# FCC 47 CFR PART 15 SUBPART C

# CERTIFICATION TEST REPORT

**FOR**

**802.11 a/b/g/n, BLE, and BT module**

**MODEL NUMBER: EDISON**

**FCC ID: 2AB8ZND1**

**REPORT NUMBER: 14U17976-E2**

**ISSUE DATE: AUGUST 05, 2014**

*Prepared for*
**INTEL CORPORATON**
**2200 MISSION COLLEGE BOULEVARD**
**SANTA CLARA, CA 95052, U.S.A**

*Prepared by*
**UL VERIFICATION SERVICES INC.**
**47173 BENICIA STREET**
**FREMONT, CA 94538, U.S.A.**
**TEL: (510) 771-1000**
**FAX: (510) 661-0888**

NVLAP LAB CODE 200065-0

## Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 08/05/14 | Initial Issue | C.S.OOI |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

TABLE OF CONTENTS






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 1. ATTESTATION OF TEST RESULTS

| | |
|---|---|
| **COMPANY NAME:** | INTEL CORPORATION<br>2200 MISSION COLLEGE BOULEVARD<br>SANTA CLARA, CA 95052, U.S.A |
| **EUT DESCRIPTION:** | 802.11 a/b/g/n, BLE, and BT module |
| **MODEL:** | EDISON |
| **SERIAL NUMBER:** | SMED425D0039PBAF(SKU10),(Conducted)<br>SMED425D004KPBAF(SKU9),(Radiated) |
| **DATE TESTED:** | JUNE 26, 2014 – AUGUST 4, 2014 |

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

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

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

Approved & Released For
UL Verification Services Inc. By:

CHOON SIAN OOI
PROJECT LEAD
UL Verification Services Inc.

Tested By:

THANH PHAM
EMC ENGINEER
UL Verification Services Inc.


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of 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 C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

# 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 | ☐ Chamber D |
| ☐ Chamber B | ☐ Chamber E |
| ☐ Chamber C | ☐ Chamber F |

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

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

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

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 4.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 0.15 to 30 MHz | ±3.52 dB |
| Radiated Disturbance, 30 to 1000 MHz | ±4.94 dB |

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g/n, BLE, and BT module

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

**2.4GHz Band**

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 2412 - 2462 | 802.11b | 15.80 | 38.02 |
| 2412 - 2462 | 802.11g | 17.10 | 51.29 |
| 2412 - 2462 | 802.11n HT20 | 17.12 | 51.52 |
| 2422 - 2452 | 802.11n HT40 | 14.20 | 26.30 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a WiFi antenna, with gain as follows:

| Frequency Range (MHz) | Max Gain (dBi) |
|---|---|
| 2400-2483.5 | 3.2 |
| 5150-5850 | 4.2 |

## 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 6.10 RC190.40.

The EUT driver software installed during testing was 6.10.190.49


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 5.5. WORST-CASE CONFIGURATION AND MODE

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

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that 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:
Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

Only BT and 5GHz WLAN can transmit simultaneously.



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| Laptop | Lenovo | T420 | 4236b92 | N/A |
| AC / DC Adapter | Lenovo | 42T4430 | 11S42T4430Z1ZGWE28 | N/A |
| Laptop | Lenovo | T420 | 4236b92 | N/A |
| AC / DC Adapter | Lenovo | 42T4430 | 11S42T4430Z1ZGWE28 | N/A |

**I/O CABLES**

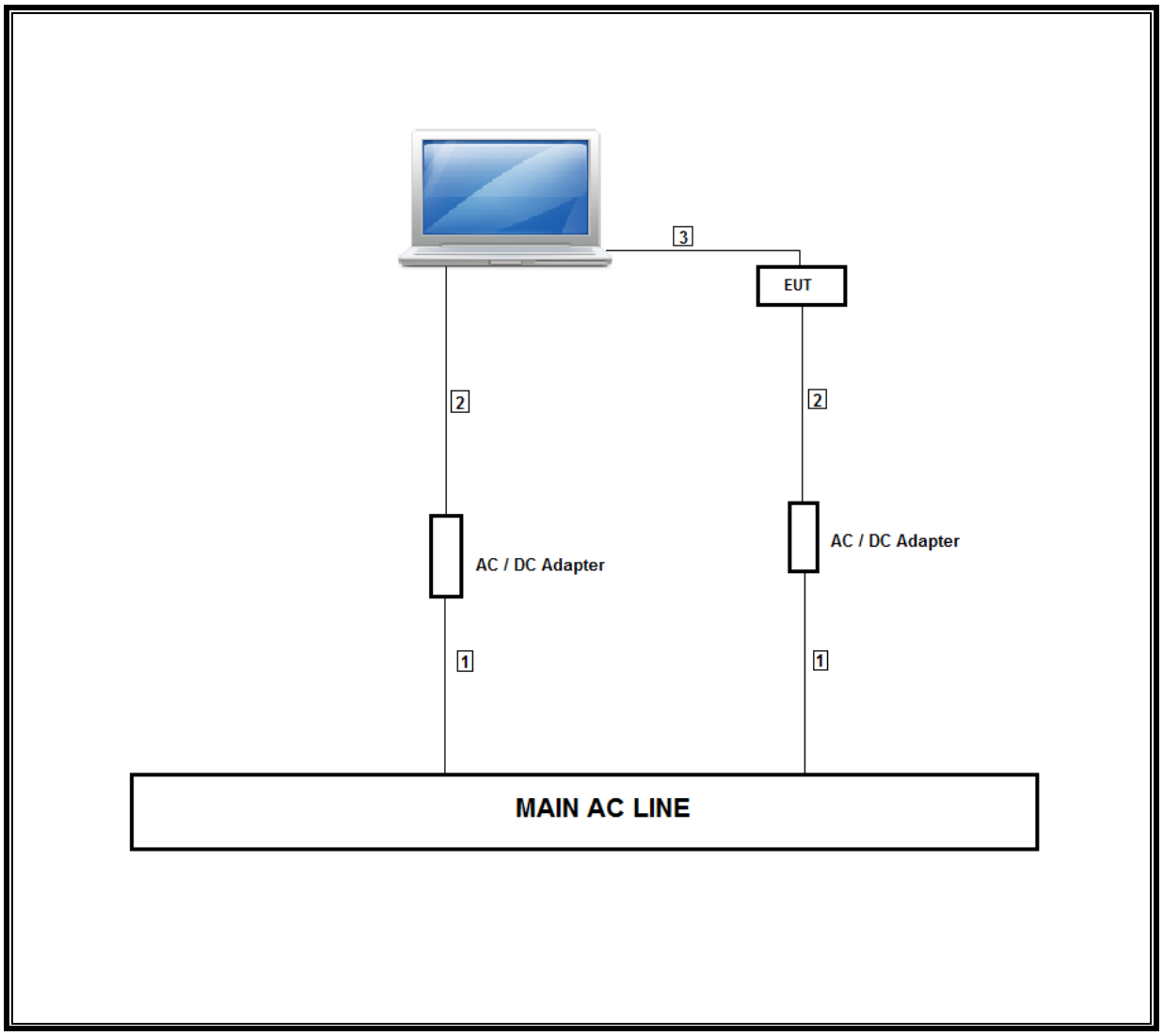
| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No** | **Port** | **# of identical ports** | **Connector Type** | **Cable Type** | **Cable Length (m)** | **Remarks** |
| 1 | AC | 2 | AC | Unshielded | 1 | AC input |
| 2 | DC | 2 | DC | Unshielded | 1 | DC output |
| 3 | USB | 1 | USB | Unshielded | 0.5 | USB-A to OTG |

**TEST SETUP**

The EUT is connected with a host laptop computer by USB cable during the tests. Test software exercised the radio card.


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**SETUP DIAGRAM FOR TESTS**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 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** | **Asset** | **Cal Date** | **Cal Due** |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | T146 | 06/19/14 | 06/19/15 |
| PXA Signal Analyzer | Agilent | N9030A | T339 | 12/10/13 | 12/10/14 |
| Horn Antenna, 1GHz-18GHz | ETS Lindgren | 3117 | T119 | 01/06/14 | 01/06/15 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C01218 | 01/18/14 | 01/18/15 |
| Antenna, Horn, 26.5 GHz | ARA | MWH-1826/B | C00980 | 11/14/13 | 11/14/14 |
| Antenna, Bilog, 30MHz-1 GHz | Sunol Sciences | JB1 | C01016 | 08/22/13 | 08/22/14 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C00749 | 10/19/13 | 10/19/14 |
| Peak Power Meter | Agilent / HP | N1911A | T379 | 02/07/14 | 02/07/15 |
| Power Meter Sensoor | Agilent / HP | N1921A | T309 | 12/12/13 | 12/12/14 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00885 | 01/16/14 | 01/16/15 |
| 5GHz Low Pass Filter | Micro-Tronics | LPS17541 | F00219 | 01/11/14 | 01/11/15 |
| 3GHz High Pass Filter | Micro-Tronics | HPS17542 | F00222 | 01/11/14 | 01/11/15 |
| 6GHz High Pass Filter | Micro-Tronics | HPM17543 | F00224 | 01/11/14 | 01/11/15 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

**LIMITS**

None; for reporting purposes only.

**PROCEDURE**

KDB 558074 Zero-Span Spectrum Analyzer Method.

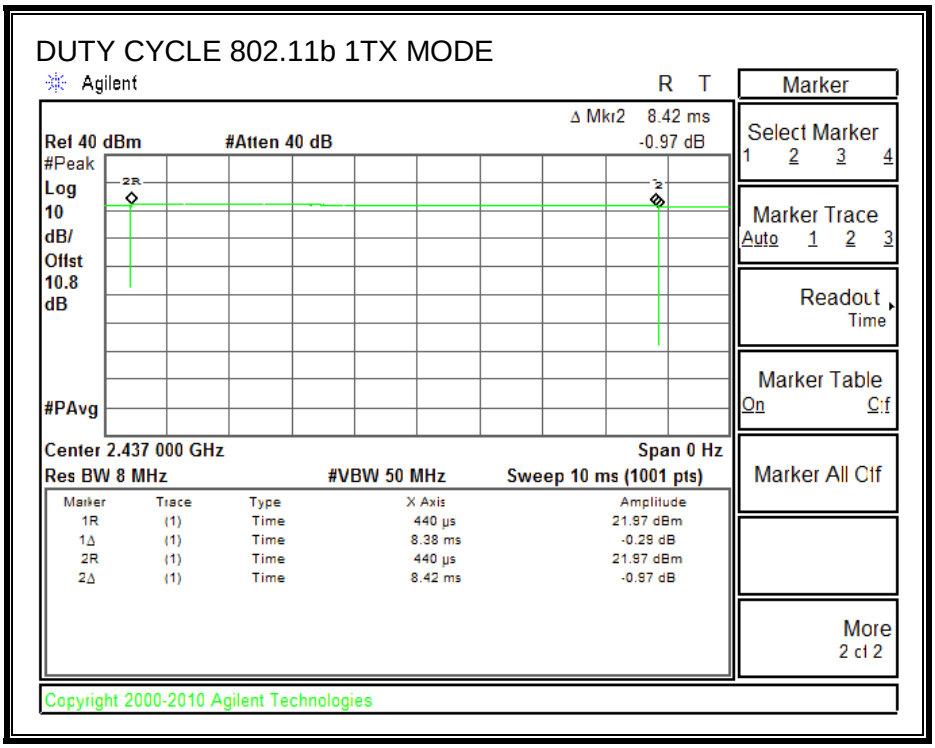
## 7.1. ON TIME AND DUTY CYCLE RESULTS

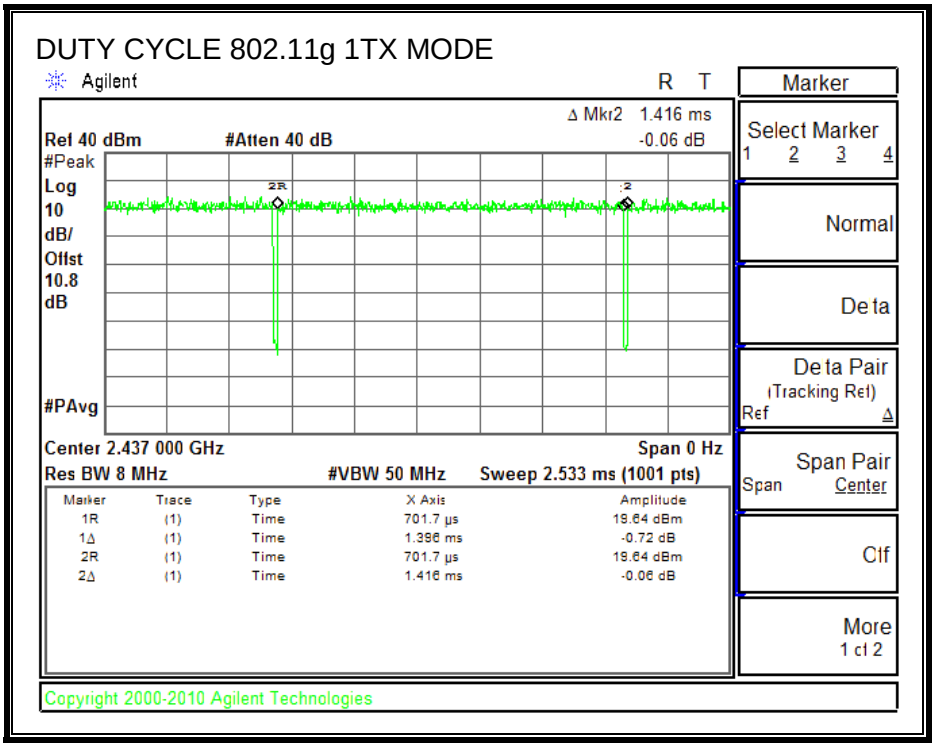
| Mode | ON Time B (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/B Minimum VBW (kHz) |
|---|---|---|---|---|---|---|
| **2.4GHz Band** | | | | | | |
| 802.11b 1TX | 8.380 | 8.420 | 0.995 | 99.52% | 0.00 | 0.010 |
| 802.11g 1TX | 1.396 | 1.416 | 0.986 | 98.59% | 0.00 | 0.010 |
| 802.11n HT20 1TX | 1.305 | 1.330 | 0.981 | 98.12% | 0.00 | 0.010 |
| 802.11n HT40 1TX | 0.6471 | 0.6685 | 0.968 | 96.80% | 0.14 | 1.545 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 7.2. DUTY CYCLE PLOTS

**2.4 GHz BAND**

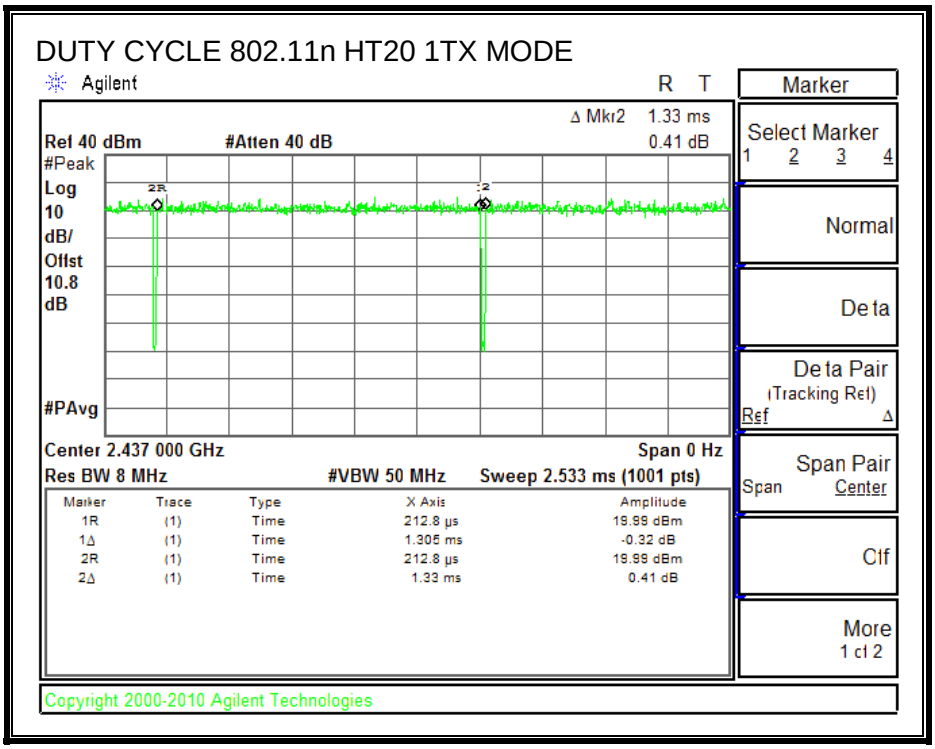


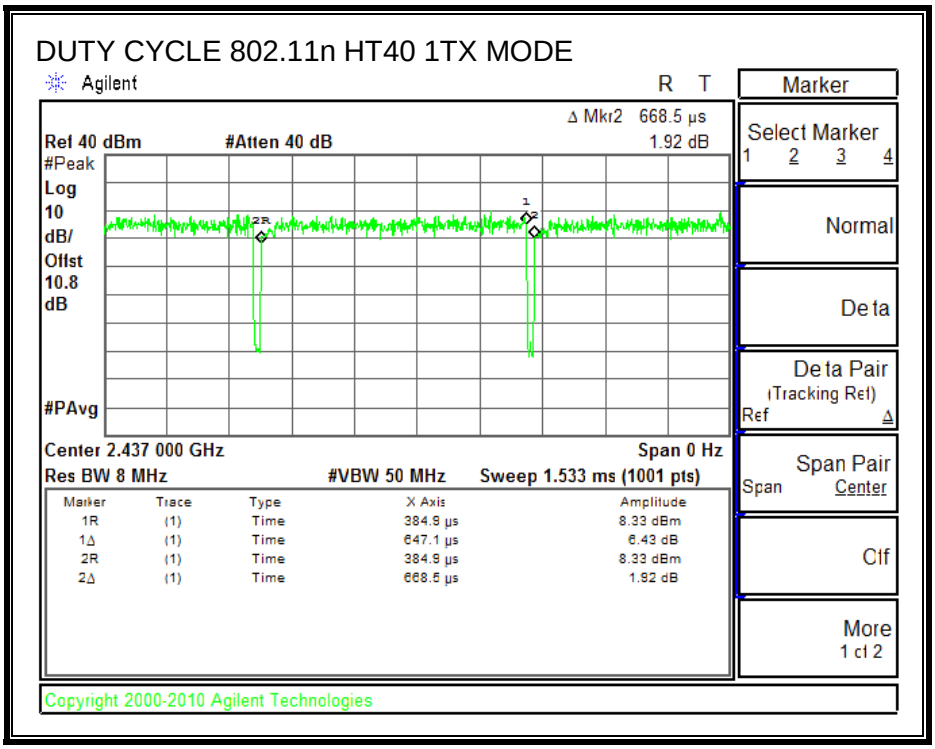


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

DUTY CYCLE 802.11n HT20 1TX MODE




DUTY CYCLE 802.11n HT40 1TX MODE






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 7.3. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v03r02, Section 8.1.

Output Power: KDB 558074 D01 v03r02, Section 9.2.3.2.

Power Spectral Density: KDB 558074 D01 v03r02, Section 10.3 and 10.5

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r02, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.1.



