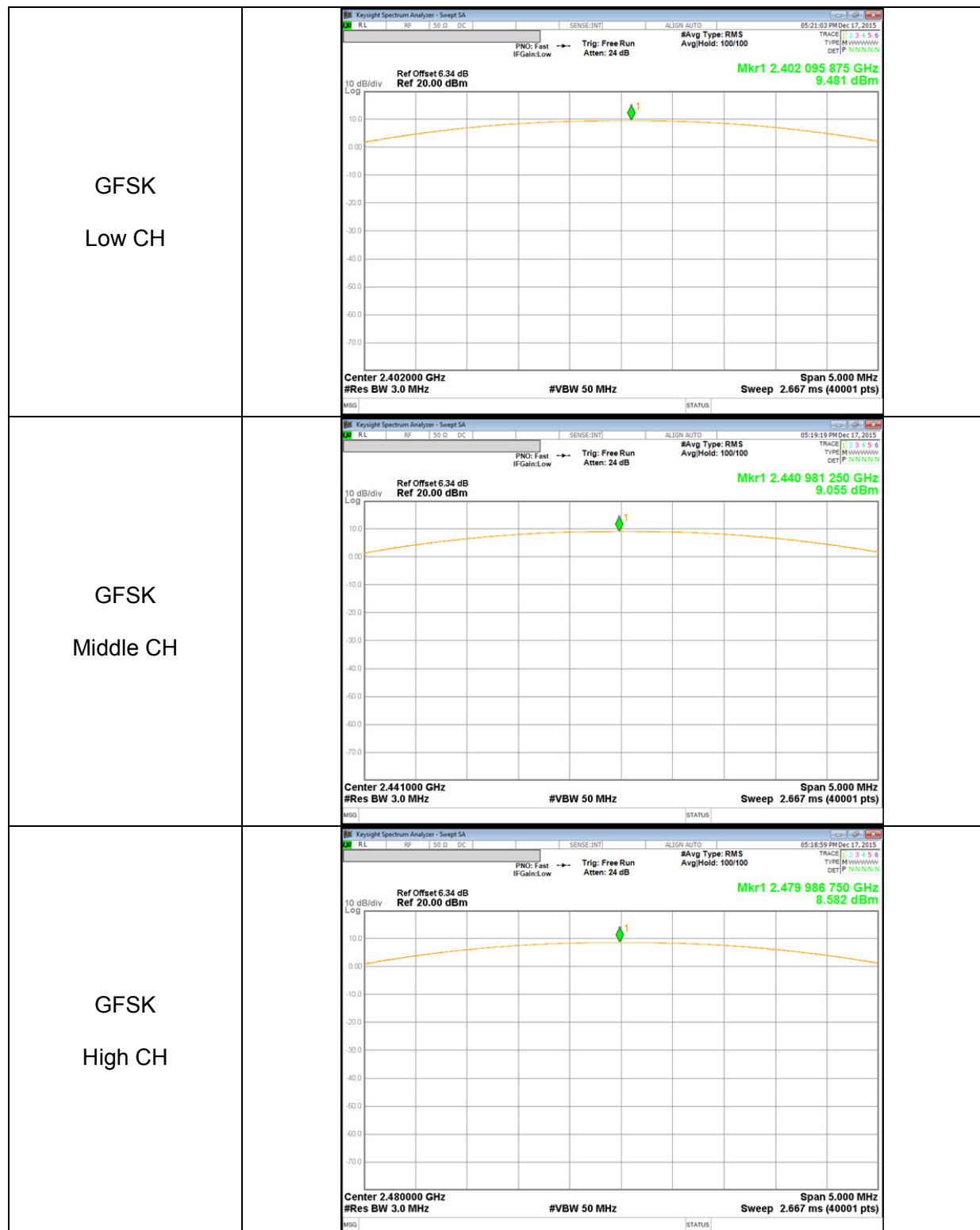


### 8.5.4. OUTPUT POWER PLOTS

#### GFSK OUTPUT POWER



**Pi/4-DPSK OUTPUT POWER**

|                                |  |
|--------------------------------|--|
| <p>Pi/4-DPSK<br/>Low CH</p>    |  |
| <p>Pi/4-DPSK<br/>Middle CH</p> |  |
| <p>Pi/4-DPSK<br/>High CH</p>   |  |

**8PSK OUTPUT POWER**

|                           |   |
|---------------------------|---|
| <p>8PSK<br/>Low CH</p>    | <p>Keysight Spectrum Analyzer - Swept SA<br/>       RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 05:20:21 PM Dec 17, 2015<br/>       PNO: Fast Trig: Free Run #Avg Type: RMS<br/>       IFGain:Low Atten: 24 dB AvgHold: 100/100<br/>       TRACE: 1 2 3 4 5 6<br/>       TYPE: M W W W W W W W<br/>       DET: P N N N N N N N<br/>       Ref Offset 6.34 dB<br/>       Ref 20.00 dBm<br/>       Mkr1 2.401 981 125 GHz<br/>       11.377 dBm<br/>       10 dB/div<br/>       Log<br/>       Center 2.402000 GHz Span 5.000 MHz<br/>       #Res BW 3.0 MHz #VBW 50 MHz Sweep 2.667 ms (40001 pts)<br/>       MSG STATUS</p> |
| <p>8PSK<br/>Middle CH</p> | <p>Keysight Spectrum Analyzer - Swept SA<br/>       RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 05:19:57 PM Dec 17, 2015<br/>       PNO: Fast Trig: Free Run #Avg Type: RMS<br/>       IFGain:Low Atten: 24 dB AvgHold: 100/100<br/>       TRACE: 1 2 3 4 5 6<br/>       TYPE: M W W W W W W W<br/>       DET: P N N N N N N N<br/>       Ref Offset 6.34 dB<br/>       Ref 20.00 dBm<br/>       Mkr1 2.441 001 625 GHz<br/>       11.075 dBm<br/>       10 dB/div<br/>       Log<br/>       Center 2.441000 GHz Span 5.000 MHz<br/>       #Res BW 3.0 MHz #VBW 50 MHz Sweep 2.667 ms (40001 pts)<br/>       MSG STATUS</p> |
| <p>8PSK<br/>High CH</p>   | <p>Keysight Spectrum Analyzer - Swept SA<br/>       RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 05:18:17 PM Dec 17, 2015<br/>       PNO: Fast Trig: Free Run #Avg Type: RMS<br/>       IFGain:Low Atten: 24 dB AvgHold: 100/100<br/>       TRACE: 1 2 3 4 5 6<br/>       TYPE: M W W W W W W W<br/>       DET: P N N N N N N N<br/>       Ref Offset 6.34 dB<br/>       Ref 20.00 dBm<br/>       Mkr1 2.480 006 750 GHz<br/>       10.572 dBm<br/>       10 dB/div<br/>       Log<br/>       Center 2.480000 GHz Span 5.000 MHz<br/>       #Res BW 3.0 MHz #VBW 50 MHz Sweep 2.667 ms (40001 pts)<br/>       MSG STATUS</p> |

## 8.6. AVERAGE POWER

### LIMIT

None; for reporting purposes only.

### TEST PROCEDURE

DA 00-705: The transmitter output is connected to a power meter.

### RESULTS

The cable assembly insertion loss of 10.1 dB (including 10 dB pad and 0.1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### 8.6.1. BASIC DATA RATE GFSK MODULATION

| Channel | Frequency [MHz] | AV power [dBm] | AV power [mW] |
|---------|-----------------|----------------|---------------|
| Low     | 2402            | 9.244          | 8.40          |
| Middle  | 2441            | 8.797          | 7.58          |
| High    | 2480            | 8.306          | 6.77          |

#### 8.6.2. DATA RATE PI/4-DQPSK MODULATION

| Channel | Frequency [MHz] | AV power [dBm] | AV power [mW] |
|---------|-----------------|----------------|---------------|
| Low     | 2402            | 8.737          | 7.48          |
| Middle  | 2441            | 8.293          | 6.75          |
| High    | 2480            | 7.807          | 6.04          |

#### 8.6.3. ENHANCED DATA RATE 8PSK MODULATION

| Channel | Frequency [MHz] | AV power [dBm] | AV power [mW] |
|---------|-----------------|----------------|---------------|
| Low     | 2402            | 8.750          | 7.50          |
| Middle  | 2441            | 8.334          | 6.81          |
| High    | 2480            | 7.834          | 6.07          |

---

## 8.7. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

Limit = -20 dBc

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

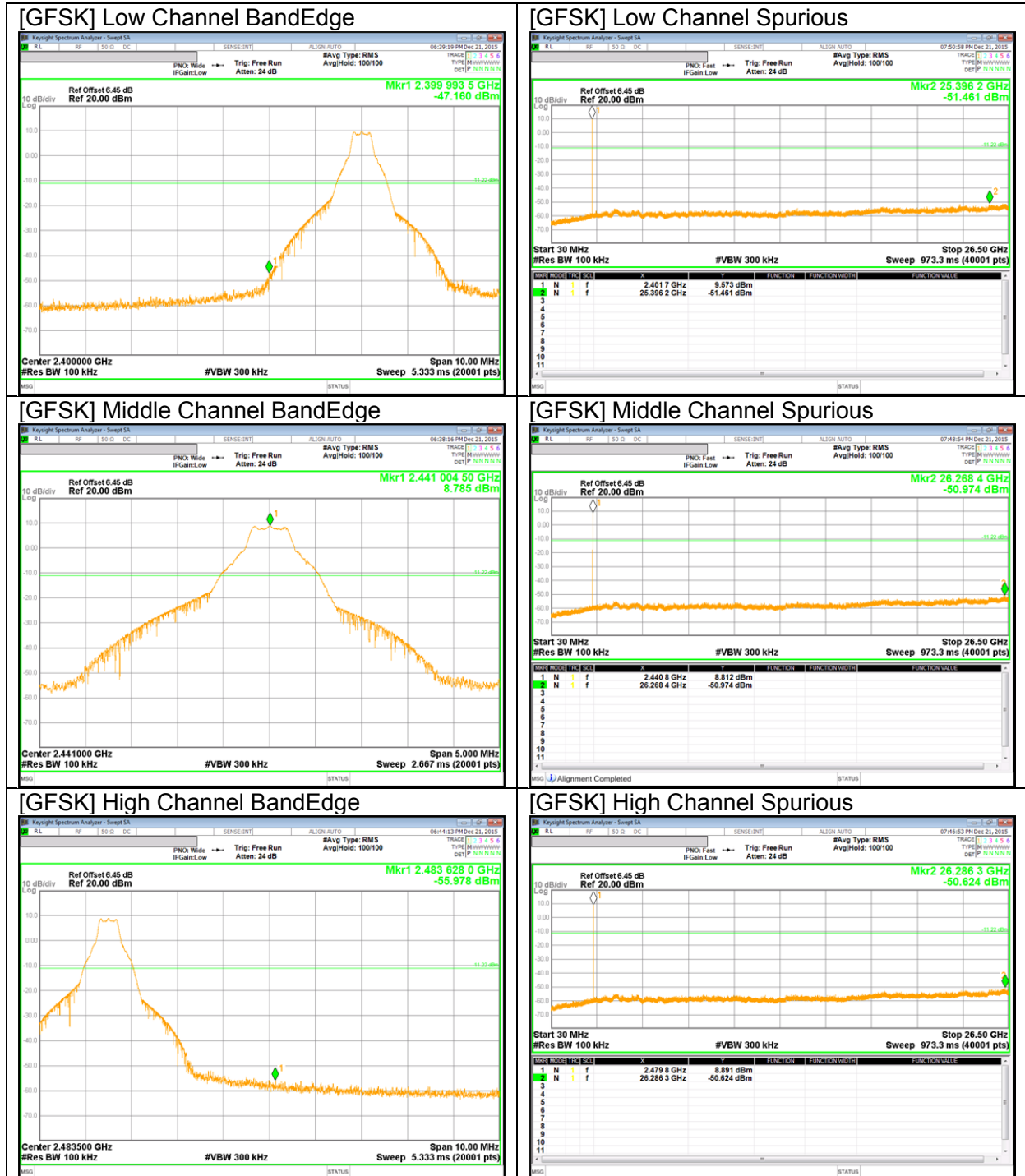
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

### RESULTS

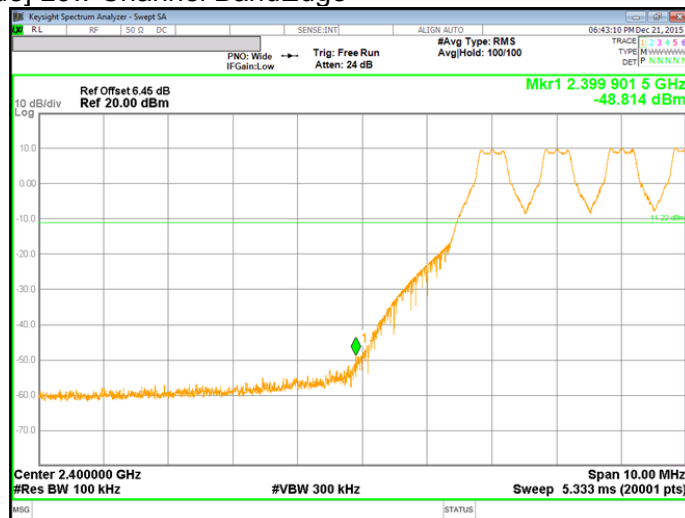
### 8.7.1. BASIC DATA RATE GFSK MODULATION

