



# **CERTIFICATION TEST REPORT**

**Report Number. :** 12561386-E1V2

**Applicant :** Valve Corporation  
10400 NE 4th Street, Suite 1400  
Bellevue, WA 98004 U.S.A.

**Model :** 1005

**FCC ID :** 2AES41005

**IC :** 20207-1005

**EUT Description :** Valve Left Controller

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
ISED RSS-247 ISSUE 2  
ISED RSS-GEN ISSUE 5

**Date Of Issue:**

December 20, 2018

**Prepared by:**

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## REPORT REVISION HISTORY

| Rev. | Issue Date | Revisions         | Revised By |
|------|------------|-------------------|------------|
| V1   | 12/12/2018 | Initial Issue     |            |
| V2   | 12/20/2018 | Updated Section 6 | KK         |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Valve Corporation  
10400 NE 4th Street, Suite 1400  
Bellevue, WA 98004 U.S.A.

**EUT DESCRIPTION:** Valve Left Controller

**MODEL:** 1005

**SERIAL NUMBER:** Conducted: 1880275  
Radiated: 1880276

**DATE TESTED:** OCTOBER 31, 2018 – NOVEMBER 9, 2018

| APPLICABLE STANDARDS     |              |
|--------------------------|--------------|
| STANDARD                 | TEST RESULTS |
| CFR 47 Part 15 Subpart C | Complies     |
| ISED RSS-247 Issue 2     | Complies     |
| ISED RSS-GEN Issue 5     | Complies     |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

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 the U.S. government.

Approved & Released For  
UL Verification Services Inc. By:

Reviewed By:



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PROJECT ENGINEER  
UL Verification Services Inc

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 v05, RSS-GEN Issue 5, and RSS-247 Issue 2.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, 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                              | 47658 Kato Rd  |
|--|---|--|
| <input checked="" type="checkbox"/> Chamber A (ISED:2324B-1) | <input type="checkbox"/> Chamber D (ISED:22541-1) | <input checked="" type="checkbox"/> Chamber I (ISED:2324A-5) |
| <input type="checkbox"/> Chamber B (ISED:2324B-2)            | <input type="checkbox"/> Chamber E (ISED:22541-2) | <input type="checkbox"/> Chamber J (ISED:2324A-6)            |
| <input type="checkbox"/> Chamber C (ISED:2324B-3)            | <input type="checkbox"/> Chamber F (ISED:22541-3) | <input type="checkbox"/> Chamber K (ISED:2324A-1)            |
|  | <input type="checkbox"/> Chamber G (ISED:22541-4) | <input type="checkbox"/> Chamber L (ISED:2324A-3)            |
|  | <input type="checkbox"/> Chamber H (ISED:22541-5) |  |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

## 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

#### RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

#### MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

### 4.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER   | UNCERTAINTY |
|---|-------------|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz  | 3.84 dB     |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz    | 3.65 dB     |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz     | 3.15 dB     |
| Worst Case Radiated Disturbance, 30 to 1000 MHz     | 5.36 dB     |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz  | 4.32 dB     |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.45 dB     |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.24 dB     |

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



## 5. EQUIPMENT UNDER TEST

### 5.1. EUT DESCRIPTION

The EUT is a Valve Left Controller.

### 5.2. MAXIMUM OUTPUT POWER

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

| Frequency Range (MHz) | Mode           | Output Power (dBm) | Output Power (mW) |
|-----------------------|----------------|--------------------|-------------------|
| 2402 - 2480           | Valve Protocol | 4.76               | 2.99              |

### 5.1. DESCRIPTION OF AVAILABLE ANTENNAS

| Frequency Band (GHz) | Antenna Peak Gain (dBi) |
|----------------------|-------------------------|
| 2.4                  | 0.90                    |

### 5.2. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was VRC version: 1538763457.

The test radio version software used during testing was 1538760414.

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

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

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.

## 5.4. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |             |                         |        |
|------------------------|--------------|-------------|-------------------------|--------|
| Description            | Manufacturer | Model       | Serial Number           | FCC ID |
| Laptop                 | Lenovo       | TP00050C    | PC0C3DUA                | DoC    |
| Laptop AC/DC Adapter   | Lenovo       | ADLX45DLC2A | 8SSA10E75792UICZ641CLB1 | DoC    |
| Laptop                 | DELL         | Inspiron15  | B871412                 | DoC    |
| Laptop AC/DC Adapter   | DELL         | HA65NS5-00  | A065R039L               | DoC    |

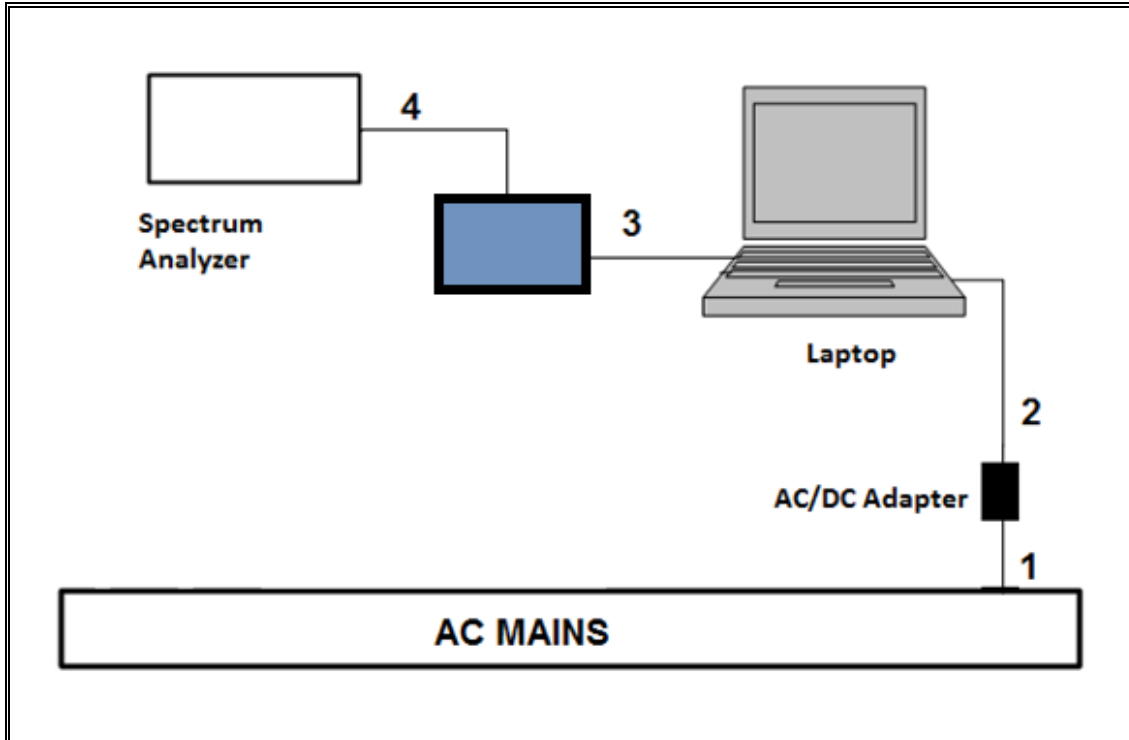
### I/O CABLES

| I/O Cable List |         |                      |                |            |                  |                           |
|----------------|---------|----------------------|----------------|------------|------------------|---------------------------|
| Cable No       | Port    | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks                   |
| 1              | AC      | 1                    | AC             | Unshielded | 1                | AC Mains to AC/DC Adapter |
| 2              | DC      | 1                    | DC             | Unshielded | 1.5              | AC/DC Adapter to Laptop   |
| 3              | USB     | 1                    | USB            | Shielded   | 1                | Laptop to EUT             |
| 4              | Antenna | 1                    | SMA            | Unshielded | 0.08             | To spectrum analyzer      |

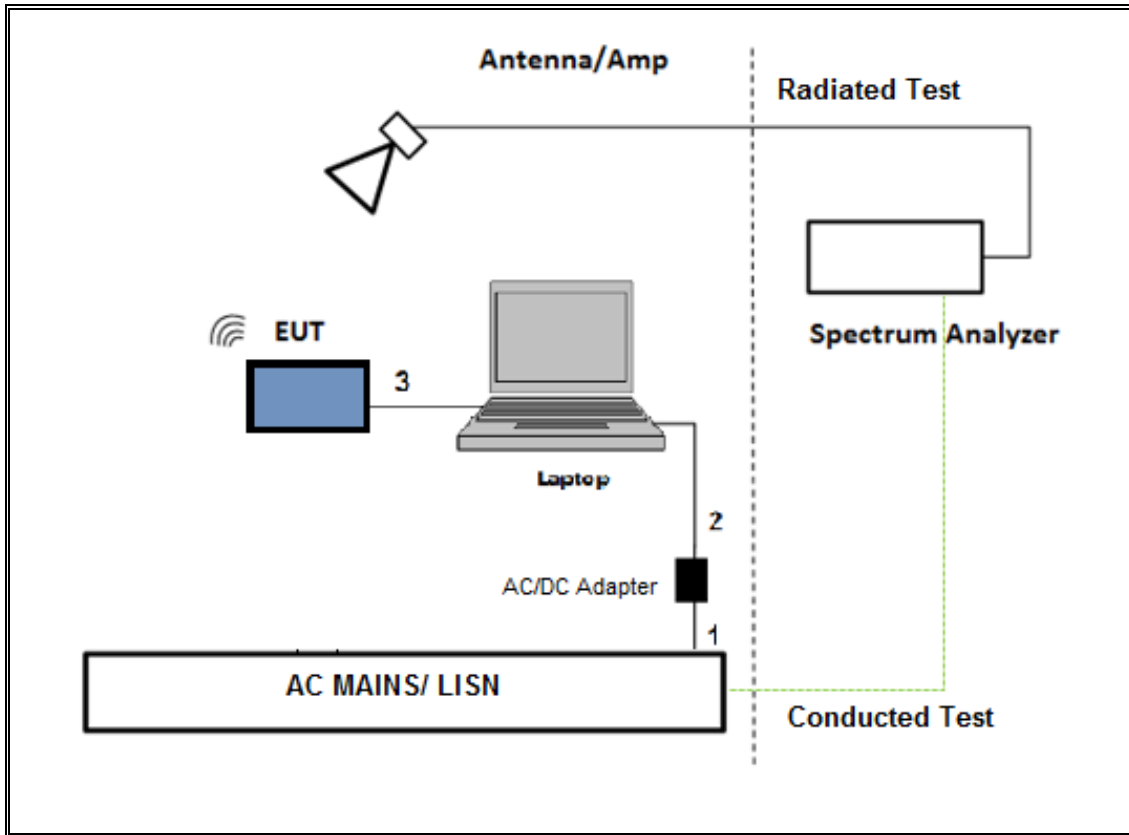
**TEST SETUP**

The EUT is connected to a test laptop during the tests. Test software exercised the EUT.

**SETUP DIAGRAM – CONDUCTED TEST**



**SETUP DIAGRAM - AC LINE CONDUCTED TEST AND RADIATED TEST**



## **6. MEASUREMENT METHOD**

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6.

6 dB BW: ANSI C63.10 Section 11.8.1. Option 1

Output Power: ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Power Spectral Density: ANSI C63.10 Section 11.10.3 Method AVGPSD-1.

Radiated emissions non-restricted frequency bands: ANSI C63.10 Section 11.12.1

Radiated emissions restricted frequency bands: ANSI C63.10 Section 11.12.1.

Conducted emissions in restricted frequency bands: ANSI C63.10 Section 11.12.2.

