



**FCC 47 CFR PART 15 SUBPART C**

**BLUETOOTH LOW ENERGY  
CERTIFICATION TEST REPORT**

**FOR**

**WIRELESS CHARGING BOWL**

**MODEL NUMBER:  
WIRELESS CHARGING BOWL**

**FCC ID: 2AB8ZND3**

**REPORT NUMBER: 14U19569-E2, Revision B**

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**NVLAP LAB CODE 200065-0**

Revision History

| Rev. | Issue Date | Revisions                                                                  | Revised By |
|------|------------|----------------------------------------------------------------------------|------------|
| --   | 12/12/2014 | Initial Issue                                                              | T. LEE     |
| A    | 12/22/2014 | Adding antenna for measurements from 18 – 25GHz in the test equipment list | M. Hua     |
| B    | 12/23/2014 | Corrected Test Methodology on Section 10                                   | M. Hua     |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Intel Corporation  
2200 Mission College Boulevard  
Santa Clara, Ca 95052, U.S.A

**EUT DESCRIPTION:** Wireless Charging Bowl

**MODEL:** Wireless Charging Bowl

**SERIAL NUMBER:** Not Available

**DATE TESTED:** DECEMBER 6 -11, 2014

| APPLICABLE STANDARDS     |              |
|--------------------------|--------------|
| STANDARD                 | TEST RESULTS |
| CFR 47 Part 15 Subpart C | 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.

Approved & Released For  
UL Verification Services Inc. By:

Tested By:



TIM LEE  
PROGRAM MANAGER  
UL Verification Services Inc.



TRI PHAM  
EMC LAB ENGINEER  
UL Verification Services Inc.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, and FCC CFR 47 Part 15.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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 | <input type="checkbox"/> Chamber D            |
| <input type="checkbox"/> Chamber B | <input type="checkbox"/> Chamber E            |
| <input type="checkbox"/> Chamber C | <input type="checkbox"/> Chamber F            |
|                                    | <input checked="" type="checkbox"/> Chamber G |
|                                    | <input checked="" type="checkbox"/> Chamber H |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

## 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:

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

### 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 | $\pm 3.52$ dB |
| Radiated Disturbance, 30 to 1000 MHz  | $\pm 4.94$ dB |

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

## EQUIPMENT UNDER TEST

### 4.4. DESCRIPTION OF EUT

The EUT is a wireless charger intended to charge Intel smart bracelet, Model MICA.

### 4.5. 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) |
|--------------------------|------|-----------------------|----------------------|
| 2402 - 2480              | BLE  | -0.24                 | 0.95                 |

### 4.6. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an Inverted-F antenna (IFA), with a maximum gain of 2.0 dBi.

### 4.7. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was xmm6321\_xges2\_ndg\_mckee2

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

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

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

Worst-case data rates based on the baseline scan:  
BLE: 1 Mbps.

## 4.9. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |       |                            |        |
|------------------------|--------------|-------|----------------------------|--------|
| Description            | Manufacturer | Model | Serial Number              | FCC ID |
| DC Power Supply        | Darfon       | 1901  | BK1A45J101-14A2-45-S-00022 | N/A    |

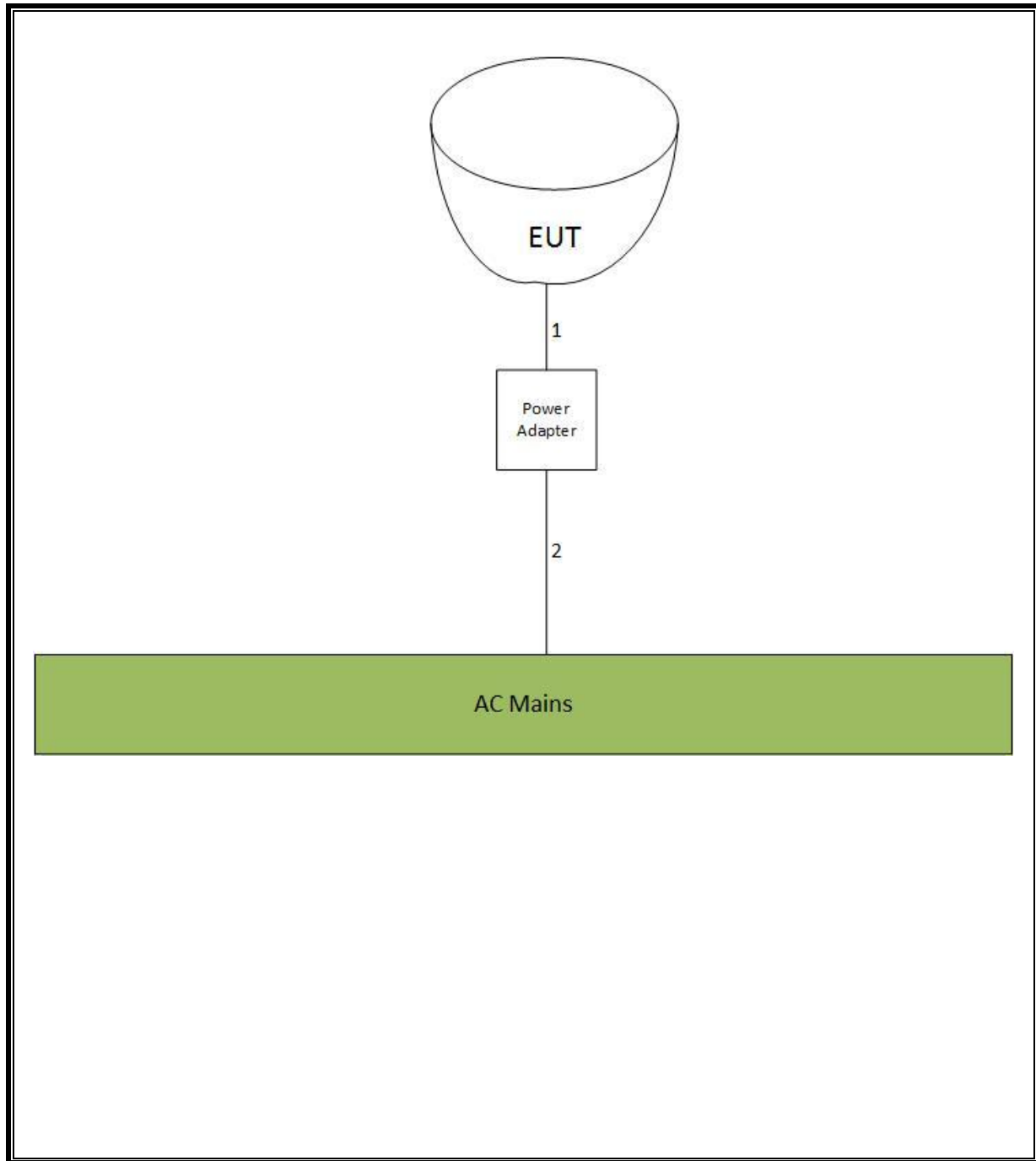
### I/O CABLES

| I/O Cable List |      |                      |                |            |                  |         |
|----------------|------|----------------------|----------------|------------|------------------|---------|
| Cable No       | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1              | DC   | 1                    | Barrel         | Unshielded | 1.7              |         |
| 2              | AC   | 2                    | 3 Prong        | Unshielded | 0.9              |         |

### TEST SETUP

Test software exercised the EUT during test. Refer to the following diagram for testing configurations.

**SETUP DIAGRAM FOR TESTS**



## 5. 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  | Serial Number | Cal Due  |
| Antenna, Horn 1-18GHz                                | ETS Lindgren   | 3117   | 165319        | 04/14/15 |
| Antenna, Horn 18-26.5GHz                             | ARA            | SWH-28 | 1007          | 05/9/15  |
| Spectrum Analyzer, PXA, 3Hz-44GHz                    | Agilent        | N9030A | MY53310959    | 05/07/15 |
| Antenna, Broadband Hybrid, 30Mhz - 2000Mhz           | Sunol Sciences | JB3    | A051314-1     | 03/28/15 |
| Power Meter, P-series single channel                 | Agilent        | N1911A | MY53060007    | 09/15/15 |
| Power Sensor, Peak and average, 50MHz-6 GHz, 5MHz BW | Agilent        | E9323A | MY530770013   | 05/02/15 |

### Line Conducted Emissions

| Test Equipment List             |                 |                  |                      |            |            |
|---------------------------------|-----------------|------------------|----------------------|------------|------------|
| Description                     | Manufacturer    | Model            | Local ID (T No.)     | Cal Date   | Cal Due    |
| EMI Test Receiver, 9KHz to 7GHz | Rohde & Schwarz | ESCI 7           | 284                  | 09/16/2014 | 09/16/2015 |
| LISN                            | FCC             | 50/250-25-2      | 24                   | 01/17/2014 | 01/17/2015 |
| LISN                            | Solar           | 8012-50-R-24-BNC | 29                   | 05/07/2014 | 05/07/2015 |
| Thermometer                     | Cole-Palmer     | 99760-00         | 437                  | 04/08/2014 | 04/08/2015 |
| Conducted Software              | UL              | UL EMC           | Ver 9.5, May 17 2012 |            |            |

## 6. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v03r02

Output Power: KDB 558074 D01 v03r02.

Power Spectral Density: KDB 558074 D01 v03r02.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r02.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02.

## 7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

### LIMITS

None; for reporting purposes only.

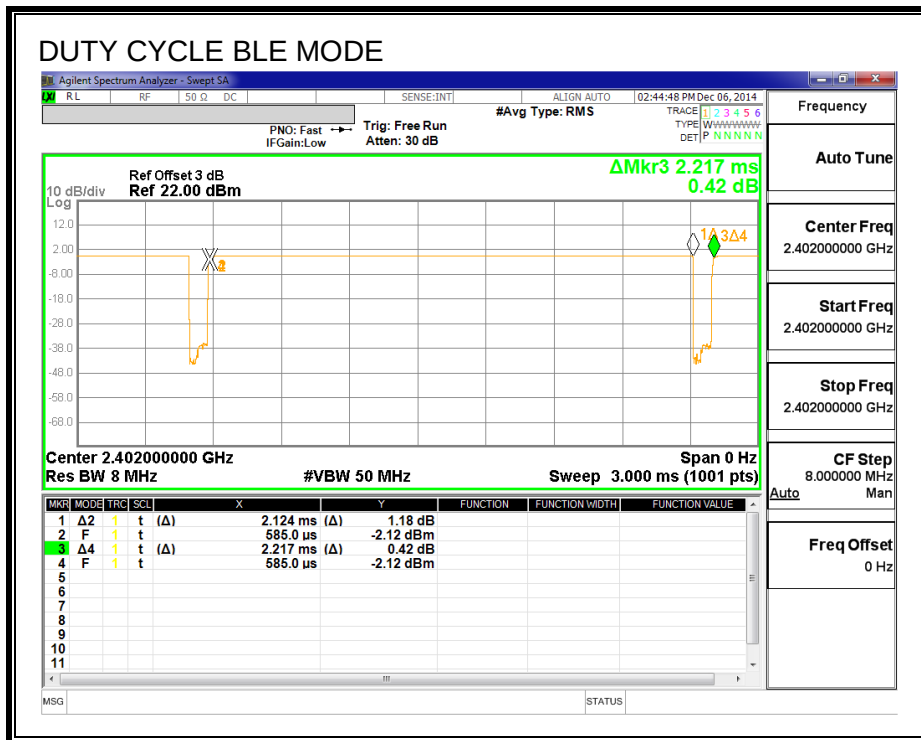
### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 7.1. 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) |
|------|------------------------|------------------|-----------------------------|----------------------|-----------------------------------------|-----------------------------|
| BLE  | 2.124                  | 2.217            | 0.958                       | 95.8%                | 0.186                                   | 0.471                       |

## DUTY CYCLE PLOT



## 8. ANTENNA PORT TEST RESULTS

### 8.1. 6 dB BANDWIDTH

#### LIMITS

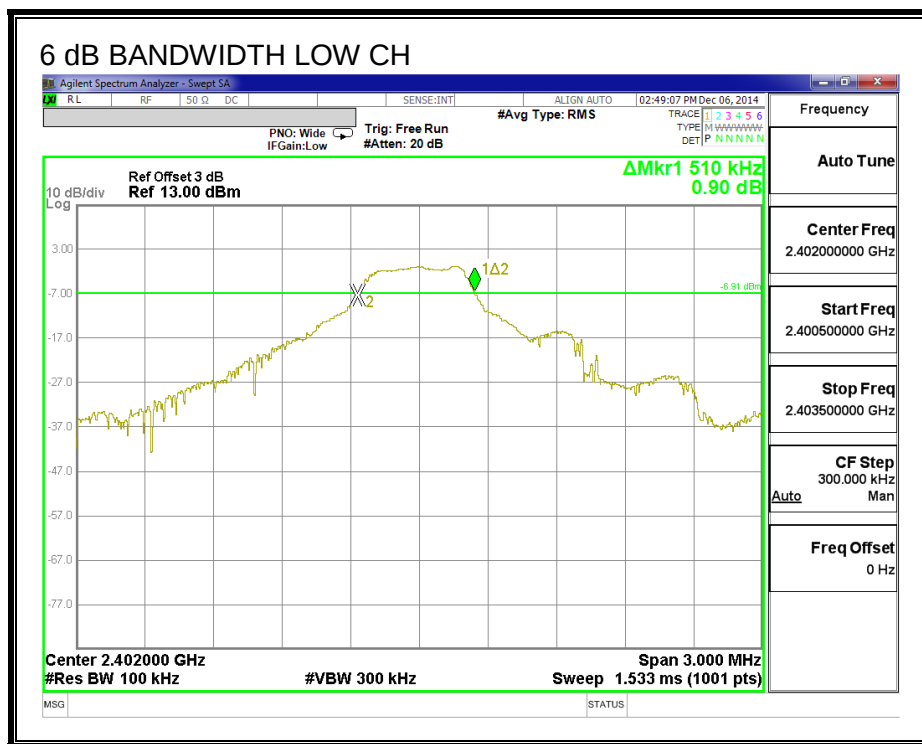
FCC §15.247 (a) (2)

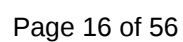
The minimum 6 dB bandwidth shall be at least 500 kHz.