#### GFSK Mode

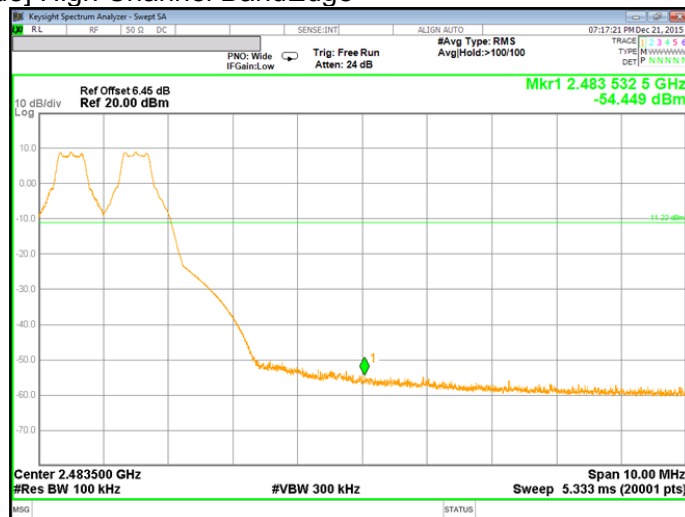


**BandEdge Emission at GFSK Hopping Mode**

[GFSK Hopping Mode] Low Channel BandEdge



[GFSK Hopping Mode] High Channel BandEdge

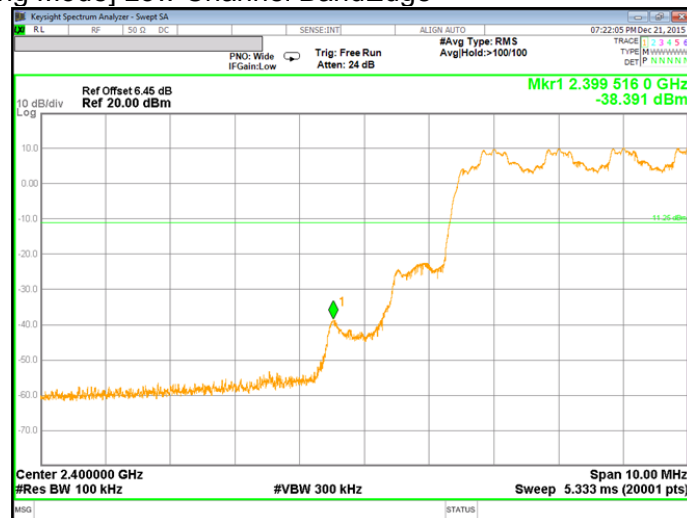


**PI/4-DQPSK Mode**



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

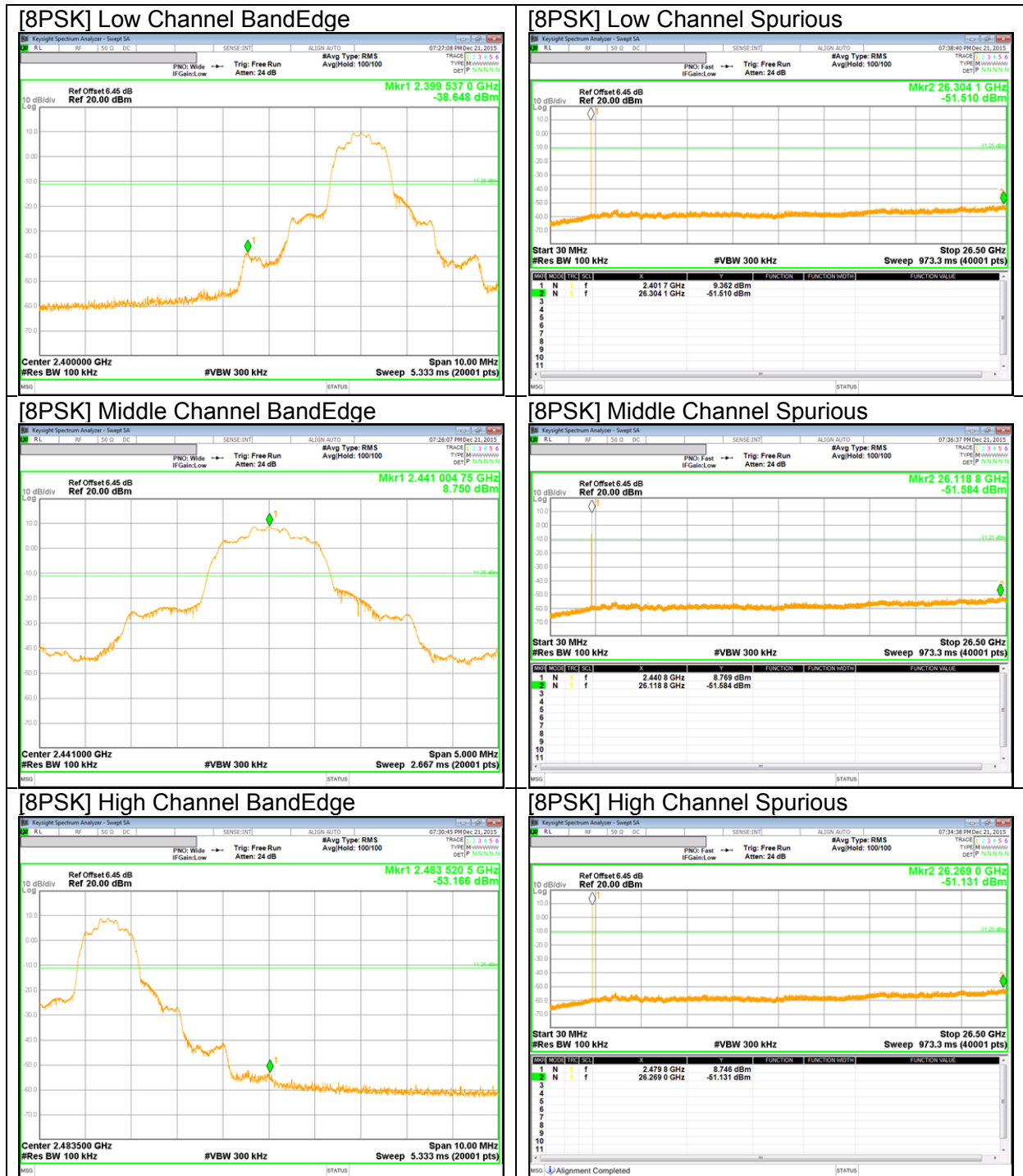
[PI/4-DQPSK Hopping Mode] Low Channel BandEdge



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

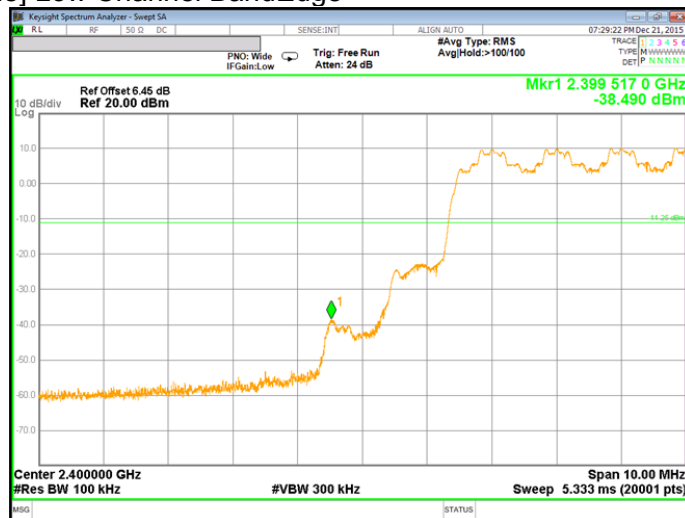


**8PSK Mode**

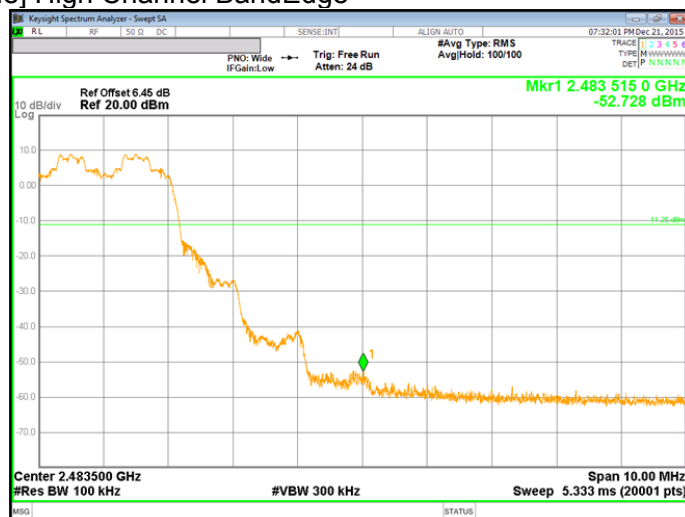


**BandEdge Emission at 8PSK Hopping Mode**

[8PSK Hopping Mode] Low Channel BandEdge



[8PSK Hopping Mode] High Channel BandEdge



## 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.

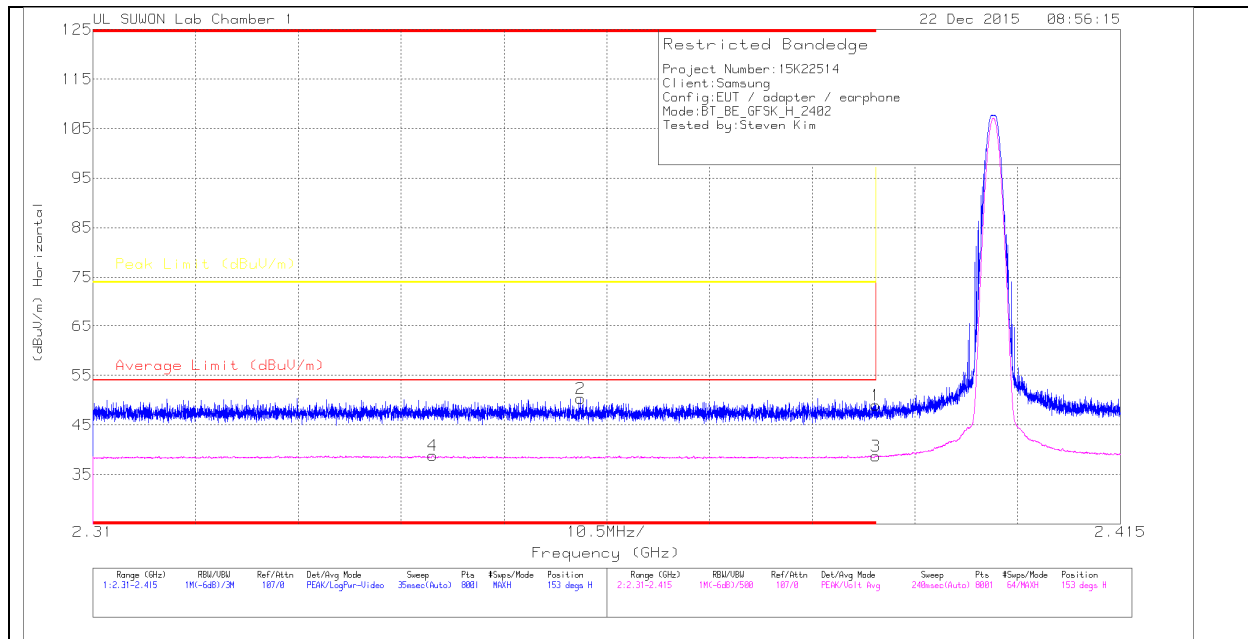
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## 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

