



**FCC CFR47 PART 15 SUBPART C  
INDUSTRY CANADA RSS-247 ISSUE 1**

**CERTIFICATION TEST REPORT**

**FOR**

**Zigbee Door Sensor**

**MODEL NUMBER: A94**

**FCC ID: DKN-501CS**

**IC ID: 1707A-501CS**

**REPORT NUMBER: 15U22255-E1V2**

**ISSUE DATE: MARCH 9, 2016**

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**NVLAP LAB CODE 200065-0**

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Revision History

| Rev. | Issue Date | Revisions                           | Revised By  |
|------|------------|-------------------------------------|-------------|
| V1   | 12/29/15   | Initial Issue                       | C. Vergonio |
| V2   | 3/9/16     | Added a note in the plot in Page 28 | C. Vergonio |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Echostar Technologies LLC  
90 Inverness Circle East  
Englewood, CO 80112

**EUT DESCRIPTION:** Zigbee Door Sensor

**MODEL:** A94

**SERIAL NUMBER:** 2263411-1, 2263411-2

**DATE TESTED:** December 8-17, 2015

| APPLICABLE STANDARDS            |              |
|---------------------------------|--------------|
| STANDARD                        | TEST RESULTS |
| CFR 47 Part 15 Subpart C        | Pass         |
| INDUSTRY CANADA RSS-247 Issue 1 | Pass         |
| INDUSTRY CANADA RSS-GEN Issue 4 | Pass         |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

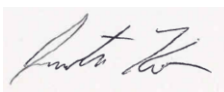
**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-247 Issue 1.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street                                       | 47266 Benicia Street                            |
|------------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Chamber A(IC: 2324B-1)            | <input type="checkbox"/> Chamber D(IC: 2324B-4) |
| <input type="checkbox"/> Chamber B(IC: 2324B-2)            | <input type="checkbox"/> Chamber E(IC: 2324B-5) |
| <input checked="" type="checkbox"/> Chamber C(IC: 2324B-3) | <input type="checkbox"/> Chamber F(IC: 2324B-6) |
|                                                            | <input type="checkbox"/> Chamber G(IC: 2324B-7) |
|                                                            | <input type="checkbox"/> Chamber H(IC: 2324B-8) |

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB     |
| Radiated Disturbance, 30 to 18000 MHz | 4.94 dB     |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Zigbee Door Sensor. Small sensor device designed to be installed on doors and windows and sense if the door/window has been opened via a magnetic sense.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

| Frequency Range<br>(MHz) | Mode   | Output Power<br>(dBm) | Output Power<br>(mW) |
|--------------------------|--------|-----------------------|----------------------|
| 2405-2480                | ZIGBEE | 5.95                  | 3.94                 |

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a meandering inverted F antenna, with a maximum gain of 1.25 dBi.

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#### **5.4. WORST-CASE CONFIGURATION AND MODE**

Radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Radiated test were performed for demonstrating compliance to the conducted emission requirements.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| SUPPORT EQUIPMENT |                 |                          |               |
|-------------------|-----------------|--------------------------|---------------|
| Description       | Manufacturer    | Model                    | Serial Number |
| Power Supply      | Sorenson-Ametek | XT15-4                   | 1319A02779    |
| Laptop            | HP              | EliteBook740<br>(CM03XL) | BCAJWZ5E8F    |
| Adapter           | Echostar        | RS232                    | N/A           |

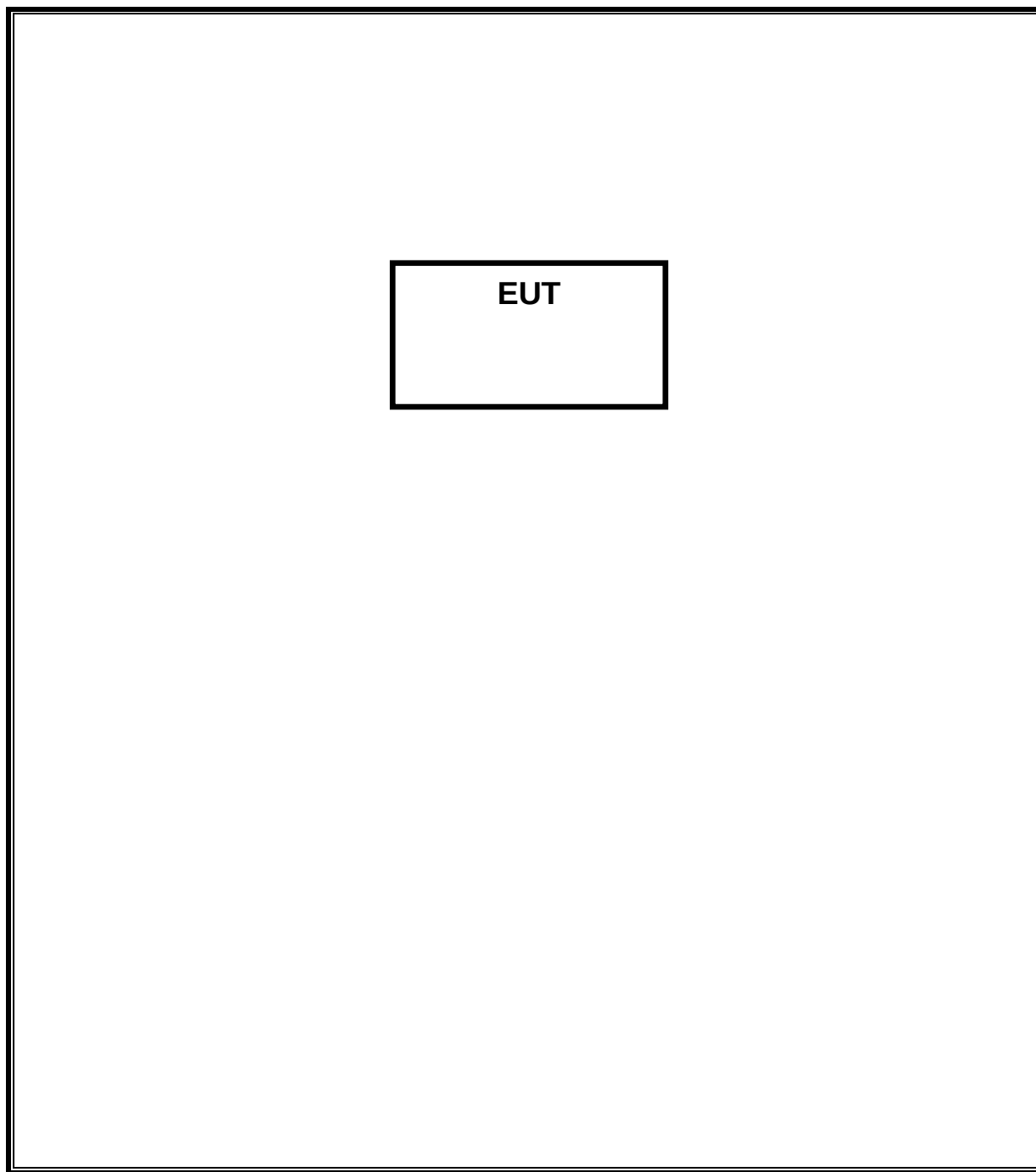
### I/O CABLES

| Cable No | Port                | # of identical ports | Connector Type | Cable Type  | Cable Length (m) | Remarks |
|----------|---------------------|----------------------|----------------|-------------|------------------|---------|
| 1        | USB to Serial       | 1                    |                | un-shielded | 1.5              | N/A     |
| 2        | Banana to Alligator | 1                    |                | un-shielded | 1                | N/A     |

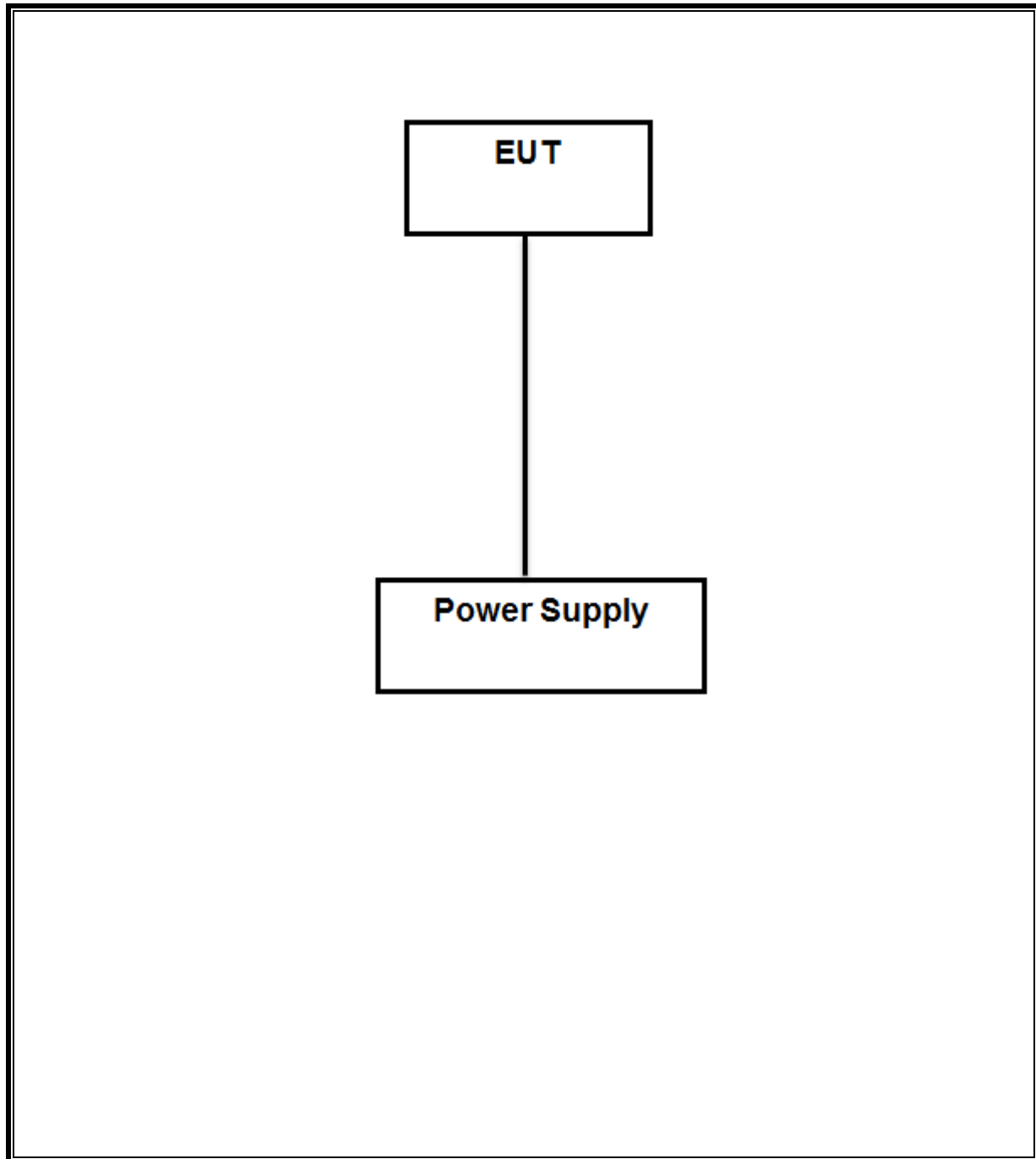
### TEST SETUP

The EUT was installed in a typical configuration. The customer provided test software to exercise the EUT during test. Refer to the following diagram.

**SETUP DIAGRAM FOR 30-1000MHz TESTS**



**SETUP DIAGRAM FOR 1000 - 18000MHz TESTS**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List                    |                |             |          |           |
|----------------------------------------|----------------|-------------|----------|-----------|
| Description                            | Manufacturer   | Model       | T Number | Cal Due   |
| Antenna, Biconolog, 30MHz-1 GHz        | Sunol Sciences | JB1         | 130      | 09/01/16  |
| Antenna, Horn, 18GHz                   | ETS Lindgren   | 3117        | 863      | 04/10/16  |
| Antenna, Horn, 26.5 GHz                | ARA            | MWH-1826/B  | 447      | 05/12/16  |
| RF Preamplifier, 1GHz - 18GHz          | Miteq          | NSP4000-SP2 | 88       | 04/07/16  |
| RF Preamplifier, 1GHz - 26.5GHz        | HP             | 8449B       | 404      | 06/29/16  |
| Spectrum Analyzer, 44 GHz              | Agilent / HP   | E4446A      | 123      | 10/22/16  |
| Spectrum Analyzer, PXA, 3 Hz to 44 GHz | Keysight       | N9030A      | 908      | 03/03/16  |
| Spectrum Analyzer, PXA, 3 Hz to 44 GHz | Keysight       | N9030A      | 907      | 01/07/16  |
| Reject Filter, 2.4GHz                  | Micro-Tronics  | BRM50702    | 160      | CNR       |
| Low Pass Filter 5GHz                   | Micro-Tronics  | LPS17541    | 417      | 05/04/16  |
| High Pass Filter 6GHz                  | Micro-Tronics  | HPS17542    | 893      | 04/25/16  |
| High Pass Filter 3GHz                  | Micro-Tronics  | HPS17543    | 898      | 04/25/16  |
| Amplifier 10KHz to 1GHz 32db           | HP             | 8447D       | 15       | 8/14/2016 |

| Test Software List |              |        |                        |
|--------------------|--------------|--------|------------------------|
| Description        | Manufacturer | Model  | Version                |
| Radiated Software  | UL           | UL EMC | Ver 9.5, June 24, 2015 |

## 7. SUMMARY

| FCC Part Section   | RSS Section(s) | Test Description                        | Test Limit | Test Condition | Test Result | Worst Case                                 |
|--------------------|----------------|-----------------------------------------|------------|----------------|-------------|--------------------------------------------|
| 15.247 (a)(2)      | RSS-247 5.2.1  | Occupied Band width (6dB)               | >500KHz    | Conducted      | Pass        | 1.587MHz                                   |
| 2.1051, 15.247 (d) | RSS-247 5.5    | Band Edge / Conducted Spurious Emission | -20dBc     |                | Pass        | -46.227dBm (Convert from 49.84 dBuV EIRP)* |
| 15.247             | RSS-247 5.4.4  | TX conducted output power               | <30dBm     |                | Pass        | 5.95 dBm                                   |
| 15.247             | RSS-247 5.2.2  | PSD                                     | <8dBm      |                | Pass        | -10.33dBm                                  |
| 15.207 (a)         | RSS-GEN 8.8    | AC Power Line conducted emissions       | Section 10 | Radiated       | N/A         | N/A                                        |
| 15.205, 15.209     | RSS-GEN 8.9/7  | Radiated Spurious Emission              | < 54dBuV/m |                | Pass        | 53.32dBuV/m                                |

\*Conducted Band Edge EIRP reading was take into account the Antenuation Factor and Gain/Loss.  
The Conducted Band Edge raw reading was 49.84 dBuV. Final reading is  $49.84 + 32.335 - 31.952 - 95.2 - 1.25 = -46.227$  dBm, where the 32.225 is the antenuation factor, 31.952 is the gain/loss, and 1.25 is the antenna gain.