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 8. ANTENNA PORT TEST RESULTS

## 8.1. 802.11b MODE IN THE 2.4 GHz BAND

### 8.1.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

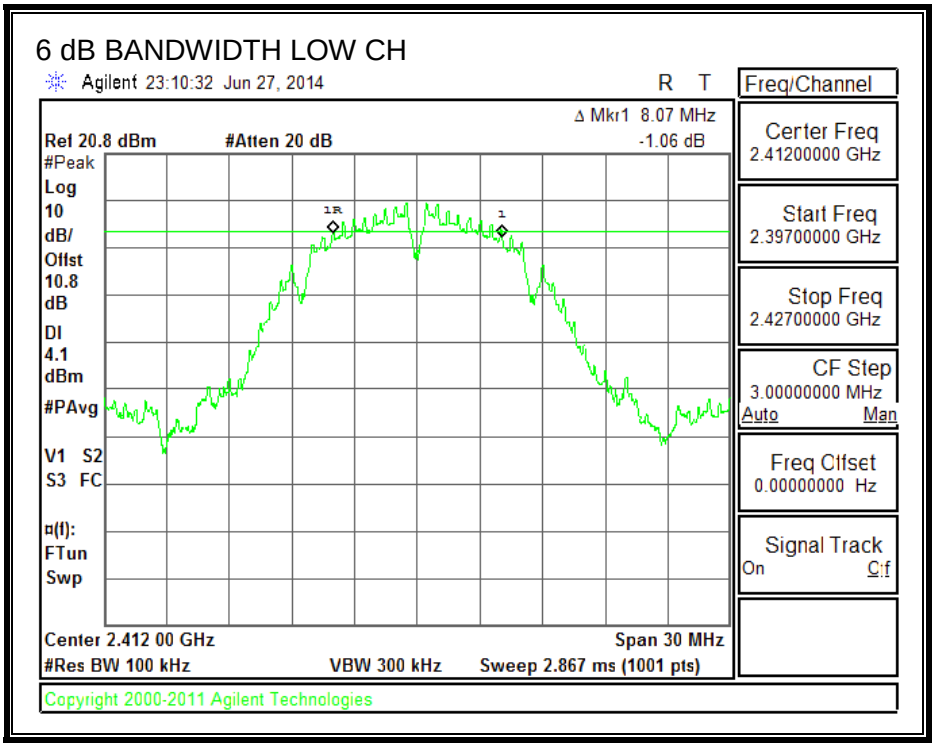
The minimum 6 dB bandwidth shall be at least 500 kHz.

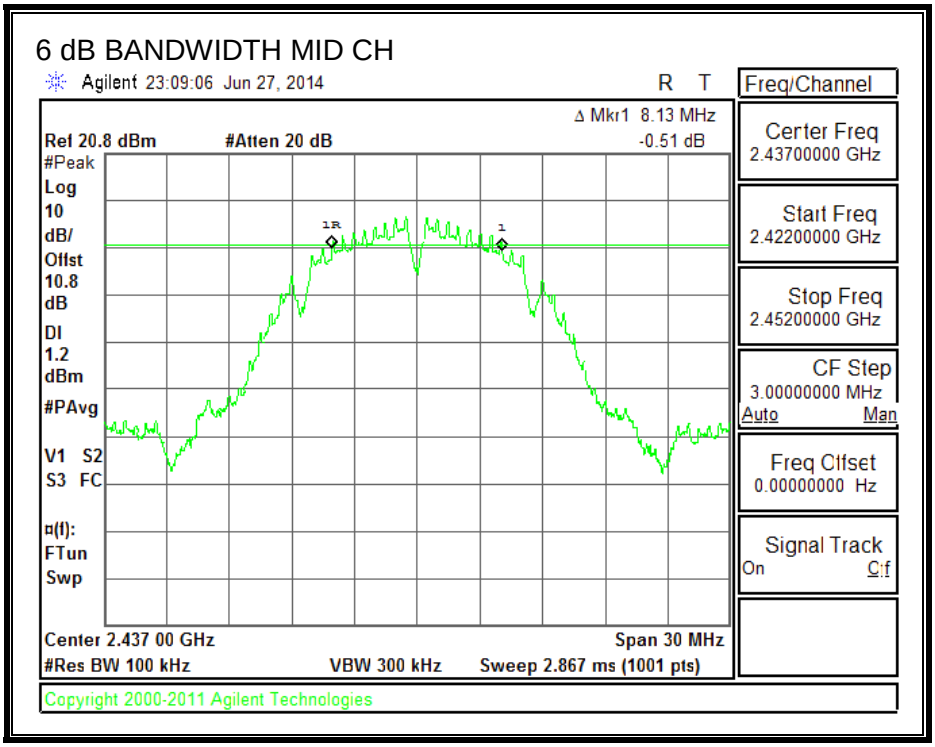
**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 8.070 | 0.5 |
| Mid | 2437 | 8.130 | 0.5 |
| High | 2462 | 8.130 | 0.5 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**6 dB BANDWIDTH**

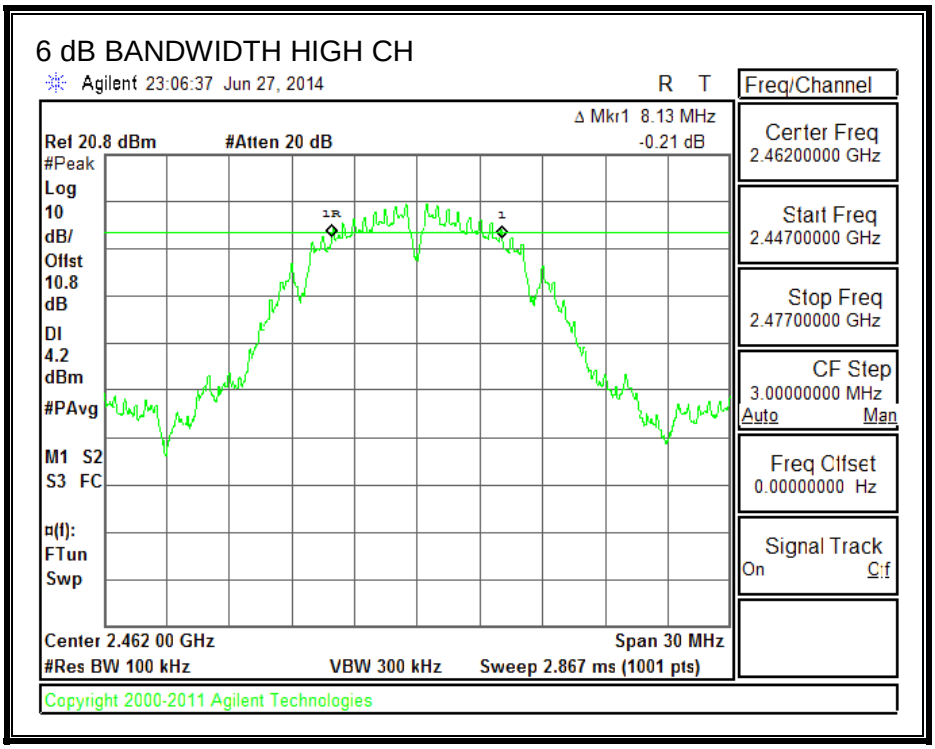





*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

6 dB BANDWIDTH HIGH CH






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.1.2. 99% BANDWIDTH

**LIMITS**

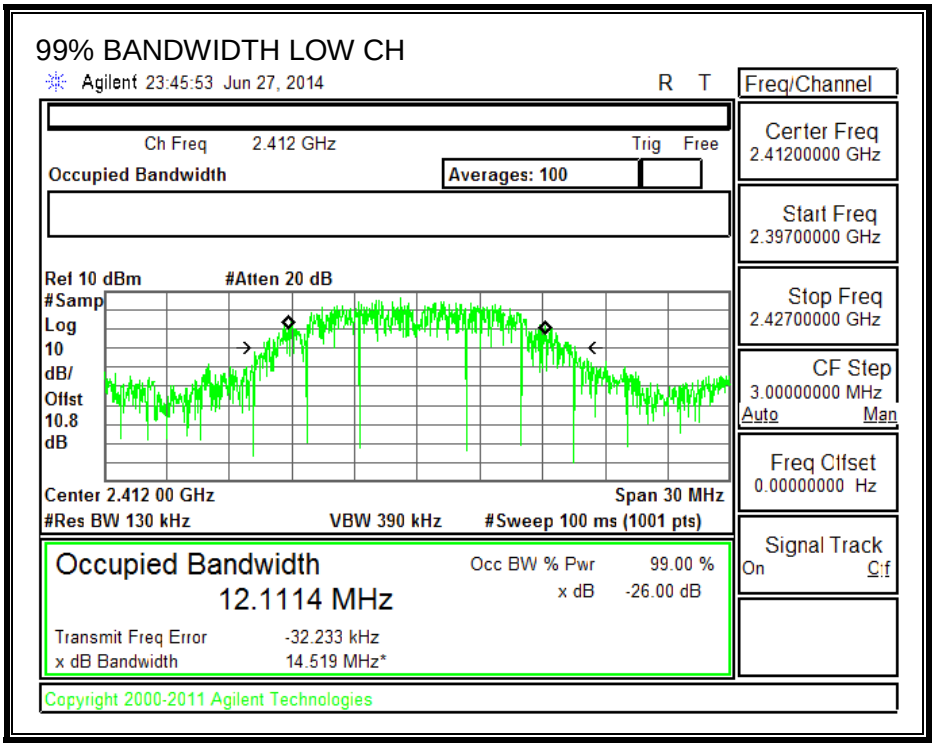
None; for reporting purposes only.

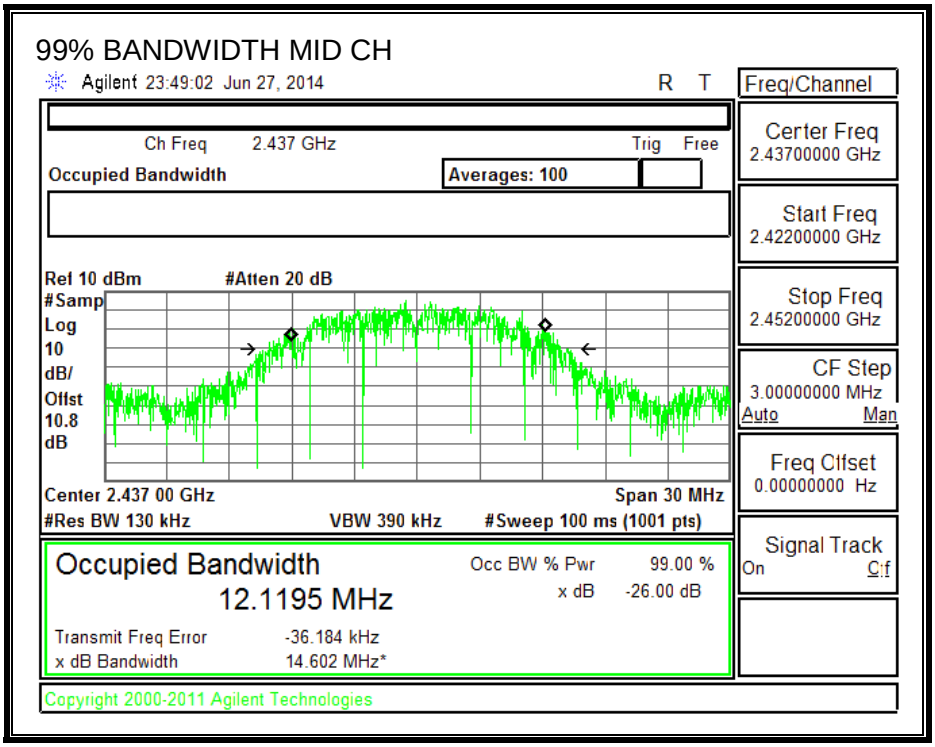
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 12.1114 |
| Mid | 2437 | 12.1195 |
| High | 2462 | 12.1717 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

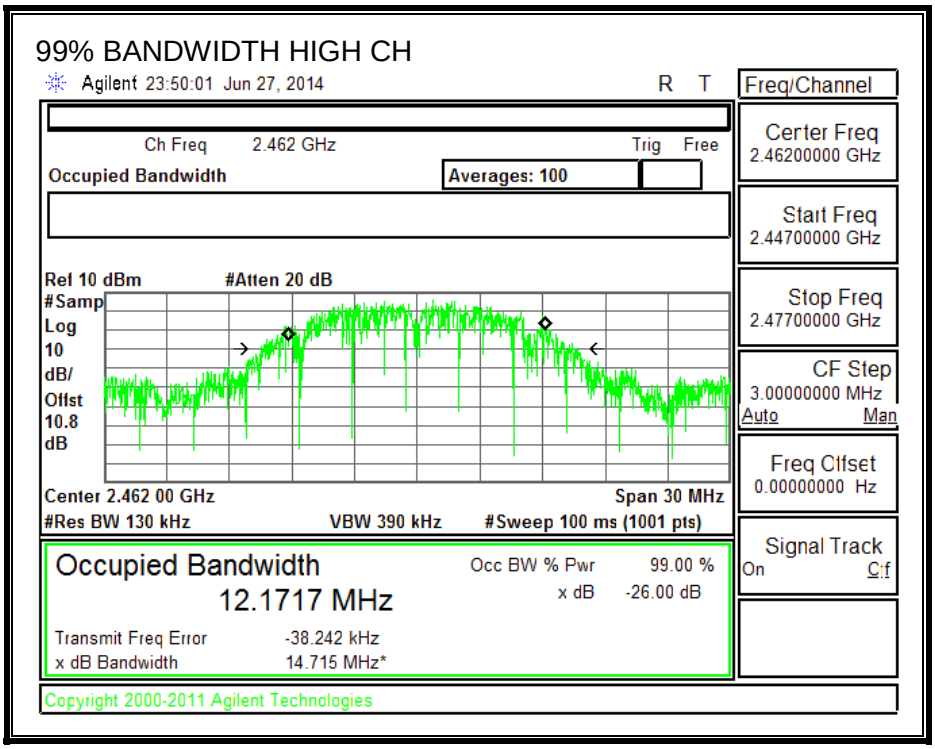
**99% BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.1.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (a) (2)

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.

**DIRECTIONAL ANTENNA GAIN**

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | 3.20 | 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 | 13.30 | 13.30 | 30.00 | -16.70 |
| Mid | 2437 | 14.10 | 14.10 | 30.00 | -15.90 |
| High | 2462 | 15.80 | 15.80 | 30.00 | -14.20 |

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



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.1.4. PSD

**LIMITS**

FCC §15.247(e)

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

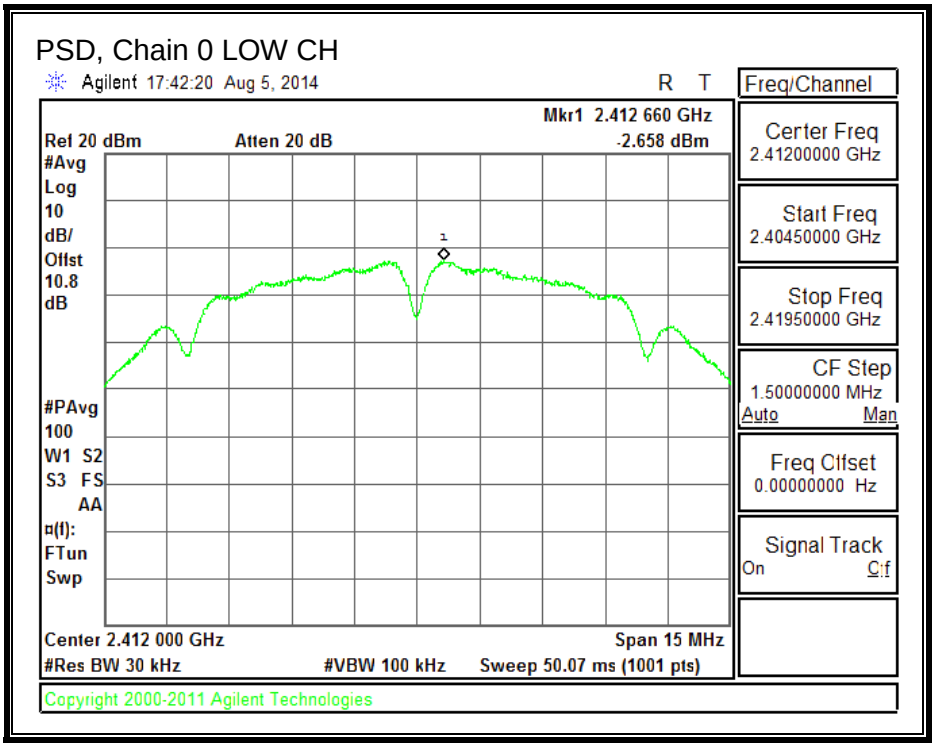
**RESULTS**

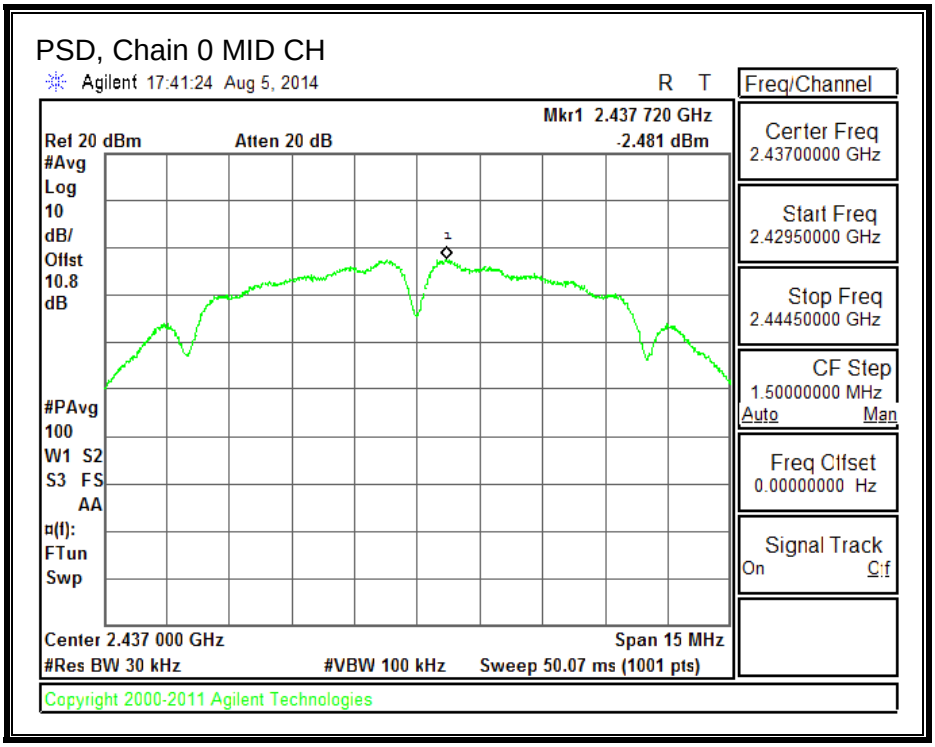
**PSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas (dBm) | DCCF (dB) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | -2.658 | 0.000 | -2.658 | 8.0 | -10.7 |
| Mid | 2437 | -2.481 | 0.000 | -2.481 | 8.0 | -10.5 |
| High | 2462 | -3.764 | 0.000 | -3.764 | 8.0 | -11.8 |


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

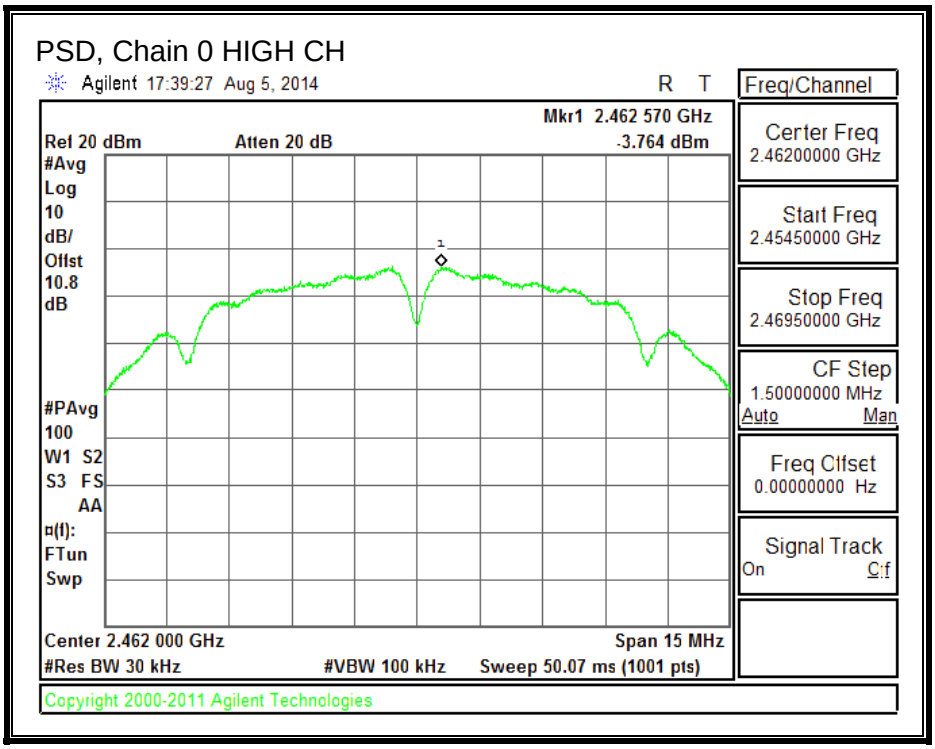
**PSD**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.1.5. OUT-OF-BAND EMISSIONS