Band-edge: ANSI C63.10 Subclause -11.13.3.4 Integration method -Trace averaging across ON and OFF times DC correction

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

## 7. 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                  | ID Num     | Cal Due    | Last Cal   |
| 6 port rf switch, 1-18GHz                        | Pasternack                      | PE7159                 | 171455     | 08/01/2019 | 08/01/2018 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz      | Sunol Sciences Corp.            | JB3                    | T130       | 06/18/2019 | 06/18/2018 |
| Antenna, Horn 1-18GHz                            | ETS-Lindgren                    | 3117                   | T862       | 05/25/2019 | 05/25/2018 |
| RF Amplifier, 1-18GHz                            | MITEQ                           | AFS42-00101800-25-S-42 | 171460     | 08/01/2019 | 08/01/2018 |
| 18-26.5 GHz Horn Antenna                         | Seavey Division                 | MWH-1826/B             | T447       | 6/16/2019  | 6/16/2018  |
| Pre-Amp 1-26.5 GHz                               | Agilent                         | 8449B                  | T404       | 3/9/2019   | 3/9/2018   |
| L.I.S.N.   | FCC INC.                        | FCC LISN 50/250        | T1310      | 06/15/2019 | 06/15/2018 |
| L.I.S.N.   | FCC INC.                        | FCC LISN 50/250        | T24        | 03/06/2019 | 03/06/2018 |
| EMI Receiver                                     | Rohde & Schwarz                 | ESR                    | T1436      | 02/21/2019 | 02/21/2018 |
| Antenna, Active Loop 9kHz-30MHz                  | Com-Power Corp.                 | AL-130R                | PRE0165308 | 12/13/2018 | 12/13/2017 |
| Power Meter, P-series single channel             | Agilent (Keysight) Technologies | N1911A                 | T1269      | 04/05/2019 | 04/05/2018 |
| Power Sensor, P-series, 50MHz to 18GHz, Wideband | Agilent (Keysight) Technologies | N1921A                 | T1225      | 04/10/2019 | 04/10/2018 |
| PXA Spectrum Analyzer, 3Hz to 44GHz              | Keysight                        | N9030A                 | T1113      | 12/21/2018 | 12/21/2017 |
| PXA Spectrum Analyzer, 3Hz to 44GHz              | Keysight                        | N9030A                 | T339       | 9/11/2019  | 9/11/2018  |
| Spectrum Analyzer, PXA, 3Hz to 44GHz             | Agilent (keysight) Technologies | N9030A                 | T1466      | 11/25/2018 | 11/25/2017 |
| EMI TEST RECEIVER                                | Rohde & Schwarz                 | ESW44                  | PRE0179367 | 04/25/2019 | 04/25/2018 |

| Test Software List    |              |        |                         |
|-----------------------|--------------|--------|-------------------------|
| Description           | Manufacturer | Model  | Version                 |
| Radiated Software     | UL           | UL EMC | Rev 9.5, Jun 22, 2018   |
| Antenna Port Software | UL           | UL RF  | Rev 8.9.1, Oct 18, 2018 |

## 8. ANTENNA PORT TEST RESULTS

### 8.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

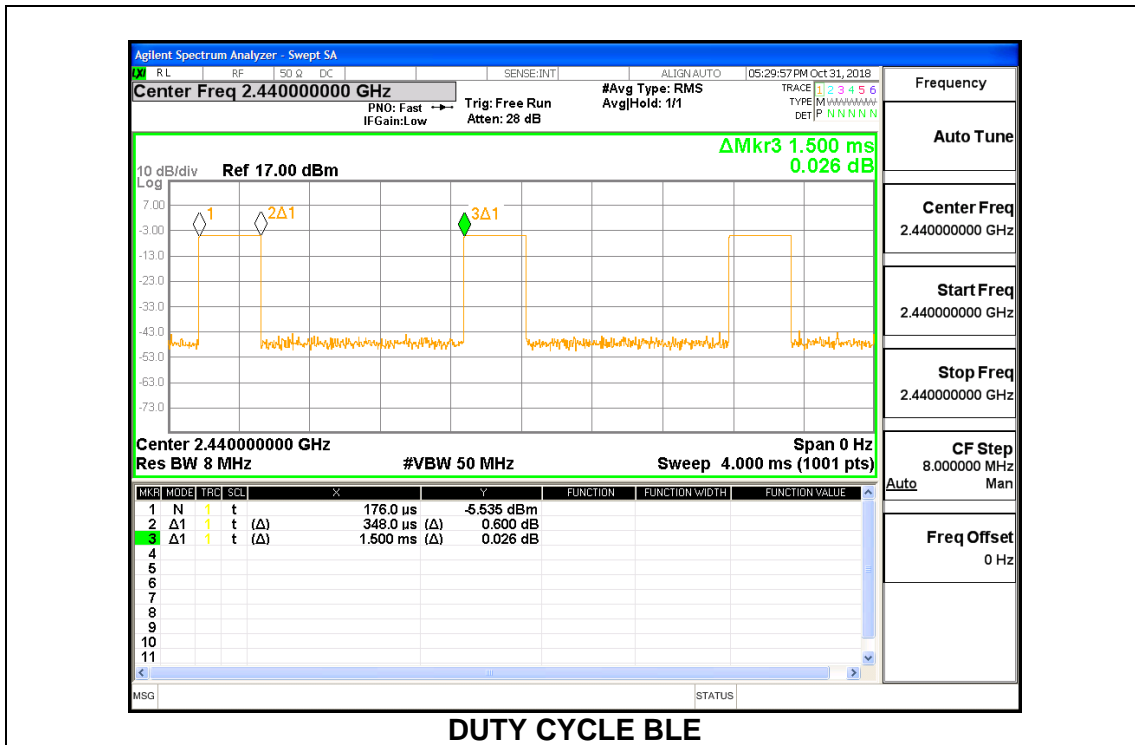
#### PROCEDURE

#### 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) |
|--------------------|------------------------|------------------|-----------------------------|----------------------|---|-----------------------------|
| <b>2.4GHz Band</b> |                        |                  |                             |                      |   |                             |
| Valve Protocol     | 0.348                  | 1.500            | 0.232                       | 23.20%               | 6.35                                    | 2.874                       |



DUTY CYCLE PLOTS



DUTY CYCLE BLE

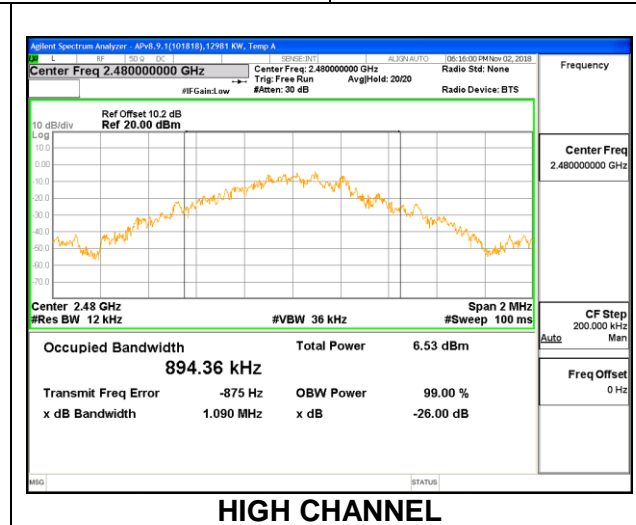
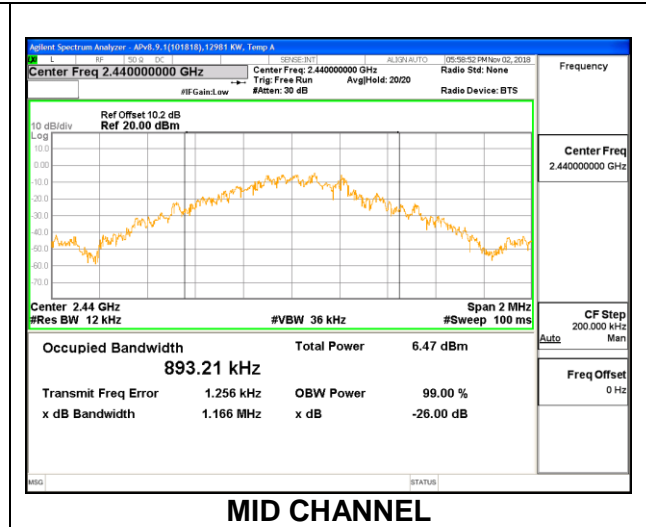
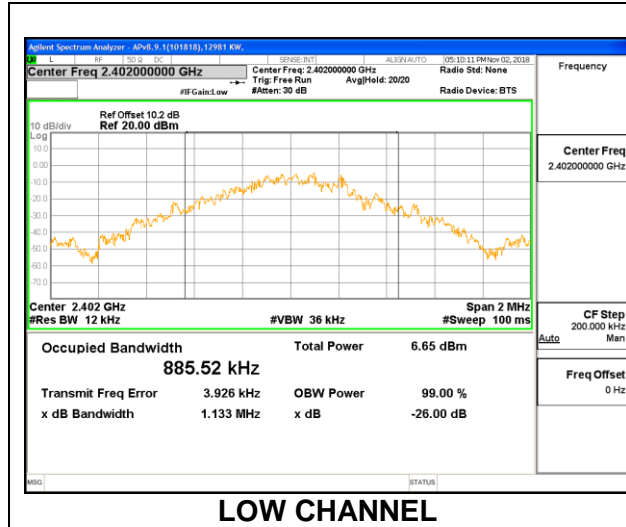
## **8.2. 99% BANDWIDTH**

### **LIMITS**

None; for reporting purposes only.

### **RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (kHz) |
|---------|-----------------|---------------------|
| Low     | 2402            | 885.52              |
| Middle  | 2440            | 893.21              |
| High    | 2480            | 894.36              |



### **8.3. 6 dB BANDWIDTH**

#### **LIMITS**

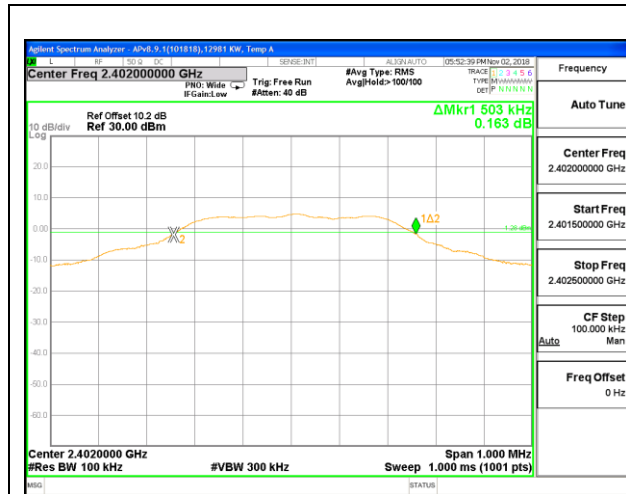
FCC §15.407 (e)

RSS-247 5.2 (a)

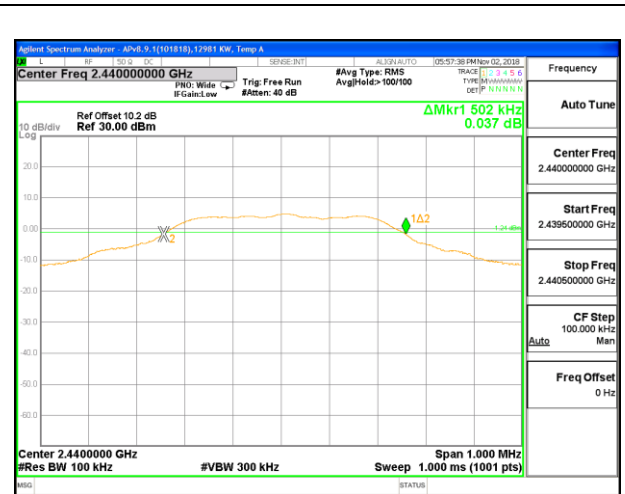
The minimum 6 dB bandwidth shall be at least 500 kHz.

#### **RESULTS**

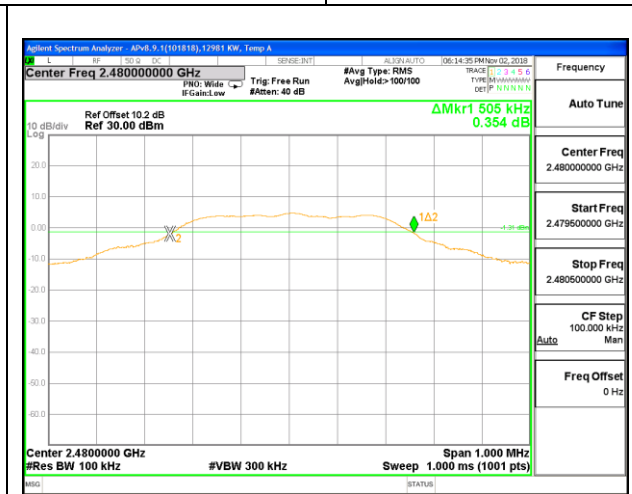
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2402            | 0.503                | 0.5                 |
| Middle  | 2440            | 0.502                | 0.5                 |
| High    | 2480            | 0.505                | 0.5                 |



**LOW CHANNEL**



**MID CHANNEL**



**HIGH CHANNEL**

## **8.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

### **TEST PROCEDURE**

The transmitter output is connected to a power meter. The cable assembly insertion was entered as an offset in the power meter to allow for a gated peak reading of power.

### **RESULTS**

|                   |           |
|-------------------|-----------|
| <b>Tested By:</b> | 12981 KW  |
| <b>Date:</b>      | 11/2/2018 |

| <b>Channel</b> | <b>Frequency<br/>(MHz)</b> | <b>Peak Power<br/>Reading<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Margin<br/>(dB)</b> |
|----------------|----------------------------|---|------------------------|------------------------|
| Low            | 2402                       | 4.75                                    | 30                     | -25.250                |
| Middle         | 2440                       | 4.76                                    | 30                     | -25.240                |
| High           | 2480                       | 4.74                                    | 30                     | -25.260                |

## **8.5. AVERAGE POWER**

### **LIMITS**

None; for reporting purposes only.

### **TEST PROCEDURE**

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated average reading of power.