## 8. RADIATED TEST RESULTS

### 8.1. ON TIME, DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

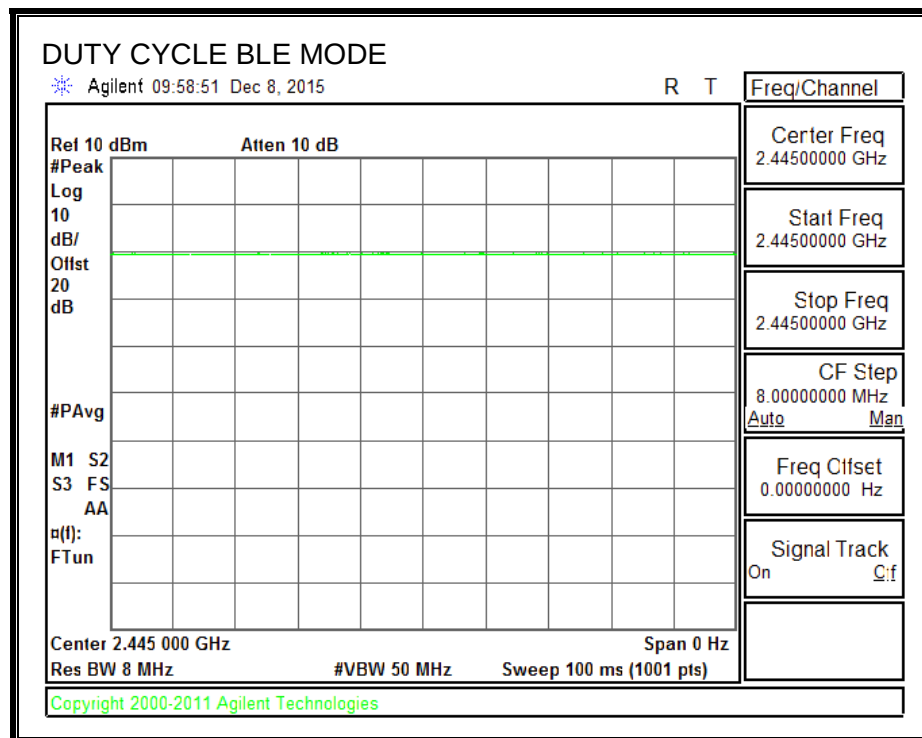
#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

| Mode   | ON Time<br>B<br>(msec) | Period<br>(msec) | Duty Cycle<br>x<br>(linear) | Duty<br>Cycle<br>(%) | Duty Cycle<br>Correction Factor<br>(dB) | 1/B<br>Minimum VBW<br>(kHz) |
|--------|------------------------|------------------|-----------------------------|----------------------|-----------------------------------------|-----------------------------|
| Zigbee | 1.000                  | 1.000            | 1.000                       | 100.00%              | 0.00                                    | 0.010                       |

#### DUTY CYCLE PLOTS



## **8.2. 6 dB BANDWIDTH LIMITS**

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

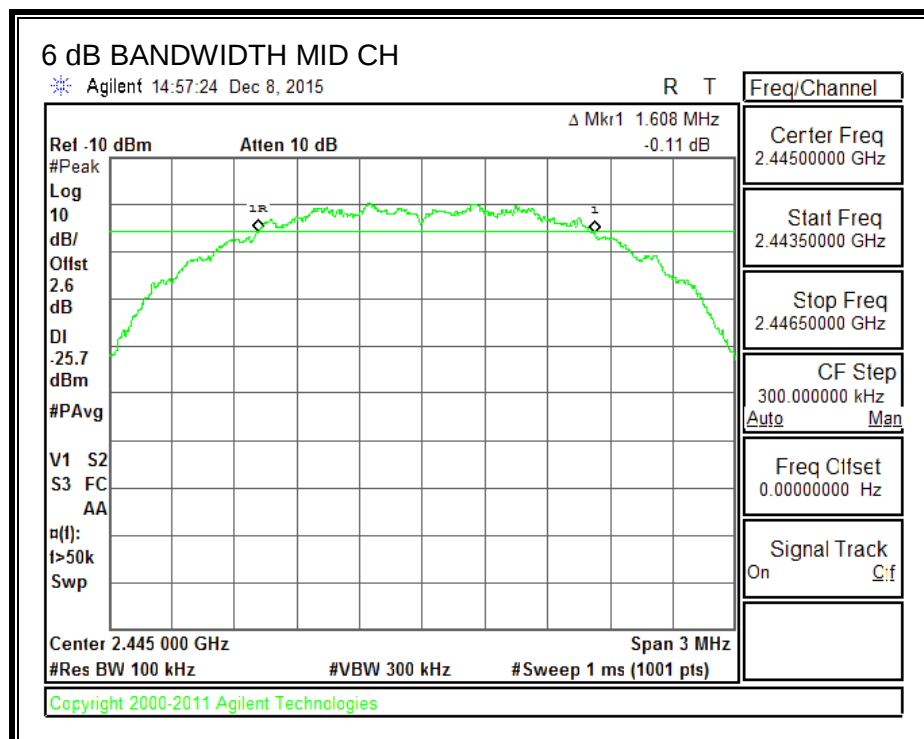
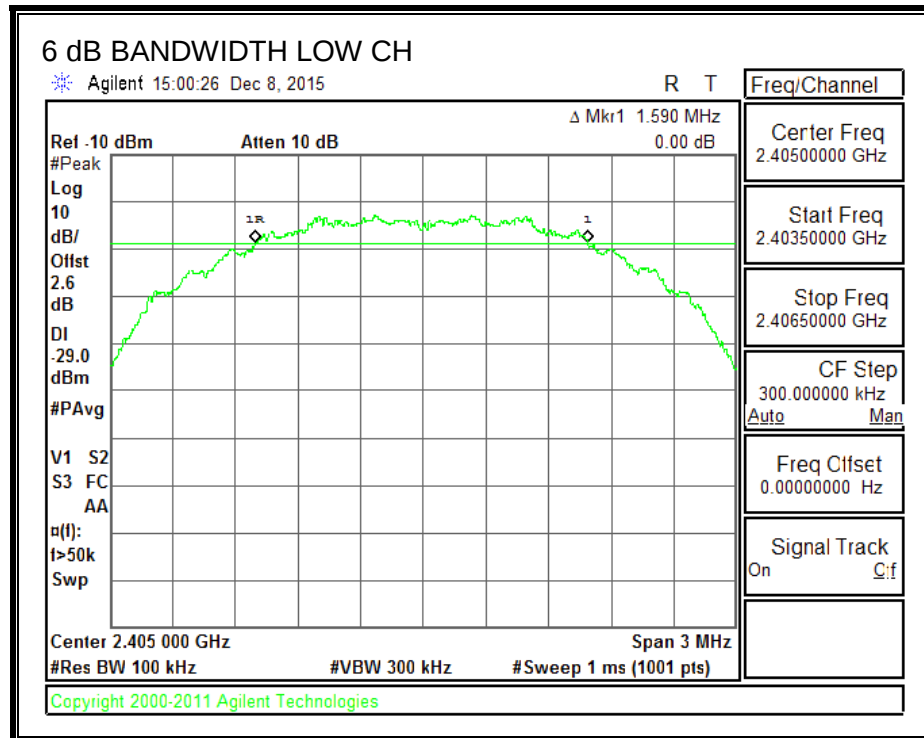
### **TEST PROCEDURE**

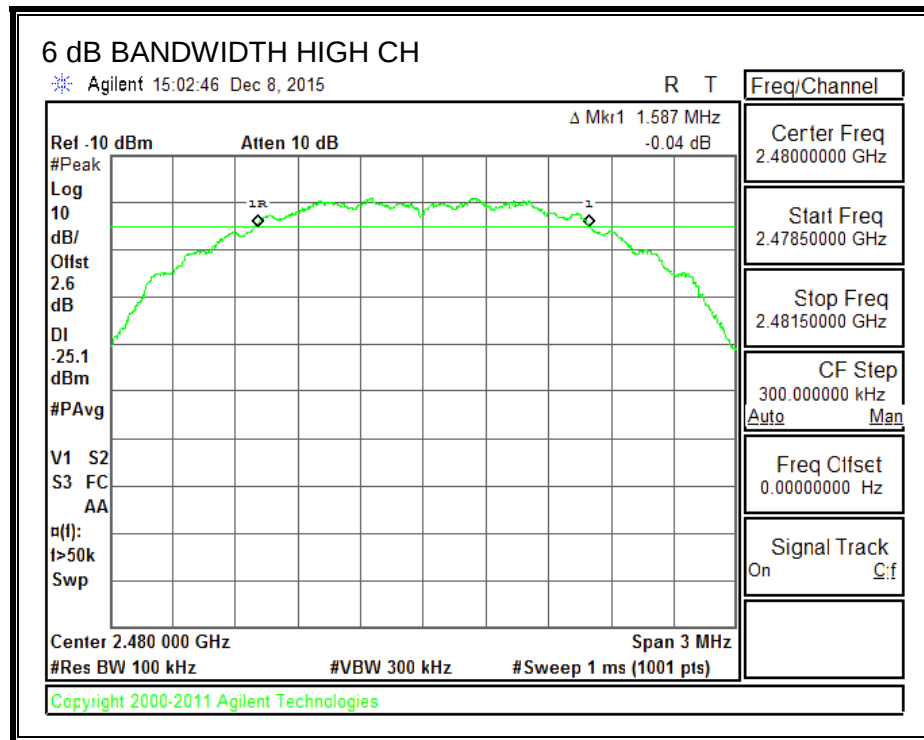
6 dB bandwidth was measured under radiated test configuration. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

### **RESULTS**

| Channel | Frequency<br>(MHz) | 6 dB Bandwidth<br>(MHz) | Minimum Limit<br>(MHz) |
|---------|--------------------|-------------------------|------------------------|
| Low     | 2405               | 1.5900                  | 0.5                    |
| Middle  | 2445               | 1.6080                  | 0.5                    |
| High    | 2480               | 1.5870                  | 0.5                    |

**6 dB BANDWIDTH**





### **8.3. 99% BANDWIDTH LIMITS**

None; for reporting purposes only.

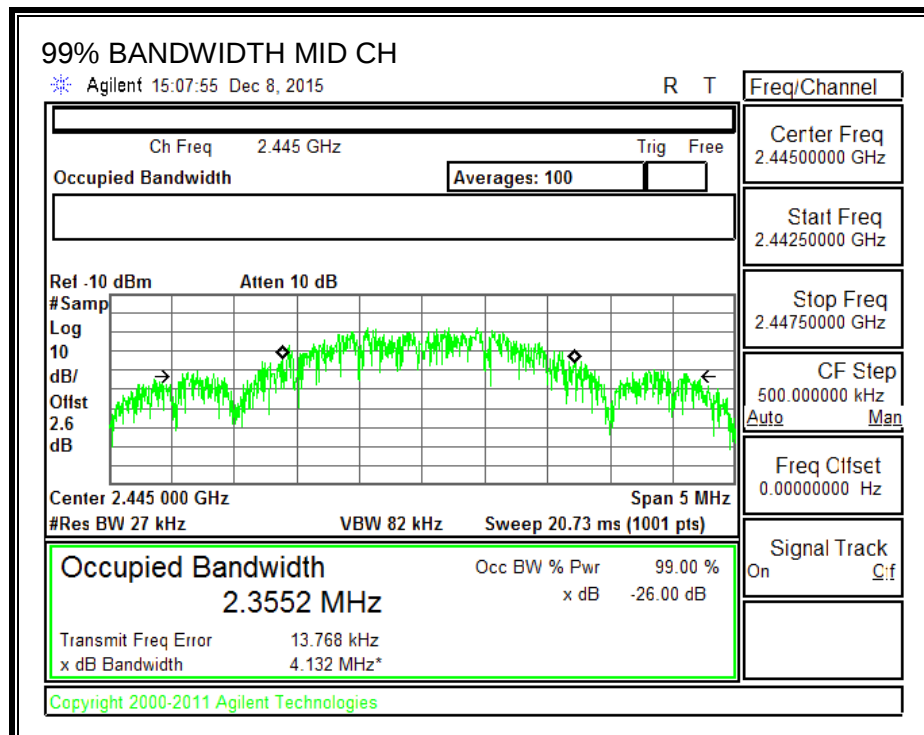
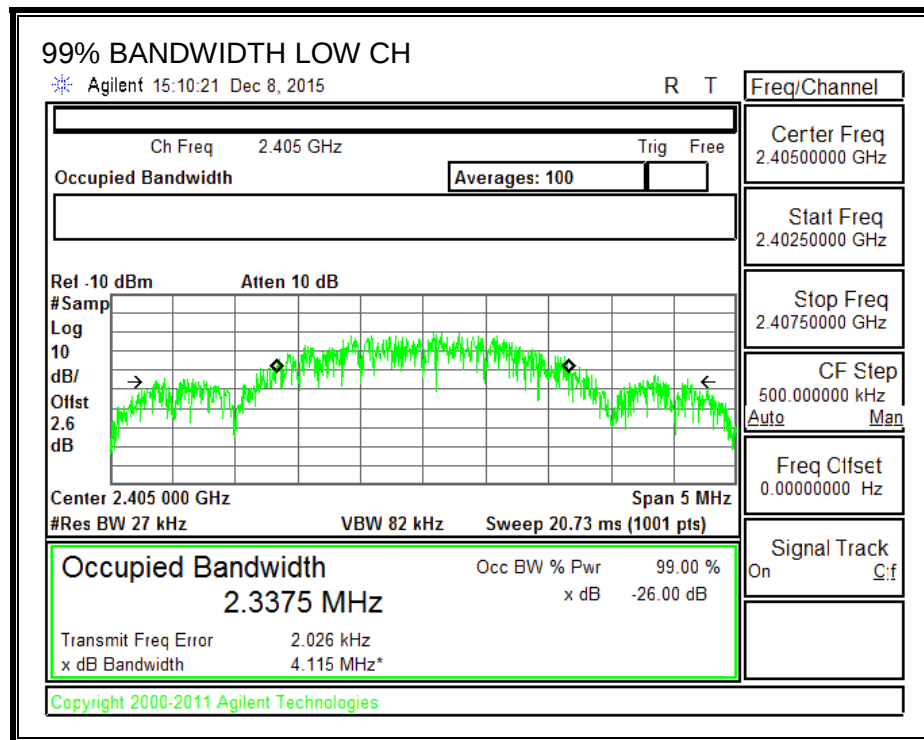
### **TEST PROCEDURE**

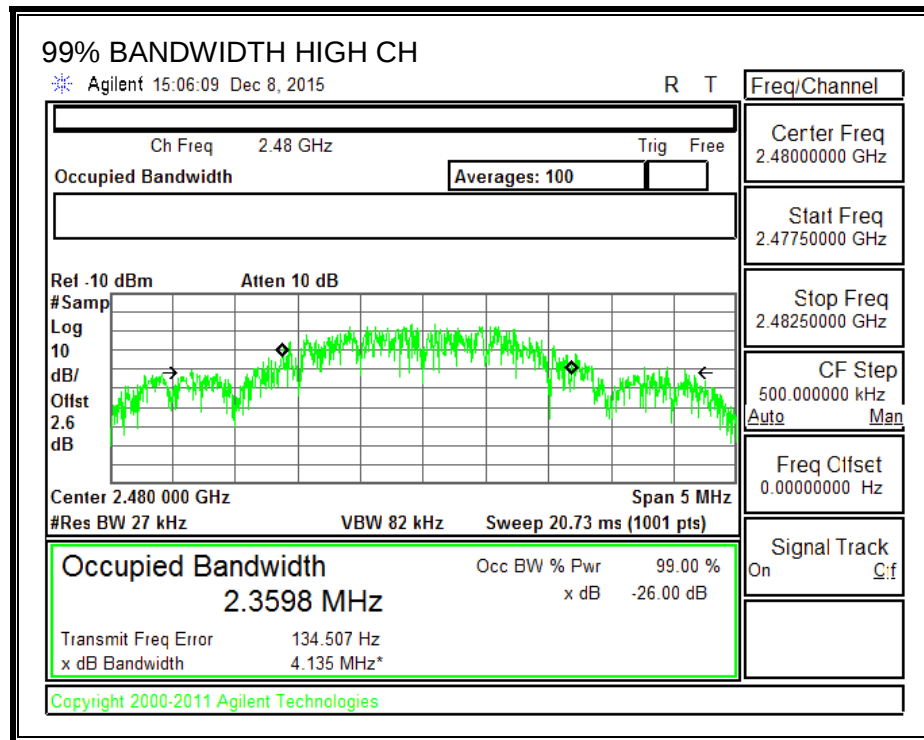
Reference to KDB558074 D01 DTS Meas Guidance v03r03: 99% bandwidth was measured under radiated test configuration. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