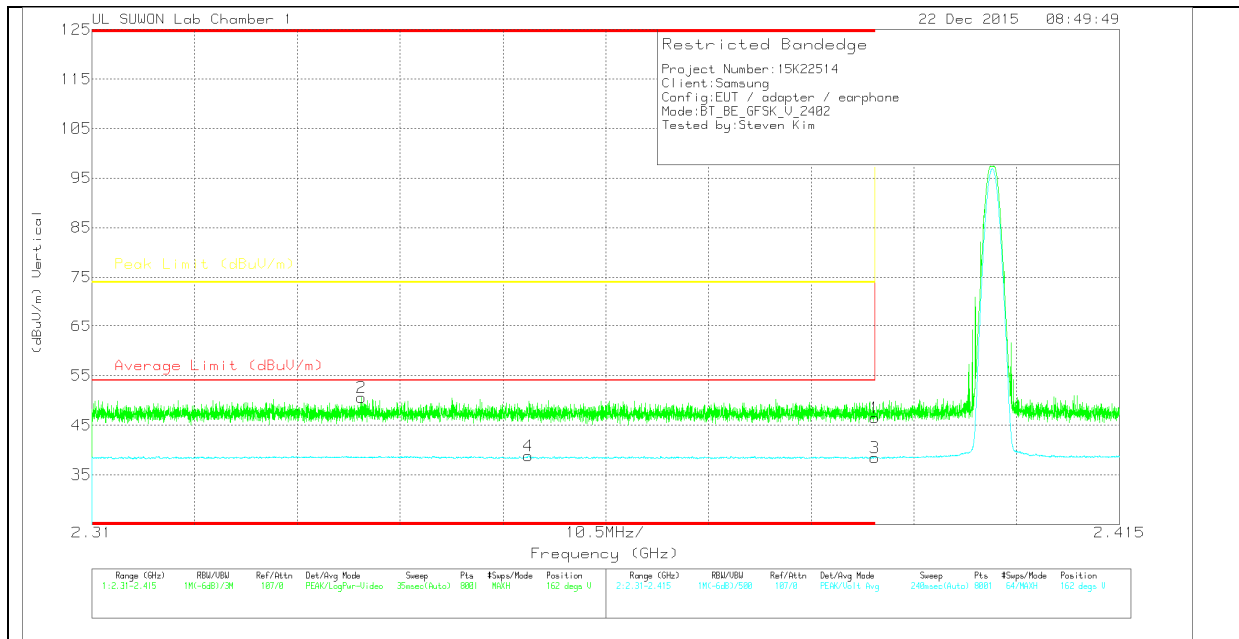
#### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(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          | 46.12                | Pk   | 31.8                    | -29    | 48.92                      | -                      | -           | 74                  | -25.08         | 153            | 100         | H        |
| 2      | * 2.36          | 47.66                | Pk   | 31.7                    | -29    | 50.36                      | -                      | -           | 74                  | -23.64         | 153            | 100         | H        |
| 3      | * 2.39          | 35.94                | V1TV | 31.8                    | -29    | 38.74                      | 54                     | -15.26      | -                   | -              | 153            | 100         | H        |
| 4      | * 2.345         | 36.11                | V1TV | 31.7                    | -29    | 38.81                      | 54                     | -15.19      | -                   | -              | 153            | 100         | H        |

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

Pk - Peak detector

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Trace Markers

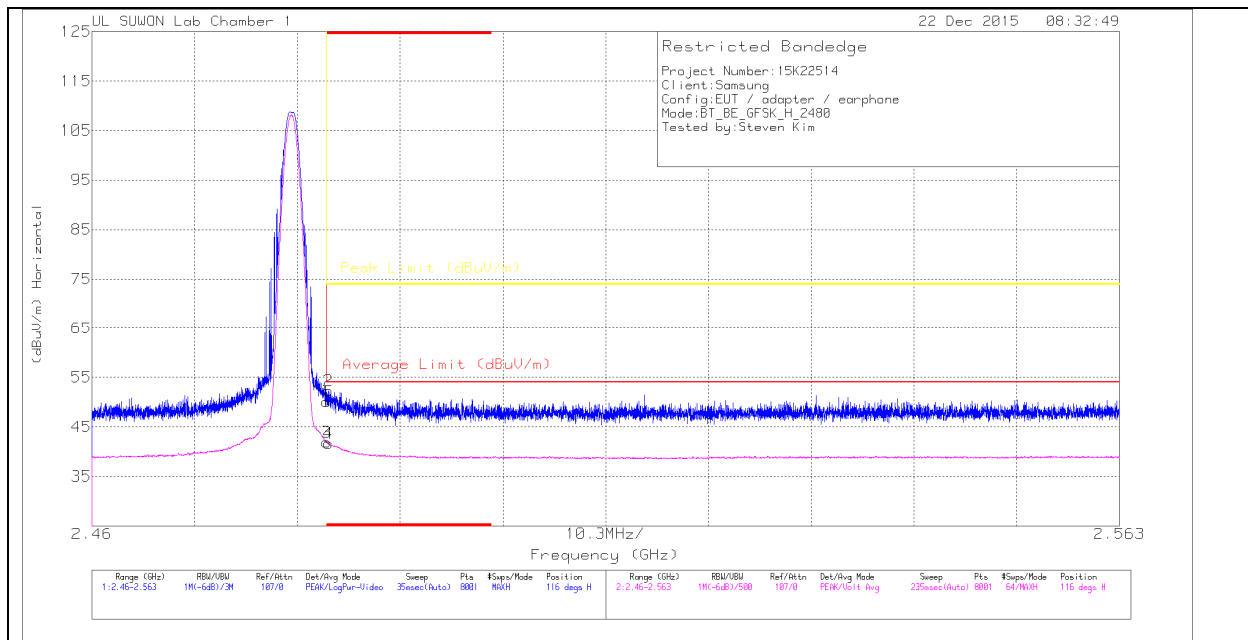
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|-------------------------|--------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 43.71                | Pk   |                         | -29    | 46.51                      | -                      | -           | 74                  | -27.49         | 162            | 239         | V        |
| 2      | * 2.338         | 47.82                | Pk   |                         | -29    | 50.52                      | -                      | -           | 74                  | -23.48         | 162            | 239         | V        |
| 3      | * 2.39          | 35.66                | V1TV |                         | -29    | 38.46                      | 54                     | -15.54      | -                   | -              | 162            | 239         | V        |
| 4      | * 2.355         | 36.12                | V1TV |                         | -29    | 38.82                      | 54                     | -15.18      | -                   | -              | 162            | 239         | V        |

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

Pk - Peak detector

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

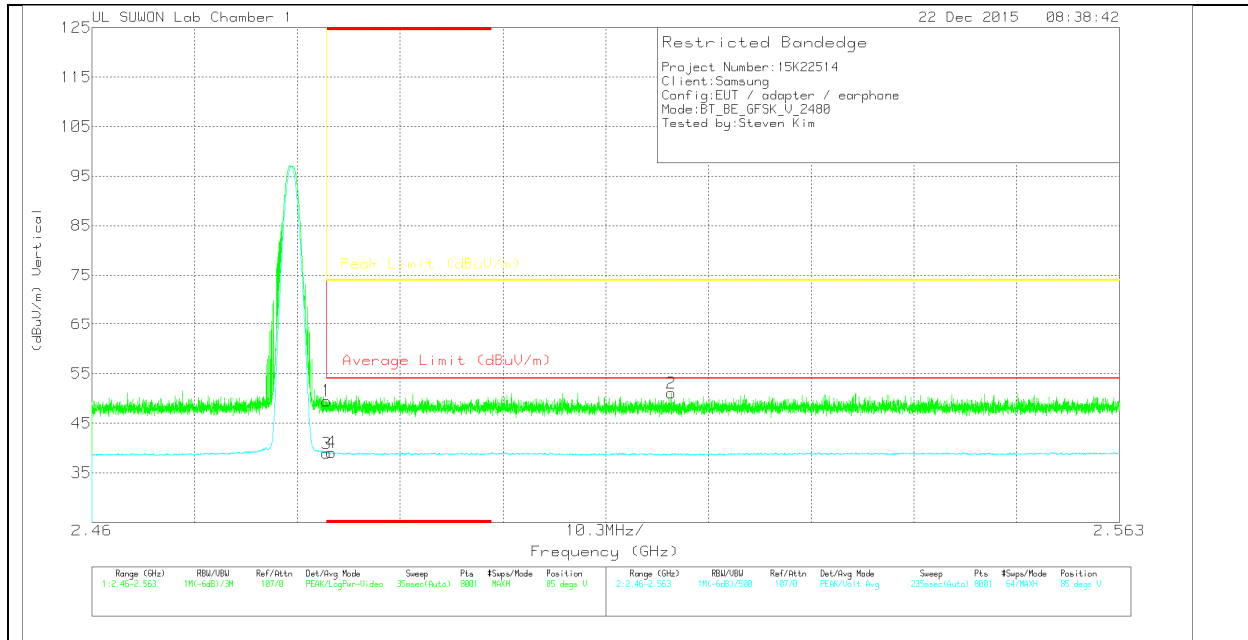
Trace Markers

| 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         | 47.03                | Pk   | 32                      | -28.9  | 50.13                      | -                      | -           | 74                  | -23.87         | 116            | 100         | H        |
| 2      | * 2.484         | 49.22                | Pk   | 32                      | -28.9  | 52.32                      | -                      | -           | 74                  | -21.68         | 116            | 100         | H        |
| 3      | * 2.484         | 38.86                | V1TV | 32                      | -28.9  | 41.96                      | 54                     | -12.04      | -                   | -              | 116            | 100         | H        |
| 4      | * 2.484         | 38.62                | V1TV | 32                      | -28.9  | 41.72                      | 54                     | -12.28      | -                   | -              | 116            | 100         | H        |

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

Pk - Peak detector

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Trace Markers

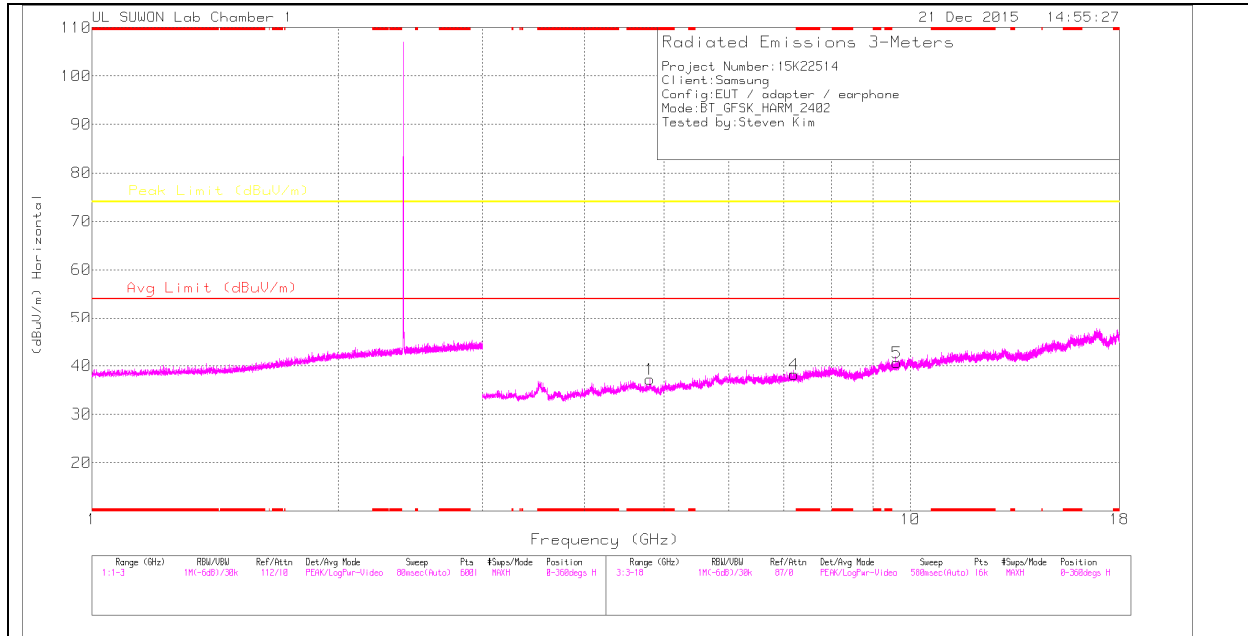
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|-------------------------|--------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 46.42                | Pk   | 32                      | -28.9  | 49.52                      | -                      | -           | 74                  | -24.48         | 85             | 293         | V        |
| 2      | 2.518           | 47.97                | Pk   | 32                      | -28.9  | 51.07                      | -                      | -           | 74                  | -22.93         | 85             | 293         | V        |
| 3      | * 2.484         | 35.89                | V1TV | 32                      | -28.9  | 38.99                      | 54                     | -15.01      | -                   | -              | 85             | 293         | V        |
| 4      | * 2.484         | 36.03                | V1TV | 32                      | -28.9  | 39.13                      | 54                     | -14.87      | -                   | -              | 85             | 293         | V        |