### **RESULTS**



|                   |           |
|-------------------|-----------|
| <b>Tested By:</b> | 12981 KW  |
| <b>Date:</b>      | 11/2/2018 |

| <b>Channel</b> | <b>Frequency<br/>(MHz)</b> | <b>AV power<br/>(dBm)</b> |
|----------------|----------------------------|---------------------------|
| Low            | 2402                       | 4.65                      |
| Middle         | 2440                       | 4.66                      |
| High           | 2480                       | 4.64                      |

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## **8.6. POWER SPECTRAL DENSITY**

### **LIMITS**

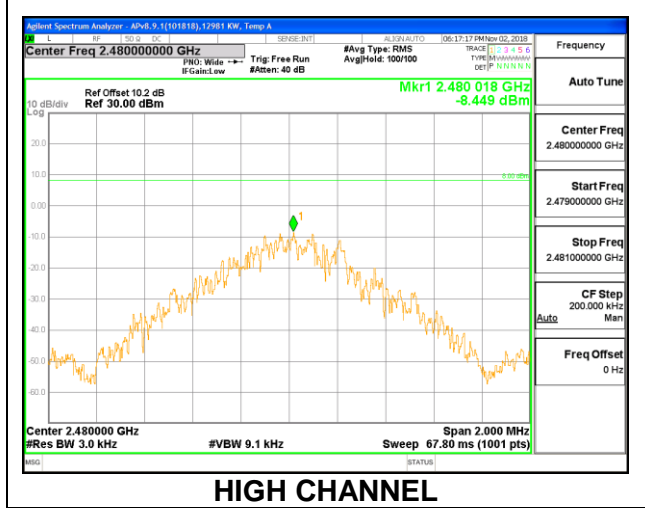
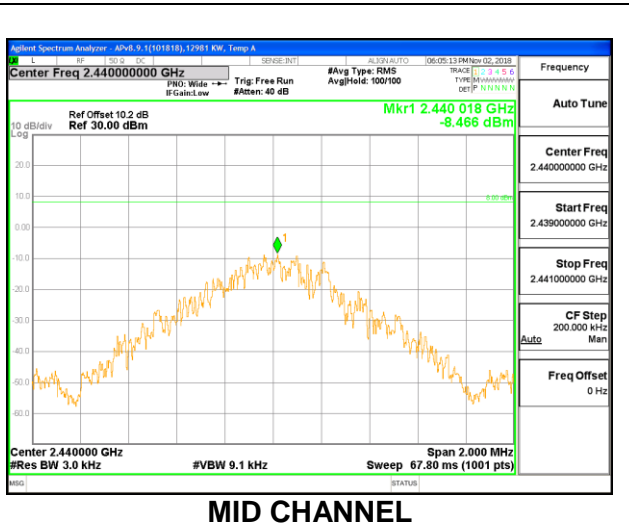
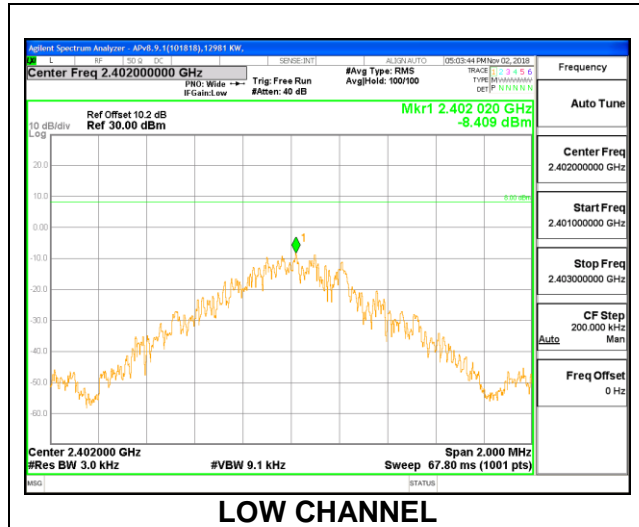
FCC §15.247 (e)

RSS-247 (5.2) (b)

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.

### **RESULTS**

| Channel | Frequency (MHz) | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Margin (dB) |
|---------|-----------------|----------------|------------------|-------------|
| Low     | 2402            | -8.409         | 8                | -16.409     |
| Middle  | 2440            | -8.466         | 8                | -16.466     |
| High    | 2480            | -8.449         | 8                | -16.449     |



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## **8.7. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

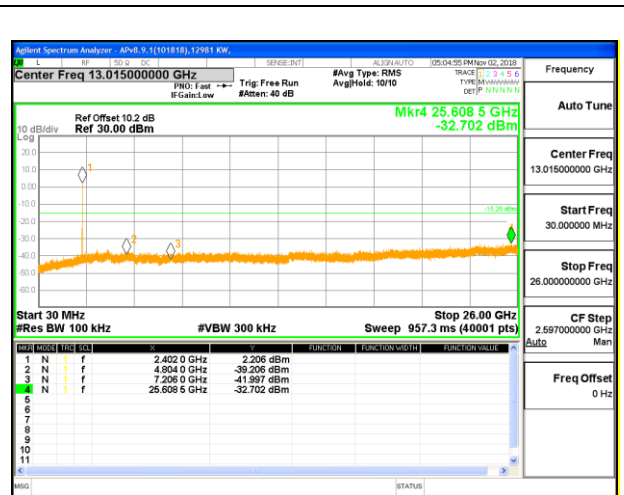
RSS-247 5.5

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

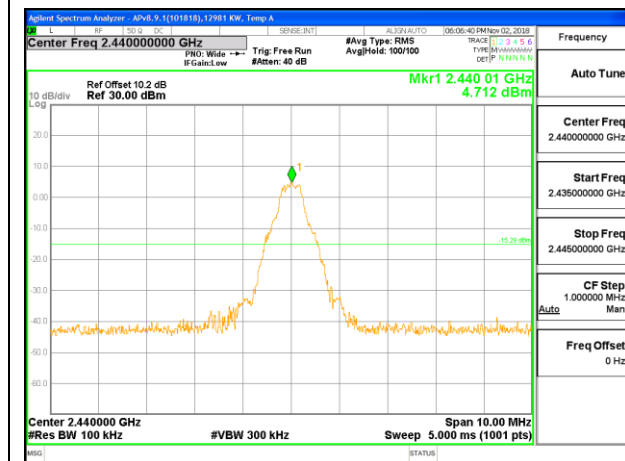
### **RESULTS**



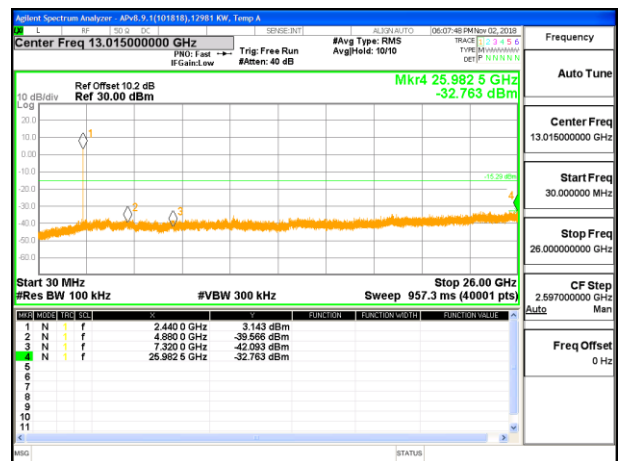
**LOW CHANNEL BANDEDGE**



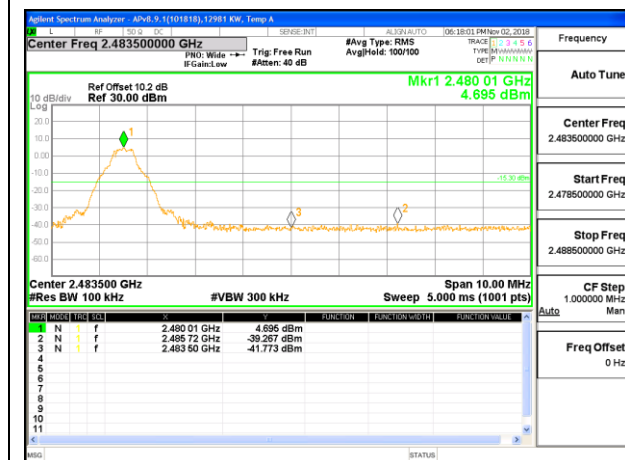
**OUT-OF-BAND LOW CHANNEL**



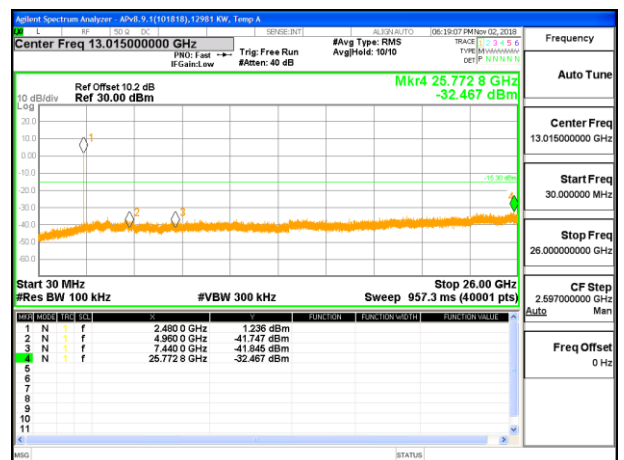
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**



**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL**

## 9. RADIATED TEST RESULTS

### 9.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|-----------------------|------------------------------------|--------------------------------------|
| 0.009-0.490           | 2400/F(kHz) @ 300 m                | -                                    |
| 0.490-1.705           | 24000/F(kHz) @ 30 m                | -                                    |
| 1.705 - 30            | 30 @ 30m                           | -                                    |
| 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 measurement below 1GHz; 1.5 m above the ground plane for measurement 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

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

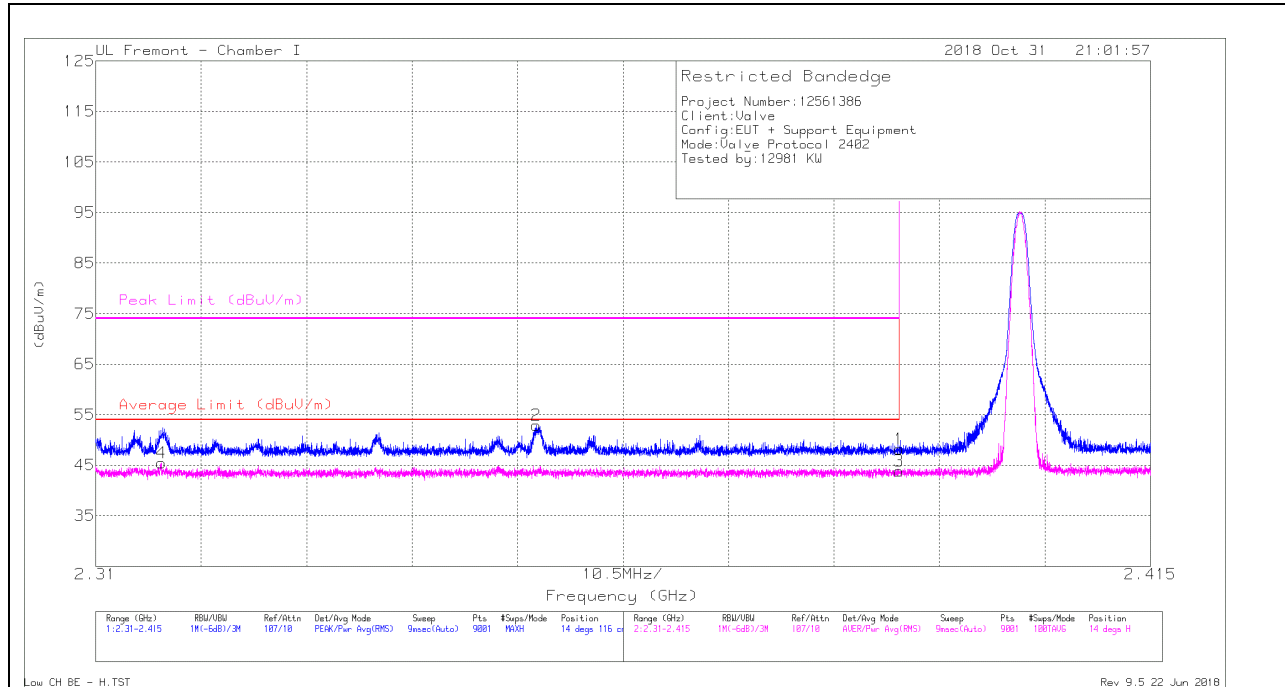
The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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

### BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT



#### Trace Markers

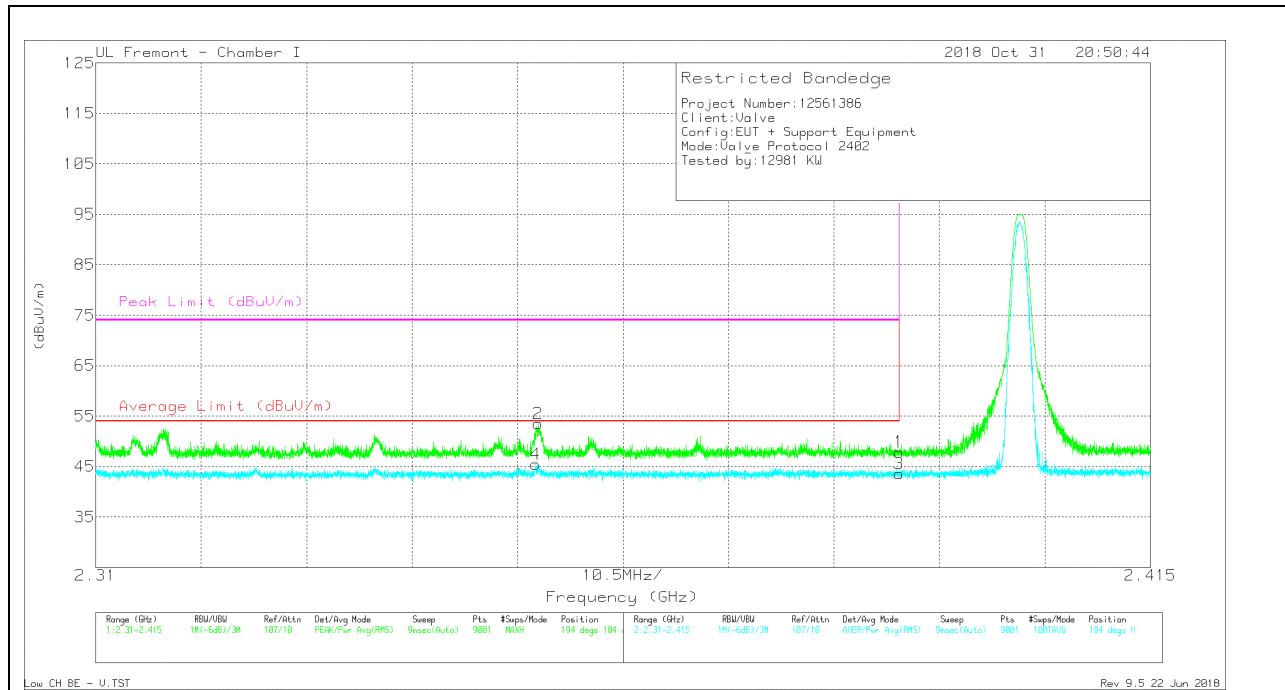
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cb/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|----------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 37.98                | Pk  | 31.8           | -21.6                | 0            | 48.18                      | -                      | -           | 74                  | -25.82         | 14             | 116         | H        |
| 2      | * 2.354         | 42.82                | Pk  | 31.6           | -21.5                | 0            | 52.92                      | -                      | -           | 74                  | -21.08         | 14             | 116         | H        |
| 3      | * 2.39          | 27.25                | RMS | 31.8           | -21.6                | 6.35         | 43.8                       | 54                     | -10.2       | -                   | -              | 14             | 116         | H        |
| 4      | * 2.317         | 28.85                | RMS | 31.6           | -21.4                | 6.35         | 45.4                       | 54                     | -8.6        | -                   | -              | 14             | 116         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cb/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          | 37.67                | Pk  | 31.8           | -21.6                | 0            | 47.87                      | -                      | -           | 74                  | -26.13         | 194            | 184         | V        |
| 2      | * 2.354         | 43.41                | Pk  | 31.6           | -21.5                | 0            | 53.51                      | -                      | -           | 74                  | -20.49         | 194            | 184         | V        |
| 3      | * 2.39          | 27.06                | RMS | 31.8           | -21.6                | 6.35         | 43.61                      | 54                     | -10.39      | -                   | -              | 194            | 184         | V        |
| 4      | * 2.354         | 29.04                | RMS | 31.6           | -21.5                | 6.35         | 45.49                      | 54                     | -8.51       | -                   | -              | 194            | 184         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

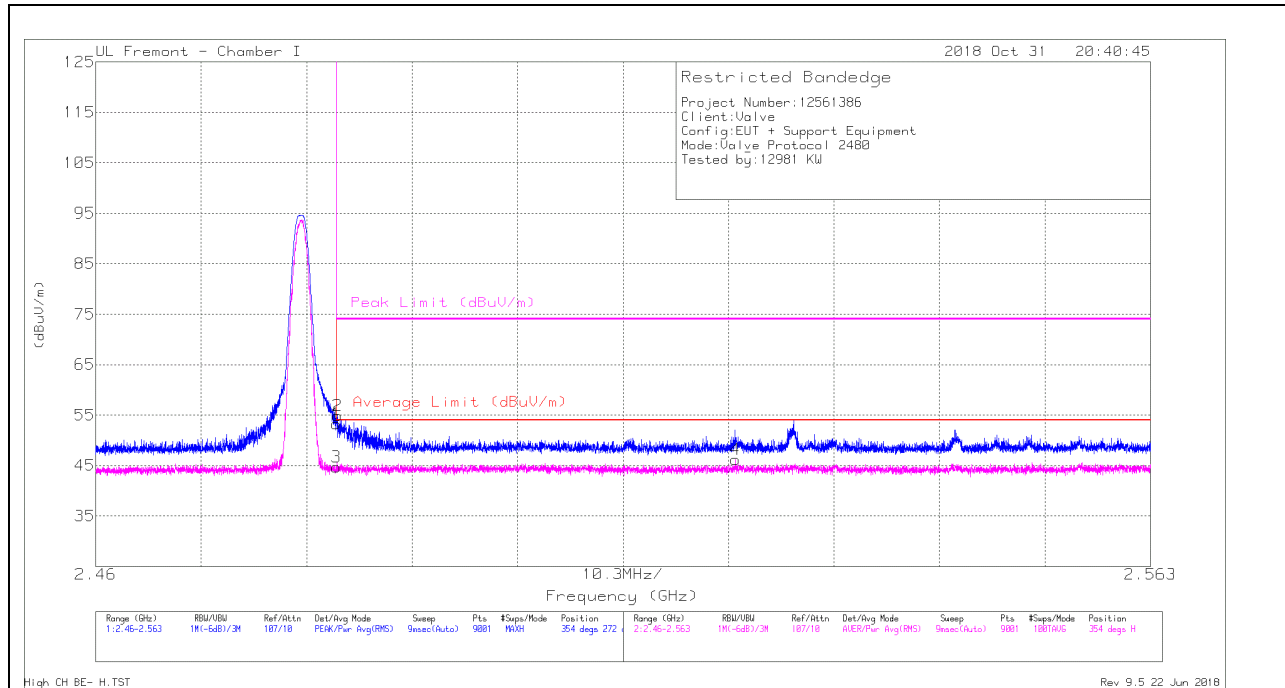
Pk - Peak detector

RMS - RMS detection



### BANDEDGE (HIGH CHANNEL)

### HORIZONTAL RESULT



#### Trace Markers

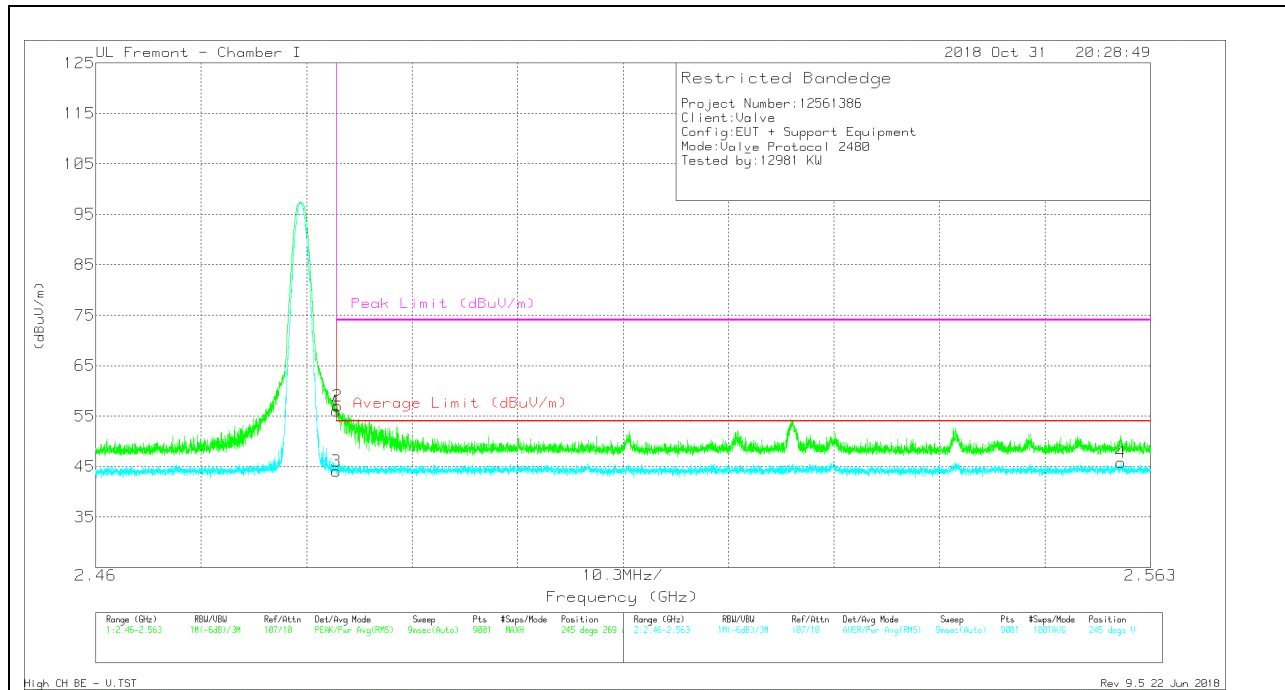
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cb/Filtr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 42.61                | Pk  | 32.4           | -21.7                 | 0            | 53.31                      | -                      | -           | 74                  | -20.69         | 354            | 272         | H        |
| 2      | * 2.484         | 44.17                | Pk  | 32.4           | -21.7                 | 0            | 54.87                      | -                      | -           | 74                  | -19.13         | 354            | 272         | H        |
| 3      | * 2.484         | 27.65                | RMS | 32.4           | -21.7                 | 6.35         | 44.7                       | 54                     | -9.3        | -                   | -              | 354            | 272         | H        |
| 4      | 2.522           | 29.13                | RMS | 32.4           | -21.7                 | 6.35         | 46.18                      | 54                     | -7.82       | -                   | -              | 354            | 272         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



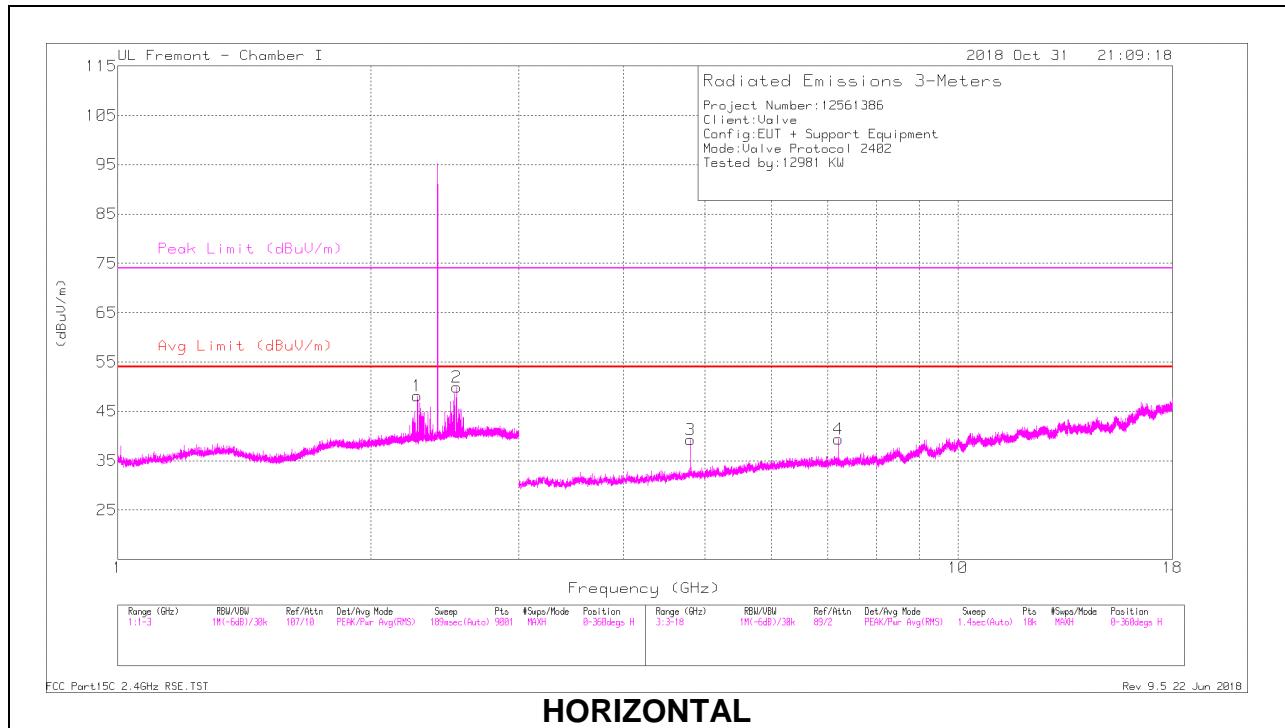
### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cb/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         | 45.32                | Pk  | 32.4           | -21.7                | 0            | 56.02                      | -                      | -           | 74                  | -17.98         | 245            | 269         | V        |
| 2      | * 2.484         | 46.28                | Pk  | 32.4           | -21.7                | 0            | 56.98                      | -                      | -           | 74                  | -17.02         | 245            | 269         | V        |
| 3      | * 2.484         | 27.07                | RMS | 32.4           | -21.7                | 6.35         | 44.12                      | 54                     | -9.88       | -                   | -              | 245            | 269         | V        |
| 4      | 2.56            | 28.71                | RMS | 32.4           | -21.6                | 6.35         | 45.86                      | 54                     | -8.14       | -                   | -              | 245            | 269         | V        |

