# CERTIFICATION TEST REPORT

**Report Number. :** 11839308-E1V3

| | | |
|---|---|---|
| **Applicant** | : | UNALIWEAR, INC<br>3410 CHERRY LANE<br>AUSTIN, TX 78703, UNITED STATES |
| **Model** | : | KANEGA WATCH |
| **FCC ID** | : | 2AM4C-KANEGA |
| **EUT Description** | : | Cellular and 802.11b/g/n Enabled Watch (mPERS device) |
| **Test Standard(s)** | : | FCC 47 CFR PART 15 SUBPART C |

**Date Of Issue:**
October 23, 2017

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NVLAP LAB CODE 200065-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 9/19/17 | Initial Issue | --- |
| V2 | 10/16/17 | Updated sections 9.3 and 9.4 with channel 2 power measurement.<br>Updated sections 10.2.2 and 10.2.3 with channel 2 band edge measurements. | Huda Mustapha |
| V3 | 10/23/17 | Updated sections 9.3.4 and 9.3.5 with channel 2 measurements<br>Updated sections 9.4.3, 9.4.4 and 9.4.5 with channels 2 and 10 measurement.<br>Updated section 10.2.3 with channel 10 band edge measurements.<br>Updated section 5.5 | Huda Mustapha |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** UNALIWEAR, INC
3410 CHERRY LANE
AUSTIN, TX 78703, UNITED STATES

**EUT DESCRIPTION:** Cellular and 802.11b/g/n Enabled Watch (mPERS device)

**SERIAL NUMBER:** 87 (Radiated), 359335050142618 (Conducted)

**DATE TESTED:** JULY 18 to JULY 24, 2017 and OCTOBER 13 to 20, 2017

| 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:

*Huda Mustapha*

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UL VERIFICATION SERVICES INC.

Prepared By:

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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, KDB 558074 D01 v04 and ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

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

| 47173 Benicia Street | 47266 Benicia Street |
|---|---|
| ☒ Chamber A(IC: 2324B-1) | ☐ Chamber D(IC: 22541-1) |
| ☐ Chamber B(IC: 2324B-2) | ☐ Chamber E(IC: 22541-2) |
| ☐ Chamber C(IC: 2324B-3) | ☐ Chamber F(IC: 22541-3) |
| | ☐ Chamber G(IC: 22541-4) |
| | ☐ Chamber H(IC: 22541-5) |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.
UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.
Chambers A through C are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

# 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:

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

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 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. DESCRIPTION OF EUT

The EUT is a Cellular and 802.11 b/g/n WLAN enabled watch (mPERS device).

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 2412 - 2472 | 802.11b | 17.23 | 52.84 |
| 2412 - 2472 | 802.11g | 16.75 | 47.32 |
| 2412 - 2472 | 802.11n HT20 CDD | 16.81 | 47.97 |

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

| Frequency Band (GHz) | Antenna Gain (dBi) |
|---|---|
| 2.4 | -11.30 |

## 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 1493
The test utility software used during testing was Tera Term Ver 4.79.

## 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated bandedge, harmonics, and spurious emissions from 1 GHz to 18 GHz were performed. The EUT was set to transmit at the Low/Middle/High channels.

Radiated emissions below 30 MHz, 30 to 1000 MHz and above 18 GHz 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 and it was determined that Y orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in Y orientation.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0

For 802.11g and n HT20 modes, radiated band edge measurements on the inner channels were compliant. In addition radiated harmonics and spurious on the low, mid and high were showing margins more than 8 dB. Therefore, no additional radiated testing was deemed necessary for channels 2 and 10.

## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| Laptop | Lenovo | 20B7S0A200 | PC015REW | NA |
| Wireless Router | TP-Link | TL-WR841N | 215A270012990 | NA |
| DC Power Supply | Revelry Microsystems | Volt Werks | N/A | N/A |

The laptop and wireless router are used to transmit commands to the unit, but are disconnected during testing.

**I/O CABLES (CONDUCTED TEST)**

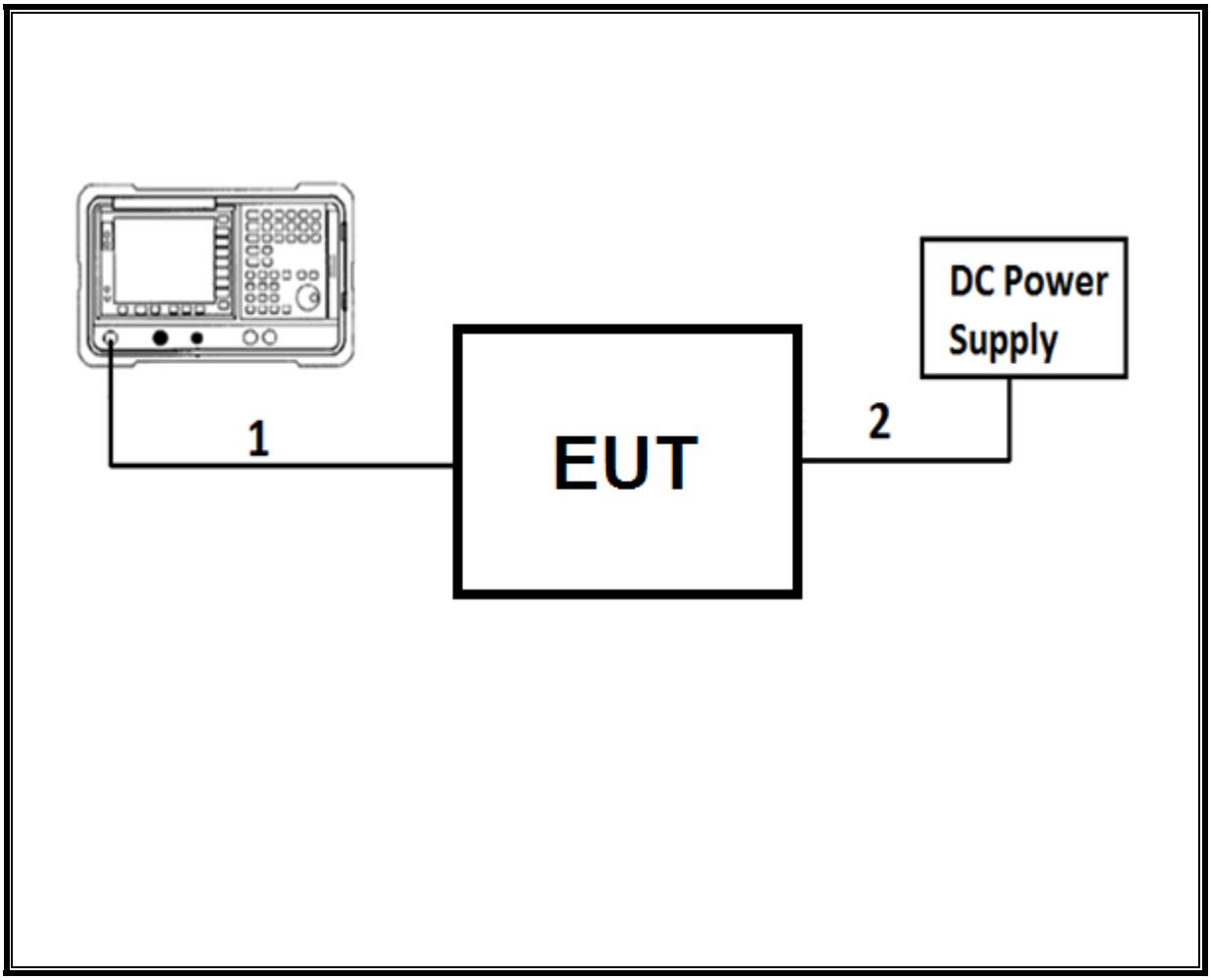
| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length m | Remarks |
| 1 | Antenna | 1 | RF | Shielded | 0.2 | To spectrum analyzer |
| 2 | DC | 1 | 1 | Micro USB | 2 | To DC power supply |

**I/O CABLES (RADIATED)**

The EUT is a standalone battery powered unit for radiated testing.

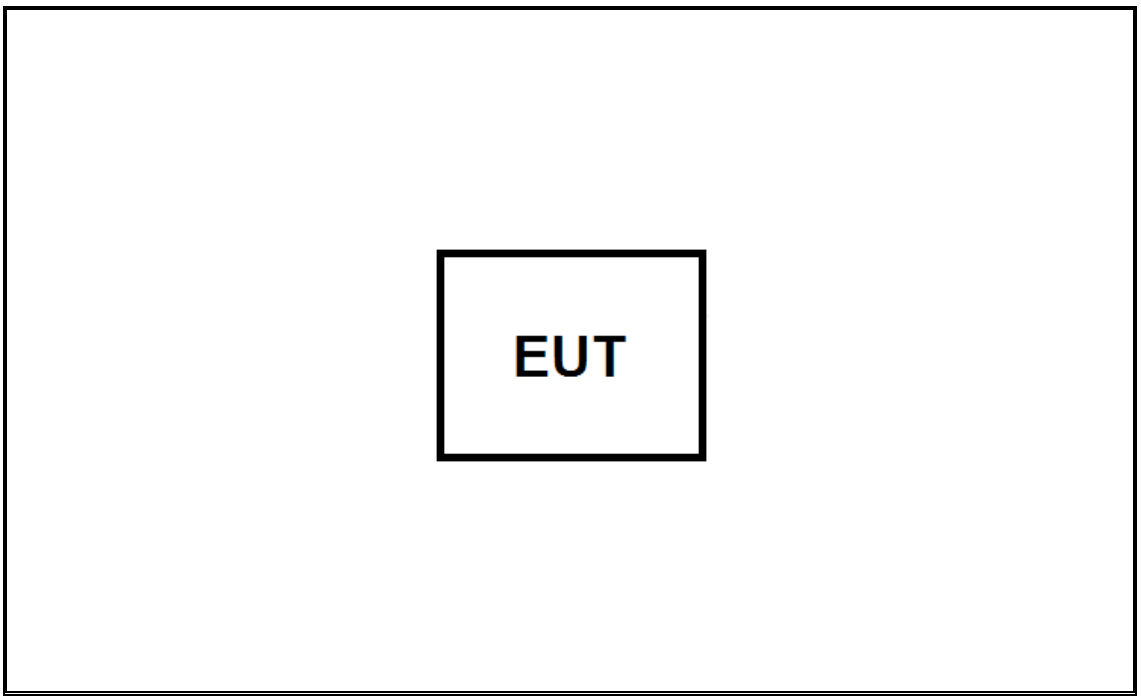
## TEST SETUP

## CONDUCTED TEST SETUP DIAGRAM



**TEST SETUP**

**RADIATED EMISSIONS SETUP DIAGRAM**



# 6. TEST AND MEASUREMENT EQUIPMENT

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

| Test Equipment List | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **T Number** | **Cal Date** | **Cal Due** |
| Amplifier, 1 to 18 GHz | Miteq | AFS43-00101800-25-S-42 | 493 | 02/15/17 | 02/15/18 |
| Amplifier, 1 to 8 GHz | Miteq | AMF-4D-01000800-30-29P | 1170 | 04/28/17 | 04/28/18 |
| Amplifier, 10KHz to 1GHz, 32dB | Keysight | 8447D | 300 | 11/10/16 | 11/10/17 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences | JB3 | 130 | 09/23/16 | 09/23/17 |
| Antenna, Active Loop 9KHz to 30MHz | ETS-Lindgren | 6502 | 1683 | 02/17/17 | 02/17/18 |
| Antenna, Horn 1-18GHz | ETS-Lindgren | 3117 | 862 | 06/09/17 | 06/09/18 |
| PXA Spectrum Analyzer, 3Hz to 44GHz | Agilent | N9030A | 1466 | 04/11/17 | 04/11/18 |
| EMI Reciever | Rohde & Schwarz | ESR-EMI | 1436 | 01/06/17 | 01/06/18 |
| 18 - 26.5 GHz Horn Antenna | Seavey Division | MWH-1826/B | 449 | 06/12/17 | 06/12/18 |
| Pre-Amp 1-26.5 GHz | Agilent | 8449B | 404 | 07/05/17 | 07/05/18 |
| Spectrum Analyzer | Agilent | 8564E | 106 | 09/07/16 | 09/07/17 |

| Test Software List | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Version** |
| Radiated Software | UL | UL EMC | Ver 9.5, Apr 26, 2016 |
| Antenna Port Software | UL | UL RF | Ver 5.1.1, July 15, 2016 |

# 7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

6 dB BW: KDB 558074 D01 v04, Section 8.1.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Output Power: KDB 558074 D01 v04, Section 9.2.3.2.

Power Spectral Density: KDB 558074 D01 v04, Section 10.3.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.1 (b).

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

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

General radiated emissions: ANSI C63.10:2013

# 8. SUMMARY TABLE

| FCC Part Section | Test Description | Test Limit | Test Condition | Test Result |
|---|---|---|---|---|
| 15.247 (a)(2) | Occupied Band width (6dB) | >500KHz | Conducted | Pass |
| 2.1051, 15.247 (d) | Band Edge / Conducted Spurious Emission | -30dBc | | Pass |
| 15.247 (b) (3) | TX conducted output power | <30dBm | | Pass |
| 15.247 (e) | PSD | <8dBm | | Pass |
| 15.205, 15.209, 15.247(d) | Radiated Spurious Emission | < 54dBuV/m | Radiated | Pass |

# 9. ANTENNA PORT TEST RESULTS

## 9.1. ON TIME AND DUTY CYCLE

**LIMITS**

None; for reporting purposes only.

**PROCEDURE**

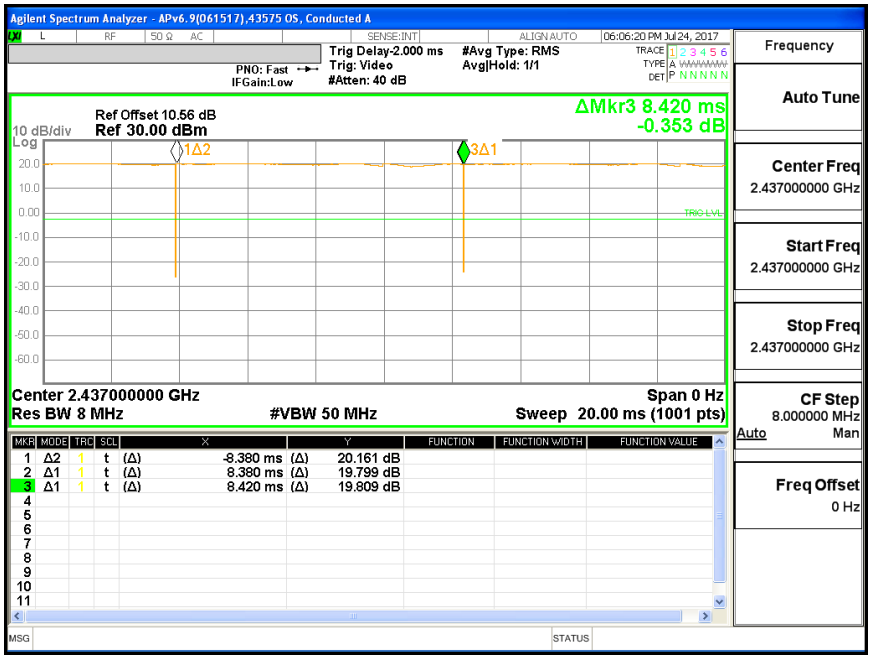
KDB 558074 Zero-Span Spectrum Analyzer Method.

**ON TIME AND DUTY CYCLE RESULTS**

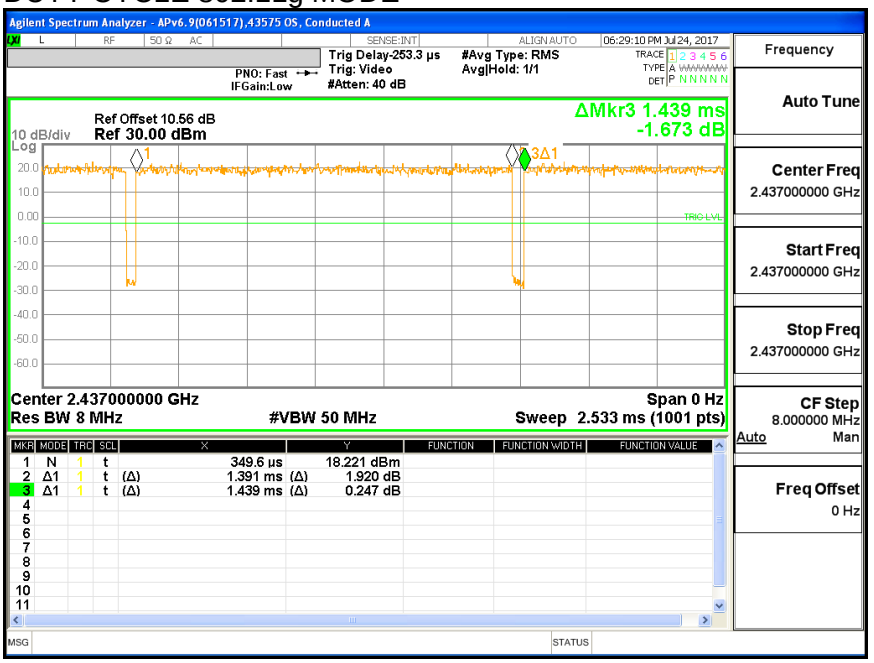
| Mode | ON Time (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/T Minimum VBW (kHz) |
|---|---|---|---|---|---|---|
| 802.11b | 8.38 | 8.42 | 1.00 | 99.52% | 0.00 | 0.01 |
| 802.11g | 1.39 | 1.44 | 0.97 | 96.66% | 0.15 | 0.72 |
| 802.11n HT20 CDD | 1.30 | 1.34 | 0.97 | 97.16% | 0.13 | 0.77 |

## DUTY CYCLE PLOTS

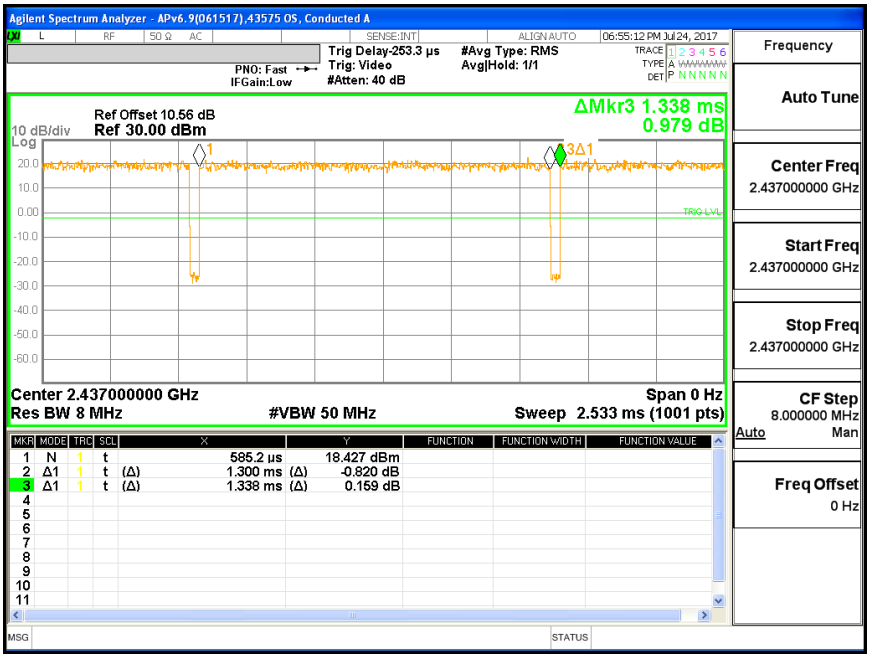
DUTY CYCLE 802.11b MODE




DUTY CYCLE 802.11g MODE



DUTY CYCLE 802.11n HT20 CDD MODE



## 9.2. 11b MODE IN THE 2.4GHz BAND

### 9.2.1. 6 dB BANDWIDTH

**LIMITS**

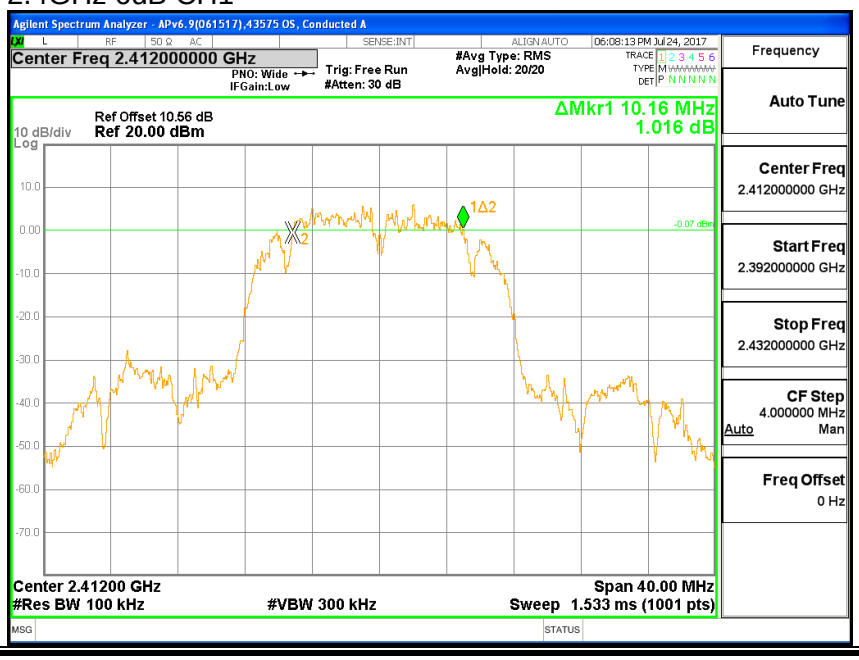
FCC §15.247 (a) (2)

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

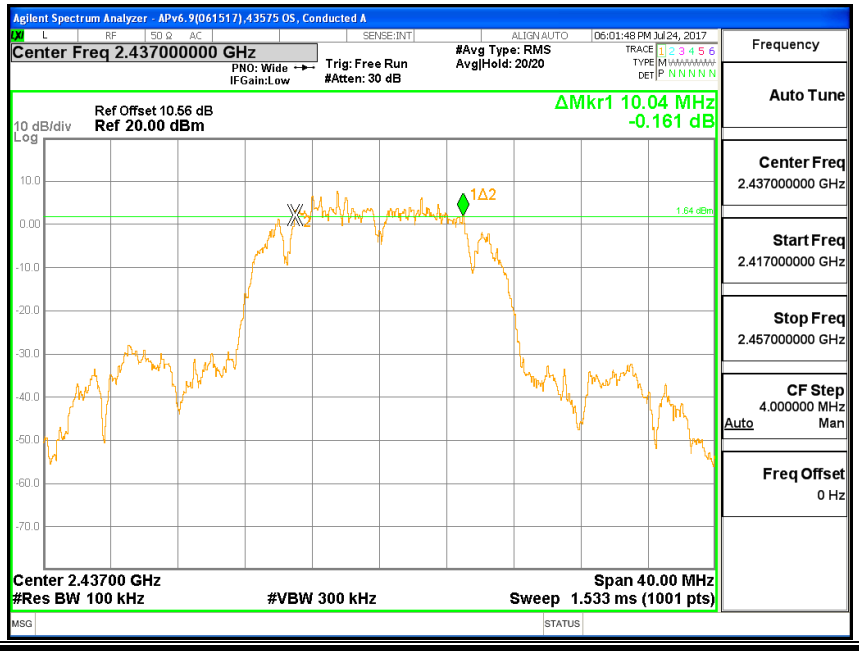
**RESULTS**

| Channel | Frequency (MHz) | 6 dB BW (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| CH1 | 2412 | 10.16 | 0.5 |
| CH6 | 2437 | 10.04 | 0.5 |
| CH11 | 2462 | 11.32 | 0.5 |

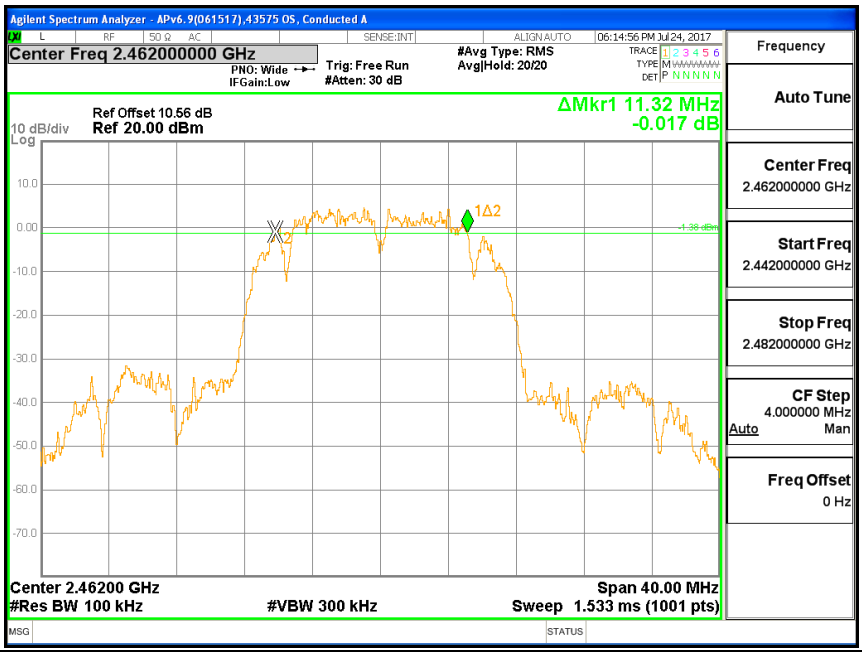
2.4GHz 6dB CH1




2.4GHz 6dB CH6



2.4GHz 6dB CH11



### 9.2.2. 99% BANDWIDTH

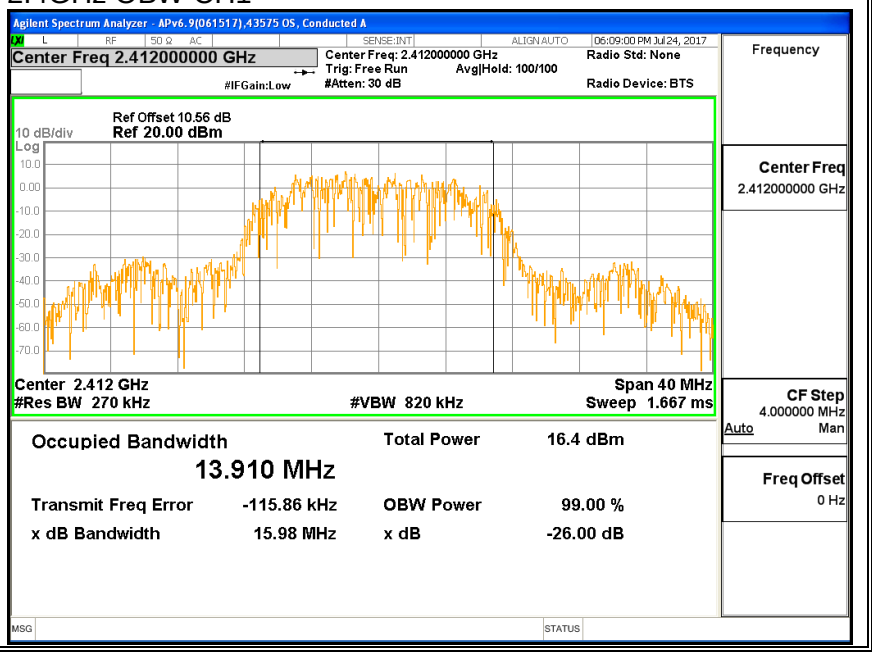
**LIMITS**

None; for reporting purposes only.

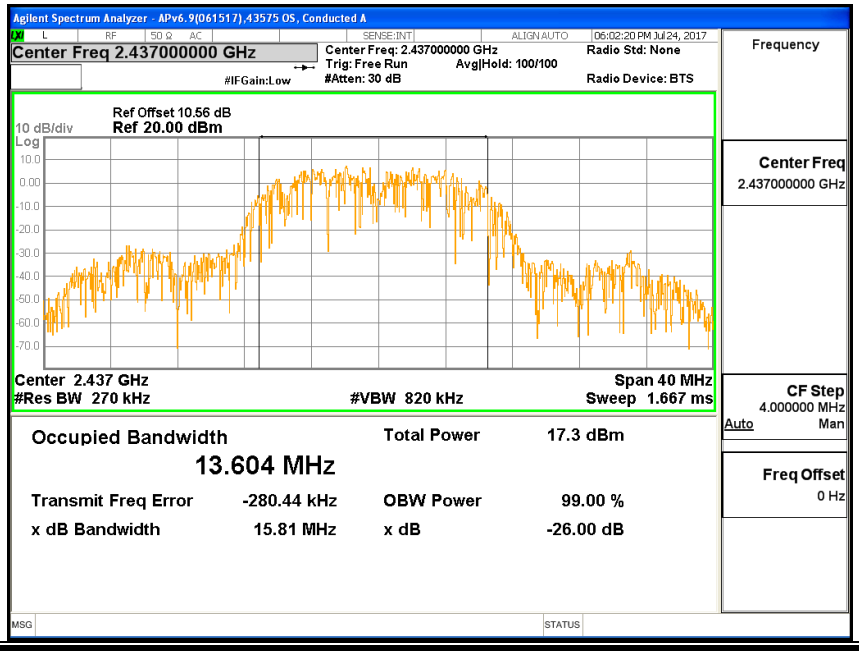
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| CH1 | 2412 | 13.910 |
| CH6 | 2437 | 13.604 |
| CH11 | 2462 | 13.693 |

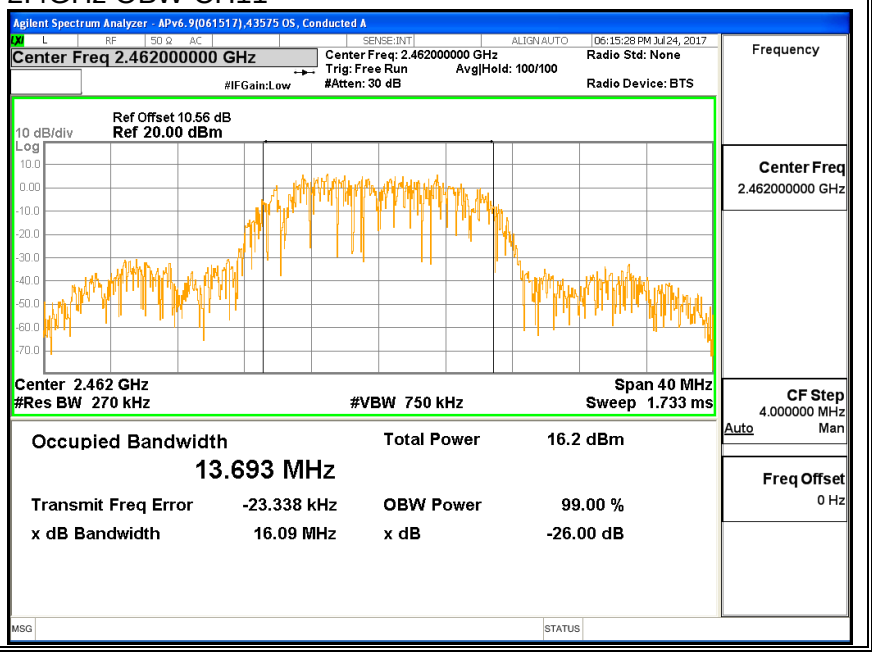
2.4GHz OBW CH1




2.4GHz OBW CH6



2.4GHz OBW CH11



## 9.2.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b) (3)

For systems using digital modulation in the 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**TEST PROCEDURE**

KDB 58074 D01 v04 Section 9.2.3.2

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

| ID: | 43575 | Date: | 7/24/17 |
|---|---|---|---|

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | -11.30 | 30.00 | 30 | 36 | 30.00 |

**Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | 16.49 | 16.49 | 30.00 | -13.51 |
| Mid | 2437 | 17.23 | 17.23 | 30.00 | -12.77 |
| High | 2462 | 16.45 | 16.45 | 30.00 | -13.55 |