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

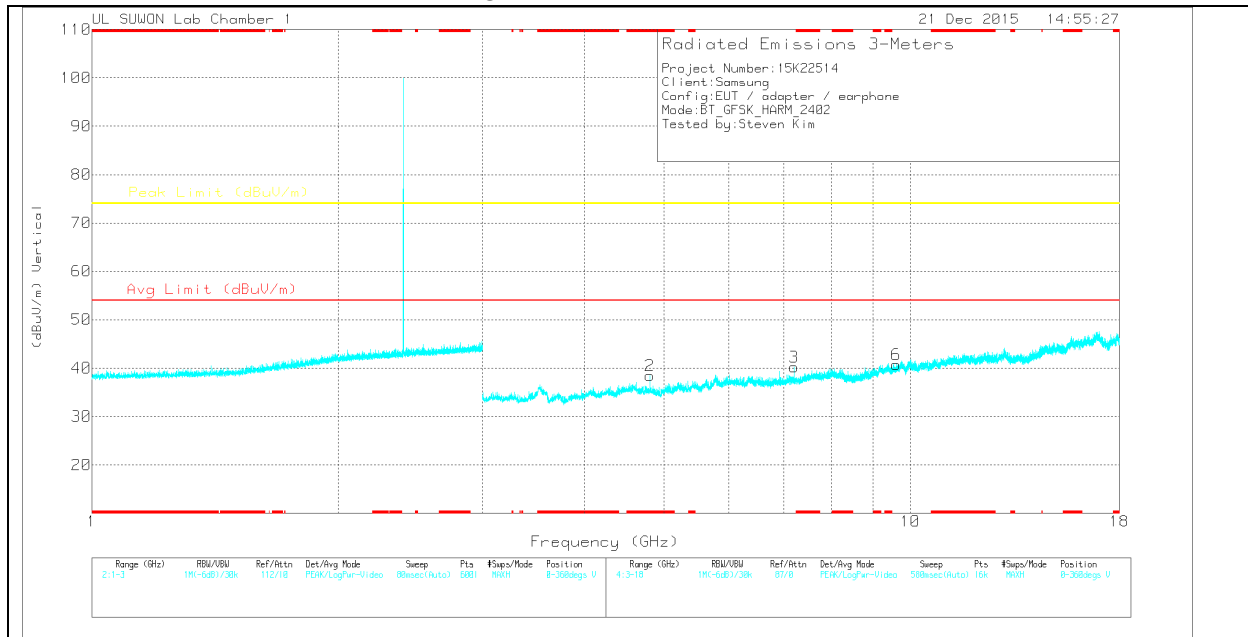
Pk - Peak detector

### 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.

**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         | 36.95                | PK  | 34                      | -33.8  | 37.15                      | -                  | -           | 74                  | -36.85      | 0-360          | 100         | H        |
| 4      | 7.204           | 33.36                | PK  | 35.7                    | -30.8  | 38.26                      | -                  | -           | 74                  | -35.74      | 0-360          | 200         | H        |
| 5      | 9.616           | 30.78                | PK  | 37                      | -27.2  | 40.58                      | -                  | -           | 74                  | -33.42      | 0-360          | 200         | H        |
| 2      | * 4.804         | 38.26                | PK  | 34                      | -33.8  | 38.46                      | -                  | -           | 74                  | -35.54      | 0-360          | 200         | V        |
| 3      | 7.206           | 35.33                | PK  | 35.7                    | -30.8  | 40.23                      | -                  | -           | 74                  | -33.77      | 0-360          | 100         | V        |
| 6      | 9.615           | 30.92                | PK  | 37                      | -27.2  | 40.72                      | -                  | -           | 74                  | -33.28      | 0-360          | 200         | V        |

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

PK – Peak Detector

Radiated Emissions

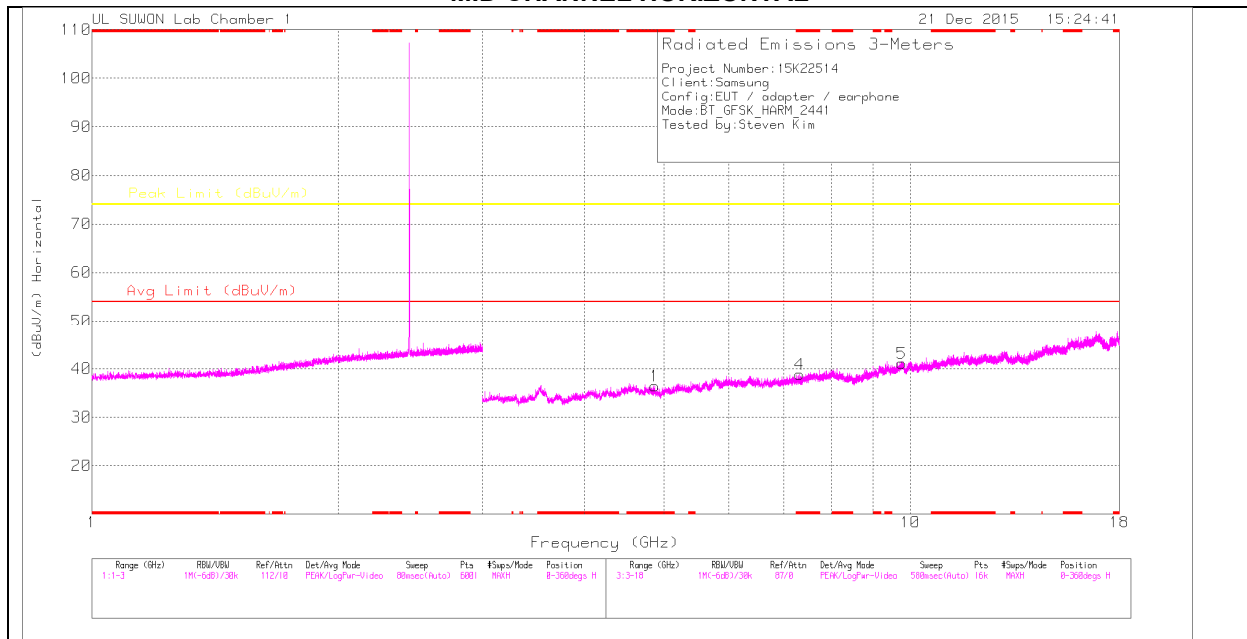
| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-------------------------|--------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 4.799         | 47.6                 | PK2  | 34                      | -33.8  | 47.8                       | -                  | -           | 74                  | -26.2       | 343            | 263         | V        |
| * 4.804         | 33.2                 | VA1T | 34                      | -33.8  | 33.4                       | 54                 | -20.6       | -                   | -           | 343            | 263         | V        |
| 7.2             | 44.2                 | PK2  | 35.7                    | -30.7  | 49.2                       | -                  | -           | 74                  | -24.8       | 171            | 277         | V        |

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

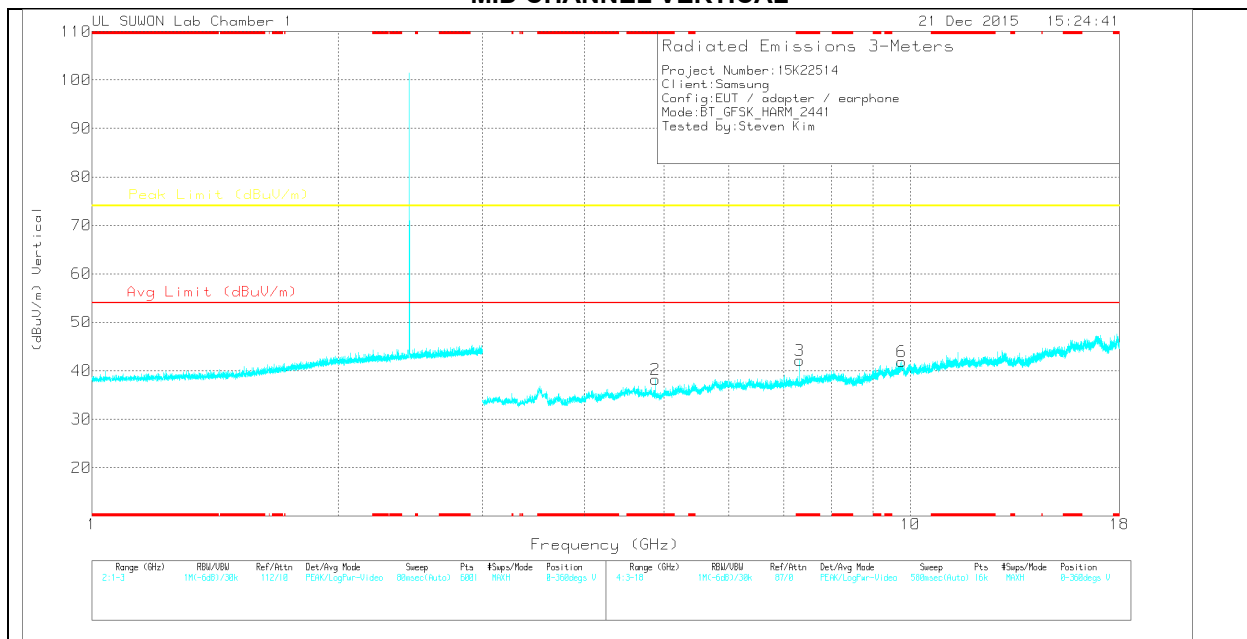
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

**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.

**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      | * 4.873         | 36.48                | PK  | 34                      | -34    | 36.48                      | -                  | -           | 74                  | -37.52      | 0-360          | 100         | H        |
| 4      | * 7.323         | 33.95                | PK  | 35.8                    | -30.9  | 38.85                      | -                  | -           | 74                  | -35.15      | 0-360          | 100         | H        |
| 5      | 9.756           | 30.67                | PK  | 37.2                    | -26.7  | 41.17                      | -                  | -           | 74                  | -32.83      | 0-360          | 100         | H        |
| 2      | * 4.881         | 38.17                | PK  | 34                      | -34    | 38.17                      | -                  | -           | 74                  | -35.83      | 0-360          | 100         | V        |
| 3      | * 7.323         | 37.18                | PK  | 35.8                    | -30.9  | 42.08                      | -                  | -           | 74                  | -31.92      | 0-360          | 100         | V        |
| 6      | 9.759           | 31.31                | PK  | 37.2                    | -26.6  | 41.91                      | -                  | -           | 74                  | -32.09      | 0-360          | 100         | V        |

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

PK – Peak Detector

Radiated Emissions

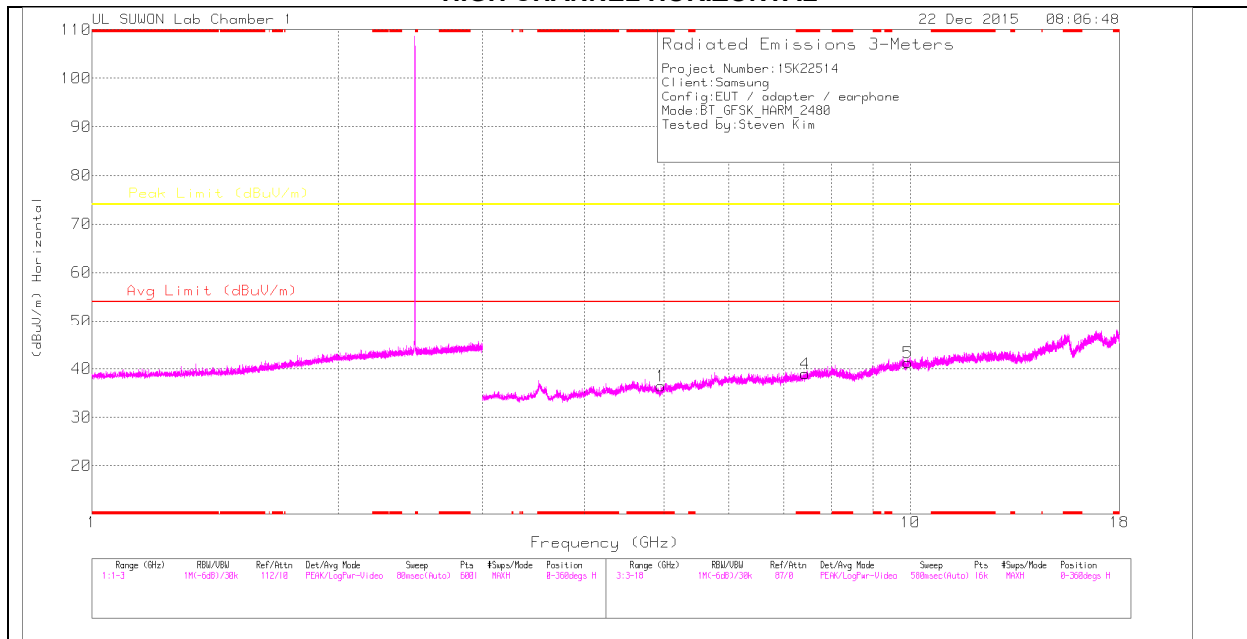
| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-------------------------|--------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 4.882         | 47.48                | PK2  | 34                      | -34    | 47.48                      | -                  | -           | 74                  | -26.52      | 254            | 362         | V        |
| * 4.882         | 36.03                | VA1T | 34                      | -34    | 36.03                      | 54                 | -17.97      | -                   | -           | 254            | 362         | V        |
| * 7.322         | 44.68                | PK2  | 35.8                    | -30.9  | 49.58                      | -                  | -           | 74                  | -24.42      | 63             | 363         | V        |
| * 7.323         | 33.58                | VA1T | 35.8                    | -30.9  | 38.48                      | 54                 | -15.52      | -                   | -           | 63             | 363         | V        |