### **RESULTS**

| Channel | Frequency<br>(MHz) | 99% Bandwidth<br>(MHz) |
|---------|--------------------|------------------------|
| Low     | 2405               | 2.3375                 |
| Middle  | 2445               | 2.3552                 |
| High    | 2480               | 2.3598                 |

**99% BANDWIDTH**





## **8.4. OUTPUT POWER LIMITS**

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

### **TEST PROCEDURE**

Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r03 utilizing spectrum analyzer. Radiated test were performed for demonstrating compliance to the conducted emission requirements.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

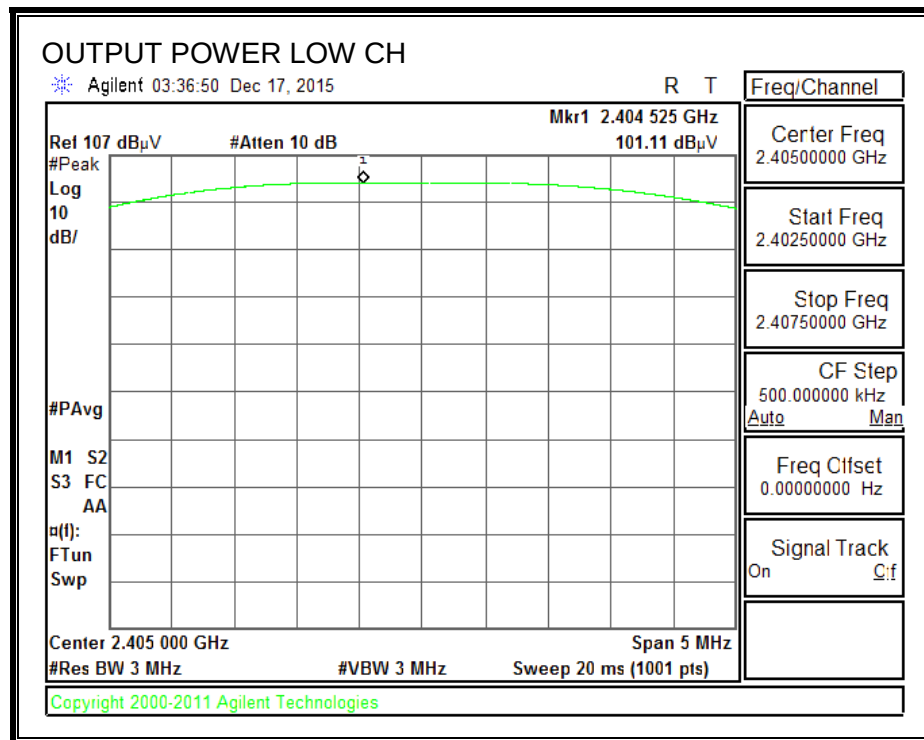
### **RESULTS**

| Channel | Frequency<br>(MHz) | Peak Power<br>Reading<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|----------------|----------------|
| Low     | 2405               | 4.907                          | 30             | -25.093        |
| Middle  | 2445               | 5.951                          | 30             | -24.049        |
| High    | 2480               | -2.807                         | 30             | -32.807        |

Power was measured under radiated test configuration.

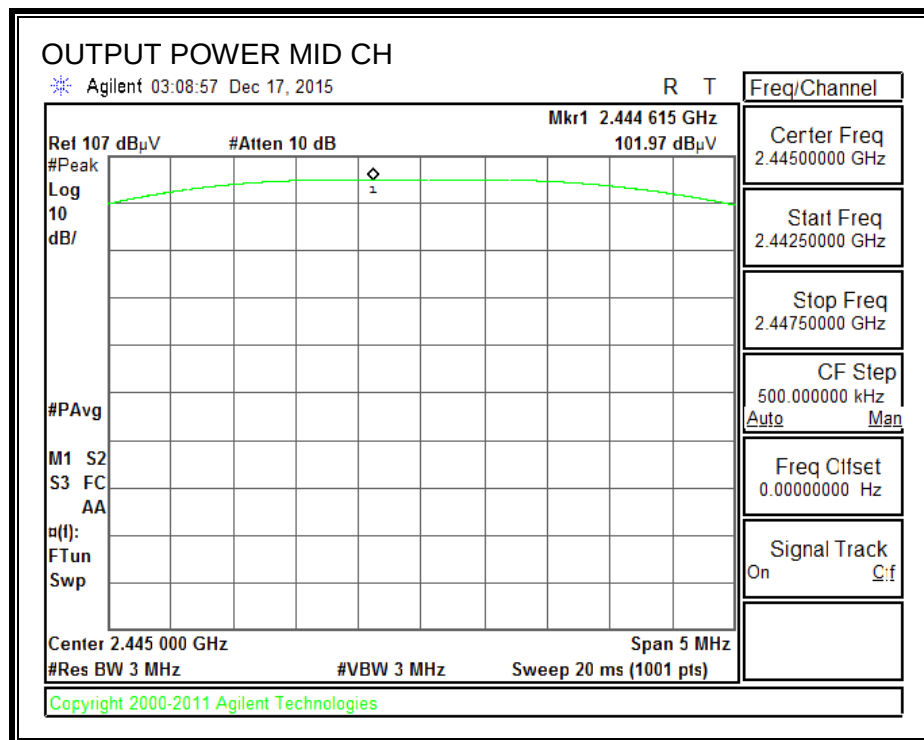
EIRP Power (in dBuV)=PSA reading + Attenuation Factor + Gain/Loss

Power=EIRP-95.2-Antenna Gain

**OUTPUT POWER**

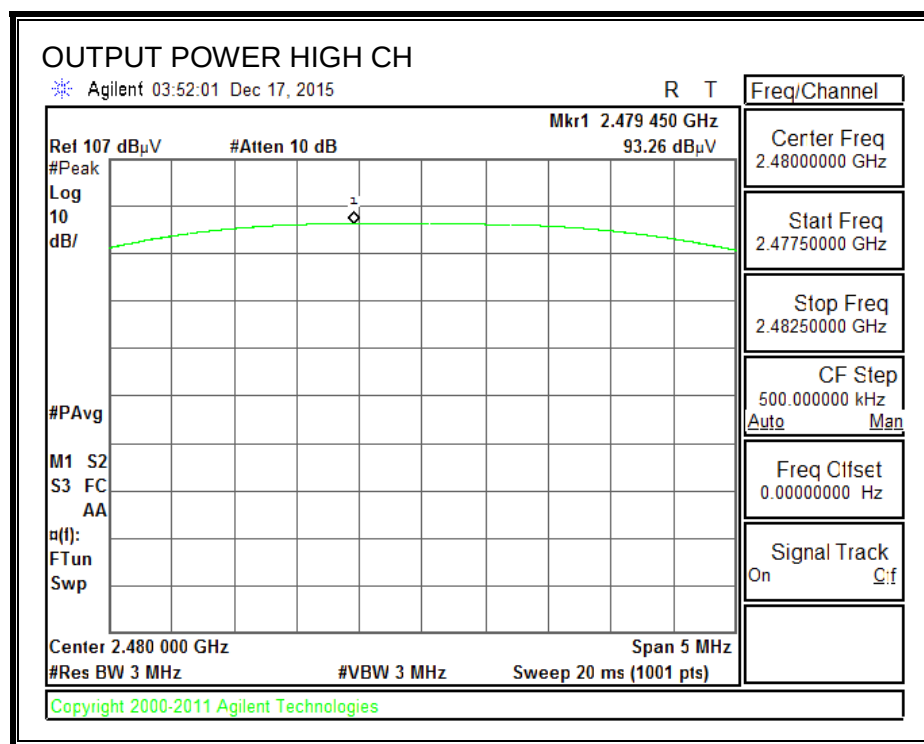
EIRP Power=101.11+32.335-32.088=101.357 dBuV

Power=101.357-95.2-1.25=4.907 dBm



EIRP Power=101.97+32.345-31.914=102.401 dBuV

Power=102.401-95.2-1.25=5.951 dBm



EIRP Power=93.26+32.335-31.952= 93.643 dBuV

Power=93.643-95.2-1.25=-2.807 dBm

## **8.5. POWER SPECTRAL DENSITY LIMITS**

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### **TEST PROCEDURE**

Power Spectral Density was performed utilizing the “Method PKPSD (Peak PSD)” under KDB558074 D01 DTS Meas Guidance v03r03. Radiated test were performed for demonstrating compliance to the conducted emission requirements.

### **RESULTS**

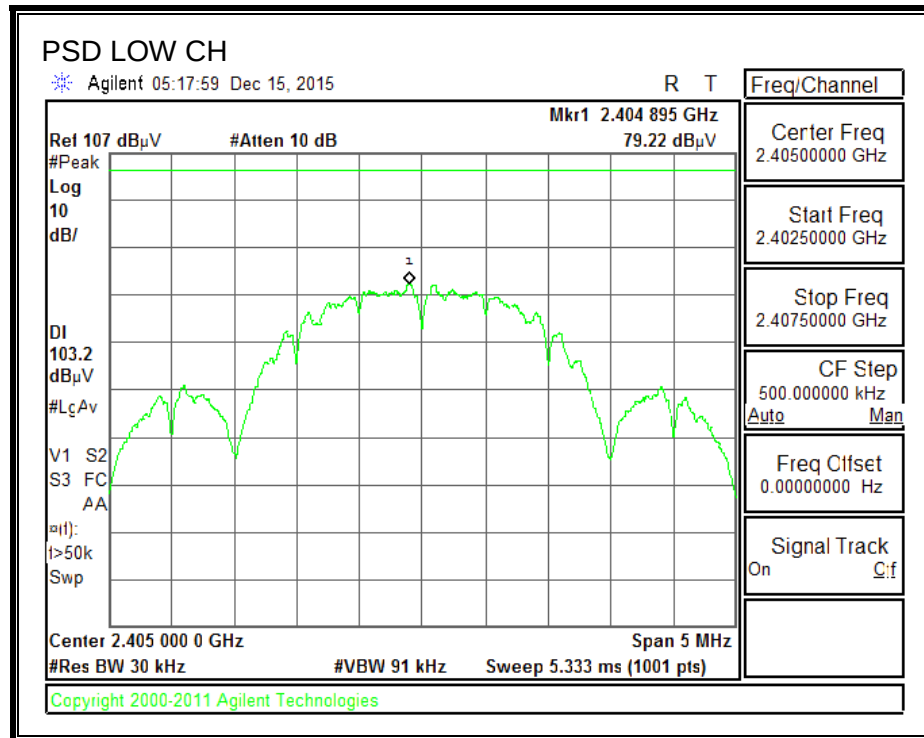
| Channel | Frequency (MHz) | PSD (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-----------|-------------|-------------|
| Low     | 2405            | -16.98    | 8           | -24.98      |
| Middle  | 2445            | -10.33    | 8           | -18.33      |
| High    | 2480            | -23.64    | 8           | -31.64      |

PSD was measured under radiated test configuration.

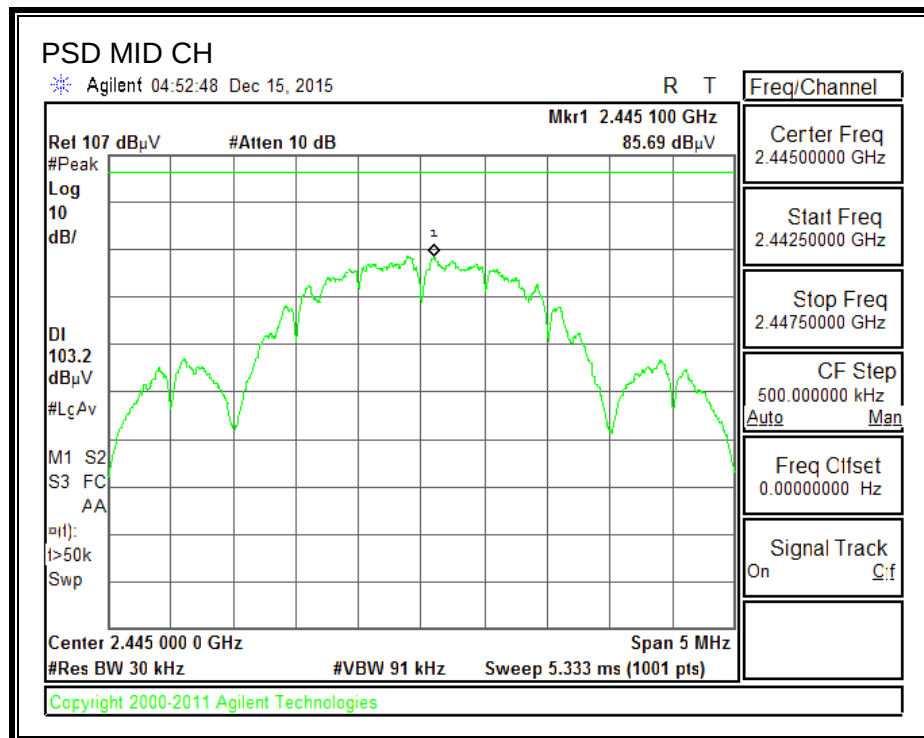
$\text{EIRP PSD (in dBuV)} = \text{PSA reading} + \text{Attenuation Factor} + \text{Gain/Loss}$

