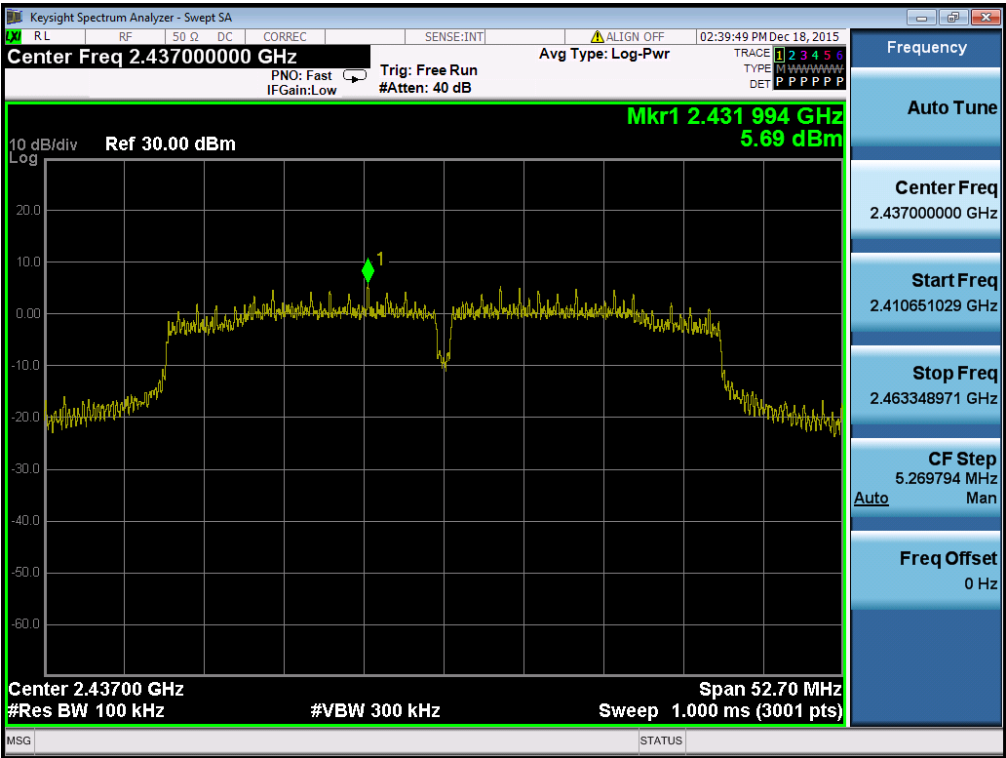


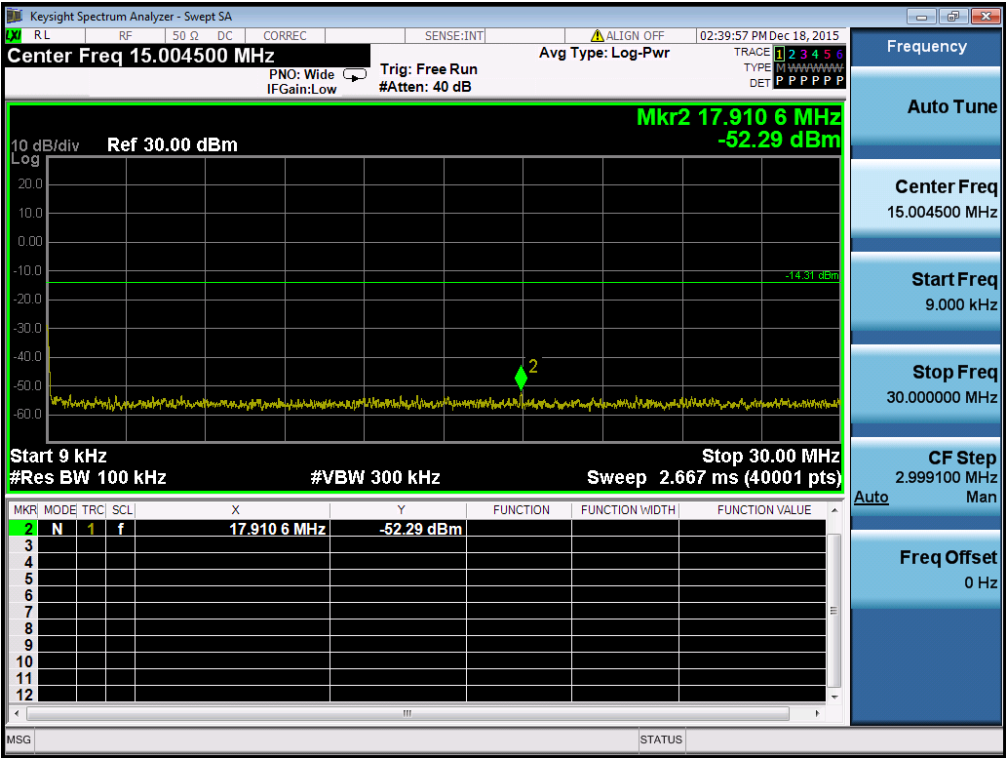


TM 6 & ANT 2 & Middle

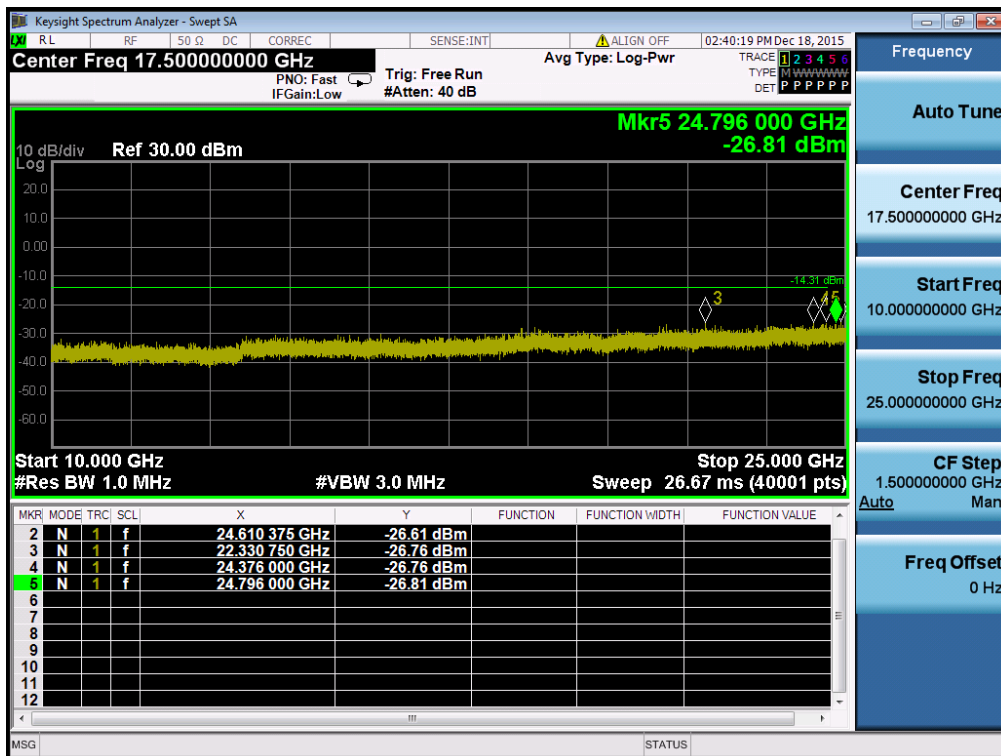
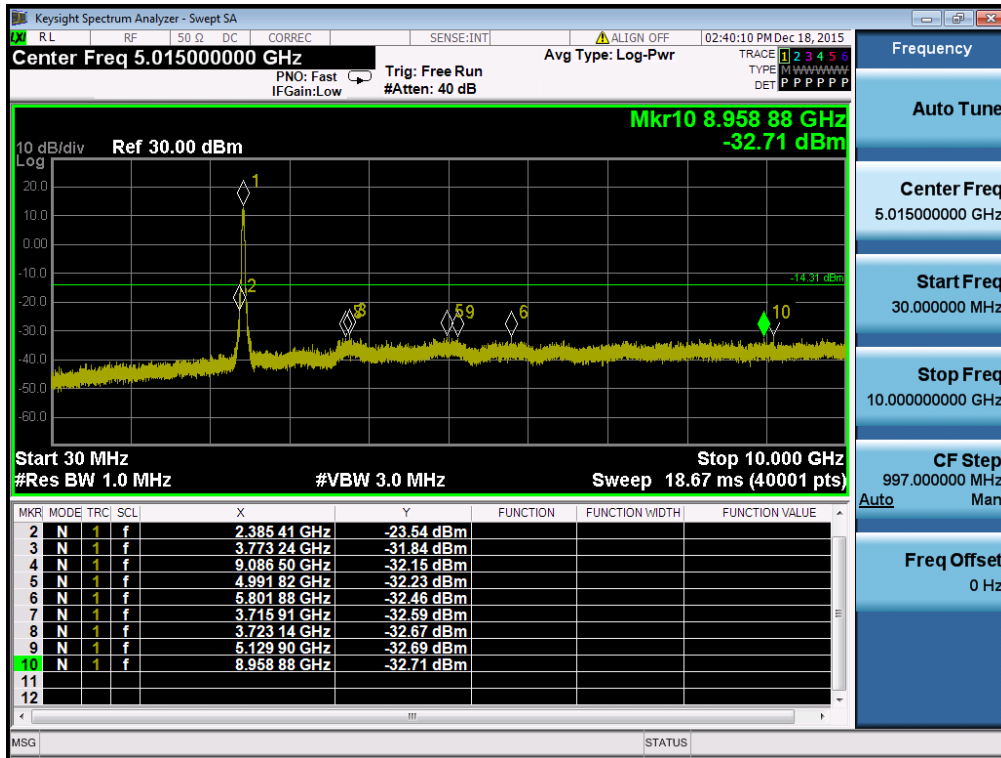
Reference