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

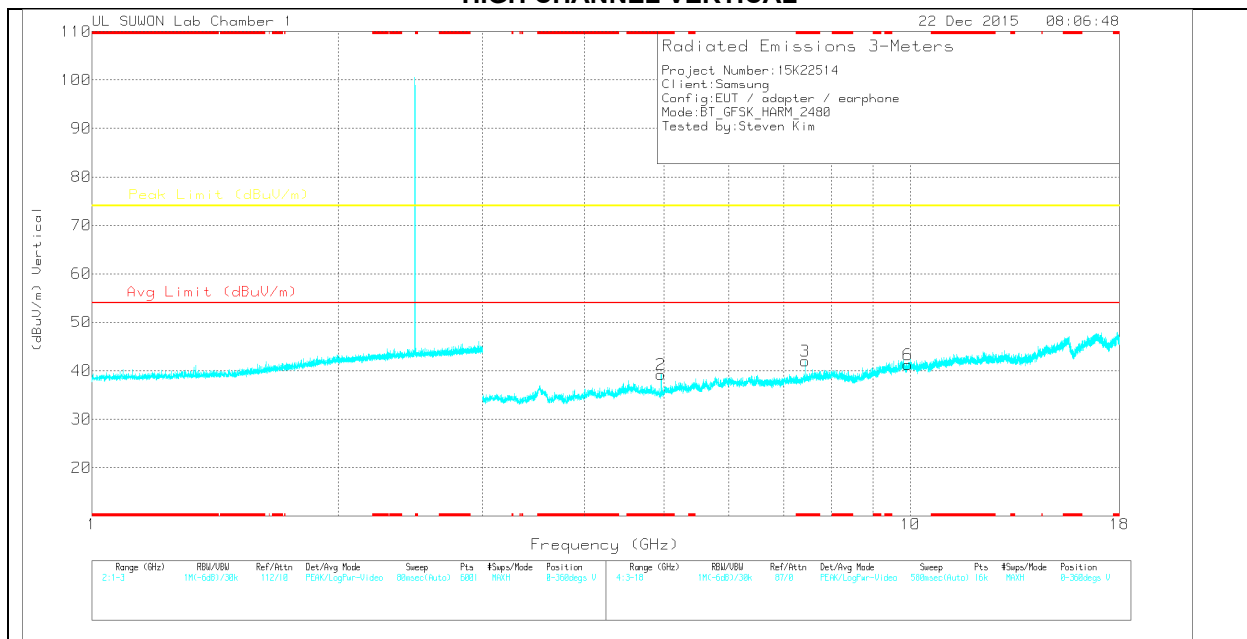
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

### 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.

**HIGH CHANNEL DATA**

race 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         | 36.49                | PK  | 34                      | -34    | 36.49                      | -                  | -           | 74                  | -37.51      | 0-360          | 100         | H        |
| 4      | * 7.442         | 33.84                | PK  | 35.8                    | -30.7  | 38.94                      | -                  | -           | 74                  | -35.06      | 0-360          | 200         | H        |
| 5      | 9.93            | 30.9                 | PK  | 37.4                    | -27    | 41.3                       | -                  | -           | 74                  | -32.7       | 0-360          | 100         | H        |
| 2      | * 4.959         | 39.19                | PK  | 34                      | -34    | 39.19                      | -                  | -           | 74                  | -34.81      | 0-360          | 100         | V        |
| 3      | * 7.441         | 36.92                | PK  | 35.8                    | -30.7  | 42.02                      | -                  | -           | 74                  | -31.98      | 0-360          | 100         | V        |
| 6      | 9.933           | 30.79                | PK  | 37.4                    | -26.9  | 41.29                      | -                  | -           | 74                  | -32.71      | 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          | 48.8                 | PK2  | 34                      | -34    | 48.8                       | -                  | -           | 74                  | -25.2       | 350            | 314         | V        |
| * 4.96          | 37.51                | VA1T | 34                      | -34    | 37.51                      | 54                 | -16.49      | -                   | -           | 350            | 314         | V        |
| * 7.439         | 46.56                | PK2  | 35.8                    | -30.7  | 51.66                      | -                  | -           | 74                  | -22.34      | 344            | 100         | V        |
| * 7.44          | 36.01                | VA1T | 35.8                    | -30.7  | 41.11                      | 54                 | -12.89      | -                   | -           | 344            | 100         | V        |

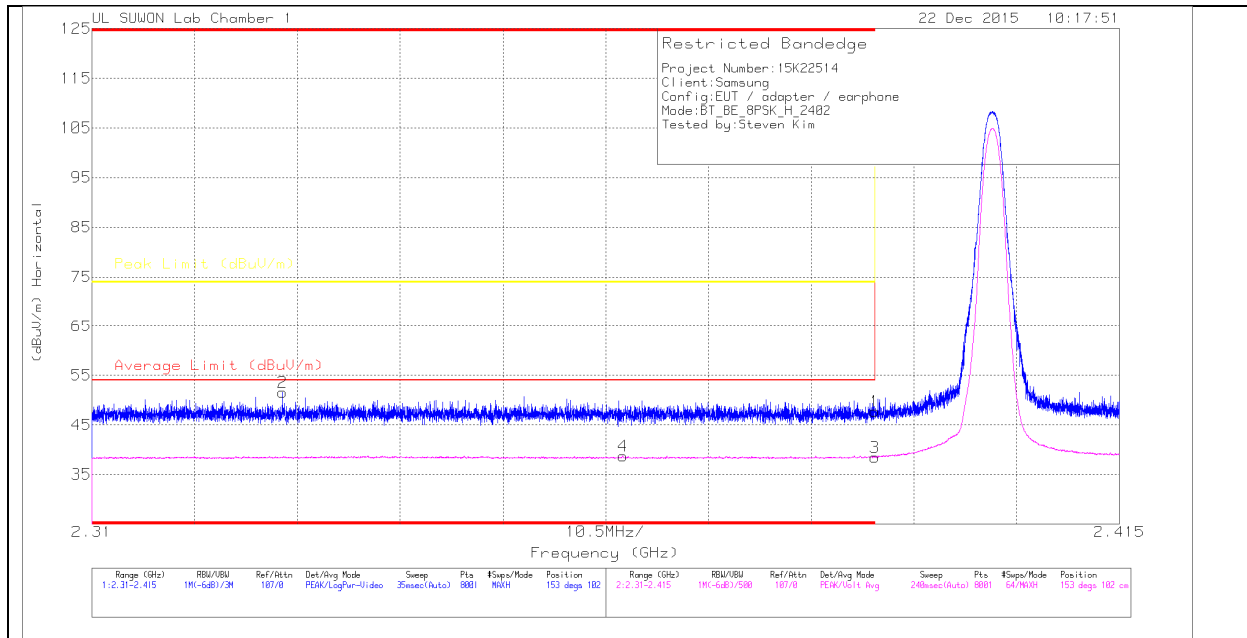
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

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

### HORIZONTAL PEAK AND AVERAGE PLOT



### HORIZONTAL DATA

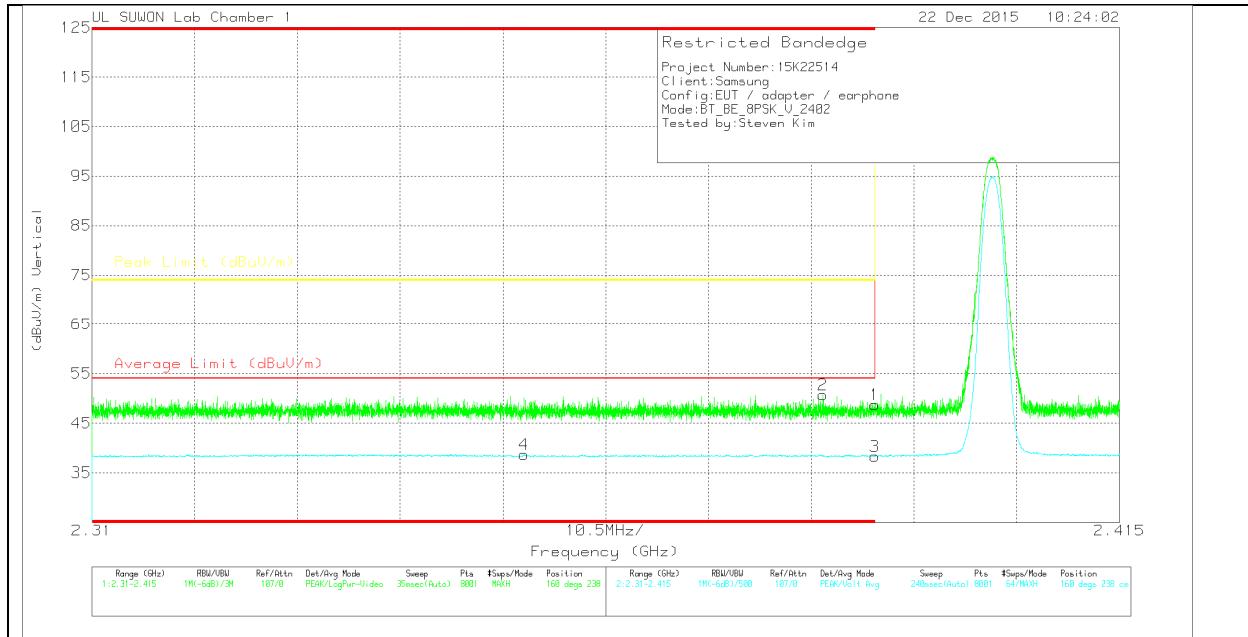
#### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(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          | 44.96                | Pk   |                         | -29    | 47.76                      | -                      | -           | 74                  | -26.24         | 153            | 102         | H        |
| 2      | * 2.329         | 48.84                | Pk   |                         | -29    | 51.54                      | -                      | -           | 74                  | -22.46         | 153            | 102         | H        |
| 3      | * 2.39          | 35.68                | V1TV |                         | -29    | 38.48                      | 54                     | -15.52      | -                   | -              | 153            | 102         | H        |
| 4      | * 2.364         | 35.95                | V1TV |                         | -29    | 38.75                      | 54                     | -15.25      | -                   | -              | 153            | 102         | H        |

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

Pk - Peak detector

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

**Trace Markers**

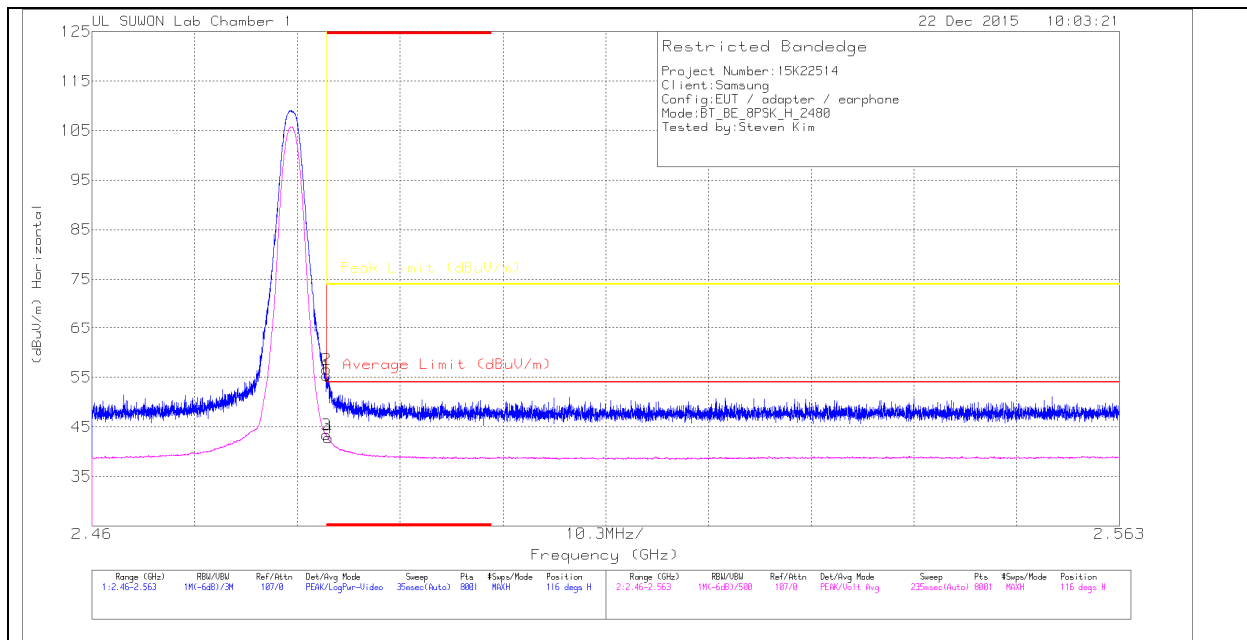
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|-------------------------|--------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 45.91                | Pk   | 31.8                    | -29    | 48.71                      | -                      | -           | 74                  | -25.29         | 160            | 238         | V        |
| 2      | * 2.385         | 47.87                | Pk   | 31.8                    | -29    | 50.67                      | -                      | -           | 74                  | -23.33         | 160            | 238         | V        |
| 3      | * 2.39          | 35.58                | V1TV | 31.8                    | -29    | 38.38                      | 54                     | -15.62      | -                   | -              | 160            | 238         | V        |
| 4      | * 2.354         | 36.05                | V1TV | 31.7                    | -29    | 38.75                      | 54                     | -15.25      | -                   | -              | 160            | 238         | V        |