$\text{PSD} = \text{EIRP PSD} - 95.2 - \text{Antenna Gain}$

**POWER SPECTRAL DENSITY**

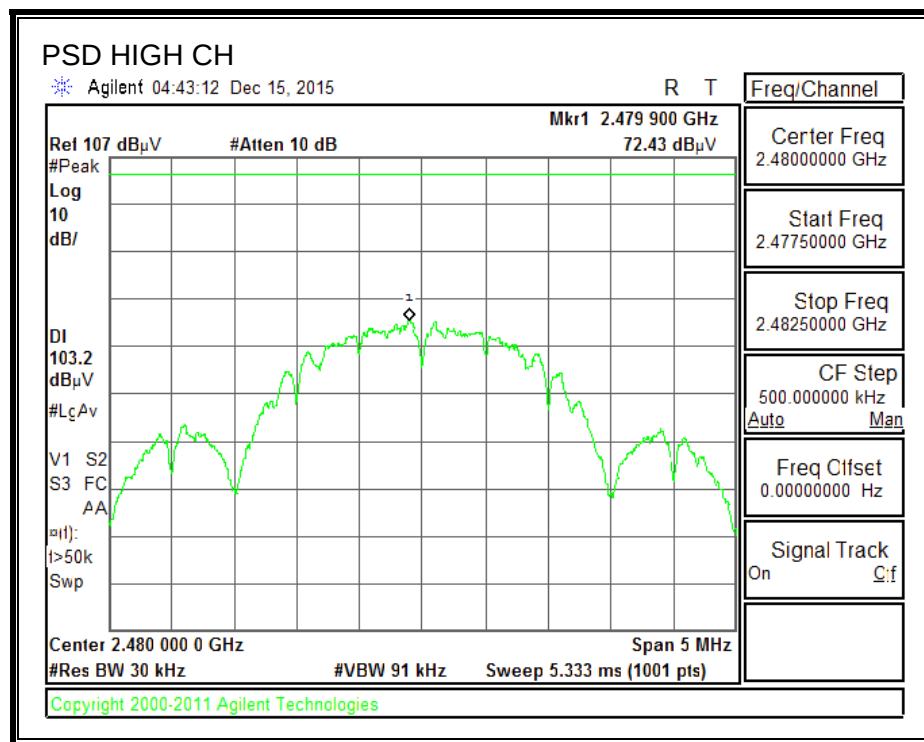


EIRP PSD=79.22+32.335-32.088=79.467 dBuV  
PSD=79.467-95.2-1.25=-16.983 dBm



EIRP PSD=85.69+32.345-31.914=86.121 dBuV

PSD=86.121-95.2-1.25=-10.329 dBm



EIRP PSD=72.43+32.335-31.952=72.813 dBuV

PSD=72.813-95.2-1.25=-23.637 dBm

## **8.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

### **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.

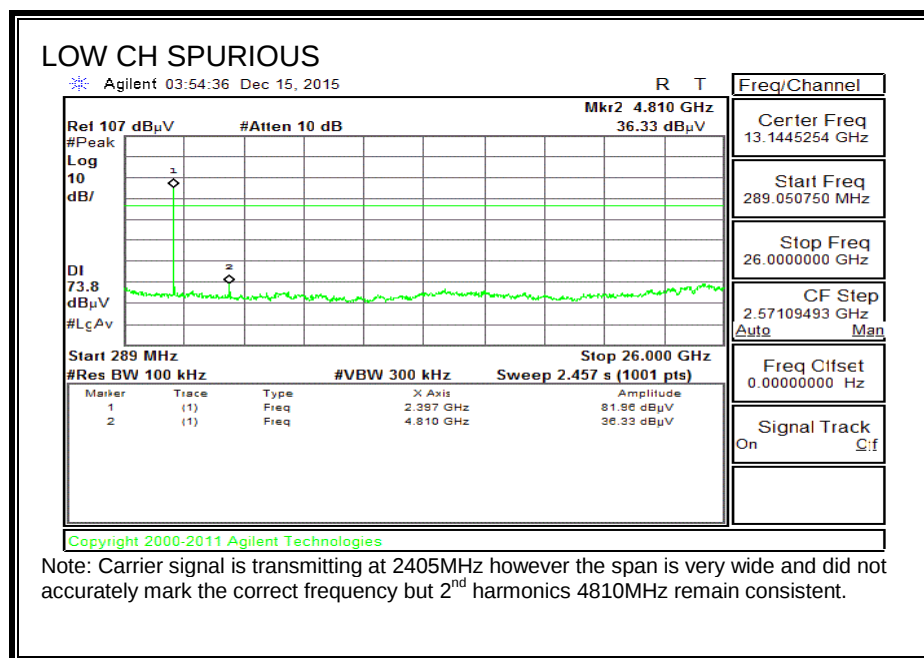
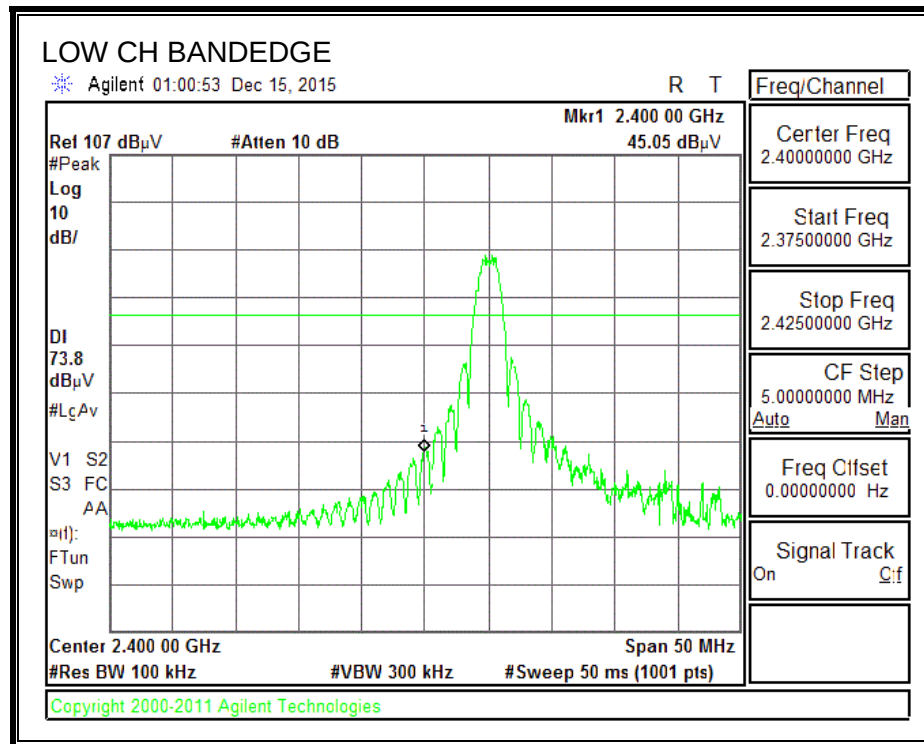
Limit was set by the mid channel as reference.

Final reading = PSA reading + Attenuation Factor + Gain/Loss – Antenna Gain  
 $94.62 + 32.335 - 31.914 - 1.25 = 93.791 \text{ dBuV}$

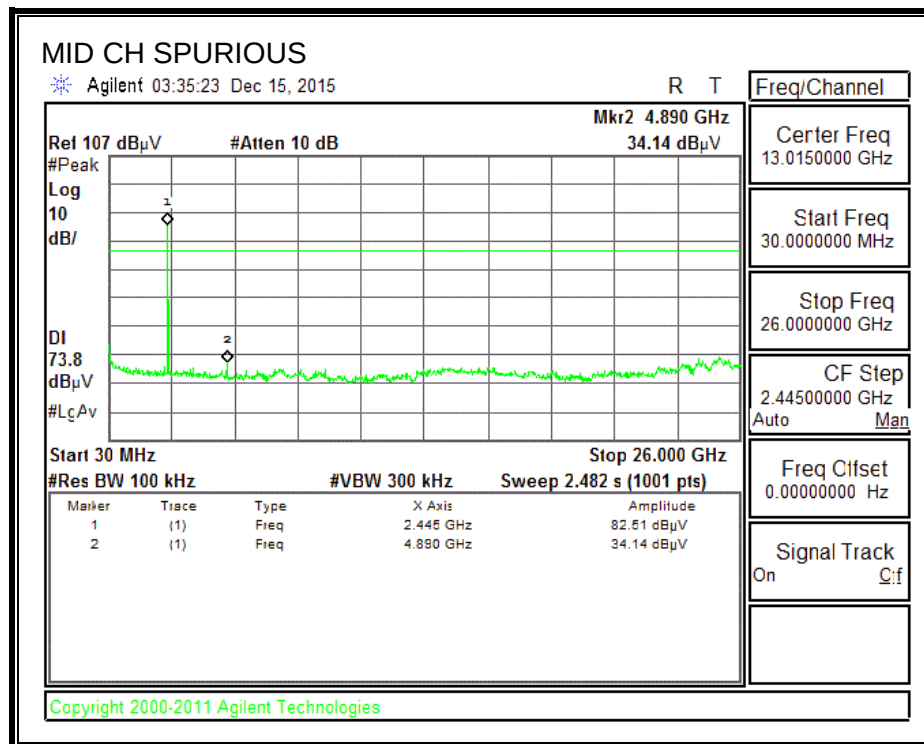
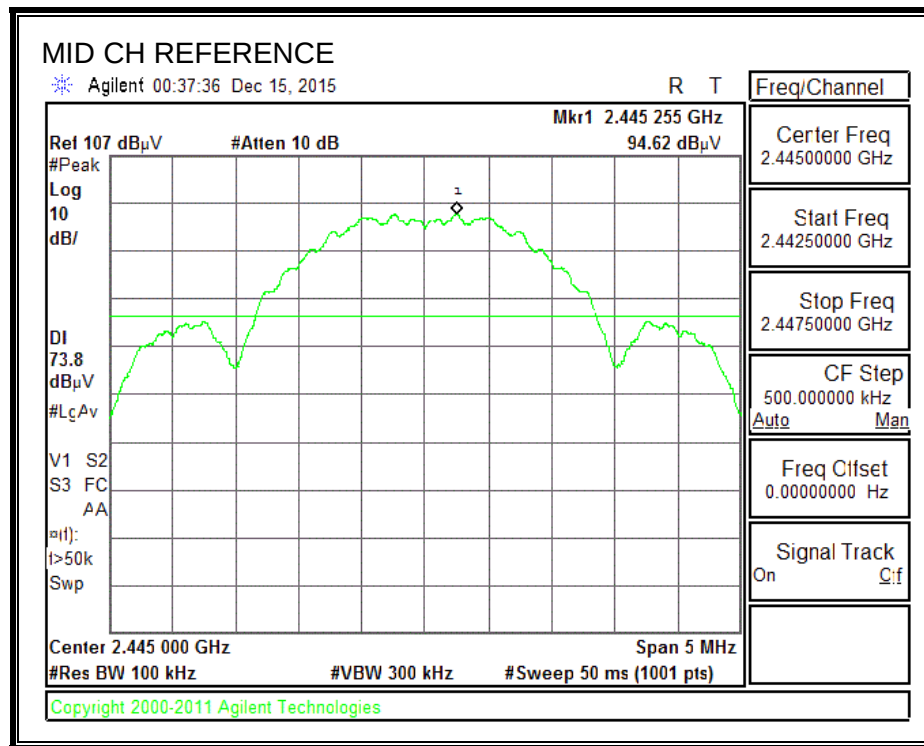
The limit line was set to 73.791 dBuV.

## RESULTS

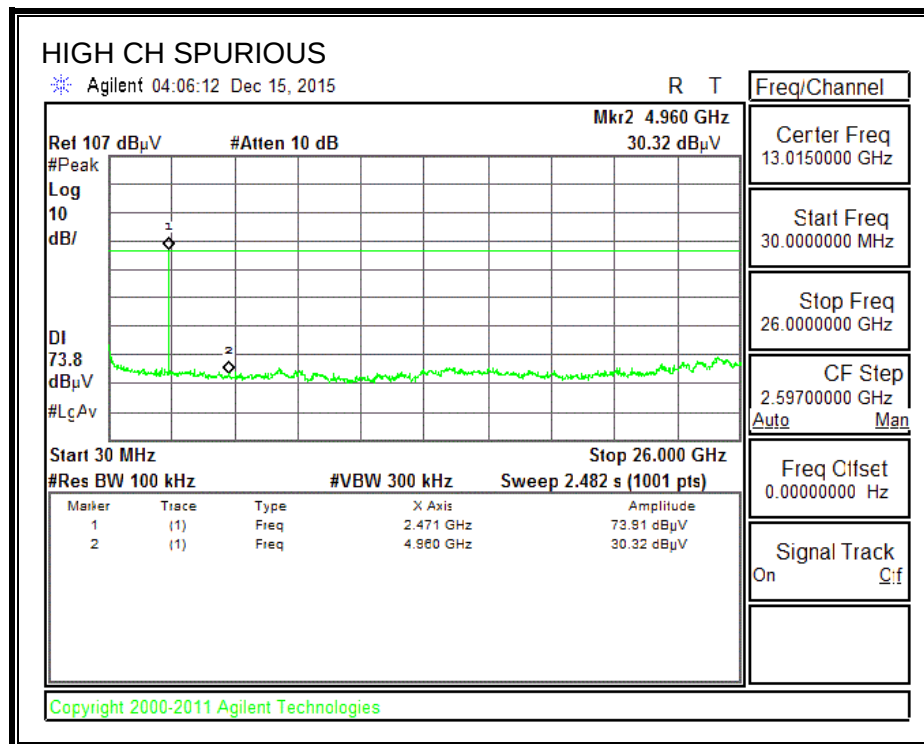
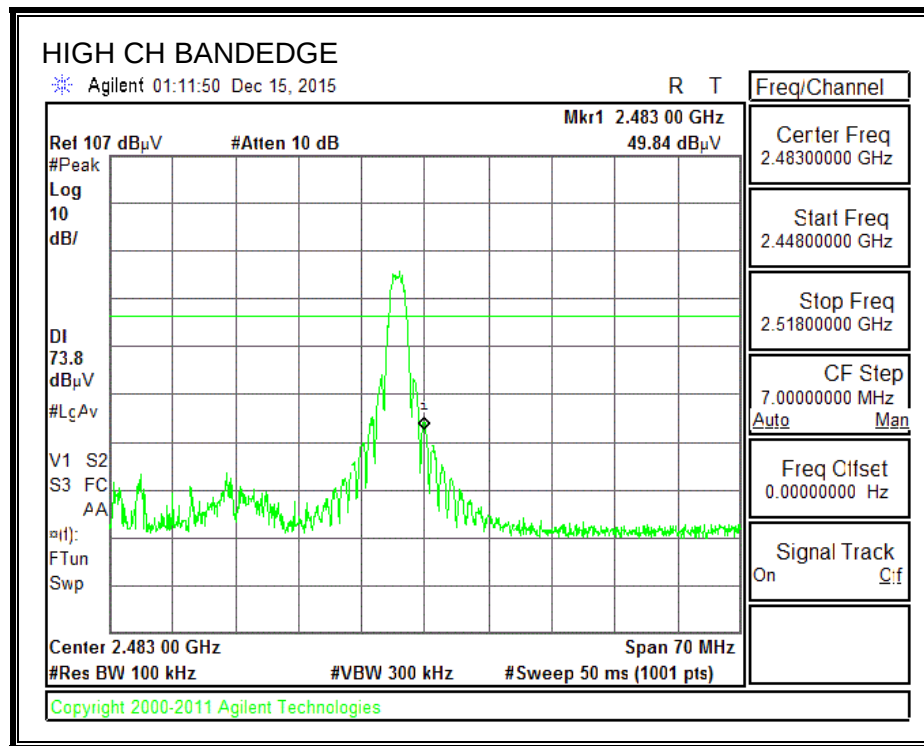
### SPURIOUS EMISSIONS, LOW CHANNEL



**SPURIOUS EMISSIONS, MID CHANNEL**



**SPURIOUS EMISSIONS, HIGH CHANNEL**



## **8.7. HARMONIC AND BANDEDGE**

### **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 for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

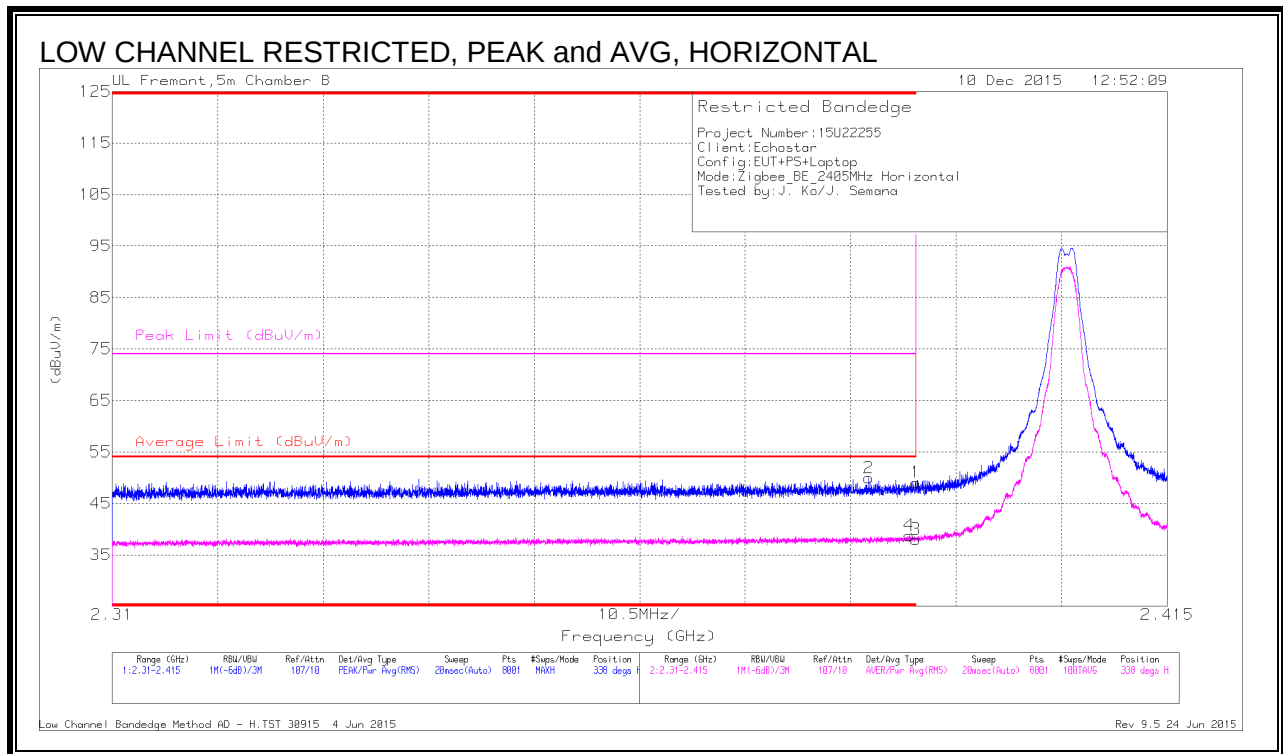
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor =  $10 \log (1/x)$ , For this sample, the unit is control by test software which is transmit continuous wave(duty cycle greater than 98%) .