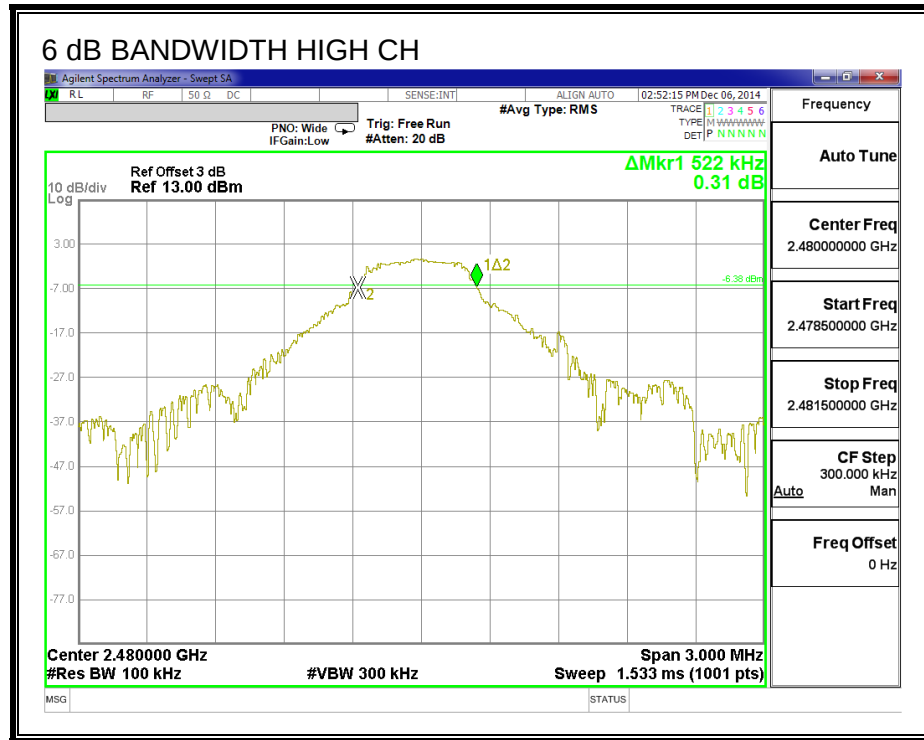
#### RESULTS

| Channel | Frequency<br>(MHz) | 6 dB Bandwidth<br>(MHz) | Minimum Limit<br>(MHz) |
|---------|--------------------|-------------------------|------------------------|
| Low     | 2402               | 0.5100                  | 0.5                    |
| Middle  | 2440               | 0.5520                  | 0.5                    |
| High    | 2480               | 0.5220                  | 0.5                    |

## 6 dB BANDWIDTH







## 8.2. 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

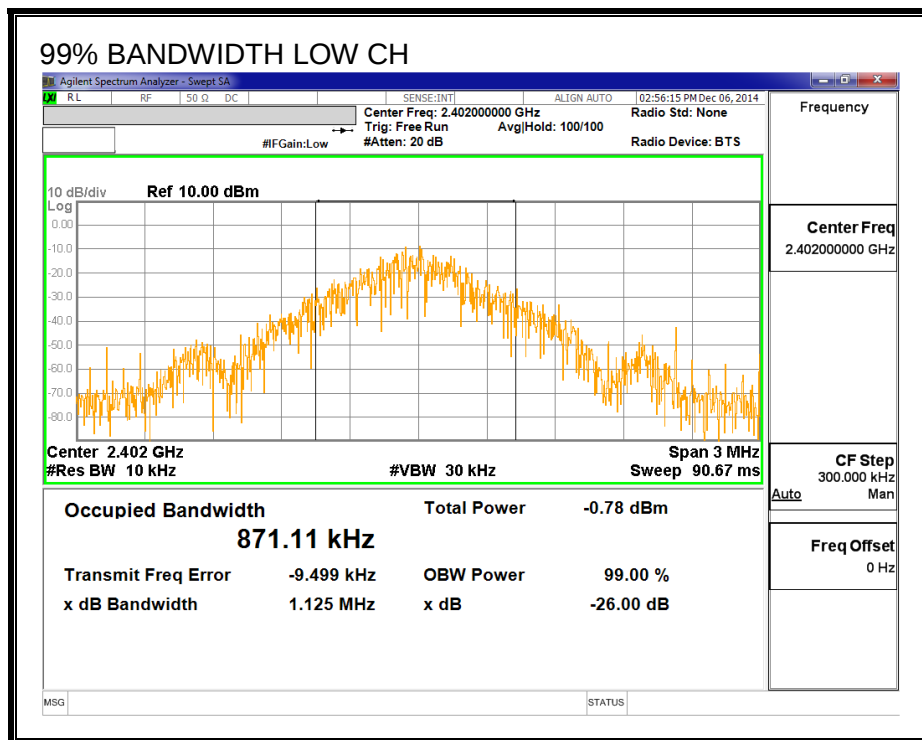
### TEST PROCEDURE

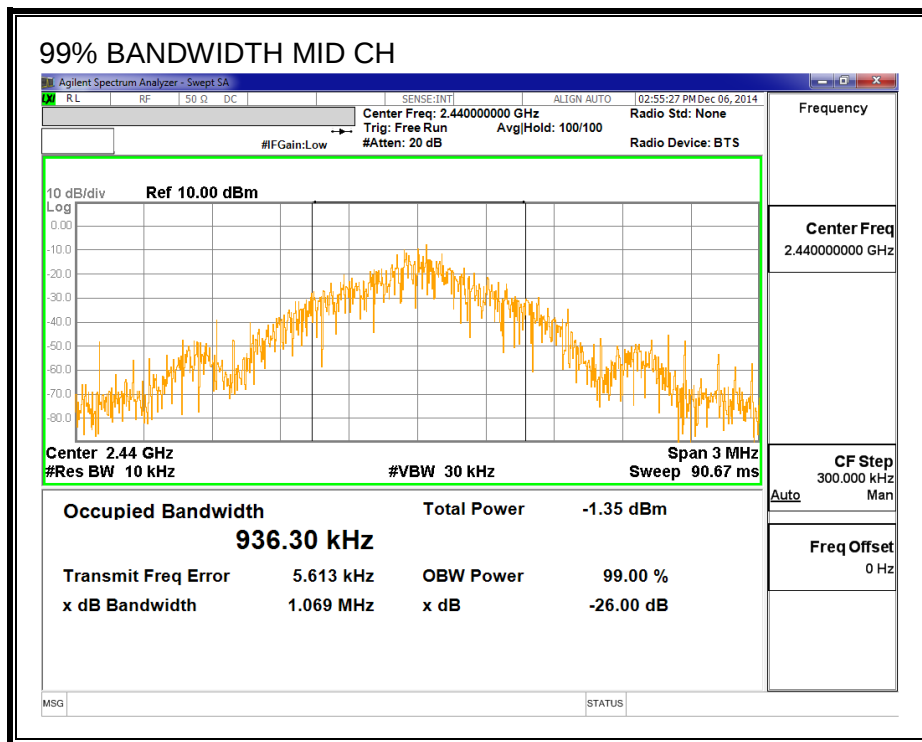
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

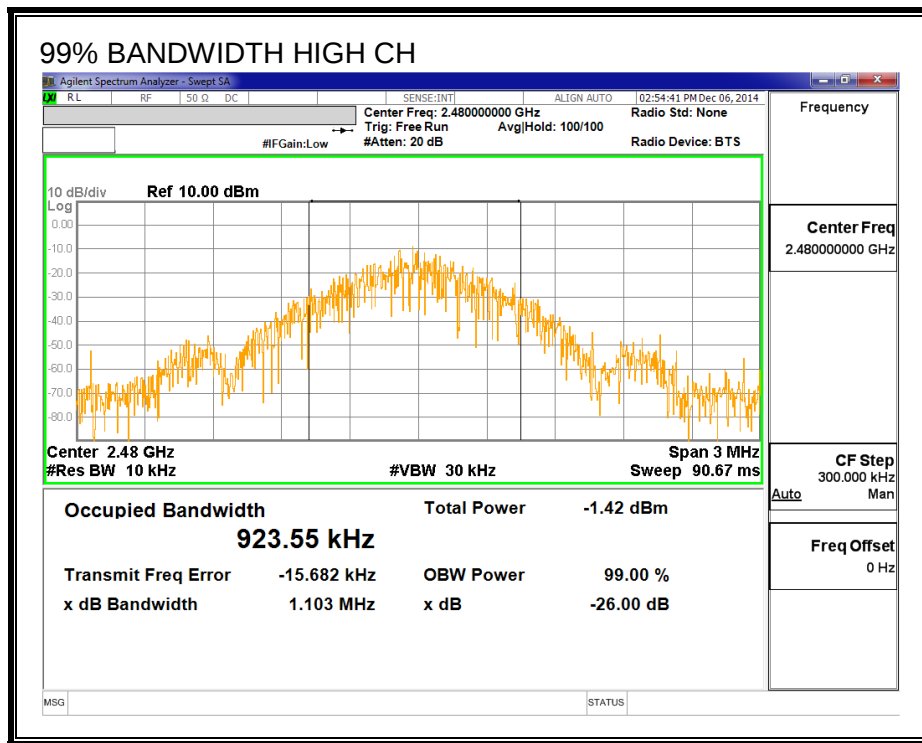
### RESULTS

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|---------------------|
| Low     | 2402            | 0.871               |
| Middle  | 2440            | 0.936               |
| High    | 2480            | 0.923               |

**99% BANDWIDTH**







### 8.3. 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

KDB 558074 D01 v03r02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

#### RESULTS

| Channel | Frequency<br>(MHz) | Peak Power<br>Reading<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|----------------|----------------|
| Low     | 2402               | -0.814                         | 30             | -30.814        |
| Middle  | 2440               | -0.695                         | 30             | -30.695        |
| High    | 2480               | -0.240                         | 30             | -30.240        |

## 8.4. AVERAGE POWER

### LIMITS

None; for reporting purposes only.