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

Pk - Peak detector

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

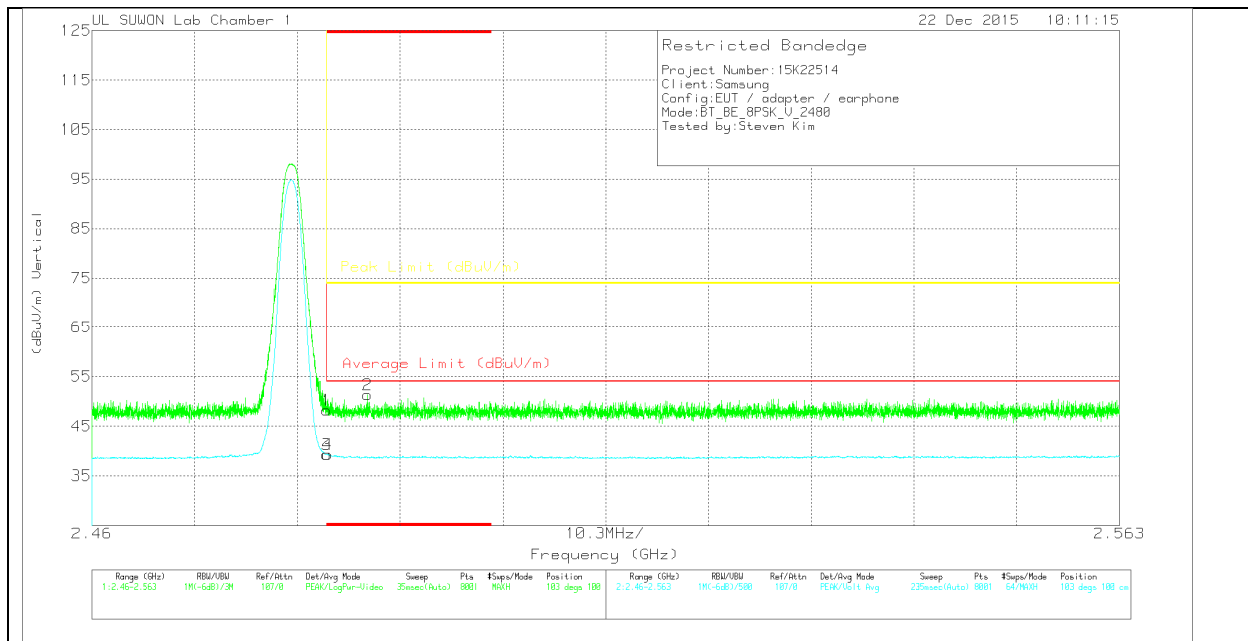
**Trace Markers**

| 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         | 52.29                | Pk   | 32                      | -28.9  | 55.39                      | -                      | -           | 74                  | -18.61         | 116            | 101         | H        |
| 2      | * 2.484         | 53.52                | Pk   | 32                      | -28.9  | 56.62                      | -                      | -           | 74                  | -17.38         | 116            | 101         | H        |
| 3      | * 2.484         | 40.25                | V1TV | 32                      | -28.9  | 43.35                      | 54                     | -10.65      | -                   | -              | 116            | 101         | H        |
| 4      | * 2.484         | 39.64                | V1TV | 32                      | -28.9  | 42.74                      | 54                     | -11.26      | -                   | -              | 116            | 101         | H        |

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

Pk - Peak detector

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

**Trace Markers**

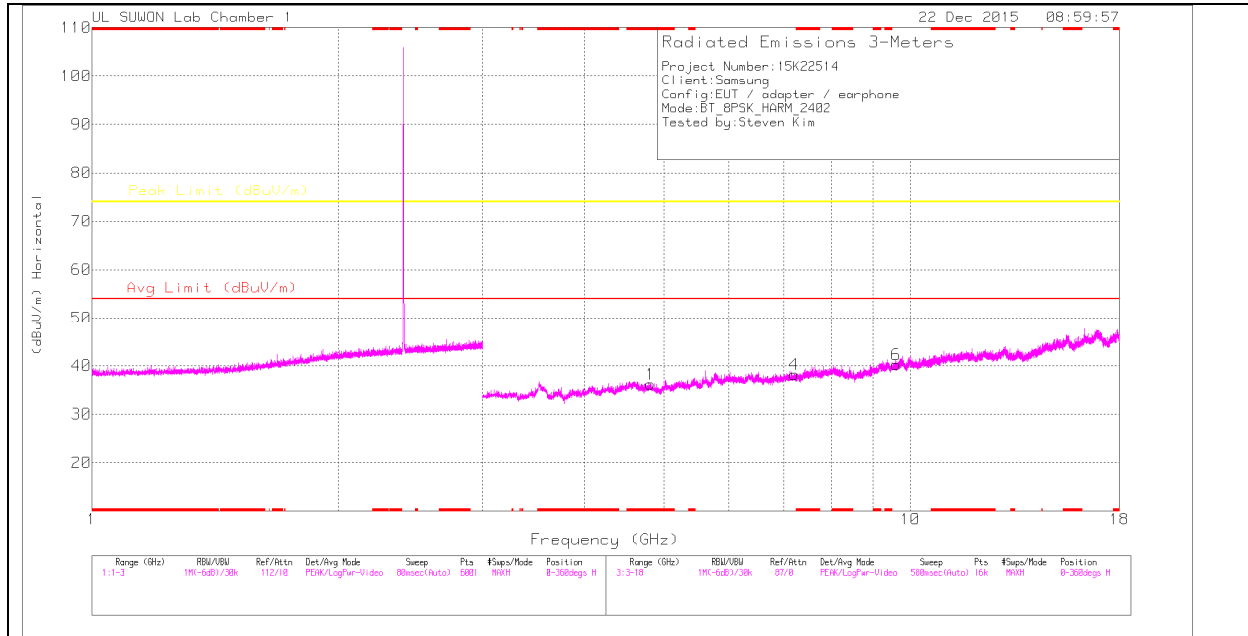
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|-------------------------|--------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 45.11                | Pk   | 32                      | -28.9  | 48.21                      | -                      | -           | 74                  | -25.79         | 103            | 100         | V        |
| 2      | * 2.488         | 48.16                | Pk   | 32                      | -28.9  | 51.26                      | -                      | -           | 74                  | -22.74         | 103            | 100         | V        |
| 3      | * 2.484         | 36.2                 | V1TV | 32                      | -28.9  | 39.3                       | 54                     | -14.7       | -                   | -              | 103            | 100         | V        |
| 4      | * 2.484         | 36.25                | V1TV | 32                      | -28.9  | 39.35                      | 54                     | -14.65      | -                   | -              | 103            | 100         | V        |

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

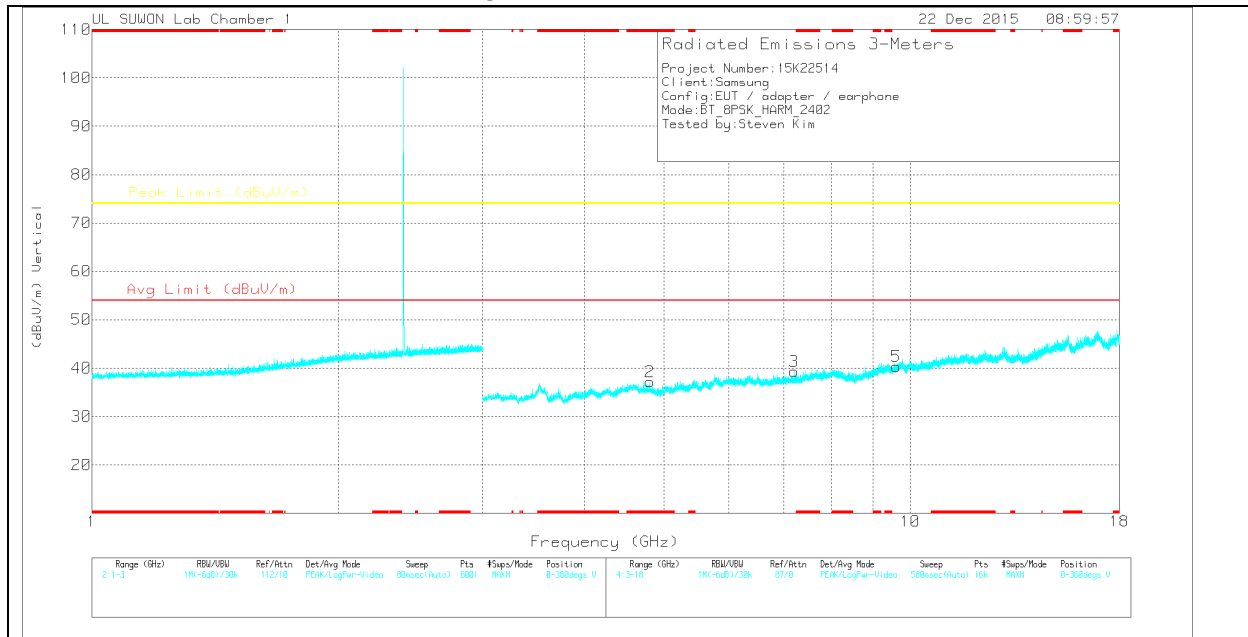
Pk - Peak detector

### 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.

**LOW CHANNEL DATA**

Trace Markers

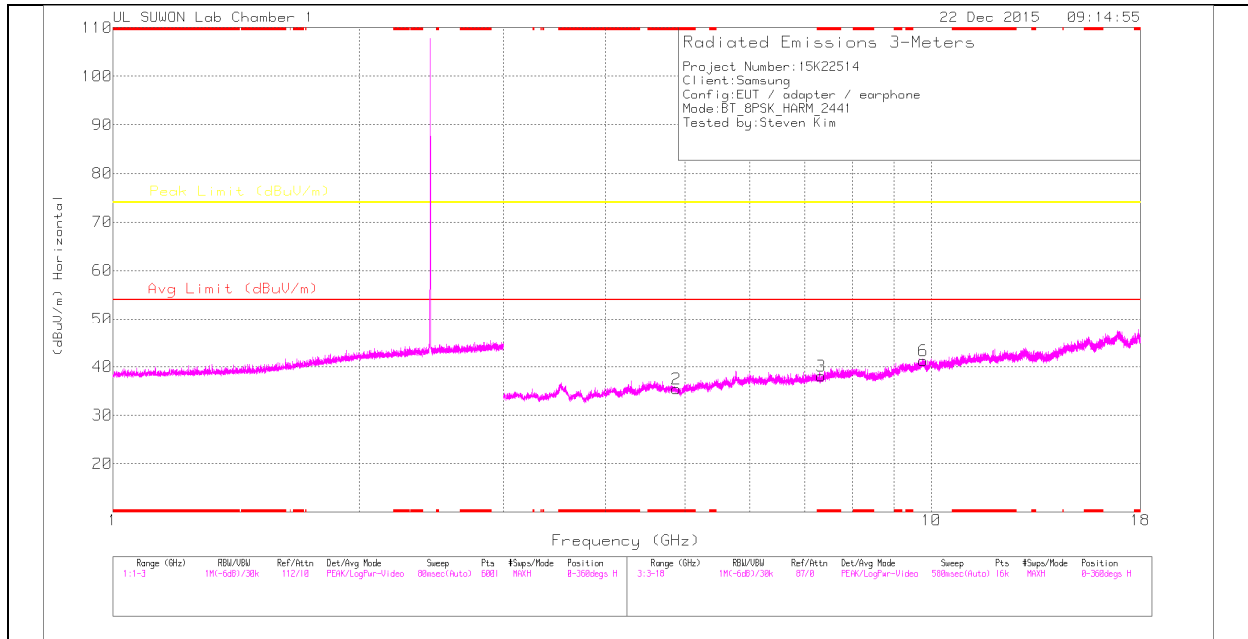
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-------------------------|--------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1      | * 4.812         | 35.97                | PK  | 34                      | -33.8  | 36.17                      | -                  | -           | 74                  | -37.83      | 0-360          | 100         | H        |
| 4      | 7.205           | 33.35                | PK  | 35.7                    | -30.8  | 38.25                      | -                  | -           | 74                  | -35.75      | 0-360          | 100         | H        |
| 6      | 9.607           | 30.53                | PK  | 37                      | -27.3  | 40.23                      | -                  | -           | 74                  | -33.77      | 0-360          | 200         | H        |
| 2      | * 4.804         | 36.95                | PK  | 34                      | -33.8  | 37.15                      | -                  | -           | 74                  | -36.85      | 0-360          | 100         | V        |
| 3      | 7.206           | 34.5                 | PK  | 35.7                    | -30.8  | 39.4                       | -                  | -           | 74                  | -34.6       | 0-360          | 100         | V        |
| 5      | 9.615           | 30.6                 | PK  | 37                      | -27.2  | 40.4                       | -                  | -           | 74                  | -33.6       | 0-360          | 100         | V        |