**LIMITS**

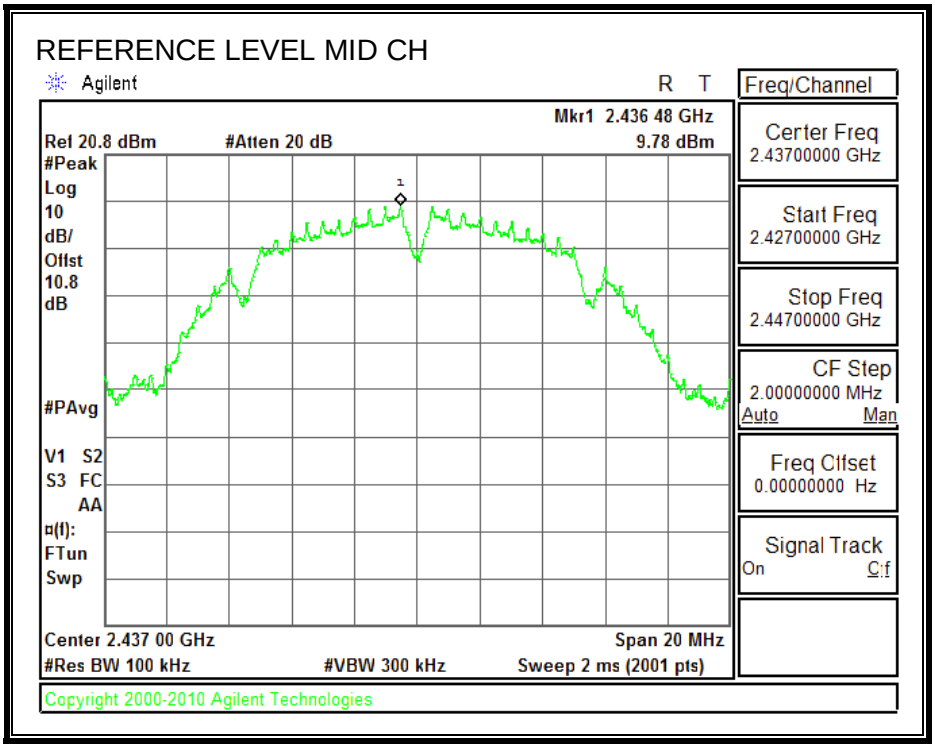
FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## RESULTS

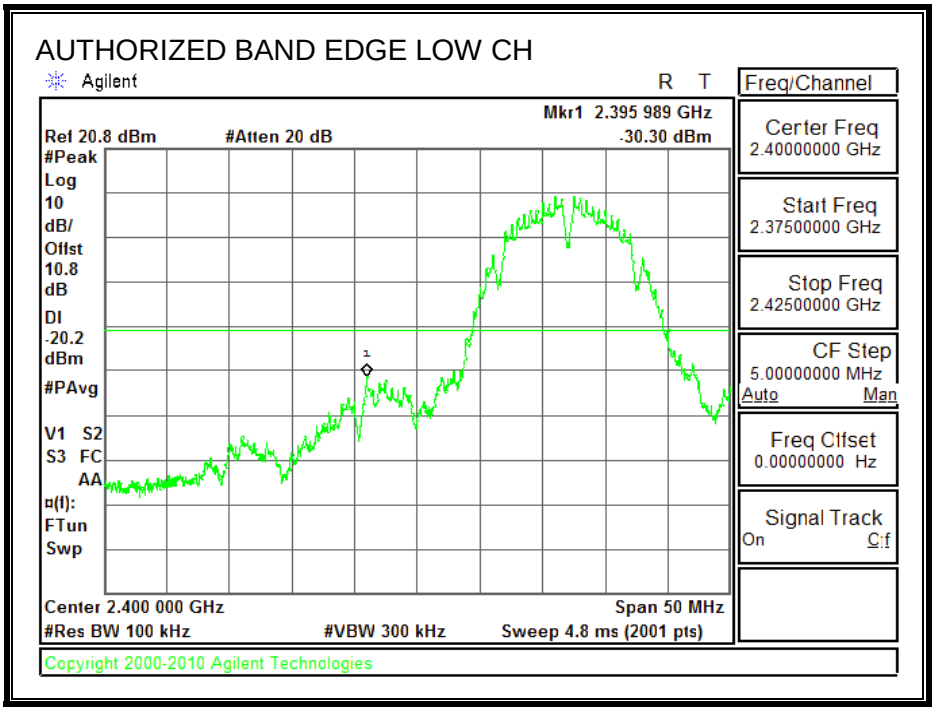
## IN-BAND REFERENCE LEVEL



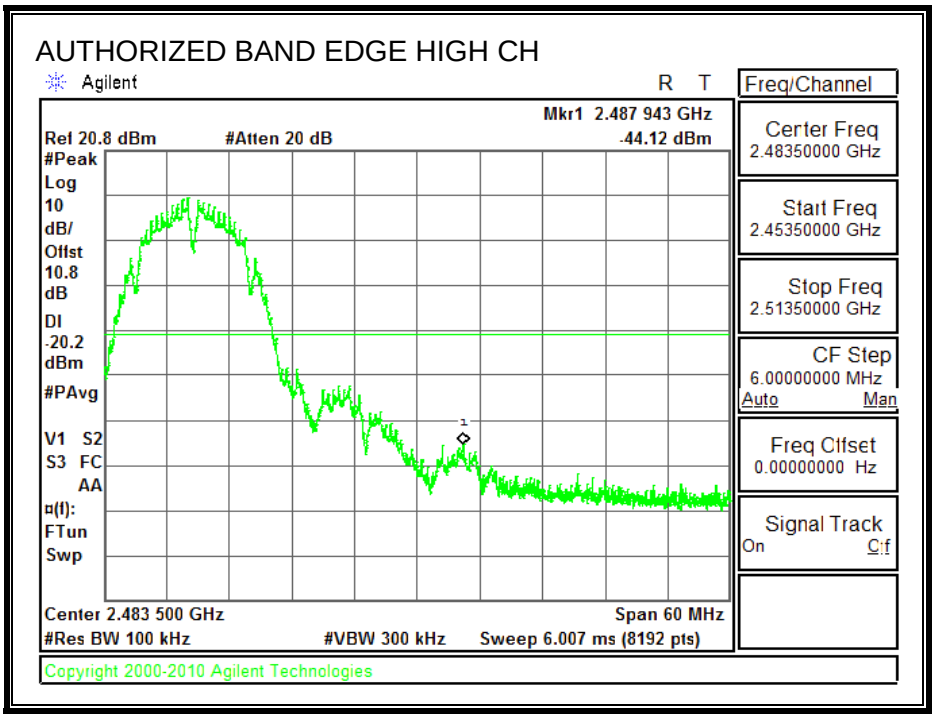



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**LOW CHANNEL BANDEDGE**



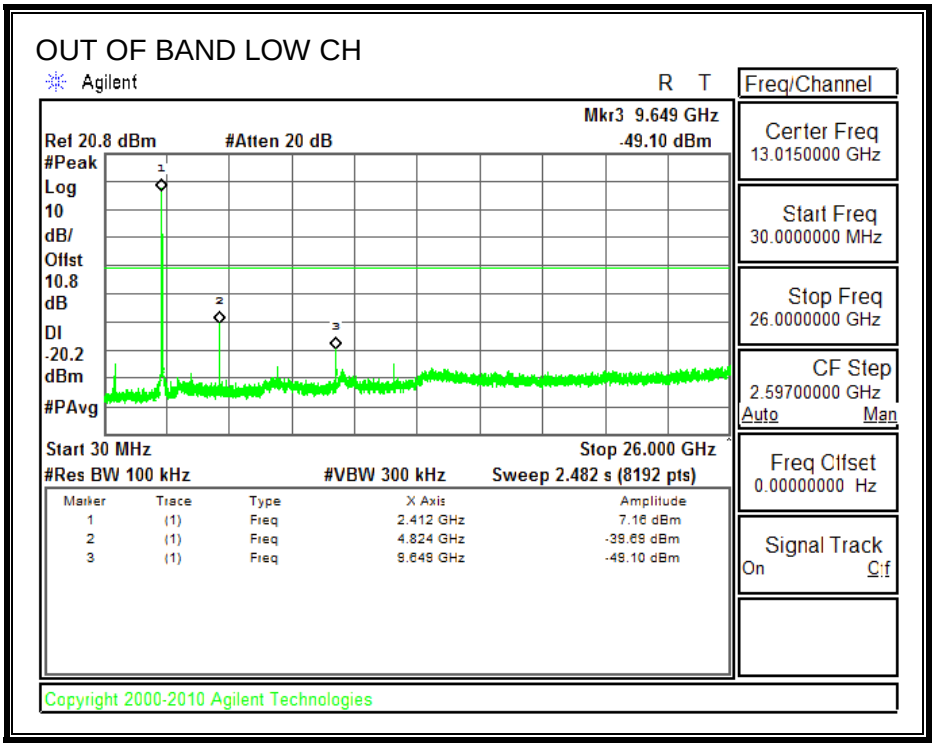

**HIGH CHANNEL BANDEDGE**

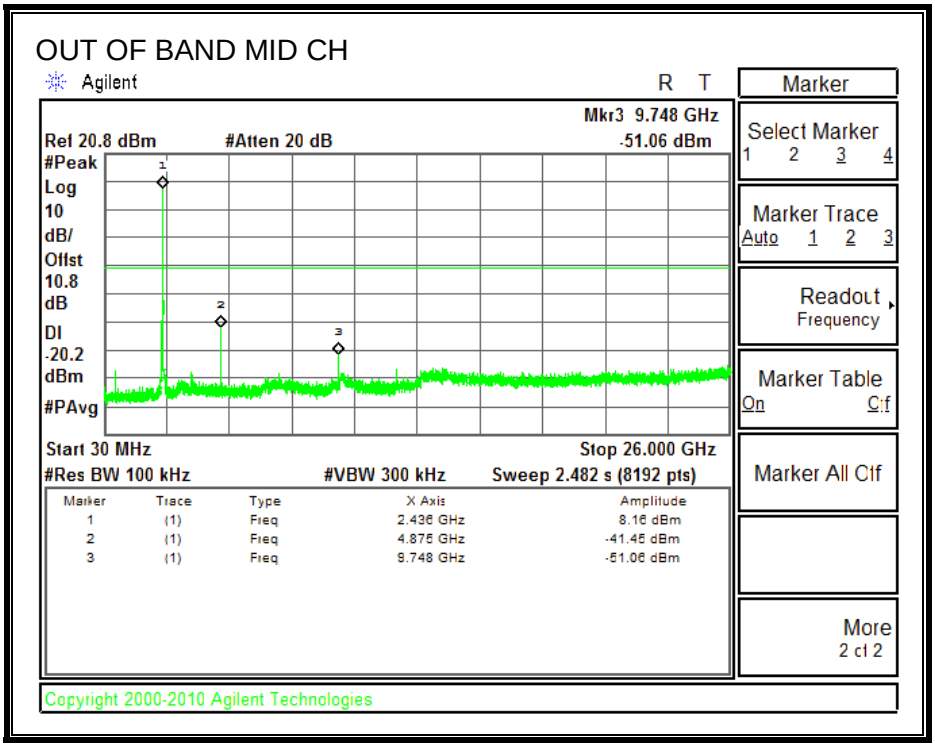





*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

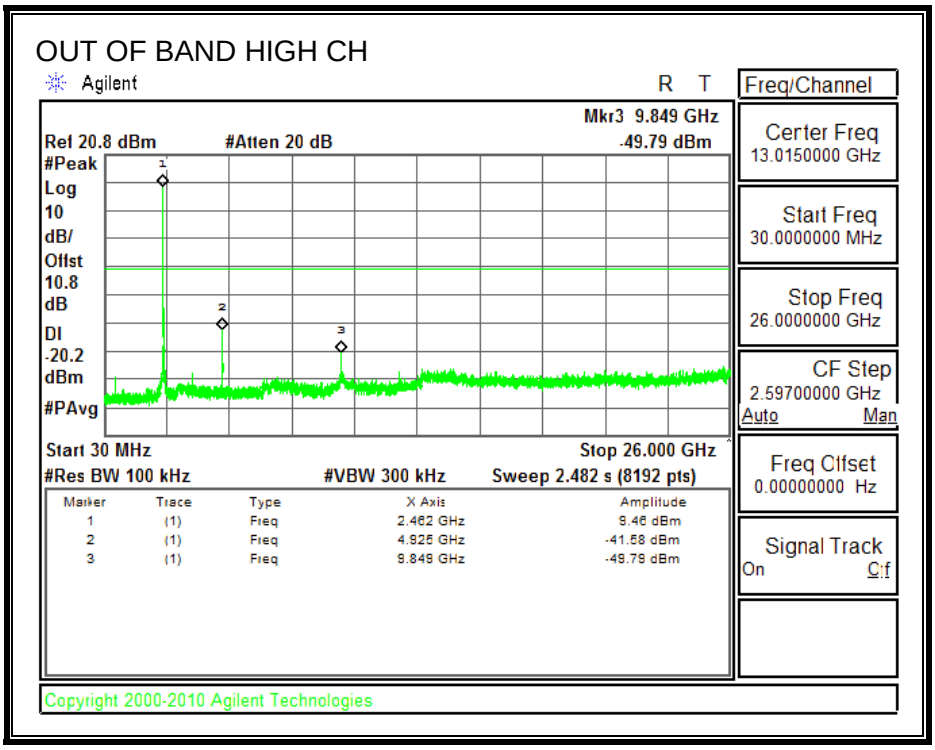
**OUT-OF-BAND EMISSIONS**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 8.2. 802.11g MODE IN THE 2.4 GHz BAND

## 8.2.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

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

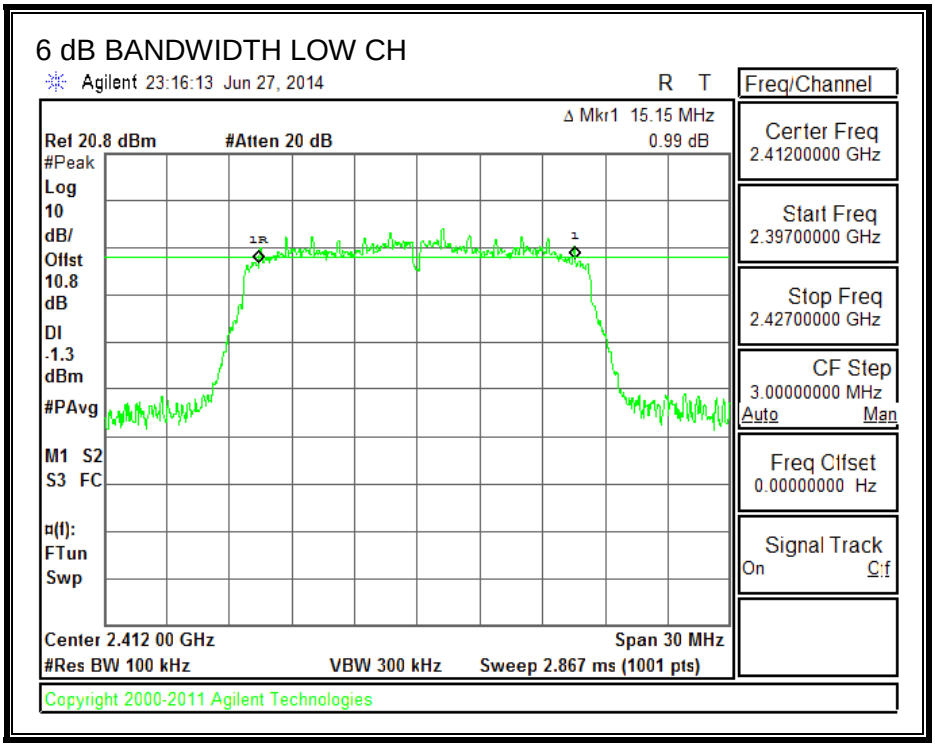
**RESULTS**

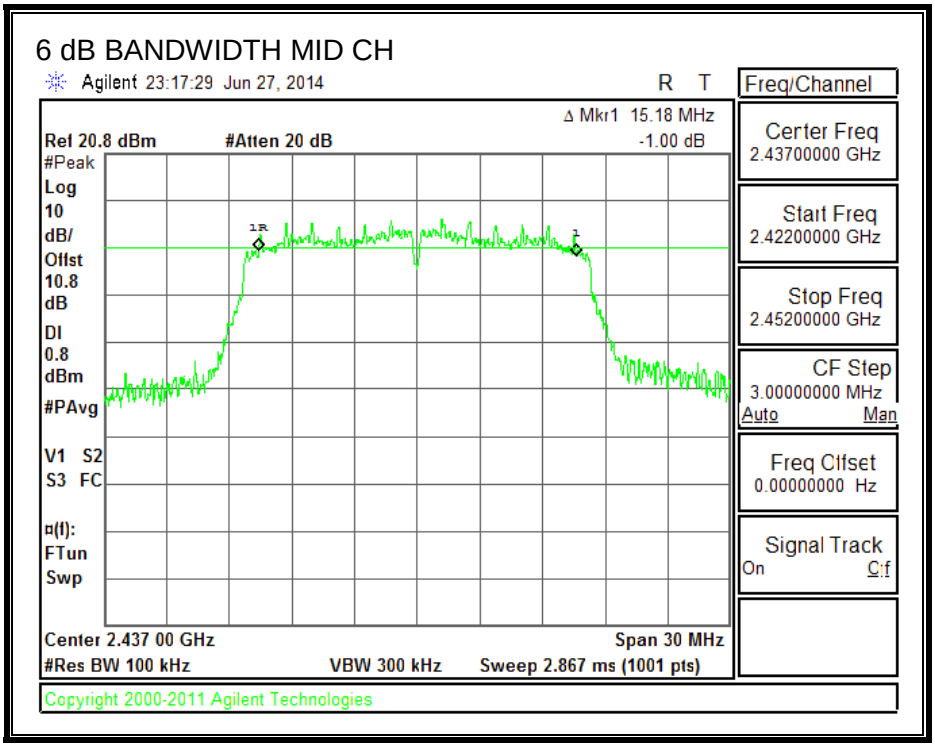
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 15.150 | 0.5 |
| Mid | 2437 | 15.180 | 0.5 |
| High | 2462 | 15.150 | 0.5 |