The spectrum from 1GHz 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.

### 8.7.1. TRANSMITTER ABOVE 1 GHz

#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

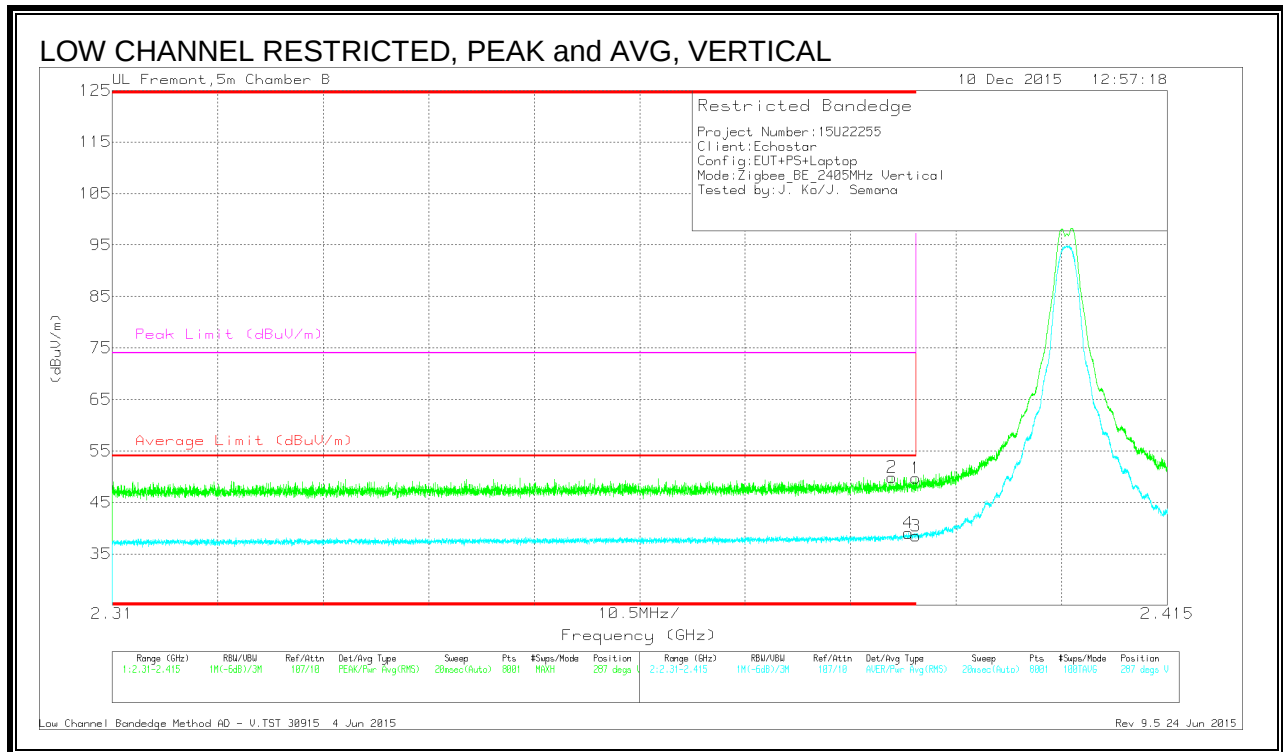


#### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | 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          | 41.14                | Pk  | 32             | -24.1                  | 49.04                      | -                      | -           | 74                  | -24.96         | 338            | 125         | H        |
| 2      | * 2.385         | 42.03                | Pk  | 32             | -24.1                  | 49.93                      | -                      | -           | 74                  | -24.07         | 338            | 125         | H        |
| 3      | * 2.39          | 30.11                | RMS | 32             | -24.1                  | 38.01                      | 54                     | -15.99      | -                   | -              | 338            | 125         | H        |
| 4      | * 2.389         | 30.86                | RMS | 32             | -24.1                  | 38.76                      | 54                     | -15.24      | -                   | -              | 338            | 125         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band  
PK - Peak detector  
RMS - RMS detection

**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



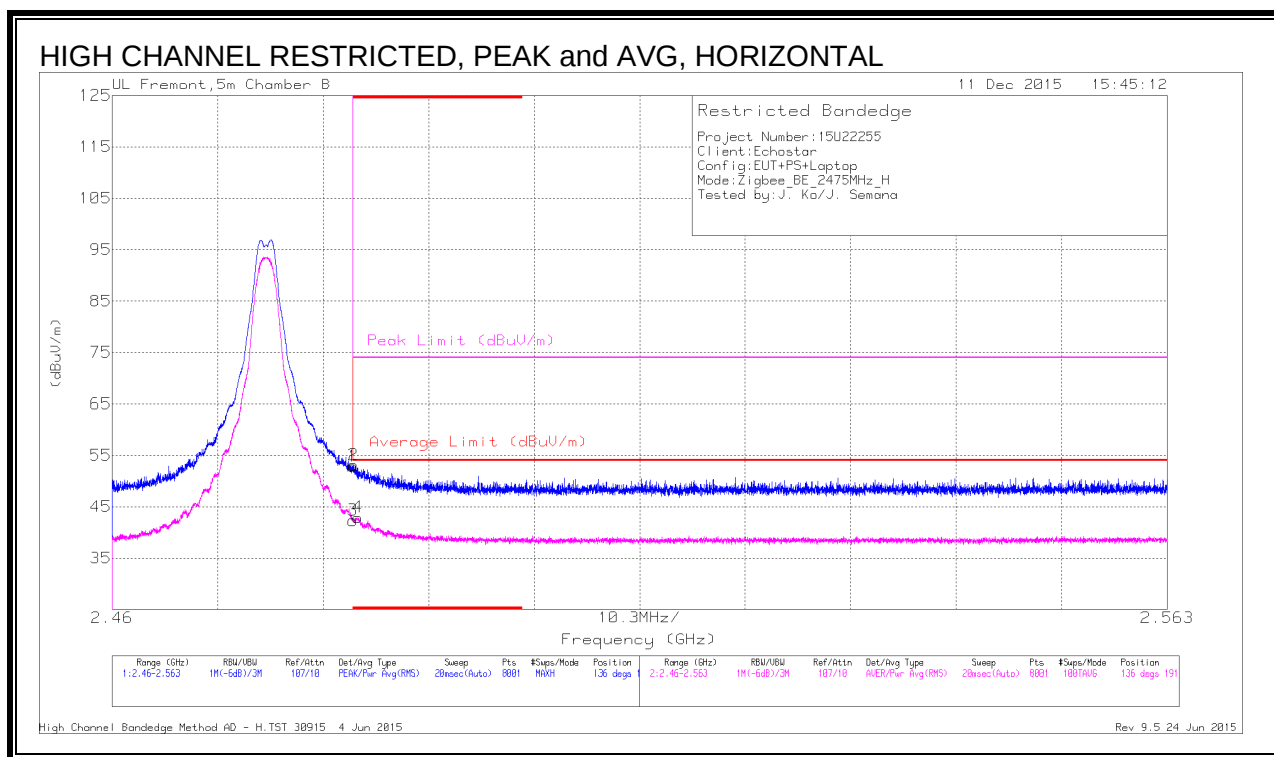
**Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Ftr/Pad (dB) | 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          | 41.82                | Pk  | 32             | -24.1                 | 49.72                      | -                      | -           | 74                  | -24.28         | 287            | 162         | V        |
| 2      | * 2.388         | 41.96                | Pk  | 32             | -24.1                 | 49.86                      | -                      | -           | 74                  | -24.14         | 287            | 162         | V        |
| 3      | * 2.39          | 30.56                | RMS | 32             | -24.1                 | 38.46                      | 54                     | -15.54      | -                   | -              | 287            | 162         | V        |
| 4      | * 2.389         | 31.15                | RMS | 32             | -24.1                 | 39.05                      | 54                     | -14.95      | -                   | -              | 287            | 162         | V        |

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

PK - Peak detector

RMS - RMS detection

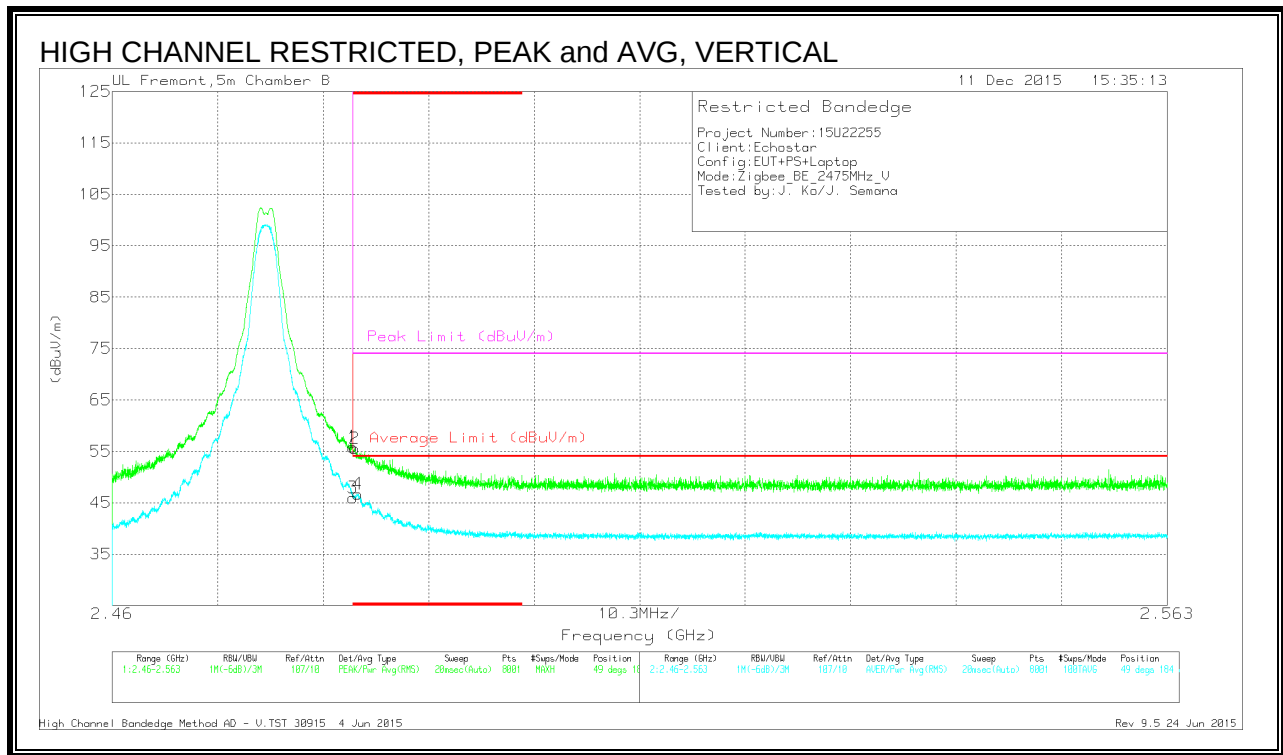
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)****Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Ftr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 44.37                | Pk  | 32.5           | -24                   | 52.87                      | -                      | -           | 74                  | -21.13         | 136            | 191         | H        |
| 2      | * 2.484         | 44.6                 | Pk  | 32.5           | -24                   | 53.1                       | -                      | -           | 74                  | -20.9          | 136            | 191         | H        |
| 3      | * 2.484         | 33.83                | RMS | 32.5           | -24                   | 42.33                      | 54                     | -11.67      | -                   | -              | 136            | 191         | H        |
| 4      | * 2.484         | 34.43                | RMS | 32.5           | -24                   | 42.93                      | 54                     | -11.07      | -                   | -              | 136            | 191         | H        |

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

PK - Peak detector

RMS - RMS detection

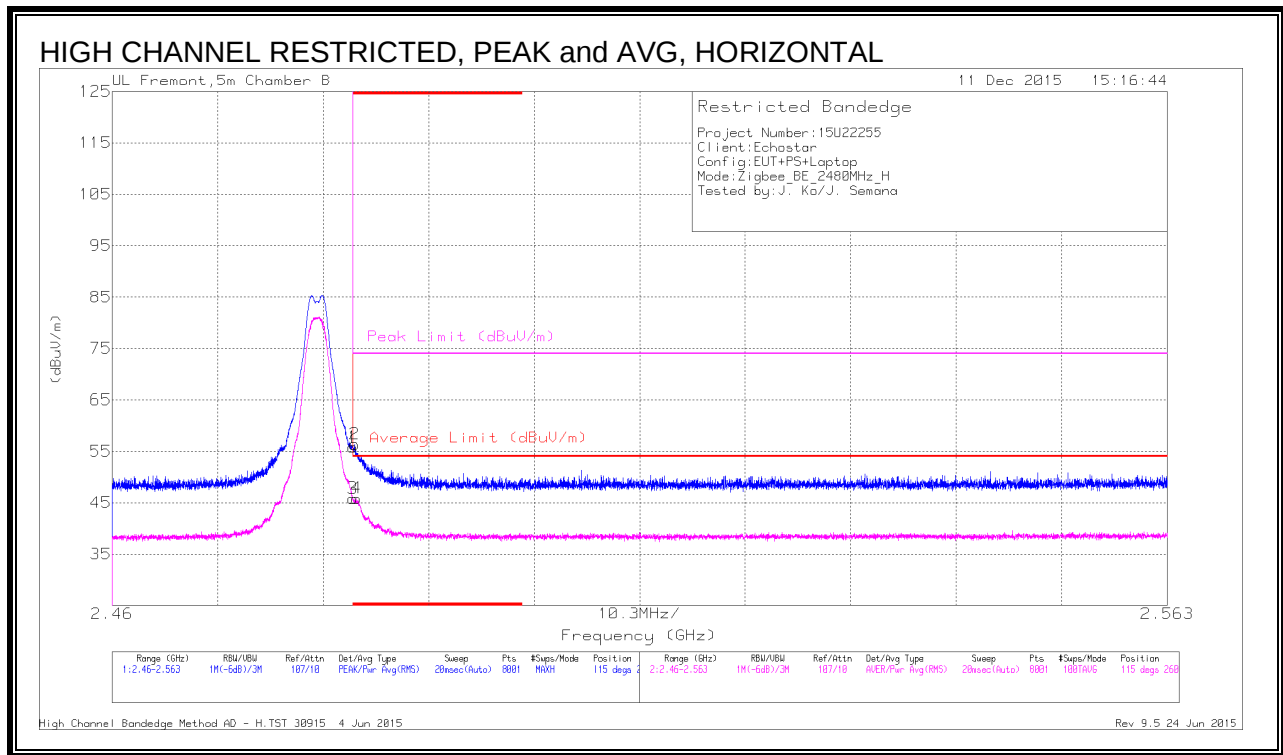
**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)****Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | 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         | 47.37                | Pk  | 32.5           | -24                    | 55.87                      | -                      | -           | 74                  | -18.13         | 49             | 184         | V        |
| 2      | * 2.484         | 47.05                | Pk  | 32.5           | -24                    | 55.55                      | -                      | -           | 74                  | -18.45         | 49             | 184         | V        |
| 3      | * 2.484         | 37.47                | RMS | 32.5           | -24                    | 45.97                      | 54                     | -8.03       | -                   | -              | 49             | 184         | V        |
| 4      | * 2.484         | 38.19                | RMS | 32.5           | -24                    | 46.69                      | 54                     | -7.31       | -                   | -              | 49             | 184         | V        |