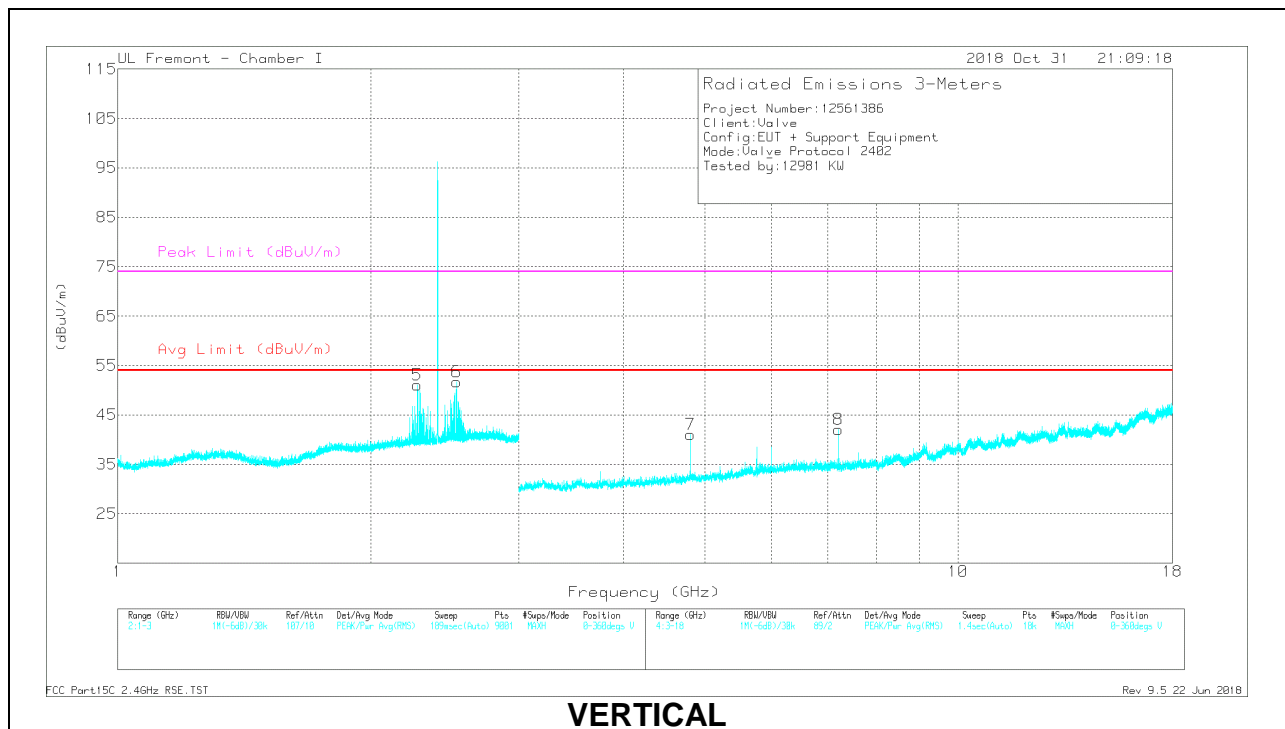
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**HARMONICS AND SPURIOUS EMISSIONS**

**LOW CHANNEL RESULTS**



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

| Marker | 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      | * 2.274         | 42.56                | PK2  | 31.3           | -21.5                  | 0            | 52.36                      | -                  | -           | 74                  | -21.64         | 30             | 170         | H        |
|        | * 2.274         | 28.73                | MAv1 | 31.3           | -21.5                  | 6.35         | 44.88                      | 54                 | -9.12       | -                   | -              | 30             | 170         | H        |
| 2      | 2.53            | 39.26                | Pk   | 32.4           | -21.7                  | 0            | 49.96                      | -                  | -           | -                   | -              | 0-360          | 198         | H        |
| 5      | * 2.274         | 41.69                | PK2  | 31.3           | -21.5                  | 0            | 51.49                      | -                  | -           | 74                  | -22.51         | 264            | 106         | V        |
|        | * 2.274         | 27.91                | MAv1 | 31.3           | -21.5                  | 6.35         | 44.06                      | 54                 | -9.94       | -                   | -              | 264            | 106         | V        |
| 6      | 2.53            | 41.05                | Pk   | 32.4           | -21.7                  | 0            | 51.75                      | -                  | -           | -                   | -              | 0-360          | 198         | V        |
| 3      | * 4.804         | 38.15                | PK2  | 34.2           | -28                    | 0            | 44.35                      | -                  | -           | 74                  | -29.65         | 326            | 110         | H        |
|        | * 4.804         | 26.43                | MAv1 | 34.3           | -28                    | 6.35         | 39.08                      | 54                 | -14.92      | -                   | -              | 326            | 110         | H        |
| 4      | 7.206           | 29.82                | Pk   | 35.6           | -26                    | 0            | 39.42                      | -                  | -           | -                   | -              | 0-360          | 100         | H        |
| 7      | * 4.804         | 39.92                | PK2  | 34.3           | -28                    | 0            | 46.22                      | -                  | -           | 74                  | -27.78         | 65             | 100         | V        |
|        | * 4.804         | 25.9                 | MAv1 | 34.2           | -28                    | 6.35         | 38.45                      | 54                 | -15.55      | -                   | -              | 65             | 100         | V        |
| 8      | 7.205           | 32.46                | Pk   | 35.6           | -26                    | 0            | 42.06                      | -                  | -           | -                   | -              | 0-360          | 198         | V        |

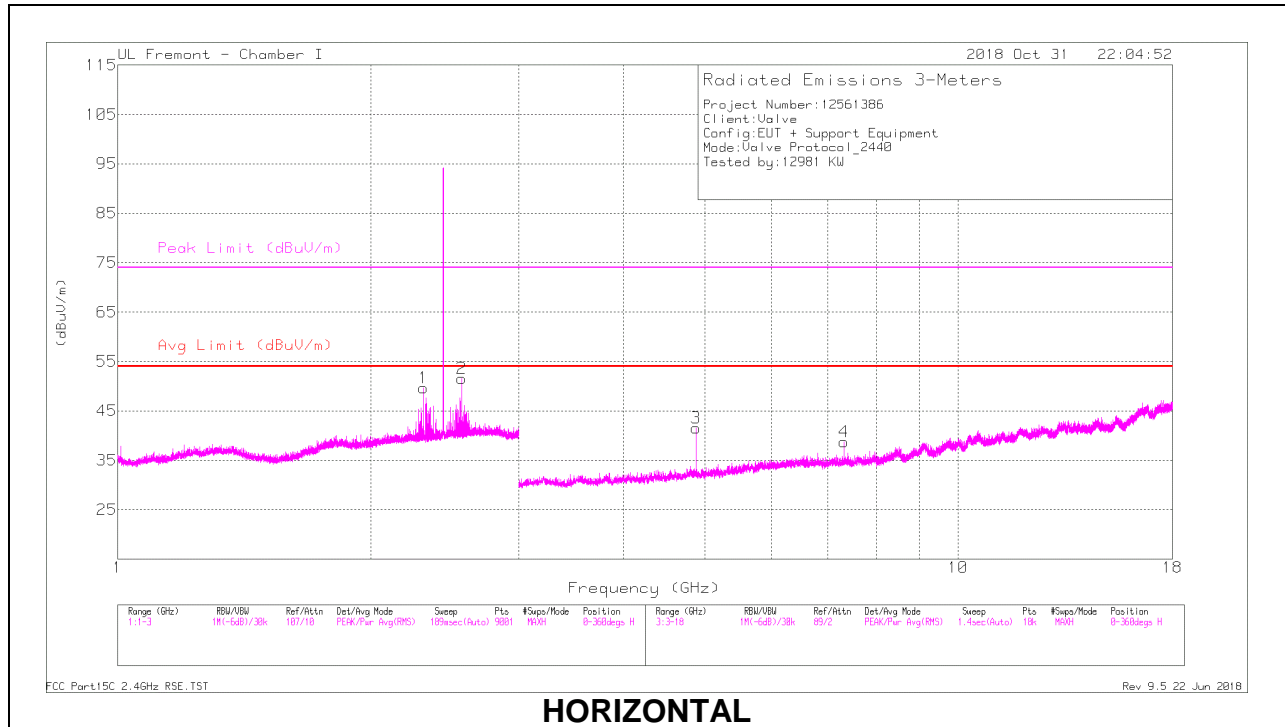
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

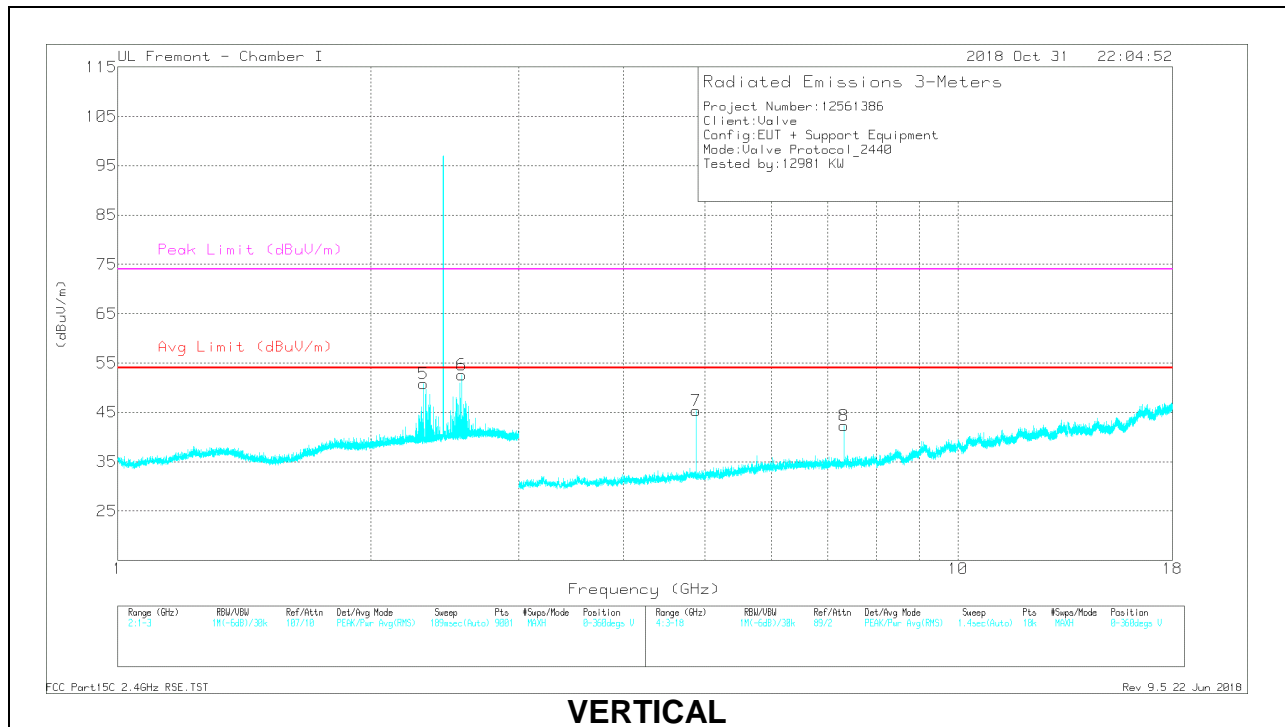
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### MID CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T862 (dB/m) | Amp/Cbl/Fltr/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      | * 2.312         | 44.66                | PK2  | 31.5           | -21.5                 | 0            | 54.66                      | -                  | -           | 74                  | -19.34         | 36             | 146         | H        |
|        | 2.312           | 30.67                | MAv1 | 31.5           | -21.5                 | 6.35         | 47.02                      | 54                 | -6.98       | -                   | -              | 36             | 146         | H        |
| 2      | 2.568           | 40.84                | Pk   | 32.4           | -21.7                 | 0            | 51.54                      | -                  | -           | -                   | -              | 0-360          | 100         | H        |
|        | * 2.312         | 47.06                | PK2  | 31.5           | -21.5                 | 0            | 57.06                      | -                  | -           | 74                  | -16.94         | 263            | 100         | V        |
| 5      | * 2.312         | 31.24                | MAv1 | 31.5           | -21.5                 | 6.35         | 47.59                      | 54                 | -6.41       | -                   | -              | 263            | 100         | V        |
|        | 2.568           | 41.93                | Pk   | 32.4           | -21.7                 | 0            | 52.63                      | -                  | -           | -                   | -              | 0-360          | 100         | V        |
| 3      | * 4.88          | 39.88                | PK2  | 34.1           | -28.8                 | 0            | 45.18                      | -                  | -           | 74                  | -28.82         | 48             | 130         | H        |
|        | * 4.88          | 27.82                | MAv1 | 34.1           | -28.8                 | 6.35         | 39.47                      | 54                 | -14.53      | -                   | -              | 48             | 130         | H        |
| 4      | * 7.319         | 31.69                | PK2  | 35.6           | -26                   | 0            | 41.29                      | -                  | -           | 74                  | -32.71         | 130            | 178         | H        |
|        | * 7.318         | 23.83                | MAv1 | 35.6           | -26                   | 6.35         | 39.78                      | 54                 | -14.22      | -                   | -              | 130            | 178         | H        |
| 7      | * 4.88          | 41.67                | PK2  | 34.2           | -28.8                 | 0            | 47.07                      | -                  | -           | 74                  | -26.93         | 75             | 107         | V        |
|        | * 4.878         | 26.51                | MAv1 | 34.2           | -28.7                 | 6.35         | 38.36                      | 54                 | -15.64      | -                   | -              | 75             | 107         | V        |
| 8      | * 7.32          | 34.42                | PK2  | 35.6           | -26                   | 0            | 44.02                      | -                  | -           | 74                  | -29.98         | 11             | 176         | V        |
|        | * 7.32          | 25.73                | MAv1 | 35.6           | -26                   | 6.35         | 41.68                      | 54                 | -12.32      | -                   | -              | 11             | 176         | V        |