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

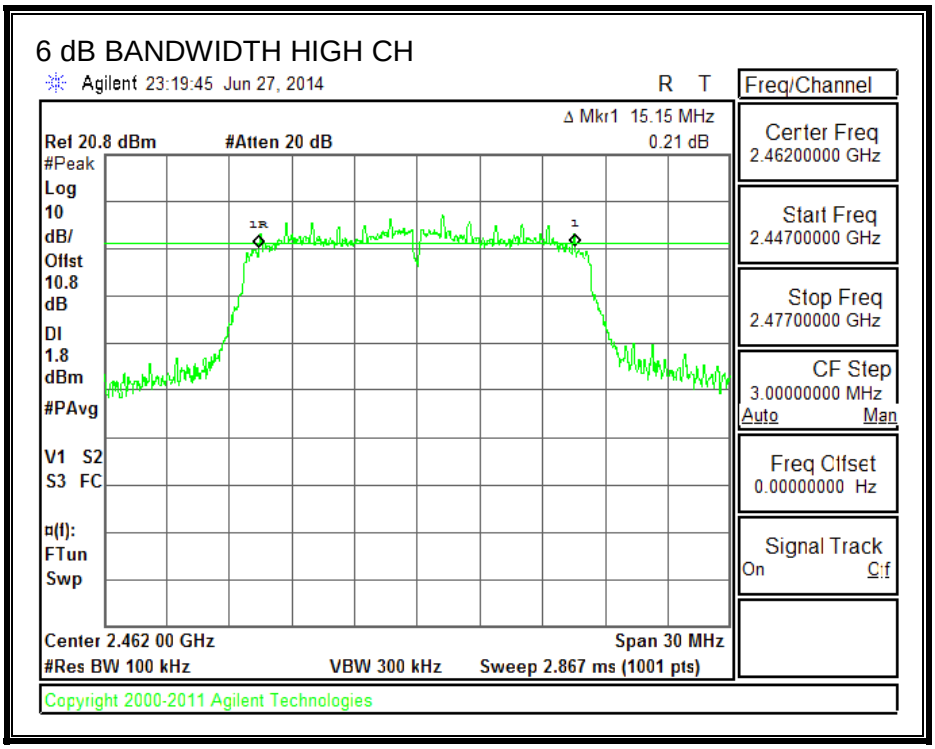
**6 dB BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.2.2. 99% BANDWIDTH

**LIMITS**

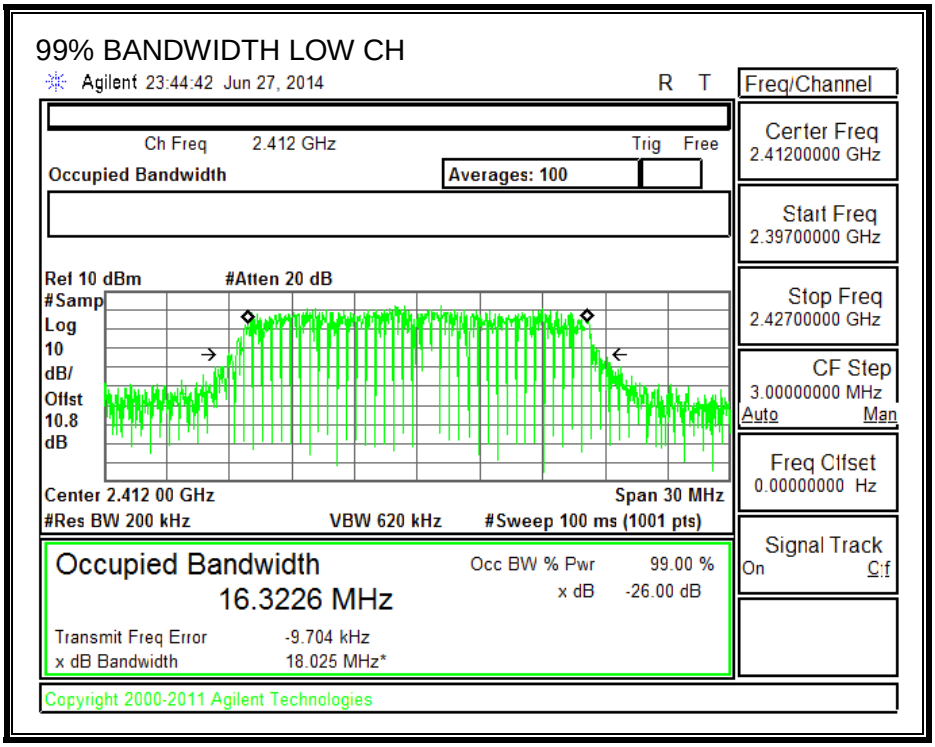
None; for reporting purposes only.

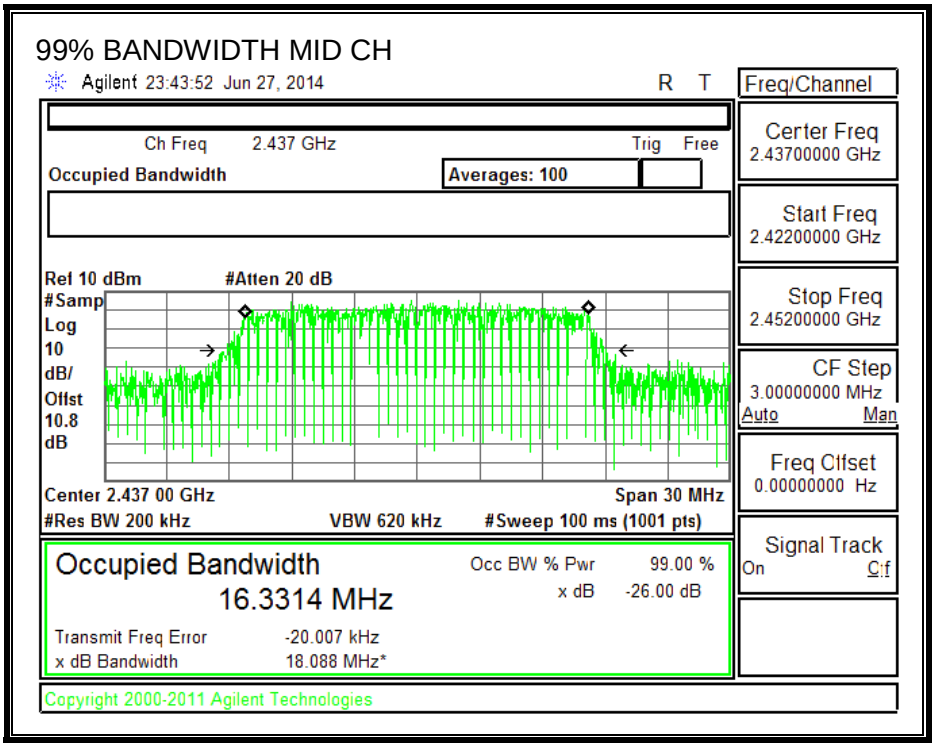
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 16.3226 |
| Mid | 2437 | 16.3314 |
| High | 2462 | 16.3245 |


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

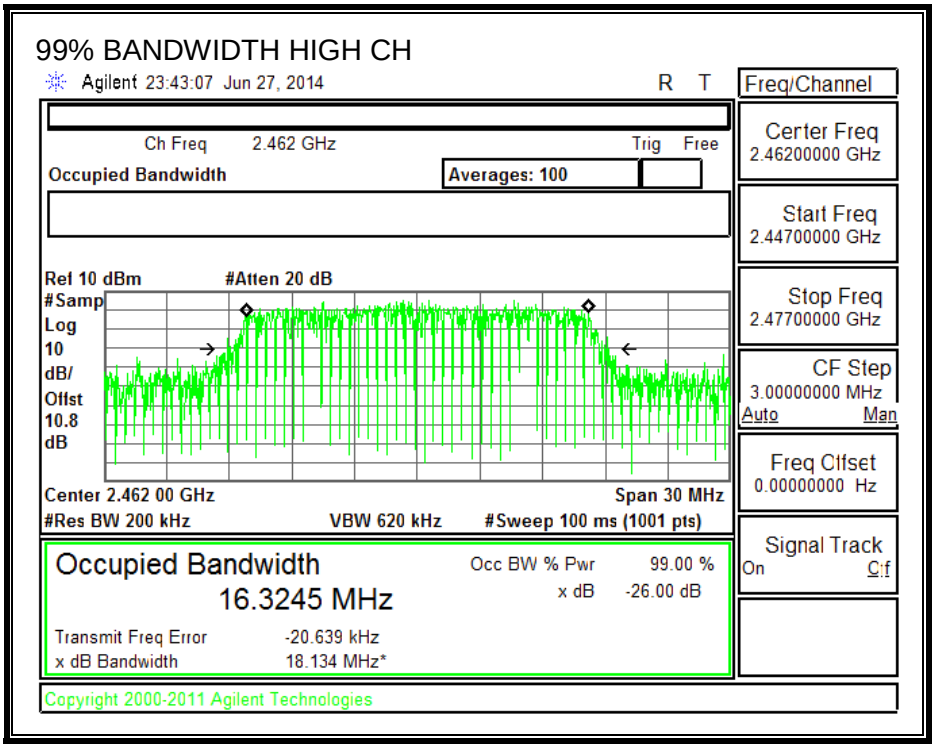
**99% BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.2.3. OUTPUT POWER

**LIMITS**

FCC §15.247

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.

**DIRECTIONAL ANTENNA GAIN**

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



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | 3.20 | 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 | 14.10 | 14.10 | 30.00 | -15.90 |
| Mid | 2437 | 17.00 | 17.00 | 30.00 | -13.00 |
| High | 2462 | 17.10 | 17.10 | 30.00 | -12.90 |

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.2.4. PSD

**LIMITS**

FCC §15.247(e)

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

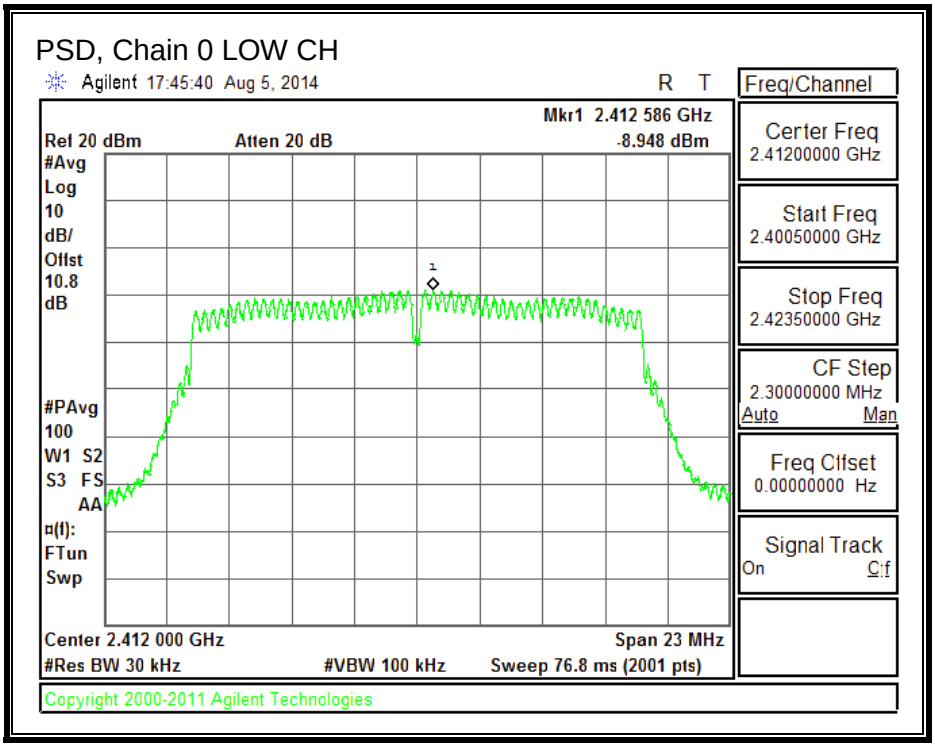
**RESULTS**

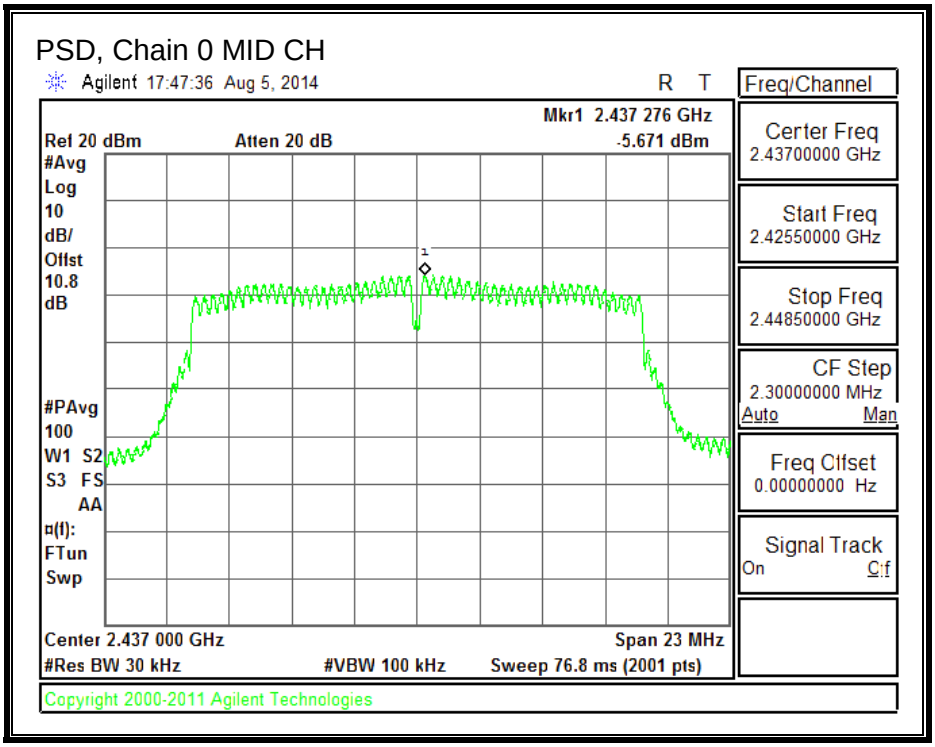
**PSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas (dBm) | DCCF (dB) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | -8.498 | 0.000 | -8.498 | 8.0 | -16.5 |
| Mid | 2437 | -5.671 | 0.000 | -5.671 | 8.0 | -13.7 |
| High | 2462 | -5.479 | 0.000 | -5.479 | 8.0 | -13.5 |


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

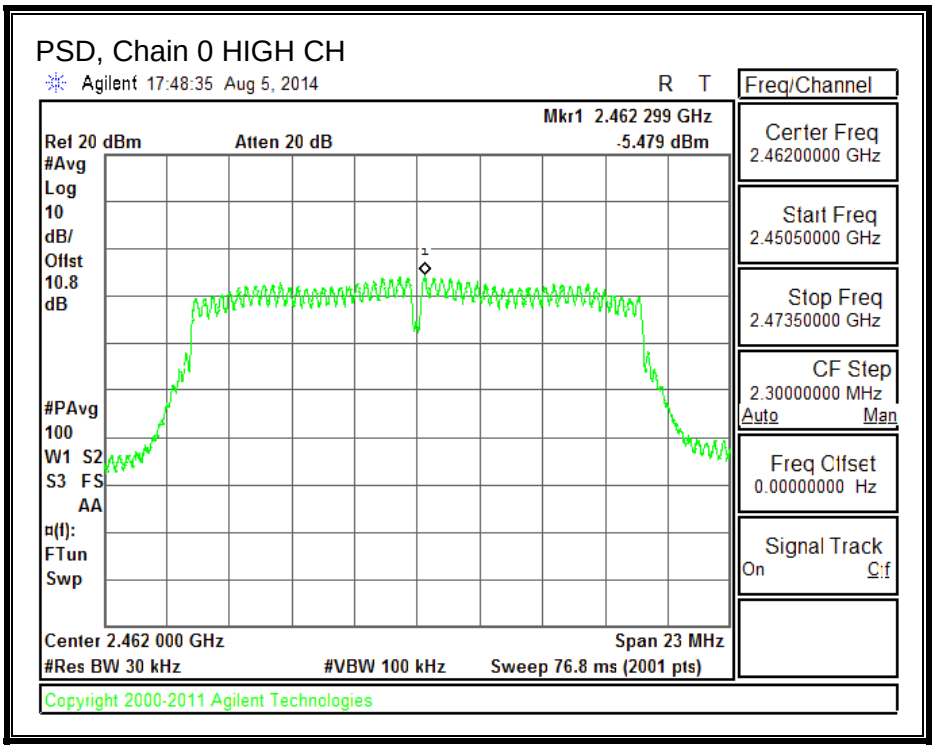
**PSD**





UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.2.5. OUT-OF-BAND EMISSIONS

**LIMITS**

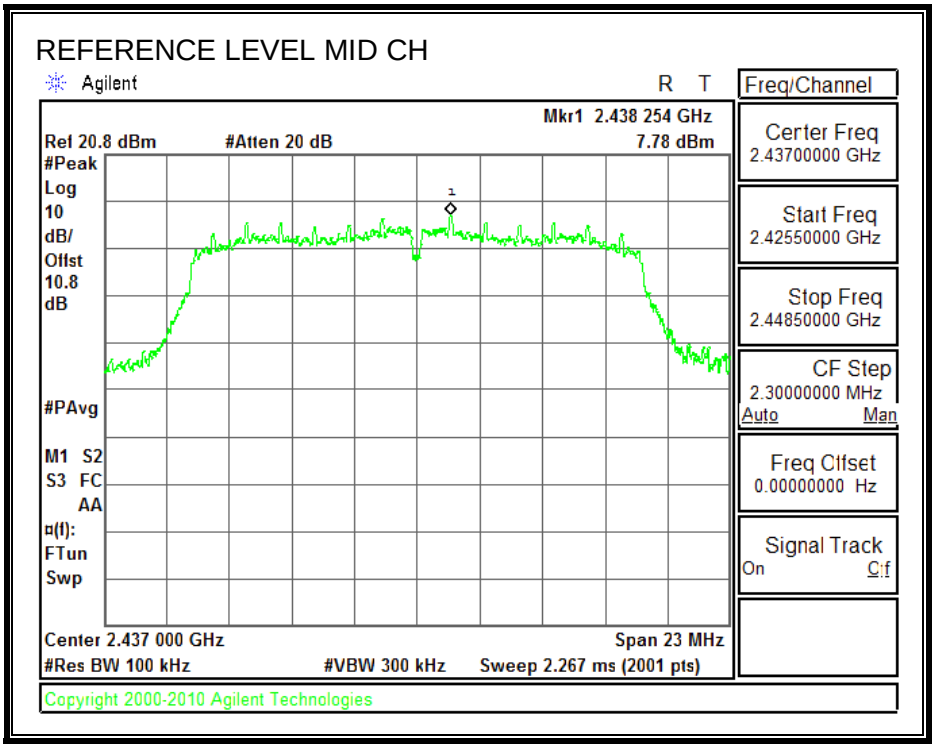
FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## RESULTS