**Note:** the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

## 9.2.4. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

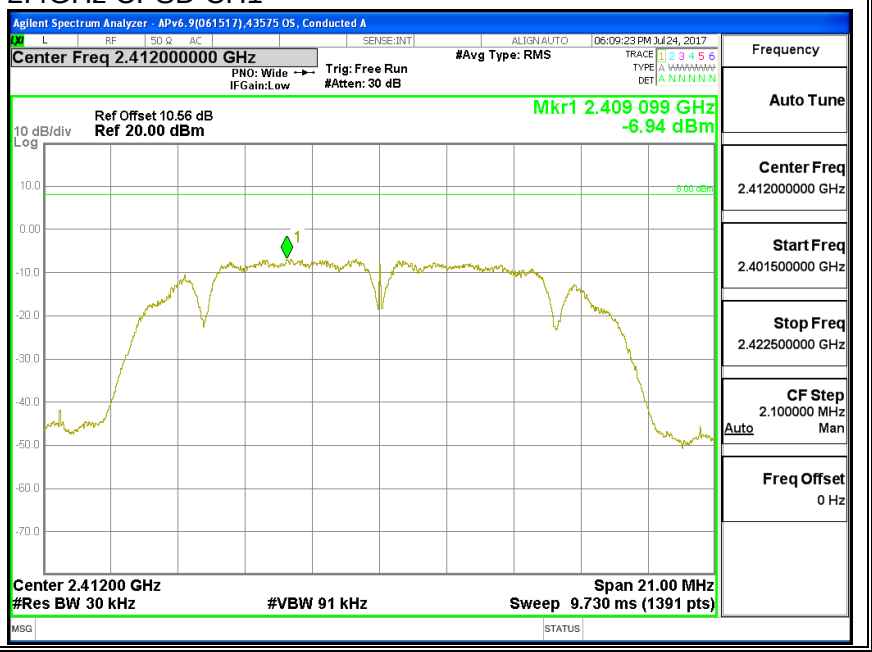
**RESULTS**

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd PSD |
|---|---|---|

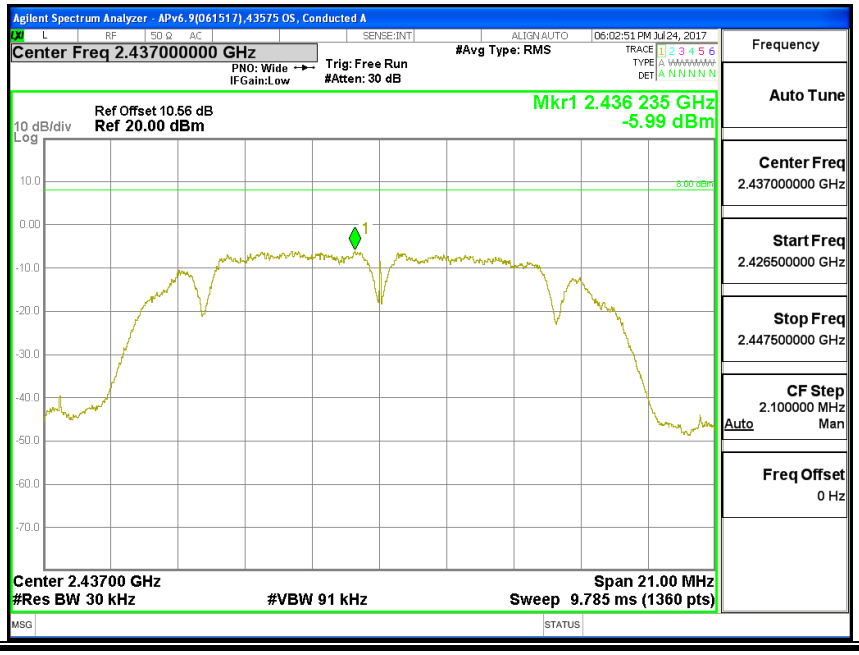
**PSD Results**

| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | -6.94 | -6.94 | 8.0 | -14.9 |
| Mid | 2437 | -5.99 | -5.99 | 8.0 | -14.0 |
| High | 2462 | -7.33 | -7.33 | 8.0 | -15.3 |

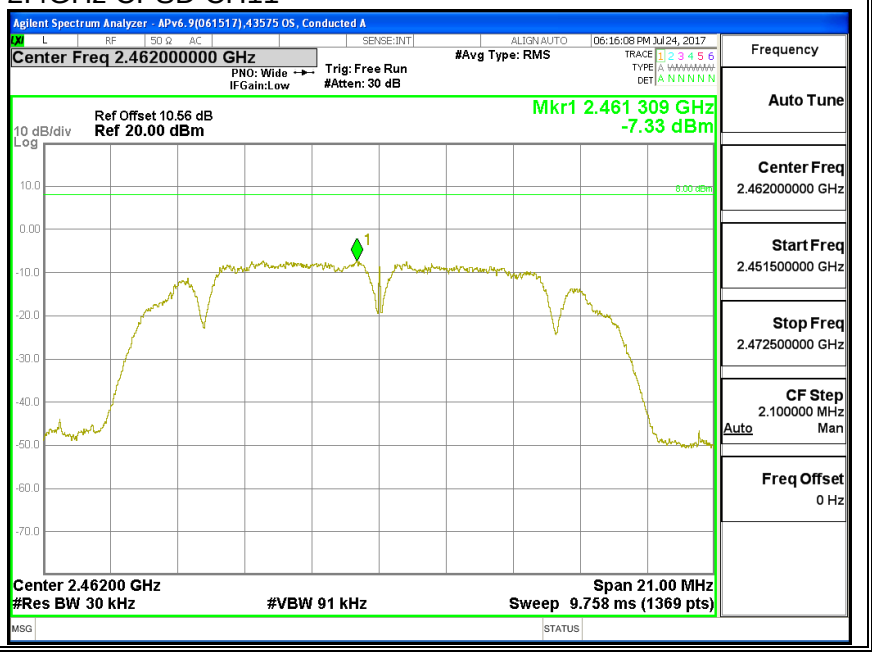
2.4GHz CPSD CH1




2.4GHz CPSD CH6



2.4GHz CPSD CH11



## 9.2.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

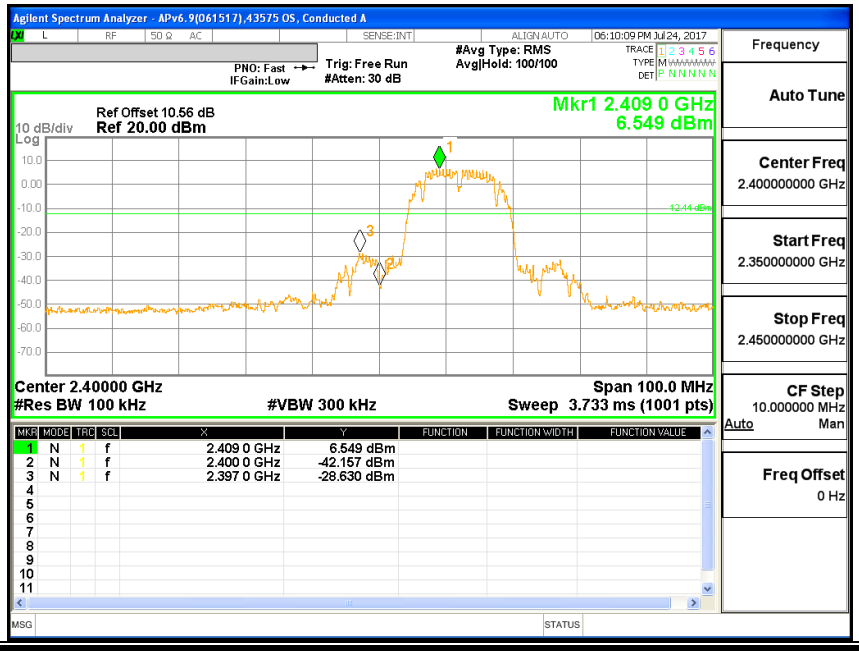
**LIMITS**

FCC §15.247 (d)

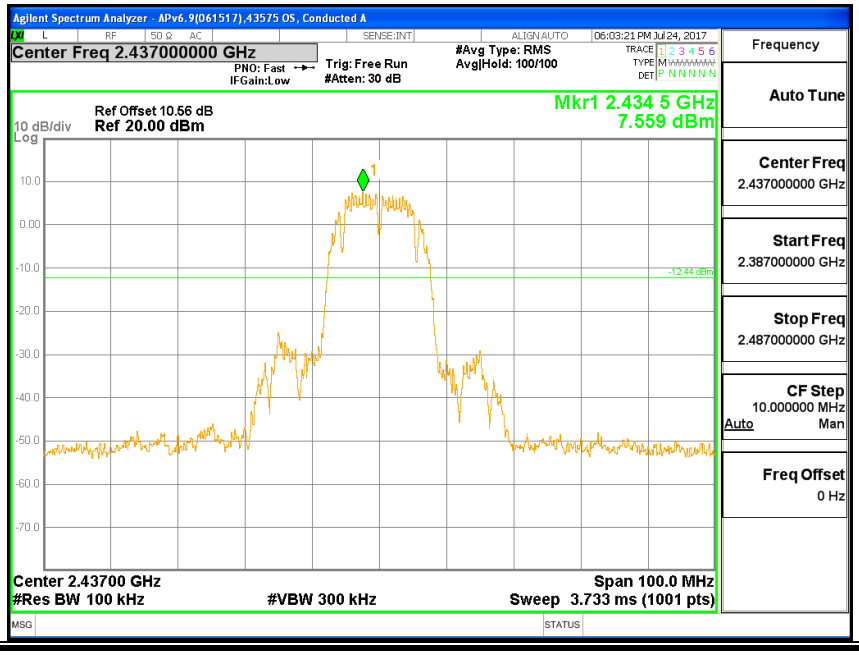
**RESULTS**

**BANDEDGE**

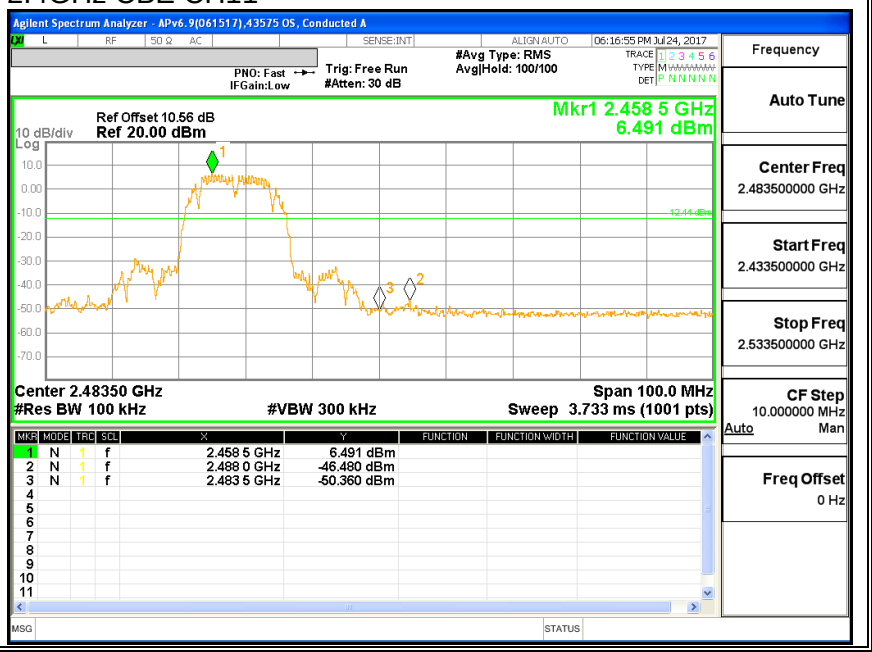
2.4GHz CBE CH1




2.4GHz CBE CH6

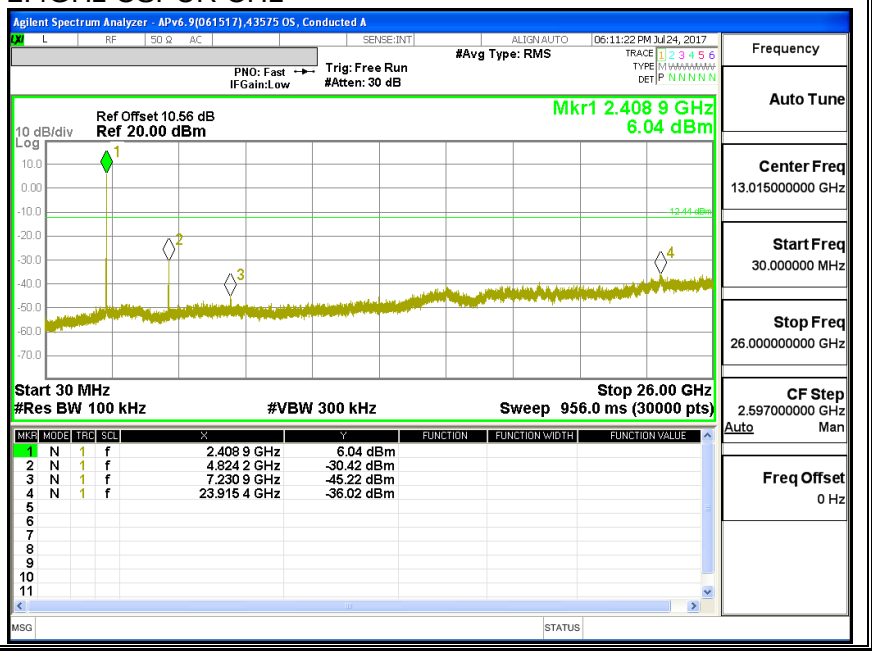


2.4GHz CBE CH11

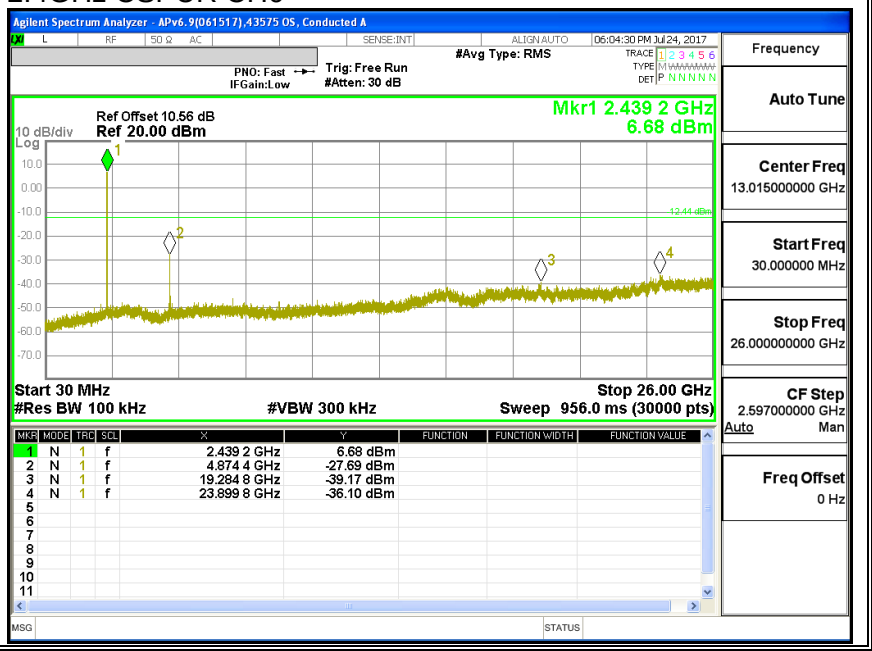


**SPURIOUS EMISSIONS**

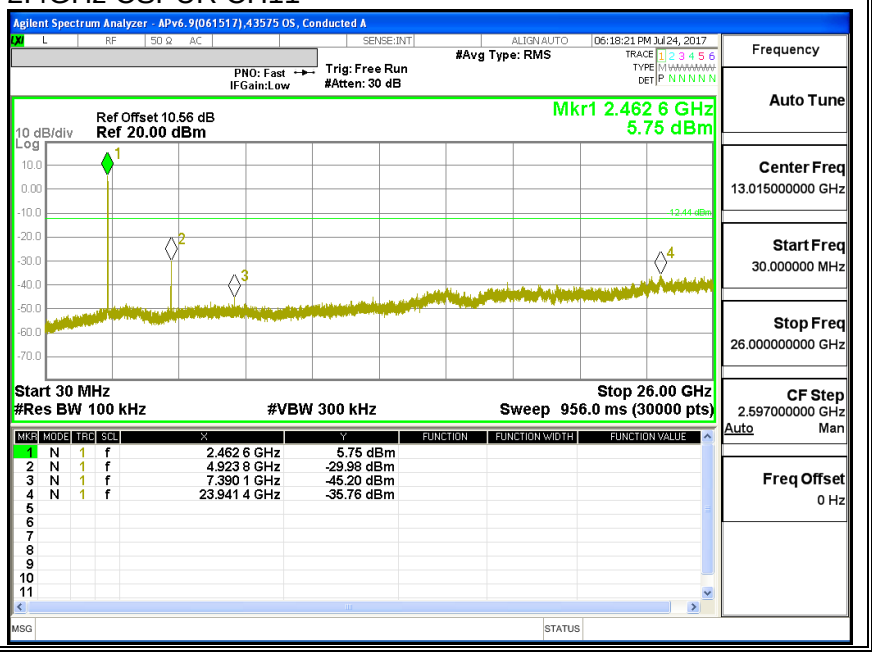
2.4GHz CSPUR CH1




2.4GHz CSPUR CH6



2.4GHz CSPUR CH11



## 9.3. 11g MODE IN THE 2.4GHz BAND

### 9.3.1. 6 dB BANDWIDTH

**LIMITS**

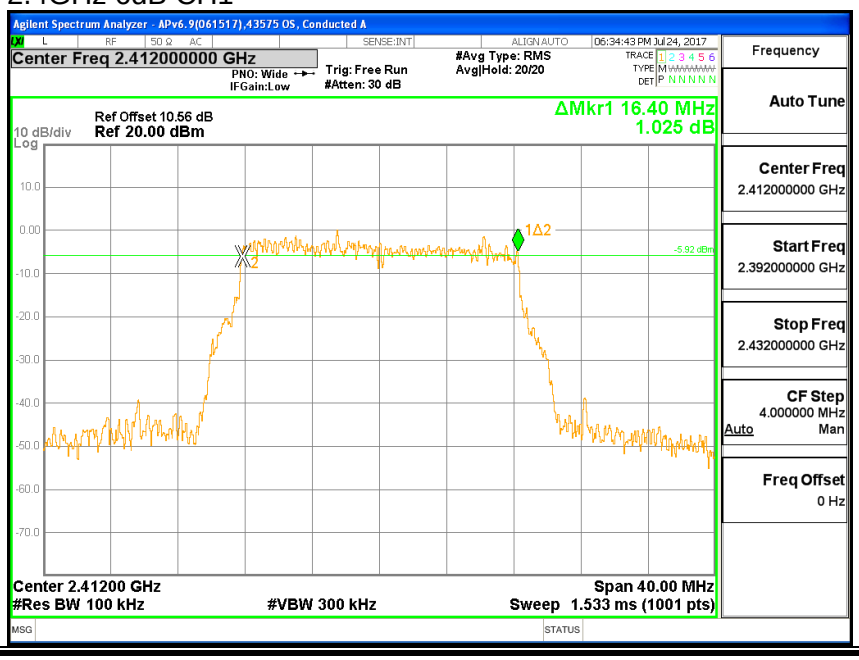
FCC §15.247 (a) (2)

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

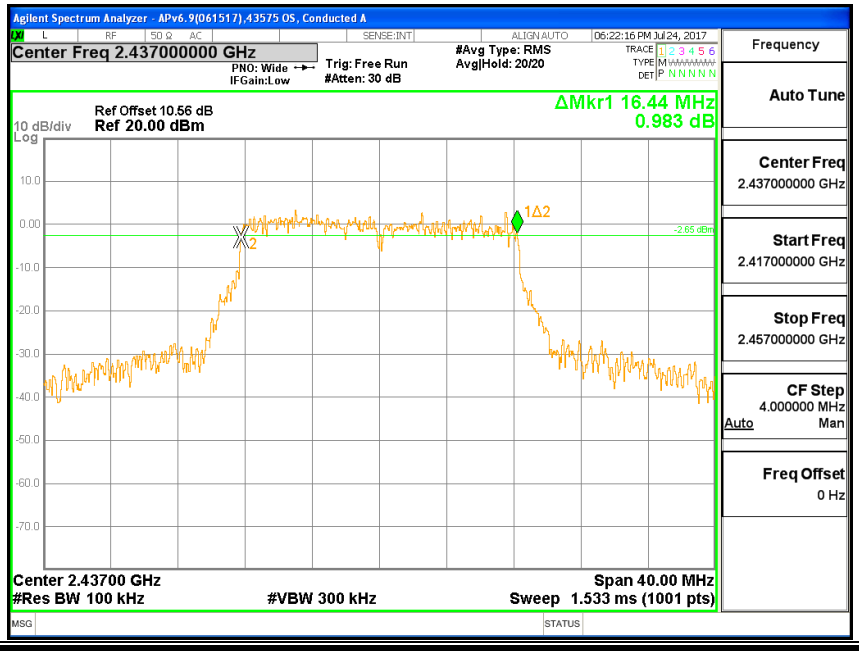
**RESULTS**

| Channel | Frequency (MHz) | 6 dB BW (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| CH1 | 2412 | 16.40 | 0.5 |
| CH6 | 2437 | 16.44 | 0.5 |
| CH11 | 2462 | 16.52 | 0.5 |

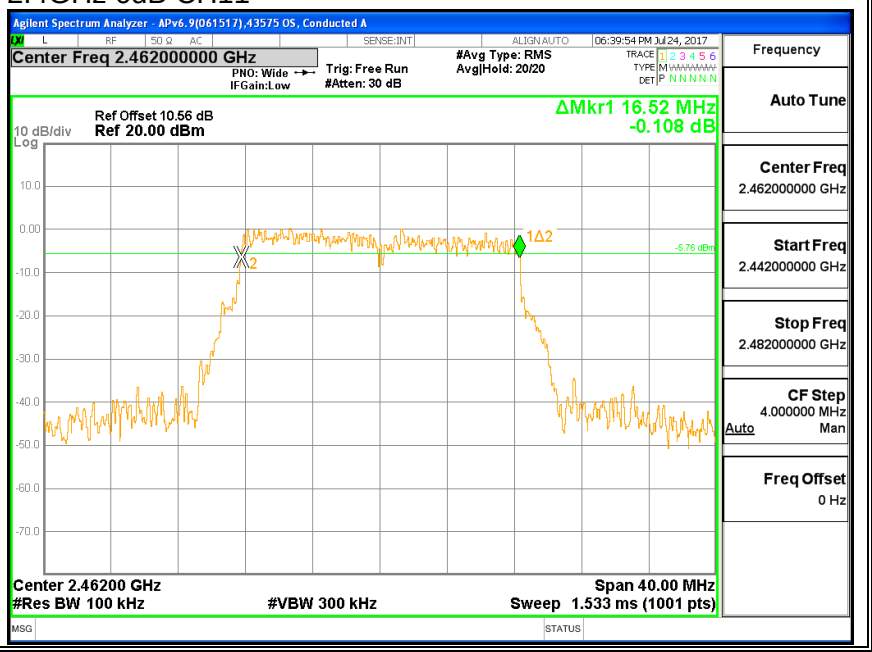
2.4GHz 6dB CH1




2.4GHz 6dB CH6



2.4GHz 6dB CH11



### 9.3.2. 99% BANDWIDTH

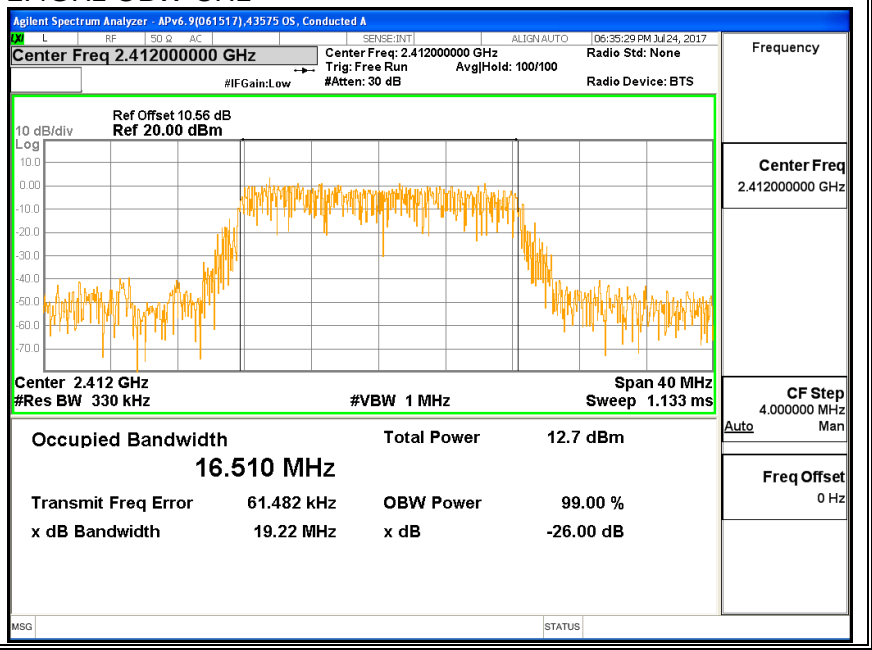
**LIMITS**

None; for reporting purposes only.

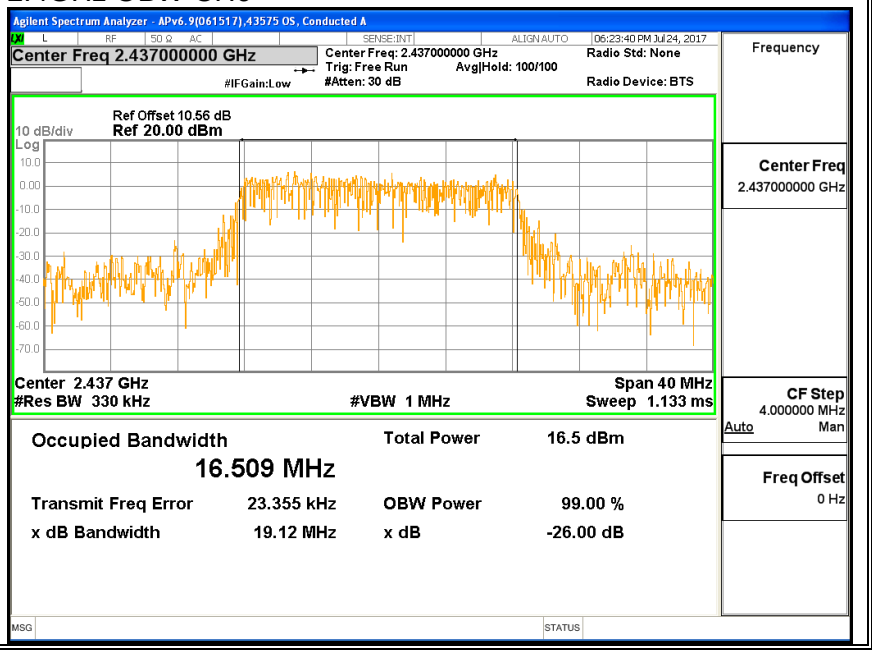
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| CH1 | 2412 | 16.510 |
| CH6 | 2437 | 16.509 |
| CH11 | 2462 | 16.451 |

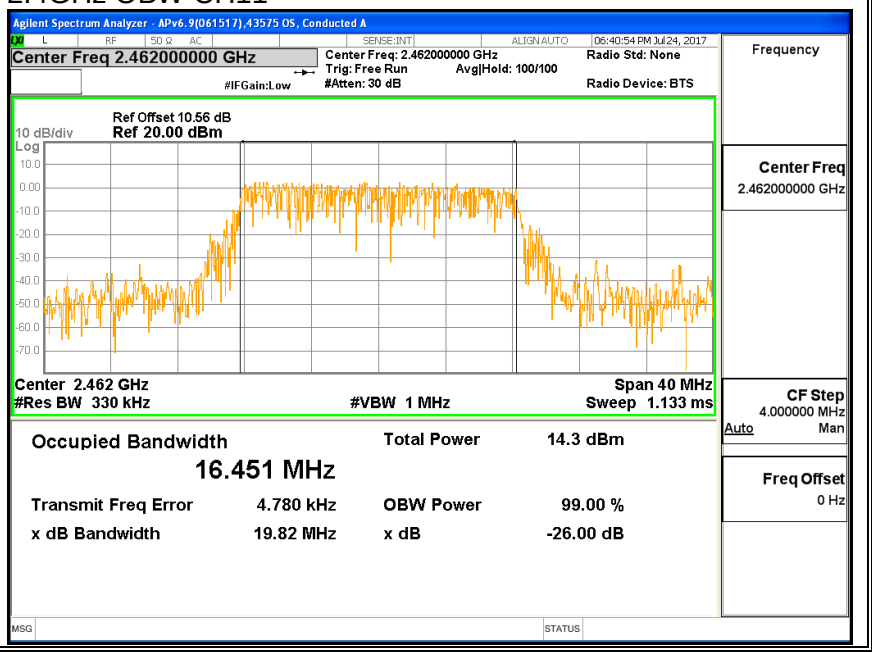
2.4GHz OBW CH1




2.4GHz OBW CH6



2.4GHz OBW CH11



## 9.3.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b) (3)

For systems using digital modulation in the 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**TEST PROCEDURE**

KDB 58074 D01 v04 Section 9.2.3.2

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

| ID: | 43575 | Date: | 7/24/17 |
|---|---|---|---|

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | -11.30 | 30.00 | 30 | 36 | 30.00 |

**Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | 12.97 | 12.97 | 30.00 | -17.03 |
| 2 | 2417 | 16.27 | 16.27 | 30.00 | -13.73 |
| Mid | 2437 | 16.75 | 16.75 | 30.00 | -13.25 |
| High | 2462 | 14.70 | 14.70 | 30.00 | -15.30 |

**Note:** the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

## 9.3.4. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

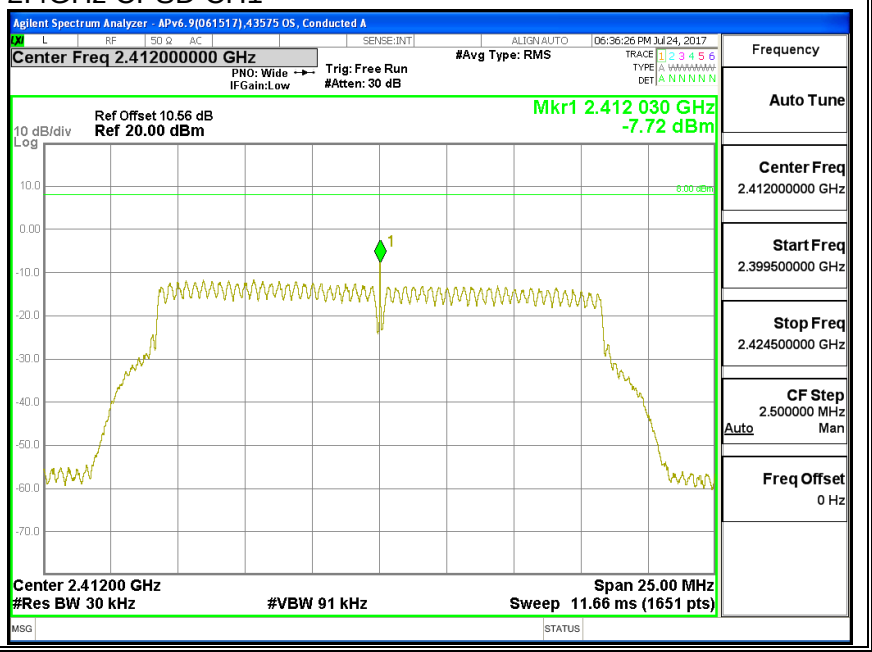
**RESULTS**

| Duty Cycle CF (dB) | 0.15 | Included in Calculations of Corr'd PSD |
|---|---|---|

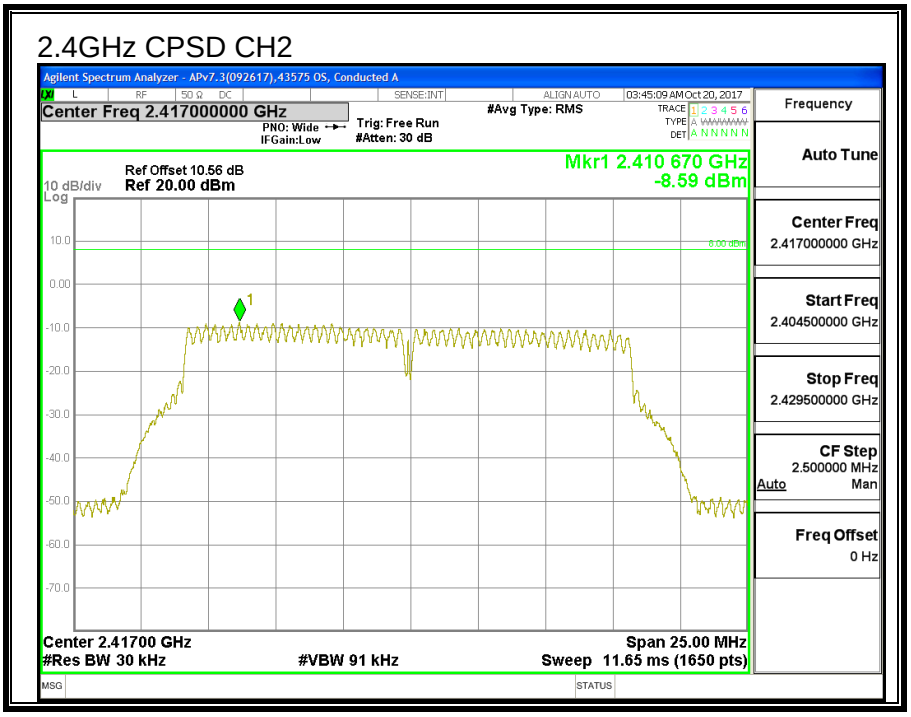
**PSD Results**

| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | -7.72 | -7.57 | 8.0 | -15.6 |
| 2 | 2417 | -8.59 | -8.44 | 8.0 | -16.4 |
| Mid | 2437 | -7.89 | -7.74 | 8.0 | -15.7 |
| High | 2462 | -8.40 | -8.25 | 8.0 | -16.3 |