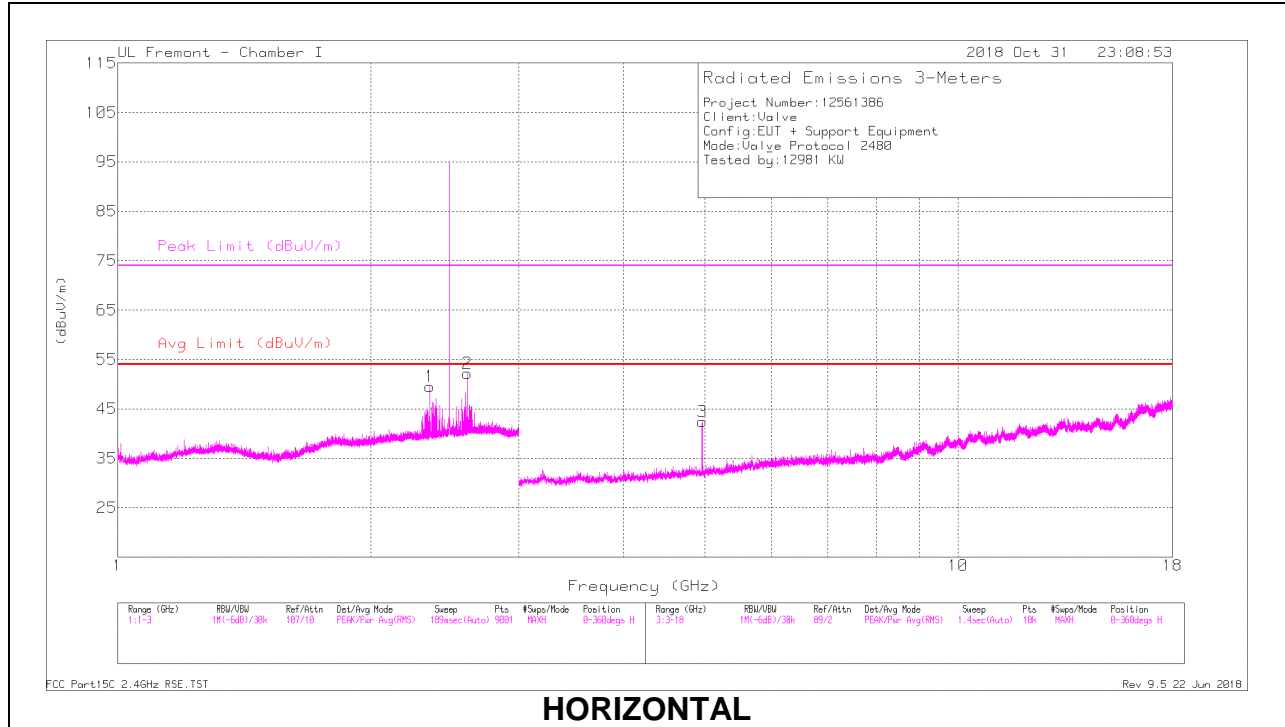
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

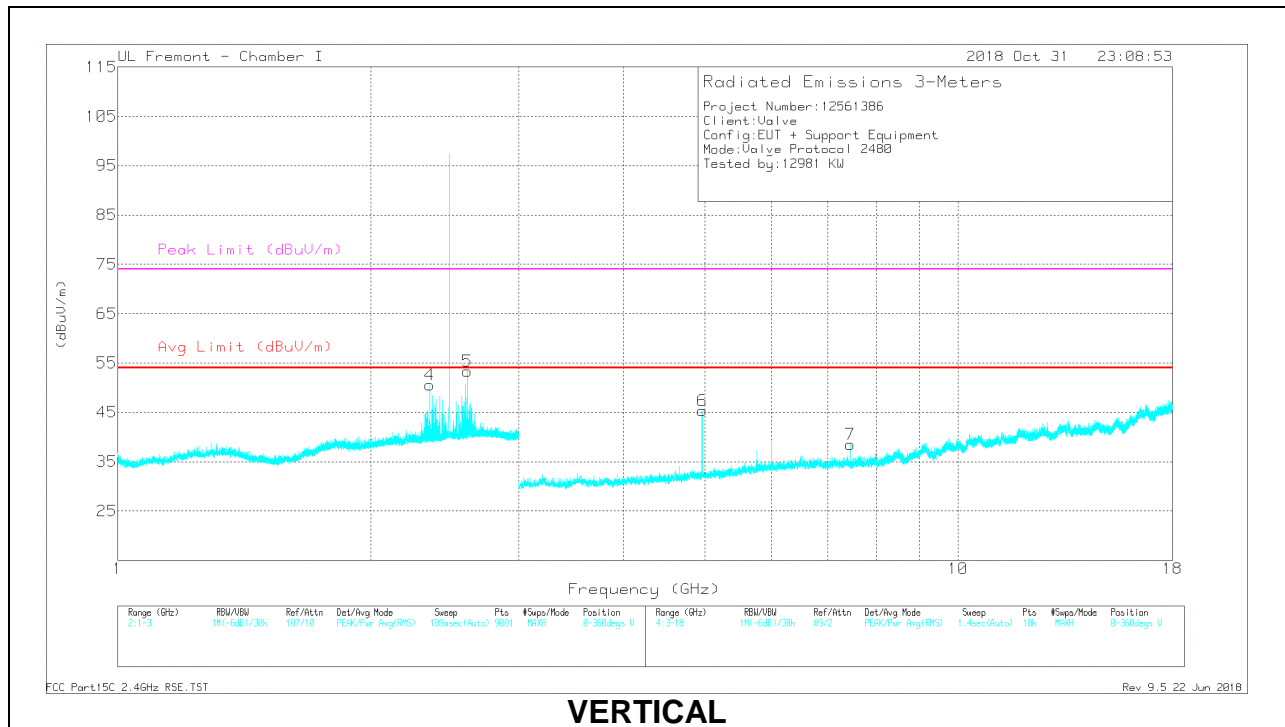
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T862 (dB/m) | Amp/Cbl/Fltr/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      | * 2.352         | 42.36                | PK2  | 31.6           | -21.5                 | 0            | 52.46                      | -                  | -           | 74                  | -21.54         | 165            | 357         | H        |
|        | * 2.352         | 28.34                | MAv1 | 31.6           | -21.5                 | 6.35         | 44.79                      | 54                 | -9.21       | -                   | -              | 165            | 357         | H        |
| 2      | 2.608           | 41.33                | Pk   | 32.5           | -21.6                 | 0            | 52.23                      | -                  | -           | -                   | -              | 0-360          | 100         | H        |
| 4      | * 2.352         | 42.14                | PK2  | 31.6           | -21.5                 | 0            | 52.24                      | -                  | -           | 74                  | -21.76         | 261            | 111         | V        |
|        | * 2.352         | 28.11                | MAv1 | 31.6           | -21.5                 | 6.35         | 44.56                      | 54                 | -9.44       | -                   | -              | 261            | 111         | V        |
| 5      | 2.608           | 42.4                 | Pk   | 32.5           | -21.6                 | 0            | 53.3                       | -                  | -           | -                   | -              | 0-360          | 100         | V        |
| 3      | * 4.96          | 40.11                | PK2  | 34.2           | -29                   | 0            | 45.31                      | -                  | -           | 74                  | -28.69         | 50             | 112         | H        |
|        | * 4.96          | 27.8                 | MAv1 | 34.2           | -29                   | 6.35         | 39.35                      | 54                 | -14.65      | -                   | -              | 50             | 112         | H        |
| 6      | * 4.958         | 39.71                | PK2  | 34.2           | -29                   | 0            | 44.91                      | -                  | -           | 74                  | -29.09         | 85             | 100         | V        |
|        | * 4.96          | 28.36                | MAv1 | 34.2           | -29                   | 6.35         | 39.91                      | 54                 | -14.09      | -                   | -              | 85             | 100         | V        |
| 7      | * 7.44          | 34.82                | PK2  | 35.6           | -26                   | 0            | 44.42                      | -                  | -           | 74                  | -29.58         | 15             | 181         | V        |
|        | * 7.44          | 25.89                | MAv1 | 35.6           | -26                   | 6.35         | 41.84                      | 54                 | -12.16      | -                   | -              | 15             | 181         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

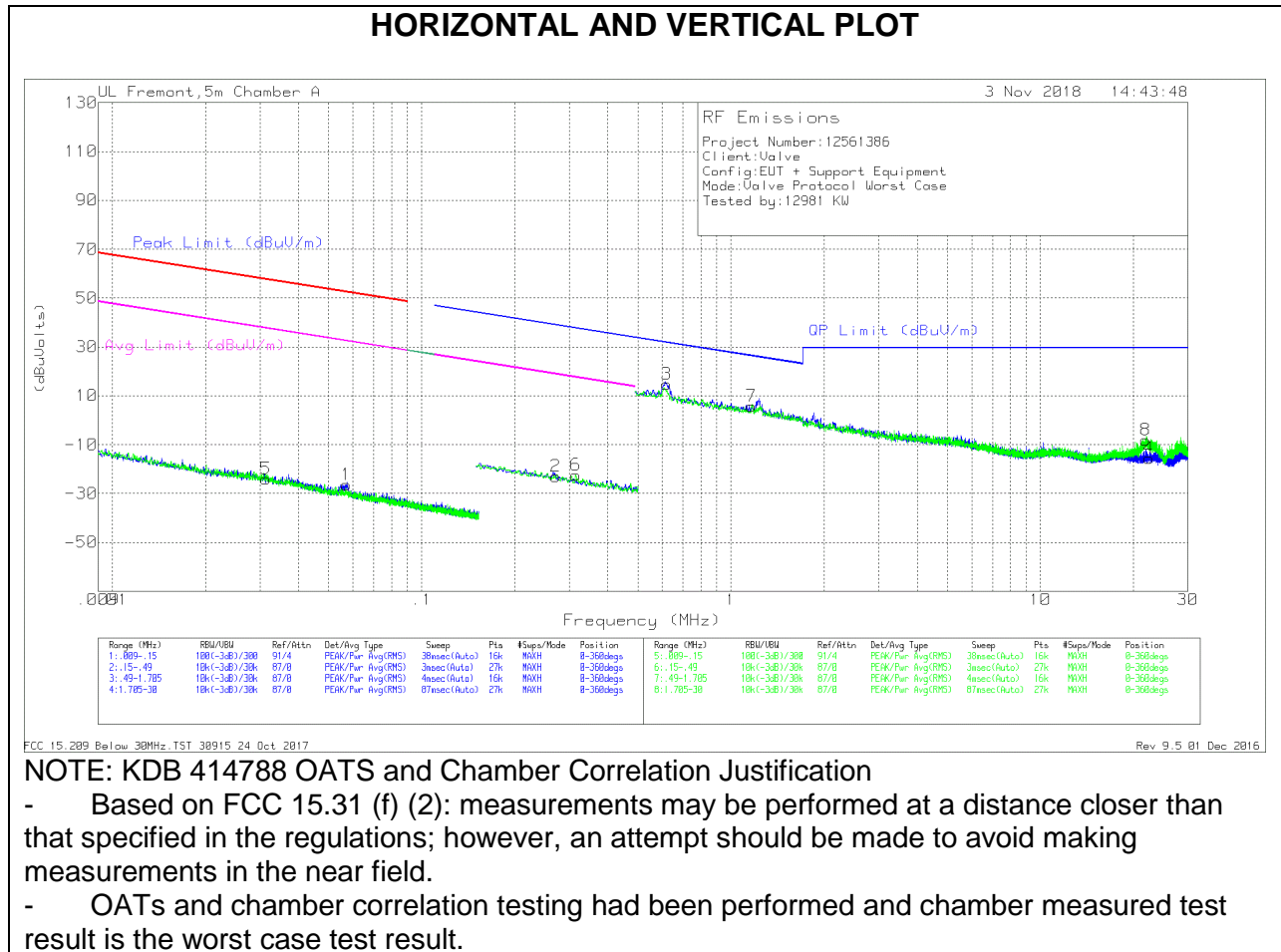
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average



### 9.3. Worst Case Below 30 MHz

#### SPURIOUS EMISSIONS 9 kHz TO 30 MHz (WORST-CASE CONFIGURATION)



**Below 30 MHz Data**

Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cbl (dB) | Dist Corr 300m | Corrected Reading (dBuVolts) | Peak Limit (dBuV/m) | Margin (dB) | Avg Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|----------|----------------|------------------------------|---------------------|-------------|--------------------|-------------|----------------|
| 5      | .03136          | 40.55                | Pk  | 15.4                | .1       | -80            | -23.95                       | 57.66               | -81.61      | 37.66              | -61.61      | 0-360          |
| 1      | .05711          | 38.94                | Pk  | 14.4                | .1       | -80            | -26.56                       | 52.45               | -79.01      | 32.45              | -59.01      | 0-360          |
| 2      | .27132          | 43                   | Pk  | 13.8                | .1       | -80            | -23.1                        | 38.94               | -62.04      | 18.94              | -42.04      | 0-360          |
| 6      | .31509          | 43.61                | Pk  | 13.8                | .1       | -80            | -22.49                       | 37.64               | -60.13      | 17.64              | -40.13      | 0-360          |