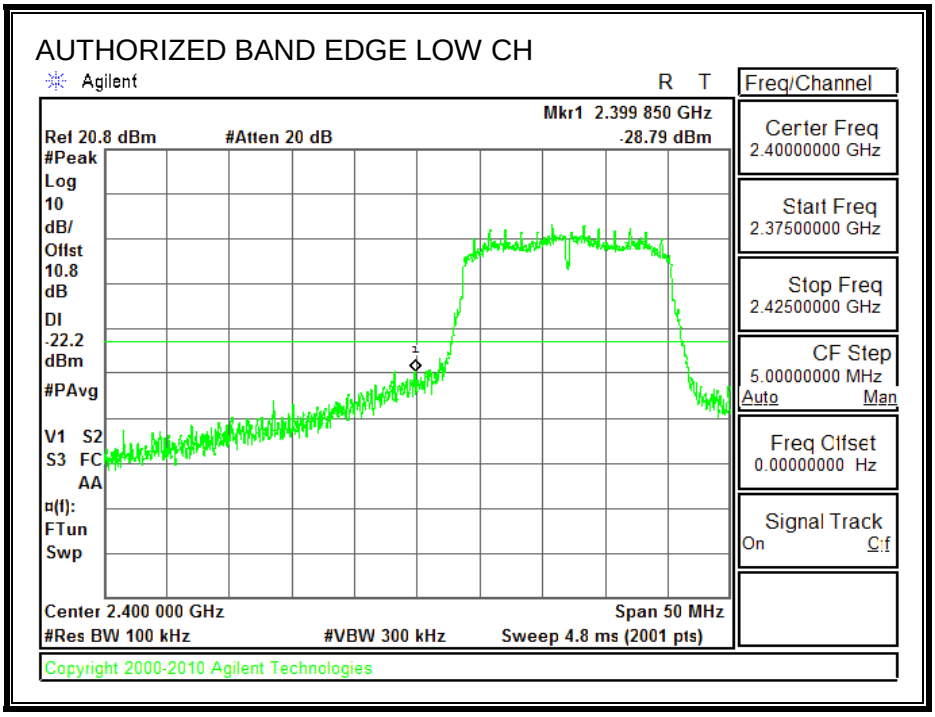
## IN-BAND REFERENCE LEVEL



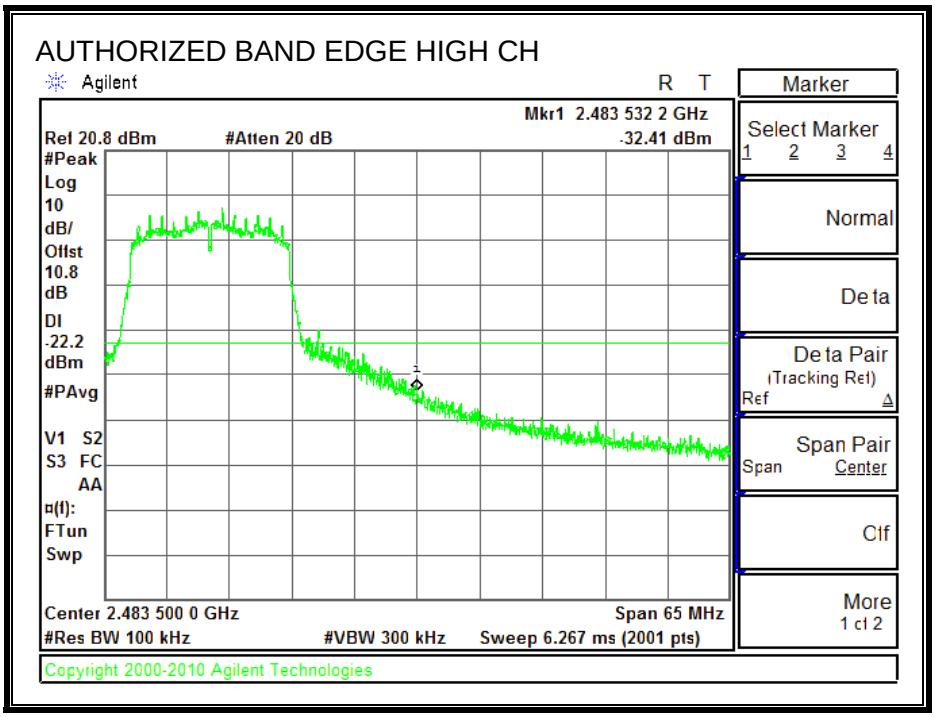



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**LOW CHANNEL BANDEDGE**



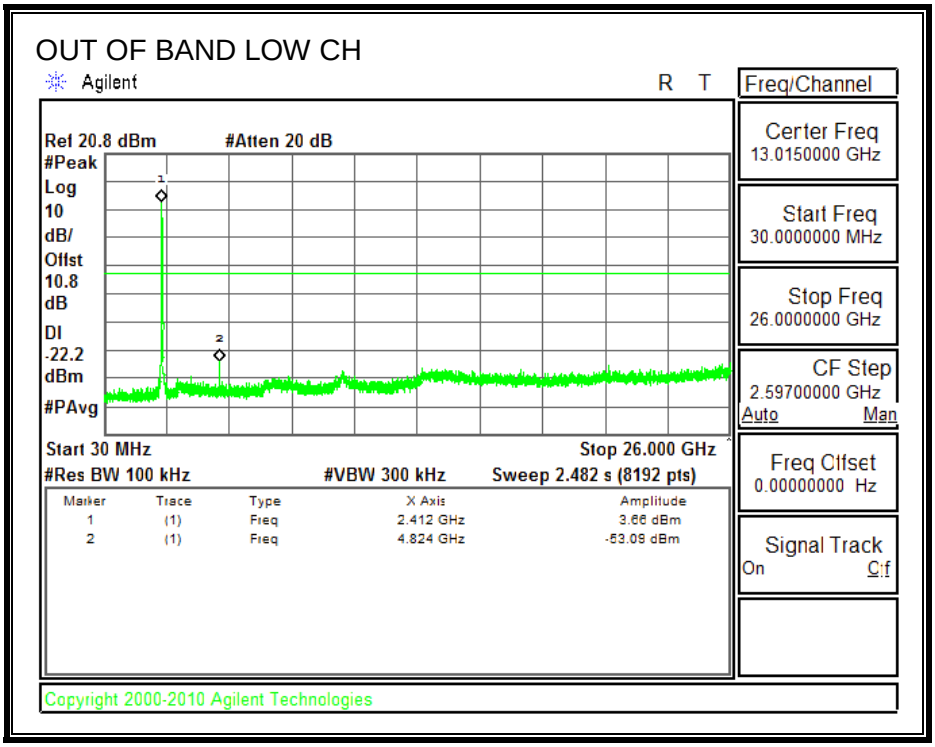

**HIGH CHANNEL BANDEDGE**

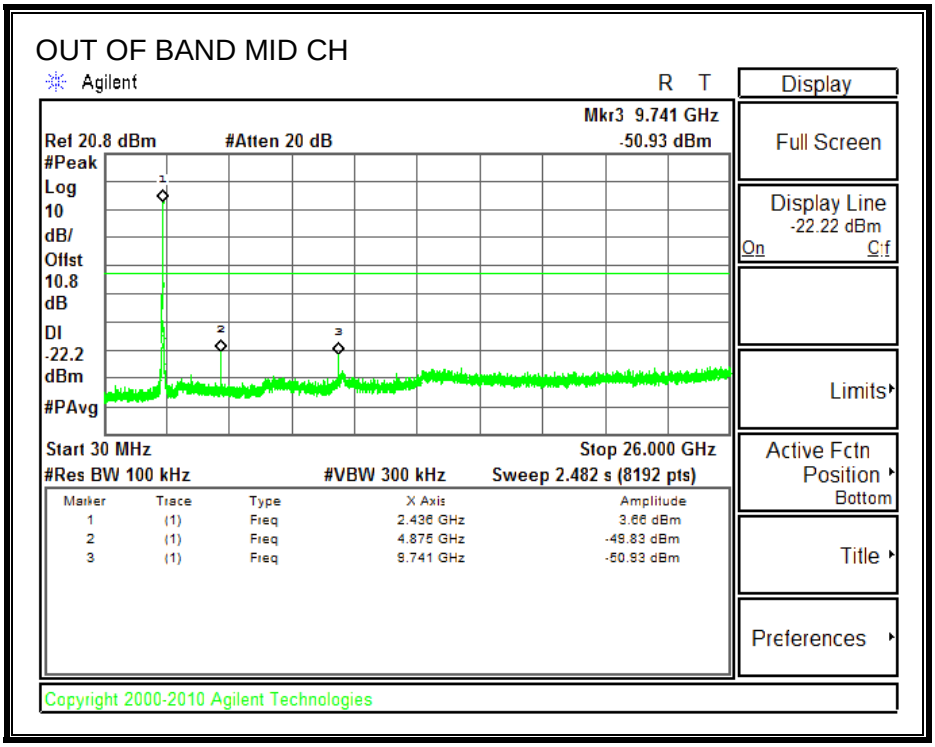





*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

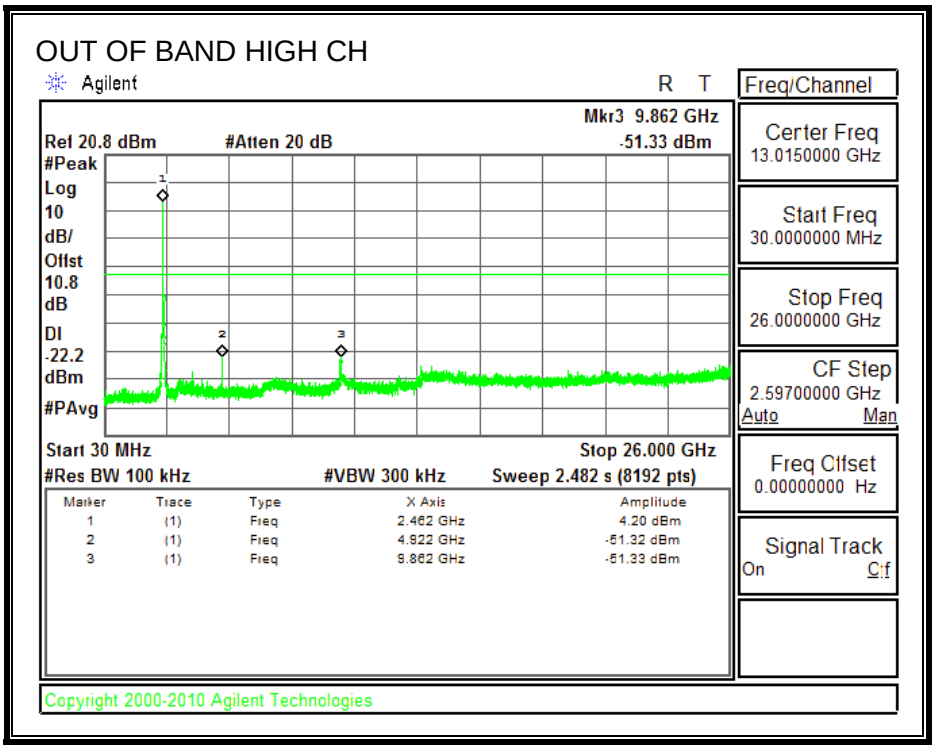
**OUT-OF-BAND EMISSIONS**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

### 8.3.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

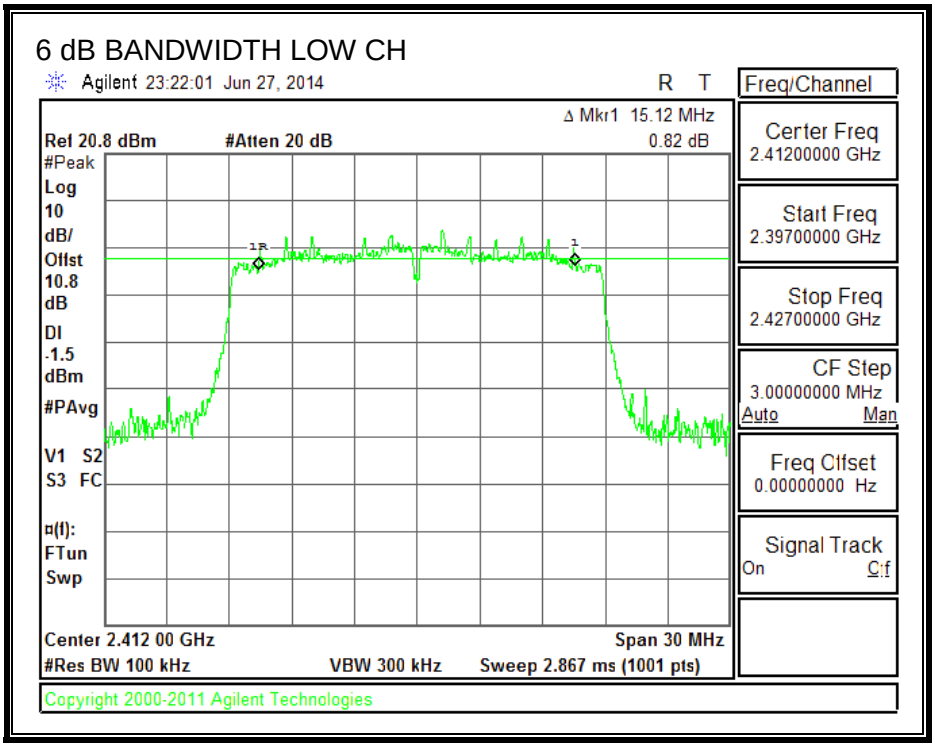
The minimum 6 dB bandwidth shall be at least 500 kHz.

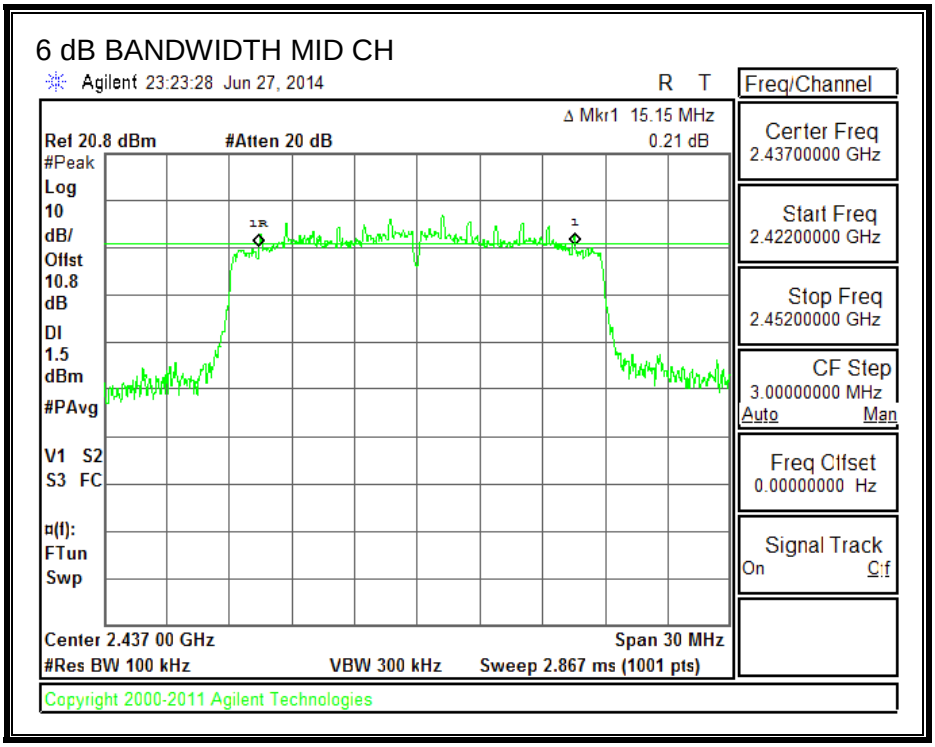
**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 15.12 | 0.5 |
| Mid | 2437 | 15.15 | 0.5 |
| High | 2462 | 16.11 | 0.5 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

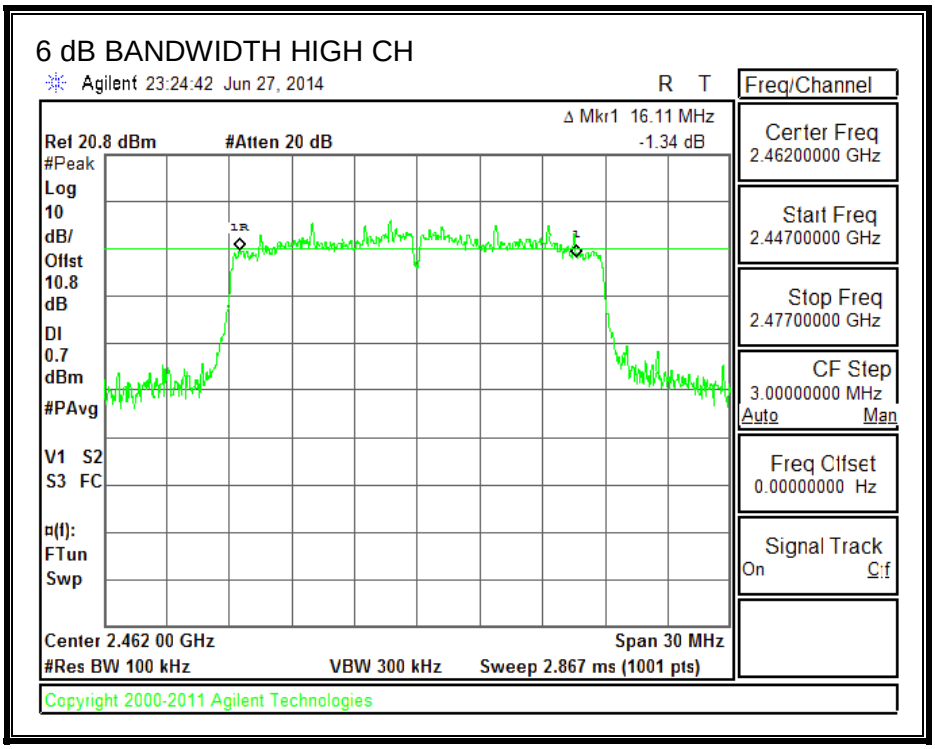
**6 dB BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.3.2. 99% BANDWIDTH

**LIMITS**

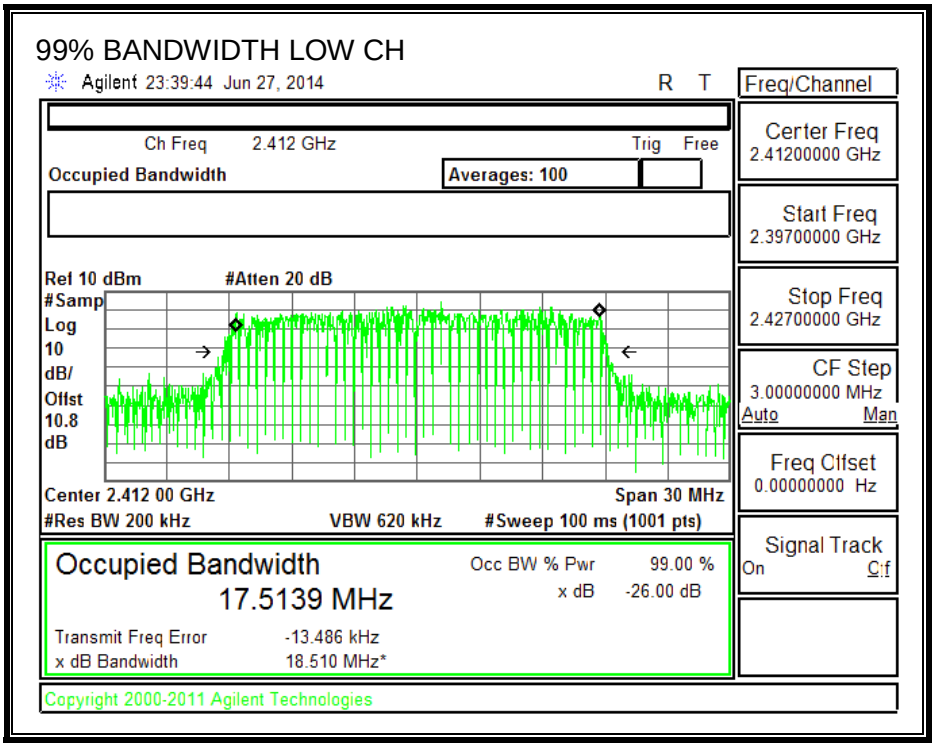
None; for reporting purposes only.