### RESULTS

The cable assembly insertion loss of 3 dB (including 3 dB pad) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | AV power (dBm) |
|---------|-----------------|----------------|
| Low     | 2402            | -0.97          |
| Middle  | 2440            | -0.65          |
| High    | 2480            | -0.3           |

## 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.

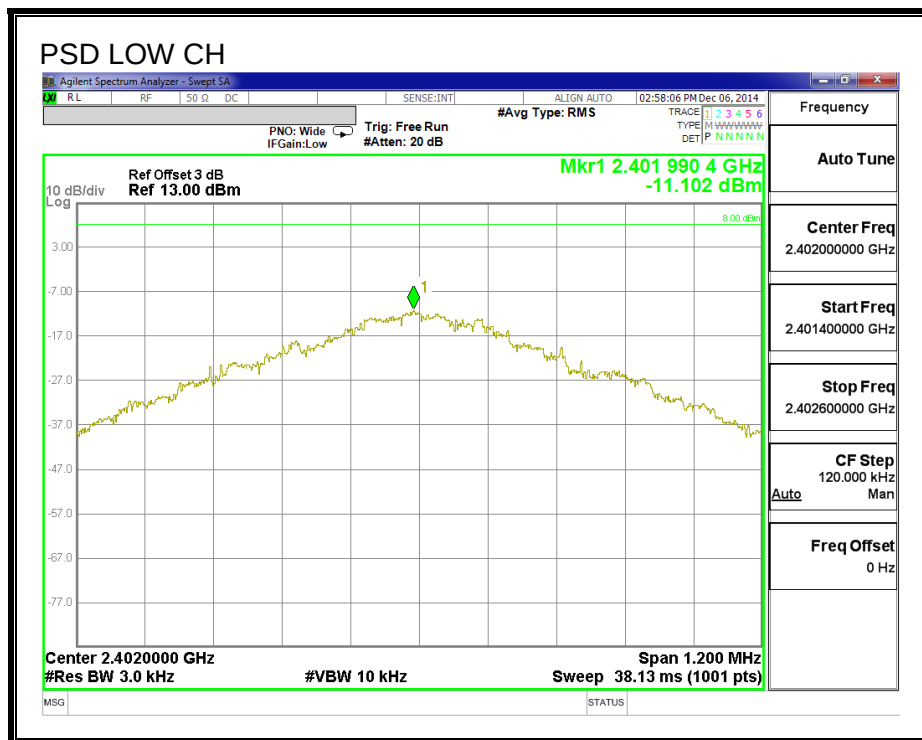
### TEST PROCEDURE

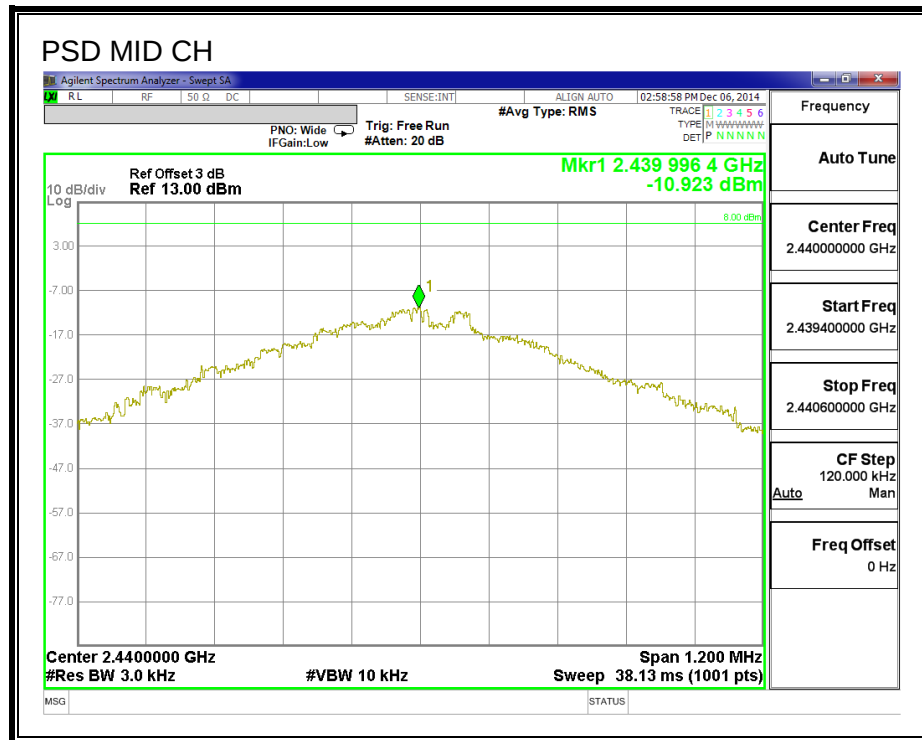
KDB 558074 D01 v03r02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

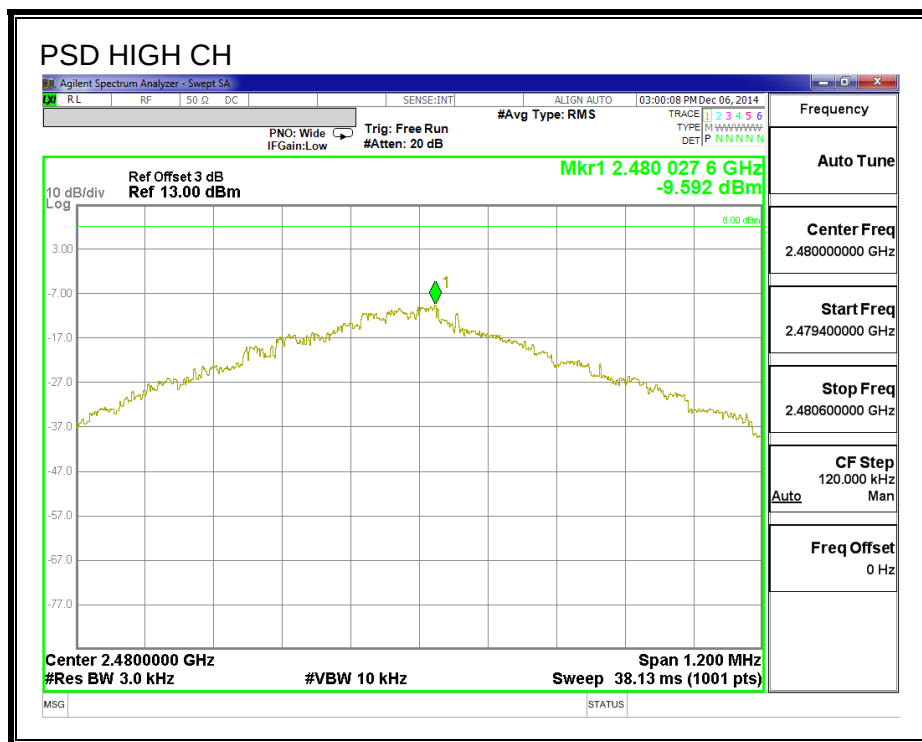
### RESULTS

| Channel | Frequency (MHz) | PSD (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-----------|-------------|-------------|
| Low     | 2402            | -11.10    | 8           | -19.10      |
| Middle  | 2440            | -10.92    | 8           | -18.92      |
| High    | 2480            | -9.59     | 8           | -17.59      |

# **POWER SPECTRAL DENSITY**







## **8.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

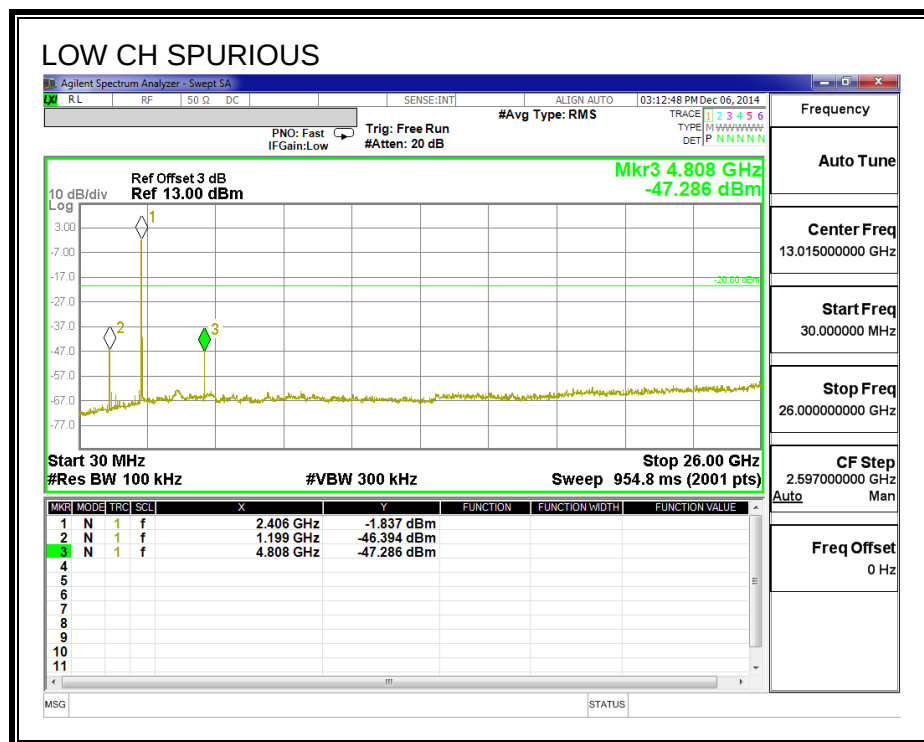
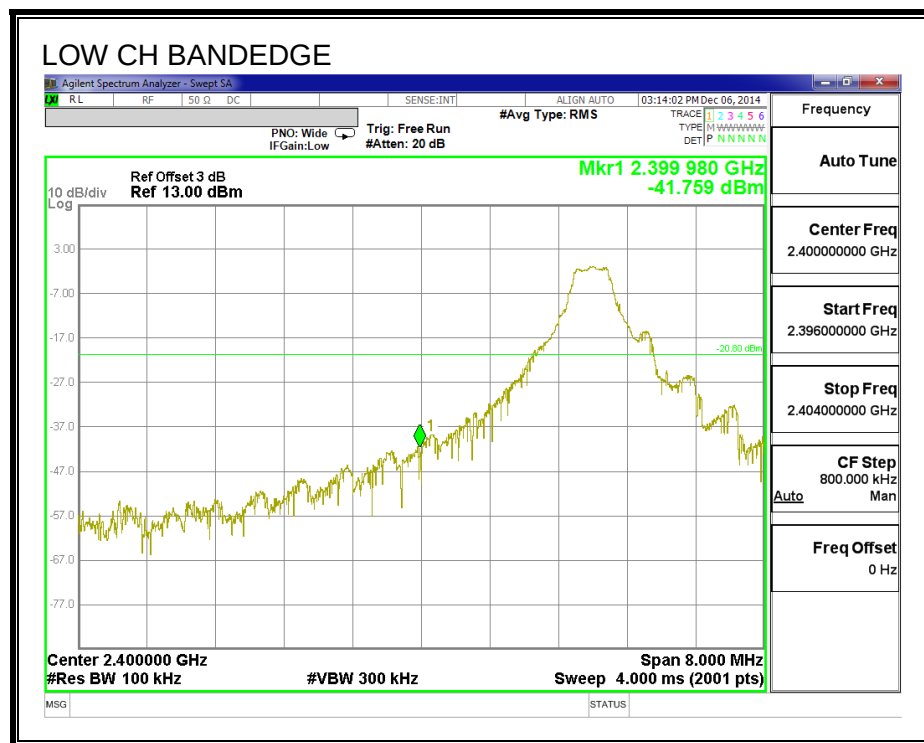
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

### **TEST PROCEDURE**

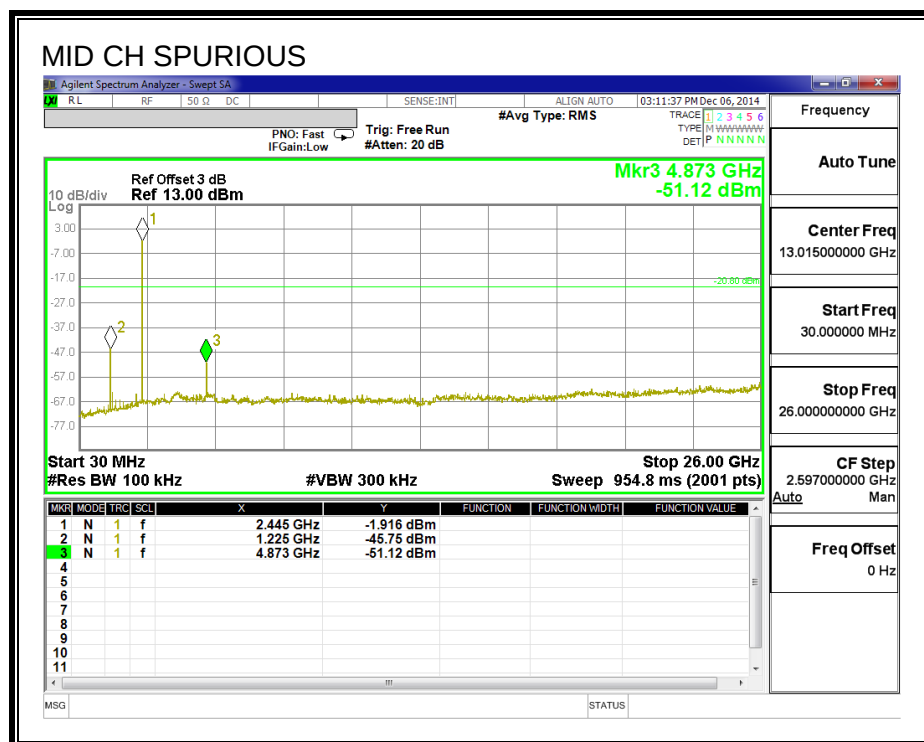
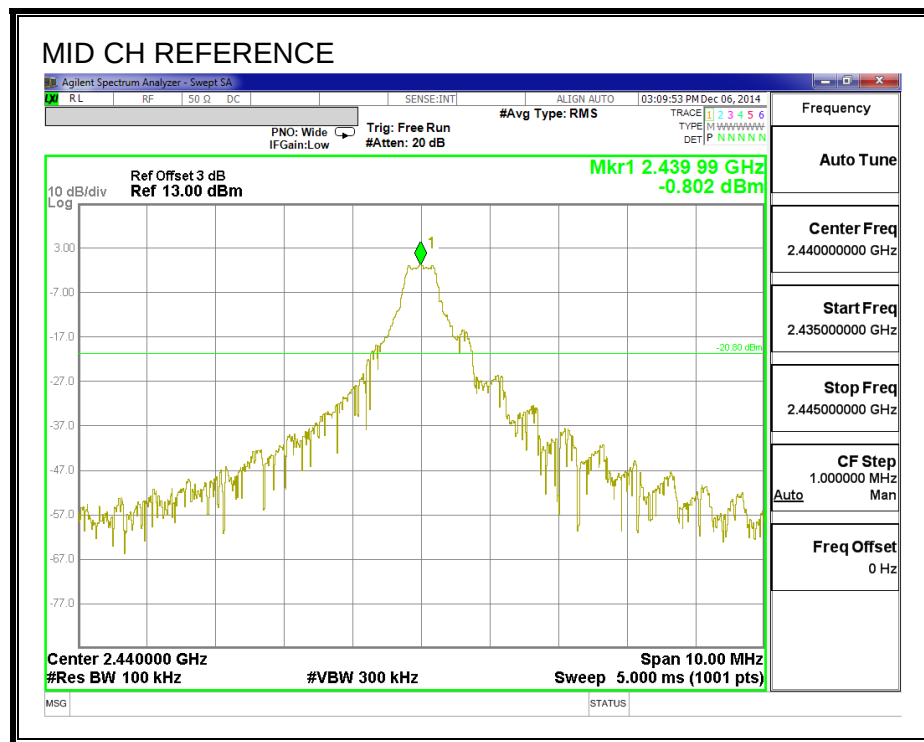
KDB 558074 D01 v03r02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