Conducted Spurious Emissions

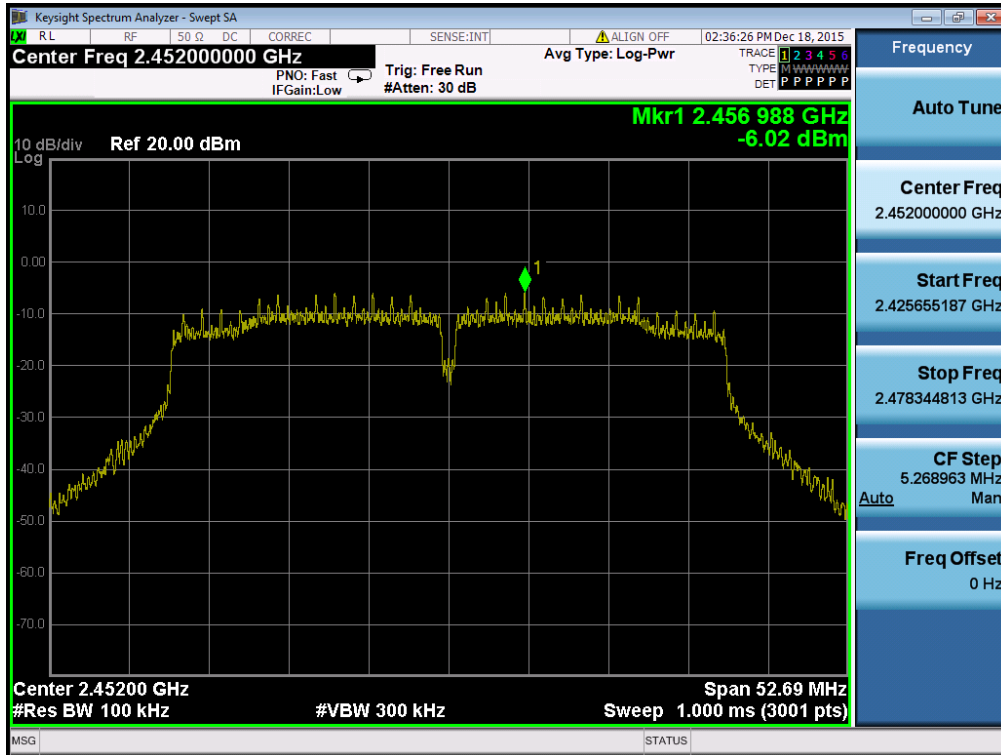


## Conducted Spurious Emissions

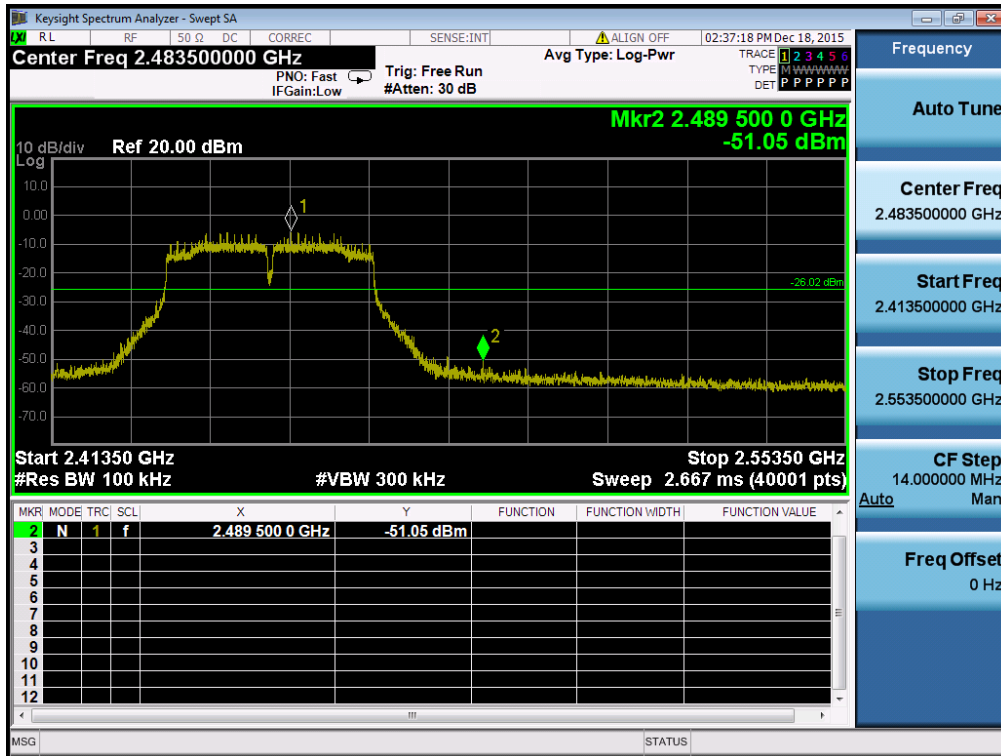


## TM 6 & ANT 2 & Highest

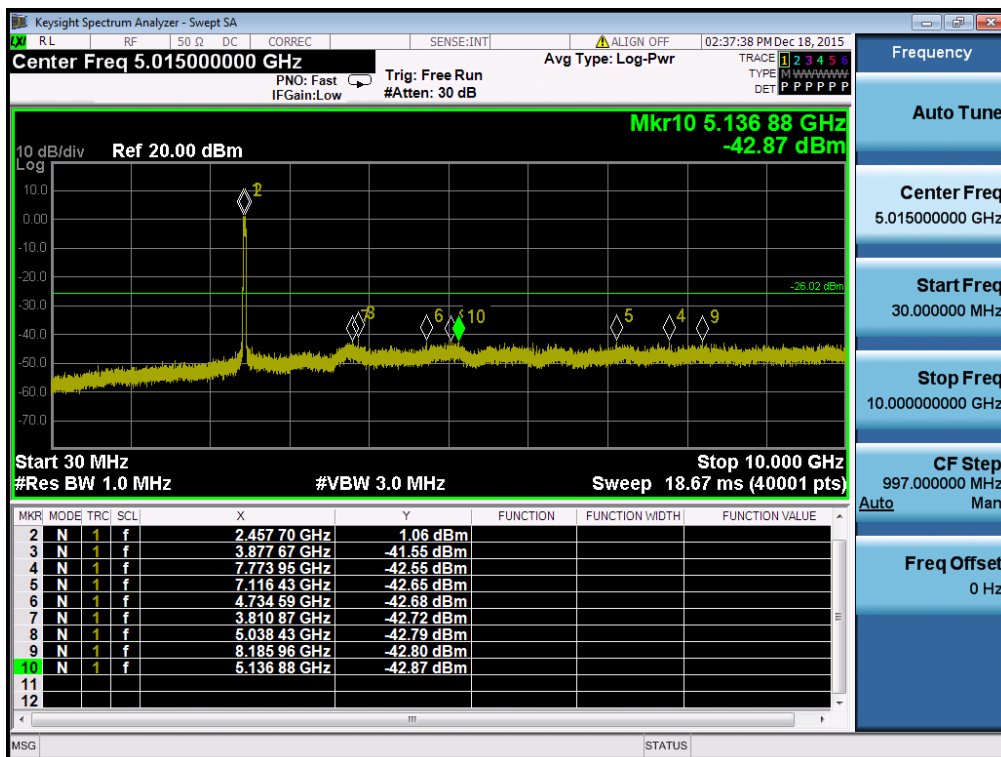
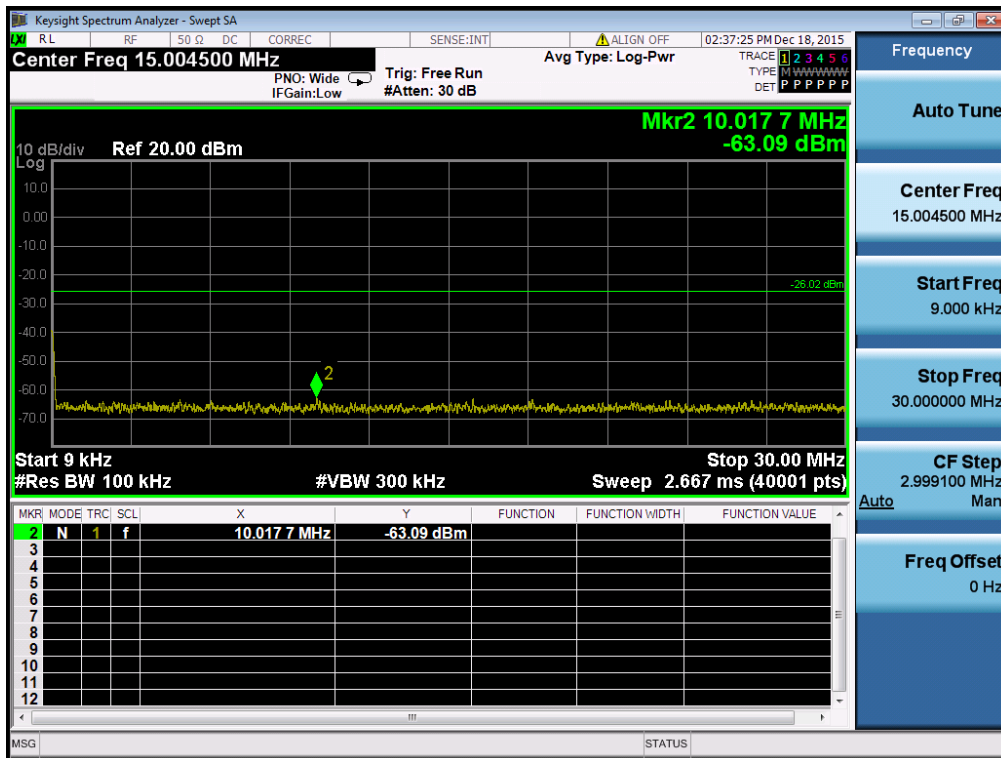
### Reference