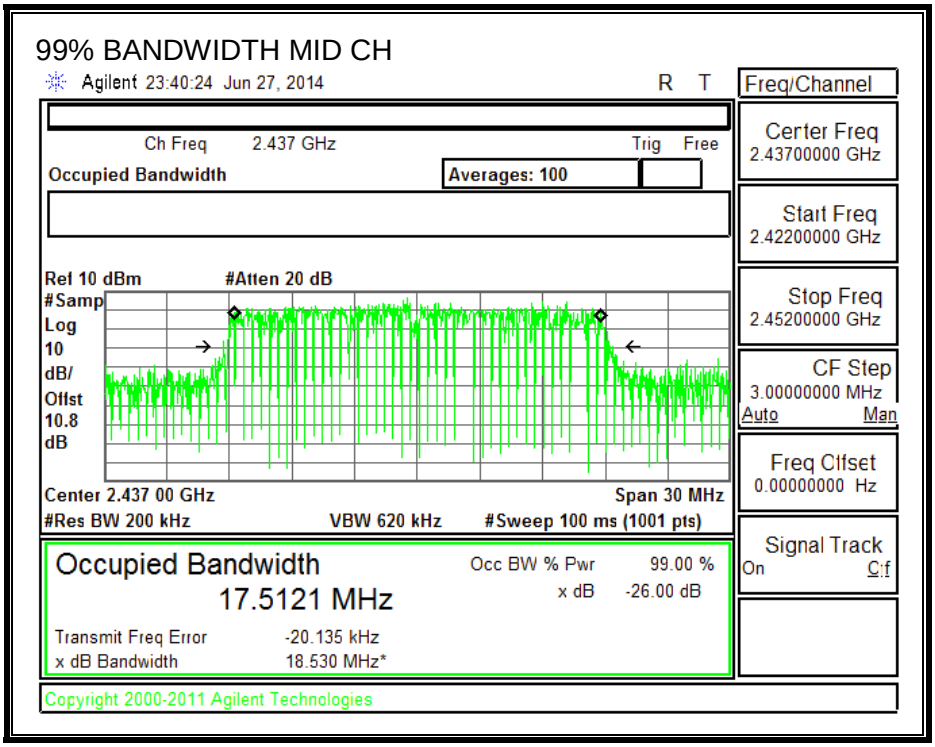
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 17.5139 |
| Mid | 2437 | 17.5121 |
| High | 2462 | 17.5161 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

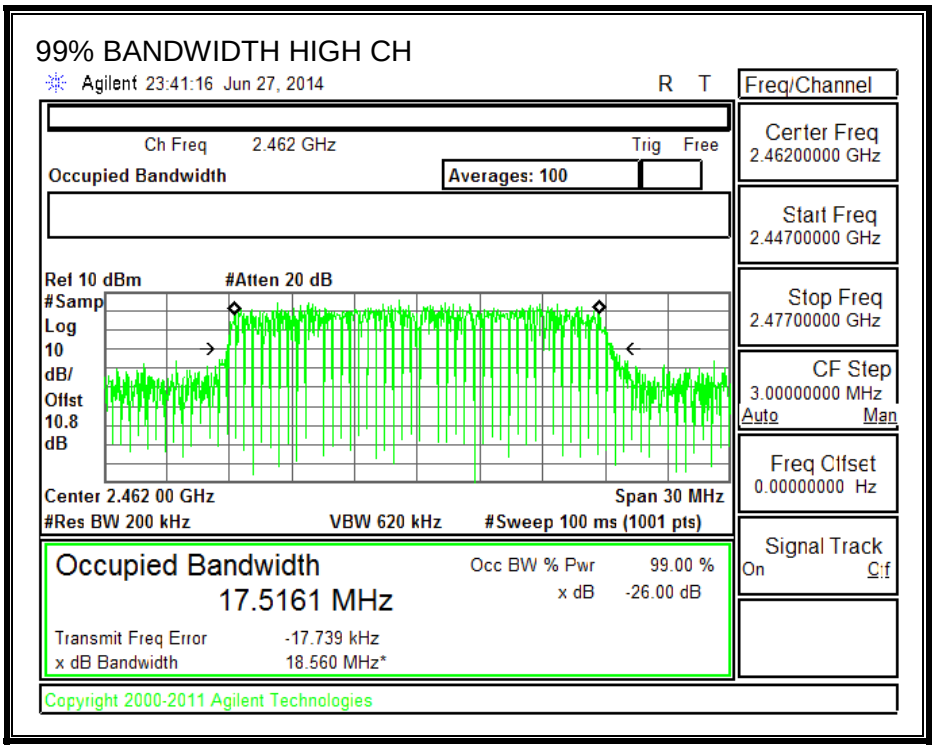
**99% BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.3.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (a) (2)

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.

**DIRECTIONAL ANTENNA GAIN**

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2412 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| High | 2462 | 3.20 | 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 | 13.98 | 13.98 | 30.00 | -16.02 |
| Mid | 2437 | 17.12 | 17.12 | 30.00 | -12.88 |
| High | 2462 | 17.05 | 17.05 | 30.00 | -12.95 |

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.3.4. PSD

**LIMITS**

FCC §15.247(e)

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

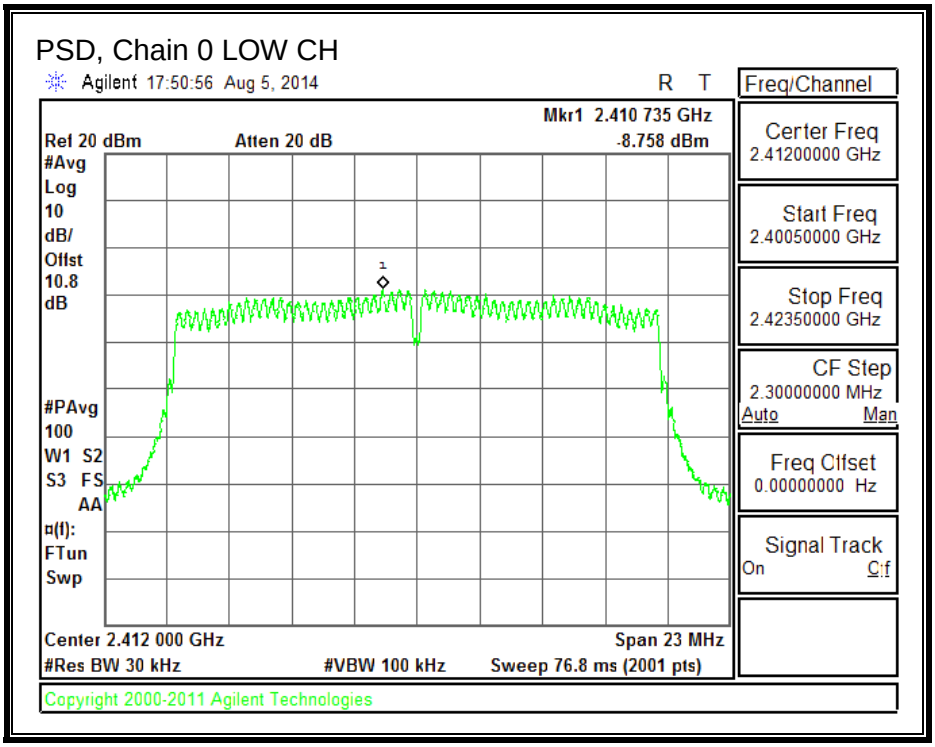
**RESULTS**

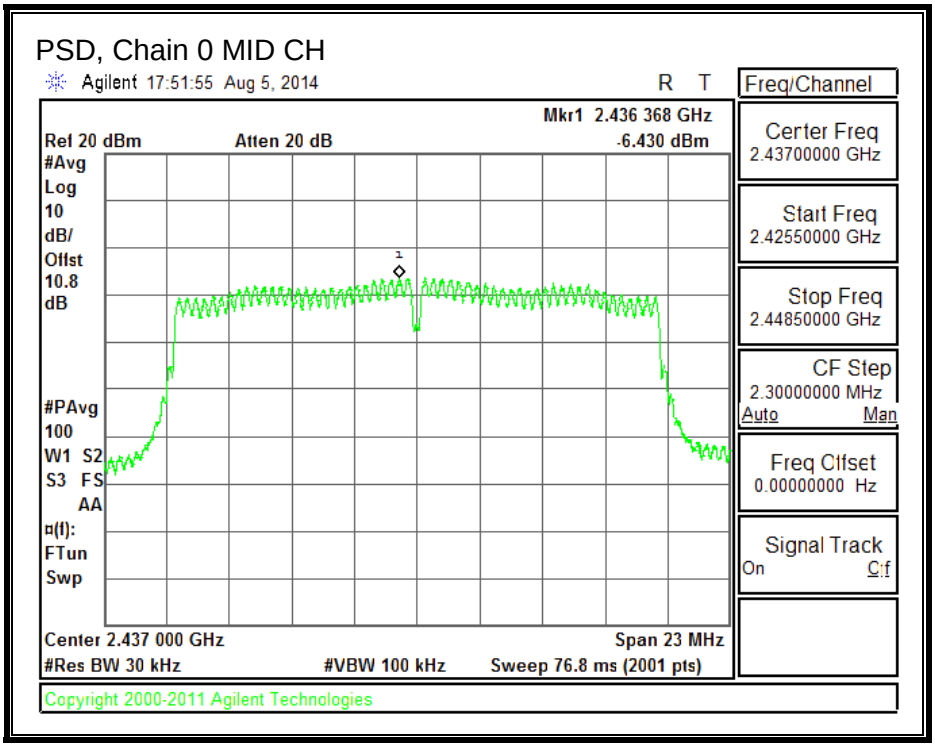
**PSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas (dBm) | DCCF (dB) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | -8.758 | 0.000 | -8.758 | 8.0 | -16.8 |
| Mid | 2437 | -6.430 | 0.000 | -6.430 | 8.0 | -14.4 |
| High | 2462 | -6.103 | 0.000 | -6.103 | 8.0 | -14.1 |


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

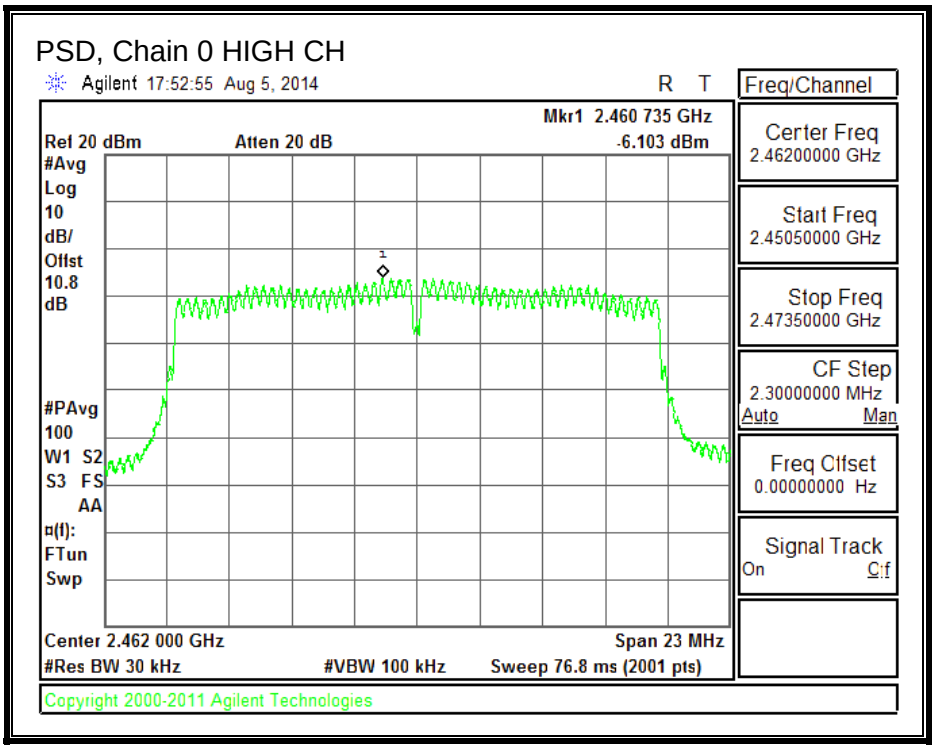
**PSD**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.3.5. OUT-OF-BAND EMISSIONS

**LIMITS**

FCC §15.247 (d)

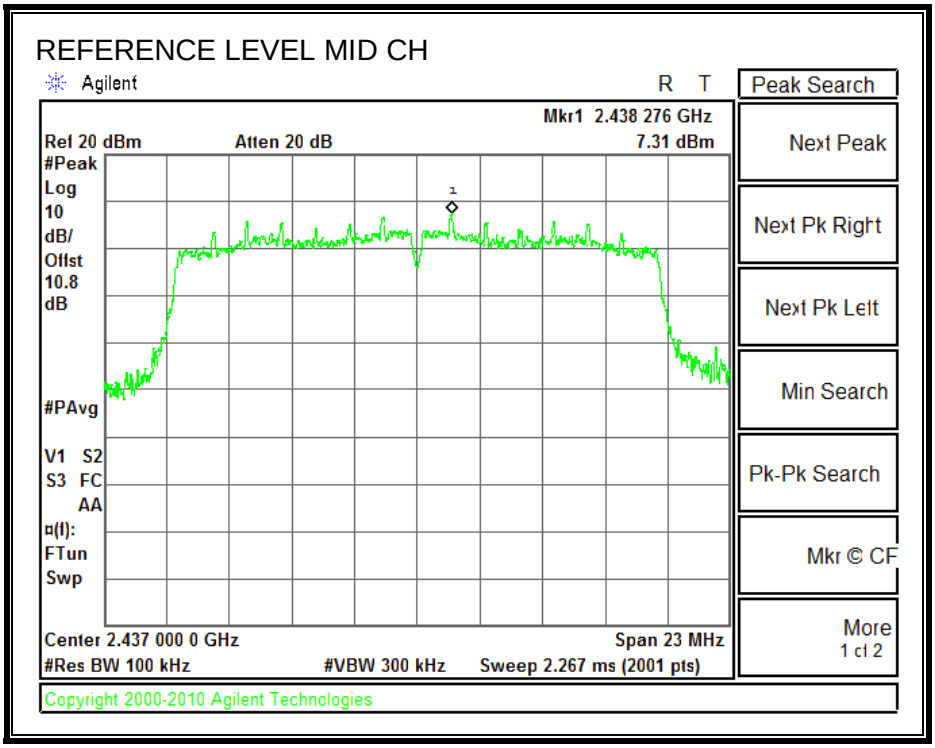
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

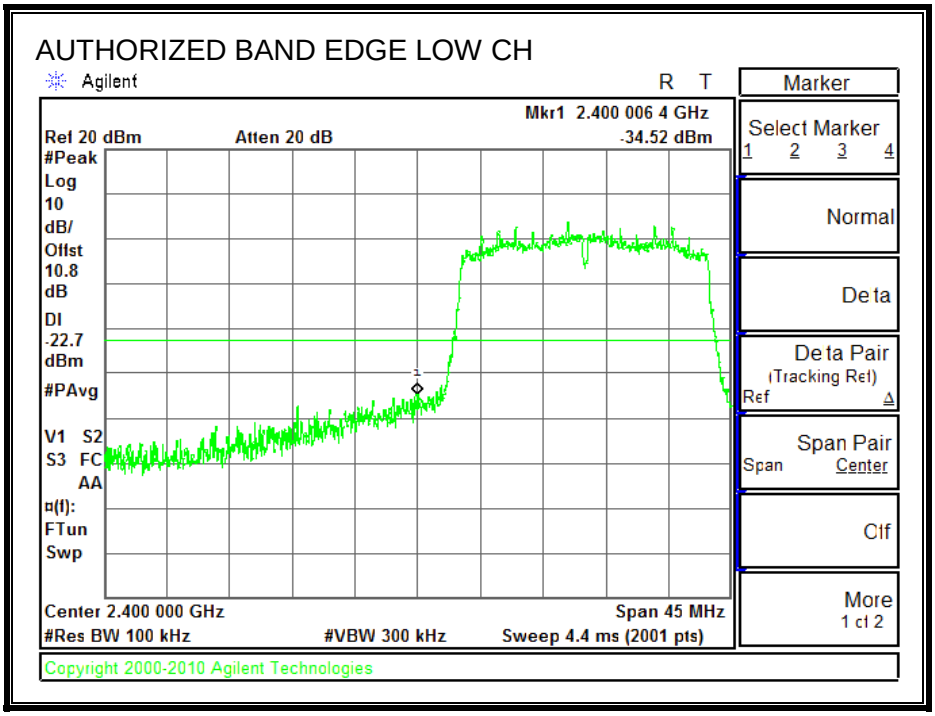
**IN-BAND REFERENCE LEVEL**



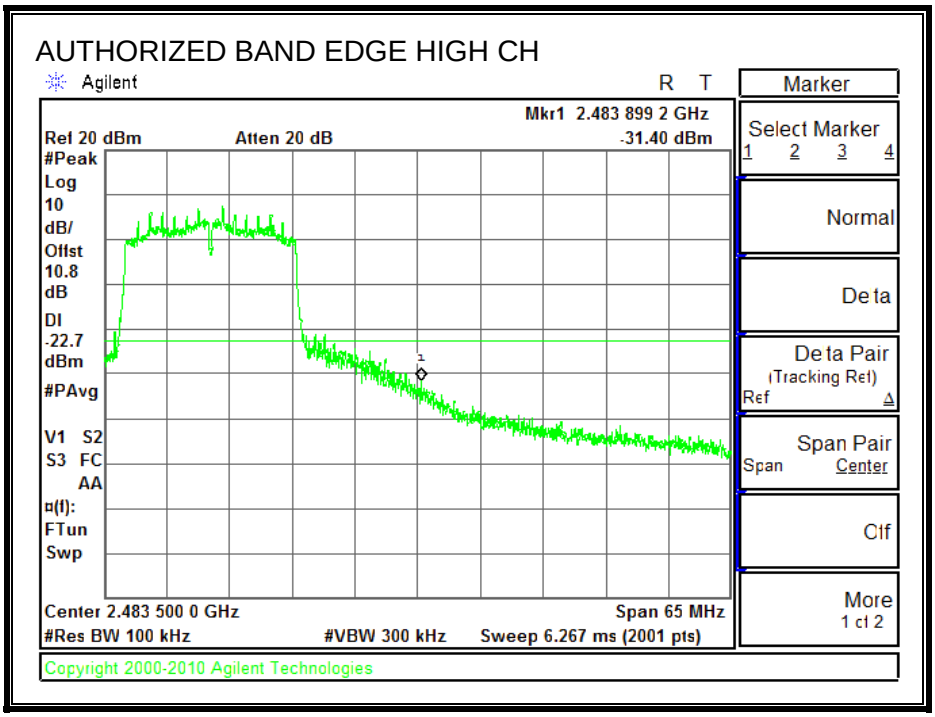



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**LOW CHANNEL BANDEDGE**




**HIGH CHANNEL BANDEDGE**

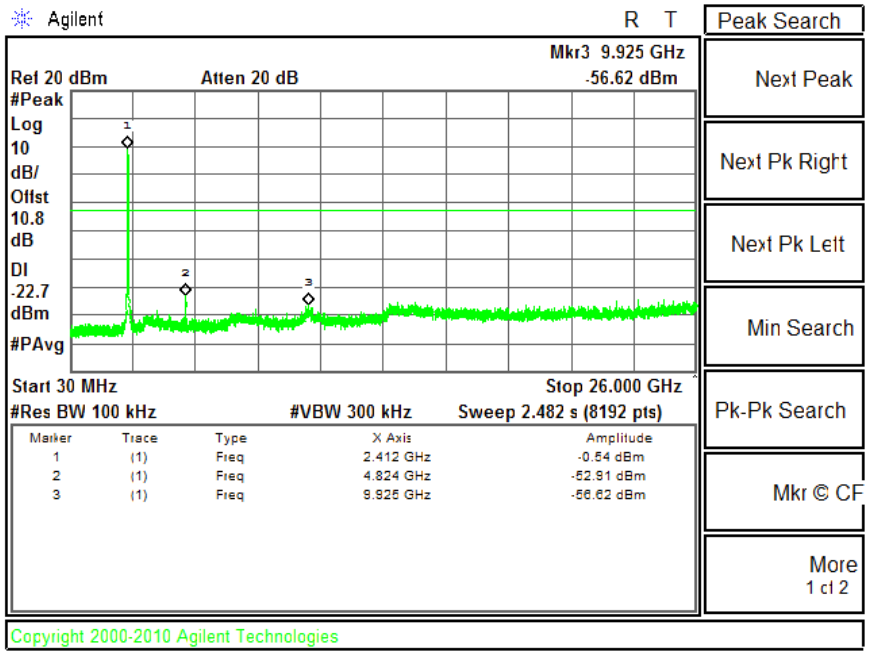




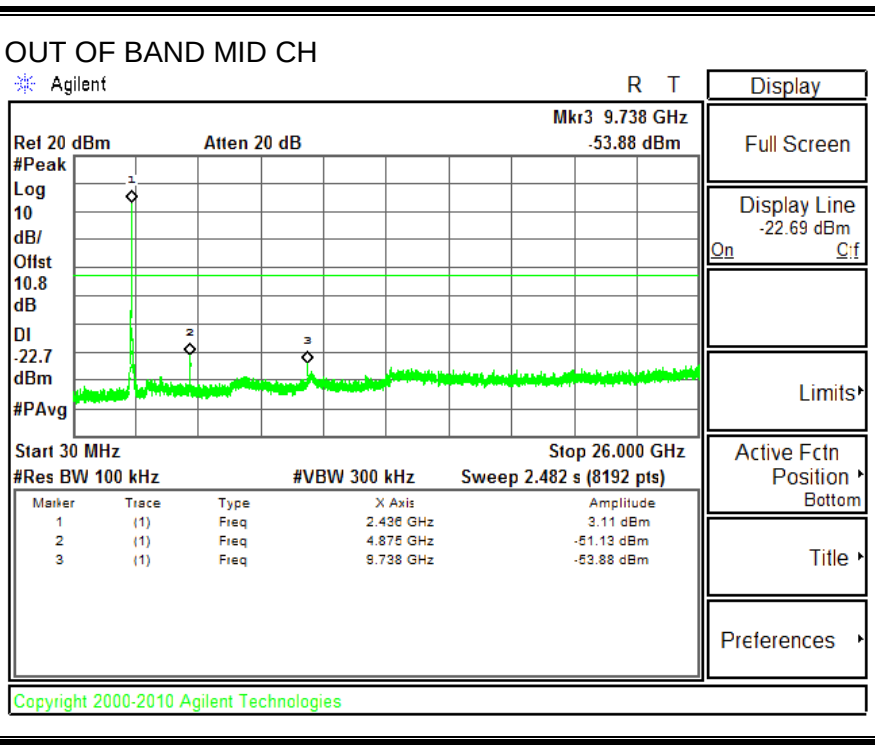
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**OUT-OF-BAND EMISSIONS**