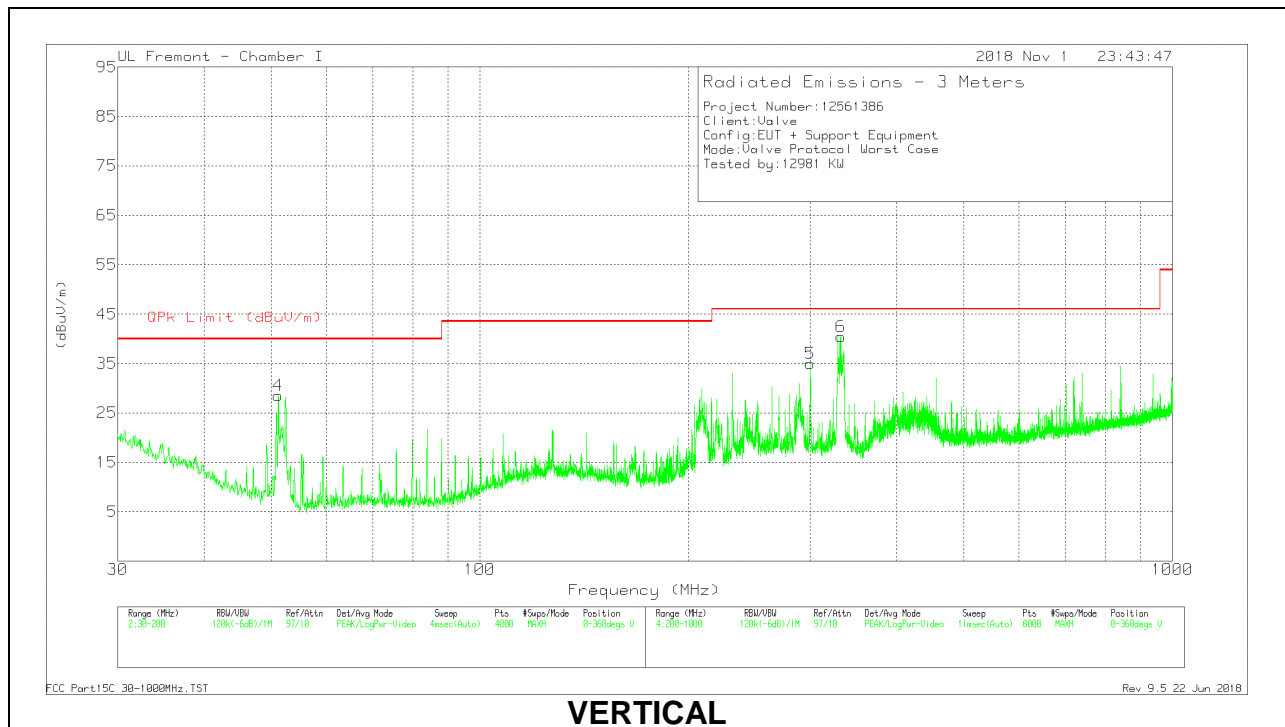
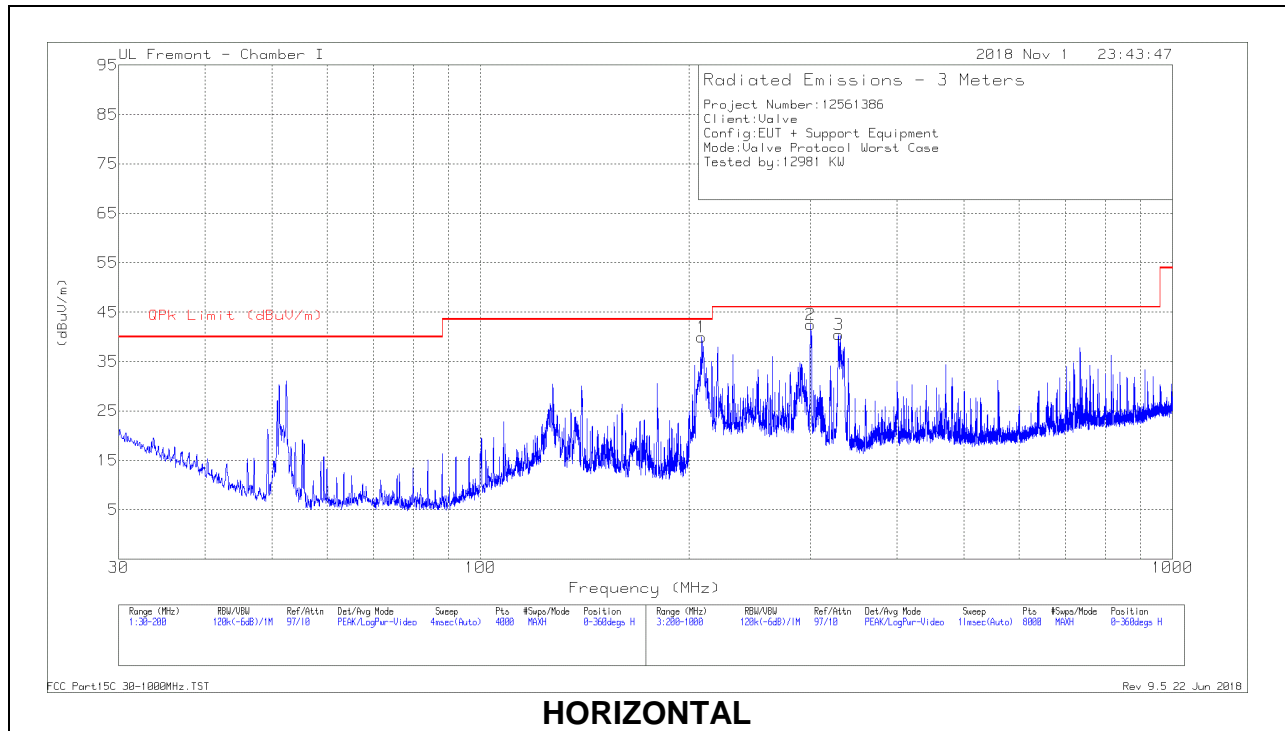
Pk - Peak detector

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cbl (dB) | Dist Corr 30m | Corrected Reading (dBuVolts) | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|----------|---------------|------------------------------|-------------------|-------------|----------------|
| 3      | .61901          | 40.64                | Pk  | 14                  | .1       | -40           | 14.74                        | 31.78             | -17.04      | 0-360          |
| 7      | 1.16496         | 31.18                | Pk  | 14.3                | .2       | -40           | 5.68                         | 26.3              | -20.62      | 0-360          |
| 8      | 21.91149        | 16.89                | Pk  | 14.2                | .7       | -40           | -8.21                        | 29.5              | -37.71      | 0-360          |
| 4      | 22.44282        | 9.82                 | Pk  | 14                  | .7       | -40           | -15.48                       | 29.5              | -44.98      | 0-360          |

Pk - Peak detector

### 9.4. Worst Case Below 1 GHz

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



**Below 1GHz Data**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AFT130 (dB/m) | Amp/Cbl (dB/m) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 4      | 51.0594         | 50.12                | Pk  | 11.2          | -31.1          | 30.22                      | 40                 | -9.78       | 93             | 124         | H        |
|        | 51.0594         | 46.45                | Qp  | 11.2          | -31.1          | 26.55                      | 40                 | -13.45      | 93             | 124         | H        |
| 1      | 208.2416        | 56.11                | Pk  | 14.3          | -30.2          | 40.21                      | 43.52              | -3.31       | 129            | 185         | H        |
|        | 208.2416        | 47.51                | Qp  | 14.3          | -30.2          | 31.61                      | 43.52              | -11.91      | 129            | 185         | H        |
| 2      | 299.8425        | 55.31                | Pk  | 17.4          | -29.8          | 42.91                      | 46.02              | -3.11       | 115            | 166         | V        |
|        | 299.8425        | 45.75                | Qp  | 17.4          | -29.8          | 33.35                      | 46.02              | -12.67      | 115            | 166         | V        |
| 3      | 328.5184        | 52.87                | Pk  | 17.9          | -29.6          | 41.17                      | 46.02              | -4.85       | 268            | 241         | V        |
|        | 328.5184        | 43.84                | Qp  | 17.9          | -29.6          | 32.14                      | 46.02              | -13.88      | 268            | 241         | V        |
| 5      | 298.8424        | 48.32                | Pk  | 17.4          | -29.8          | 35.92                      | 43.52              | -7.6        | 193            | 153         | V        |
|        | 298.8424        | 39.62                | Qp  | 17.4          | -29.8          | 27.22                      | 43.52              | -16.3       | 193            | 153         | V        |
| 6      | 330.8489        | 53.64                | Pk  | 17.8          | -29.7          | 41.74                      | 43.52              | -1.78       | 240            | 158         | H        |
|        | 330.8489        | 42.15                | Qp  | 17.8          | -29.7          | 30.25                      | 43.52              | -13.27      | 240            | 158         | H        |

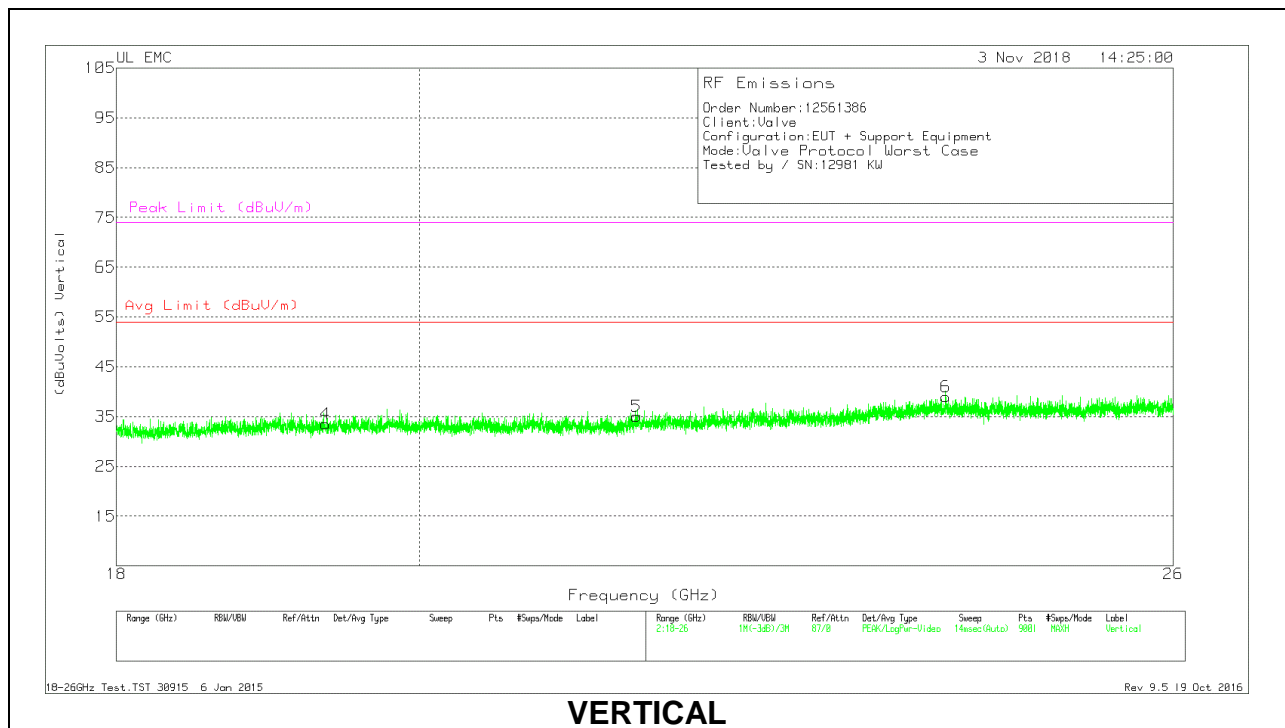
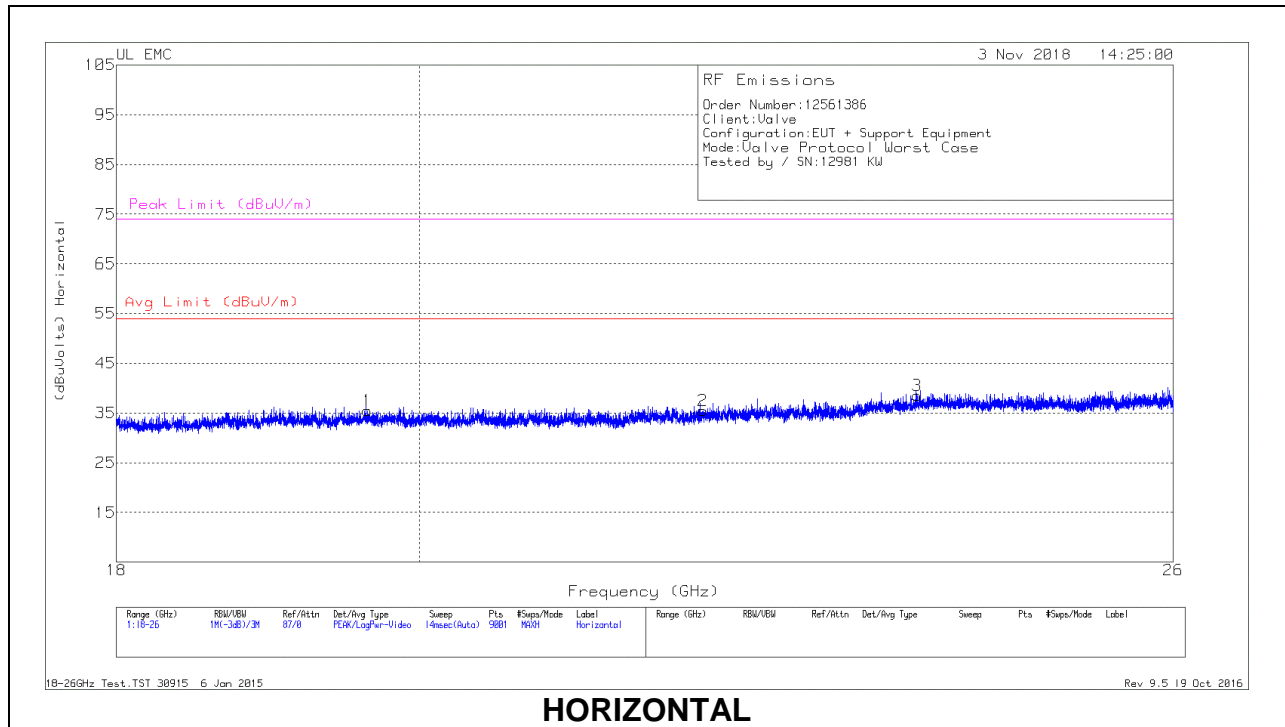
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