### High Band-edge

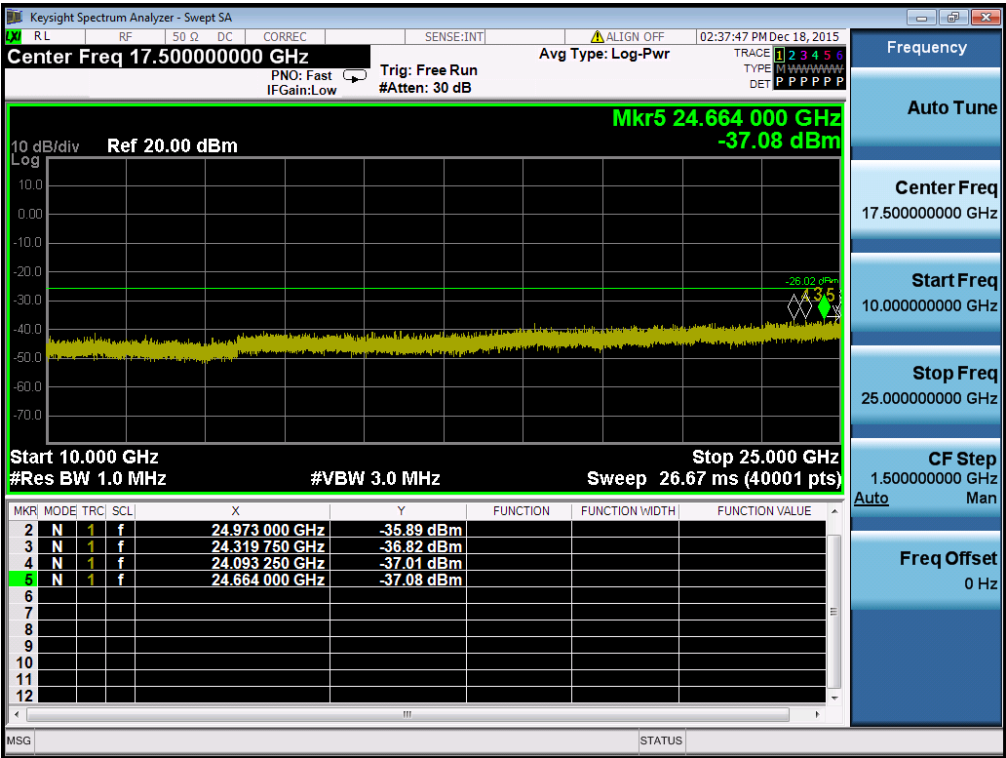


## Conducted Spurious Emissions





Conducted Spurious Emissions



## 8.5 Radiated spurious emissions

### ■ Test Requirements and limit, §15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the operating frequency band, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 KHz bandwidth within the band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

#### ▪ FCC Part 15.209(a) and (b)

| Frequency (MHz) | Limit (uV/m)  | Measurement Distance (meter) |
|-----------------|---------------|------------------------------|
| 0.009 – 0.490   | 2400/F (kHz)  | 300                          |
| 0.490 – 1.705   | 24000/F (kHz) | 30                           |
| 1.705 – 30.0    | 30            | 30                           |
| 30 ~ 88         | 100 **        | 3                            |
| 88 ~ 216        | 150 **        | 3                            |
| 216 ~ 960       | 200 **        | 3                            |
| Above 960       | 500           | 3                            |

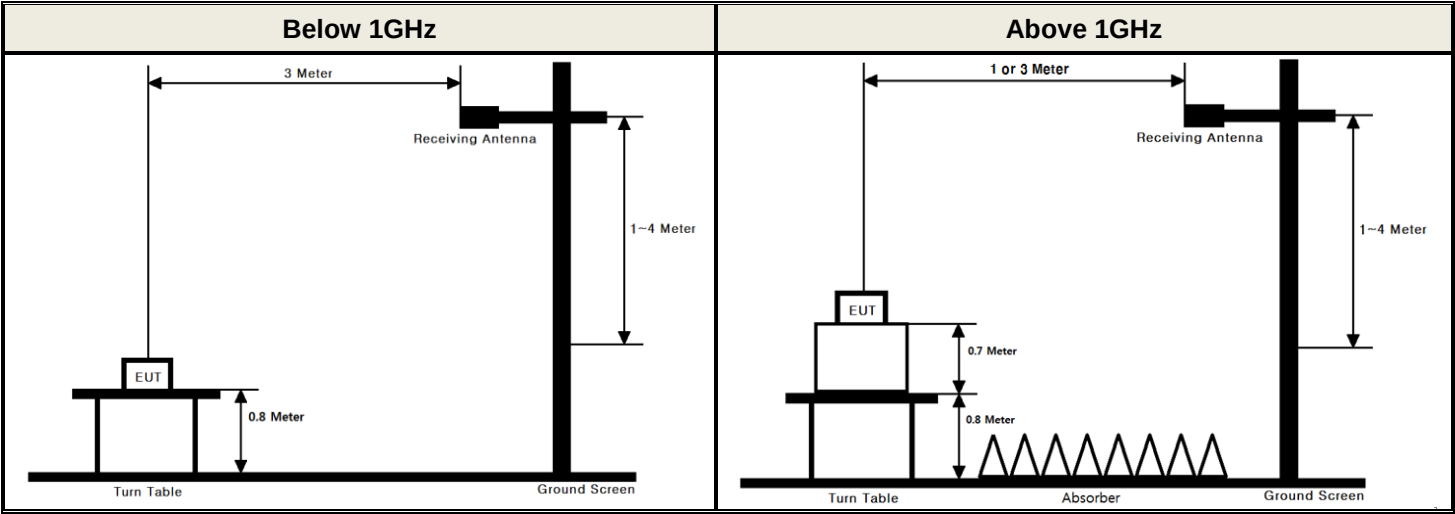
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