OUT OF BAND LOW CH

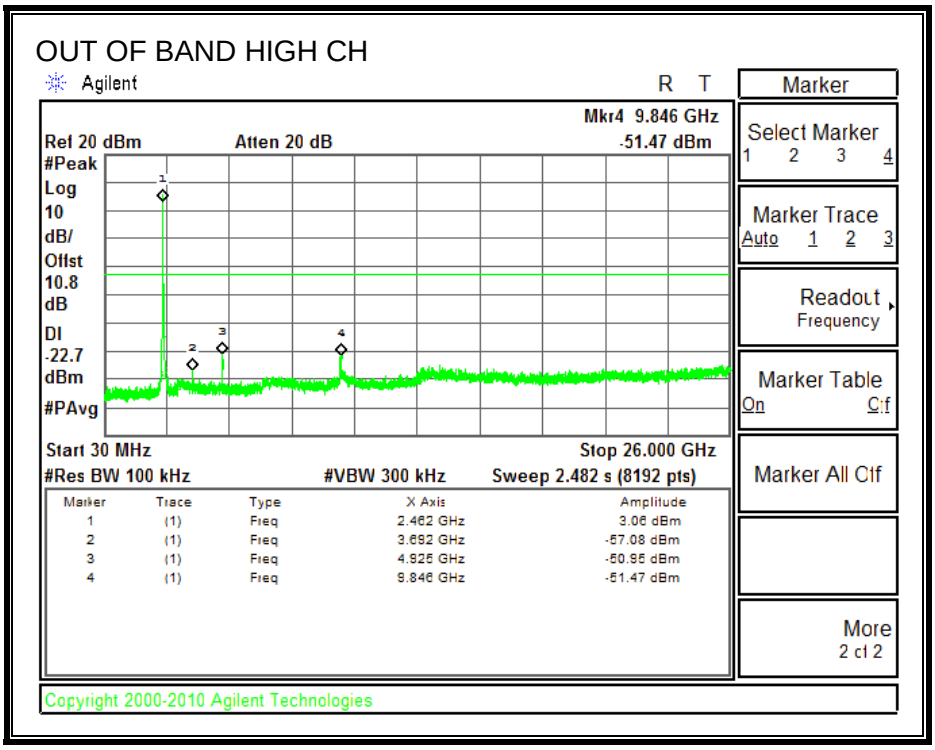



OUT OF BAND MID CH






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 8.4. 802.11n HT40 MODE IN THE 2.4 GHz BAND

## 8.4.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

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

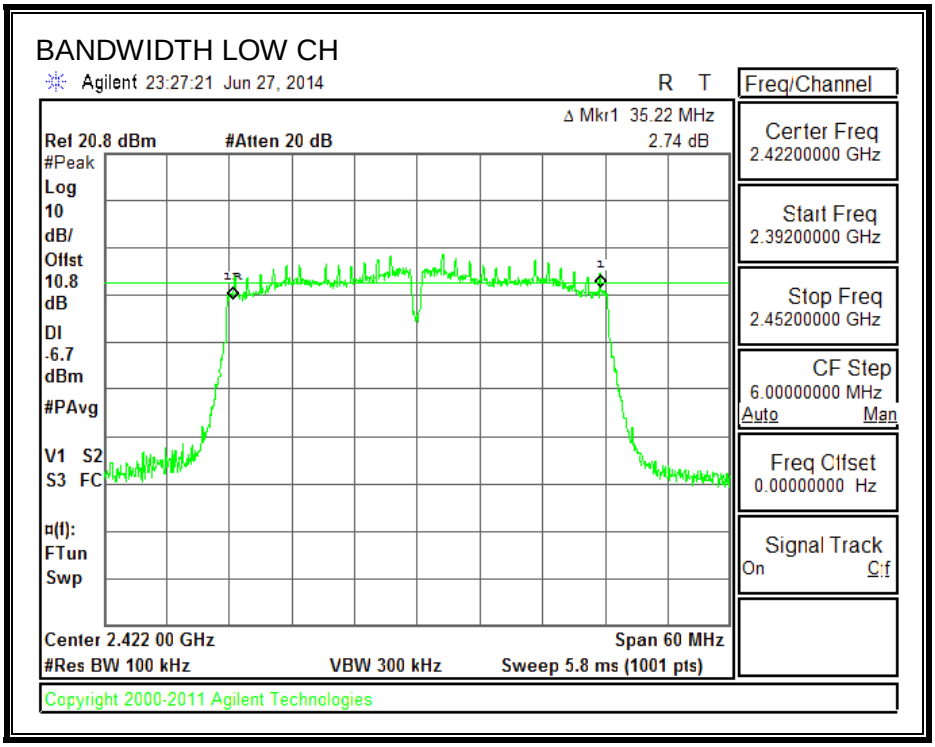
**RESULTS**

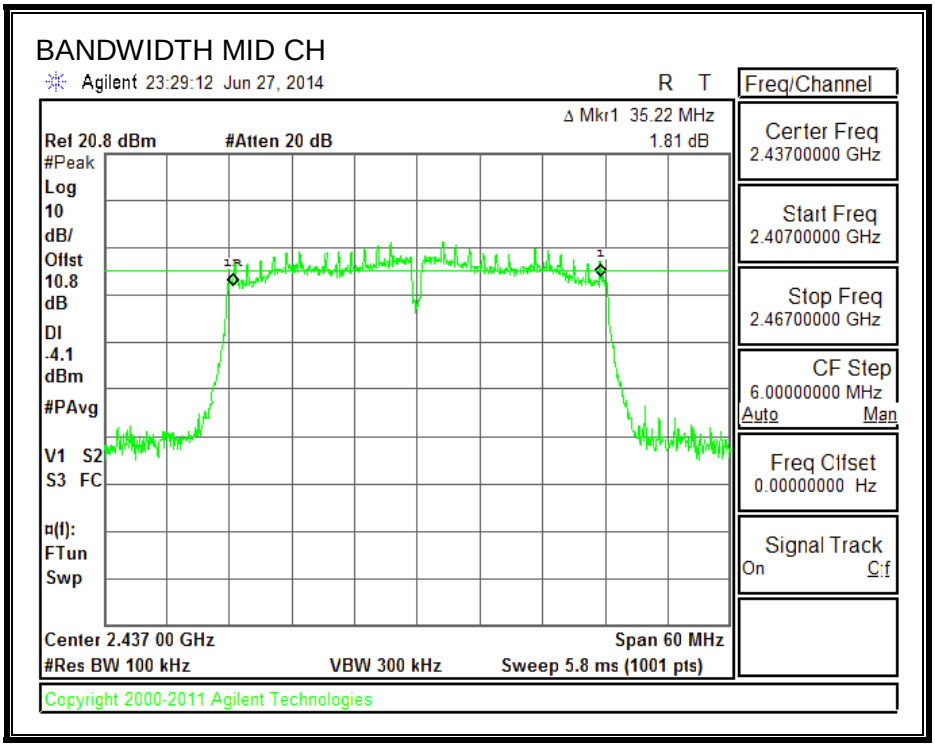
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2422 | 35.22 | 0.5 |
| Mid | 2437 | 35.22 | 0.5 |
| High | 2452 | 35.22 | 0.5 |



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

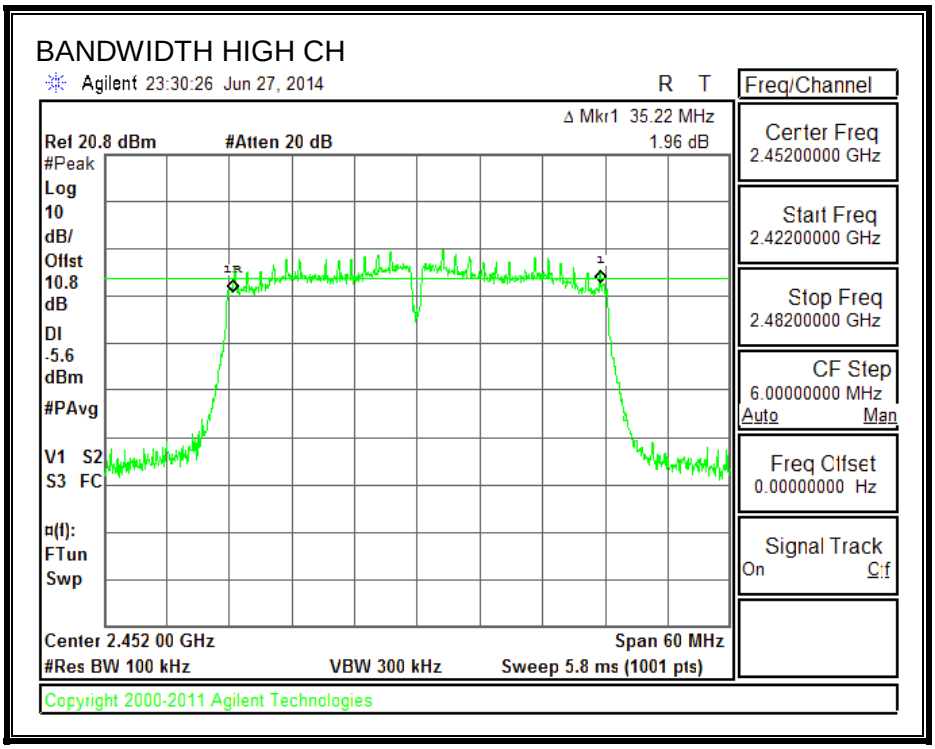
**6 dB BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.4.2. 99% BANDWIDTH

**LIMITS**

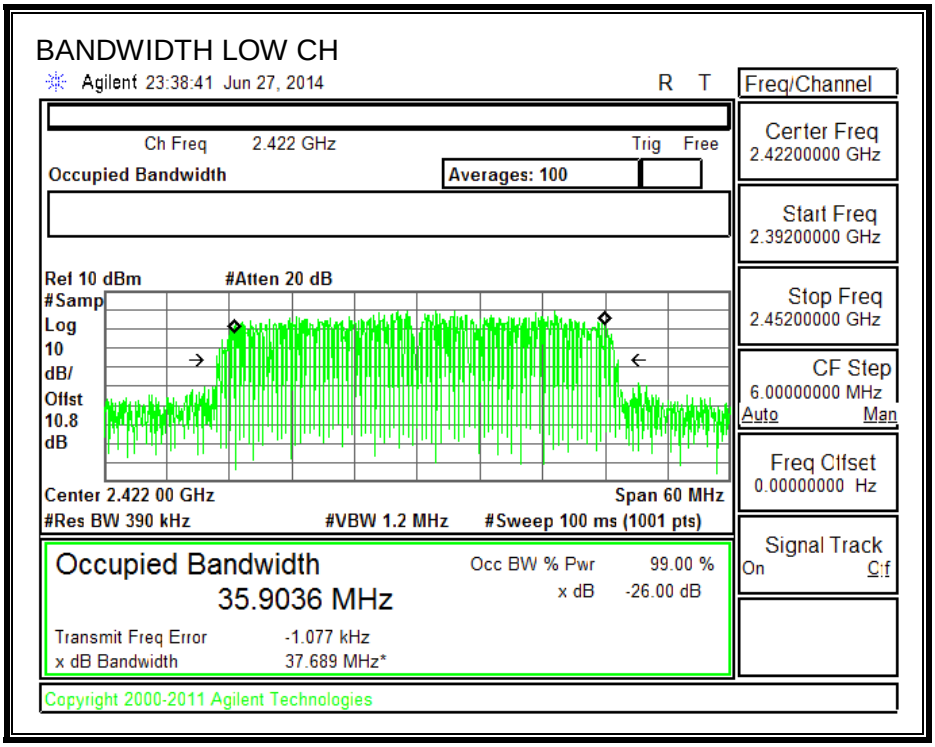
None; for reporting purposes only.

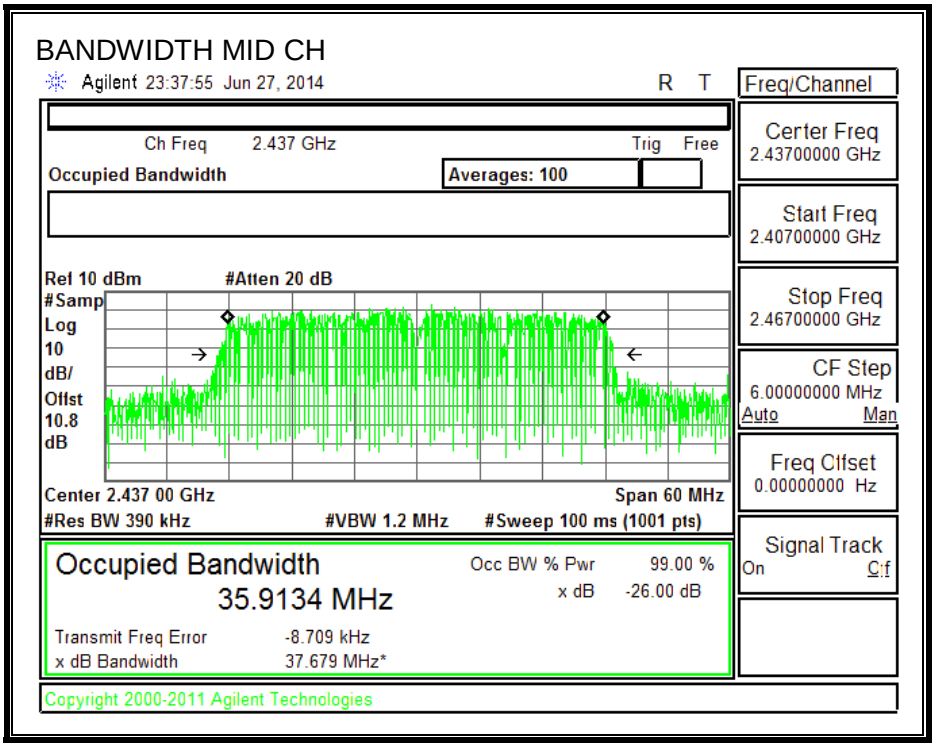
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2422 | 35.9036 |
| Mid | 2437 | 35.9134 |
| High | 2452 | 35.9141 |


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

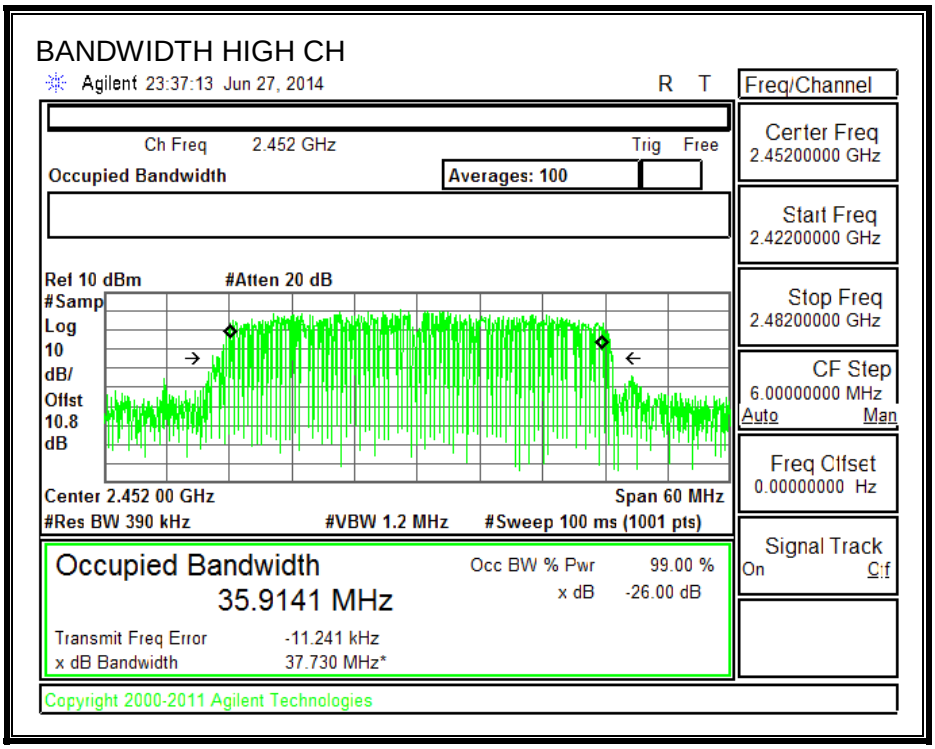
**99% BANDWIDTH**






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.4.3. OUTPUT POWER

**LIMITS**

FCC §15.247

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.