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

PK - Peak detector

RMS - RMS detection

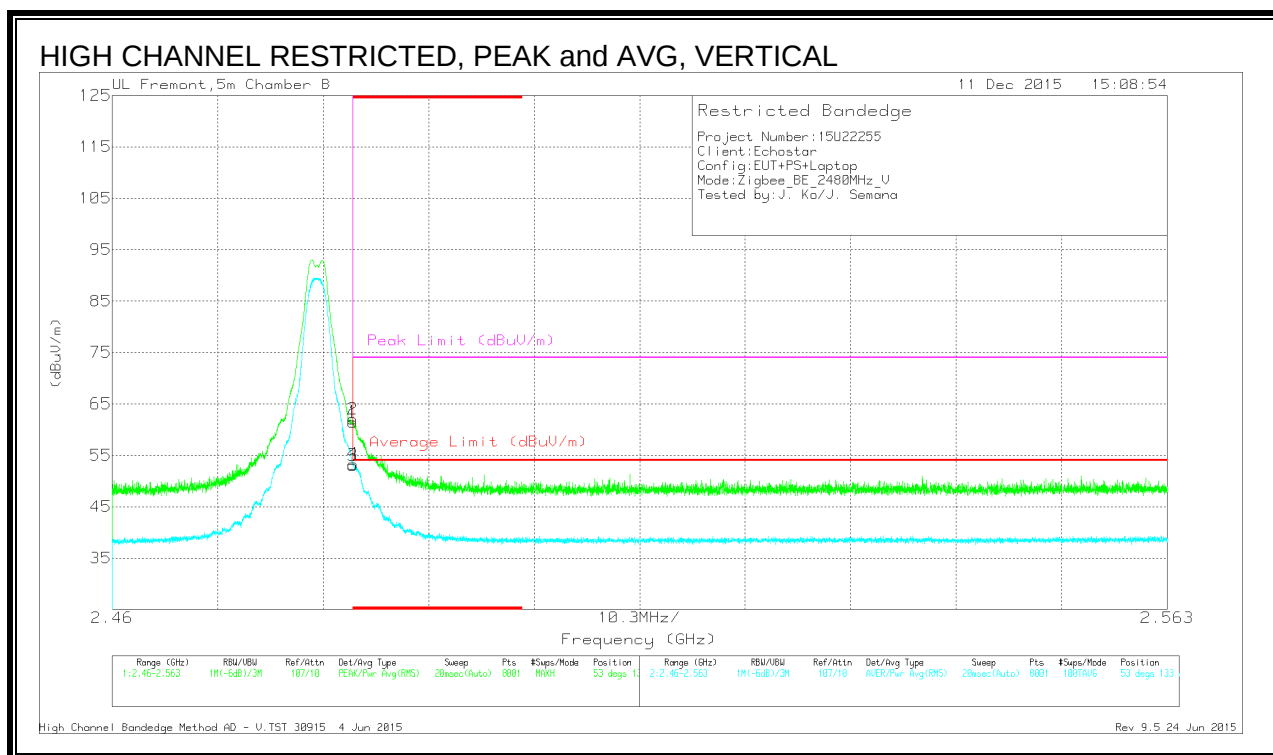
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)****Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Ftr/Pad (dB) | 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         | 47.29                | Pk  | 32.5           | -24                   | 55.79                      | -                      | -           | 74                  | -18.21         | 115            | 260         | H        |
| 2      | * 2.484         | 47.88                | Pk  | 32.5           | -24                   | 56.38                      | -                      | -           | 74                  | -17.62         | 115            | 260         | H        |
| 3      | * 2.484         | 37.33                | RMS | 32.5           | -24                   | 45.83                      | 54                     | -8.17       | -                   | -              | 115            | 260         | H        |
| 4      | * 2.484         | 37.37                | RMS | 32.5           | -24                   | 45.87                      | 54                     | -8.13       | -                   | -              | 115            | 260         | H        |

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

PK - Peak detector

RMS - RMS detection

**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)****Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | 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         | 52.98                | Pk  | 32.5           | -24                    | 61.48                      | -                      | -           | 74                  | -12.52         | 53             | 133         | V        |
| 2      | * 2.484         | 53.55                | Pk  | 32.5           | -24                    | 62.05                      | -                      | -           | 74                  | -11.95         | 53             | 133         | V        |
| 3      | * 2.484         | 44.56                | RMS | 32.5           | -24                    | 53.06                      | 54                     | -94         | -                   | -              | 53             | 133         | V        |
| 4      | * 2.484         | 44.82                | RMS | 32.5           | -24                    | 53.32                      | 54                     | -68         | -                   | -              | 53             | 133         | V        |

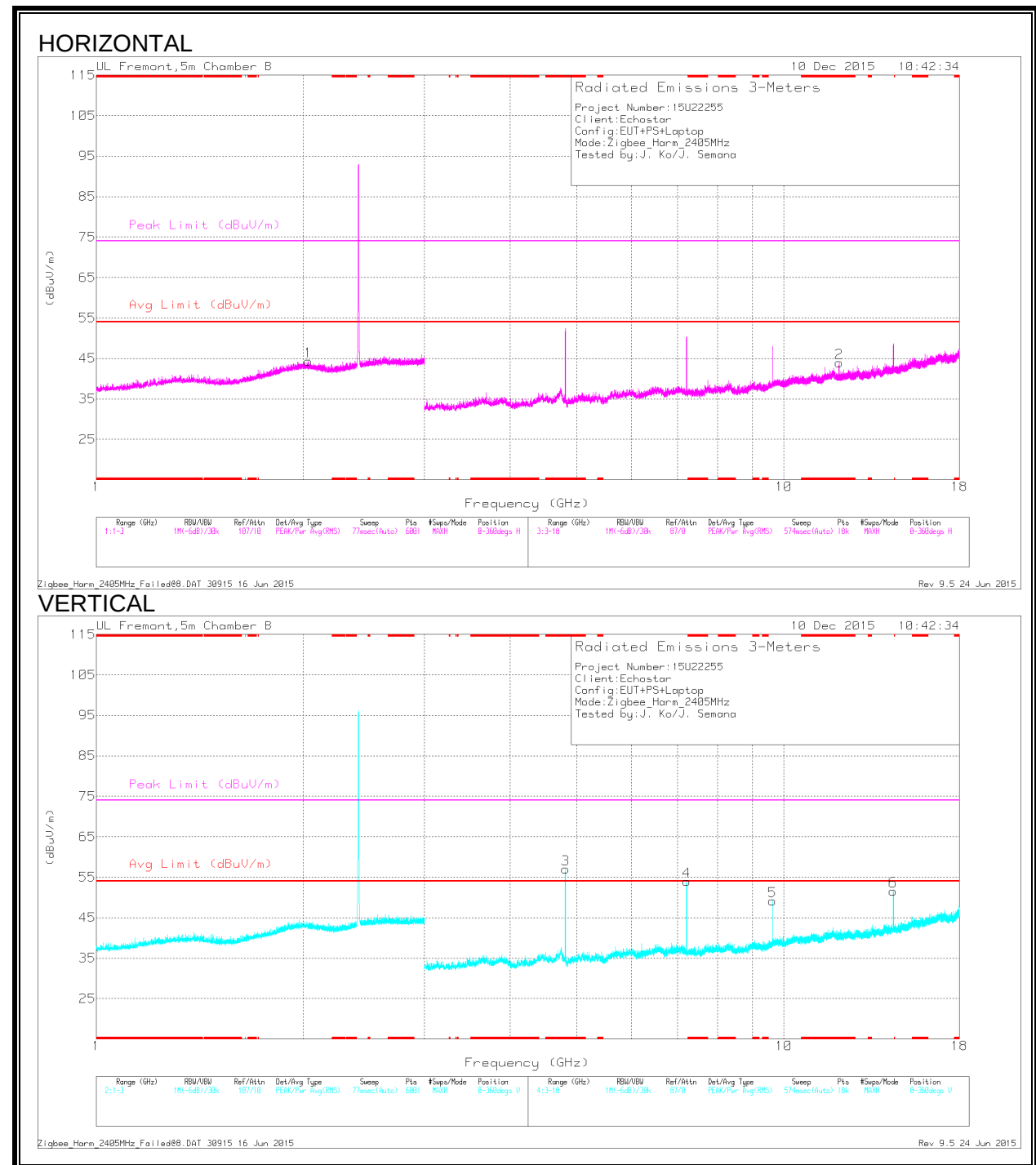
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL



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 | AF T345 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2      | * 12.028        | 30.55                | Pk  | 38.6           | -25.2                  | 43.95                      | -                  | -           | 74                  | -30.05         | 0-360          | 101         | H        |
| 3      | * 4.809         | 53.98                | Pk  | 34.3           | -31.2                  | 57.08                      | -                  | -           | 74                  | -16.92         | 0-360          | 199         | V        |
| 1      | 2.035           | 36.67                | Pk  | 32.2           | -24.5                  | 44.37                      | -                  | -           | -                   | -              | 0-360          | 199         | H        |
| 4      | 7.216           | 48.24                | Pk  | 35.3           | -29.6                  | 53.94                      | -                  | -           | -                   | -              | 0-360          | 199         | V        |
| 5      | 9.617           | 38.98                | Pk  | 36.7           | -26.5                  | 49.18                      | -                  | -           | -                   | -              | 0-360          | 199         | V        |
| 6      | 14.427          | 35.33                | Pk  | 39.6           | -23.3                  | 51.63                      | -                  | -           | -                   | -              | 0-360          | 101         | V        |

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

Pk - Peak detector

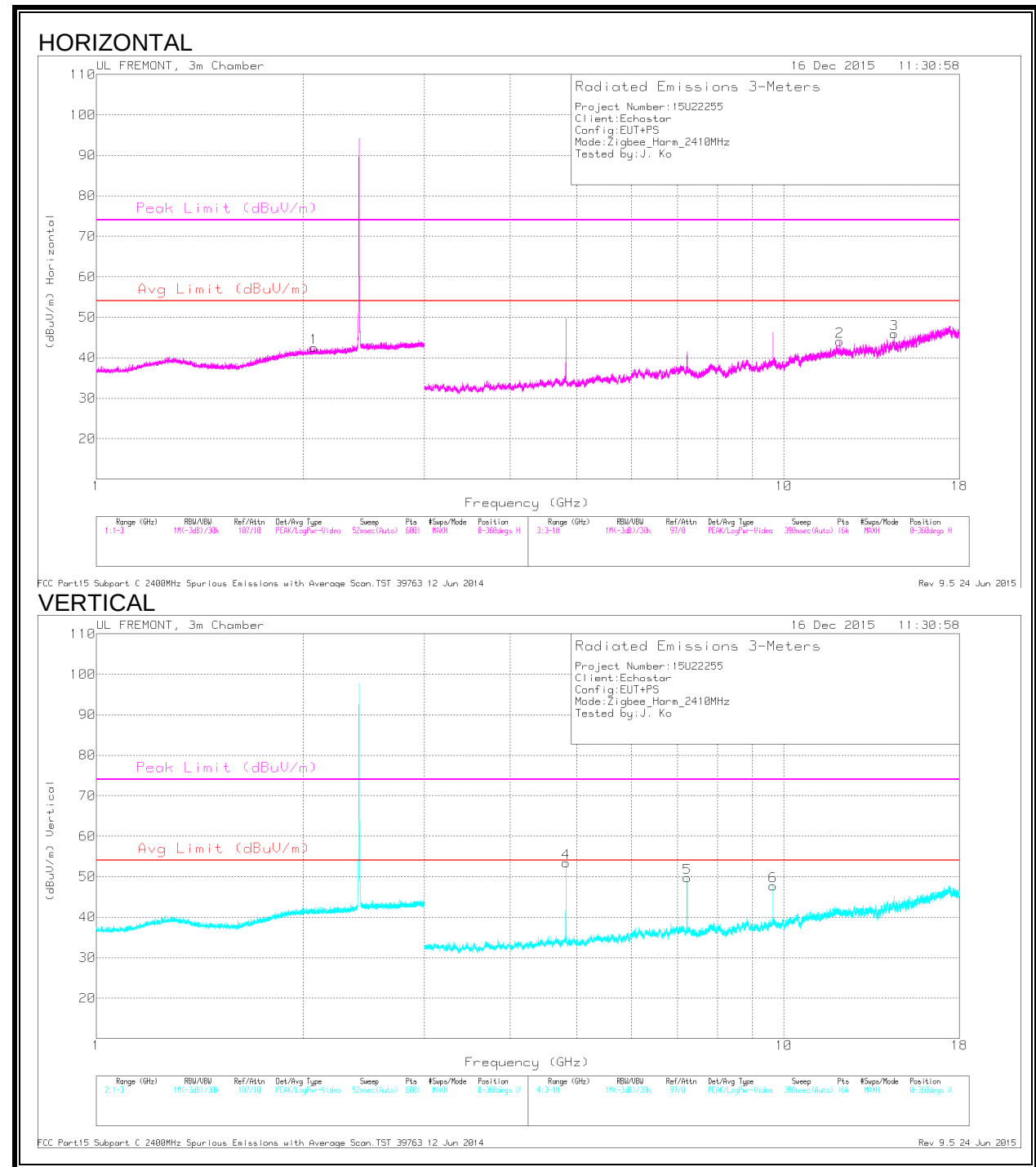
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T345 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 12.028        | 37.56                | PK2  | 38.6           | -25.2                  | 50.96                      | -                  | -           | 74                  | -23.04         | 318            | 108         | H        |
| * 12.028        | 27.7                 | MAV1 | 38.6           | -25.2                  | 41.1                       | 54                 | -12.9       | -                   | -              | 318            | 108         | H        |
| * 4.811         | 54.49                | PK2  | 34.3           | -31.2                  | 57.59                      | -                  | -           | 74                  | -16.41         | 142            | 237         | V        |
| * 4.811         | 49.26                | MAV1 | 34.3           | -31.2                  | 52.36                      | 54                 | -1.64       | -                   | -              | 142            | 237         | V        |
| 2.033           | 32.22                | MAV1 | 32.2           | -24.5                  | 39.92                      | 54                 | -14.08      | -                   | -              | 1              | 199         | H        |
| 2.036           | 44.04                | PK2  | 32.1           | -24.5                  | 51.64                      | -                  | -           | 74                  | -22.36         | 1              | 199         | H        |
| 7.216           | 54.45                | PK2  | 35.3           | -29.6                  | 60.15                      | -                  | -           | 74                  | -13.85         | 144            | 233         | H        |
| 7.216           | 38.41                | MAV1 | 35.3           | -29.6                  | 44.11                      | 54                 | -9.89       | -                   | -              | 144            | 233         | H        |
| 9.618           | 44.62                | PK2  | 36.7           | -26.5                  | 54.82                      | -                  | -           | 74                  | -19.18         | 133            | 243         | V        |
| 9.618           | 37.8                 | MAV1 | 36.7           | -26.5                  | 48                         | 54                 | -6          | -                   | -              | 133            | 243         | V        |
| 14.427          | 40.85                | PK2  | 39.6           | -23.3                  | 57.15                      | -                  | -           | 74                  | -16.85         | 2              | 101         | H        |
| 14.427          | 26.64                | MAV1 | 39.6           | -23.3                  | 42.94                      | 54                 | -11.06      | -                   | -              | 2              | 101         | H        |