#### ▪ FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz               | MHz                 | MHz               | MHz             | GHz          | GHz           |
|-------------------|---------------------|-------------------|-----------------|--------------|---------------|
| 0.009 ~ 0.110     | 8.41425 ~ 8.41475   | 108 ~ 121.94      | 1300 ~ 1427     | 4.5 ~ 5.15   | 14.47 ~ 14.5  |
| 0.495 ~ 0.505     | 12.29 ~ 12.293      | 123 ~ 138         | 1435 ~ 1626.5   | 5.35 ~ 5.46  | 15.35 ~ 16.2  |
| 2.1735 ~ 2.1905   | 12.51975 ~ 12.52025 | 149.9 ~ 150.05    | 1645.5 ~ 1646.5 | 7.25 ~ 7.75  | 17.7 ~ 21.4   |
| 4.125 ~ 4.128     | 12.57675 ~ 12.57725 | 156.52475 ~       | 1660 ~ 1710     | 8.025 ~ 8.5  | 22.01 ~ 23.12 |
| 4.17725 ~ 4.17775 | 13.36 ~ 13.41       | 156.52525         | 1718.8 ~ 1722.2 | 9.0 ~ 9.2    | 23.6 ~ 24.0   |
| 4.20725 ~ 4.20775 | 16.42 ~ 16.423      | 156.7 ~ 156.9     | 2200 ~ 2300     | 9.3 ~ 9.5    | 31.2 ~ 31.8   |
| 6.215 ~ 6.218     | 16.69475 ~ 16.69525 | 162.0125 ~ 167.17 | 2310 ~ 2390     | 10.6 ~ 12.7  | 36.43 ~ 36.5  |
| 6.26775 ~ 6.26825 | 16.80425 ~ 16.80475 | 167.72 ~ 173.2    | 2483.5 ~ 2500   | 13.25 ~ 13.4 | Above 38.6    |
| 6.31175 ~ 6.31225 | 25.5 ~ 25.67        | 240 ~ 285         | 2655 ~ 2900     |              |               |
| 8.291 ~ 8.294     | 37.5 ~ 38.25        | 322 ~ 335.4       | 3260 ~ 3267     |              |               |
| 8.362 ~ 8.366     | 73 ~ 74.6           | 399.90 ~ 410      | 3332 ~ 3339     |              |               |
| 8.37625 ~ 8.38675 | 74.8 ~ 75.2         | 608 ~ 614         | 3345.8 ~ 3358   |              |               |
|                   |                     | 960 ~ 1240        | 3600 ~ 4400     |              |               |

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

■ Test Configuration



■ Test Procedure

1. The EUT is placed on a non-conductive table, emission measurements at below 1 GHz, the table height is 80 cm and above 1 GHz, the table height is 1.5 m.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1 or 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

## ■ Measurement Instrument Setting for Radiated Emission Measurements.

The radiated emission was tested according to the section 6.3, 6.4, 6.5 and 6.6 of the ANSI C63.10-2013 with following settings.

### Peak Measurement

RBW = As specified in below table, VBW  $\geq 3 \times$  RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

| Frequency   | RBW         |
|-------------|-------------|
| 9-150 kHz   | 200-300 Hz  |
| 0.15-30 MHz | 9-10 kHz    |
| 30-1000 MHz | 100-120 kHz |
| > 1000 MHz  | 1 MHz       |

### Average Measurement:

1. RBW = 1 MHz (unless otherwise specified).
2. VBW  $\geq 3 \times$  RBW.
3. Detector = RMS (Number of points  $\geq 2 \times$  Span / RBW)
4. Averaging type = power. (i.e., RMS)
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
  - 1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is  $10 \log(1/x)$ , where x is the duty cycle.
  - 2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is  $20 \log(1/x)$ , where x is the duty cycle.
  - 3) If a specific emission is demonstrated to be continuous ( $\geq 98$  percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

### Duty Cycle Corrections (Refer to appendix II for duty cycle measurement procedure and plots)

| Test Mode | Date rate | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|-----------|-----------|----------------|-----------------------------------|
| TM 1      | 1 Mbps    | 98.78          | 0.05                              |
| TM 2      | 6 Mbps    | 98.66          | 0.06                              |
| TM 3      | MCS 0     | 98.56          | 0.06                              |
| TM 4      | MCS 0     | 97.22          | 0.12                              |
| TM 5      | MCS 8     | 97.62          | 0.11                              |
| TM 6      | MCS 8     | 94.72          | 0.24                              |

Note: Please refer to Appendix I for detailed information.

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 1(TM 1)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2389.78         | Y       | H                   | PK            | 53.92          | 3.54       | N/A      | N/A             | 57.46           | 74.00          | 16.54       | Ant 1                                   |
|                  | 2390.00         | Y       | H                   | AV            | 46.34          | 3.54       | N/A      | N/A             | 49.88           | 54.00          | 4.12        | Ant 1                                   |
|                  | 7234.25         | Y       | H                   | PK            | 45.29          | 14.13      | N/A      | N/A             | 59.42           | 74.00          | 14.58       | Ant 1                                   |
|                  | 7234.49         | Y       | H                   | AV            | 36.74          | 14.13      | N/A      | N/A             | 50.87           | 54.00          | 3.13        | Ant 1                                   |
|                  | 2385.76         | Y       | H                   | PK            | 54.26          | 3.54       | N/A      | N/A             | 57.80           | 74.00          | 16.20       | Ant 2                                   |
|                  | 2386.14         | Y       | H                   | AV            | 46.55          | 3.54       | N/A      | N/A             | 50.09           | 54.00          | 3.91        | Ant 2                                   |
|                  | 4824.07         | Y       | H                   | PK            | 45.05          | 9.59       | N/A      | N/A             | 54.64           | 74.00          | 19.36       | Ant 2                                   |
|                  | 4823.94         | Y       | H                   | AV            | 37.70          | 9.59       | N/A      | N/A             | 47.29           | 54.00          | 6.71        | Ant 2                                   |
| Middle           | 7309.83         | Y       | H                   | PK            | 44.85          | 14.05      | N/A      | N/A             | 58.90           | 74.00          | 15.10       | Ant 1                                   |
|                  | 7309.64         | Y       | H                   | AV            | 36.62          | 14.05      | N/A      | N/A             | 50.67           | 54.00          | 3.33        | Ant 1                                   |
|                  | 4873.60         | Y       | H                   | PK            | 47.19          | 9.80       | N/A      | N/A             | 56.99           | 74.00          | 17.01       | Ant 2                                   |
|                  | 4873.95         | Y       | H                   | AV            | 40.84          | 9.80       | N/A      | N/A             | 50.64           | 54.00          | 3.36        | Ant 2                                   |
| Highest          | 2483.83         | Y       | H                   | PK            | 51.54          | 3.70       | N/A      | N/A             | 55.24           | 74.00          | 18.76       | Ant 1                                   |
|                  | 2483.50         | Y       | H                   | AV            | 45.04          | 3.70       | N/A      | N/A             | 48.74           | 54.00          | 5.26        | Ant 1                                   |
|                  | 7384.96         | Y       | H                   | PK            | 43.75          | 14.27      | N/A      | N/A             | 58.02           | 74.00          | 15.98       | Ant 1                                   |
|                  | 7384.90         | Y       | H                   | AV            | 33.69          | 14.27      | N/A      | N/A             | 47.96           | 54.00          | 6.04        | Ant 1                                   |
|                  | 2483.90         | Y       | H                   | PK            | 50.85          | 3.70       | N/A      | N/A             | 54.55           | 74.00          | 19.45       | Ant 2                                   |
|                  | 2483.50         | Y       | H                   | AV            | 43.17          | 3.70       | N/A      | N/A             | 46.87           | 54.00          | 7.13        | Ant 2                                   |
|                  | 4924.16         | Y       | H                   | PK            | 46.92          | 9.83       | N/A      | N/A             | 56.75           | 74.00          | 17.25       | Ant 2                                   |
|                  | 4924.06         | Y       | H                   | AV            | 40.70          | 9.83       | N/A      | N/A             | 50.53           | 54.00          | 3.47        | Ant 2                                   |