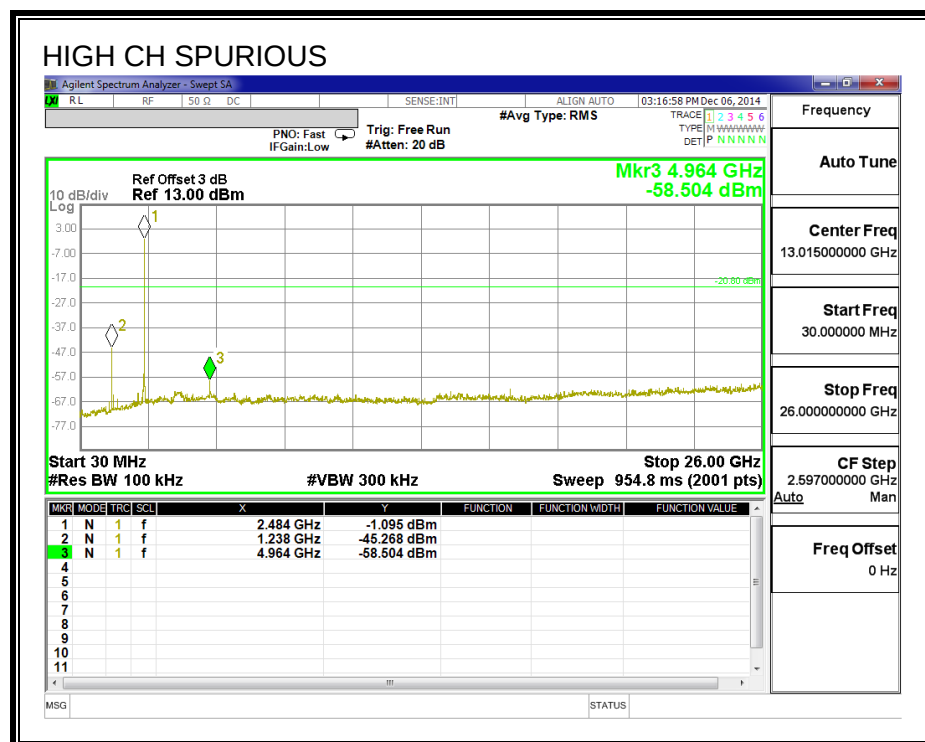
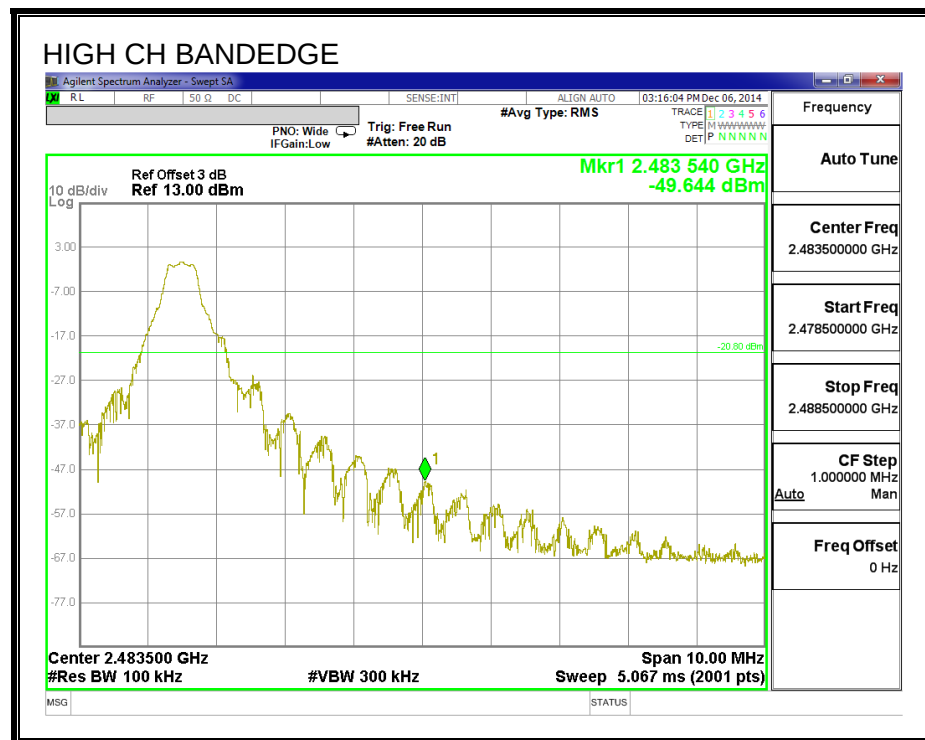
## RESULTS

### SPURIOUS EMISSIONS, LOW CHANNEL



## SPURIOUS EMISSIONS, MID CHANNEL





## 9. RADIATED TEST RESULTS

### 9.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

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

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10-2009,. 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.

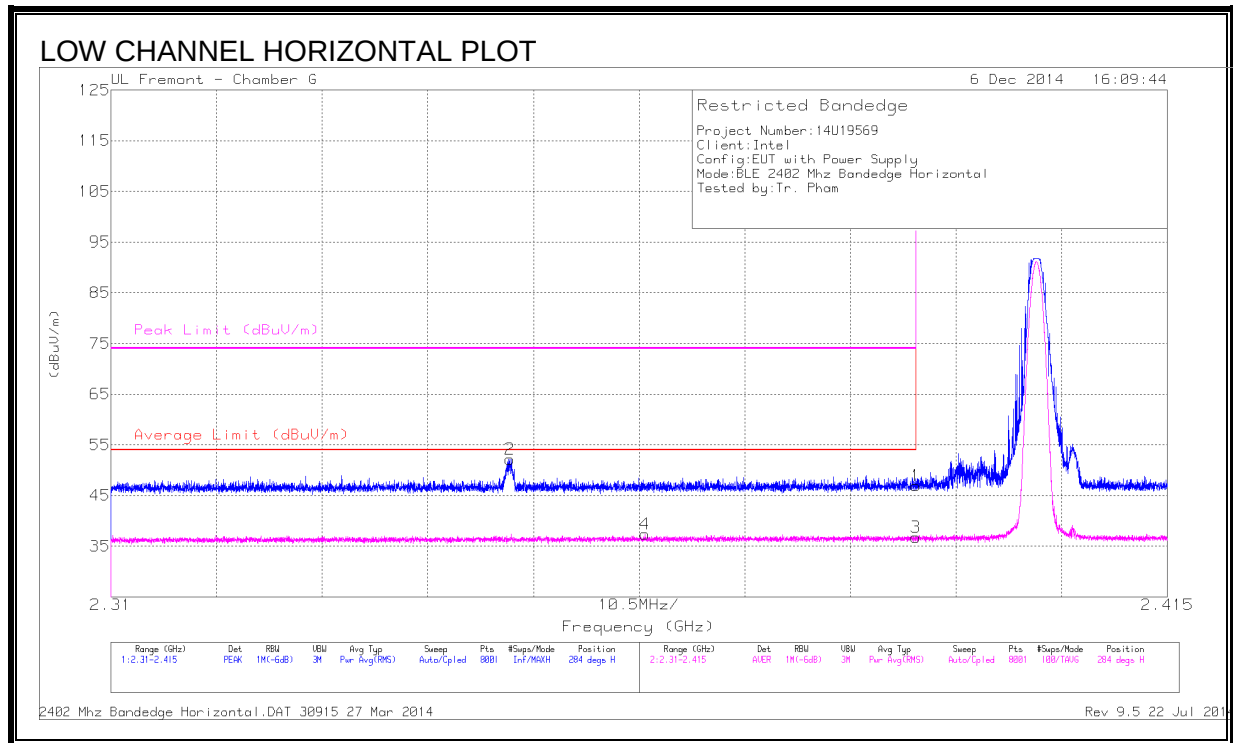
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

For 2.4 GHz band, the spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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

## 9.2. TRANSMITTER ABOVE 1 GHz

### RESTRICTED BANDEDGE (LOW CHANNEL)



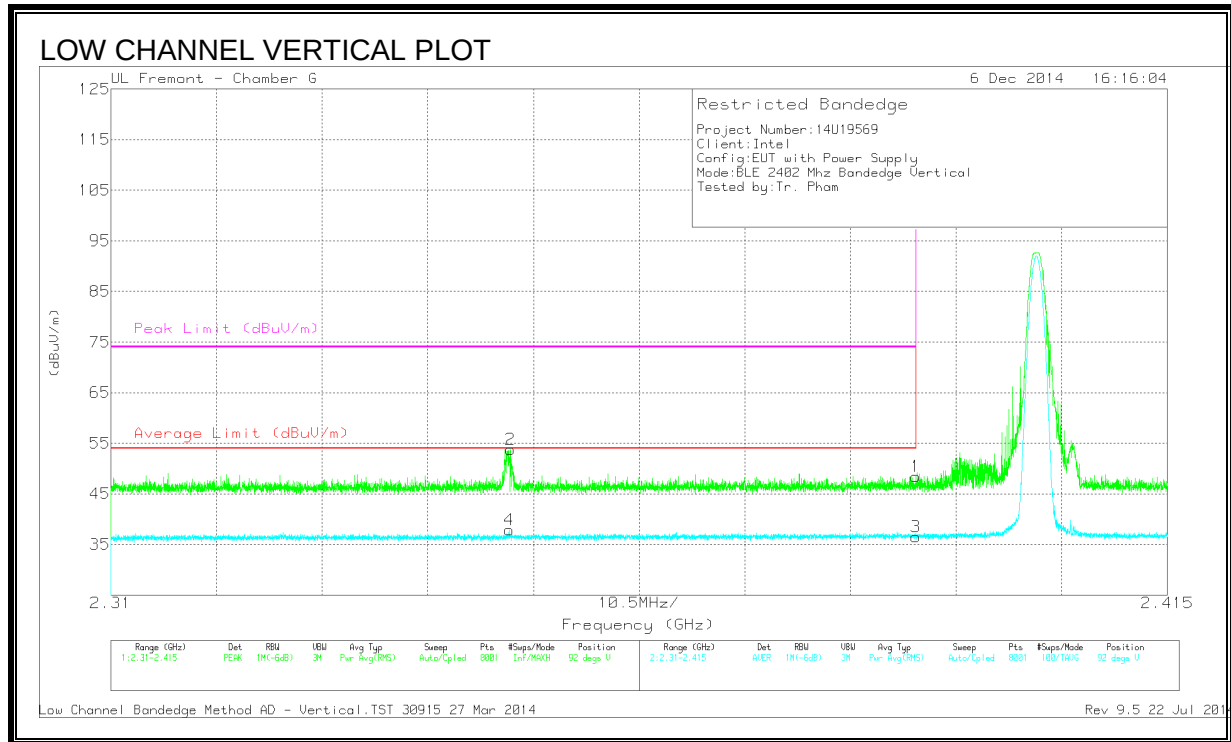
### DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2      | * 2.35          | 45.51                | PK  | 31.7           | -25                    | 0            | 52.21                      | -                      | -           | 74                  | -21.79         | 284            | 333         | H        |
| 4      | * 2.363         | 30.55                | RMS | 31.7           | -24.9                  | .186         | 37.536                     | 54                     | -16.46      | -                   | -              | 284            | 333         | H        |
| 1      | * 2.39          | 40.06                | PK  | 31.8           | -24.9                  | 0            | 46.96                      | -                      | -           | 74                  | -27.04         | 284            | 333         | H        |
| 3      | * 2.39          | 29.84                | RMS | 31.8           | -24.9                  | .186         | 36.926                     | 54                     | -17.07      | -                   | -              | 284            | 333         | H        |