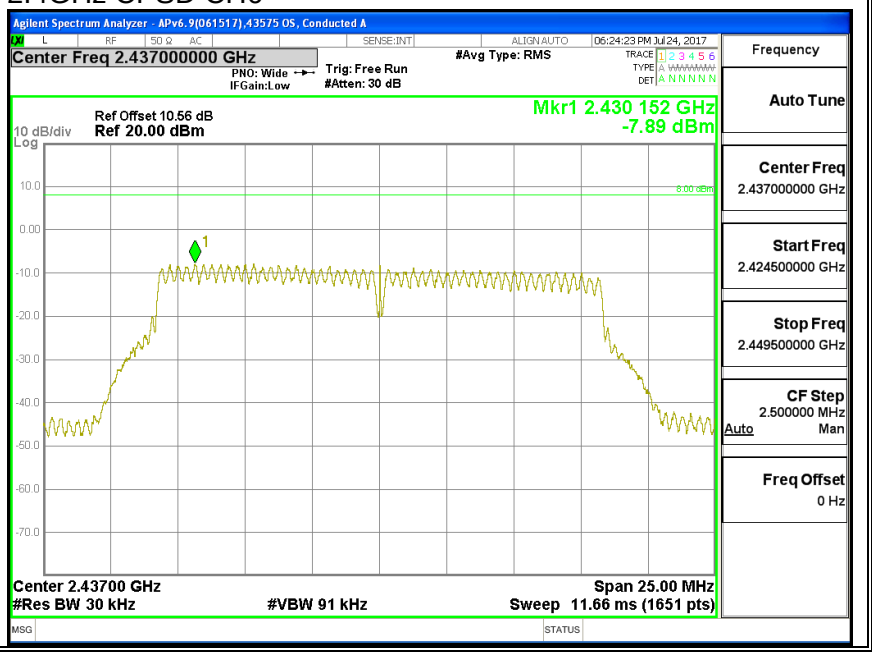
2.4GHz CPSD CH1



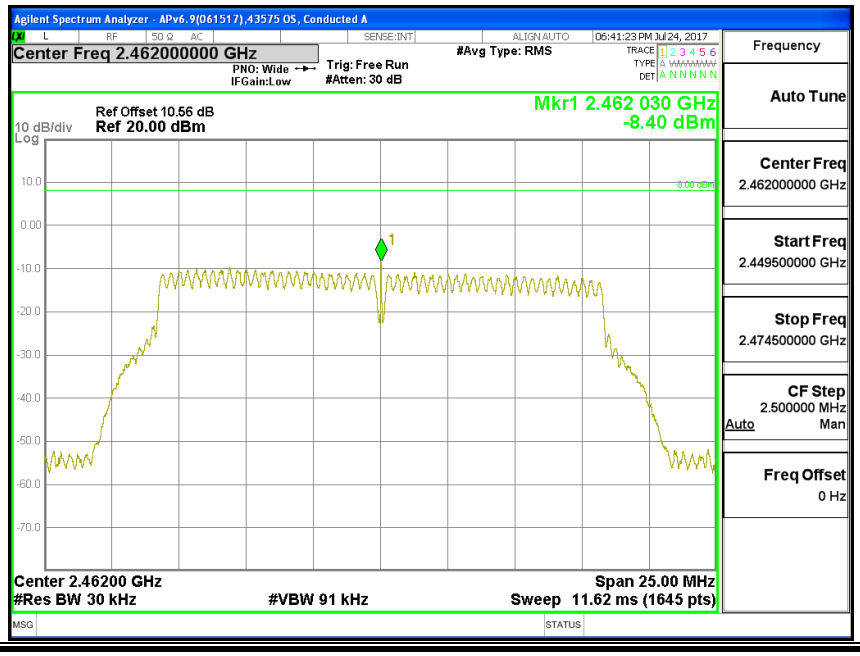

2.4GHz CPSD CH2



2.4GHz CPSD CH6




2.4GHz CPSD CH11



## 9.3.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

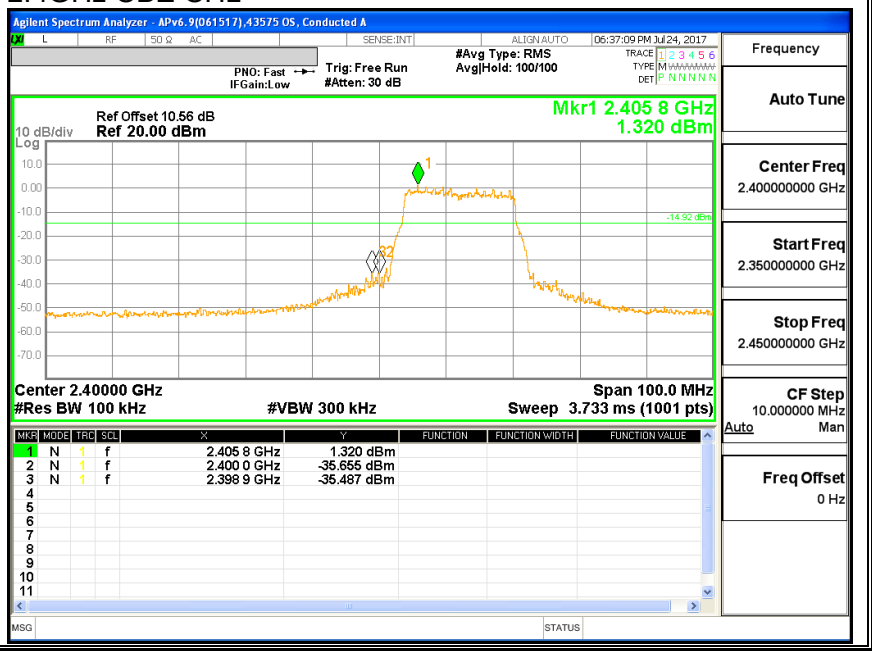
**LIMITS**

FCC §15.247 (d)

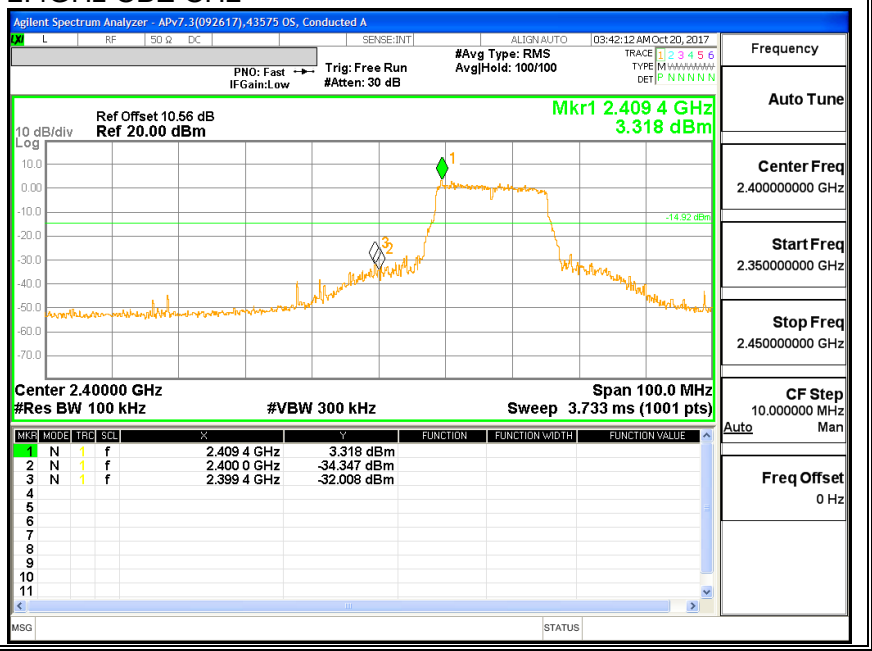
**RESULTS**

**BANDEDGE**

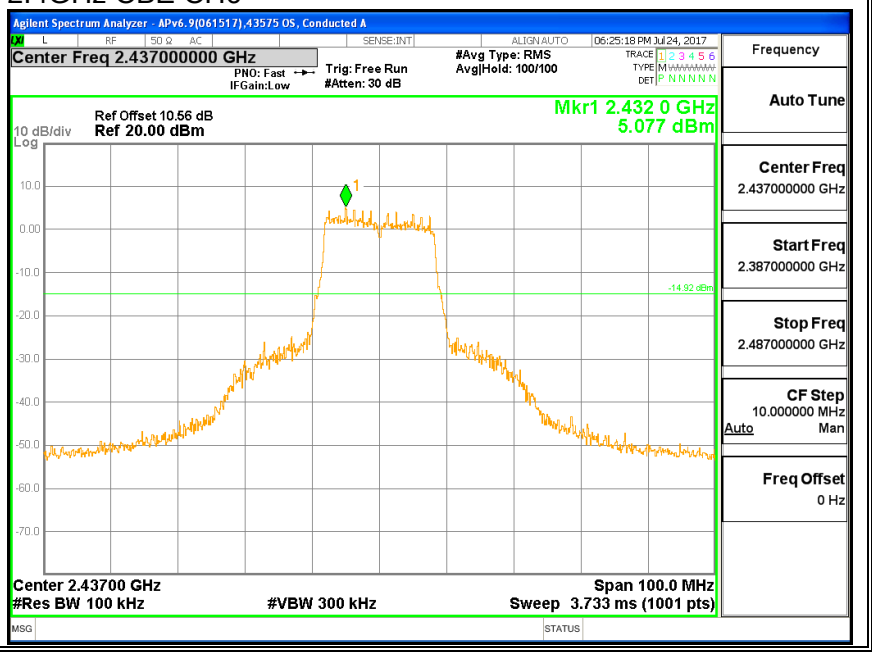
2.4GHz CBE CH1



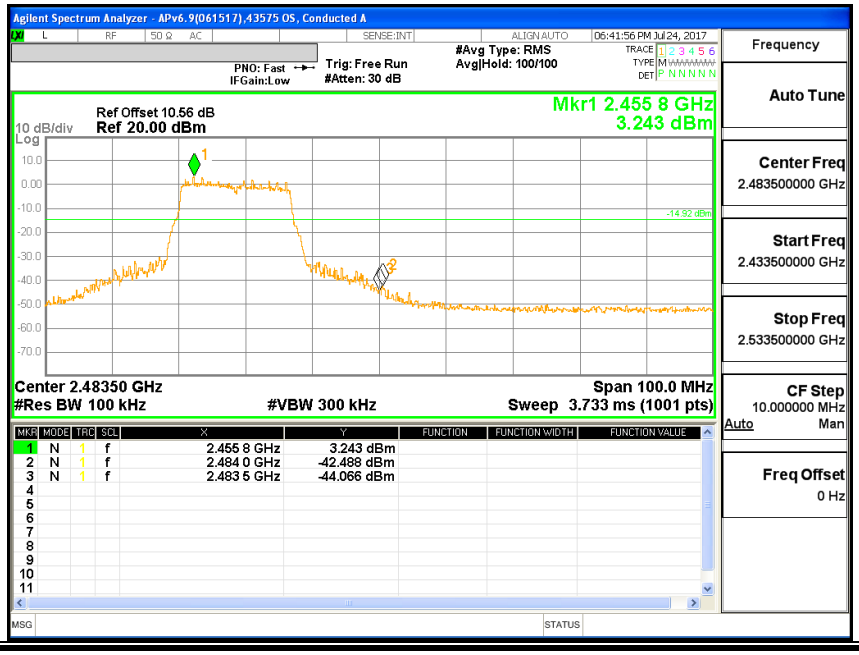

2.4GHz CBE CH2



2.4GHz CBE CH6

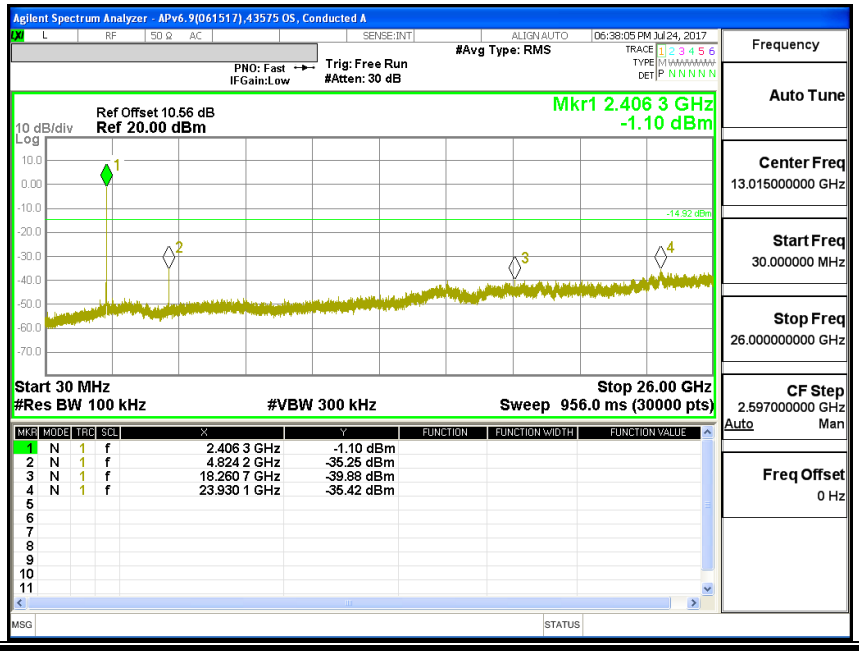



2.4GHz CBE CH11

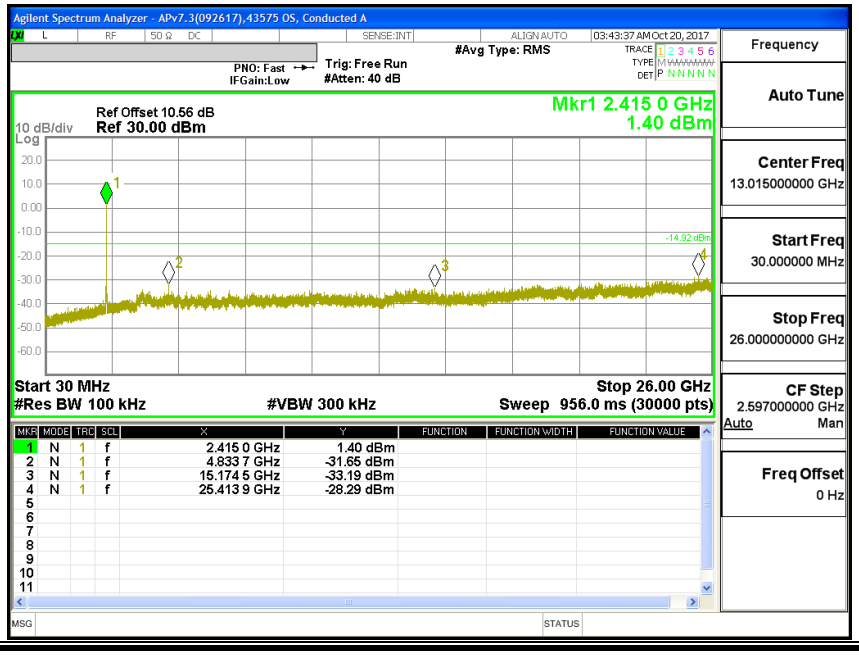


**SPURIOUS EMISSIONS**

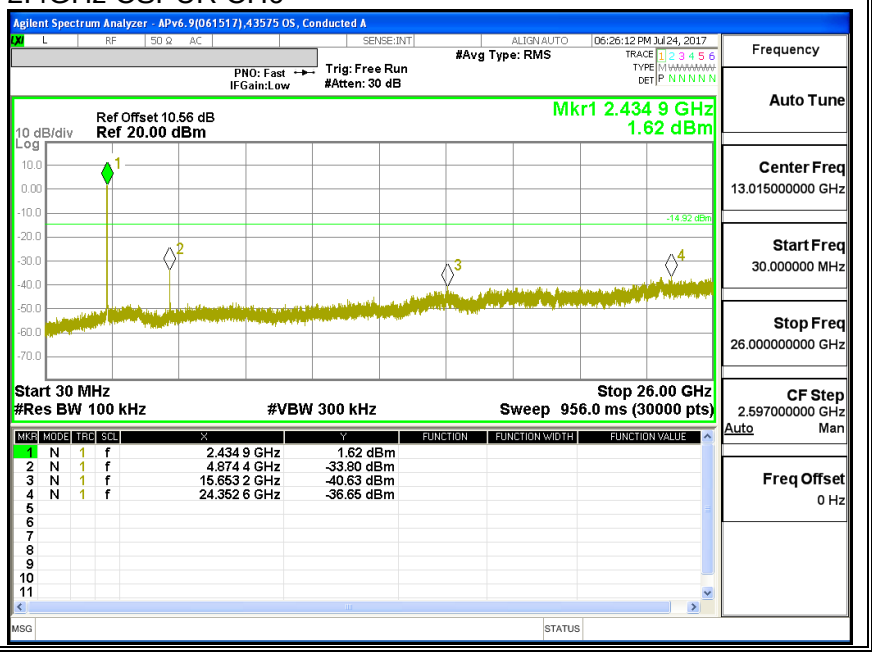
2.4GHz CSPUR CH1



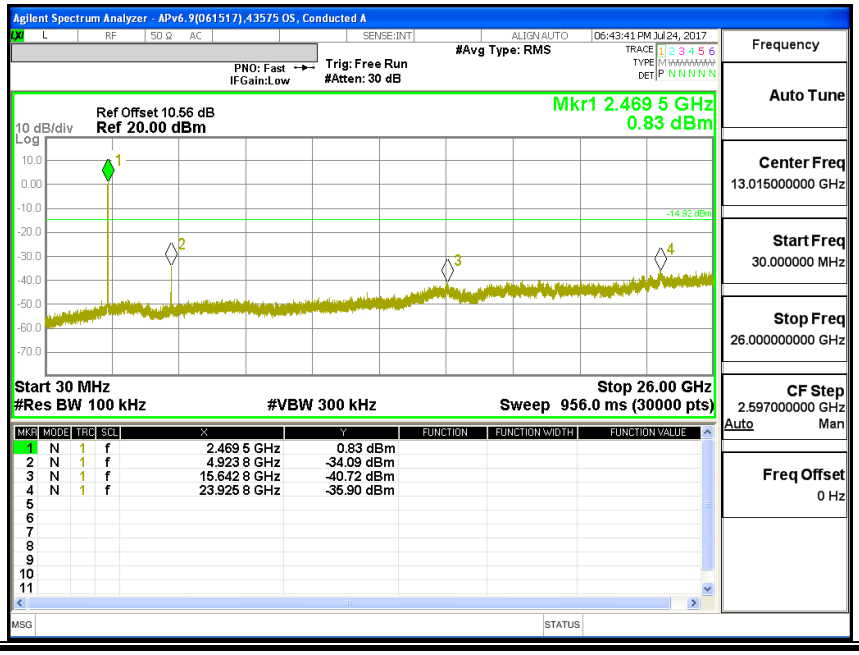

2.4GHz CSPUR CH2



## 2.4GHz CSPUR CH6




## 2.4GHz CSPUR CH11



## 9.4. 11n HT20 MODE IN THE 2.4GHz BAND

### 9.4.1. 6 dB BANDWIDTH

**LIMITS**

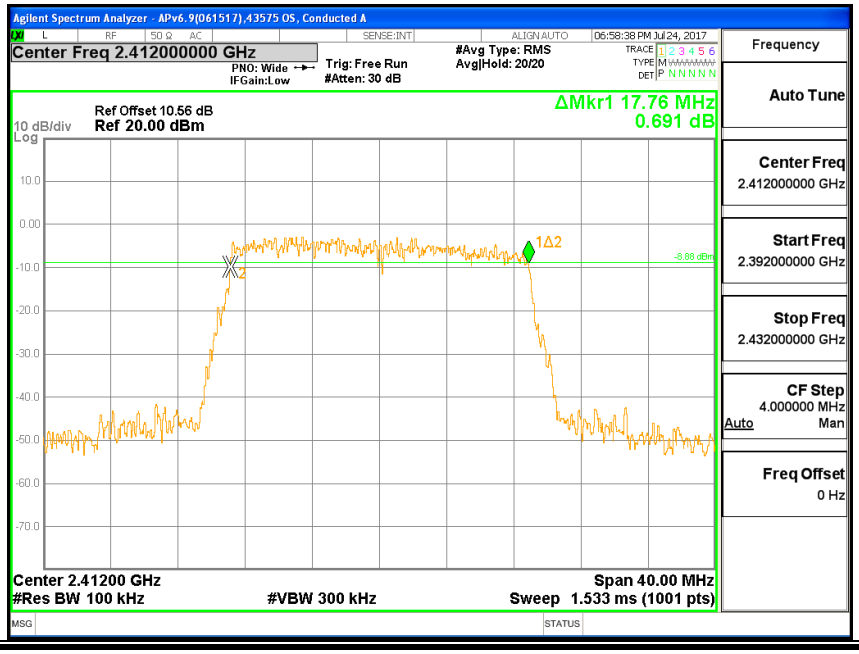
FCC §15.247 (a) (2)

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

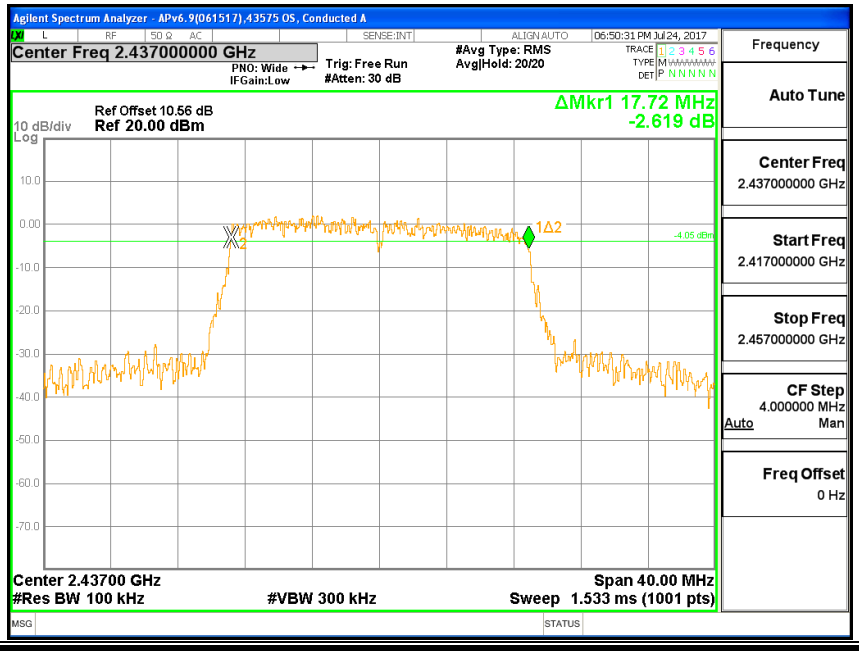
**RESULTS**

| Channel | Frequency (MHz) | 6 dB BW (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| CH1 | 2412 | 17.76 | 0.5 |
| CH6 | 2437 | 17.72 | 0.5 |
| CH11 | 2462 | 17.68 | 0.5 |

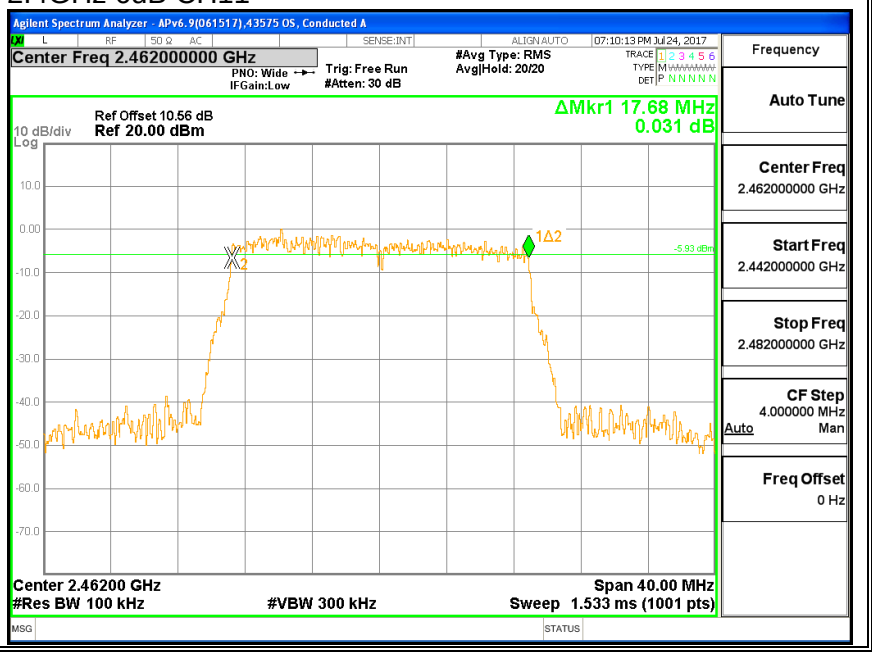
2.4GHz 6dB CH1




2.4GHz 6dB CH6



2.4GHz 6dB CH11



### 9.4.2. 99% BANDWIDTH

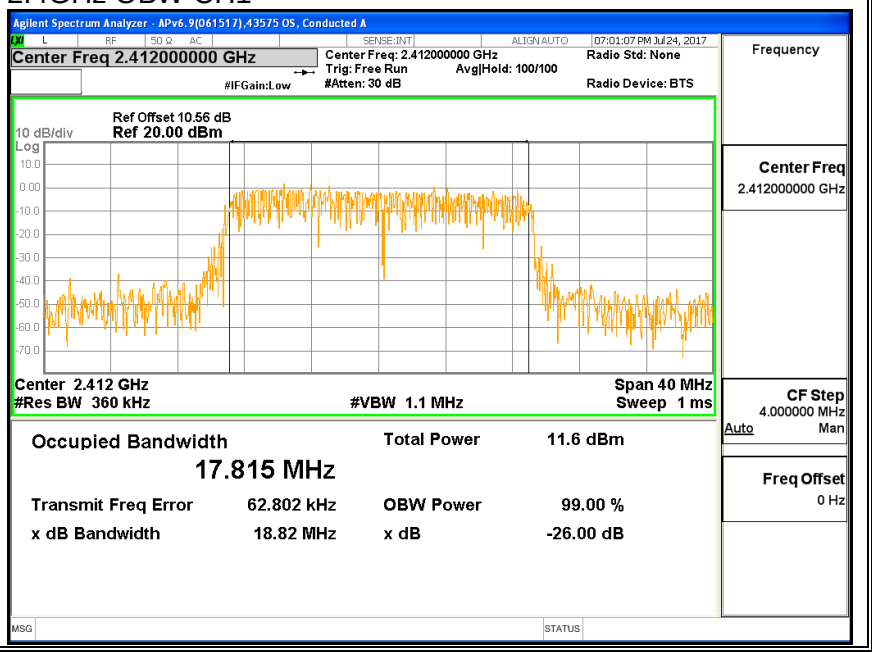
**LIMITS**

None; for reporting purposes only.

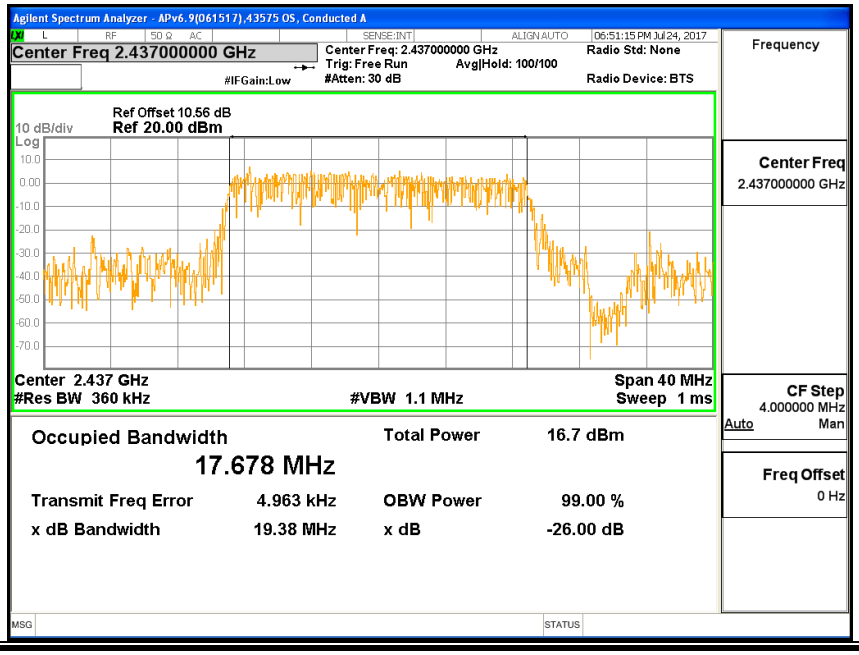
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| CH1 | 2412 | 17.815 |
| CH6 | 2437 | 17.678 |
| CH11 | 2462 | 17.869 |

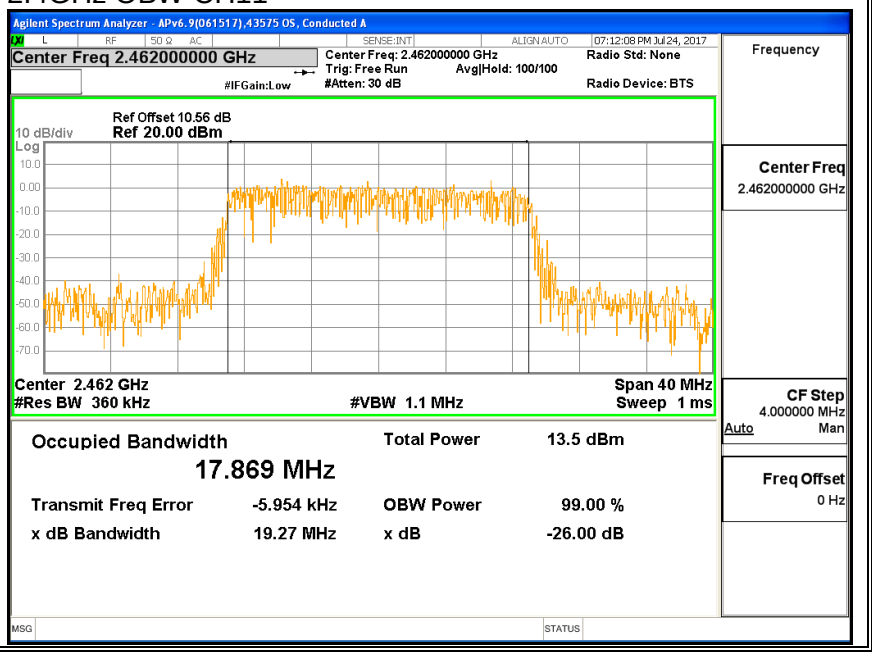
2.4GHz OBW CH1




2.4GHz OBW CH6



2.4GHz OBW CH11



## 9.4.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b) (3)

For systems using digital modulation in the 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**TEST PROCEDURE**

KDB 58074 D01 v04 Section 9.2.3.2

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

| ID: | 43575 | Date: | 7/24/17 |
|---|---|---|---|

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | -11.30 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | -11.30 | 30.00 | 30 | 36 | 30.00 |

**Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | 11.53 | 11.53 | 30.00 | -18.47 |
| 2 | 2417 | 15.69 | 15.69 | 30.00 | -14.31 |
| Mid | 2437 | 16.81 | 16.81 | 30.00 | -13.19 |
| 10 | 2457 | 15.75 | 15.75 | 30.00 | -14.25 |
| High | 2462 | 13.46 | 13.46 | 30.00 | -16.54 |

**Note:** the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

## 9.4.4. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

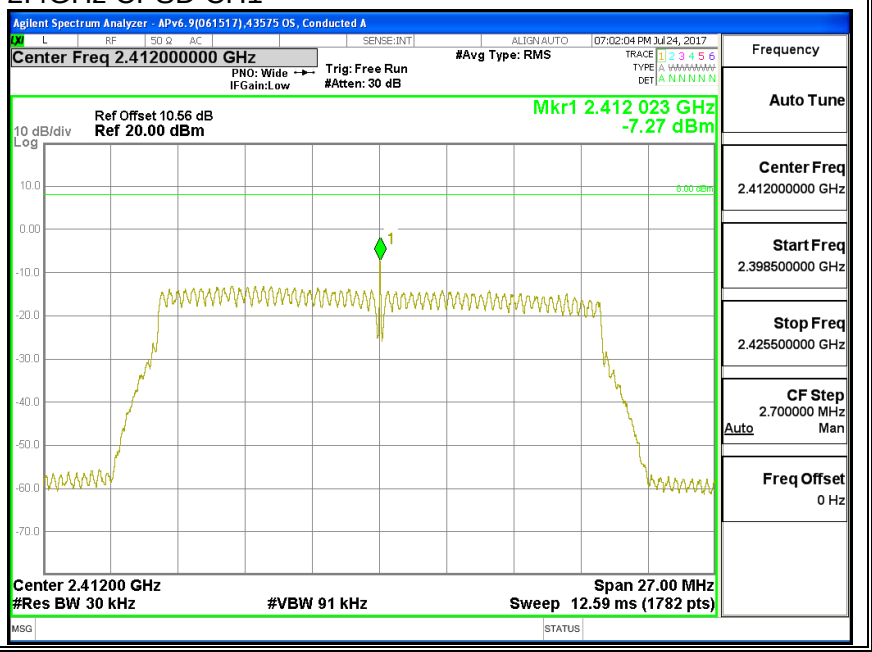
**RESULTS**

| Duty Cycle CF (dB) | 0.13 | Included in Calculations of Corr'd PSD |
|---|---|---|