**Note.**

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- This device was tested under single transmitting(Ant 1, 2) and the worst case data are reported in the table above.
- Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
 DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
 Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 2(TM 2)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2390.00         | Y       | H                   | PK            | 55.65          | 3.54       | N/A      | N/A             | 59.19           | 74.00          | 14.81       | Ant 1                                   |
|                  | 2390.00         | Y       | H                   | AV            | 46.90          | 3.54       | N/A      | N/A             | 50.44           | 54.00          | 3.56        | Ant 1                                   |
|                  | 7233.29         | Y       | H                   | PK            | 44.75          | 14.13      | N/A      | N/A             | 58.88           | 74.00          | 15.12       | Ant 1                                   |
|                  | 7234.47         | Y       | H                   | AV            | 34.59          | 14.13      | N/A      | N/A             | 48.72           | 54.00          | 5.28        | Ant 1                                   |
|                  | 2389.79         | Y       | H                   | PK            | 58.76          | 3.54       | N/A      | N/A             | 62.30           | 74.00          | 11.70       | Ant 2                                   |
|                  | 2390.00         | Y       | H                   | AV            | 46.74          | 3.54       | N/A      | N/A             | 50.28           | 54.00          | 3.72        | Ant 2                                   |
|                  | 4825.05         | Y       | H                   | PK            | 44.31          | 9.59       | N/A      | N/A             | 53.90           | 74.00          | 20.10       | Ant 2                                   |
|                  | 4824.95         | Y       | H                   | AV            | 33.69          | 9.59       | N/A      | N/A             | 43.28           | 54.00          | 10.72       | Ant 2                                   |
| Middle           | 7308.52         | Y       | H                   | PK            | 44.64          | 14.05      | N/A      | N/A             | 58.69           | 74.00          | 15.31       | Ant 1                                   |
|                  | 7309.29         | Y       | H                   | AV            | 34.98          | 14.05      | N/A      | N/A             | 49.03           | 54.00          | 4.97        | Ant 1                                   |
|                  | 4874.03         | Y       | H                   | PK            | 48.52          | 9.80       | N/A      | N/A             | 58.32           | 74.00          | 15.68       | Ant 2                                   |
|                  | 4874.46         | Y       | H                   | AV            | 37.22          | 9.80       | N/A      | N/A             | 47.02           | 54.00          | 6.98        | Ant 2                                   |
| Highest          | 2483.64         | Y       | H                   | PK            | 59.17          | 3.70       | N/A      | N/A             | 62.87           | 74.00          | 11.13       | Ant 1                                   |
|                  | 2483.78         | Y       | H                   | AV            | 46.78          | 3.70       | N/A      | N/A             | 50.48           | 54.00          | 3.52        | Ant 1                                   |
|                  | 7386.74         | Y       | H                   | PK            | 44.01          | 14.27      | N/A      | N/A             | 58.28           | 74.00          | 15.72       | Ant 1                                   |
|                  | 7388.42         | Y       | H                   | AV            | 33.34          | 14.27      | N/A      | N/A             | 47.61           | 54.00          | 6.39        | Ant 1                                   |
|                  | 2483.99         | Y       | H                   | PK            | 50.62          | 3.70       | N/A      | N/A             | 54.32           | 74.00          | 19.68       | Ant 2                                   |
|                  | 2484.08         | Y       | H                   | AV            | 40.17          | 3.70       | N/A      | N/A             | 43.87           | 54.00          | 10.13       | Ant 2                                   |
|                  | 4924.32         | Y       | H                   | PK            | 44.75          | 9.83       | N/A      | N/A             | 54.58           | 74.00          | 19.42       | Ant 2                                   |
|                  | 4924.53         | Y       | H                   | AV            | 33.98          | 9.83       | N/A      | N/A             | 43.81           | 54.00          | 10.19       | Ant 2                                   |

**Note.**

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. This device was tested under single transmitting(Ant 1, 2) and the worst case data are reported in the table above.
3. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
 DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
4. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
 Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 3(TM 3)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2389.51         | Y       | H                   | PK            | 59.08          | 3.54       | N/A      | N/A             | 62.62           | 74.00          | 11.38       | Ant 1                                   |
|                  | 2389.76         | Y       | H                   | AV            | 45.98          | 3.54       | N/A      | N/A             | 49.52           | 54.00          | 4.48        | Ant 1                                   |
|                  | 7235.27         | Y       | H                   | PK            | 44.89          | 14.13      | N/A      | N/A             | 59.02           | 74.00          | 14.98       | Ant 1                                   |
|                  | 7234.30         | Y       | H                   | AV            | 33.91          | 14.13      | N/A      | N/A             | 48.04           | 54.00          | 5.96        | Ant 1                                   |
|                  | 2389.61         | Y       | H                   | PK            | 58.72          | 3.54       | N/A      | N/A             | 62.26           | 74.00          | 11.74       | Ant 2                                   |
|                  | 2389.88         | Y       | H                   | AV            | 46.53          | 3.54       | N/A      | N/A             | 50.07           | 54.00          | 3.93        | Ant 2                                   |
|                  | 4823.19         | Y       | H                   | PK            | 45.41          | 9.59       | N/A      | N/A             | 55.00           | 74.00          | 19.00       | Ant 2                                   |
|                  | 4823.17         | Y       | H                   | AV            | 33.77          | 9.59       | N/A      | N/A             | 43.36           | 54.00          | 10.64       | Ant 2                                   |
| Middle           | 7312.40         | Y       | H                   | PK            | 45.56          | 14.05      | N/A      | N/A             | 59.61           | 74.00          | 14.39       | Ant 1                                   |
|                  | 7310.97         | Y       | H                   | AV            | 35.09          | 14.05      | N/A      | N/A             | 49.14           | 54.00          | 4.86        | Ant 1                                   |
|                  | 4874.58         | Y       | H                   | PK            | 47.76          | 9.80       | N/A      | N/A             | 57.56           | 74.00          | 16.44       | Ant 2                                   |
|                  | 4873.22         | Y       | H                   | AV            | 37.22          | 9.80       | N/A      | N/A             | 47.02           | 54.00          | 6.98        | Ant 2                                   |
| Highest          | 2484.30         | Y       | H                   | PK            | 60.95          | 3.70       | N/A      | N/A             | 64.65           | 74.00          | 9.35        | Ant 1                                   |
|                  | 2483.58         | Y       | H                   | AV            | 46.44          | 3.70       | N/A      | N/A             | 50.14           | 54.00          | 3.86        | Ant 1                                   |
|                  | 7385.06         | Y       | H                   | PK            | 43.71          | 14.27      | N/A      | N/A             | 57.98           | 74.00          | 16.02       | Ant 1                                   |
|                  | 7383.45         | Y       | H                   | AV            | 33.62          | 14.27      | N/A      | N/A             | 47.89           | 54.00          | 6.11        | Ant 1                                   |
|                  | 2483.74         | Y       | H                   | PK            | 49.60          | 3.70       | N/A      | N/A             | 53.30           | 74.00          | 20.70       | Ant 2                                   |
|                  | 2483.96         | Y       | H                   | AV            | 39.57          | 3.70       | N/A      | N/A             | 43.27           | 54.00          | 10.73       | Ant 2                                   |
|                  | 4923.49         | Y       | H                   | PK            | 45.19          | 9.83       | N/A      | N/A             | 55.02           | 74.00          | 18.98       | Ant 2                                   |
|                  | 4923.74         | Y       | H                   | AV            | 34.27          | 9.83       | N/A      | N/A             | 44.10           | 54.00          | 9.90        | Ant 2                                   |

**Note.**

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- This device was tested under single transmitting(Ant 1, 2) and multiple transmitting(Ant 1+2) and the worst case data are reported in the table above.
- Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
 DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
 Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 4(TM 4)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2388.43         | Y       | H                   | PK            | 57.50          | 3.54       | N/A      | N/A             | 61.04           | 74.00          | 12.96       | Ant 1                                   |
|                  | 2389.08         | Y       | H                   | AV            | 46.10          | 3.54       | 0.12     | N/A             | 49.76           | 54.00          | 4.24        | Ant 1                                   |
|                  | 7267.41         | Y       | H                   | PK            | 43.65          | 14.13      | N/A      | N/A             | 57.78           | 74.00          | 16.22       | Ant 1                                   |
|                  | 7265.88         | Y       | H                   | AV            | 33.36          | 14.13      | 0.12     | N/A             | 47.61           | 54.00          | 6.39        | Ant 1                                   |
|                  | 2389.30         | Y       | H                   | PK            | 57.53          | 3.54       | N/A      | N/A             | 61.07           | 74.00          | 12.93       | Ant 2                                   |
|                  | 2389.75         | Y       | H                   | AV            | 46.14          | 3.54       | 0.12     | N/A             | 49.80           | 54.00          | 4.20        | Ant 2                                   |
|                  | 4843.16         | Y       | H                   | PK            | 44.98          | 9.59       | N/A      | N/A             | 54.57           | 74.00          | 19.43       | Ant 2                                   |
|                  | 4843.77         | Y       | H                   | AV            | 33.60          | 9.59       | 0.12     | N/A             | 43.31           | 54.00          | 10.69       | Ant 2                                   |
| Middle           | 7308.50         | Y       | H                   | PK            | 44.18          | 14.05      | N/A      | N/A             | 58.23           | 74.00          | 15.77       | Ant 1                                   |
|                  | 7308.12         | Y       | H                   | AV            | 34.18          | 14.05      | 0.12     | N/A             | 48.35           | 54.00          | 5.65        | Ant 1                                   |
|                  | 4873.79         | Y       | H                   | PK            | 46.53          | 9.80       | N/A      | N/A             | 56.33           | 74.00          | 17.67       | Ant 2                                   |
|                  | 4873.18         | Y       | H                   | AV            | 35.45          | 9.80       | 0.12     | N/A             | 45.37           | 54.00          | 8.63        | Ant 2                                   |
| Highest          | 2484.48         | Y       | H                   | PK            | 55.85          | 3.70       | N/A      | N/A             | 59.55           | 74.00          | 14.45       | Ant 1                                   |
|                  | 2484.48         | Y       | H                   | AV            | 45.89          | 3.70       | 0.12     | N/A             | 49.71           | 54.00          | 4.29        | Ant 1                                   |
|                  | 7355.58         | Y       | H                   | PK            | 45.62          | 14.27      | N/A      | N/A             | 59.89           | 74.00          | 14.11       | Ant 1                                   |
|                  | 7355.47         | Y       | H                   | AV            | 33.18          | 14.27      | 0.12     | N/A             | 47.57           | 54.00          | 6.43        | Ant 1                                   |
|                  | 2483.51         | Y       | H                   | PK            | 56.73          | 3.70       | N/A      | N/A             | 60.43           | 74.00          | 13.57       | Ant 2                                   |
|                  | 2484.24         | Y       | H                   | AV            | 45.24          | 3.70       | 0.12     | N/A             | 49.06           | 54.00          | 4.94        | Ant 2                                   |
|                  | 4871.65         | Y       | H                   | PK            | 44.92          | 9.83       | N/A      | N/A             | 54.75           | 74.00          | 19.25       | Ant 2                                   |
|                  | 4871.48         | Y       | H                   | AV            | 33.86          | 9.83       | 0.12     | N/A             | 43.81           | 54.00          | 10.19       | Ant 2                                   |