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

PK - Peak detector

RMS - RMS detection



## DATA

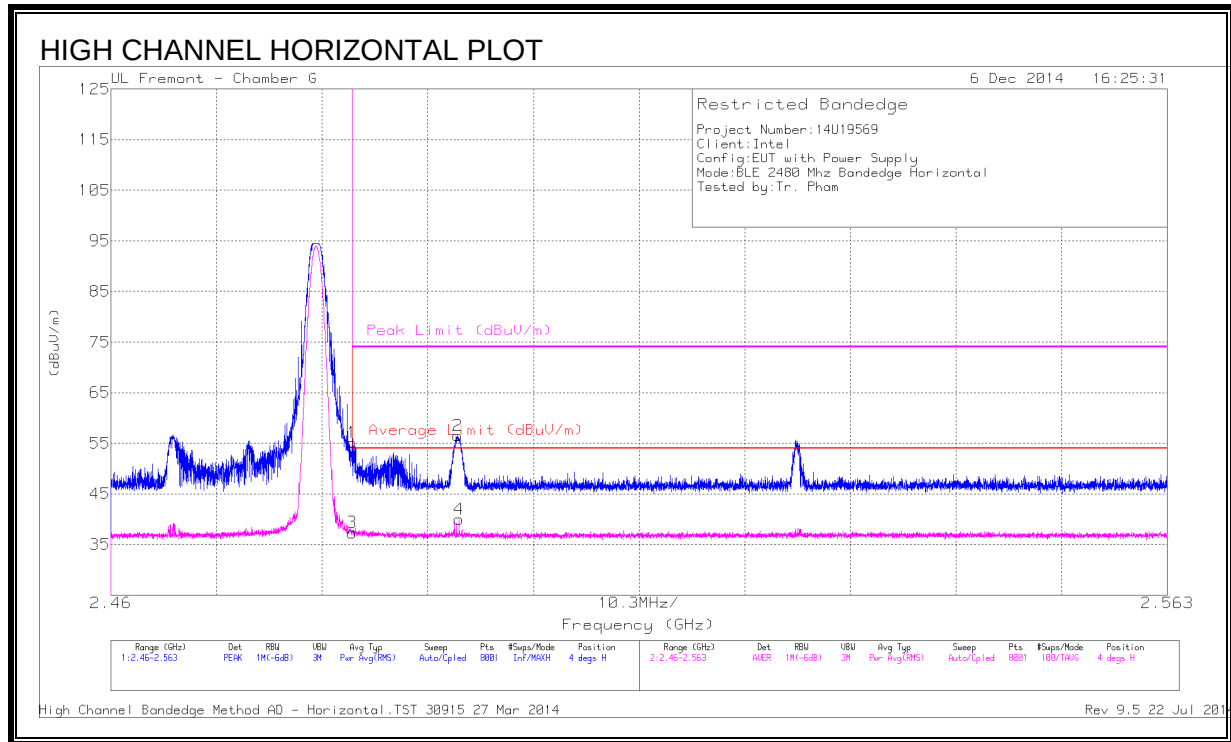
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 41.56                | PK  | 31.8           | -24.9                 | 0            | 48.46                      | -                      | -           | 74                  | -25.54         | 92             | 343         | V        |
| 2      | * 2.35          | 47.05                | PK  | 31.7           | -25                   | 0            | 53.75                      | -                      | -           | 74                  | -20.25         | 92             | 343         | V        |
| 3      | * 2.39          | 29.61                | RMS | 31.8           | -24.9                 | .186         | 36.696                     | 54                     | -17.304     | -                   | -              | 92             | 343         | V        |
| 4      | * 2.35          | 31.23                | RMS | 31.7           | -25                   | .186         | 38.116                     | 54                     | -15.88      | -                   | -              | 92             | 343         | V        |

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

PK - Peak detector

RMS - RMS detection

## RESTRICTED BANDEGE (HIGH CHANNEL)



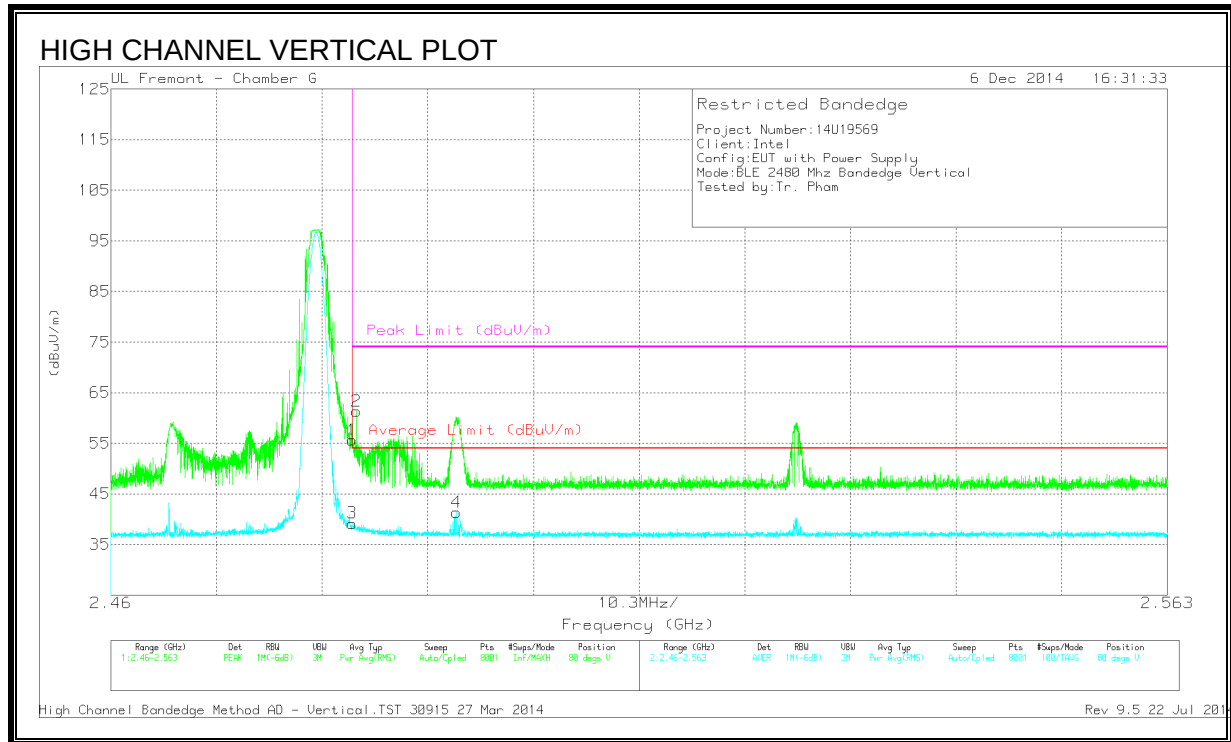
## DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|------------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 47.98                | PK  | 32             | -24.9                  | 0            | 55.08                      | -                      | -           | 74                  | -18.92         | 4              | 342         | H        |
| 3      | * 2.484         | 30.22                | RMS | 32             | -24.9                  | .186         | 37.506                     | 54                     | -16.494     | -                   | -              | 4              | 342         | H        |
| 2      | * 2.494         | 49.35                | PK  | 32             | -24.9                  | 0            | 56.45                      | -                      | -           | 74                  | -17.55         | 4              | 342         | H        |
| 4      | * 2.494         | 32.92                | RMS | 32             | -24.9                  | .186         | 40.206                     | 54                     | -13.794     | -                   | -              | 4              | 342         | H        |

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

PK - Peak detector

RMS - RMS detection



## DATA

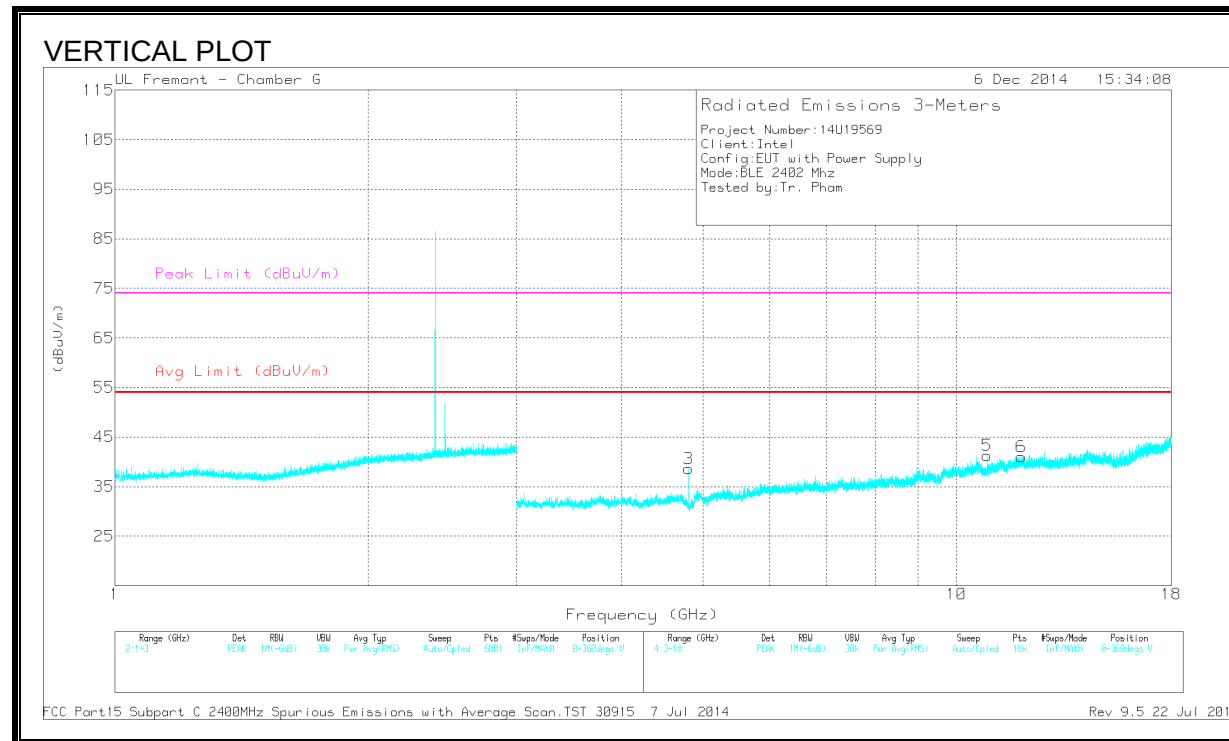
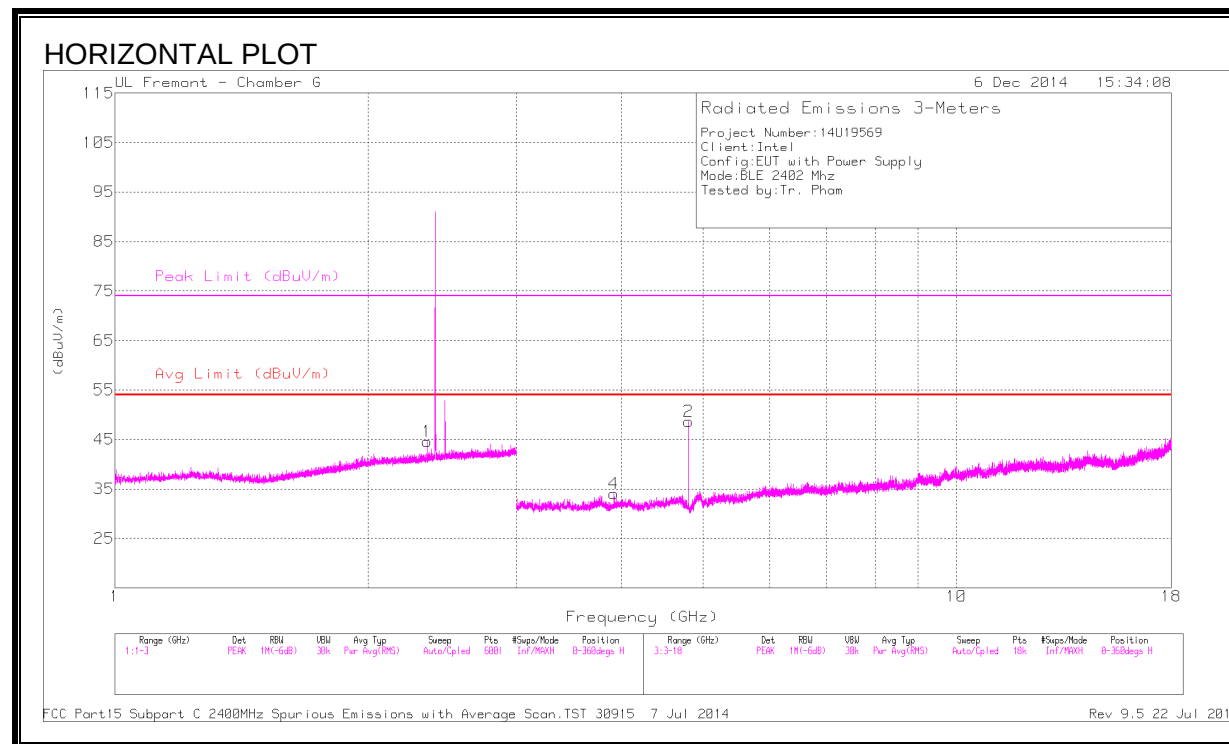
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 48.48                | PK  | 32             | -24.9                 | 0            | 55.58                      | -                      | -           | 74                  | -18.42         | 80             | 389         | V        |
| 2      | * 2.484         | 54.22                | PK  | 32             | -24.9                 | 0            | 61.32                      | -                      | -           | 74                  | -12.68         | 80             | 389         | V        |
| 3      | * 2.484         | 32.08                | RMS | 32             | -24.9                 | .186         | 39.366                     | 54                     | -14.634     | -                   | -              | 80             | 389         | V        |
| 4      | * 2.494         | 34.24                | RMS | 32             | -24.9                 | .186         | 41.526                     | 54                     | -12.474     | -                   | -              | 80             | 389         | V        |