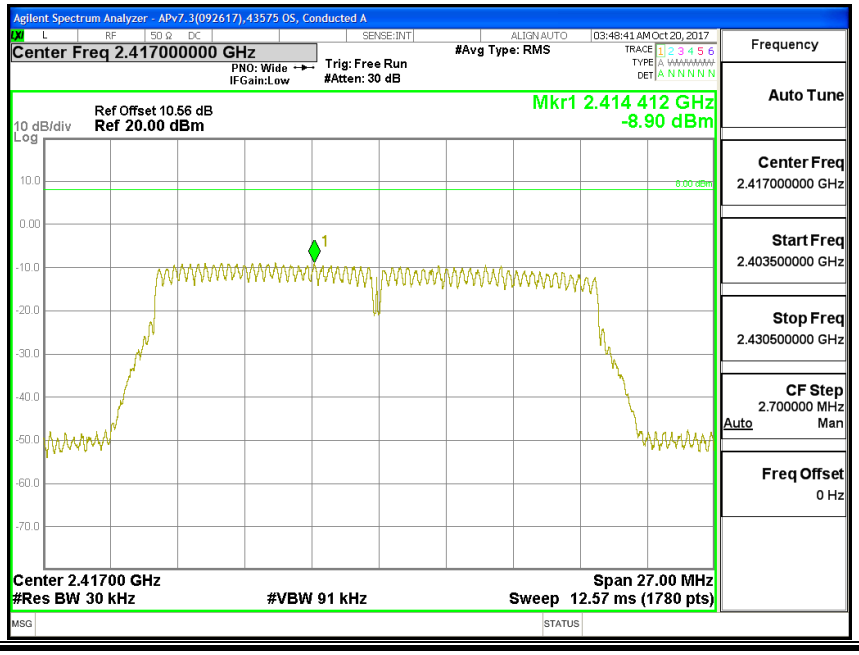
**PSD Results**

| Channel | Frequency (MHz) | Meas (dBm) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | -7.27 | -7.14 | 8.0 | -15.1 |
| 2 | 2417 | -8.90 | -8.77 | 8.0 | -16.8 |
| Mid | 2437 | -7.85 | -7.72 | 8.0 | -15.7 |
| 10 | 2457 | -8.82 | -8.69 | 8.0 | -16.7 |
| High | 2462 | -8.21 | -8.08 | 8.0 | -16.1 |

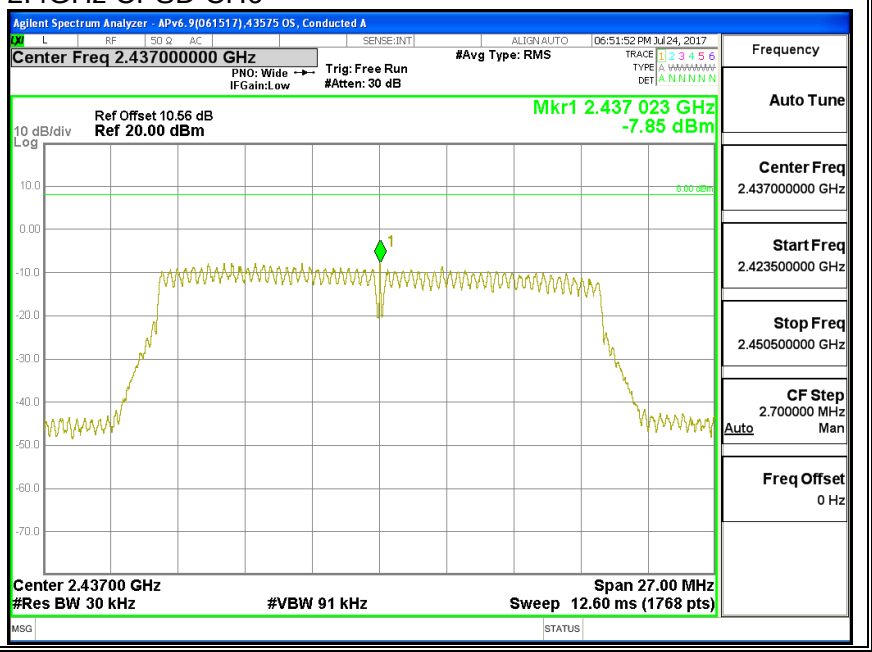
## 2.4GHz CPSD CH1



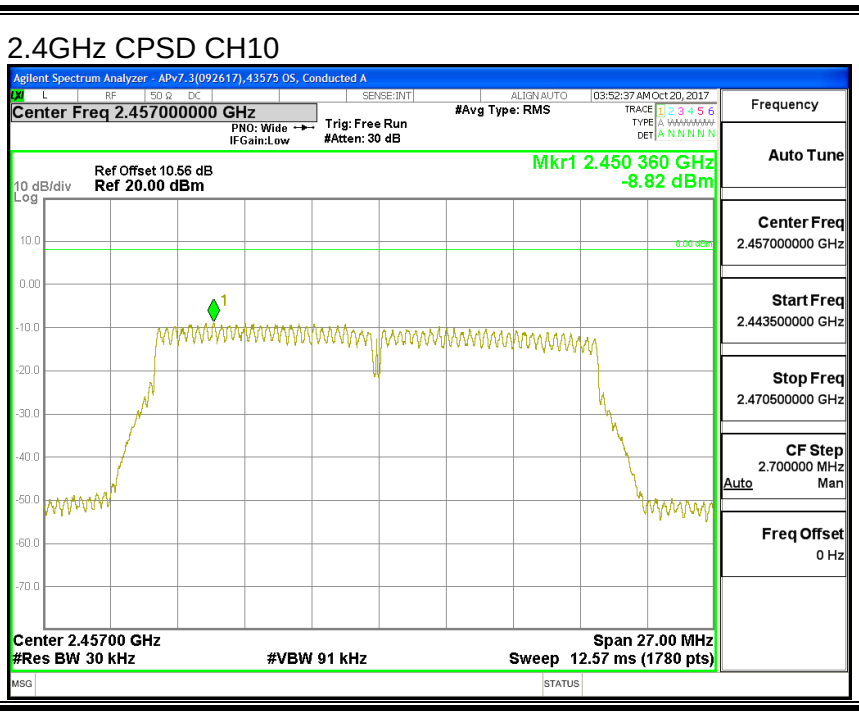

## 2.4GHz CPSD CH2



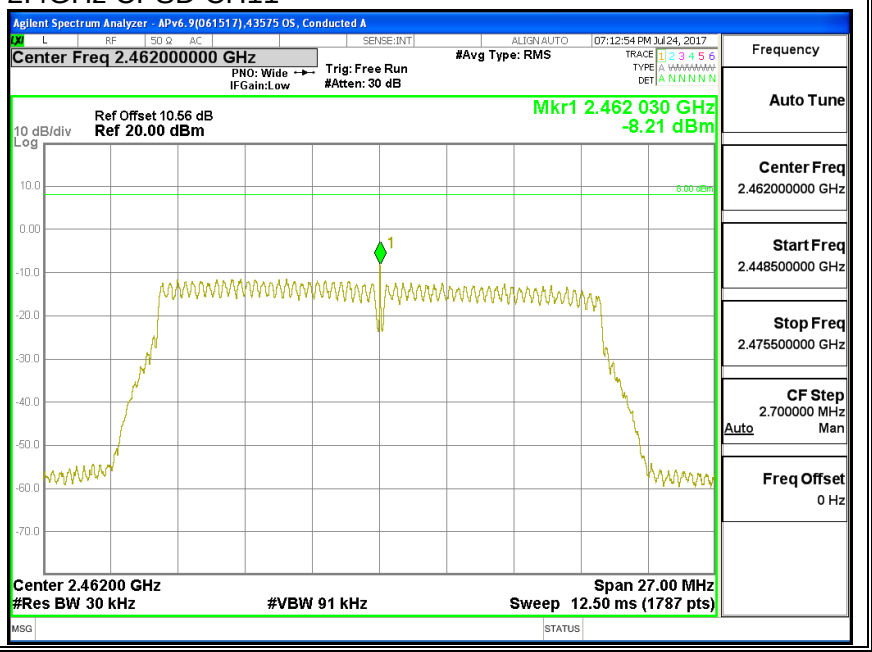
2.4GHz CPSD CH6




2.4GHz CPSD CH10



2.4GHz CPSD CH11



## 9.4.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

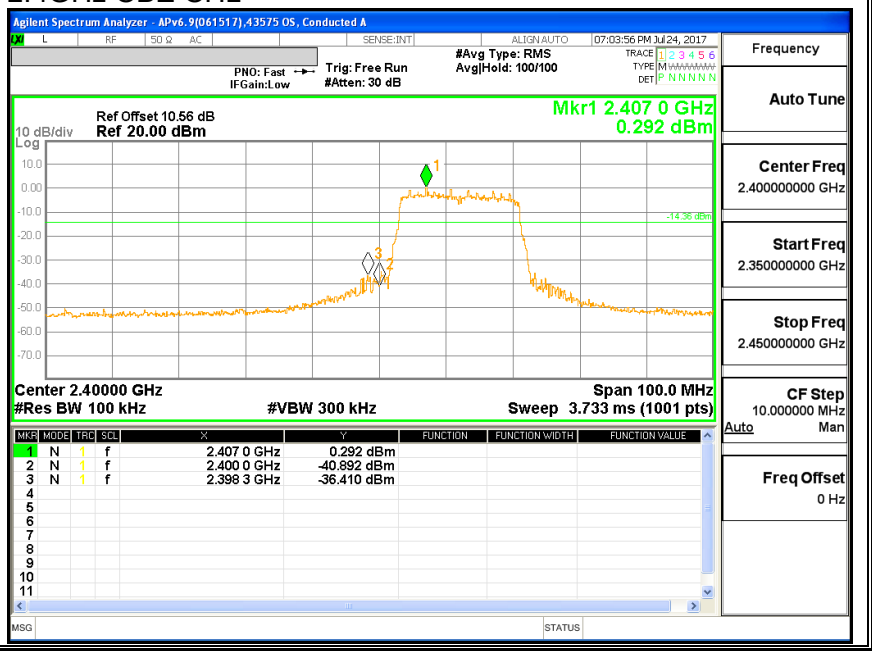
**LIMITS**

FCC §15.247 (d)

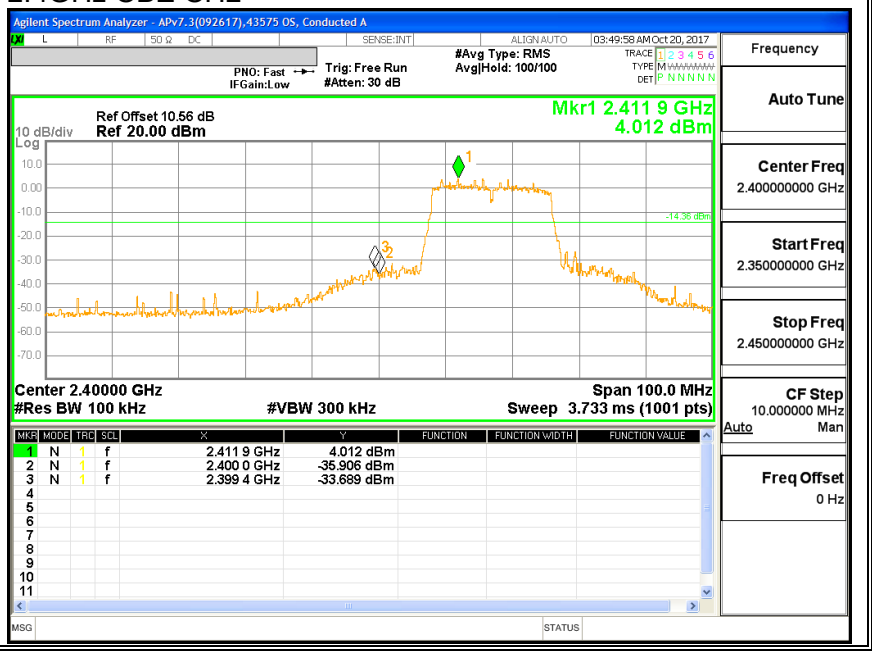
**RESULTS**

**BANDEDGE**

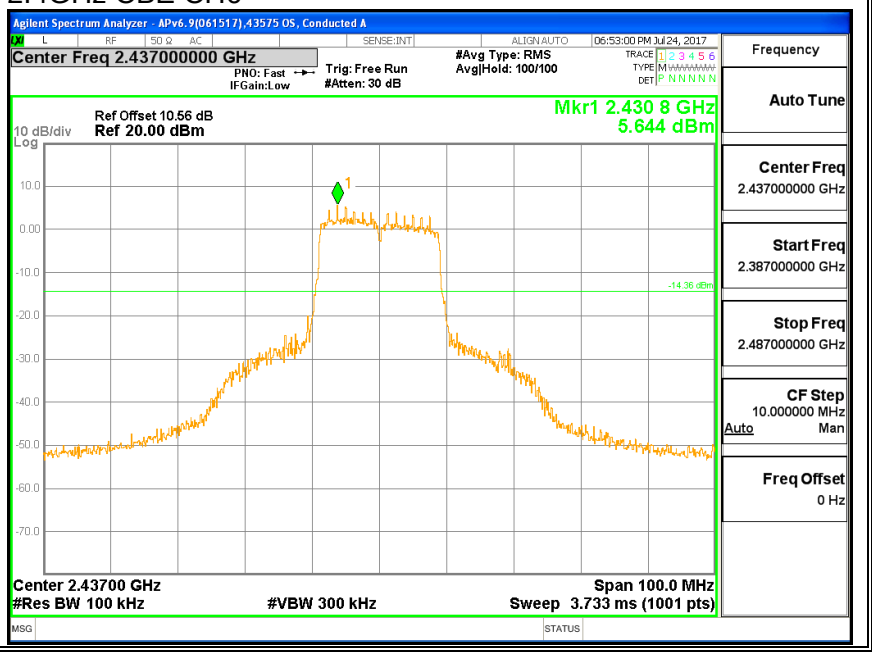
2.4GHz CBE CH1



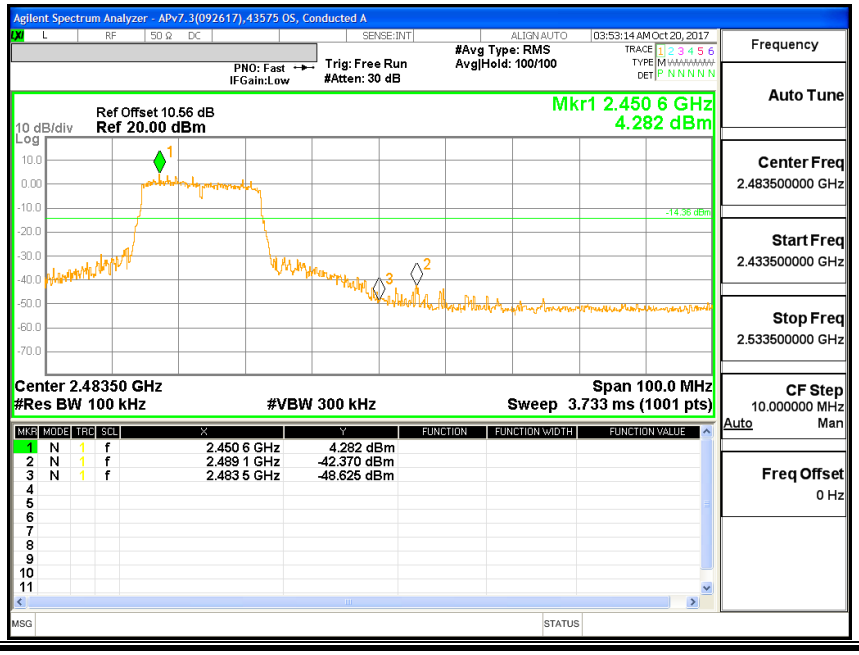

2.4GHz CBE CH2



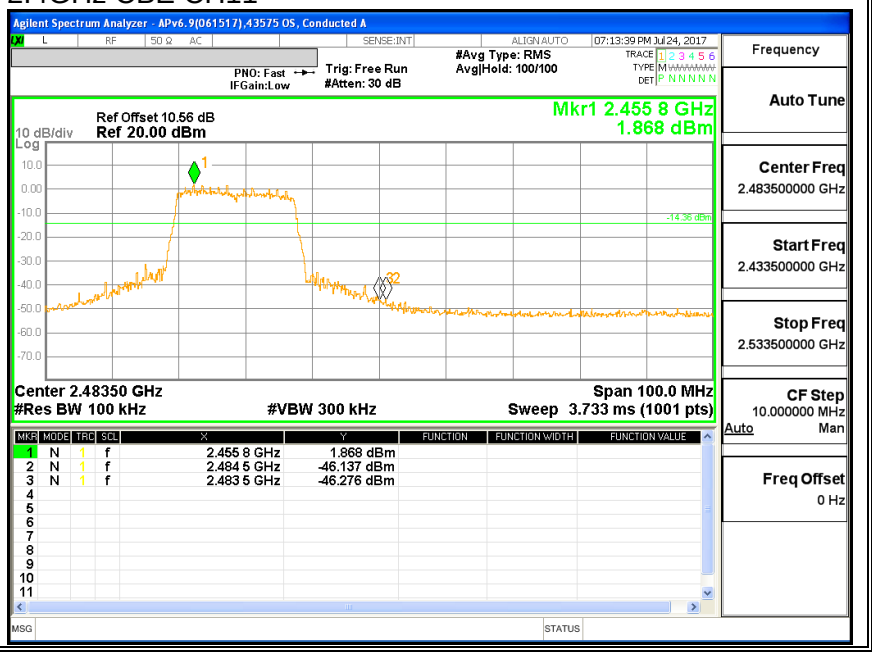
2.4GHz CBE CH6




2.4GHz CBE CH10

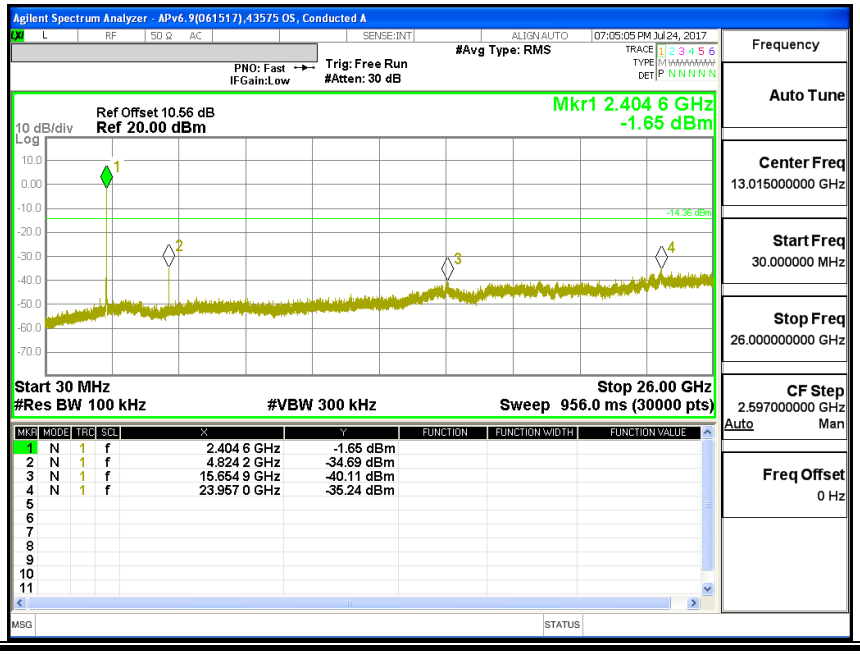


2.4GHz CBE CH11

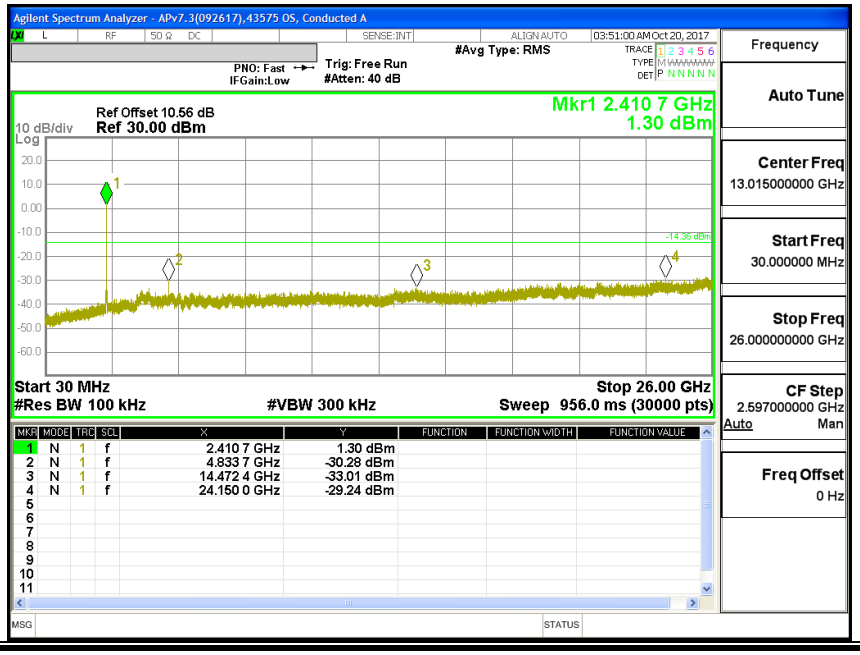


**SPURIOUS EMISSIONS**

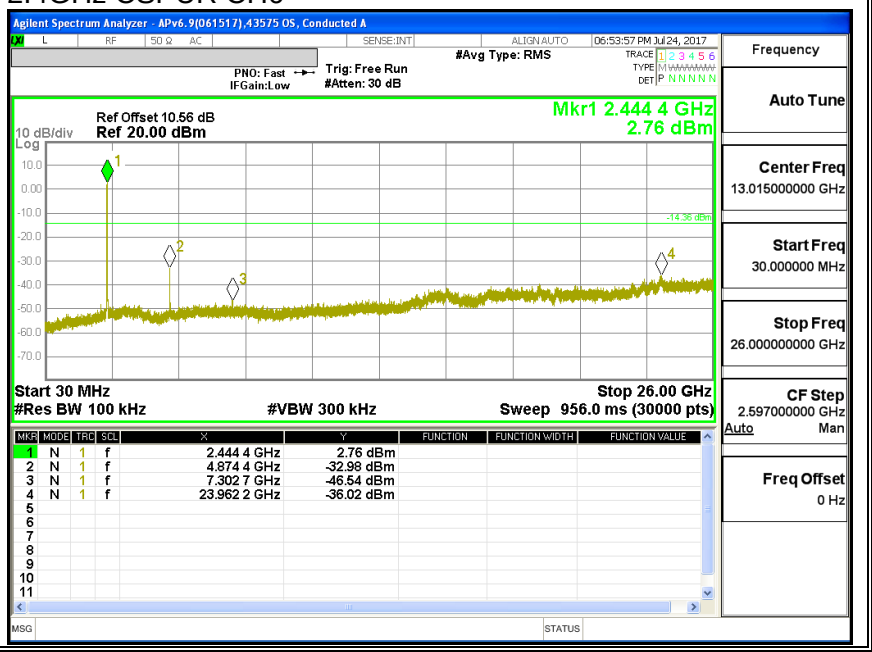
2.4GHz CSPUR CH1



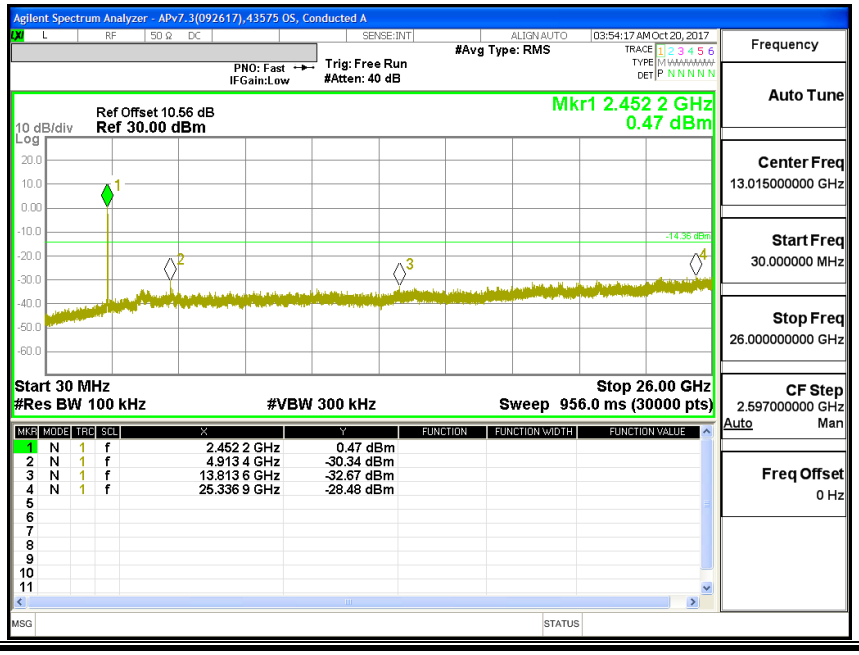

2.4GHz CSPUR CH2



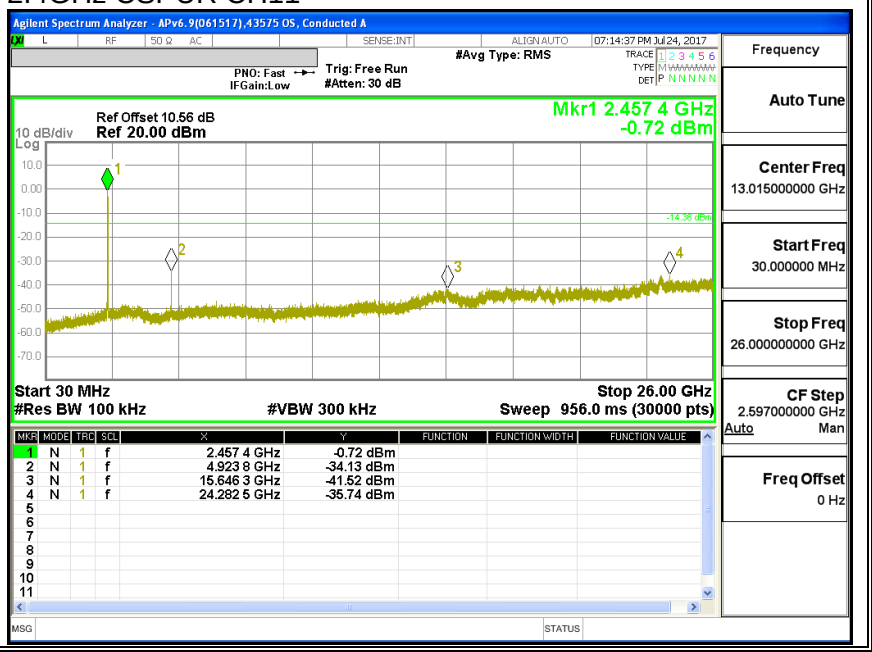
## 2.4GHz CSPUR CH6




## 2.4GHz CSPUR CH10



2.4GHz CSPUR CH11



# 10. RADIATED TEST RESULTS

## 10.1. 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 |
|---|---|---|
| 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 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. 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 add duty cycle factor for average measurements.

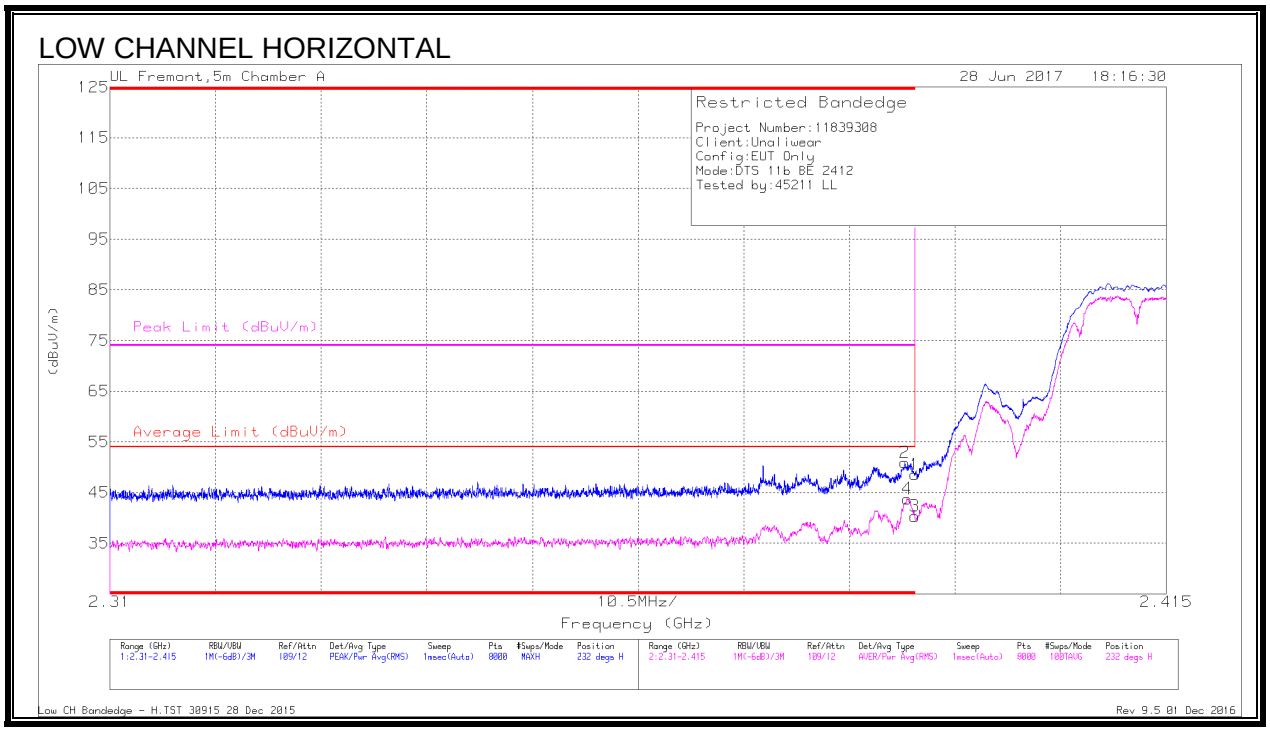
The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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

# 10.2. TRANSMITTER ABOVE 1 GHz

## 10.2.1 11b MODE IN THE 2.4GHz BAND

**AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)**

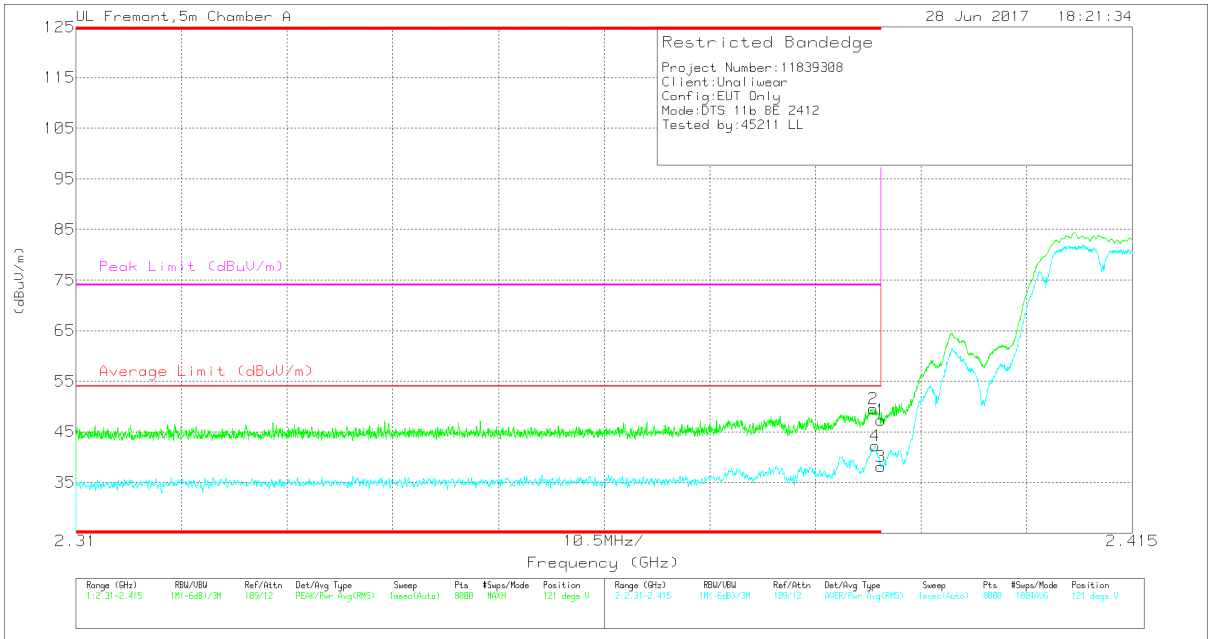



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 39.99 | Pk | 31.8 | -23.2 | 48.59 | - | - | 74 | -25.41 | 232 | 250 | H |
| 2 | * 2.389 | 42.28 | Pk | 31.8 | -23.2 | 50.88 | - | - | 74 | -23.12 | 232 | 250 | H |
| 3 | * 2.39 | 31.7 | RMS | 31.8 | -23.2 | 40.3 | 54 | -13.7 | - | - | 232 | 250 | H |
| 4 | * 2.389 | 35.17 | RMS | 31.8 | -23.2 | 43.77 | 54 | -10.23 | - | - | 232 | 250 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL

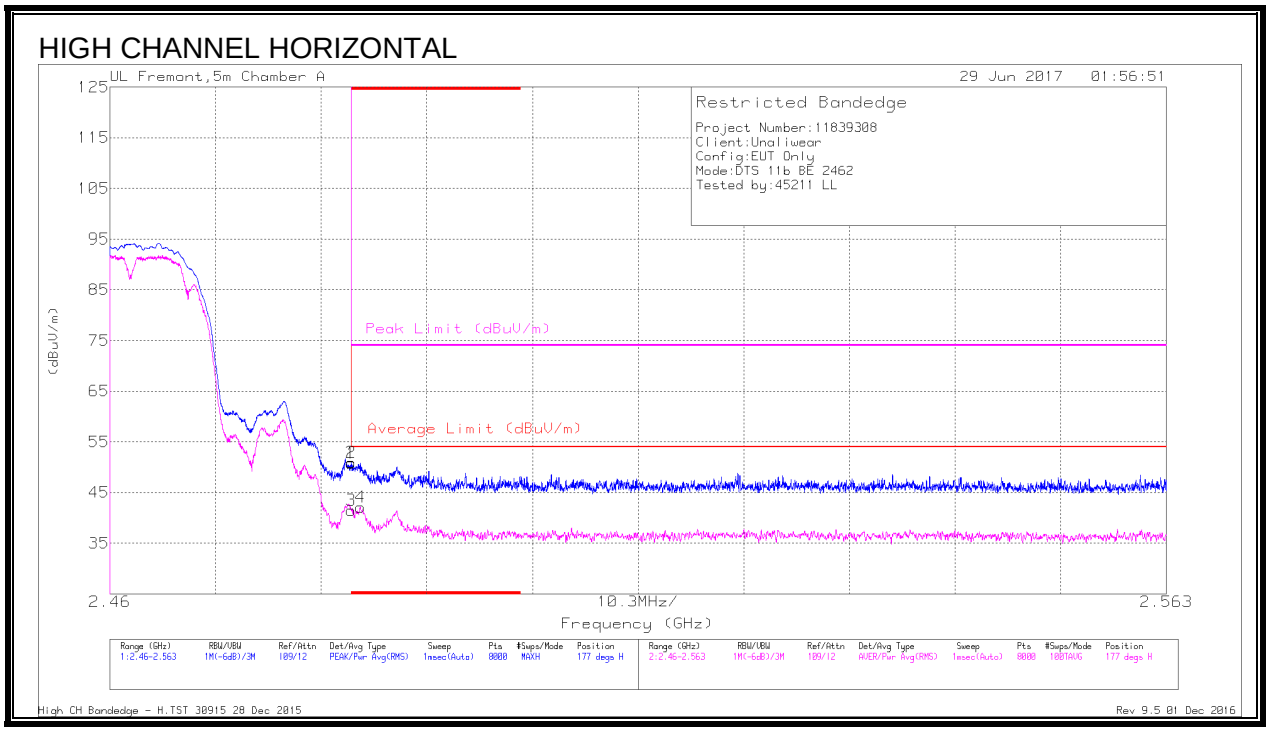



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 38.72 | Pk | 31.8 | -23.2 | 47.32 | - | - | 74 | -26.68 | 121 | 366 | V |
| 2 | * 2.389 | 41 | Pk | 31.8 | -23.2 | 49.6 | - | - | 74 | -24.4 | 121 | 366 | V |
| 3 | * 2.39 | 29.51 | RMS | 31.8 | -23.2 | 38.11 | 54 | -15.89 | - | - | 121 | 366 | V |
| 4 | * 2.389 | 33.6 | RMS | 31.8 | -23.2 | 42.2 | 54 | -11.8 | - | - | 121 | 366 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)**

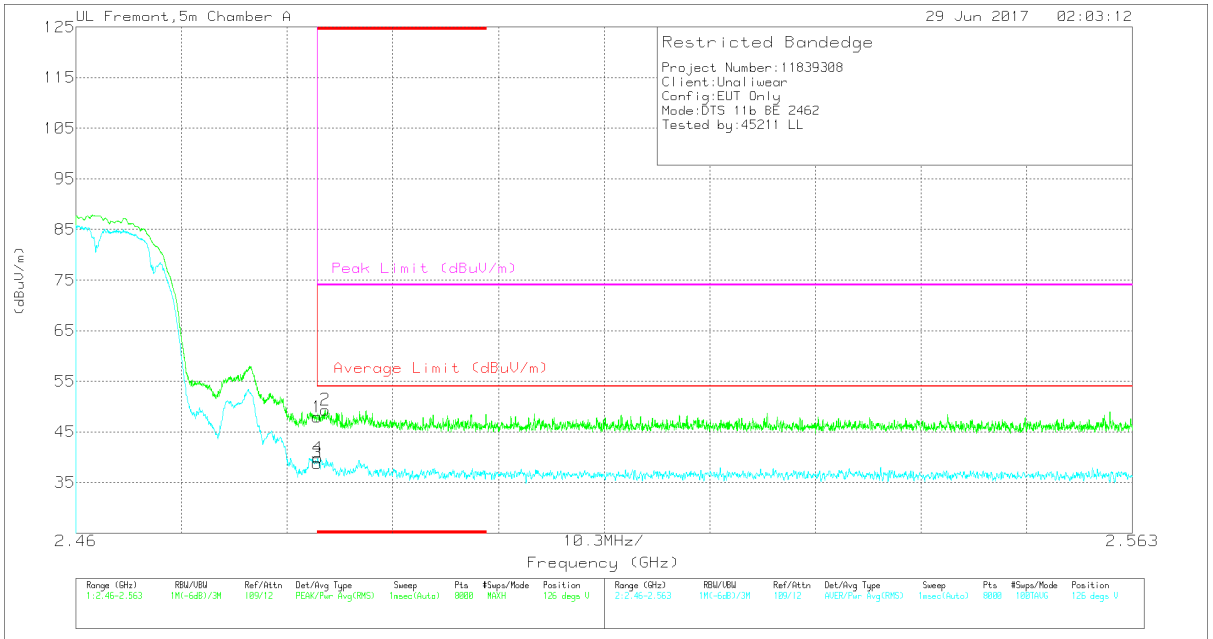



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 41.63 | Pk | 32.3 | -23.1 | 50.83 | - | - | 74 | -23.17 | 177 | 136 | H |
| 2 | * 2.484 | 41.72 | Pk | 32.3 | -23.1 | 50.92 | - | - | 74 | -23.08 | 177 | 136 | H |
| 3 | * 2.484 | 32.32 | RMS | 32.3 | -23.1 | 41.52 | 54 | -12.48 | - | - | 177 | 136 | H |
| 4 | * 2.484 | 32.92 | RMS | 32.3 | -23.1 | 42.12 | 54 | -11.88 | - | - | 177 | 136 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL



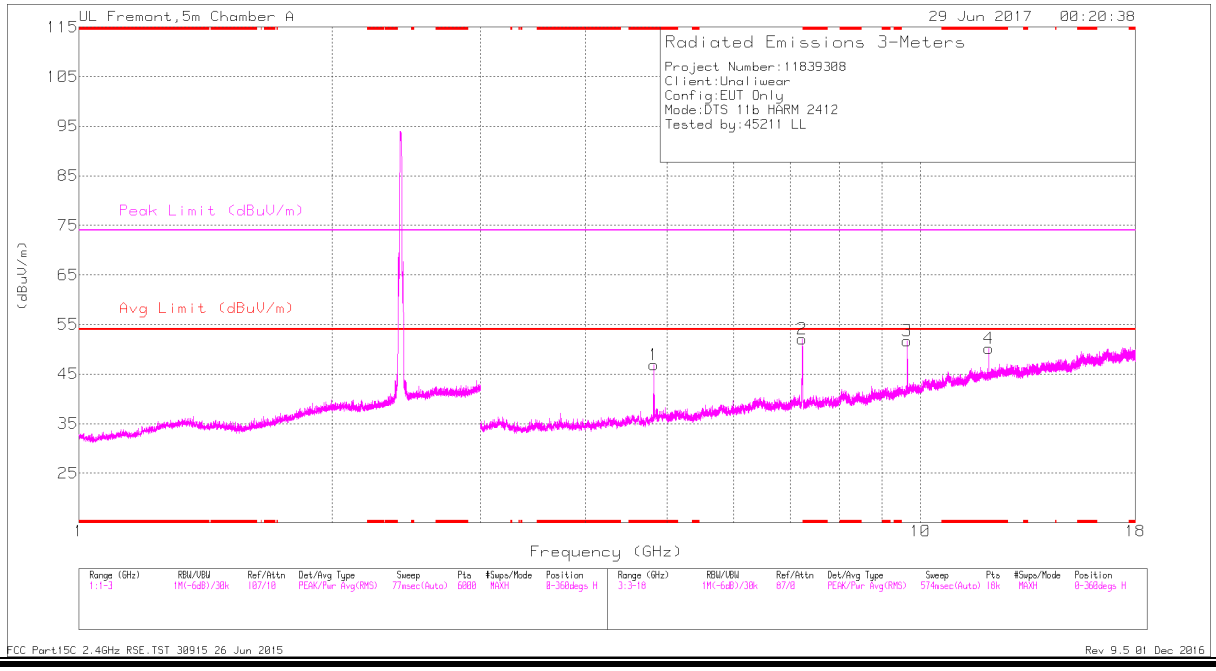

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 38.74 | Pk | 32.3 | -23.1 | 47.94 | - | - | 74 | -26.06 | 126 | 367 | V |
| 2 | * 2.484 | 40.16 | Pk | 32.3 | -23.1 | 49.36 | - | - | 74 | -24.64 | 126 | 367 | V |
| 3 | * 2.484 | 29.61 | RMS | 32.3 | -23.1 | 38.81 | 54 | -15.19 | - | - | 126 | 367 | V |
| 4 | * 2.484 | 30.71 | RMS | 32.3 | -23.1 | 39.91 | 54 | -14.09 | - | - | 126 | 367 | V |

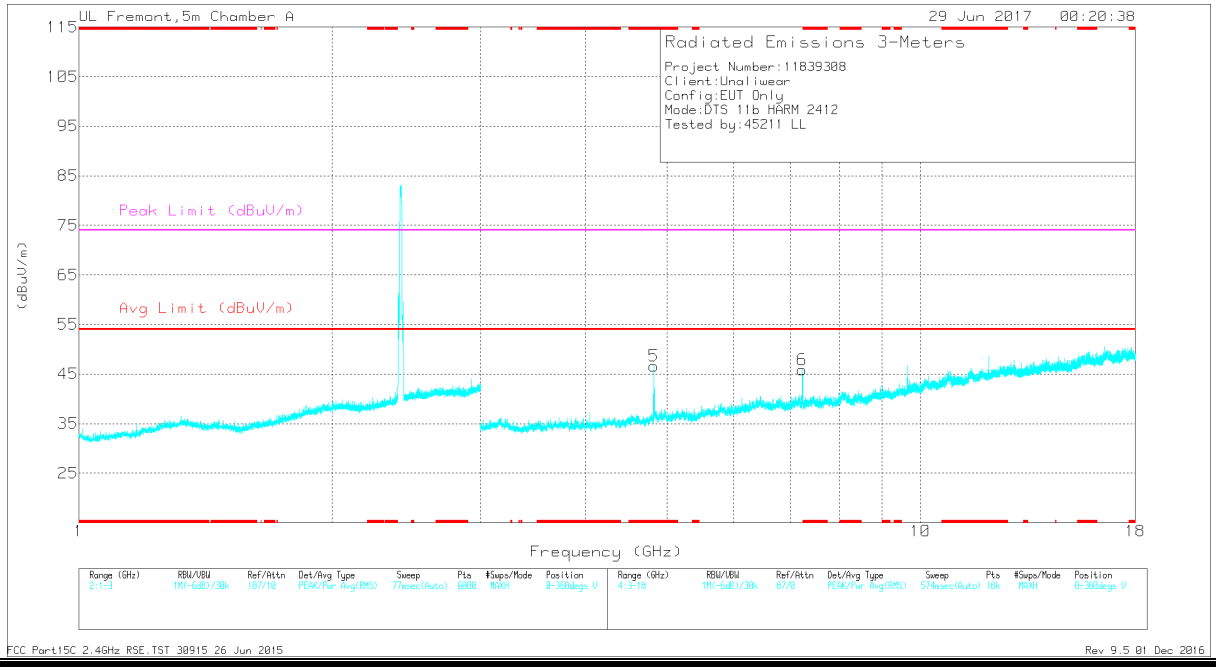
* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL




LOW CHANNEL VERTICAL



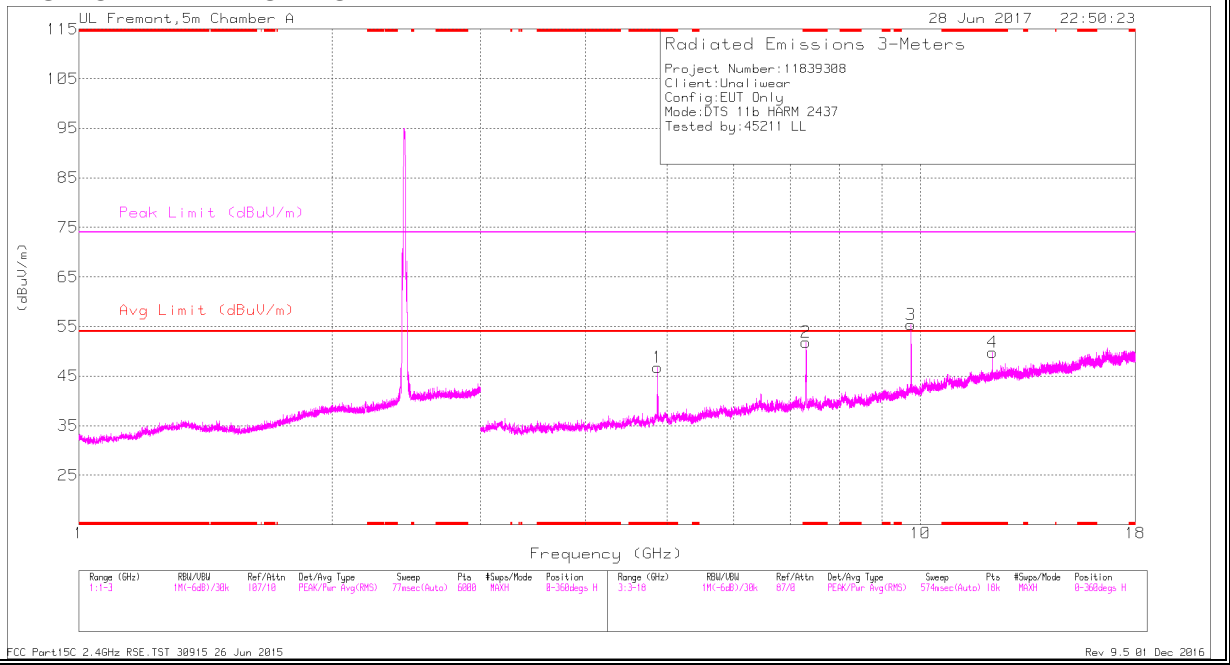
## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/ Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.824 | 42.24 | PK2 | 34.2 | -27.3 | 49.14 | - | - | 74 | -24.86 | 76 | 101 | H |
| * 4.824 | 38 | MAv1 | 34.2 | -27.3 | 44.9 | 54 | -9.1 | - | - | 76 | 101 | H |
| * 12.06 | 36.36 | PK2 | 38.9 | -19.2 | 56.06 | - | - | 74 | -17.94 | 107 | 102 | H |
| * 12.06 | 30.34 | MAv1 | 38.9 | -19.2 | 50.04 | 54 | -3.96 | - | - | 107 | 102 | H |
| * 4.824 | 43.53 | PK2 | 34.2 | -27.3 | 50.43 | - | - | 74 | -23.57 | 145 | 232 | V |
| * 4.824 | 39.51 | MAv1 | 34.2 | -27.3 | 46.41 | 54 | -7.59 | - | - | 145 | 232 | V |
| 7.236 | 43.42 | PK2 | 35.7 | -24.1 | 55.02 | - | - | - | - | 81 | 222 | H |
| 7.239 | 38.79 | MAv1 | 35.7 | -24.1 | 50.39 | - | - | - | - | 81 | 222 | H |
| 7.239 | 39.93 | PK2 | 35.7 | -24.1 | 51.53 | - | - | - | - | 150 | 391 | V |
| 7.239 | 33.64 | MAv1 | 35.7 | -24.1 | 45.24 | - | - | - | - | 150 | 391 | V |
| 9.648 | 38.37 | PK2 | 36.8 | -21.2 | 53.97 | - | - | - | - | 151 | 101 | H |
| 9.648 | 34.05 | MAv1 | 36.8 | -21.2 | 49.65 | - | - | - | - | 151 | 101 | H |

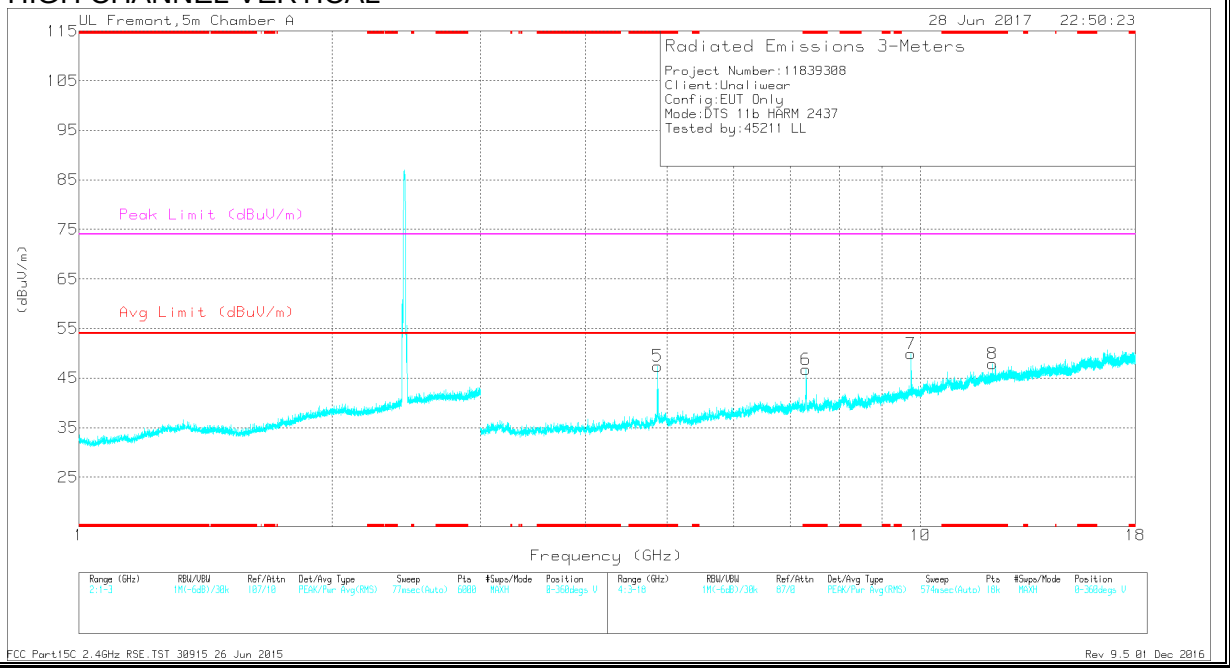
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)**

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



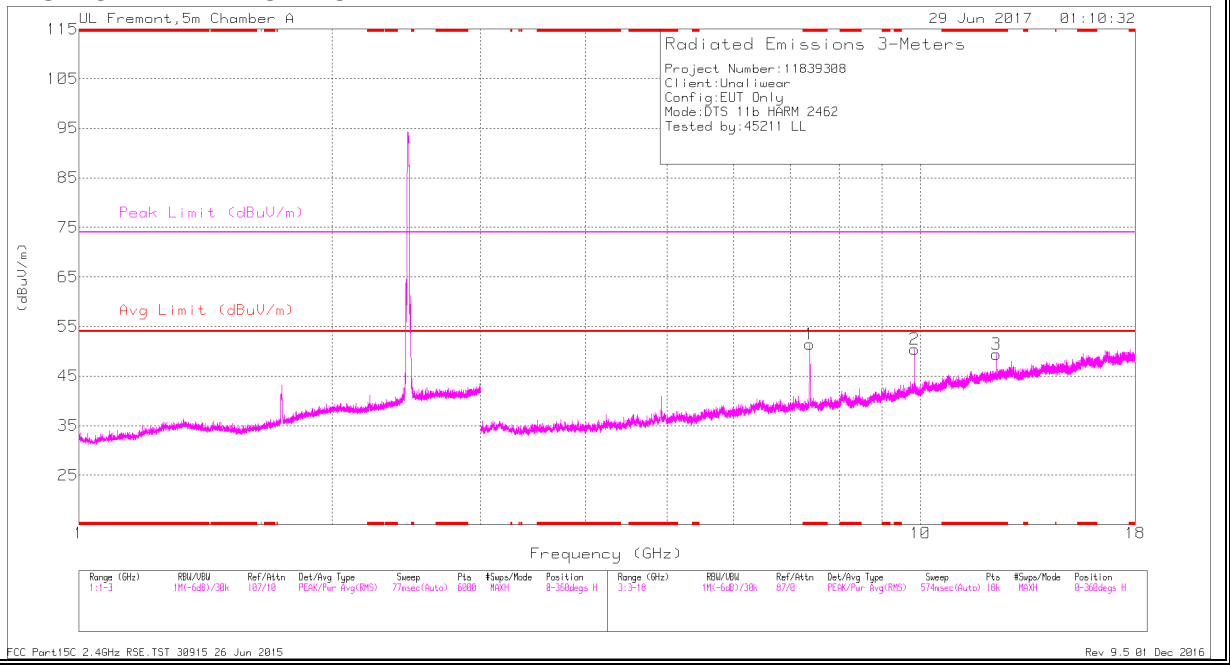
## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/ Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.874 | 42.22 | PK2 | 34.1 | -27.2 | 49.12 | - | - | 74 | -24.88 | 75 | 101 | H |
| * 4.874 | 37.5 | MAv1 | 34.1 | -27.2 | 44.4 | 54 | -9.6 | - | - | 75 | 101 | H |
| * 7.313 | 42.83 | PK2 | 35.7 | -24 | 54.53 | - | - | 74 | -19.47 | 80 | 102 | H |
| * 7.312 | 38.18 | MAv1 | 35.7 | -24.1 | 49.78 | 54 | -4.22 | - | - | 80 | 102 | H |
| * 12.185 | 35 | PK2 | 39 | -19.2 | 54.8 | - | - | 74 | -19.2 | 173 | 210 | H |
| * 12.185 | 28.06 | MAv1 | 39 | -19.2 | 47.86 | 54 | -6.14 | - | - | 173 | 210 | H |
| * 4.874 | 42.81 | PK2 | 34.1 | -27.2 | 49.71 | - | - | 74 | -24.29 | 135 | 241 | V |
| * 4.874 | 39.22 | MAv1 | 34.1 | -27.2 | 46.12 | 54 | -7.88 | - | - | 135 | 241 | V |
| * 7.313 | 41.38 | PK2 | 35.7 | -24 | 53.08 | - | - | 74 | -20.92 | 135 | 353 | V |
| * 7.312 | 36.31 | MAv1 | 35.7 | -24.1 | 47.91 | 54 | -6.09 | - | - | 135 | 353 | V |
| * 12.185 | 33.57 | PK2 | 39 | -19.2 | 53.37 | - | - | 74 | -20.63 | 174 | 371 | V |
| * 12.185 | 25.18 | MAv1 | 39 | -19.2 | 44.98 | 54 | -9.02 | - | - | 174 | 371 | V |
| 9.748 | 38.56 | PK2 | 36.9 | -20.7 | 54.76 | - | - | - | - | 150 | 101 | H |
| 9.748 | 33.98 | MAv1 | 36.9 | -20.7 | 50.18 | - | - | - | - | 150 | 101 | H |
| 9.748 | 36.81 | PK2 | 36.9 | -20.7 | 53.01 | - | - | - | - | 130 | 218 | V |
| 9.748 | 30.94 | MAv1 | 36.9 | -20.7 | 47.14 | - | - | - | - | 130 | 218 | V |

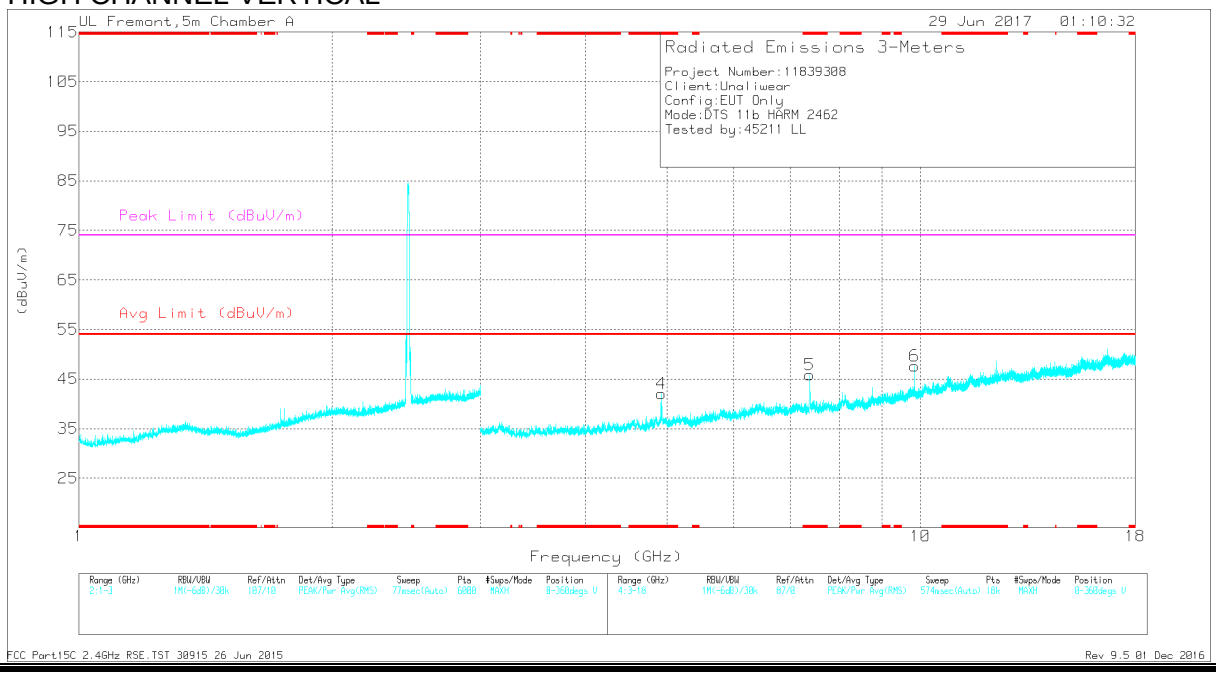
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)**

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



## Radiated Emissions

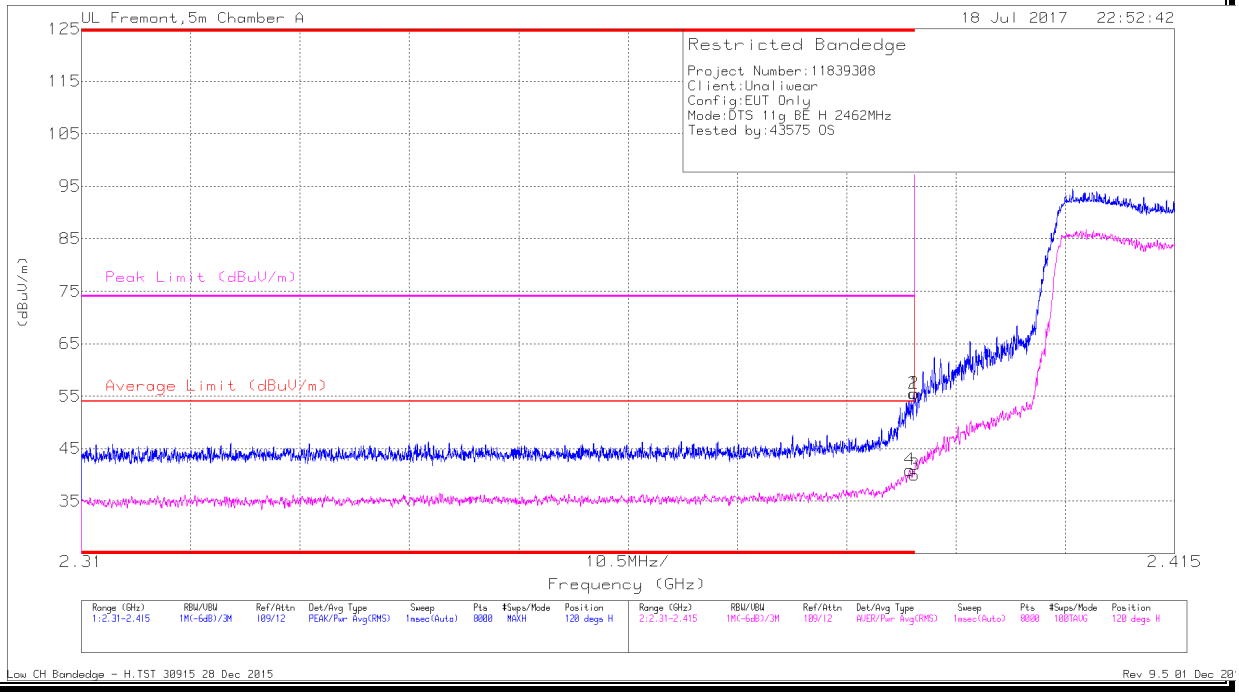
| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/ Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 7.389 | 41.73 | PK2 | 35.6 | -22.9 | 54.43 | - | - | 74 | -19.57 | 258 | 105 | H |
| * 7.388 | 36.56 | MAv1 | 35.6 | -22.9 | 49.26 | 54 | -4.74 | - | - | 258 | 105 | H |
| * 12.31 | 35.07 | PK2 | 38.9 | -19.1 | 54.87 | - | - | 74 | -19.13 | 282 | 104 | H |
| * 12.31 | 27.77 | MAv1 | 38.9 | -19.1 | 47.57 | 54 | -6.43 | - | - | 282 | 104 | H |
| * 4.924 | 40.08 | PK2 | 34.1 | -27.1 | 47.08 | - | - | 74 | -26.92 | 325 | 226 | V |
| * 4.924 | 35.05 | MAv1 | 34.1 | -27.1 | 42.05 | 54 | -11.95 | - | - | 325 | 226 | V |
| * 7.387 | 40.14 | PK2 | 35.6 | -22.9 | 52.84 | - | - | 74 | -21.16 | 308 | 356 | V |
| * 7.388 | 34.5 | MAv1 | 35.6 | -22.9 | 47.2 | 54 | -6.8 | - | - | 308 | 356 | V |
| 9.848 | 37.89 | PK2 | 37.1 | -20.6 | 54.39 | - | - | - | - | 208 | 241 | H |
| 9.848 | 33.15 | MAv1 | 37.1 | -20.6 | 49.65 | - | - | - | - | 208 | 241 | H |
| 9.848 | 36.41 | PK2 | 37.1 | -20.6 | 52.91 | - | - | - | - | 109 | 102 | V |
| 9.848 | 29.61 | MAv1 | 37.1 | -20.6 | 46.11 | - | - | - | - | 109 | 102 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## 10.2.2 11g MODE IN THE 2.4GHz BAND

**AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)**

LOW CHANNEL HORIZONTAL

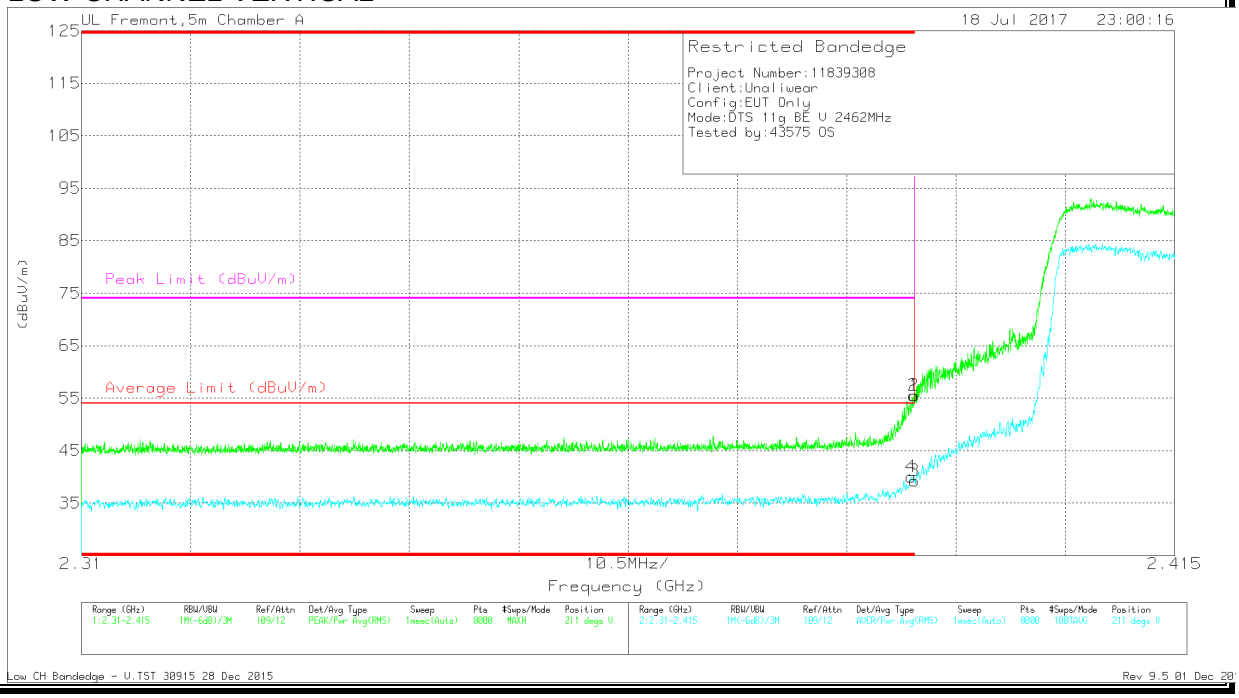



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | 46.85 | Pk | 31.8 | -23.2 | 0 | 55.45 | - | - | 74 | -18.55 | 120 | 355 | H |
| 2 | * 2.39 | 46.93 | Pk | 31.8 | -23.2 | 0 | 55.53 | - | - | 74 | -18.47 | 120 | 355 | H |
| 3 | * 2.39 | 31.19 | RMS | 31.8 | -23.2 | .14 | 39.93 | 54 | -14.07 | - | - | 120 | 355 | H |
| 4 | * 2.39 | 32.18 | RMS | 31.8 | -23.2 | .14 | 40.92 | 54 | -13.08 | - | - | 120 | 355 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL



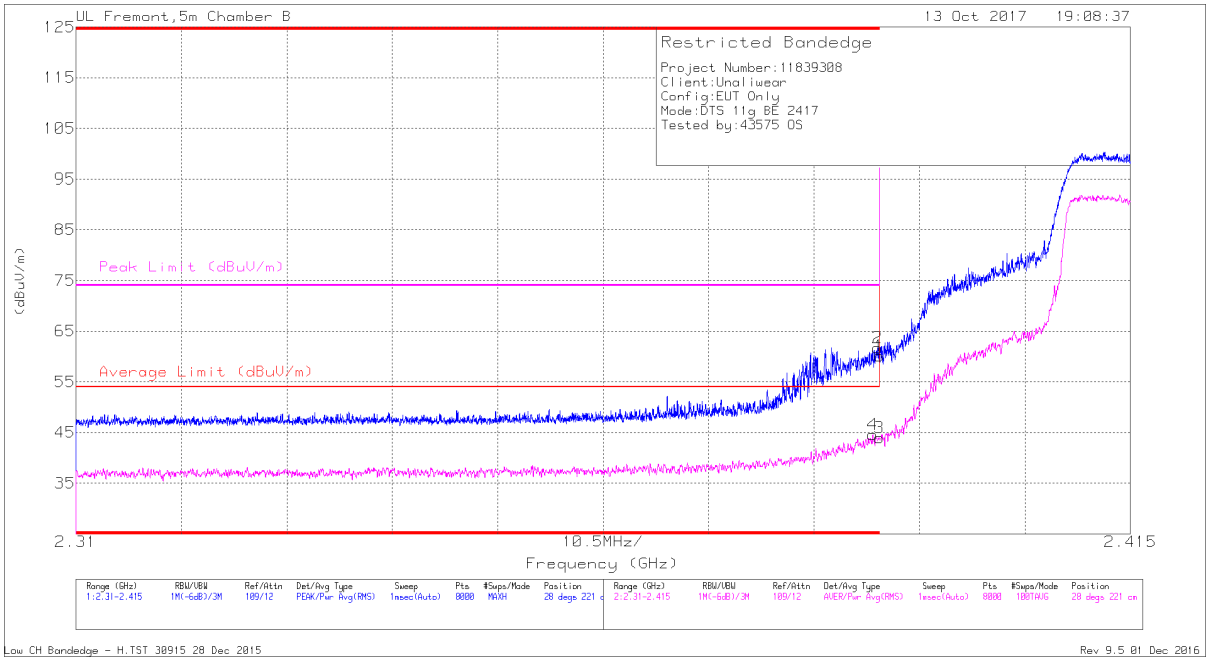

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | 46.89 | Pk | 31.8 | -23.2 | 0 | 55.49 | - | - | 74 | -18.51 | 211 | 354 | V |
| 2 | * 2.39 | 46.95 | Pk | 31.8 | -23.2 | 0 | 55.55 | - | - | 74 | -18.45 | 211 | 354 | V |
| 3 | * 2.39 | 30.45 | RMS | 31.8 | -23.2 | .14 | 39.19 | 54 | -14.81 | - | - | 211 | 354 | V |
| 4 | * 2.39 | 31.2 | RMS | 31.8 | -23.2 | .14 | 39.94 | 54 | -14.06 | - | - | 211 | 354 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

**AUTHORIZED BANDEDGE (LOW CHANNEL, CH 2)**

LOW CHANNEL HORIZONTAL

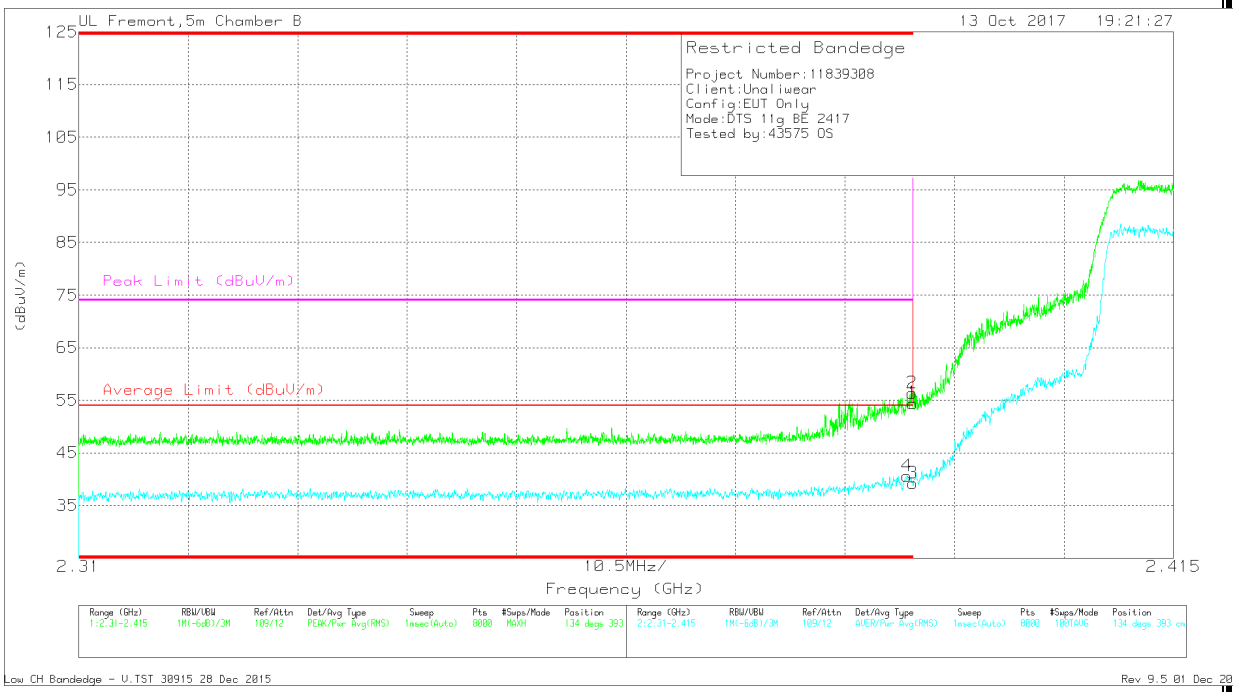



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T863 (dB/m) | Amp/Cbl/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 | 49.32 | Pk | 32 | -21.2 | 0 | 60.12 | - | - | 74 | -13.88 | 28 | 221 | H |
| 2 | * 2.39 | 50.93 | Pk | 32 | -21.2 | 0 | 61.73 | - | - | 74 | -12.27 | 28 | 221 | H |
| 3 | * 2.39 | 33 | RMS | 32 | -21.2 | .15 | 43.95 | 54 | -10.05 | - | - | 28 | 221 | H |
| 4 | * 2.389 | 33.61 | RMS | 32 | -21.2 | .15 | 44.56 | 54 | -9.44 | - | - | 28 | 221 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## LOW CHANNEL VERTICAL

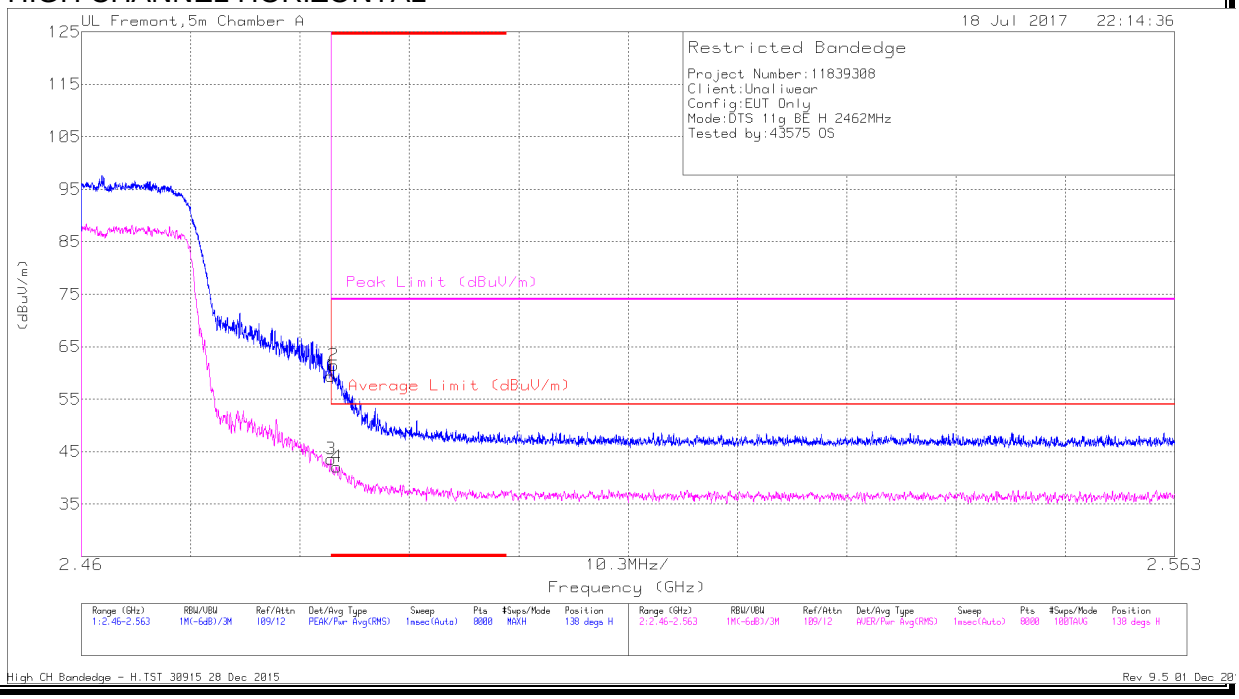



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T863 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | * 2.389 | 29.67 | RMS | 32 | -21.2 | .15 | 40.62 | 54 | -13.38 | - | - | 134 | 393 | V |
| 1 | * 2.39 | 43.65 | Pk | 32 | -21.2 | 0 | 54.45 | - | - | 74 | -19.55 | 134 | 393 | V |
| 2 | * 2.39 | 45.62 | Pk | 32 | -21.2 | 0 | 56.42 | - | - | 74 | -17.58 | 134 | 393 | V |
| 3 | * 2.39 | 28.27 | RMS | 32 | -21.2 | .15 | 39.22 | 54 | -14.78 | - | - | 134 | 393 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)**

HIGH CHANNEL HORIZONTAL

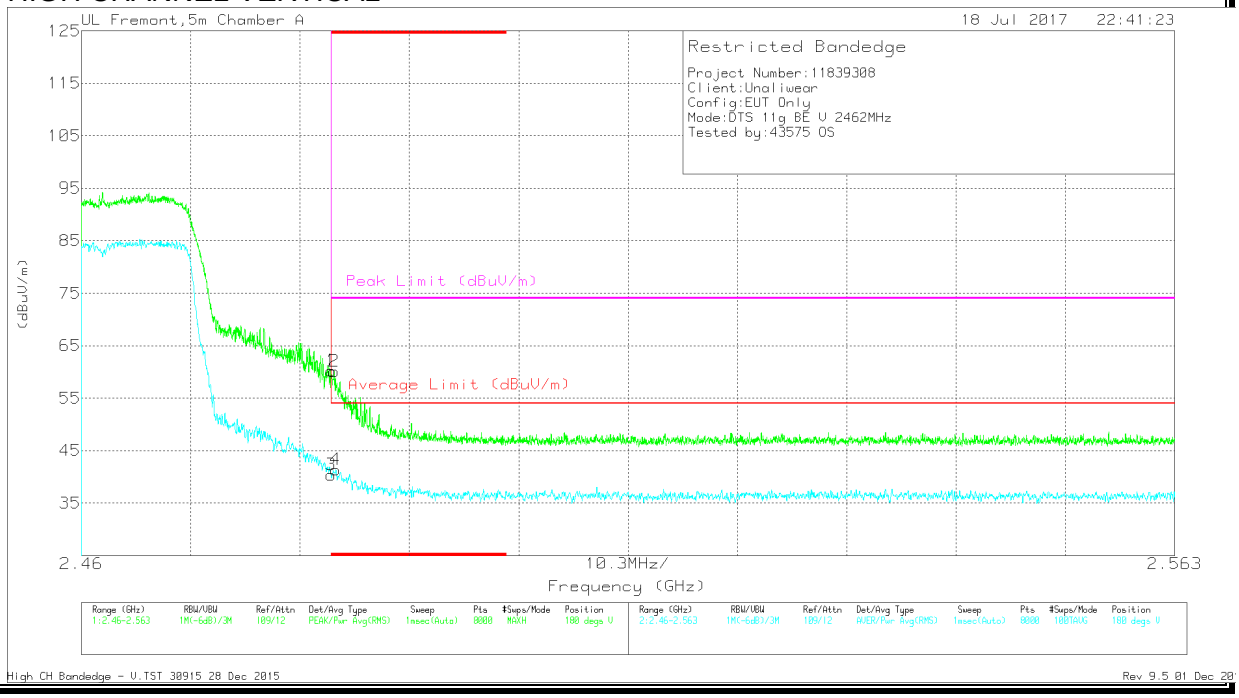



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 50.19 | Pk | 32.3 | -23.1 | 0 | 59.39 | - | - | 74 | -14.61 | 138 | 139 | H |
| 2 | * 2.484 | 52.26 | Pk | 32.3 | -23.1 | 0 | 61.46 | - | - | 74 | -12.54 | 138 | 139 | H |
| 3 | * 2.484 | 34.26 | RMS | 32.3 | -23.1 | .14 | 43.6 | 54 | -10.4 | - | - | 138 | 139 | H |
| 4 | * 2.484 | 32.71 | RMS | 32.3 | -23.1 | .14 | 42.05 | 54 | -11.95 | - | - | 138 | 139 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL



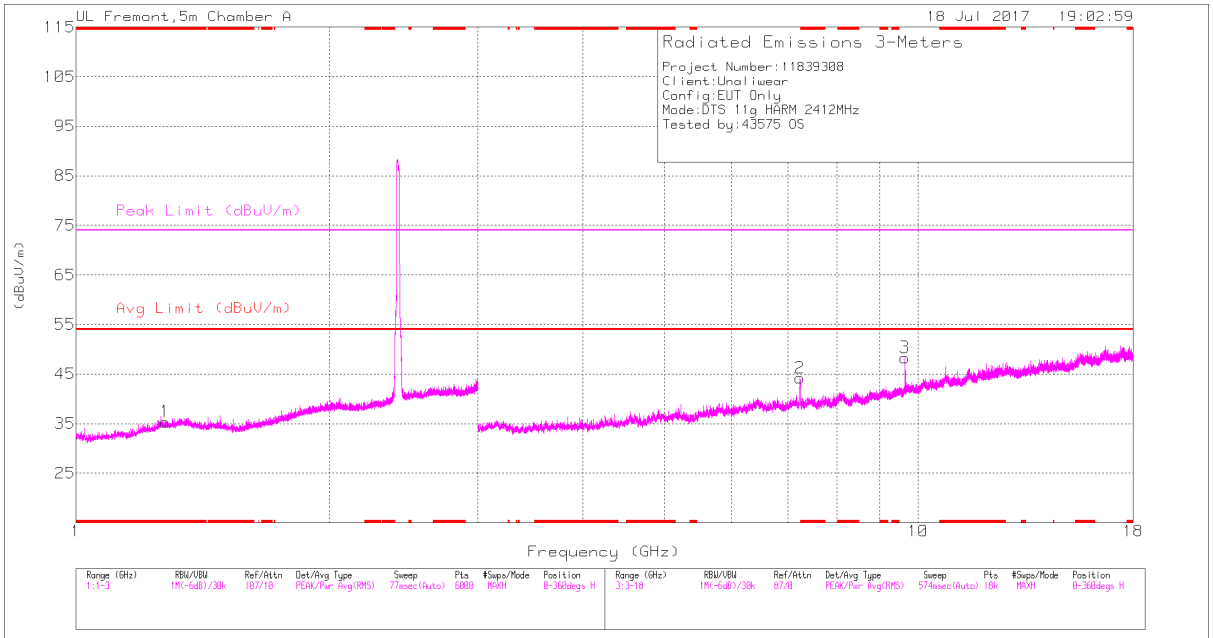

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 51.02 | Pk | 32.3 | -23.1 | 0 | 60.22 | - | - | 74 | -13.78 | 180 | 387 | V |
| 2 | * 2.484 | 50.87 | Pk | 32.3 | -23.1 | 0 | 60.07 | - | - | 74 | -13.93 | 180 | 387 | V |
| 3 | * 2.484 | 31.06 | RMS | 32.3 | -23.1 | .14 | 40.4 | 54 | -13.6 | - | - | 180 | 387 | V |
| 4 | * 2.484 | 32.06 | RMS | 32.3 | -23.1 | .14 | 41.4 | 54 | -12.6 | - | - | 180 | 387 | V |

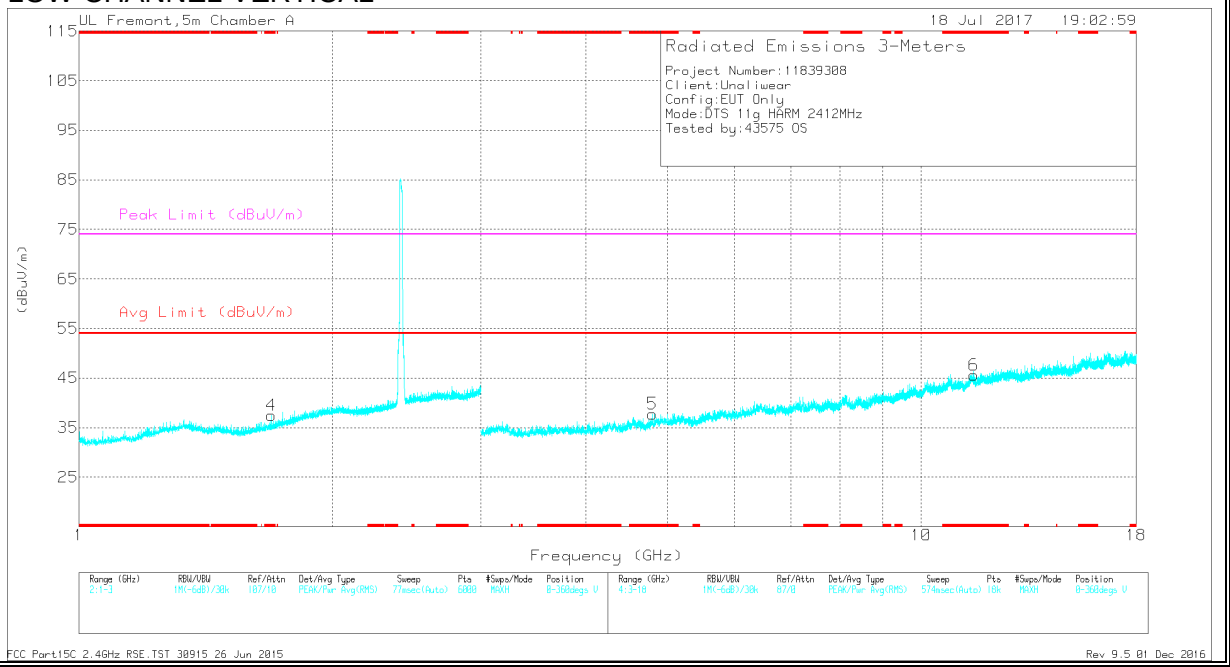
* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL




LOW CHANNEL VERTICAL



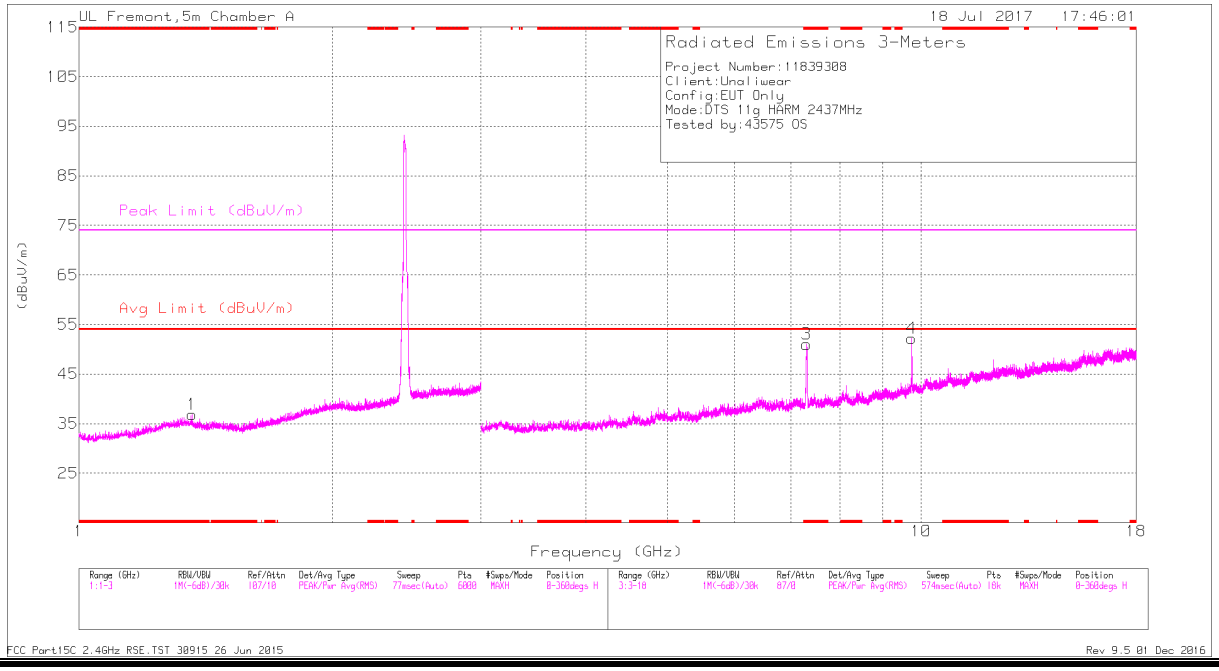
## Radiated Emissions

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.273 | 35.67 | PK2 | 29.3 | -23.5 | 0 | 41.47 | - | - | 74 | -32.53 | 65 | 150 | H |
| * 1.274 | 23.86 | MAv1 | 29.3 | -23.5 | .14 | 29.8 | 54 | -24.2 | - | - | 65 | 150 | H |
| * 1.692 | 36.4 | PK2 | 28.9 | -23.3 | 0 | 42 | - | - | 74 | -32 | 110 | 328 | V |
| * 1.692 | 24.52 | MAv1 | 28.9 | -23.3 | .14 | 30.26 | 54 | -23.74 | - | - | 110 | 328 | V |
| * 4.796 | 36.65 | PK2 | 34.2 | -27.6 | 0 | 43.25 | - | - | 74 | -30.75 | 206 | 157 | V |
| * 4.797 | 24.75 | MAv1 | 34.2 | -27.6 | .14 | 31.49 | 54 | -22.51 | - | - | 206 | 157 | V |
| * 11.539 | 31.83 | PK2 | 38.4 | -19.1 | 0 | 51.13 | - | - | 74 | -22.87 | 3 | 192 | V |
| * 11.54 | 20.63 | MAv1 | 38.4 | -19.1 | .14 | 40.07 | 54 | -13.93 | - | - | 3 | 192 | V |
| 7.241 | 39.17 | PK2 | 35.7 | -24.1 | 0 | 50.77 | - | - | - | - | 147 | 209 | H |
| 7.241 | 28.62 | MAv1 | 35.7 | -24.1 | .14 | 40.36 | - | - | - | - | 147 | 209 | H |
| 9.648 | 38.6 | PK2 | 36.8 | -21.2 | 0 | 54.2 | - | - | - | - | 201 | 227 | H |
| 9.648 | 33.54 | MAv1 | 36.8 | -21.2 | .14 | 49.28 | - | - | - | - | 201 | 227 | H |

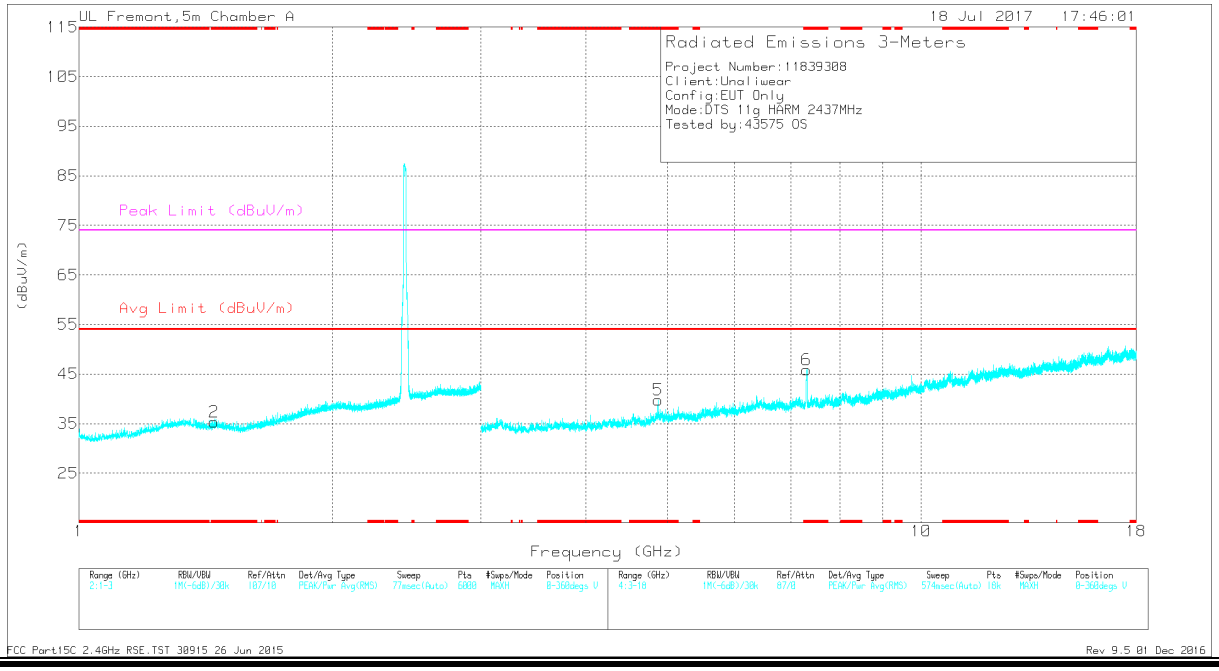
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)**

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



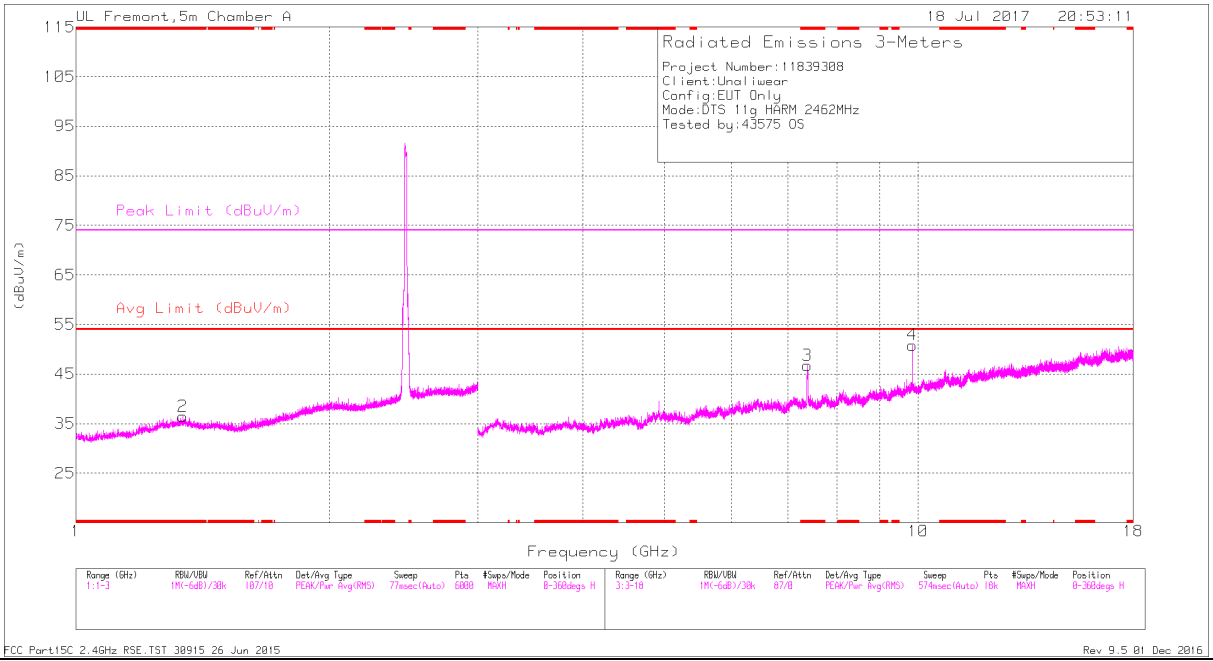
## Radiated Emissions

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.363 | 35.7 | PK2 | 29.3 | -23.4 | 0 | 41.6 | - | - | 74 | -32.4 | 326 | 114 | H |
| * 1.363 | 23.96 | MAv1 | 29.3 | -23.4 | .14 | 30 | 54 | -24 | - | - | 326 | 114 | H |
| * 1.445 | 35.73 | PK2 | 28.7 | -23.3 | 0 | 41.13 | - | - | 74 | -32.87 | 55 | 119 | V |
| * 1.445 | 24.02 | MAv1 | 28.7 | -23.3 | .14 | 29.56 | 54 | -24.44 | - | - | 55 | 119 | V |
| * 7.314 | 46.96 | PK2 | 35.7 | -24 | 0 | 58.66 | - | - | 74 | -15.34 | 251 | 206 | H |
| * 7.315 | 33.67 | MAv1 | 35.7 | -24 | .14 | 45.51 | 54 | -8.49 | - | - | 251 | 206 | H |
| * 4.875 | 37.04 | PK2 | 34.1 | -27.2 | 0 | 43.94 | - | - | 74 | -30.06 | 305 | 279 | V |
| * 4.874 | 24.71 | MAv1 | 34.1 | -27.2 | .14 | 31.75 | 54 | -22.25 | - | - | 305 | 279 | V |
| * 7.312 | 34.9 | PK2 | 35.7 | -24.1 | 0 | 46.5 | - | - | 74 | -27.5 | 55 | 253 | V |
| * 7.312 | 22.26 | MAv1 | 35.7 | -24.1 | .14 | 34 | 54 | -20 | - | - | 55 | 253 | V |
| 9.748 | 40.65 | PK2 | 36.9 | -20.7 | 0 | 56.85 | - | - | - | - | 298 | 198 | H |
| 9.748 | 34.4 | MAv1 | 36.9 | -20.7 | .14 | 50.74 | - | - | - | - | 298 | 198 | H |

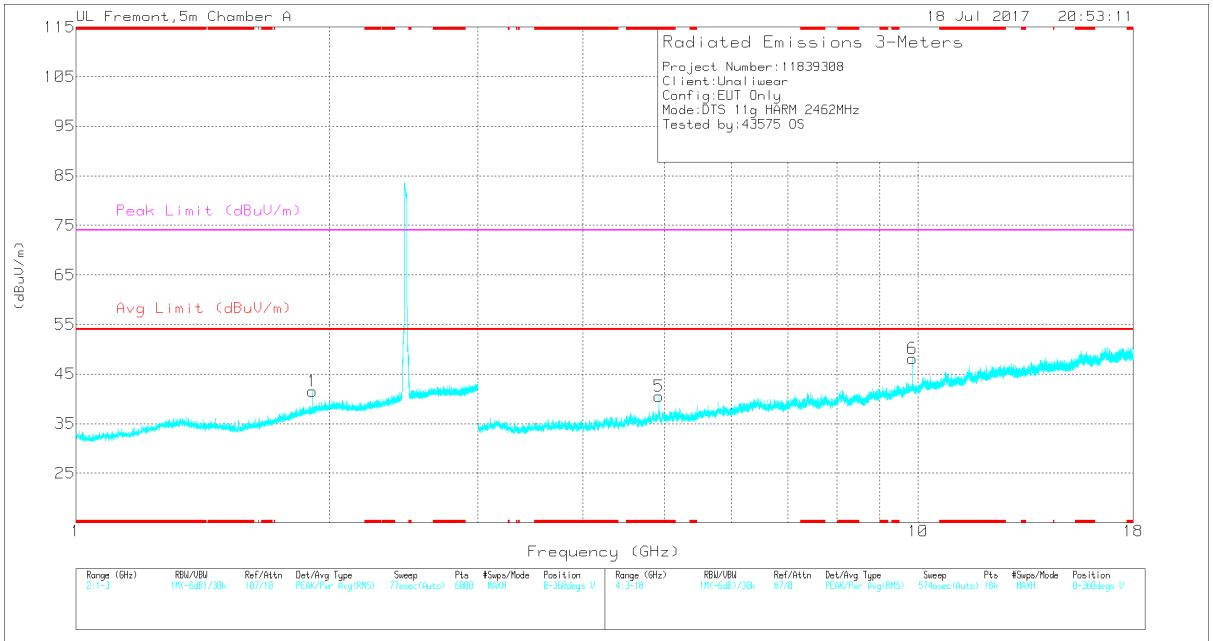
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