**Note.**

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- This device was tested under single transmitting(Ant 1, 2) and multiple transmitting(Ant 1+2) and the worst case data are reported in the table above.
- Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
 DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
 Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 5(TM 5)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2389.20         | H       | Y                   | PK            | 59.26          | 3.54       | N/A      | N/A             | 62.80           | 74.00          | 11.20       | Ant 1+Ant 2                             |
|                  | 2390.00         | H       | Y                   | AV            | 46.38          | 3.54       | 0.11     | N/A             | 50.03           | 54.00          | 3.97        | Ant 1+Ant 2                             |
|                  | 7236.49         | H       | Y                   | PK            | 44.26          | 14.13      | N/A      | N/A             | 58.39           | 74.00          | 15.61       | Ant 1+Ant 2                             |
|                  | 7236.66         | H       | Y                   | AV            | 33.77          | 14.13      | 0.11     | N/A             | 48.01           | 54.00          | 5.99        | Ant 1+Ant 2                             |
| Middle           | 4874.18         | H       | Y                   | PK            | 47.22          | 9.80       | N/A      | N/A             | 57.02           | 74.00          | 16.98       | Ant 1+Ant 2                             |
|                  | 4874.57         | H       | Y                   | AV            | 36.40          | 9.80       | 0.11     | N/A             | 46.31           | 54.00          | 7.69        | Ant 1+Ant 2                             |
| Highest          | 2483.79         | H       | Y                   | PK            | 57.62          | 3.70       | N/A      | N/A             | 61.32           | 74.00          | 12.68       | Ant 1+Ant 2                             |
|                  | 2483.66         | H       | Y                   | AV            | 46.39          | 3.70       | 0.11     | N/A             | 50.20           | 54.00          | 3.80        | Ant 1+Ant 2                             |
|                  | 7385.95         | H       | Y                   | PK            | 43.74          | 14.27      | N/A      | N/A             | 58.01           | 74.00          | 15.99       | Ant 1+Ant 2                             |
|                  | 7385.46         | H       | Y                   | AV            | 33.32          | 14.27      | 0.11     | N/A             | 47.70           | 54.00          | 6.30        | Ant 1+Ant 2                             |

**Note.**

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. This device was tested under single transmitting(Ant 1, 2) and multiple transmitting(Ant 1+2) and the worst case data are reported in the table above.
3. Sample Calculation.  

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
4. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

**Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 6(TM 6)**

| Tested Frequency | Frequency (MHz) | ANT Pol | EUT Position (Axis) | Detector Mode | Reading (dBuV) | T.F (dB/m) | DCF (dB) | Distance F (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Test Ant of Worst data <sup>Note2</sup> |
|------------------|-----------------|---------|---------------------|---------------|----------------|------------|----------|-----------------|-----------------|----------------|-------------|-----------------------------------------|
| Lowest           | 2389.84         | H       | Y                   | PK            | 57.48          | 3.54       | N/A      | N/A             | 61.02           | 74.00          | 12.98       | Ant 1+Ant 2                             |
|                  | 2389.41         | H       | Y                   | AV            | 46.05          | 3.54       | 0.24     | N/A             | 49.83           | 54.00          | 4.17        | Ant 1+Ant 2                             |
|                  | 7266.07         | H       | Y                   | PK            | 44.37          | 14.13      | N/A      | N/A             | 58.50           | 74.00          | 15.50       | Ant 1+Ant 2                             |
|                  | 7266.46         | H       | Y                   | AV            | 33.04          | 14.13      | 0.24     | N/A             | 47.41           | 54.00          | 6.59        | Ant 1+Ant 2                             |
| Middle           | 7310.65         | H       | Y                   | PK            | 44.67          | 14.05      | N/A      | N/A             | 58.72           | 74.00          | 15.28       | Ant 1+Ant 2                             |
|                  | 7311.22         | H       | Y                   | AV            | 34.14          | 14.05      | 0.24     | N/A             | 48.43           | 54.00          | 5.57        | Ant 1+Ant 2                             |
| Highest          | 2483.93         | H       | Y                   | PK            | 57.47          | 3.70       | N/A      | N/A             | 61.17           | 74.00          | 12.83       | Ant 1+Ant 2                             |
|                  | 2483.64         | H       | Y                   | AV            | 46.03          | 3.70       | 0.24     | N/A             | 49.97           | 54.00          | 4.03        | Ant 1+Ant 2                             |
|                  | 7355.78         | H       | Y                   | PK            | 43.83          | 14.27      | N/A      | N/A             | 58.10           | 74.00          | 15.90       | Ant 1+Ant 2                             |
|                  | 7356.74         | H       | Y                   | AV            | 33.50          | 14.27      | 0.24     | N/A             | 48.01           | 54.00          | 5.99        | Ant 1+Ant 2                             |

**Note.**

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- This device was tested under single transmitting(Ant 1, 2) and multiple transmitting(Ant 1+2) and the worst case data are reported in the table above.
- Sample Calculation.  

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.  
Therefore Distance Correction Factor(DCF) :  $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$

## 8.6 Power-line conducted emissions

### ■ Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

| Frequency Range<br>(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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### ■ Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

### ■ Test Results: **Comply**(Refer to next page.)

The worst data was reported.

## ■ RESULT PLOTS

## AC Line Conducted Emissions (Graph)

Test mode 1(TM 1) &amp; Middle

Results of Conducted Emission

DTNC

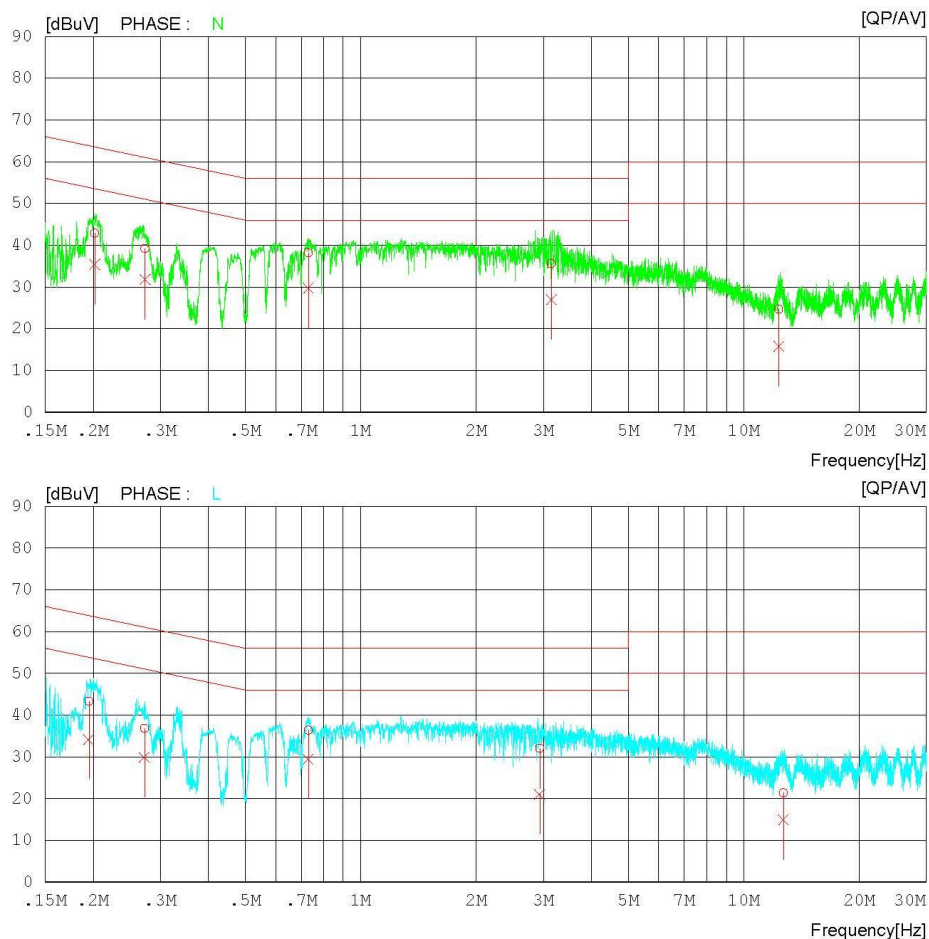
Date : 2015-12-11

Order No. :  
Model No. : LG15Z96  
Serial No. : Identical prototype  
Test Condition : 802.11b / 2437MHz