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average



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 | AF T119 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | 2.073           | 33.18                | Avg | 31.5           | -22.2                  | 42.48                      | 54                 | -11.52      | -                   | -              | 0-360          | 101         | H        |
| 4      | 4.821           | 48.48                | Avg | 34             | -29.1                  | 53.38                      | 54                 | -.62        | -                   | -              | 0-360          | 100         | V        |
| 5      | 7.229           | 42.22                | Avg | 35.6           | -28.1                  | 49.72                      | 54                 | -4.28       | -                   | -              | 0-360          | 100         | V        |
| 6      | 9.642           | 34.32                | Avg | 36.8           | -23.4                  | 47.72                      | 54                 | -6.28       | -                   | -              | 0-360          | 100         | V        |
| 2      | 12.048          | 28.31                | Avg | 39.1           | -23.4                  | 44.01                      | 54                 | -9.99       | -                   | -              | 0-360          | 100         | H        |
| 3      | 14.457          | 29.7                 | Avg | 39.6           | -23.4                  | 45.9                       | 54                 | -8.1        | -                   | -              | 0-360          | 100         | H        |

Avg - Video bandwidth < Resolution bandwidth

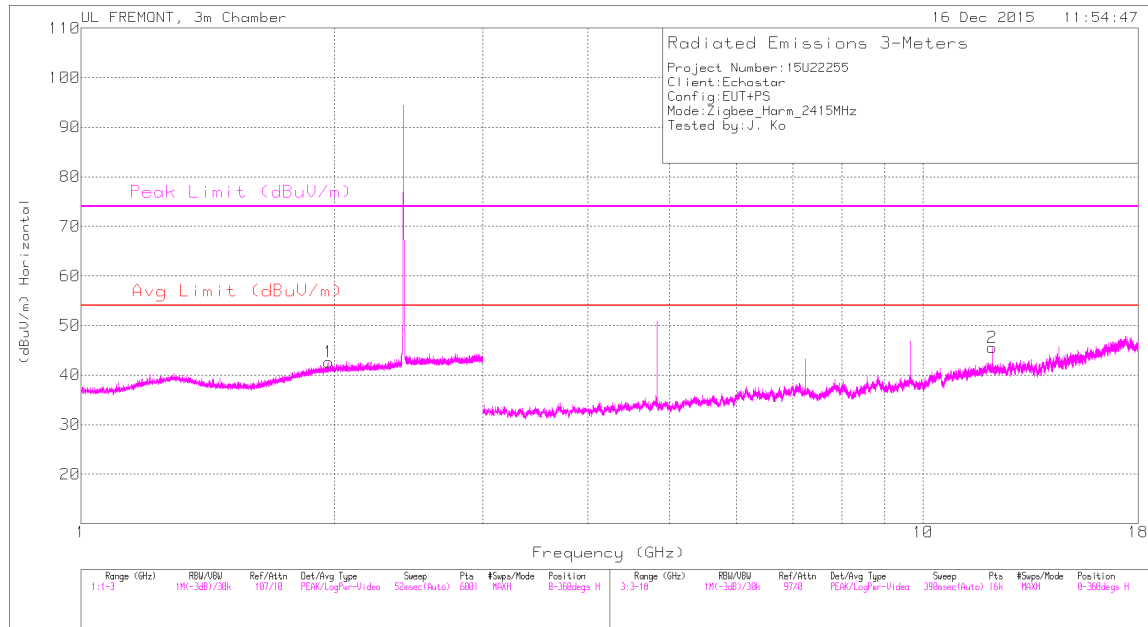
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T119 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2.073           | 30.69                | MAV1 | 31.5           | -22.2                  | 39.99                      | 54                 | -14.01      | -                   | -              | 1              | 100         | H        |
| 2.074           | 42.62                | PK2  | 31.5           | -22.2                  | 51.92                      | -                  | -           | 74                  | -22.08         | 1              | 100         | H        |
| 4.819           | 52.2                 | PK2  | 34             | -29.1                  | 57.1                       | -                  | -           | 74                  | -16.9          | 93             | 116         | H        |
| 4.819           | 46.52                | MAV1 | 34             | -29.1                  | 51.42                      | 54                 | -2.58       | -                   | -              | 93             | 116         | H        |
| 7.228           | 40.36                | MAV1 | 35.6           | -28.1                  | 47.86                      | 54                 | -6.14       | -                   | -              | 93             | 100         | V        |
| 7.229           | 46.89                | PK2  | 35.6           | -28.1                  | 54.39                      | -                  | -           | 74                  | -19.61         | 93             | 100         | V        |
| 9.642           | 37.95                | PK2  | 36.8           | -23.4                  | 51.35                      | -                  | -           | 74                  | -22.65         | 93             | 100         | V        |
| 9.642           | 28.58                | MAV1 | 36.8           | -23.4                  | 41.98                      | 54                 | -12.02      | -                   | -              | 93             | 100         | V        |
| 12.05           | 36.2                 | PK2  | 39.1           | -23.4                  | 51.9                       | -                  | -           | 74                  | -22.1          | 1              | 100         | H        |
| 12.05           | 24.35                | MAV1 | 39.1           | -23.4                  | 40.05                      | 54                 | -13.95      | -                   | -              | 1              | 100         | H        |
| 14.457          | 37.37                | PK2  | 39.6           | -23.4                  | 53.57                      | -                  | -           | 74                  | -20.43         | 1              | 100         | H        |
| 14.457          | 26.23                | MAV1 | 39.6           | -23.4                  | 42.43                      | 54                 | -11.57      | -                   | -              | 1              | 100         | H        |

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

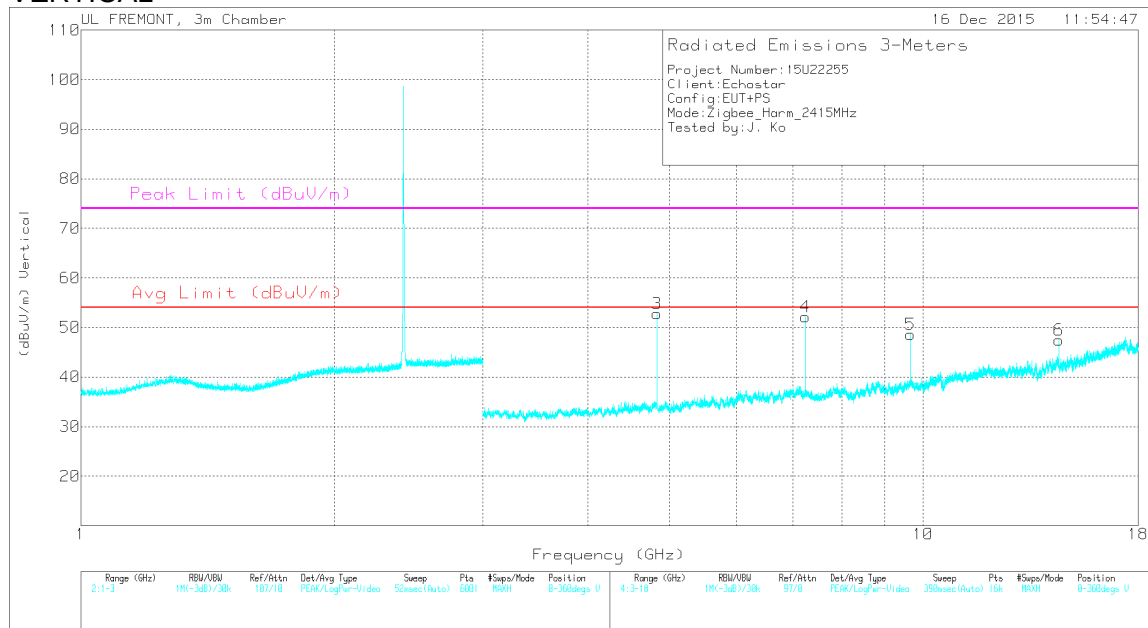
## HORIZONTAL



FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 39763 12 Jun 2014

Rev 9.5 24 Jun 2015

## VERTICAL



FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 39763 12 Jun 2014

Rev 9.5 24 Jun 2015

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 | AF T119 (dB/m) | Amp/Cbl/ Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | 1.969           | 33.68                | Avg | 31.4           | -22.5                   | 42.58                      | 54                 | -11.42      | -                   | -              | 0-360          | 200         | H        |
| 3      | 4.831           | 47.81                | Avg | 34             | -29                     | 52.81                      | 54                 | -1.19       | -                   | -              | 0-360          | 100         | V        |
| 4      | 7.247           | 44.52                | Avg | 35.6           | -28                     | 52.12                      | 54                 | -1.88       | -                   | -              | 0-360          | 100         | V        |
| 5      | 9.661           | 35.25                | Avg | 36.8           | -23.5                   | 48.55                      | 54                 | -5.45       | -                   | -              | 0-360          | 100         | V        |
| 2      | 12.078          | 30.4                 | Avg | 39             | -23.9                   | 45.5                       | 54                 | -8.5        | -                   | -              | 0-360          | 100         | H        |
| 6      | 14.487          | 31.74                | Avg | 39.7           | -24                     | 47.44                      | 54                 | -6.56       | -                   | -              | 0-360          | 100         | V        |

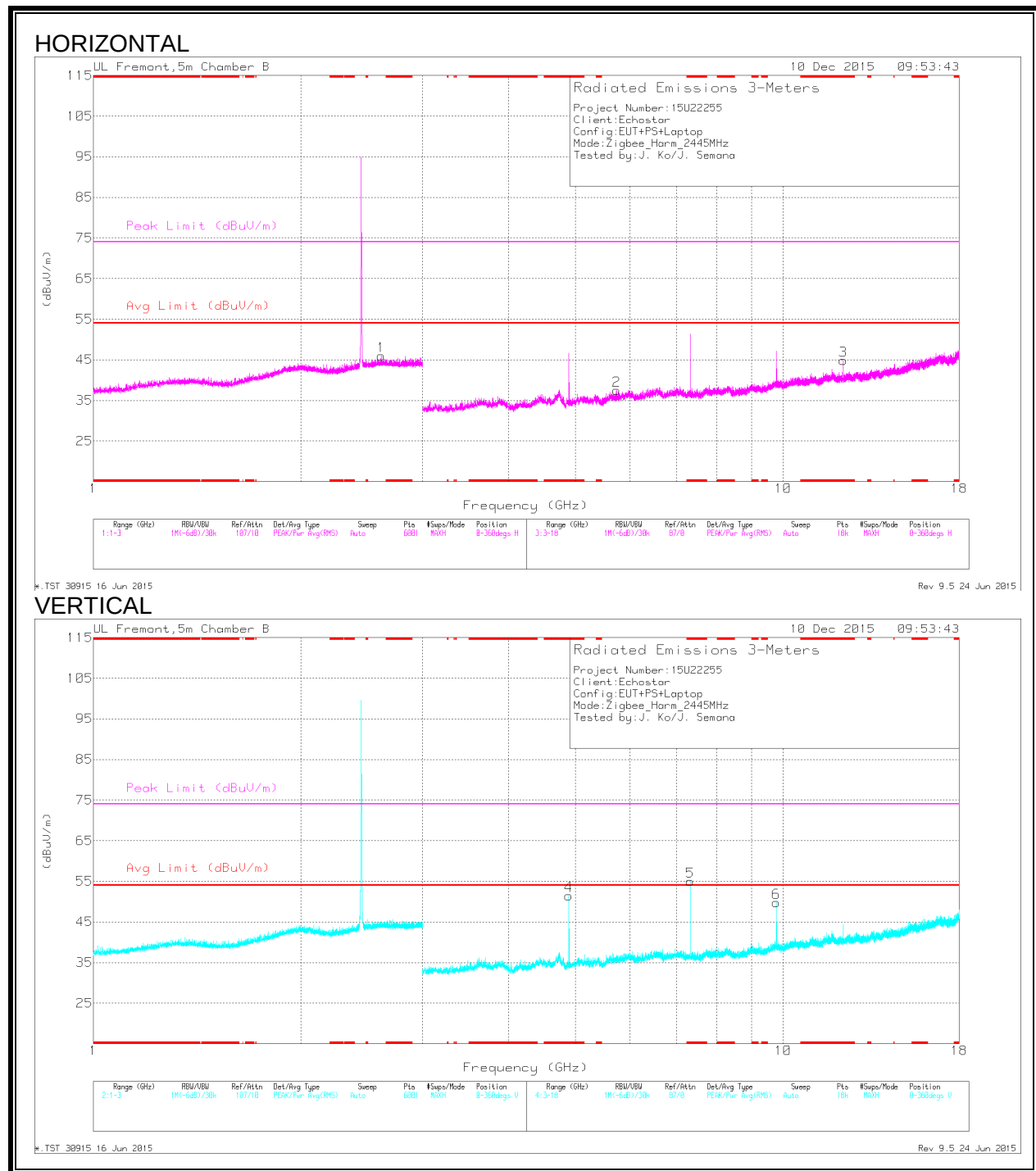
Avg - Video bandwidth < Resolution bandwidth

### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T119 (dB/m) | Amp/Cbl/ Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|-------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1.97            | 42.47                | PK2  | 31.4           | -22.4                   | 51.47                      | -                  | -           | 74                  | -22.53         | 0              | 200         | H        |
| 1.97            | 30.72                | MAv1 | 31.4           | -22.4                   | 39.72                      | 54                 | -14.28      | -                   | -              | 0              | 200         | H        |
| 4.829           | 53.39                | PK2  | 34             | -29.1                   | 58.29                      | -                  | -           | 74                  | -15.71         | 82             | 129         | V        |
| 4.829           | 47.99                | MAv1 | 34             | -29.1                   | 52.89                      | 54                 | -1.11       | -                   | -              | 82             | 129         | V        |
| 7.246           | 50.81                | PK2  | 35.6           | -28                     | 58.41                      | -                  | -           | 74                  | -15.59         | 131            | 106         | V        |
| 7.247           | 44.76                | MAv1 | 35.6           | -28                     | 52.36                      | 54                 | -1.64       | -                   | -              | 131            | 106         | V        |
| 9.662           | 42.43                | PK2  | 36.8           | -23.5                   | 55.73                      | -                  | -           | 74                  | -18.27         | 131            | 100         | V        |
| 9.662           | 35.2                 | MAv1 | 36.8           | -23.5                   | 48.5                       | 54                 | -5.5        | -                   | -              | 131            | 100         | V        |
| 12.078          | 36.63                | PK2  | 39             | -23.9                   | 51.73                      | -                  | -           | 74                  | -22.27         | 0              | 100         | H        |
| 12.08           | 24.81                | MAv1 | 39             | -23.9                   | 39.91                      | 54                 | -14.09      | -                   | -              | 0              | 100         | H        |
| 14.487          | 38.38                | PK2  | 39.7           | -24                     | 54.08                      | -                  | -           | 74                  | -19.92         | 131            | 100         | V        |
| 14.487          | 27.98                | MAv1 | 39.7           | -24                     | 43.68                      | 54                 | -10.32      | -                   | -              | 131            | 100         | V        |

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average



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 | AF T345 (dB/m) | Amp/Cbl/F ltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 3      | * 12.223        | 31.08                | Pk  | 38.6           | -24.8                  | 44.88                      | -                  | -           | 74                  | -29.12         | 0-360          | 101         | H        |
| 4      | * 4.889         | 49.8                 | Pk  | 34.2           | -32.5                  | 51.5                       | -                  | -           | 74                  | -22.5          | 0-360          | 199         | V        |
| 5      | * 7.333         | 49.46                | Pk  | 35.3           | -29.8                  | 54.96                      | -                  | -           | 74                  | -19.04         | 0-360          | 199         | V        |
| 1      | 2.612           | 37.09                | Pk  | 32.8           | -23.9                  | 45.99                      | -                  | -           | -                   | -              | 0-360          | 199         | H        |
| 2      | 5.738           | 34                   | Pk  | 35.1           | -31.6                  | 37.5                       | -                  | -           | -                   | -              | 0-360          | 101         | H        |
| 6      | 9.781           | 38.76                | Pk  | 37             | -26                    | 49.76                      | -                  | -           | -                   | -              | 0-360          | 199         | V        |