### 9.5. Worst Case 18-26 GHz

#### SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



**18 – 26GHz DATA**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | T447 AF (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | Corrected Reading (dBuVolts) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------|----------------|------------------------------|--------------------|-------------|---------------------|----------------|
| 1      | 19.642          | 37.19                | Pk  | 32.8           | -25          | -9.5           | 35.49                        | 54                 | -18.51      | 74                  | -38.51         |
| 2      | 22.075          | 36.99                | Pk  | 33.3           | -25.3        | -9.5           | 35.49                        | 54                 | -18.51      | 74                  | -38.51         |
| 3      | 23.781          | 38.09                | Pk  | 34.1           | -24.2        | -9.5           | 38.49                        | 54                 | -15.51      | 74                  | -35.51         |
| 4      | 19.357          | 35.21                | Pk  | 32.7           | -24.9        | -9.5           | 33.51                        | 54                 | -20.49      | 74                  | -40.49         |
| 5      | 21.568          | 36.65                | Pk  | 33.1           | -25.2        | -9.5           | 35.05                        | 54                 | -18.95      | 74                  | -38.95         |
| 6      | 24.02           | 38.37                | Pk  | 34.3           | -24.2        | -9.5           | 38.97                        | 54                 | -15.03      | 74                  | -35.03         |

Pk - Peak detector

## 10. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

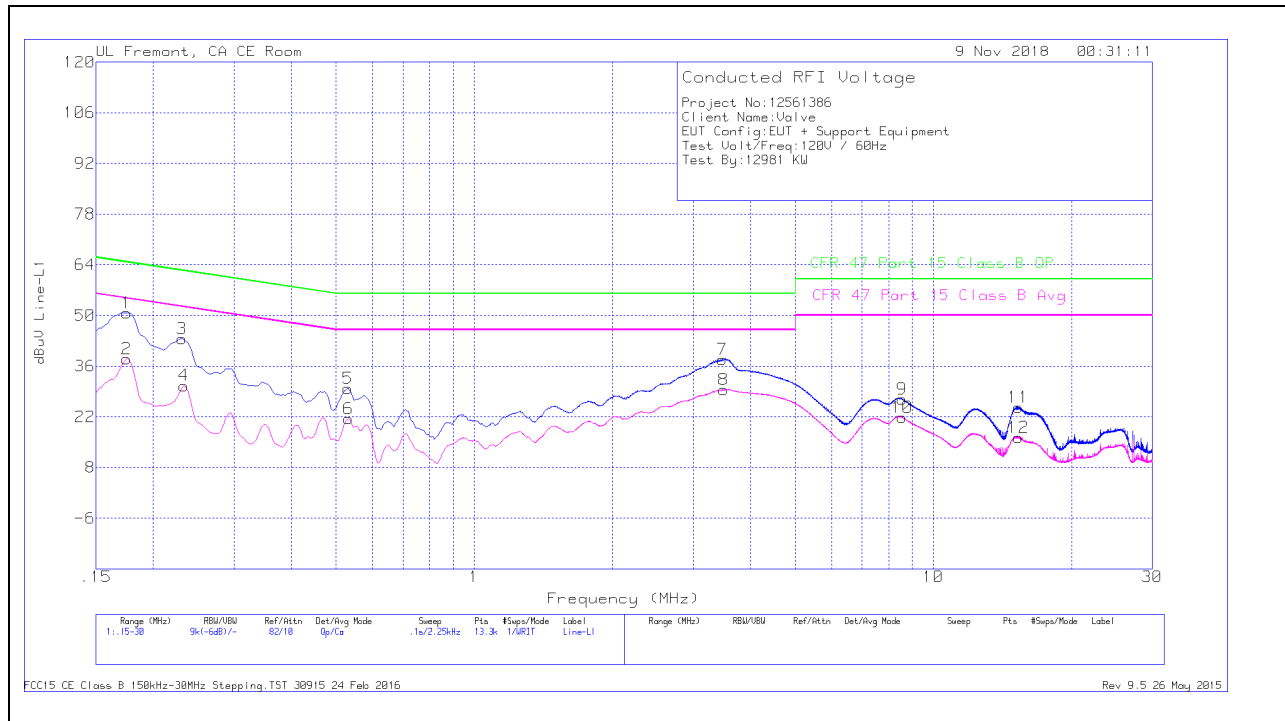
| Frequency of Emission (MHz) | Conducted Limit (dBuV) |          |
|-----------------------------|------------------------|----------|
|                             | Quasi-peak             | Average  |
| 0.15-0.5                    | 66 to 56               | 56 to 46 |
| 0.5-5                     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

\*Decreases with the logarithm of the frequency.

### RESULTS

**10.1.1. AC Power Line Norm**

**LINE 1 RESULTS**



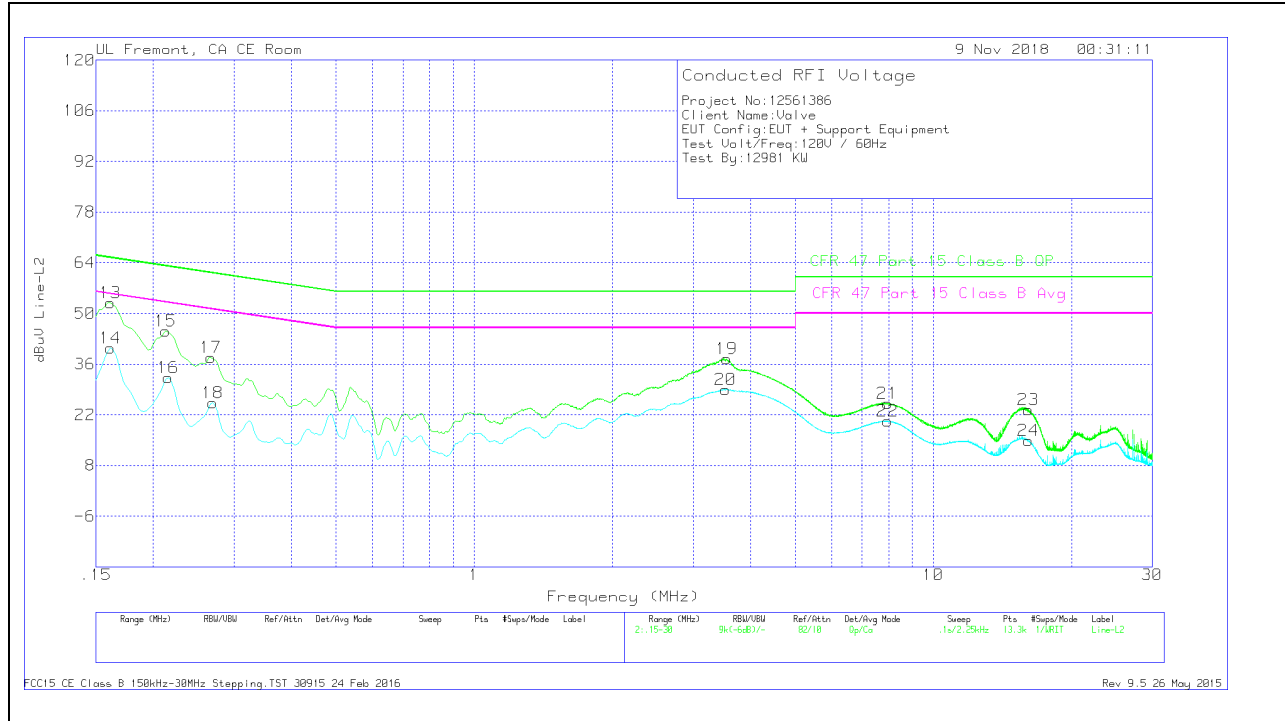
**Trace Markers**

| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |         |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR) Margin (dB) |
| 1                            | .17475          | 40.62                | Qp  | 0       | 0               | 10.1         | 50.72                  | 64.73                     | -14.01         | -                          | -                     |
| 2                            | .17475          | 27.85                | Ca  | 0       | 0               | 10.1         | 37.95                  | -                         | -              | 54.73                      | -16.78                |
| 3                            | .231            | 33.52                | Qp  | 0       | 0               | 10.1         | 43.62                  | 62.41                     | -18.79         | -                          | -                     |
| 4                            | .23325          | 20.52                | Ca  | 0       | 0               | 10.1         | 30.62                  | -                         | -              | 52.33                      | -21.71                |
| 5                            | .53137          | 19.78                | Qp  | 0       | 0               | 10.1         | 29.88                  | 56                        | -26.12         | -                          | -                     |
| 6                            | .5325           | 11.34                | Ca  | 0       | 0               | 10.1         | 21.44                  | -                         | -              | 46                         | -24.56                |
| 7                            | 3.47325         | 27.64                | Qp  | 0       | .1              | 10.1         | 37.84                  | 56                        | -18.16         | -                          | -                     |
| 8                            | 3.49575         | 19.28                | Ca  | 0       | .1              | 10.1         | 29.48                  | -                         | -              | 46                         | -16.52                |
| 9                            | 8.55375         | 16.49                | Qp  | 0       | .2              | 10.2         | 26.89                  | 60                        | -33.11         | -                          | -                     |
| 10                           | 8.547           | 11.51                | Ca  | 0       | .2              | 10.2         | 21.91                  | -                         | -              | 50                         | -28.09                |
| 11                           | 15.31275        | 14.04                | Qp  | .1      | .3              | 10.2         | 24.64                  | 60                        | -35.36         | -                          | -                     |
| 12                           | 15.31163        | 5.64                 | Ca  | .1      | .3              | 10.2         | 16.24                  | -                         | -              | 50                         | -33.76                |

Qp - Quasi-Peak detector  
 Ca - CISPR average detection



### LINE 2 RESULTS



#### Trace Markers

| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |         |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR) Margin (dB) |
| 13                           | .16125          | 42.7                 | Qp  | .1      | 0               | 10.1         | 52.9                   | 65.4                      | -12.5          | -                          | -                     |
| 14                           | .16125          | 30.27                | Ca  | .1      | 0               | 10.1         | 40.47                  | -                         | -              | 55.4                       | -14.93                |
| 15                           | .213            | 35.01                | Qp  | 0       | 0               | 10.1         | 45.11                  | 63.09                     | -17.98         | -                          | -                     |
| 16                           | .21525          | 22.15                | Ca  | 0       | 0               | 10.1         | 32.25                  | -                         | -              | 53                         | -20.75                |
| 17                           | .267            | 27.77                | Qp  | 0       | 0               | 10.1         | 37.87                  | 61.21                     | -23.34         | -                          | -                     |
| 18                           | .26925          | 15.25                | Ca  | 0       | 0               | 10.1         | 25.35                  | -                         | -              | 51.14                      | -25.79                |
| 19                           | 3.54863         | 27.23                | Qp  | 0       | .1              | 10.1         | 37.43                  | 56                        | -18.57         | -                          | -                     |
| 20                           | 3.5295          | 18.83                | Ca  | 0       | .1              | 10.1         | 29.03                  | -                         | -              | 46                         | -16.97                |
| 21                           | 7.9575          | 14.73                | Qp  | 0       | .2              | 10.2         | 25.13                  | 60                        | -34.87         | -                          | -                     |
| 22                           | 7.95525         | 9.81                 | Ca  | 0       | .2              | 10.2         | 20.21                  | -                         | -              | 50                         | -29.79                |
| 23                           | 16.12275        | 12.66                | Qp  | .1      | .3              | 10.3         | 23.36                  | 60                        | -36.64         | -                          | -                     |
| 24                           | 16.11713        | 4.12                 | Ca  | .1      | .3              | 10.3         | 14.82                  | -                         | -              | 50                         | -35.18                |

Qp - Quasi-Peak detector  
 Ca - CISPR average detection