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

PK - Peak detector

RMS - RMS detection

## LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



# DATA

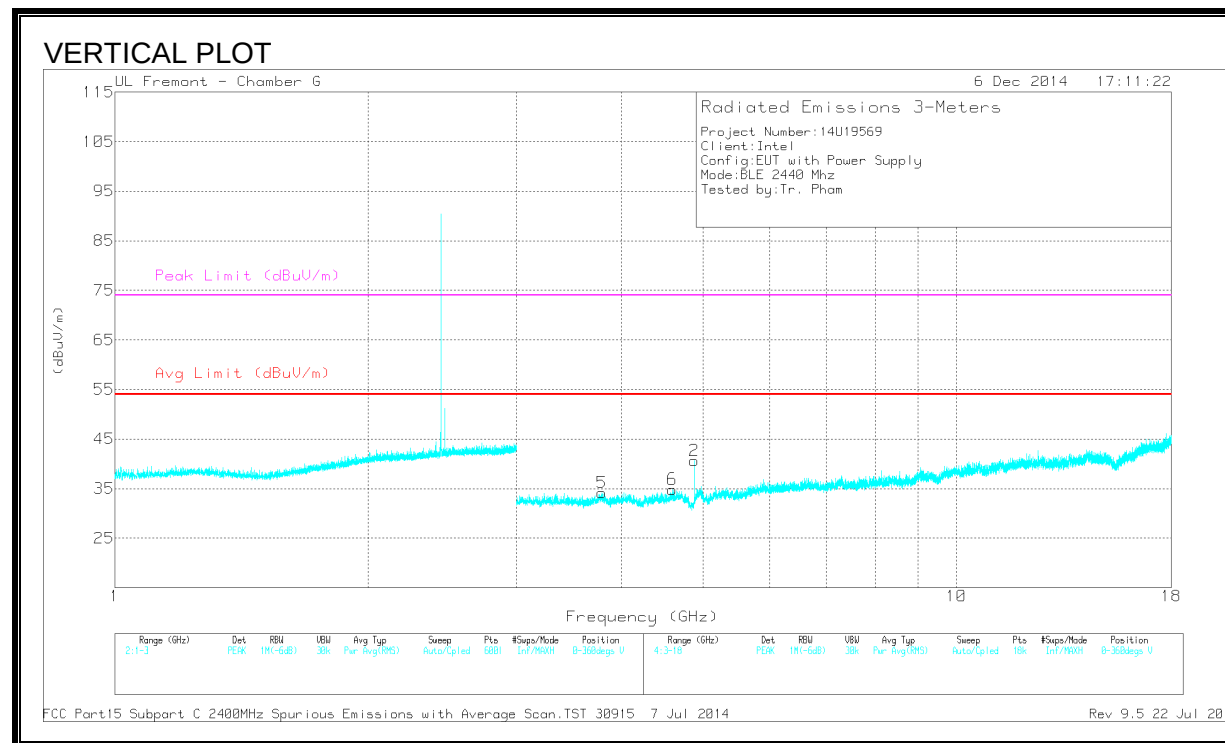
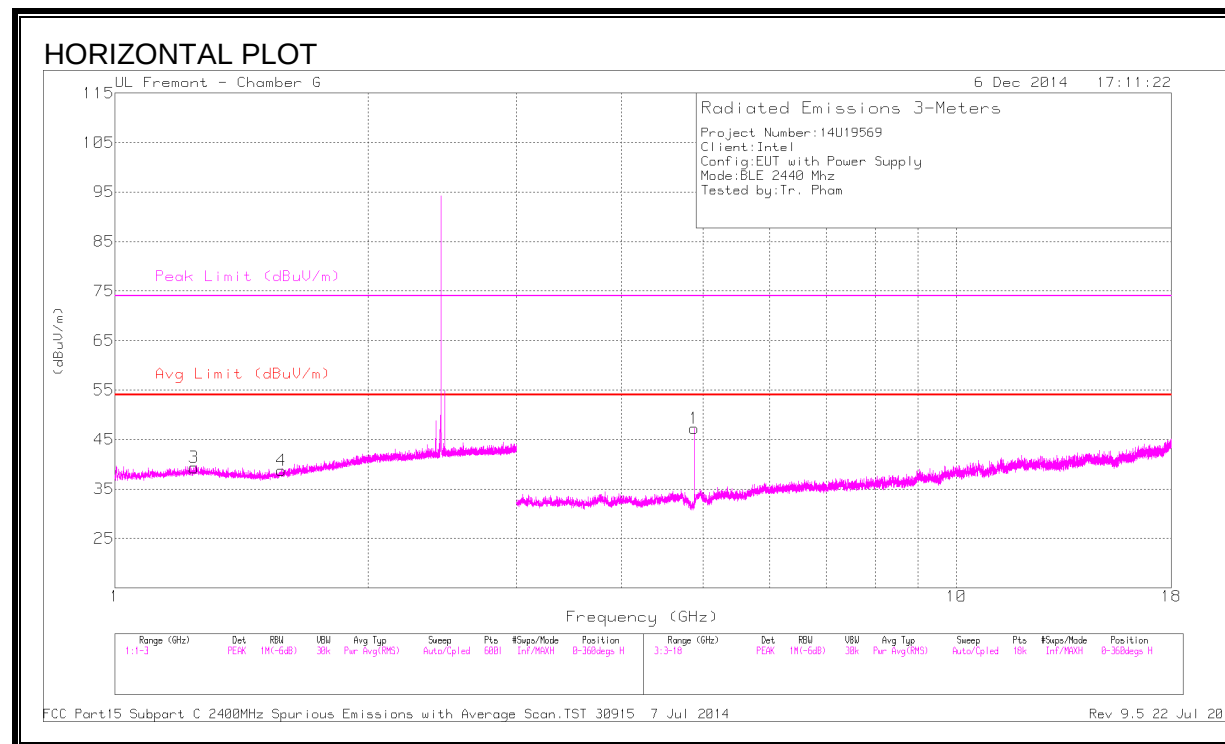
| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T862 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|--------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 2.35          | 44.97                | PK2  | 31.7           | -25                    | 0            | 51.67                      | -                  | -           | 74                  | -22.33         | 282            | 109         | H        |
| * 2.35          | 31.12                | MAV1 | 31.7           | -25                    | .186         | 38.006                     | 54                 | -15.994     | -                   | -              | 282            | 109         | H        |
| * 4.804         | 56.73                | PK2  | 34.1           | -33.2                  | 0            | 57.63                      | -                  | -           | 74                  | -16.37         | 267            | 229         | H        |
| * 4.804         | 44.5                 | MAV1 | 34.1           | -33.2                  | .186         | 45.586                     | 54                 | -8.414      | -                   | -              | 267            | 229         | H        |
| * 3.916         | 40.69                | PK2  | 33.2           | -33.7                  | 0            | 40.19                      | -                  | -           | 74                  | -33.81         | 267            | 229         | H        |
| * 3.917         | 30                   | MAV1 | 33.2           | -33.7                  | .186         | 29.686                     | 54                 | -24.314     | -                   | -              | 267            | 229         | H        |
| * 4.804         | 51.34                | PK2  | 34.1           | -33.2                  | 0            | 52.24                      | -                  | -           | 74                  | -21.76         | 336            | 250         | V        |
| * 4.804         | 38.7                 | MAV1 | 34.1           | -33.2                  | .186         | 39.786                     | 54                 | -14.214     | -                   | -              | 336            | 250         | V        |
| * 10.874        | 36.32                | PK2  | 37.7           | -26.8                  | 0            | 47.22                      | -                  | -           | 74                  | -26.78         | 336            | 250         | V        |
| * 10.874        | 25.37                | MAV1 | 37.7           | -26.8                  | .186         | 36.456                     | 54                 | -17.544     | -                   | -              | 336            | 250         | V        |
| * 11.941        | 36.9                 | PK2  | 38.8           | -26.3                  | 0            | 49.4                       | -                  | -           | 74                  | -24.6          | 336            | 250         | V        |
| * 11.941        | 25.11                | MAV1 | 38.8           | -26.3                  | .186         | 37.796                     | 54                 | -16.204     | -                   | -              | 336            | 250         | V        |