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

Pk - Peak detector

### Radiated Emissions

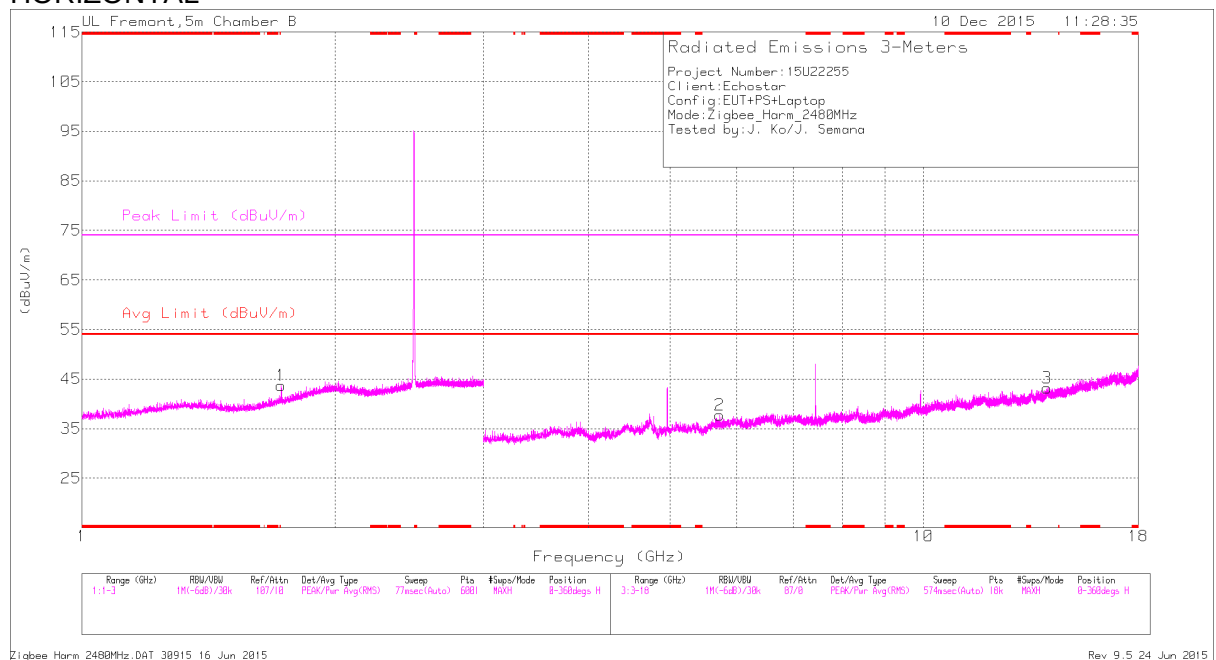
| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T345 (dB/m) | Amp/Cbl/F ltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 12.223        | 40.43                | PK2  | 38.6           | -24.8                  | 54.23                      | -                  | -           | 74                  | -19.77         | 323            | 102         | H        |
| * 12.223        | 31.07                | MAV1 | 38.6           | -24.8                  | 44.87                      | 54                 | -9.13       | -                   | -              | 323            | 102         | H        |
| * 7.333         | 52.53                | PK2  | 35.3           | -29.8                  | 58.03                      | -                  | -           | 74                  | -15.97         | 135            | 320         | V        |
| * 7.334         | 46.97                | MAV1 | 35.3           | -29.8                  | 52.47                      | 54                 | -1.53       | -                   | -              | 135            | 320         | V        |
| * 4.889         | 54.14                | PK2  | 34.2           | -32.5                  | 55.84                      | -                  | -           | 74                  | -18.16         | 149            | 158         | V        |
| * 4.889         | 48.77                | MAV1 | 34.2           | -32.5                  | 50.47                      | 54                 | -3.53       | -                   | -              | 149            | 158         | V        |
| 2.612           | 31.95                | MAV1 | 32.8           | -23.9                  | 40.85                      | 54                 | -13.15      | -                   | -              | 135            | 200         | H        |
| 2.613           | 43.81                | PK2  | 32.8           | -23.9                  | 52.71                      | -                  | -           | 74                  | -21.29         | 135            | 200         | H        |
| 5.738           | 30.18                | MAV1 | 35             | -31.6                  | 33.58                      | 54                 | -20.42      | -                   | -              | 135            | 102         | H        |
| 5.739           | 41.26                | PK2  | 35.1           | -31.6                  | 44.76                      | -                  | -           | 74                  | -29.24         | 135            | 102         | H        |
| 9.782           | 44.49                | PK2  | 37             | -26                    | 55.49                      | -                  | -           | 74                  | -18.51         | 156            | 213         | V        |
| 9.782           | 37.59                | MAV1 | 37             | -26                    | 48.59                      | 54                 | -5.41       | -                   | -              | 156            | 213         | V        |

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

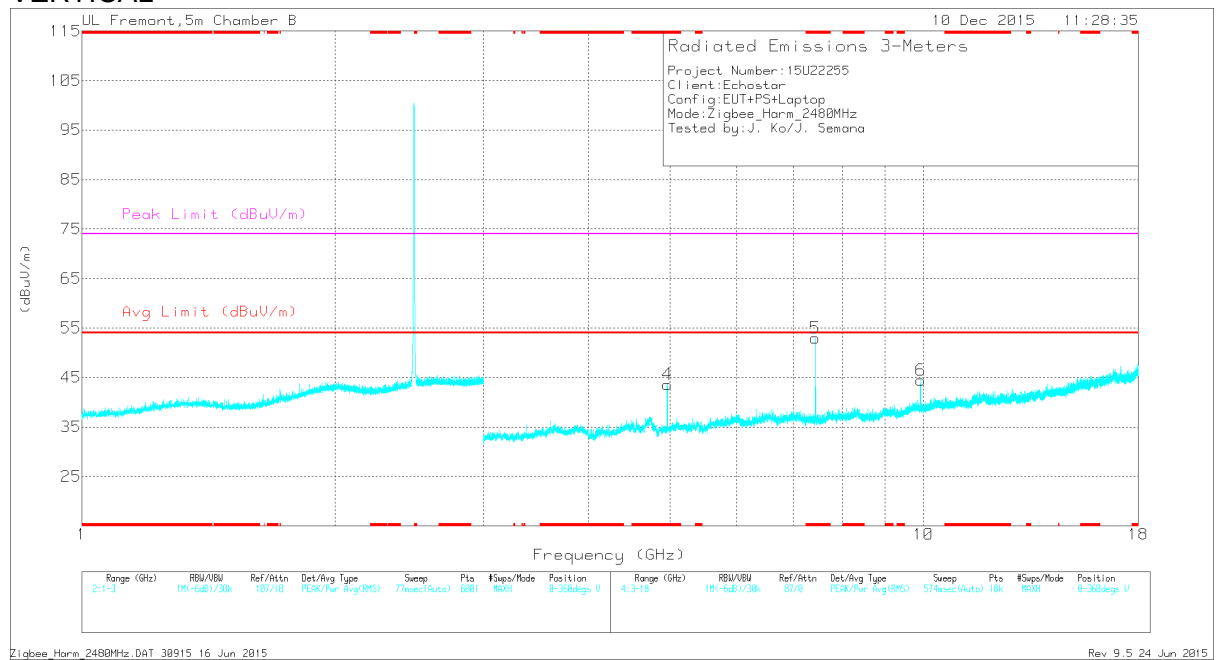
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

## HORIZONTAL



## 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 | AF T345 (dB/m) | Amp/Cbl/F ltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 4      | * 4.961         | 41.43                | Pk  | 34.1           | -31.9                  | 43.63                      | -                  | -           | 74                  | -30.37         | 0-360          | 102         | V        |
| 5      | * 7.441         | 46.82                | Pk  | 35.3           | -29.2                  | 52.92                      | -                  | -           | 74                  | -21.08         | 0-360          | 199         | V        |
| 1      | 1.725           | 38.45                | Pk  | 30             | -24.8                  | 43.65                      | -                  | -           | -                   | -              | 0-360          | 199         | H        |
| 2      | 5.722           | 34.16                | Pk  | 35             | -31.4                  | 37.76                      | -                  | -           | -                   | -              | 0-360          | 199         | H        |
| 6      | 9.921           | 33.58                | Pk  | 37.1           | -26.2                  | 44.48                      | -                  | -           | -                   | -              | 0-360          | 199         | V        |
| 3      | 14.024          | 27.54                | Pk  | 39.1           | -23.4                  | 43.24                      | -                  | -           | -                   | -              | 0-360          | 199         | H        |

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

Pk - Peak detector

### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T345 (dB/m) | Amp/Cbl/F ltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 7.441         | 49.61                | PK2  | 35.3           | -29.2                  | 55.71                      | -                  | -           | 74                  | -18.29         | 133            | 282         | V        |
| * 7.441         | 43.34                | MAV1 | 35.3           | -29.2                  | 49.44                      | 54                 | -4.56       | -                   | -              | 133            | 282         | V        |
| * 4.961         | 48.16                | PK2  | 34.1           | -31.9                  | 50.36                      | -                  | -           | 74                  | -23.64         | 308            | 137         | V        |
| * 4.959         | 40.24                | MAV1 | 34.1           | -32                    | 42.34                      | 54                 | -11.66      | -                   | -              | 308            | 137         | V        |
| 1.724           | 43.86                | PK2  | 30             | -24.8                  | 49.06                      | -                  | -           | 74                  | -24.94         | 1              | 198         | H        |
| 1.726           | 32.58                | MAV1 | 30             | -24.8                  | 37.78                      | 54                 | -16.22      | -                   | -              | 1              | 198         | H        |
| 5.722           | 30.33                | MAV1 | 35             | -31.4                  | 33.93                      | 54                 | -20.07      | -                   | -              | 1              | 198         | H        |
| 5.723           | 41.47                | PK2  | 35             | -31.4                  | 45.07                      | -                  | -           | 74                  | -28.93         | 1              | 198         | H        |
| 9.922           | 41.1                 | PK2  | 37.1           | -26.2                  | 52                         | -                  | -           | 74                  | -22            | 135            | 186         | V        |
| 9.922           | 32.58                | MAV1 | 37.1           | -26.2                  | 43.48                      | 54                 | -10.52      | -                   | -              | 135            | 186         | V        |
| 14.023          | 35.37                | PK2  | 39.1           | -23.4                  | 51.07                      | -                  | -           | 74                  | -22.93         | 1              | 198         | H        |
| 14.025          | 24.17                | MAV1 | 39.1           | -23.4                  | 39.87                      | 54                 | -14.13      | -                   | -              | 1              | 198         | H        |

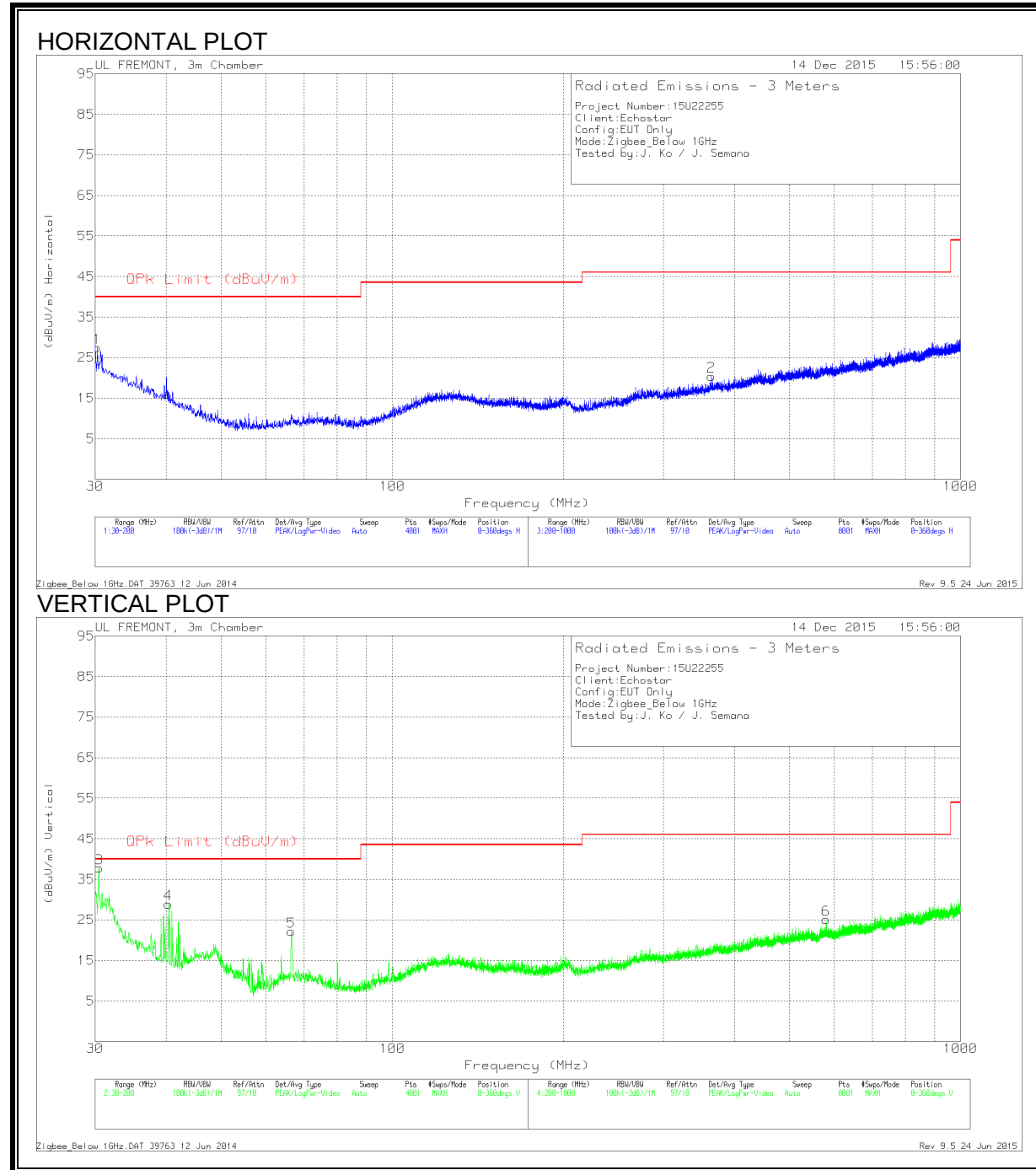
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

## 8.8. WORST-CASE BELOW 1 GHz

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



## Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T185 (dB/m) | Amp/Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 1      | 30.255          | 33.05                | Pk  | 21.6           | -27.2        | 27.45                      | 40                 | -12.55      | 0-360          | 200         | H        |
| 3      | 30.4675         | 43.59                | Pk  | 21.4           | -27.2        | 37.79                      | 40                 | -2.21       | 0-360          | 100         | V        |
| 4      | 40.3275         | 41.96                | Pk  | 14             | -27          | 28.96                      | 40                 | -11.04      | 0-360          | 100         | V        |
| 5      | 66.4225         | 40.75                | Pk  | 8.1            | -26.7        | 22.15                      | 40                 | -17.85      | 0-360          | 100         | V        |
| 2      | 364.3           | 30.16                | Pk  | 14.9           | -24.6        | 20.46                      | 46.02              | -25.56      | 0-360          | 400         | H        |
| 6      | 580.15          | 31.14                | Pk  | 18.7           | -24.8        | 25.04                      | 46.02              | -20.98      | 0-360          | 300         | V        |

Pk - Peak detector

## Radiated Emissions

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF T185 (dB/m) | Amp/Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 30.0564         | 33.31                | Qp  | 21.7           | -27.3        | 27.71                      | 40                 | -12.29      | 274            | 159         | V        |

Qp - Quasi-Peak detector

## 9. POWER SETTING TABLE

| Output Peak Power in dBm |           | Channel ID   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   |
|--------------------------|-----------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| SKU                      | Countries | Center Freq. | 2405 | 2410 | 2415 | 2420 | 2425 | 2430 | 2435 | 2440 | 2445 | 2450 | 2455 | 2460 | 2465 | 2470 | 2475 | 2480 |
| SISO                     | US & IC   | Zigbee       | 4.9  | 5.27 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | -2.8 |