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

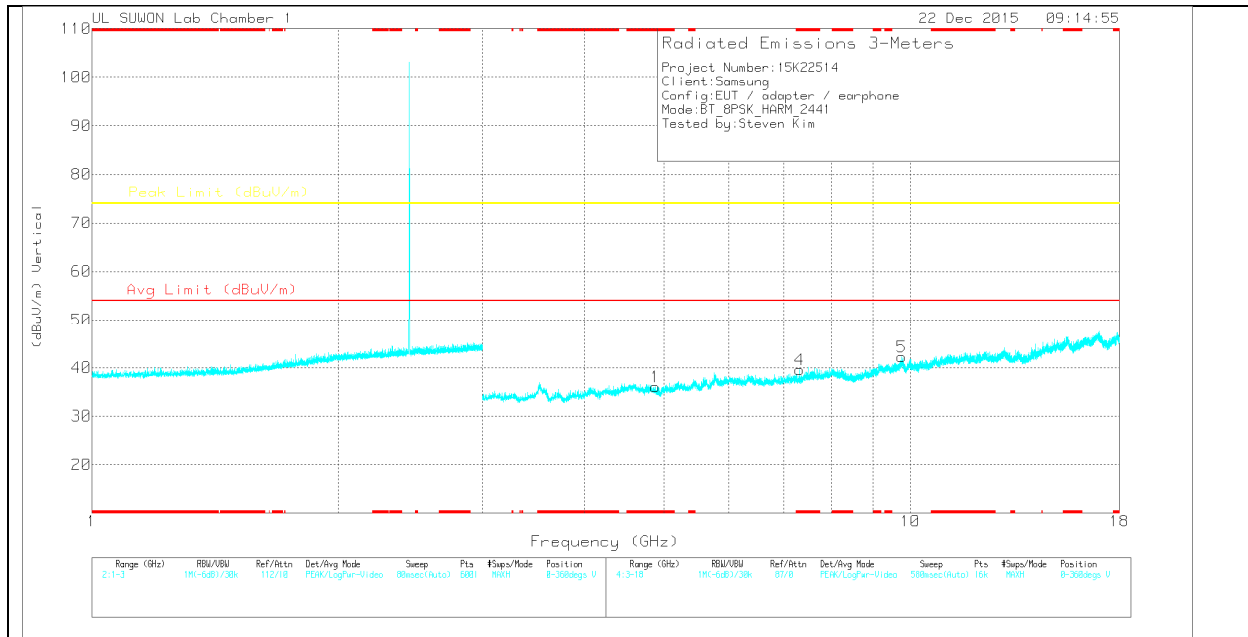
PK – Peak Detector

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

**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.

**MID CHANNEL DATA**

Trace Markers

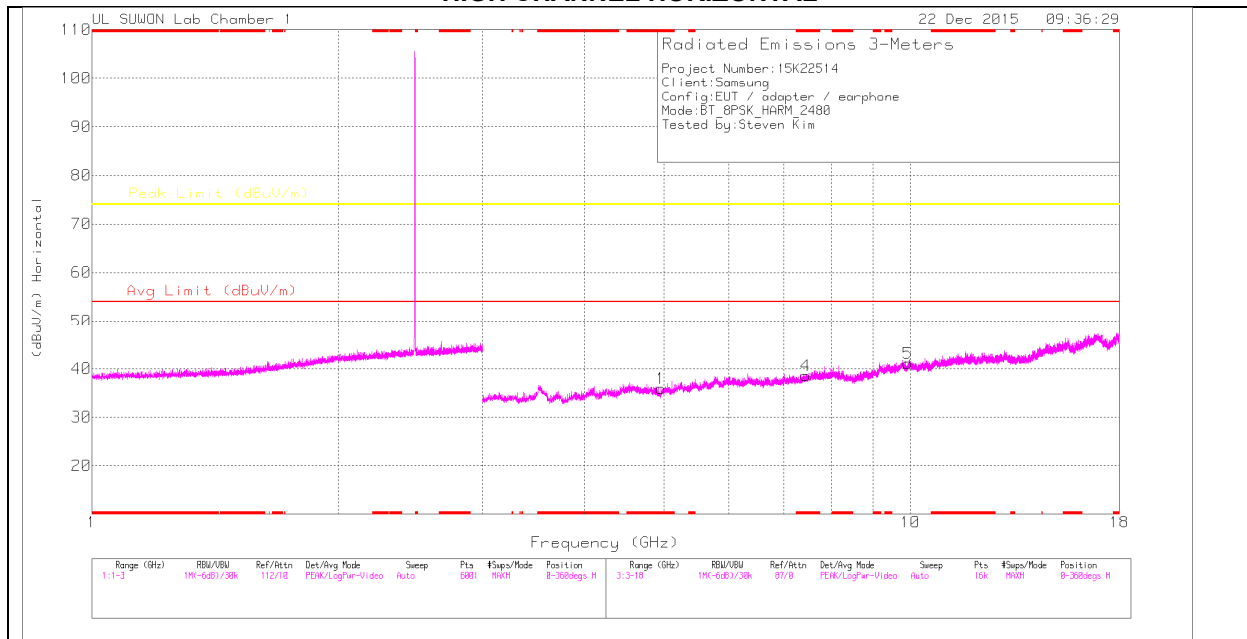
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-------------------------|--------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 2      | * 4.882         | 35.38                | Pk  | 34                      | -34    | 35.38                      | -                  | -           | 74                  | -38.62      | 0-360          | 100         | H        |
| 3      | * 7.337         | 33.14                | Pk  | 35.8                    | -30.8  | 38.14                      | -                  | -           | 74                  | -35.86      | 0-360          | 100         | H        |
| 6      | 9.768           | 30.58                | Pk  | 37.2                    | -26.5  | 41.28                      | -                  | -           | 74                  | -32.72      | 0-360          | 100         | H        |
| 1      | * 4.881         | 36.03                | Pk  | 34                      | -34    | 36.03                      | -                  | -           | 74                  | -37.97      | 0-360          | 100         | V        |
| 4      | * 7.323         | 34.67                | Pk  | 35.8                    | -30.9  | 39.57                      | -                  | -           | 74                  | -34.43      | 0-360          | 100         | V        |
| 5      | 9.758           | 31.73                | Pk  | 37.2                    | -26.7  | 42.23                      | -                  | -           | 74                  | -31.77      | 0-360          | 200         | V        |

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

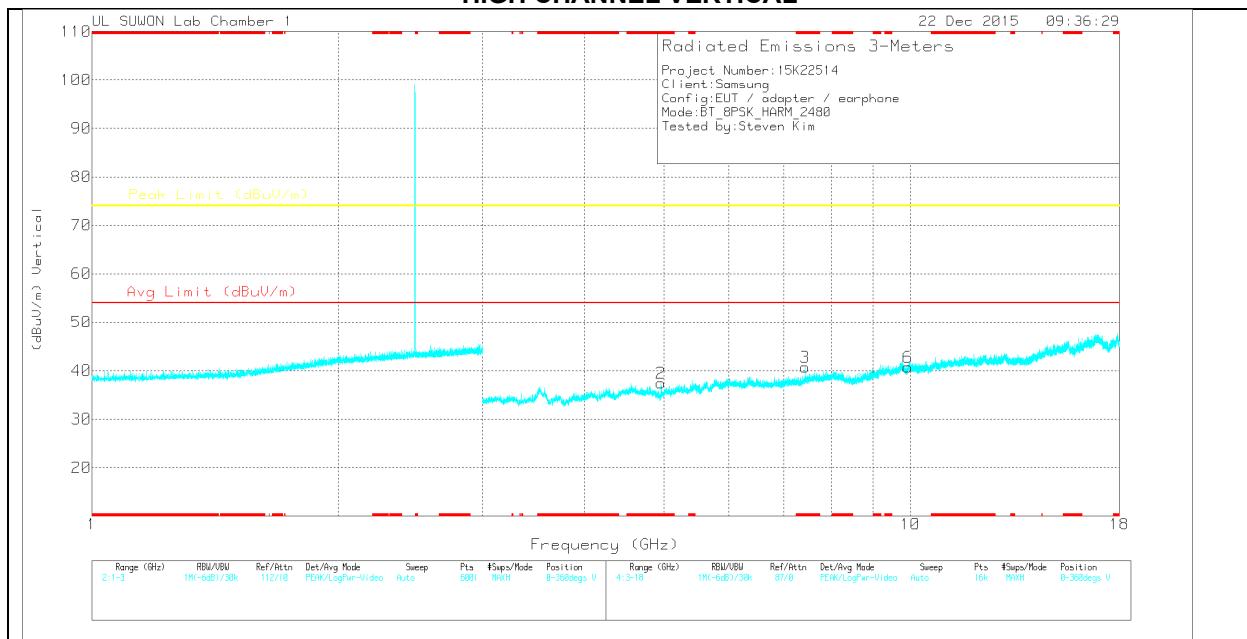
Pk – Peak Detector

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

### 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.

**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         | 35.96                | PK  | 34                      | -34    | 35.96                      | -                  | -           | 74                  | -38.04      | 0-360          | 200         | H        |
| 4      | * 7.445         | 33.37                | PK  | 35.8                    | -30.6  | 38.57                      | -                  | -           | 74                  | -35.43      | 0-360          | 200         | H        |
| 5      | 9.931           | 30.71                | PK  | 37.4                    | -27    | 41.11                      | -                  | -           | 74                  | -32.89      | 0-360          | 200         | H        |
| 2      | * 4.959         | 37.4                 | PK  | 34                      | -34    | 37.4                       | -                  | -           | 74                  | -36.6       | 0-360          | 100         | V        |
| 3      | * 7.44          | 35.68                | PK  | 35.8                    | -30.7  | 40.78                      | -                  | -           | 74                  | -33.22      | 0-360          | 100         | V        |
| 6      | 9.924           | 30.4                 | PK  | 37.4                    | -27.1  | 40.7                       | -                  | -           | 74                  | -33.3       | 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 |
|-----------------|----------------------|------|-------------------------|--------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 7.44          | 46.58                | PK2  | 35.8                    | -30.7  | 51.68                      | -                  | -           | 74                  | -22.32      | 340            | 102         | V        |
| * 7.44          | 33.71                | VA1T | 35.8                    | -30.7  | 38.81                      | 54                 | -15.19      | -                   | -           | 340            | 102         | V        |

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

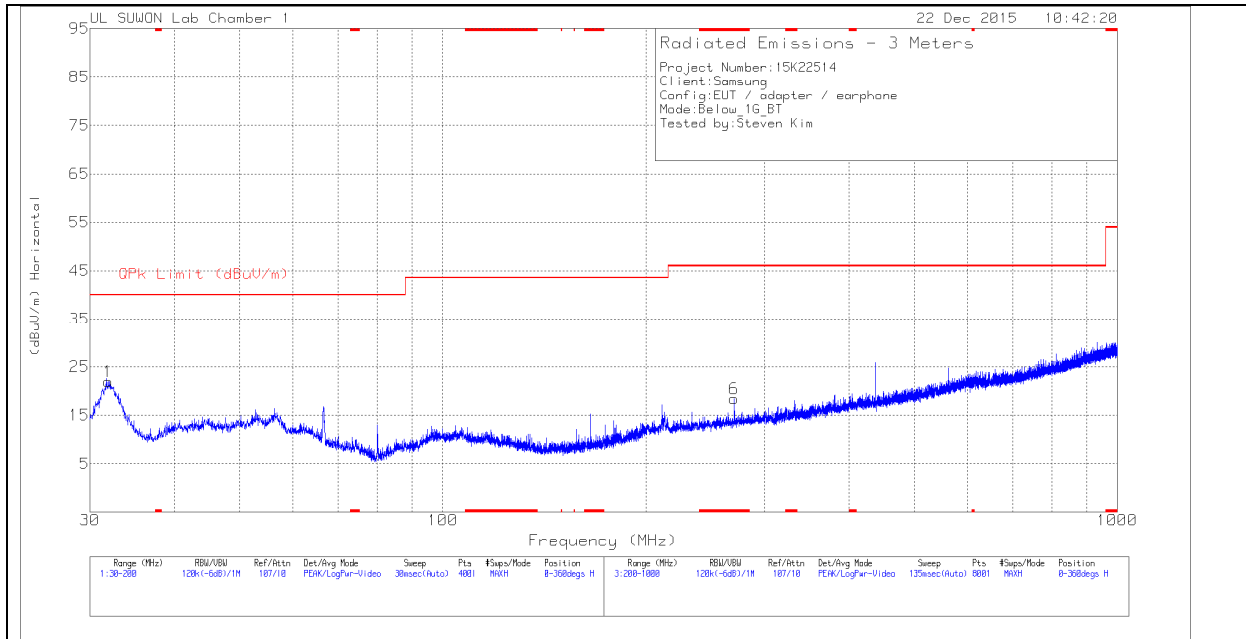
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