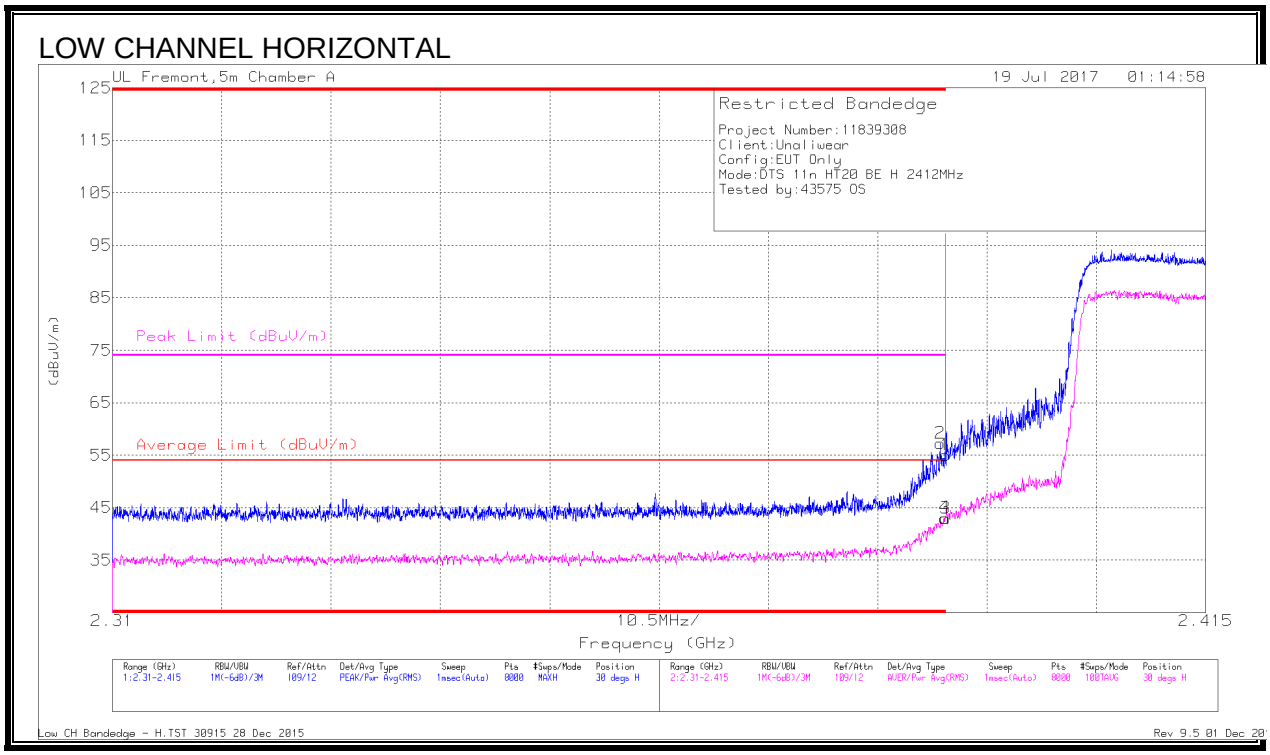
## Radiated Emissions

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.339 | 36.13 | PK2 | 29.5 | -23.4 | 0 | 42.23 | - | - | 74 | -31.77 | 160 | 122 | H |
| * 1.338 | 23.98 | MAv1 | 29.5 | -23.4 | .14 | 30.22 | 54 | -23.78 | - | - | 160 | 122 | H |
| * 7.384 | 42.53 | PK2 | 35.6 | -23 | 0 | 55.13 | - | - | 74 | -18.87 | 250 | 219 | H |
| * 7.384 | 29.9 | MAv1 | 35.6 | -23 | .14 | 42.64 | 54 | -11.36 | - | - | 250 | 219 | H |
| * 4.924 | 40.44 | PK2 | 34.1 | -27.1 | 0 | 47.44 | - | - | 74 | -26.56 | 49 | 241 | V |
| * 4.924 | 31.65 | MAv1 | 34.1 | -27.1 | .14 | 38.79 | 54 | -15.21 | - | - | 49 | 241 | V |
| 1.91 | 36.33 | PK2 | 31.1 | -23.2 | 0 | 44.23 | - | - | - | - | 105 | 212 | V |
| 1.91 | 24.25 | MAv1 | 31.1 | -23.2 | .14 | 32.29 | - | - | - | - | 105 | 212 | V |
| 9.848 | 39.03 | PK2 | 37.1 | -20.6 | 0 | 55.53 | - | - | - | - | 279 | 217 | H |
| 9.848 | 34.06 | MAv1 | 37.1 | -20.6 | .14 | 50.7 | - | - | - | - | 279 | 217 | H |
| 9.848 | 37.95 | PK2 | 37.1 | -20.6 | 0 | 54.45 | - | - | - | - | 30 | 232 | V |
| 9.848 | 32.29 | MAv1 | 37.1 | -20.6 | .14 | 48.93 | - | - | - | - | 30 | 232 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## 10.2.3 11n-HT20 MODE IN THE 2.4GHz BAND

**AUTHORIZED BANDEDGE (LOW CHANNEL, CH 1)**

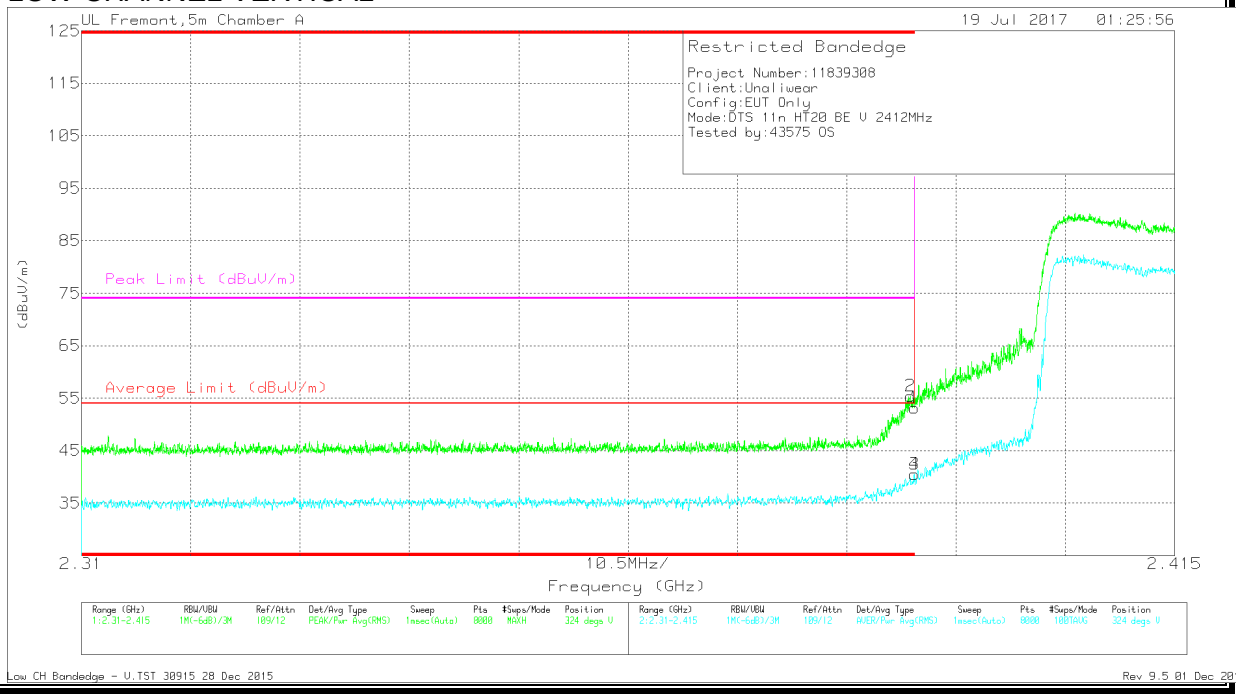



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | 46.41 | Pk | 31.8 | -23.2 | 0 | 55.01 | - | - | 74 | -18.99 | 30 | 190 | H |
| 2 | * 2.39 | 48.64 | Pk | 31.8 | -23.2 | 0 | 57.24 | - | - | 74 | -16.76 | 30 | 190 | H |
| 3 | * 2.39 | 34.22 | RMS | 31.8 | -23.2 | .12 | 42.94 | 54 | -11.06 | - | - | 30 | 190 | H |
| 4 | * 2.39 | 34.31 | RMS | 31.8 | -23.2 | .12 | 43.03 | 54 | -10.97 | - | - | 30 | 190 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL



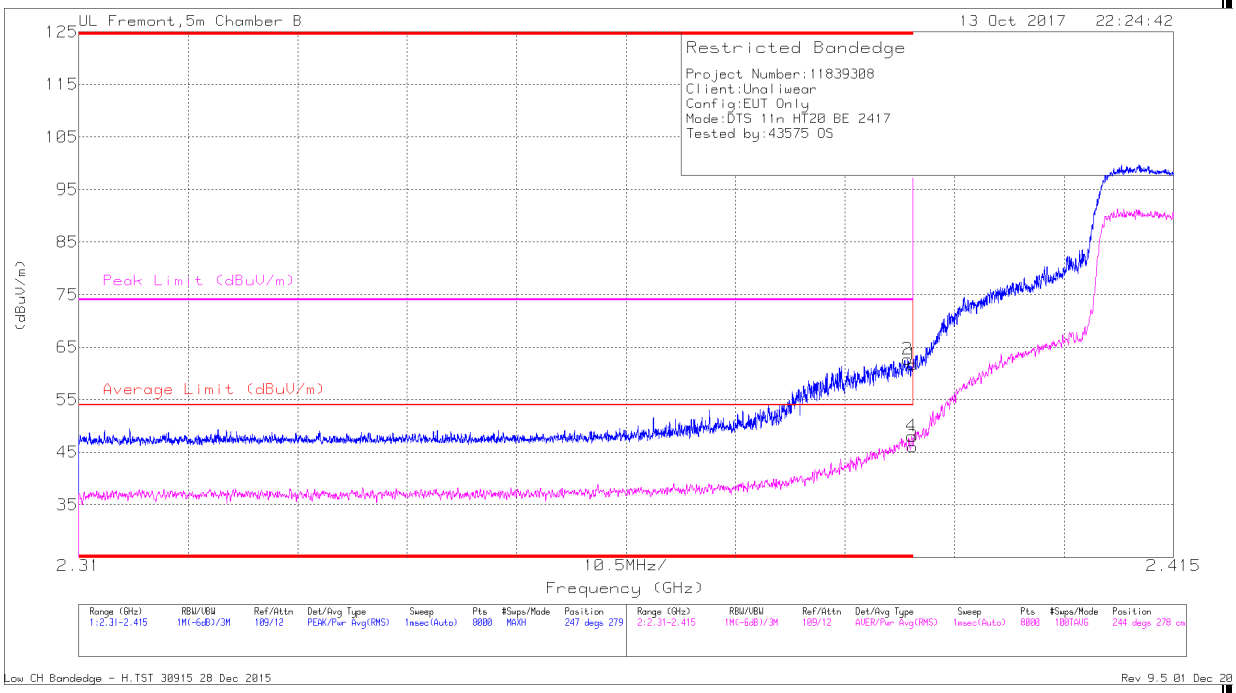

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | 44.58 | Pk | 31.8 | -23.2 | 0 | 53.18 | - | - | 74 | -20.82 | 324 | 359 | V |
| 2 | * 2.39 | 46.74 | Pk | 31.8 | -23.2 | 0 | 55.34 | - | - | 74 | -18.66 | 324 | 359 | V |
| 3 | * 2.39 | 31.76 | RMS | 31.8 | -23.2 | .12 | 40.48 | 54 | -13.52 | - | - | 324 | 359 | V |
| 4 | * 2.39 | 31.76 | RMS | 31.8 | -23.2 | .12 | 40.48 | 54 | -13.52 | - | - | 324 | 359 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## AUTHORIZED BANDEDGE (LOW CHANNEL, CH 2)

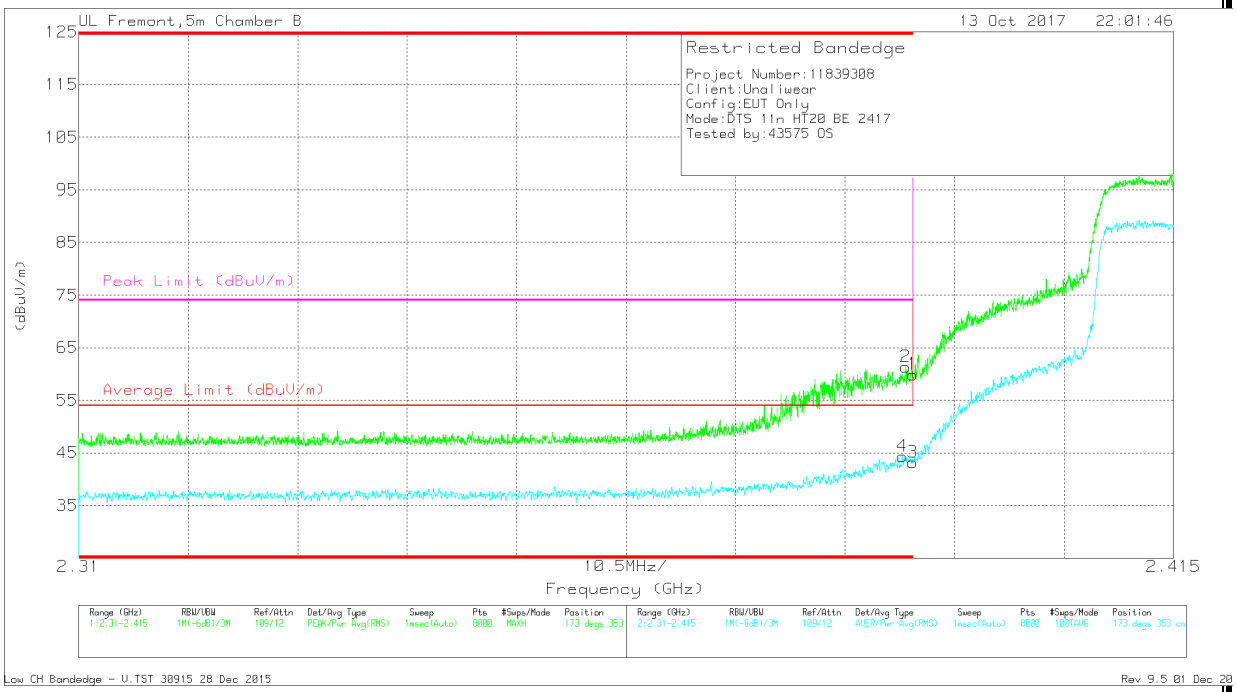
LOW CHANNEL HORIZONTAL




| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T863 (dB/m) | Amp/Cbl/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 | 50.96 | Pk | 32 | -21.2 | 0 | 61.76 | - | - | 74 | -12.24 | 247 | 279 | H |
| 2 | * 2.39 | 51.88 | Pk | 32 | -21.2 | 0 | 62.68 | - | - | 74 | -11.32 | 247 | 279 | H |
| 3 | * 2.39 | 35.18 | RMS | 32 | -21.2 | .13 | 46.11 | 54 | -7.89 | - | - | 244 | 278 | H |
| 4 | * 2.39 | 37.08 | RMS | 32 | -21.2 | .13 | 48.01 | 54 | -5.99 | - | - | 244 | 278 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## LOW CHANNEL VERTICAL

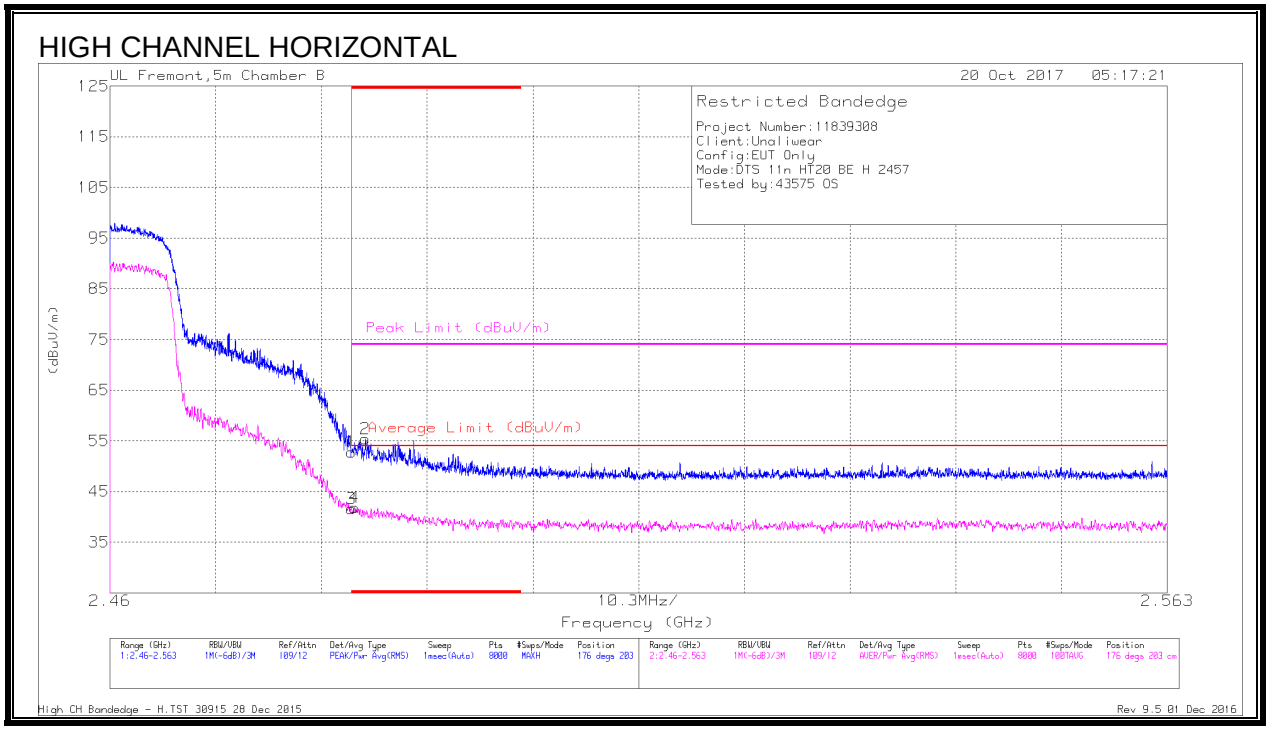



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | 44.58 | Pk | 31.8 | -23.2 | 0 | 53.18 | - | - | 74 | -20.82 | 324 | 359 | V |
| 2 | * 2.39 | 46.74 | Pk | 31.8 | -23.2 | 0 | 55.34 | - | - | 74 | -18.66 | 324 | 359 | V |
| 3 | * 2.39 | 31.76 | RMS | 31.8 | -23.2 | .12 | 40.48 | 54 | -13.52 | - | - | 324 | 359 | V |
| 4 | * 2.39 | 31.76 | RMS | 31.8 | -23.2 | .12 | 40.48 | 54 | -13.52 | - | - | 324 | 359 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 10)**

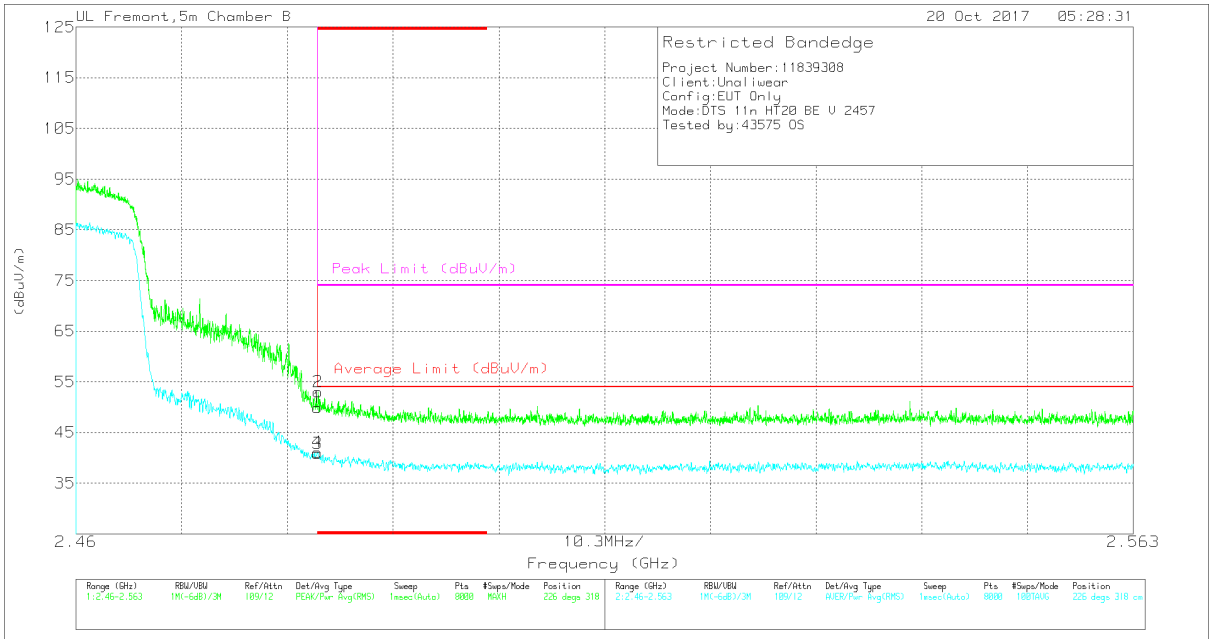



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 41.18 | Pk | 32.5 | -20.9 | 0 | 52.78 | - | - | 74 | -21.22 | 176 | 203 | H |
| 2 | * 2.485 | 43.66 | Pk | 32.5 | -20.8 | 0 | 55.36 | - | - | 74 | -18.64 | 176 | 203 | H |
| 3 | * 2.484 | 29.89 | RMS | 32.5 | -20.9 | .12 | 41.61 | 54 | -12.39 | - | - | 176 | 203 | H |
| 4 | * 2.484 | 30.1 | RMS | 32.5 | -20.9 | .12 | 41.82 | 54 | -12.18 | - | - | 176 | 203 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL



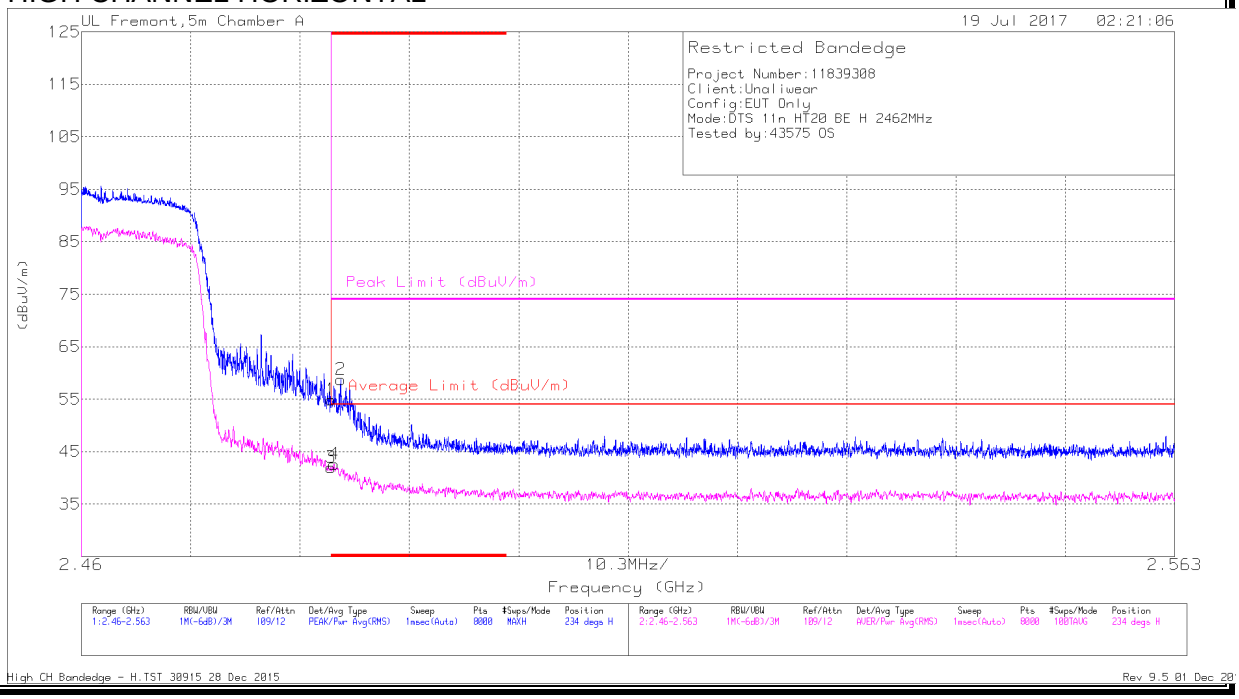

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 38.34 | Pk | 32.5 | -20.9 | 0 | 49.94 | - | - | 74 | -24.06 | 226 | 318 | V |
| 2 | * 2.484 | 41.45 | Pk | 32.5 | -20.9 | 0 | 53.05 | - | - | 74 | -20.95 | 226 | 318 | V |
| 3 | * 2.484 | 29.18 | RMS | 32.5 | -20.9 | .12 | 40.9 | 54 | -13.1 | - | - | 226 | 318 | V |
| 4 | * 2.484 | 29.37 | RMS | 32.5 | -20.9 | .12 | 41.09 | 54 | -12.91 | - | - | 226 | 318 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)**

HIGH CHANNEL HORIZONTAL

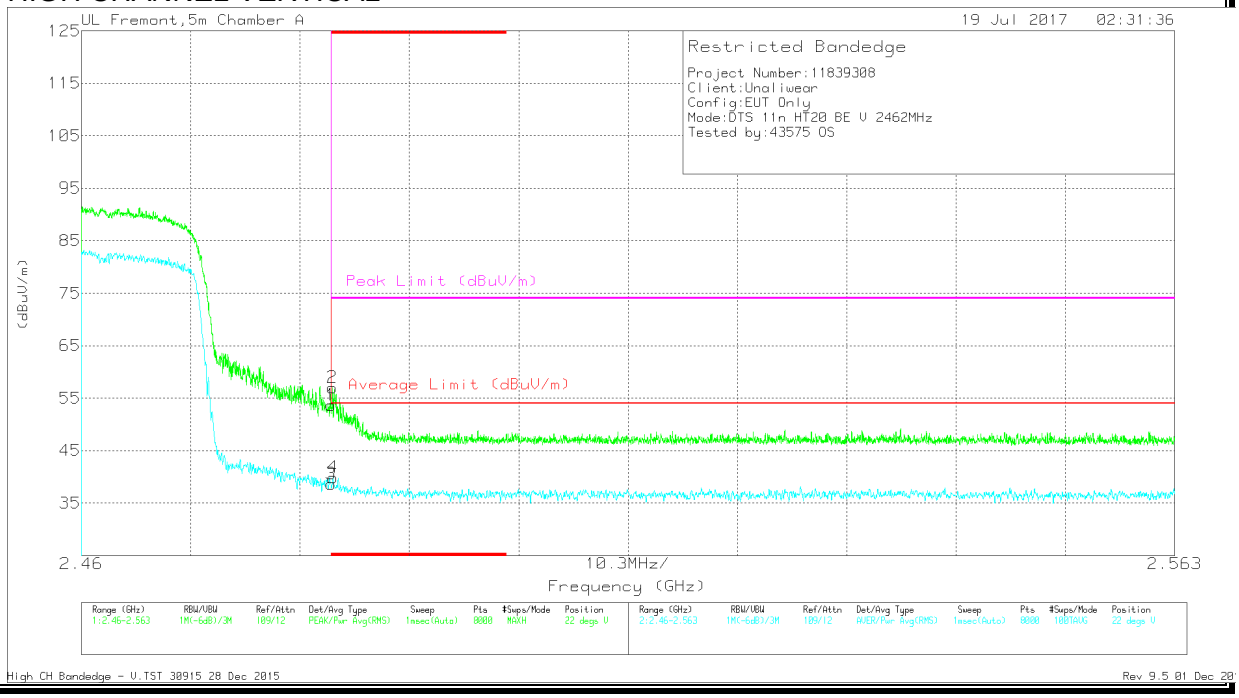



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 45.64 | Pk | 32.3 | -23.1 | 0 | 54.84 | - | - | 74 | -19.16 | 234 | 146 | H |
| 2 | * 2.484 | 49.54 | Pk | 32.3 | -23.1 | 0 | 58.74 | - | - | 74 | -15.26 | 234 | 146 | H |
| 3 | * 2.484 | 32.63 | RMS | 32.3 | -23.1 | .12 | 41.95 | 54 | -12.05 | - | - | 234 | 146 | H |
| 4 | * 2.484 | 33.25 | RMS | 32.3 | -23.1 | .12 | 42.57 | 54 | -11.43 | - | - | 234 | 146 | H |

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL



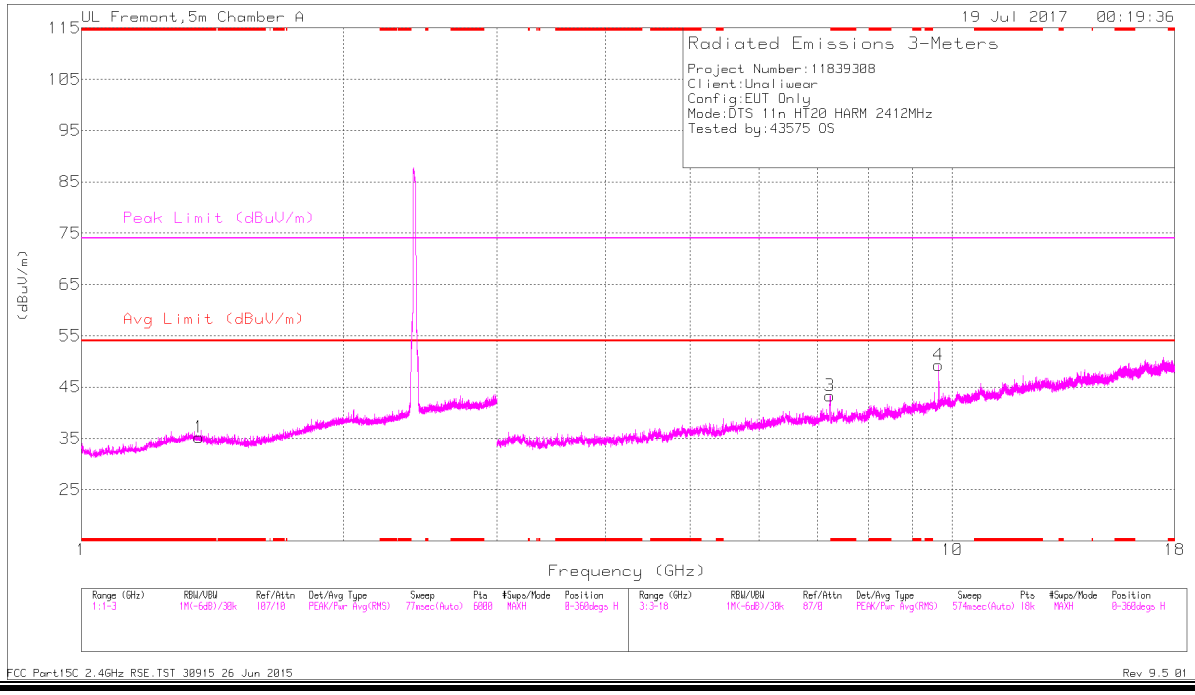

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/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 | * 2.484 | 44.47 | Pk | 32.3 | -23.1 | 0 | 53.67 | - | - | 74 | -20.33 | 22 | 376 | V |
| 2 | * 2.484 | 47.74 | Pk | 32.3 | -23.1 | 0 | 56.94 | - | - | 74 | -17.06 | 22 | 376 | V |
| 3 | * 2.484 | 29.31 | RMS | 32.3 | -23.1 | .12 | 38.63 | 54 | -15.37 | - | - | 22 | 376 | V |
| 4 | * 2.484 | 30.49 | RMS | 32.3 | -23.1 | .12 | 39.81 | 54 | -14.19 | - | - | 22 | 376 | V |

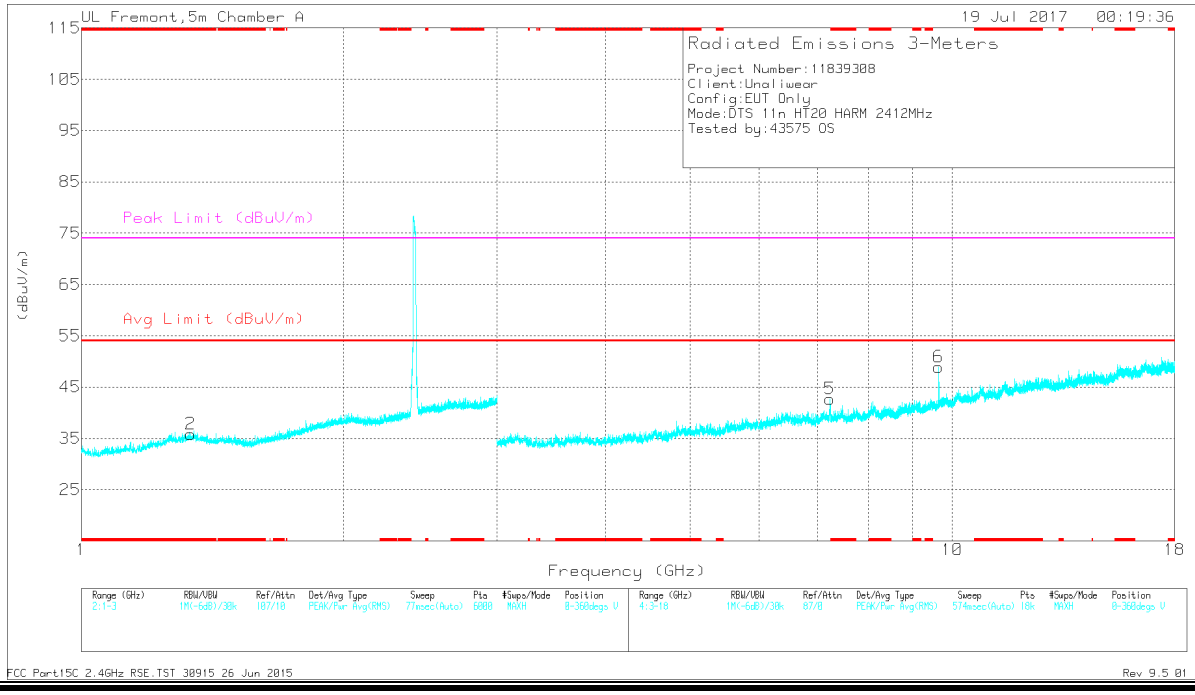
* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, CH 1)