Reference No. :  
Power Supply : 120V / 60Hz  
Temp/Humi. : 21 °C / 42 % R.H.  
Operator : I.H.BAE

Memo :

LIMIT : CISPR22\_B QP  
CISPR22\_B AV



## AC Line Conducted Emissions (List)

Test mode 1(TM 1) &amp; Middle

Results of Conducted Emission

DTNC

Date : 2015-12-11

Order No. :  
 Model No. : LG15Z96  
 Serial No. : Identical prototype  
 Test Condition : 802.11b / 2437MHz

Reference No. :  
 Power Supply : 120V / 60Hz  
 Temp/Humi. : 21 'C / 42 % R.H.  
 Operator : I.H.BAE

Memo :

LIMIT : CISPR22\_B QP  
 CISPR22\_B AV

| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |       |
| 1  | 0.20213       | 32.8         | 25.3         | 10.1             | 42.9         | 35.4         | 63.5         | 53.5         | 20.6         | 18.1         | N     |
| 2  | 0.27350       | 29.1         | 21.7         | 10.1             | 39.2         | 31.8         | 61.0         | 51.0         | 21.8         | 19.2         | N     |
| 3  | 0.72980       | 28.0         | 19.6         | 10.1             | 38.1         | 29.7         | 56.0         | 46.0         | 17.9         | 16.3         | N     |
| 4  | 3.14400       | 25.4         | 16.8         | 10.2             | 35.6         | 27.0         | 56.0         | 46.0         | 20.4         | 19.0         | N     |
| 5  | 12.35560      | 14.0         | 5.2          | 10.6             | 24.6         | 15.8         | 60.0         | 50.0         | 35.4         | 34.2         | N     |
| 6  | 0.19501       | 33.1         | 24.0         | 10.1             | 43.2         | 34.1         | 63.8         | 53.8         | 20.6         | 19.7         | L     |
| 7  | 0.27206       | 26.7         | 19.7         | 10.1             | 36.8         | 29.8         | 61.1         | 51.1         | 24.3         | 21.3         | L     |
| 8  | 0.73001       | 26.3         | 19.3         | 10.1             | 36.4         | 29.4         | 56.0         | 46.0         | 19.6         | 16.6         | L     |
| 9  | 2.93000       | 21.8         | 10.8         | 10.2             | 32.0         | 21.0         | 56.0         | 46.0         | 24.0         | 25.0         | L     |
| 10 | 12.69580      | 10.6         | 4.2          | 10.7             | 21.3         | 14.9         | 60.0         | 50.0         | 38.7         | 35.1         | L     |

## 8.7 Occupied Bandwidth

### Test Requirements, RSS-Gen [4.6.1]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

#### ■ TEST CONFIGURATION

Refer to the APPENDIX I.

#### ■ TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1 %. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

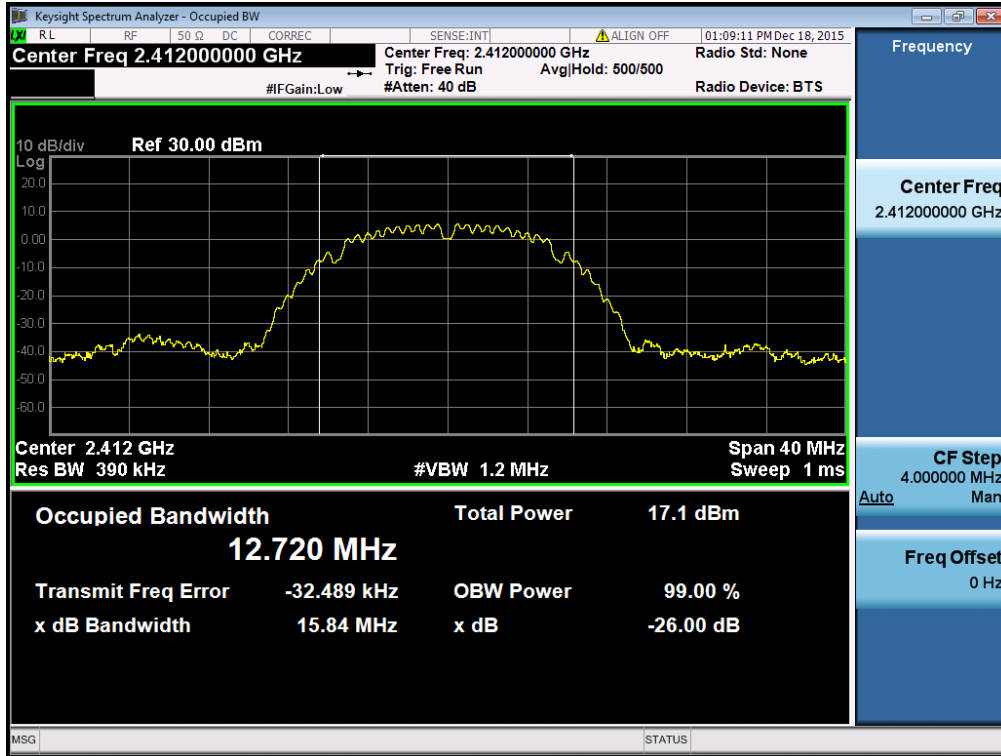
#### ■ TEST RESULTS: **Comply**

| Test Mode | Frequency | Test Results[MHz] |        |
|-----------|-----------|-------------------|--------|
|           |           | ANT 1             | ANT 2  |
| TM 1      | Lowest    | 12.720            | 12.564 |
|           | Middle    | 13.007            | 12.576 |
|           | Highest   | 12.839            | 12.536 |
| TM 2      | Lowest    | 16.804            | 16.799 |
|           | Middle    | 17.343            | 17.380 |
|           | Highest   | 16.858            | 16.766 |
| TM 3      | Lowest    | 17.936            | 17.888 |
|           | Middle    | 18.446            | 18.530 |
|           | Highest   | 17.959            | 17.884 |
| TM 4      | Lowest    | 36.168            | 36.119 |
|           | Middle    | 36.501            | 36.927 |
|           | Highest   | 36.208            | 36.187 |
| TM 5      | Lowest    | 17.959            | 17.746 |
|           | Middle    | 18.317            | 18.417 |
|           | Highest   | 17.890            | 17.770 |
| TM 6      | Lowest    | 36.176            | 36.134 |
|           | Middle    | 36.735            | 36.474 |
|           | Highest   | 36.116            | 36.154 |