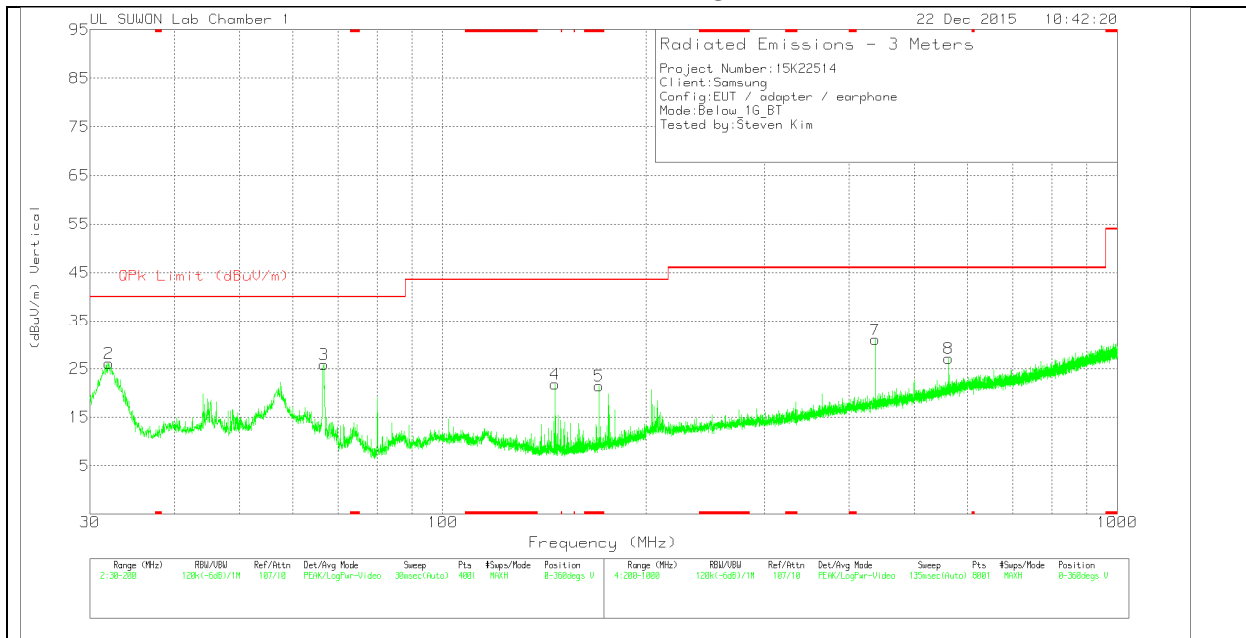
### 9.3. WORST-CASE BELOW 1 GHz

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

#### HORIZONTAL PLOT



#### VERTICAL PLOT



**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      | 31.955          | 42.19                | Pk  | 10.3         | -30.5  | 21.99                      | 40                 | -18.01      | 0-360          | 301         | H        |
| 2      | 31.9975         | 46.35                | Pk  | 10.3         | -30.5  | 26.15                      | 40                 | -13.85      | 0-360          | 100         | V        |
| 3      | 66.635          | 45.08                | Pk  | 10.6         | -29.8  | 25.88                      | 40                 | -14.12      | 0-360          | 100         | V        |
| 4      | 146.6625        | 42.37                | Pk  | 8.1          | -28.7  | 21.77                      | 43.52              | -21.75      | 0-360          | 100         | V        |
| 5      | * 170.4625      | 40.89                | Pk  | 9            | -28.4  | 21.49                      | 43.52              | -22.03      | 0-360          | 100         | V        |
| 6      | * 270.5         | 33.33                | Pk  | 12.7         | -27.6  | 18.43                      | 46.02              | -27.59      | 0-360          | 100         | H        |
| 7      | 437.5           | 41.5                 | Pk  | 16.1         | -26.6  | 31                         | 46.02              | -15.02      | 0-360          | 100         | V        |
| 8      | 562.6           | 34.74                | Pk  | 18.4         | -26    | 27.14                      | 46.02              | -18.88      | 0-360          | 100         | V        |

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

Pk - Peak detector

## 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.

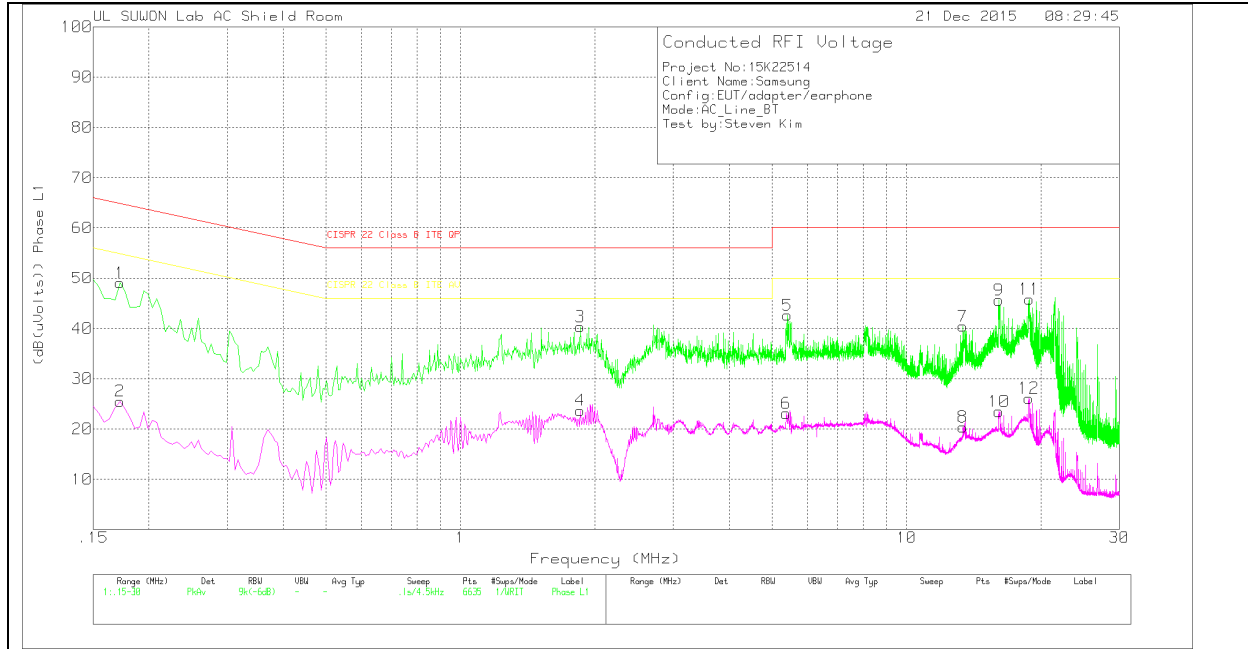
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

### RESULTS

**6 WORST EMISSIONS**

**LINE 1 PLOT**



**LINE 1 RESULTS**

Trace Markers

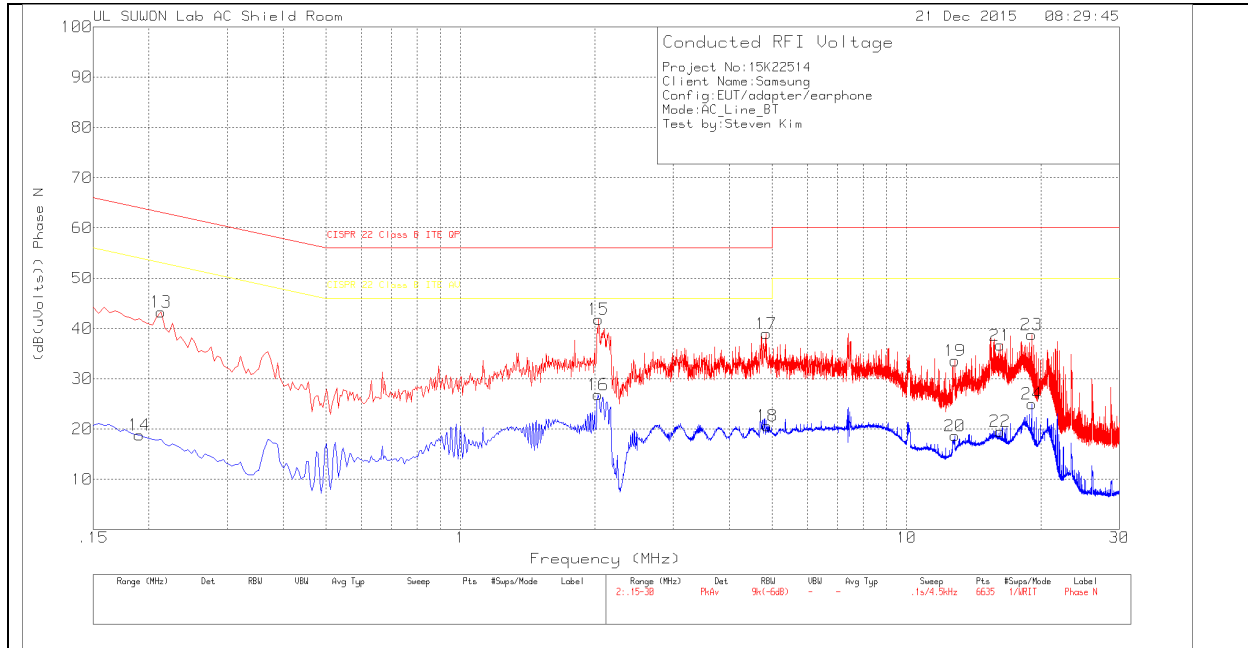
Phase L1 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_w ith 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      | .1725           | 38.88                | Pk  | 10.2                    | 0              | 49.08                          | 64.84                   | -15.76      | -                       | -           |
| 2      | .1725           | 15.34                | Av  | 10.2                    | 0              | 25.54                          | -                       | -           | 54.84                   | -29.3       |
| 3      | 1.8555          | 30.48                | Pk  | 9.8                     | .1             | 40.38                          | 56                      | -15.62      | -                       | -           |
| 4      | 1.8555          | 13.82                | Av  | 9.8                     | .1             | 23.72                          | -                       | -           | 46                      | -22.28      |
| 5      | 5.406           | 32.72                | Pk  | 9.8                     | .1             | 42.62                          | 60                      | -17.38      | -                       | -           |
| 6      | 5.37            | 13.22                | Av  | 9.8                     | .1             | 23.12                          | -                       | -           | 50                      | -26.88      |
| 7      | 13.3665         | 30.15                | Pk  | 10.1                    | .2             | 40.45                          | 60                      | -19.55      | -                       | -           |
| 8      | 13.371          | 10.11                | Av  | 10.1                    | .2             | 20.41                          | -                       | -           | 50                      | -29.59      |
| 9      | 16.125          | 35.25                | Pk  | 10.2                    | .2             | 45.65                          | 60                      | -14.35      | -                       | -           |
| 10     | 16.125          | 13.09                | Av  | 10.2                    | .2             | 23.49                          | -                       | -           | 50                      | -26.51      |
| 11     | 18.8655         | 35.26                | Pk  | 10.4                    | .2             | 45.86                          | 60                      | -14.14      | -                       | -           |
| 12     | 18.789          | 15.63                | Av  | 10.3                    | .2             | 26.13                          | -                       | -           | 50                      | -23.87      |

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



**LINE 2 RESULTS**

Trace Markers

Phase N .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_w ith 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     | .213            | 33.39                | Pk  | 9.9                    | 0              | 43.29                          | 63.09                   | -19.8       | -                       | -           |
| 14     | .1905           | 8.82                 | Av  | 10                     | 0              | 18.82                          | -                       | -           | 54.01                   | -35.19      |
| 15     | 2.04            | 31.94                | Pk  | 9.8                    | .1             | 41.84                          | 56                      | -14.16      | -                       | -           |
| 16     | 2.0355          | 16.94                | Av  | 9.8                    | .1             | 26.84                          | -                       | -           | 46                      | -19.16      |
| 17     | 4.848           | 29.08                | Pk  | 9.8                    | .1             | 38.98                          | 56                      | -17.02      | -                       | -           |
| 18     | 4.8705          | 10.76                | Av  | 9.8                    | .1             | 20.66                          | -                       | -           | 46                      | -25.34      |
| 19     | 12.8445         | 23.2                 | Pk  | 10.2                   | .2             | 33.6                           | 60                      | -26.4       | -                       | -           |
| 20     | 12.831          | 8.25                 | Av  | 10.2                   | .2             | 18.65                          | -                       | -           | 50                      | -31.35      |
| 21     | 16.206          | 26.06                | Pk  | 10.4                   | .2             | 36.66                          | 60                      | -23.34      | -                       | -           |
| 22     | 16.206          | 8.97                 | Av  | 10.4                   | .2             | 19.57                          | -                       | -           | 50                      | -30.43      |
| 23     | 19.068          | 28                   | Pk  | 10.6                   | .2             | 38.8                           | 60                      | -21.2       | -                       | -           |
| 24     | 19.0905         | 14.21                | Av  | 10.6                   | .2             | 25.01                          | -                       | -           | 50                      | -24.99      |

Pk - Peak detector

Av - Average detection