LOW CHANNEL HORIZONTAL




LOW CHANNEL VERTICAL



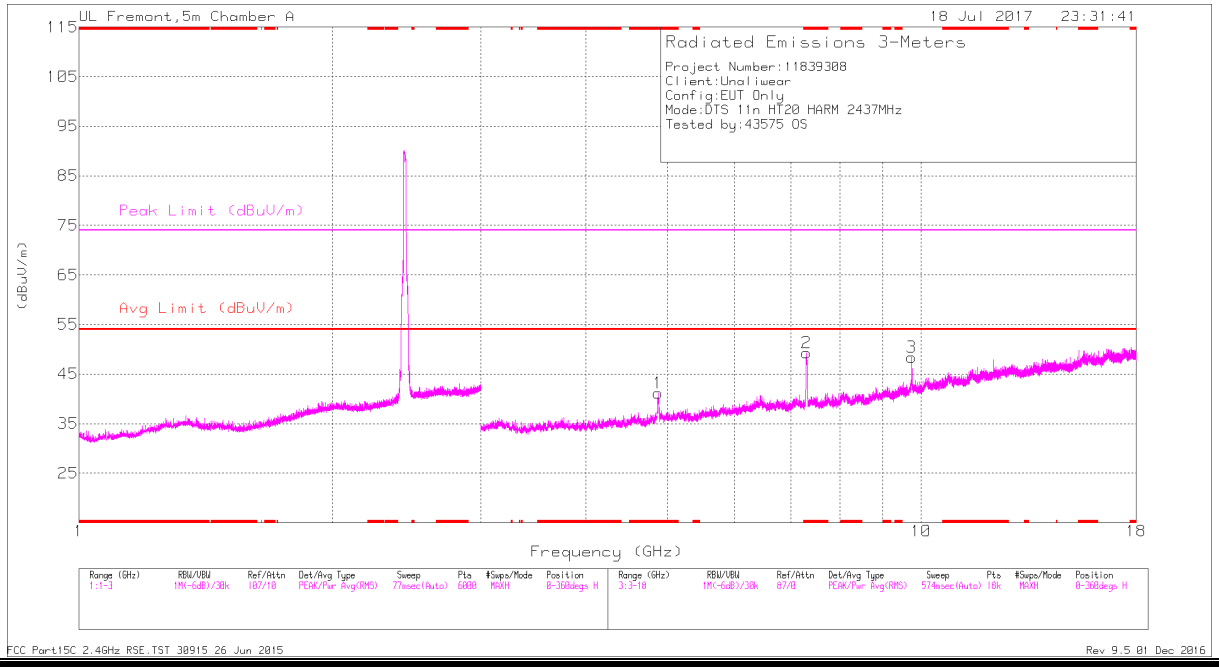
## Radiated Emissions

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.364 | 35.88 | PK2 | 29.3 | -23.4 | 0 | 41.78 | - | - | 74 | -32.22 | 323 | 230 | H |
| * 1.363 | 23.97 | MAv1 | 29.3 | -23.4 | .12 | 29.99 | 54 | -24.01 | - | - | 323 | 230 | H |
| * 1.332 | 36.69 | PK2 | 29.5 | -23.5 | 0 | 42.69 | - | - | 74 | -31.31 | 352 | 351 | V |
| * 1.332 | 24.16 | MAv1 | 29.5 | -23.5 | .12 | 30.28 | 54 | -23.72 | - | - | 352 | 351 | V |
| 7.233 | 37.61 | PK2 | 35.7 | -24 | 0 | 49.31 | - | - | - | - | 192 | 357 | V |
| 7.233 | 26.17 | MAv1 | 35.7 | -24 | .12 | 37.99 | - | - | - | - | 192 | 357 | V |
| 7.236 | 37.95 | PK2 | 35.7 | -24.1 | 0 | 49.55 | - | - | - | - | 274 | 108 | H |
| 7.239 | 26.9 | MAv1 | 35.7 | -24.1 | .12 | 38.62 | - | - | - | - | 274 | 108 | H |
| 9.648 | 37.51 | PK2 | 36.8 | -21.2 | 0 | 53.11 | - | - | - | - | 200 | 223 | H |
| 9.648 | 31.54 | MAv1 | 36.8 | -21.2 | .12 | 47.26 | - | - | - | - | 200 | 223 | H |
| 9.648 | 36.91 | PK2 | 36.8 | -21.2 | 0 | 52.51 | - | - | - | - | 208 | 220 | V |
| 9.648 | 31.21 | MAv1 | 36.8 | -21.2 | .12 | 46.93 | - | - | - | - | 208 | 220 | V |

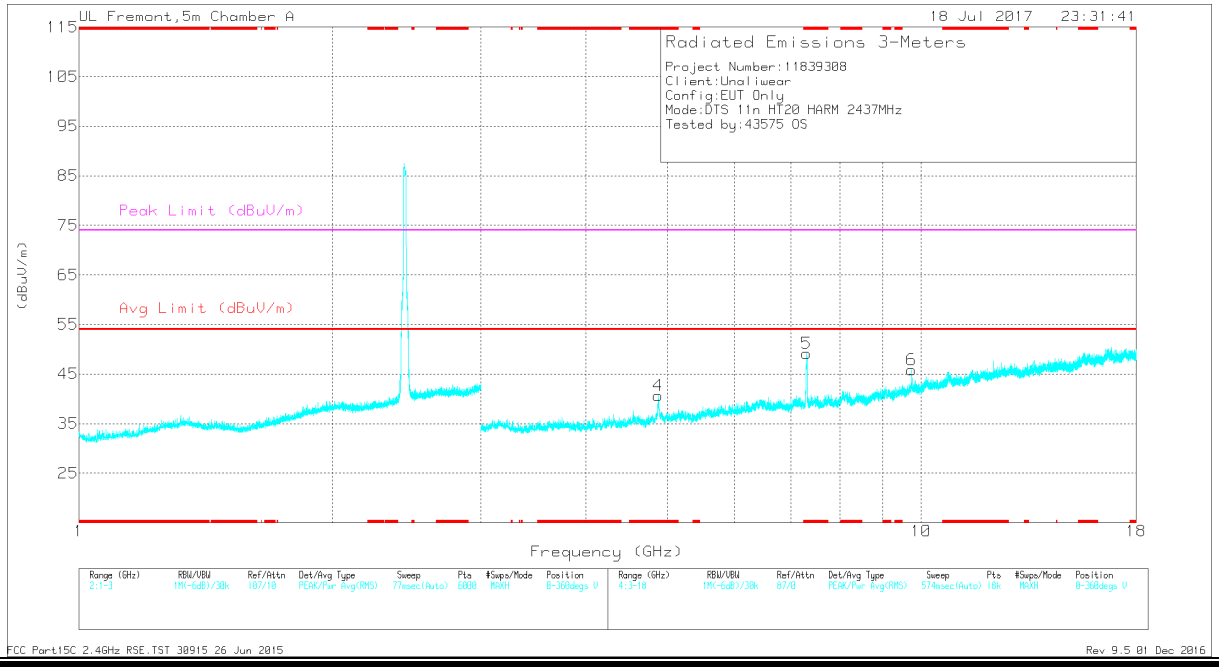
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, CH 6)**

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



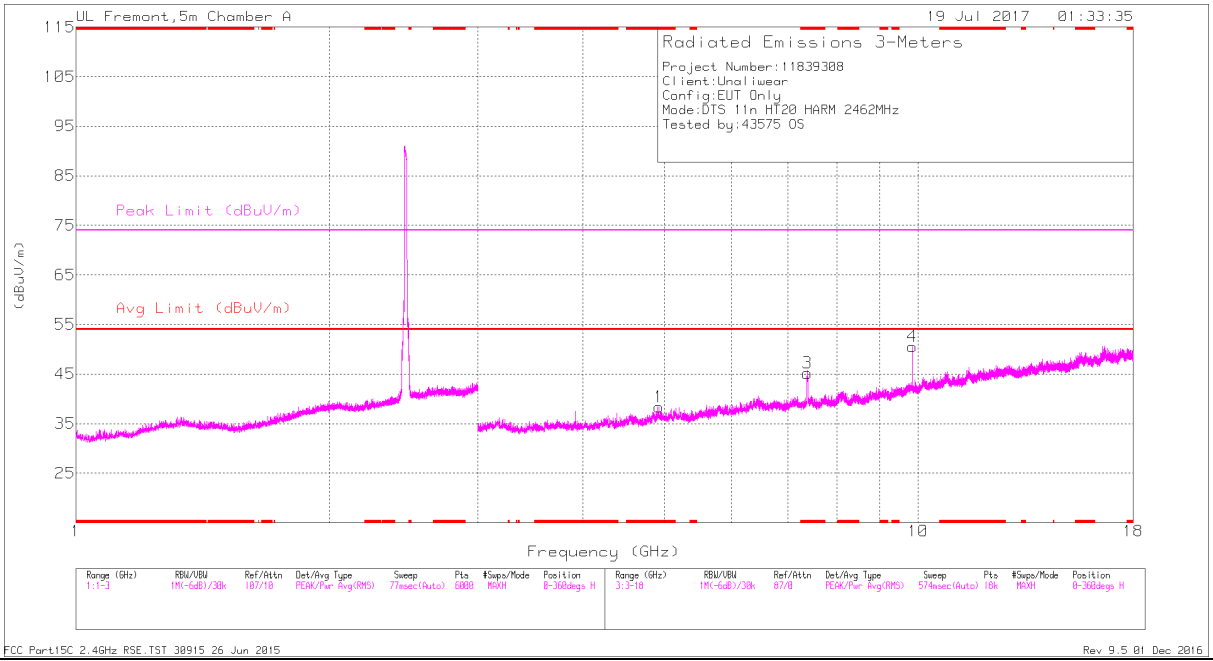
## Radiated Emissions

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 7.312 | 44.71 | PK2 | 35.7 | -24.1 | 0 | 56.31 | - | - | 74 | -17.69 | 315 | 102 | H |
| * 7.314 | 31.23 | MAv1 | 35.7 | -24 | .12 | 43.05 | 54 | -10.95 | - | - | 315 | 102 | H |
| * 4.871 | 44.48 | PK2 | 34.1 | -27.2 | 0 | 51.38 | - | - | 74 | -22.62 | 15 | 189 | H |
| * 4.874 | 29.92 | MAv1 | 34.1 | -27.2 | .12 | 36.94 | 54 | -17.06 | - | - | 15 | 189 | H |
| * 7.309 | 44.05 | PK2 | 35.7 | -24.1 | 0 | 55.65 | - | - | 74 | -18.35 | 307 | 114 | V |
| * 7.309 | 30.86 | MAv1 | 35.7 | -24.1 | .12 | 42.58 | 54 | -11.42 | - | - | 307 | 114 | V |
| * 4.872 | 41.88 | PK2 | 34.1 | -27.2 | 0 | 48.78 | - | - | 74 | -25.22 | 223 | 117 | V |
| * 4.874 | 28.13 | MAv1 | 34.1 | -27.2 | .12 | 35.15 | 54 | -18.85 | - | - | 223 | 117 | V |
| 9.748 | 35.99 | PK2 | 36.9 | -20.7 | 0 | 52.19 | - | - | - | - | 157 | 166 | H |
| 9.748 | 28.29 | MAv1 | 36.9 | -20.7 | .12 | 44.61 | - | - | - | - | 157 | 166 | H |
| 9.748 | 36.63 | PK2 | 36.9 | -20.7 | 0 | 52.83 | - | - | - | - | 185 | 222 | V |
| 9.748 | 28.55 | MAv1 | 36.9 | -20.7 | .12 | 44.87 | - | - | - | - | 185 | 222 | V |

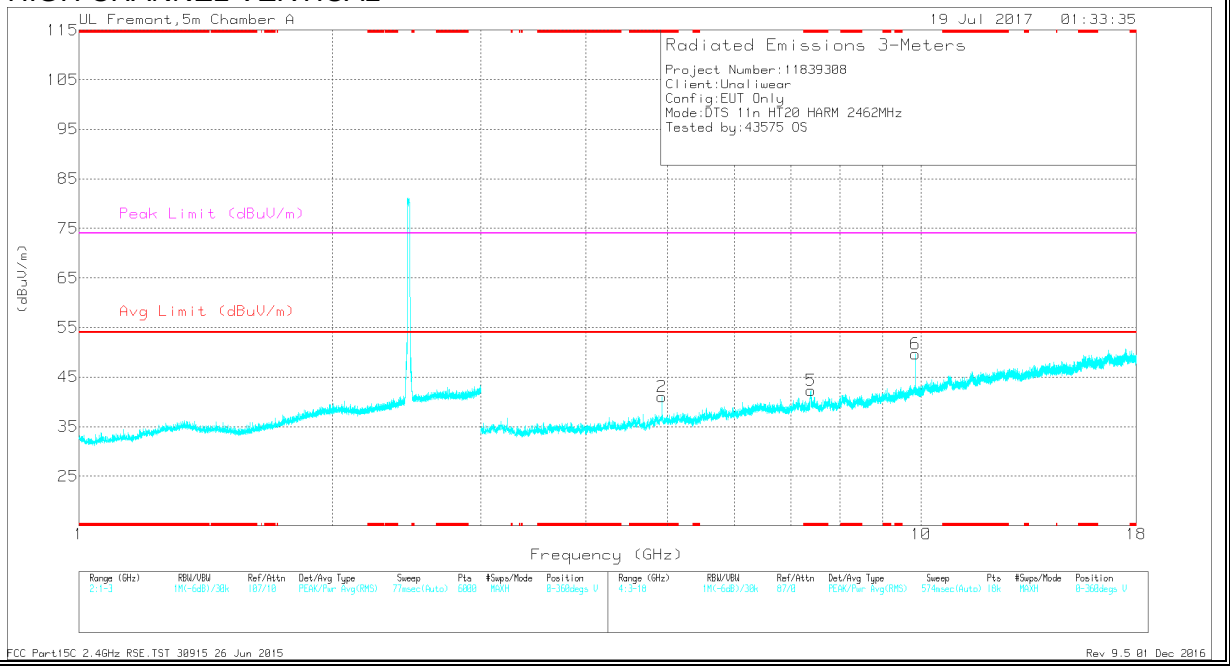
* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, CH 11)

HIGH CHANNEL HORIZONTAL




HIGH CHANNEL VERTICAL



## Radiated Emissions

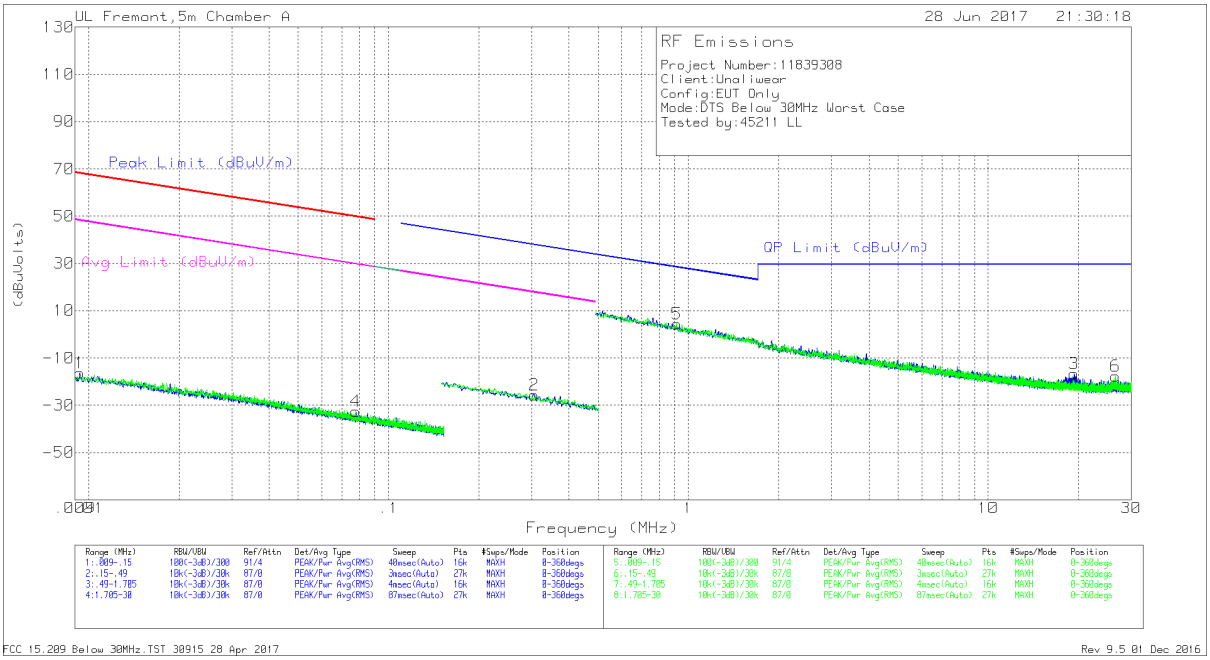
| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fltr/ Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.924 | 37.41 | PK2 | 34.1 | -27.1 | 0 | 44.41 | - | - | 74 | -29.59 | 15 | 103 | H |
| * 4.924 | 27.71 | MAv1 | 34.1 | -27.1 | .12 | 34.83 | 54 | -19.17 | - | - | 15 | 103 | H |
| * 7.383 | 38.6 | PK2 | 35.6 | -23 | 0 | 51.2 | - | - | 74 | -22.8 | 355 | 118 | H |
| * 7.384 | 27.13 | MAv1 | 35.6 | -23 | .12 | 39.85 | 54 | -14.15 | - | - | 355 | 118 | H |
| * 4.924 | 39.77 | PK2 | 34.1 | -27.1 | 0 | 46.77 | - | - | 74 | -27.23 | 32 | 228 | V |
| * 4.924 | 32.86 | MAv1 | 34.1 | -27.1 | .12 | 39.98 | 54 | -14.02 | - | - | 32 | 228 | V |
| * 7.392 | 38.23 | PK2 | 35.6 | -22.8 | 0 | 51.03 | - | - | 74 | -22.97 | 35 | 337 | V |
| * 7.391 | 27.12 | MAv1 | 35.6 | -22.8 | .12 | 40.04 | 54 | -13.96 | - | - | 35 | 337 | V |
| 9.848 | 38.1 | PK2 | 37.1 | -20.6 | 0 | 54.6 | - | - | - | - | 12 | 235 | H |
| 9.848 | 33.33 | MAv1 | 37.1 | -20.6 | .12 | 49.95 | - | - | - | - | 12 | 235 | H |
| 9.848 | 37.45 | PK2 | 37.1 | -20.6 | 0 | 53.95 | - | - | - | - | 27 | 201 | V |
| 9.848 | 31.1 | MAv1 | 37.1 | -20.6 | .12 | 47.72 | - | - | - | - | 27 | 201 | V |

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## 10.3 WORST-CASE BELOW 30 MHz

**SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)**

HORIZONTAL AND VERTICAL PLOTS




NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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) | QP Limit (dBuV/m) | Margin (dB) | QP Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Avg Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .00934 | 43.51 | Pk | 20 | .1 | -80 | -16.39 | 68.18 | -84.57 | 48.18 | -64.57 | - | - | - | - | - | - | - | - | 0-360 |
| 4 | .07778 | 35.44 | Pk | 11.9 | .1 | -80 | -32.56 | 49.77 | -82.33 | 29.77 | -62.33 | - | - | - | - | - | - | - | - | 0-360 |
| 2 | .30591 | 42.75 | Pk | 11.5 | .1 | -80 | -25.65 | - | - | - | - | - | - | - | - | 37.9 | -63.55 | 17.9 | -43.55 | 0-360 |

Pk - Peak detector

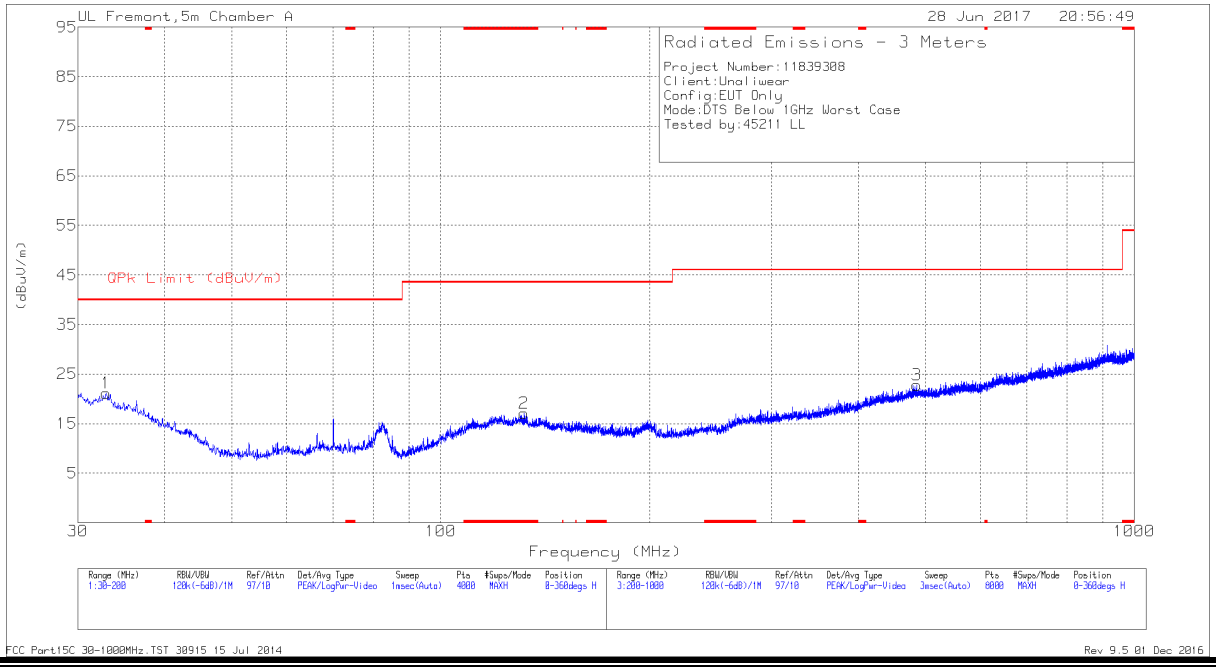
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cbl (dB) | Dist Corr 30m | Corrected Reading (dBuVolts) | Peak Limit (dBuV/m) | Margin (dB) | Avg Limit (dBuV/m) | Margin (dB) | QP Limit (dBuV/m) | Margin (dB) | QP Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Avg Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | .914 | 32.62 | Pk | 11.5 | .2 | -40 | 4.32 | - | - | - | - | - | - | 28.4 | -24.08 | - | - | - | - | 0-360 |
| 3 | 19.35437 | 12.86 | Pk | 9.8 | .7 | -40 | -16.64 | - | - | - | - | - | - | 29.5 | -46.14 | - | - | - | - | 0-360 |
| 6 | 26.56251 | 12.92 | Pk | 8.6 | .8 | -40 | -17.68 | - | - | - | - | - | - | 29.5 | -47.18 | - | - | - | - | 0-360 |

Pk - Peak detector

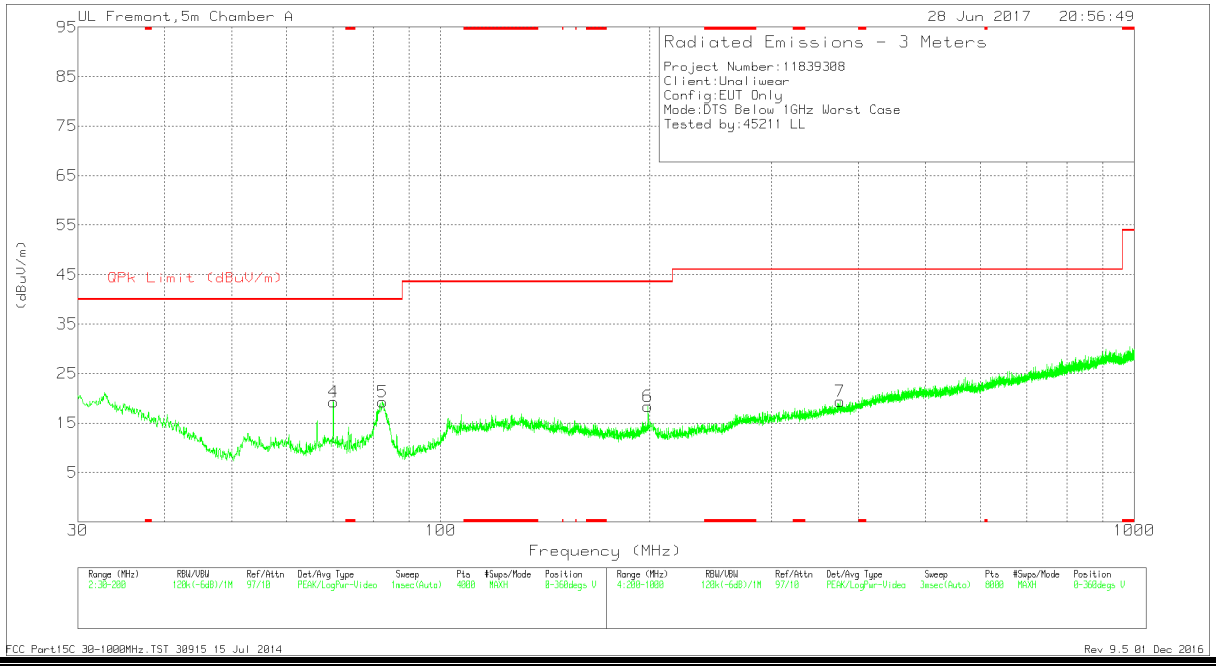
# 10.4 WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT




VERTICAL PLOT



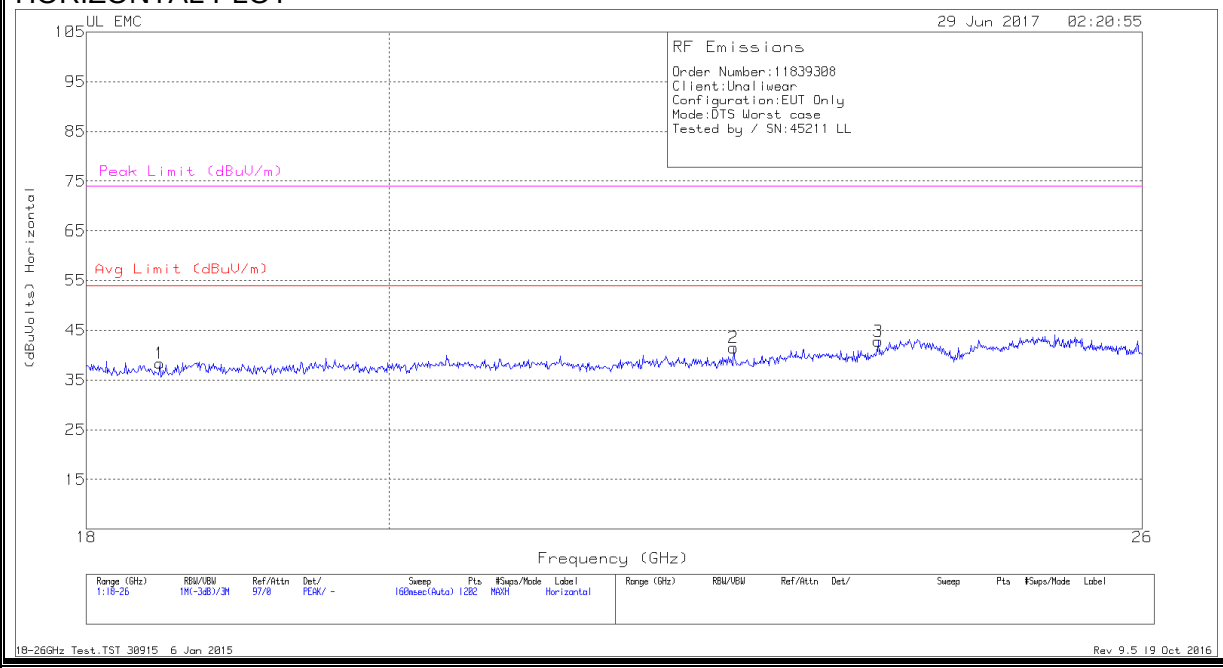
## Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T130 (dB/m) | Amp/Cbl (dB/m) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 131.9201 | 29.64 | Pk | 17.8 | -30.4 | 17.04 | 43.52 | -26.48 | 0-360 | 400 | H |
| 1 | 32.9333 | 28.4 | Pk | 23.9 | -31.2 | 21.1 | 40 | -18.9 | 0-360 | 100 | H |
| 4 | 70.0454 | 37.61 | Pk | 12.5 | -30.8 | 19.31 | 40 | -20.69 | 0-360 | 100 | V |
| 5 | 82.5011 | 38.43 | Pk | 11.5 | -30.7 | 19.23 | 40 | -20.77 | 0-360 | 100 | V |
| 6 | 199.0237 | 31.58 | Pk | 16.7 | -29.9 | 18.38 | 43.52 | -25.14 | 0-360 | 100 | V |
| 7 | 376.4229 | 29.51 | Pk | 19 | -29.1 | 19.41 | 46.02 | -26.61 | 0-360 | 200 | V |
| 3 | 485.5371 | 29.75 | Pk | 21.7 | -28.7 | 22.75 | 46.02 | -23.27 | 0-360 | 400 | H |

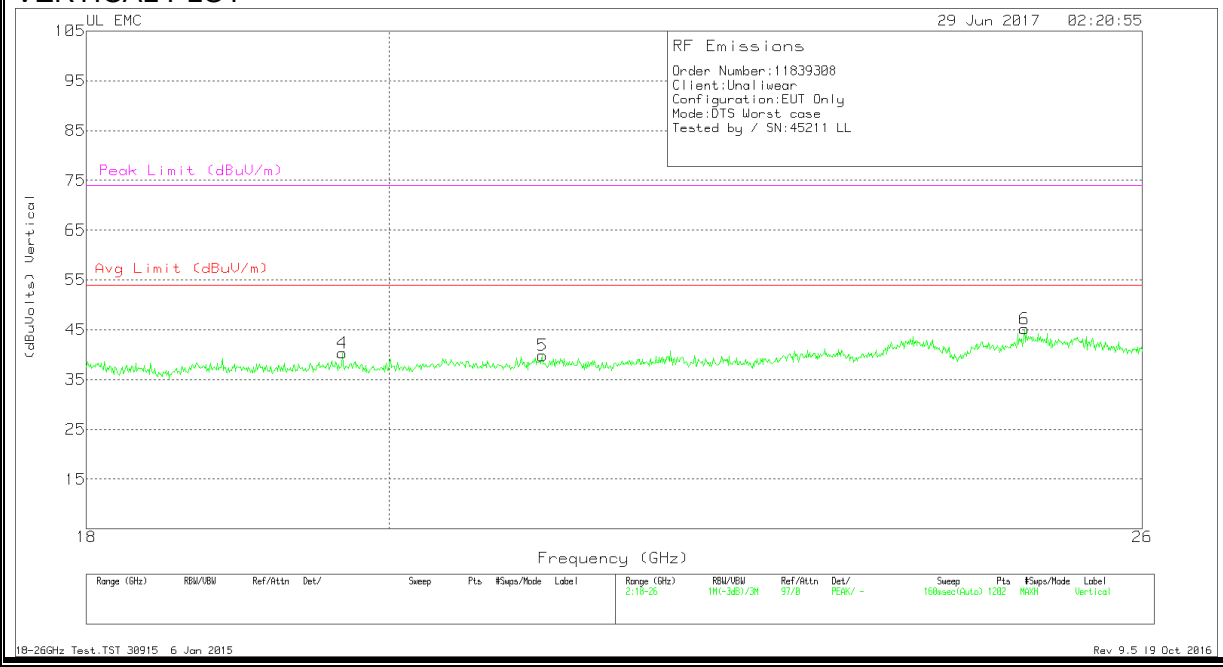
## 10.5. WORST-CASE 18 to 26 GHz

**SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)**

HORIZONTAL PLOT




VERTICAL PLOT



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | T449 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 | 18.466 | 41.03 | Pk | 32.3 | -25.5 | -9.5 | 38.33 | 54 | -15.67 | 74 | -35.67 |
| 2 | 22.55 | 42.4 | Pk | 33.5 | -24.9 | -9.5 | 41.5 | 54 | -12.5 | 74 | -32.5 |
| 3 | 23.715 | 42.73 | Pk | 33.8 | -24.2 | -9.5 | 42.83 | 54 | -11.17 | 74 | -31.17 |
| 4 | 19.679 | 42.13 | Pk | 32.7 | -25 | -9.5 | 40.33 | 54 | -13.67 | 74 | -33.67 |
| 5 | 21.097 | 41.23 | Pk | 33.2 | -25.1 | -9.5 | 39.83 | 54 | -14.17 | 74 | -34.17 |
| 6 | 24.954 | 44.77 | Pk | 34.3 | -24.4 | -9.5 | 45.17 | 54 | -8.83 | 74 | -28.83 |

Pk - Peak detector