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

# MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS



## DATA

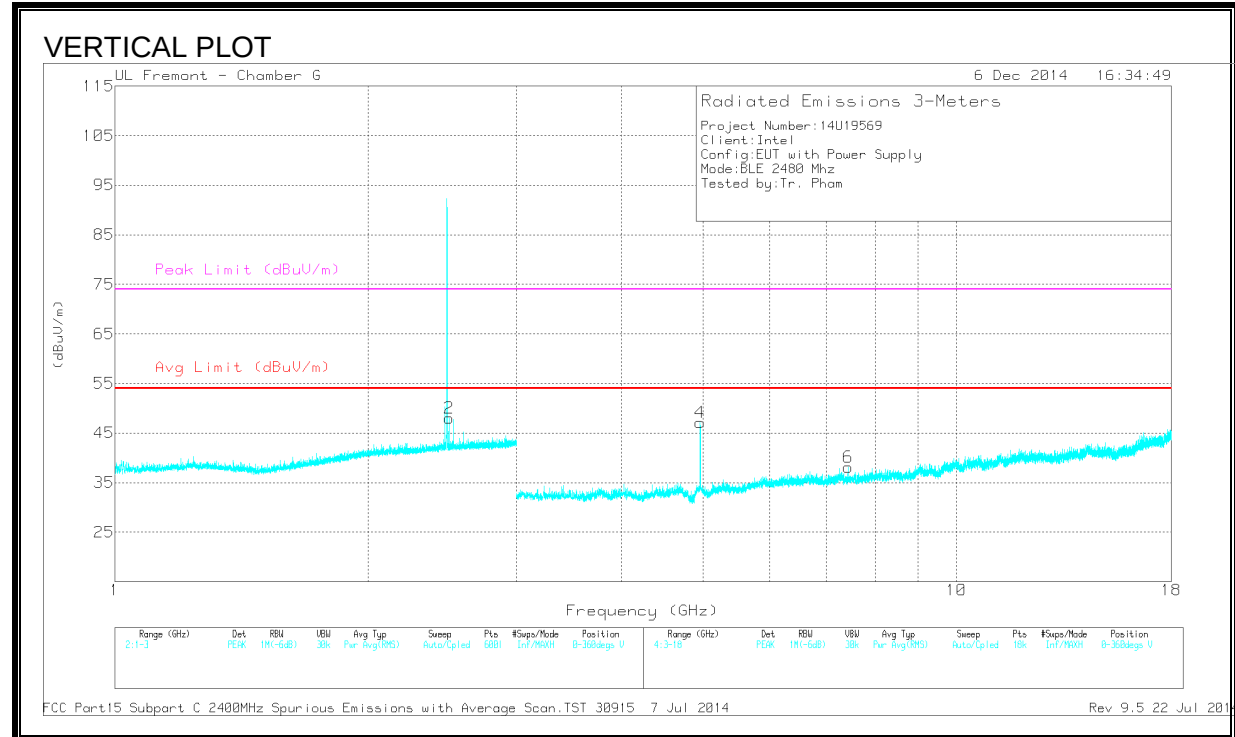
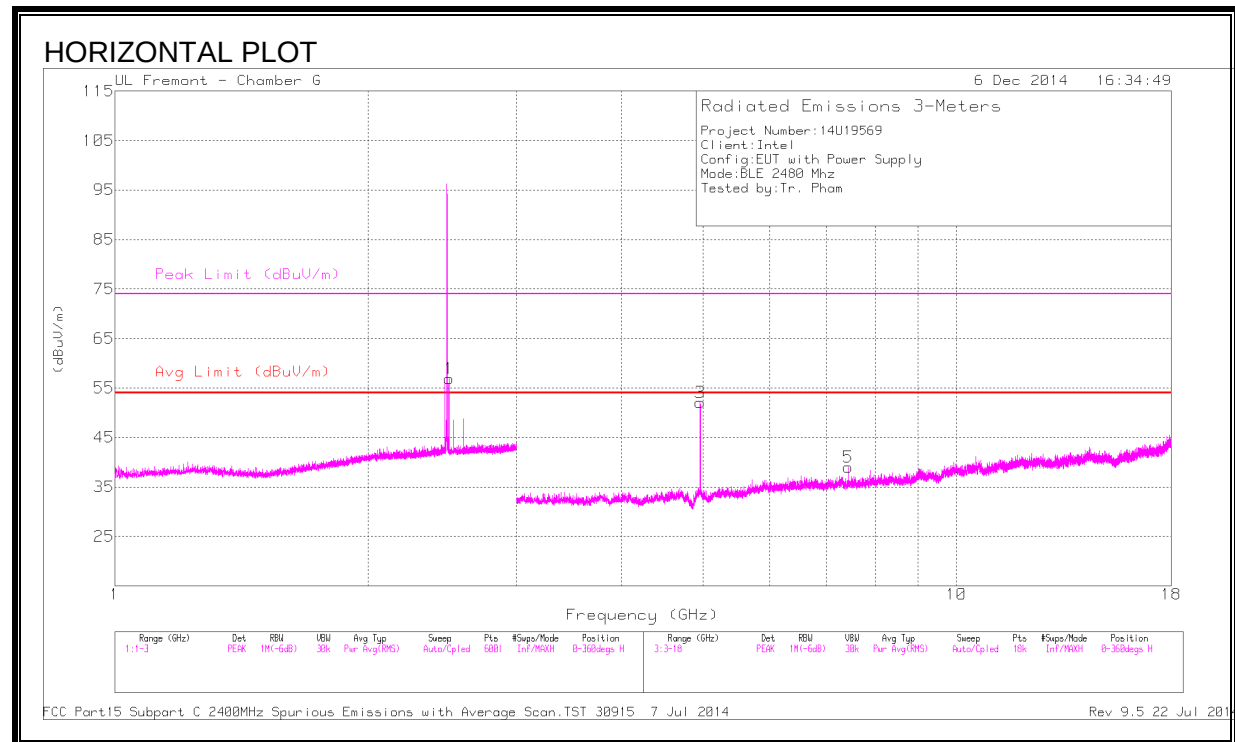
| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T862 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|--------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 1.242         | 44.54                | PK2  | 29.2           | -26.1                  | 0            | 47.64                      | -                  | -           | 74                  | -26.36         | 325            | 124         | H        |
| * 1.242         | 32.68                | MAV1 | 29.2           | -26.1                  | .186         | 35.966                     | 54                 | -18.034     | -                   | -              | 325            | 124         | H        |
| * 1.578         | 44.11                | PK2  | 28.4           | -25.5                  | 0            | 47.01                      | -                  | -           | 74                  | -26.99         | 300            | 139         | H        |
| * 1.578         | 32.38                | MAV1 | 28.4           | -25.5                  | .186         | 35.466                     | 54                 | -18.534     | -                   | -              | 300            | 139         | H        |
| * 4.88          | 56.57                | PK2  | 34.1           | -33                    | 0            | 57.67                      | -                  | -           | 74                  | -16.33         | 270            | 249         | H        |
| * 4.88          | 45.86                | MAV1 | 34.1           | -33                    | .186         | 46.96                      | 54                 | -6.854      | -                   | -              | 270            | 249         | H        |
| * 4.88          | 52.83                | PK2  | 34.1           | -33                    | 0            | 53.93                      | -                  | -           | 74                  | -20.07         | 125            | 337         | V        |
| * 4.88          | 41.96                | MAV1 | 34.1           | -33                    | .186         | 43.246                     | 54                 | -10.754     | -                   | -              | 125            | 337         | V        |
| * 3.789         | 42.3                 | PK2  | 33             | -32.9                  | 0            | 42.4                       | -                  | -           | 74                  | -31.6          | 125            | 337         | V        |
| * 3.789         | 30.82                | MAV1 | 33             | -32.9                  | .186         | 31.106                     | 54                 | -22.894     | -                   | -              | 125            | 337         | V        |
| * 4.595         | 41.83                | PK2  | 33.9           | -33.3                  | 0            | 42.43                      | -                  | -           | 74                  | -31.57         | 125            | 337         | V        |
| * 4.594         | 30.59                | MAV1 | 33.9           | -33.3                  | .186         | 31.376                     | 54                 | -22.624     | -                   | -              | 125            | 337         | V        |

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

## HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS



# DATA

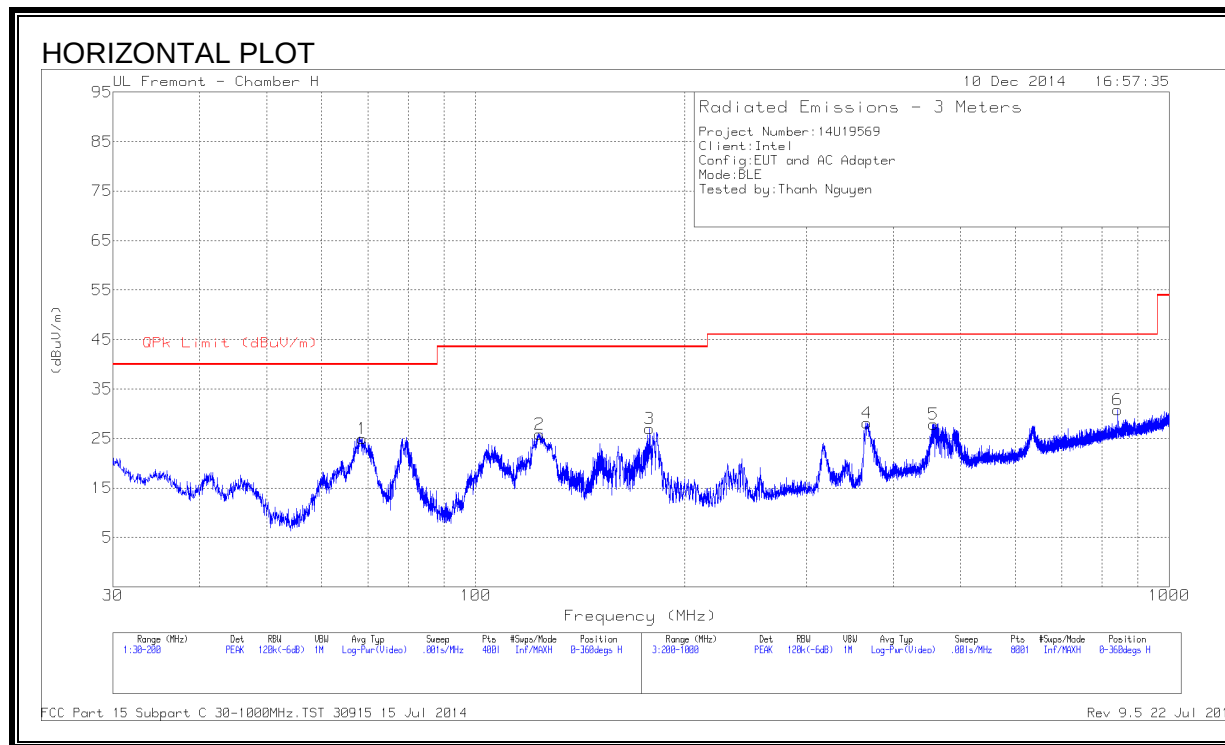
| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T862 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|------------------------|--------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 2.494         | 52.72                | PK2  | 32             | -24.9                  | 0            | 59.82                      | -                  | -           | 74                  | -14.18         | 281            | 249         | H        |
| * 2.494         | 33.83                | MAV1 | 32             | -24.9                  | .186         | 41.116                     | 54                 | -12.884     | -                   | -              | 281            | 249         | H        |
| * 2.494         | 53.79                | PK2  | 32             | -24.9                  | 0            | 60.89                      | -                  | -           | 74                  | -13.11         | 84             | 396         | V        |
| * 2.494         | 34.49                | MAV1 | 32             | -24.9                  | .186         | 41.776                     | 54                 | -12.224     | -                   | -              | 84             | 396         | V        |
| * 4.96          | 58.1                 | PK2  | 34.1           | -32.9                  | 0            | 59.3                       | -                  | -           | 74                  | -14.7          | 280            | 217         | H        |
| * 4.96          | 51.68                | MAV1 | 34.1           | -32.9                  | .186         | 53.066                     | 54                 | -.934       | -                   | -              | 280            | 217         | H        |
| * 7.44          | 42.68                | PK2  | 35.6           | -31.4                  | 0            | 46.88                      | -                  | -           | 74                  | -27.12         | 321            | 319         | H        |
| * 7.44          | 33.68                | MAV1 | 35.6           | -31.4                  | .186         | 38.066                     | 54                 | -15.934     | -                   | -              | 321            | 319         | H        |
| * 4.96          | 52.66                | PK2  | 34.1           | -32.9                  | 0            | 53.86                      | -                  | -           | 74                  | -20.14         | 116            | 143         | V        |
| * 4.96          | 45.99                | MAV1 | 34.1           | -32.9                  | .186         | 47.376                     | 54                 | -6.624      | -                   | -              | 116            | 143         | V        |
| * 7.438         | 40.87                | PK2  | 35.6           | -31.4                  | 0            | 45.07                      | -                  | -           | 74                  | -28.93         | 116            | 143         | V        |
| * 7.44          | 31.18                | MAV1 | 35.6           | -31.4                  | .186         | 35.566                     | 54                 | -18.434     | -                   | -              | 116            | 143         | V        |

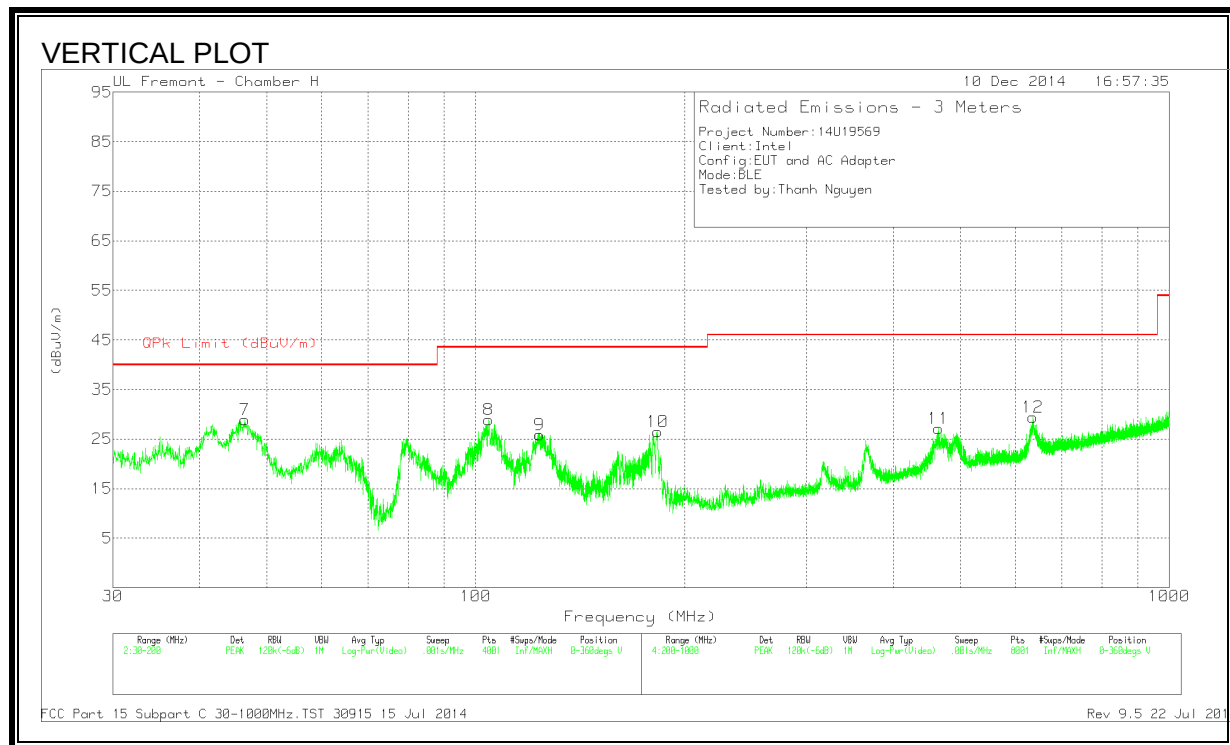
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