## RESULT PLOTS

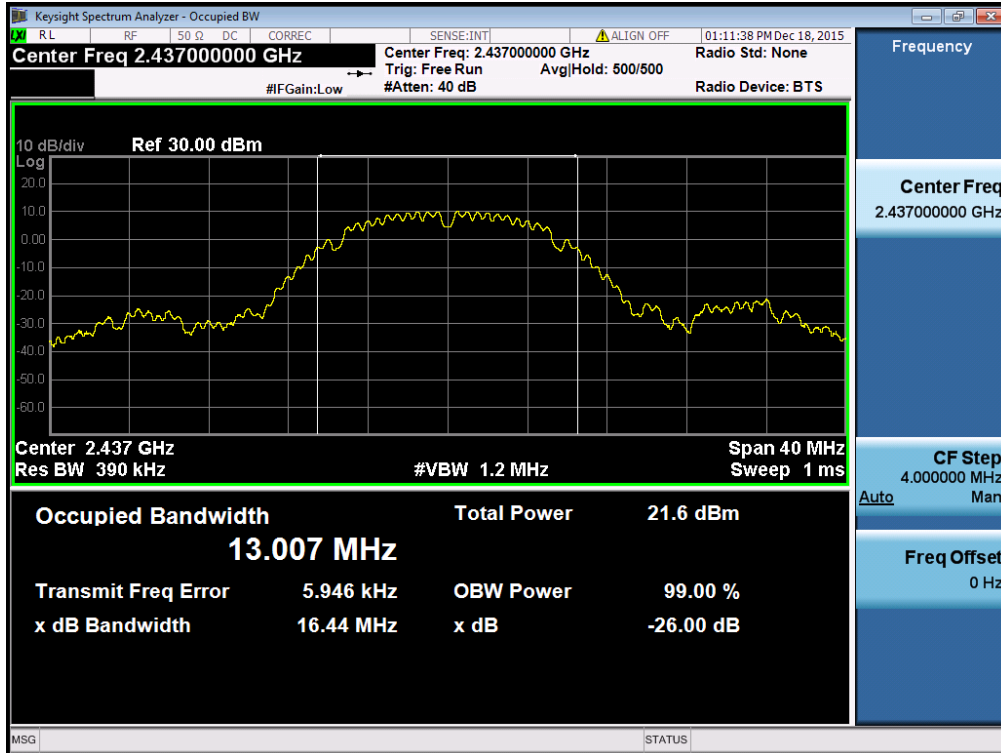
### Occupied Bandwidth

TM 1 & ANT 1 & Lowest



### Occupied Bandwidth

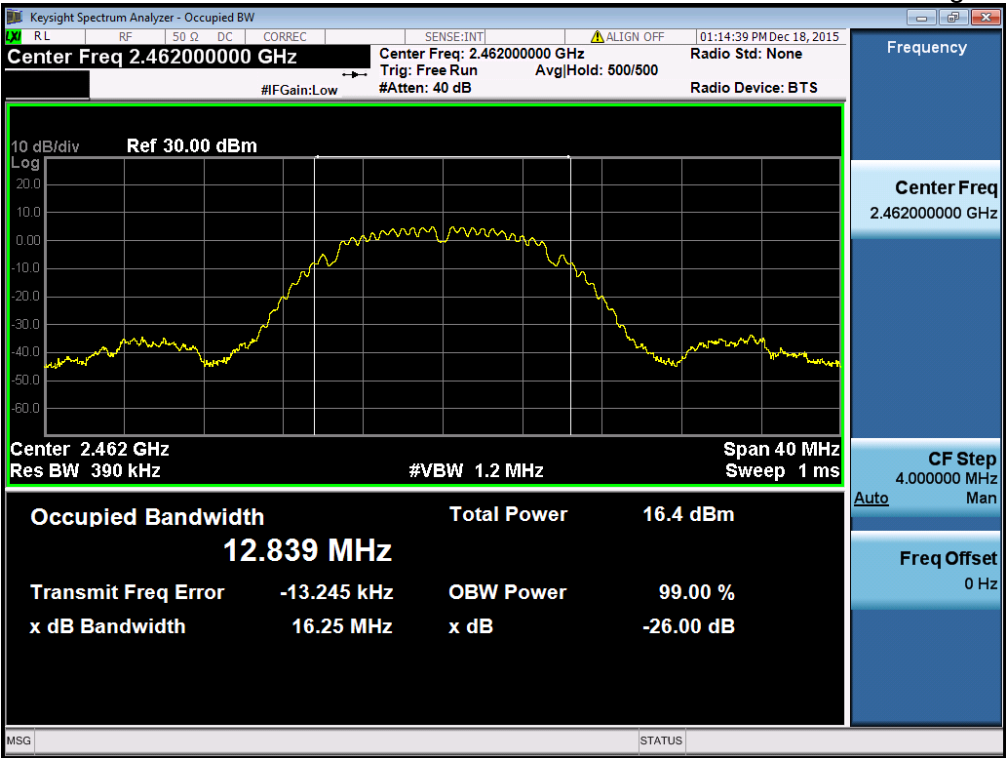
TM 1 & ANT 1 & Middle





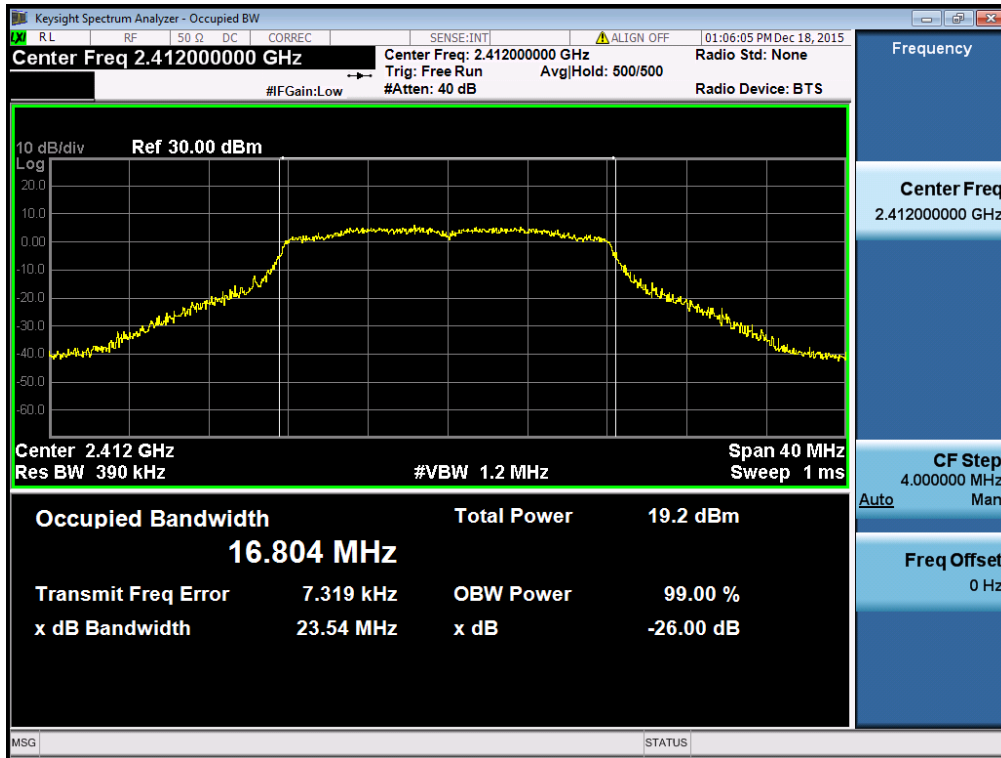
Occupied Bandwidth

TM 1 & ANT 1 & Highest



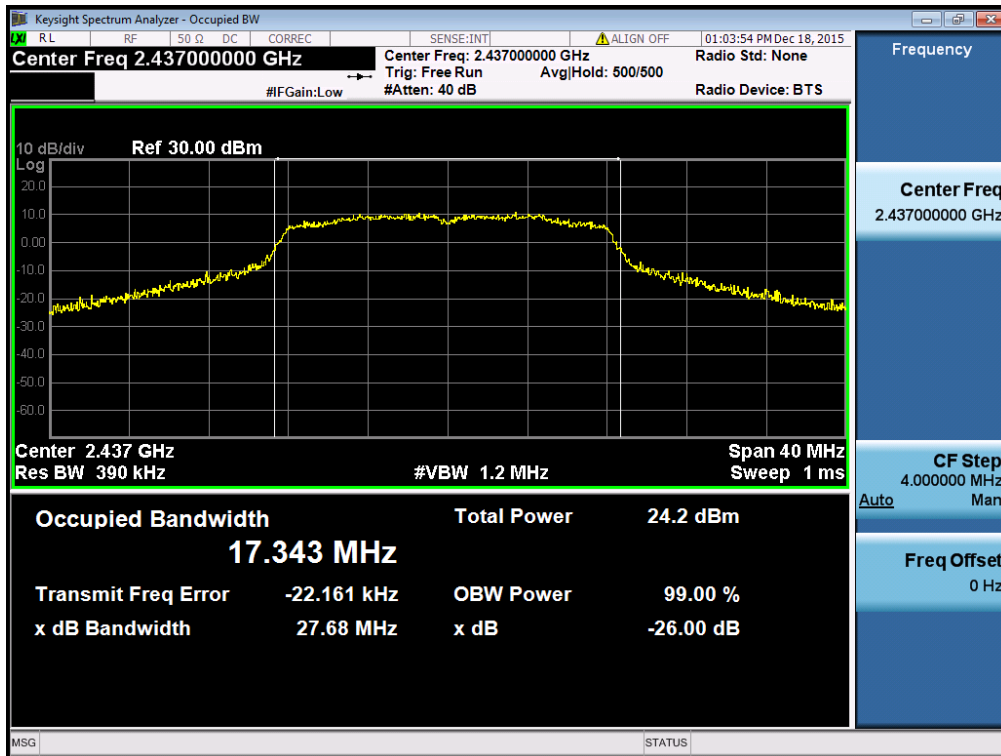
## Occupied Bandwidth

TM 2 &amp; ANT 1 &amp; Lowest



## Occupied Bandwidth

TM 2 &amp; ANT 1 &amp; Middle





Occupied Bandwidth

TM 2 & ANT 1 & Highest