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





## **HORIZONTAL AND VERTICAL DATA**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | SS JB3 SN A051314-1 | Amp/Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 2      | * 123.6275      | 38.84                | PK  | 16.8                | -29.8        | 25.84                      | 43.52              | -17.68      | 0-360          | 201         | H        |
| 9      | * 123.7125      | 38.85                | PK  | 16.8                | -29.8        | 25.85                      | 43.52              | -17.67      | 0-360          | 100         | V        |
| 7      | 46.49           | 46.95                | PK  | 12.6                | -30.7        | 28.85                      | 40                 | -11.15      | 0-360          | 100         | V        |
| 1      | 68.59           | 44.11                | PK  | 11.3                | -30.4        | 25.01                      | 40                 | -14.99      | 0-360          | 401         | H        |
| 8      | 104.4175        | 44.83                | PK  | 14.1                | -30          | 28.93                      | 43.52              | -14.59      | 0-360          | 100         | V        |
| 3      | 178.24          | 41.95                | PK  | 14.5                | -29.4        | 27.05                      | 43.52              | -16.47      | 0-360          | 201         | H        |
| 10     | 182.83          | 41.54                | PK  | 14.3                | -29.4        | 26.44                      | 43.52              | -17.08      | 0-360          | 100         | V        |
| 4      | 366.8           | 38.56                | PK  | 17.7                | -28.1        | 28.16                      | 46.02              | -17.86      | 0-360          | 100         | H        |
| 5      | 457.6           | 35.55                | PK  | 19.9                | -27.6        | 27.85                      | 46.02              | -18.17      | 0-360          | 201         | H        |
| 11     | 464.5           | 34.68                | PK  | 20.1                | -27.6        | 27.18                      | 46.02              | -18.84      | 0-360          | 100         | V        |
| 12     | 635.3           | 33.98                | PK  | 22.5                | -27.1        | 29.38                      | 46.02              | -16.64      | 0-360          | 100         | V        |
| 6      | 843.1           | 32.12                | PK  | 24.6                | -25.9        | 30.82                      | 46.02              | -15.2       | 0-360          | 301         | H        |

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

PK - Peak detector

## 10. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

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

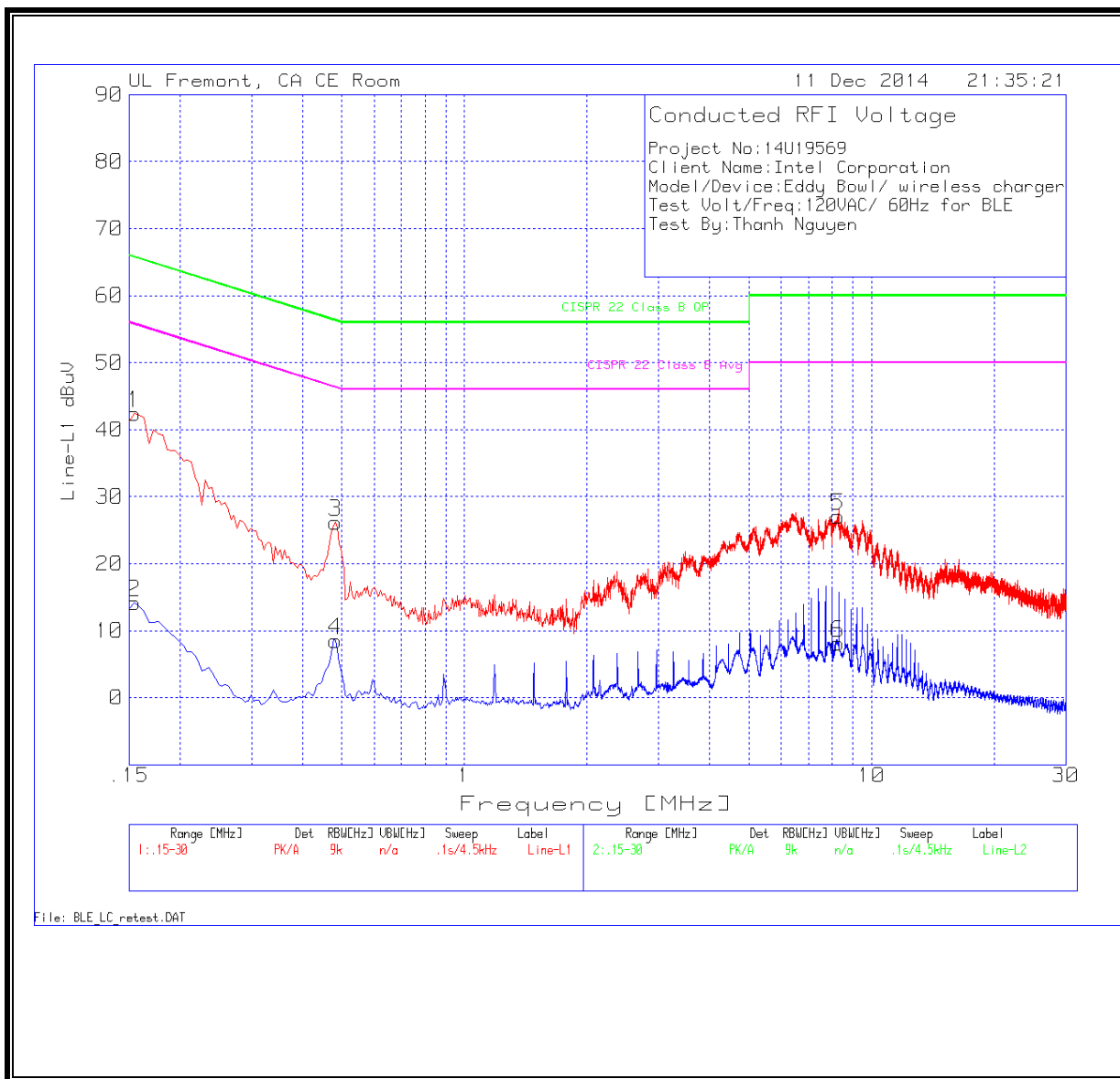
<sup>\*</sup> Decreases with the logarithm of the frequency.

### TEST PROCEDURE

ANSI C63.10

## RESULTS

### LINE 1 RESULTS

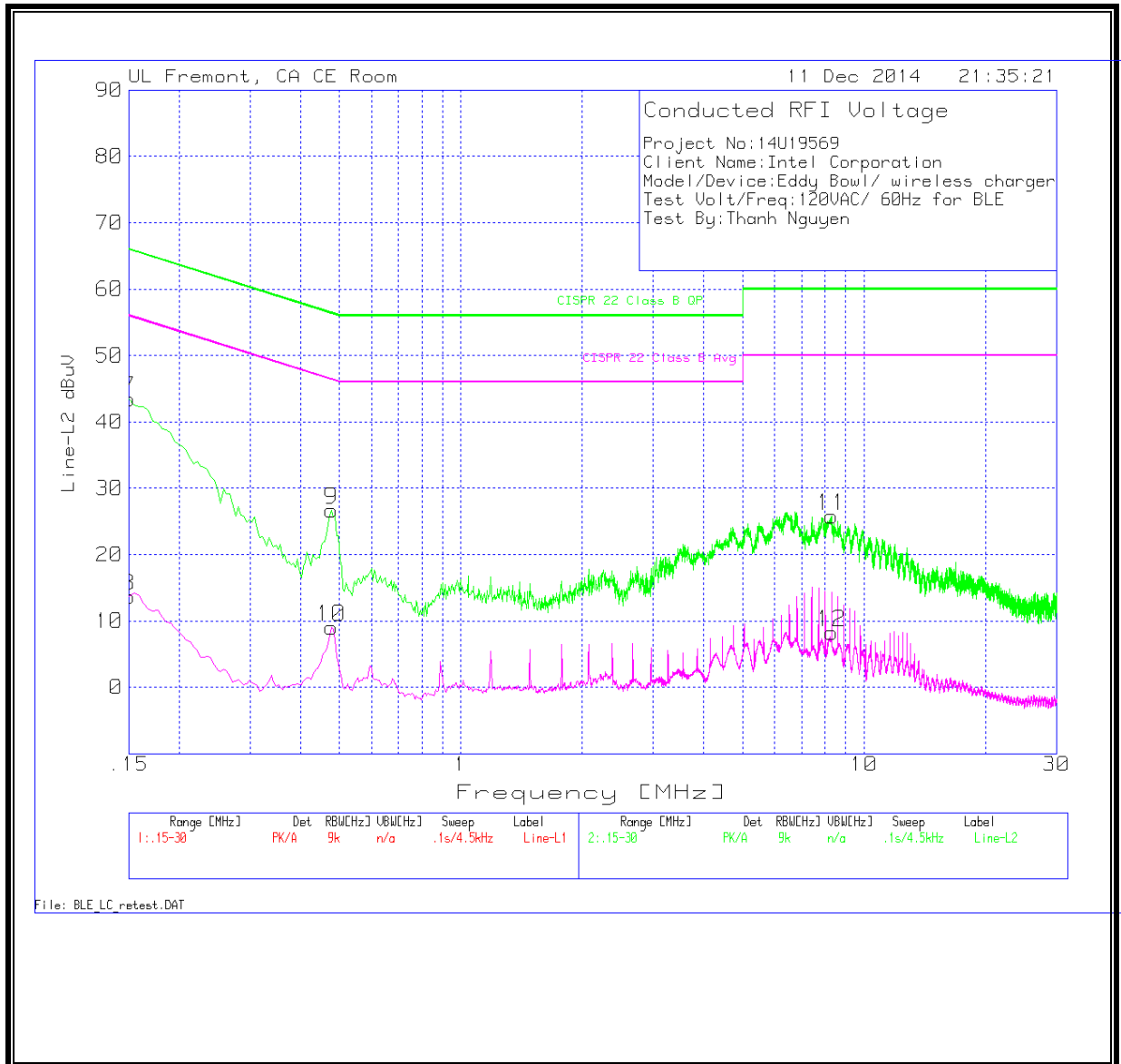


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**Trace Markers**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L1 (dB) | LC Cables 1&3 (dB) | Corrected Reading dBuV | CISPR 22 Class B QP | Margin to Limit (dB) | CISPR 22 Class B Avg | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------|---------------------|----------------------|----------------------|----------------------|
| 1      | .1545           | 41.18                | PK  | 1.3            | 0                  | 42.48                  | 65.8                | -23.32               | -                    | -                    |
| 2      | .1545           | 12.94                | Av  | 1.3            | 0                  | 14.24                  | -                   | -                    | 55.8                 | -41.56               |
| 3      | .483            | 25.76                | PK  | .4             | 0                  | 26.16                  | 56.3                | -30.14               | -                    | -                    |
| 4      | .483            | 8.09                 | Av  | .4             | 0                  | 8.49                   | -                   | -                    | 46.3                 | -37.81               |
| 5      | 8.25            | 26.82                | PK  | .2             | .1                 | 27.12                  | 60                  | -32.88               | -                    | -                    |
| 6      | 8.25            | 7.83                 | Av  | .2             | .1                 | 8.13                   | -                   | -                    | 50                   | -41.87               |

**LINE 2 RESULTS**



# Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L2 (dB) | LC Cables 2&3 (dB) | Corrected Reading dBuV | CISPR 22 Class B QP | Margin to Limit (dB) | CISPR 22 Class B Avg | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------|---------------------|----------------------|----------------------|----------------------|
| 7      | .15             | 41.91                | PK  | 1.5            | 0                  | 43.41                  | 66                  | -22.59               | -                    | -                    |
| 8      | .15             | 12.19                | Av  | 1.5            | 0                  | 13.69                  | -                   | -                    | 56                   | -42.31               |
| 9      | .4785           | 26.3                 | PK  | .4             | 0                  | 26.7                   | 56.4                | -29.7                | -                    | -                    |
| 10     | .4785           | 8.61                 | Av  | .4             | 0                  | 9.01                   | -                   | -                    | 46.4                 | -37.39               |
| 11     | 8.295           | 25.48                | PK  | .2             | .1                 | 25.78                  | 60                  | -34.22               | -                    | -                    |
| 12     | 8.295           | 7.94                 | Av  | .2             | .1                 | 8.24                   | -                   | -                    | 50                   | -41.76               |

PK - Peak detector

Av - average detection