**DIRECTIONAL ANTENNA GAIN**

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

**Limits**

| Channel | Frequency (MHz) | Directional Gain (dBi) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Max Power (dBm) |
|---|---|---|---|---|---|---|
| Low | 2422 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| Mid | 2437 | 3.20 | 30.00 | 30 | 36 | 30.00 |
| High | 2452 | 3.20 | 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 | 2422 | 11.06 | 11.06 | 30.00 | -18.94 |
| Mid | 2437 | 14.20 | 14.20 | 30.00 | -15.80 |
| High | 2452 | 12.12 | 12.12 | 30.00 | -17.88 |

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

### 8.4.4. PSD

**LIMITS**

FCC §15.247(e)

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

**RESULTS**

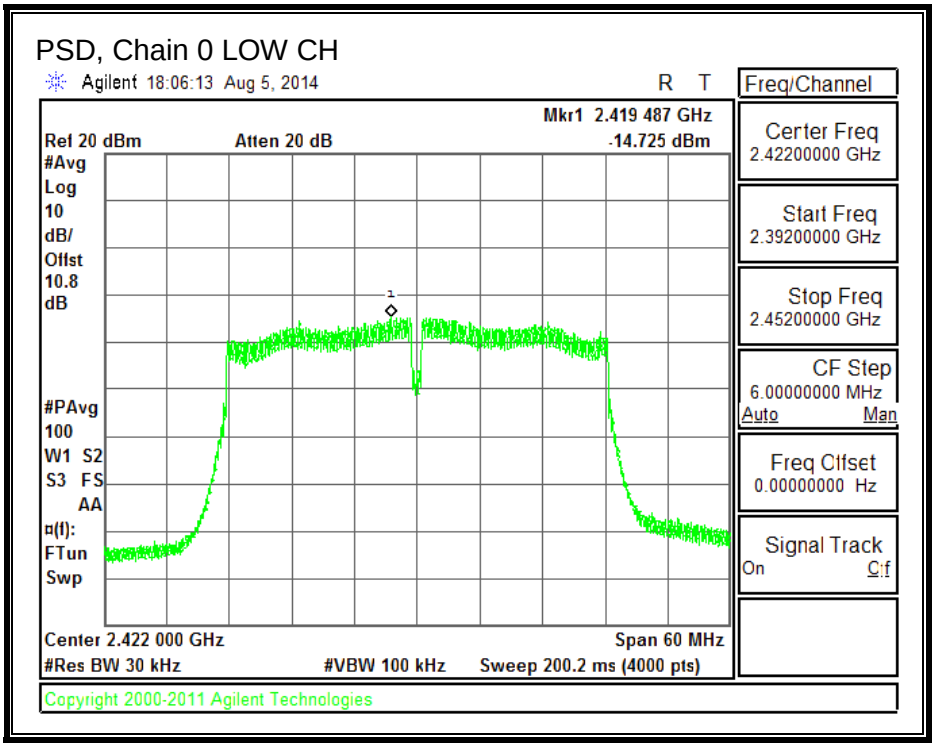
**PSD Results**

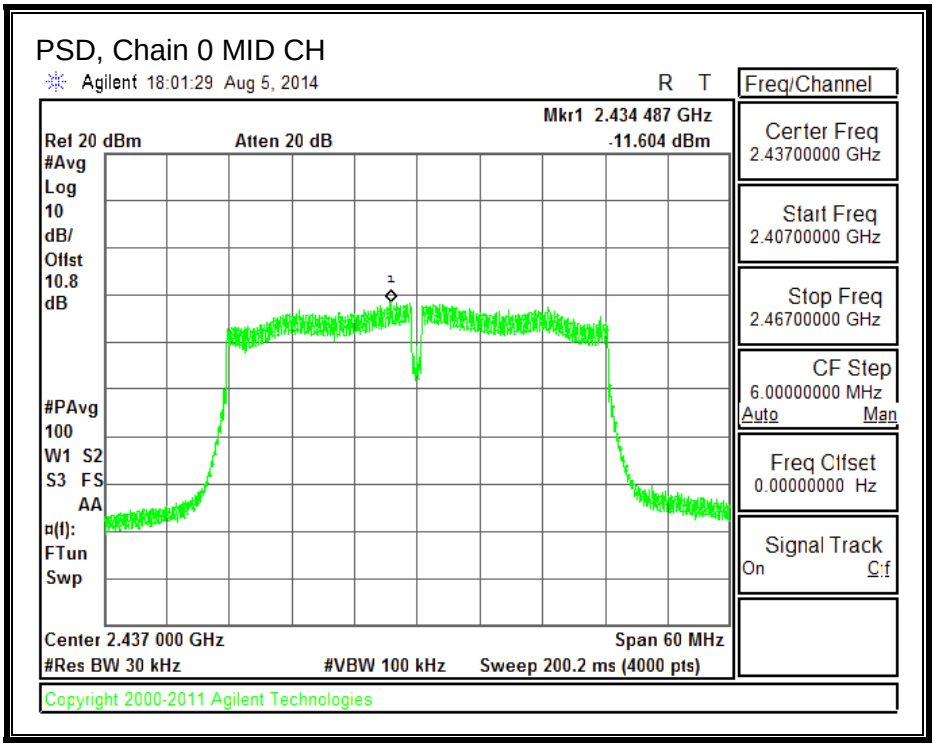
| Channel | Frequency (MHz) | Chain 0 Meas (dBm) | DCCF (dB) | Total Corr'd PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2422 | -14.725 | 0.140 | -14.585 | 8.0 | -22.6 |
| Mid | 2437 | -11.604 | 0.140 | -11.464 | 8.0 | -19.5 |
| High | 2452 | -13.194 | 0.140 | -13.054 | 8.0 | -21.1 |



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

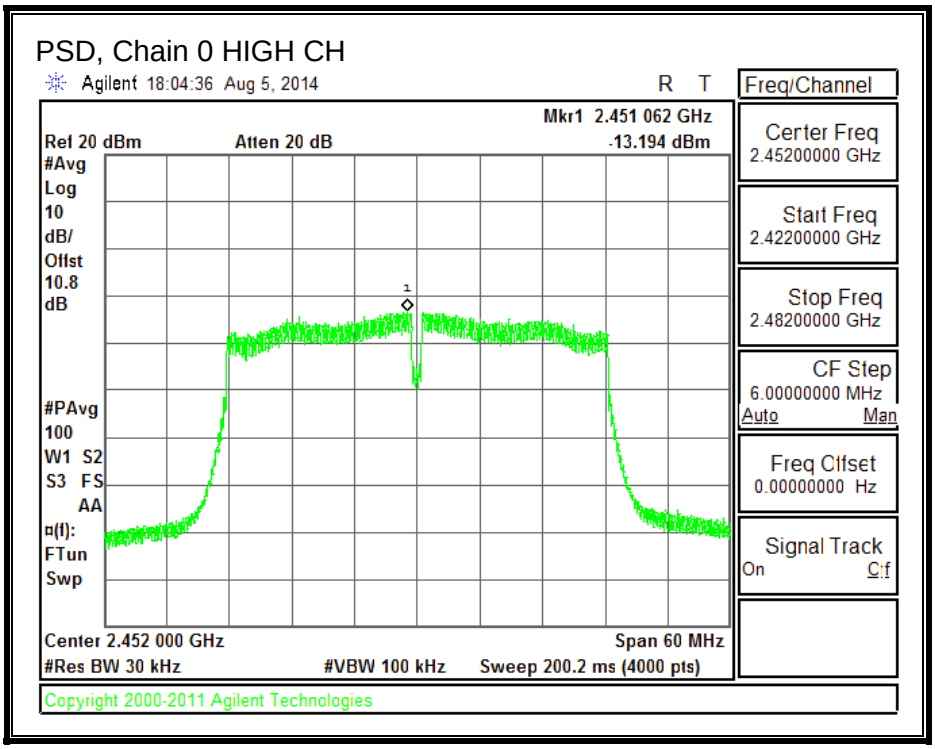
**PSD**





*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 8.4.5. OUT-OF-BAND EMISSIONS

**LIMITS**

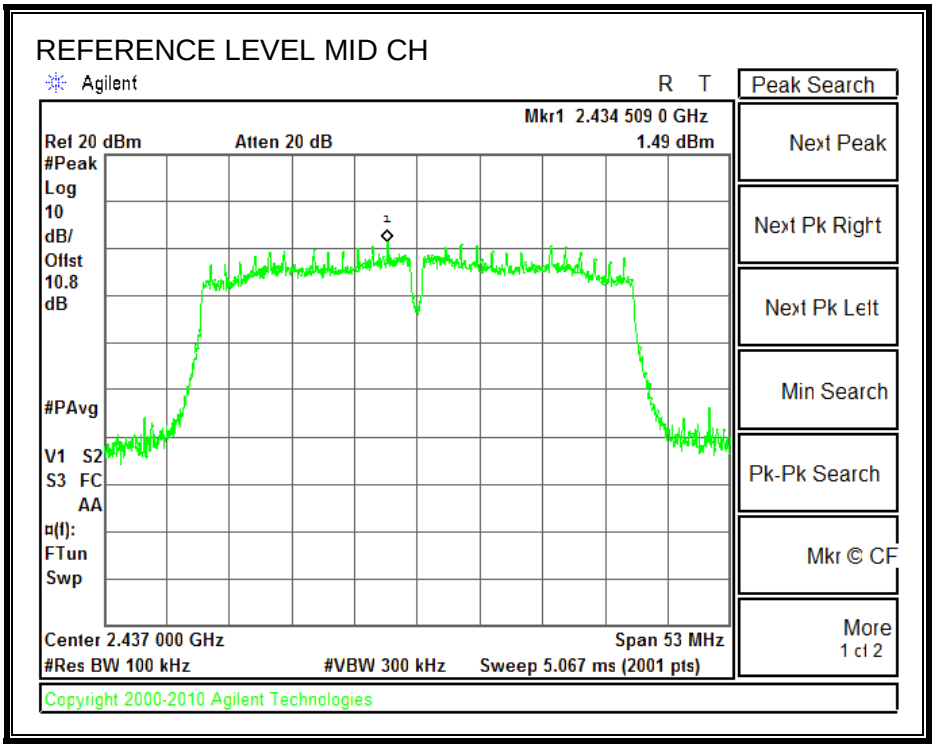
FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**RESULTS**

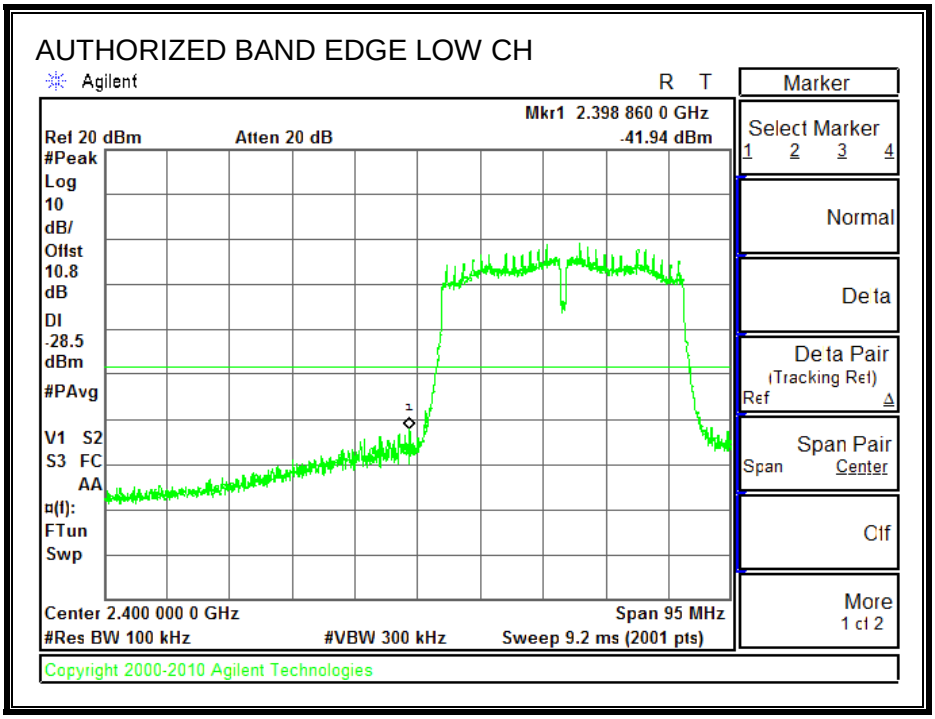
**IN-BAND REFERENCE LEVEL**



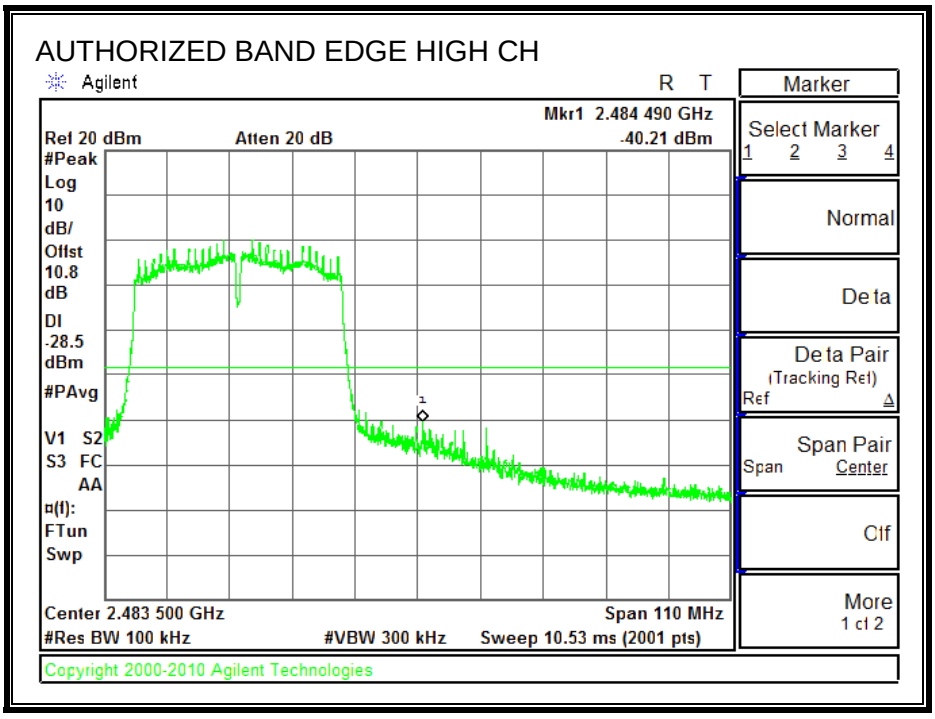



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**LOW CHANNEL BANDEDGE**




**HIGH CHANNEL BANDEDGE**

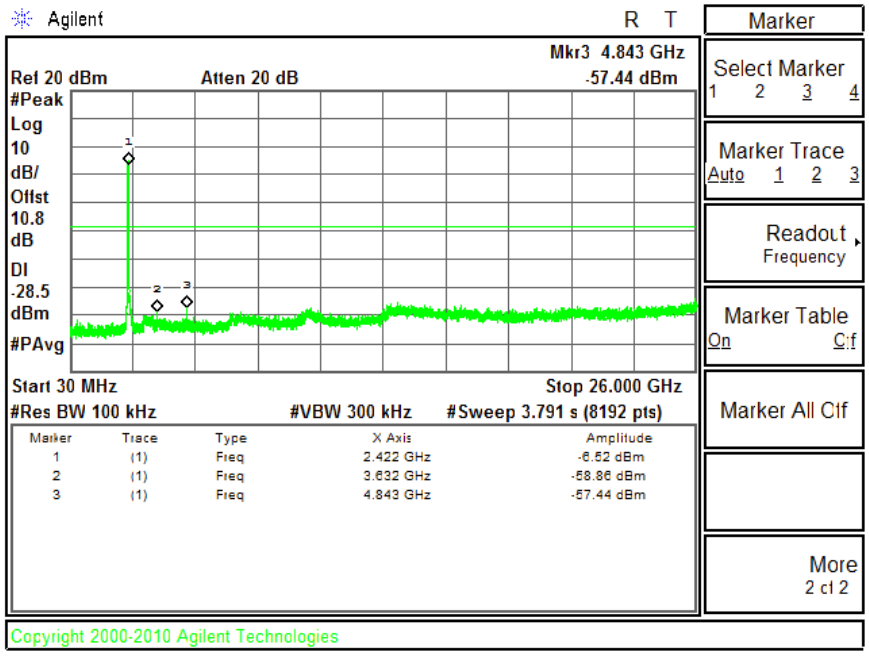




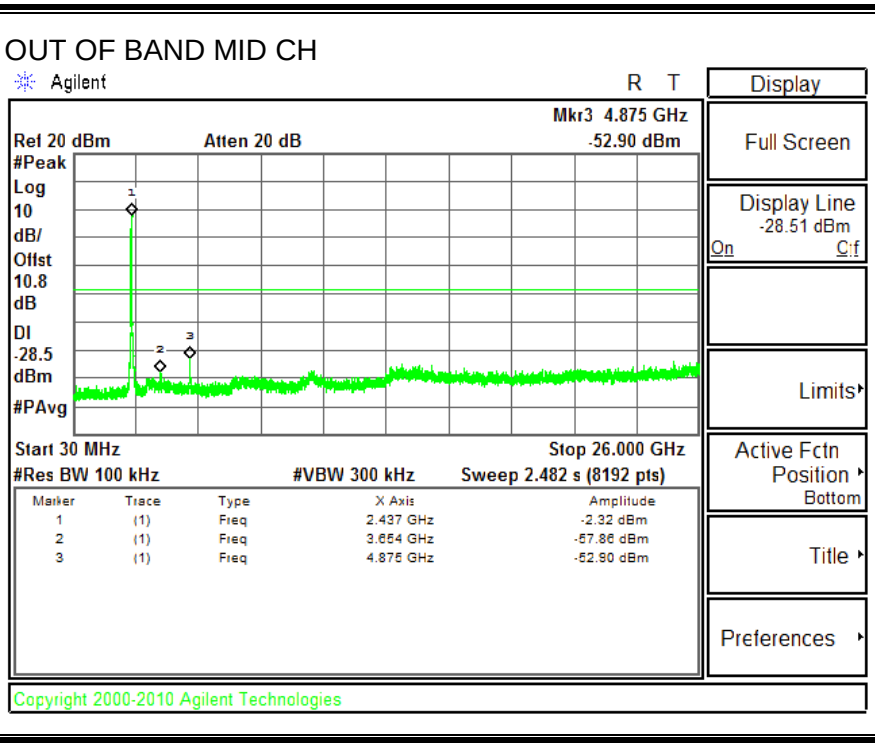

*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**OUT-OF-BAND EMISSIONS**

OUT OF BAND LOW CH



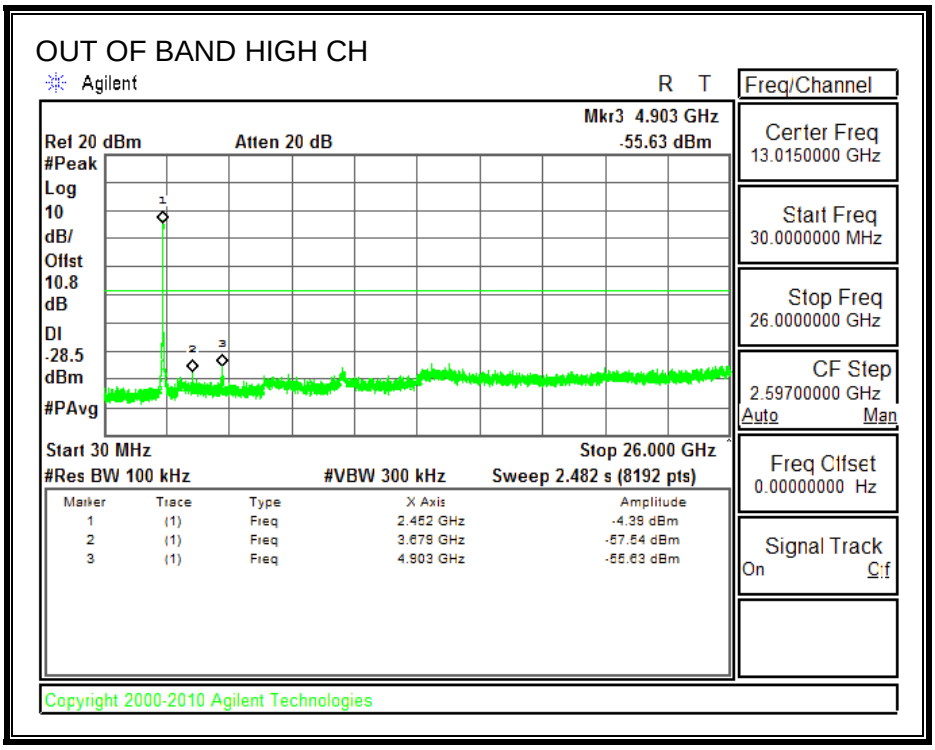

OUT OF BAND MID CH





*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

OUT OF BAND HIGH CH






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 9. RADIATED TEST RESULTS

## 9.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

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

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

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

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

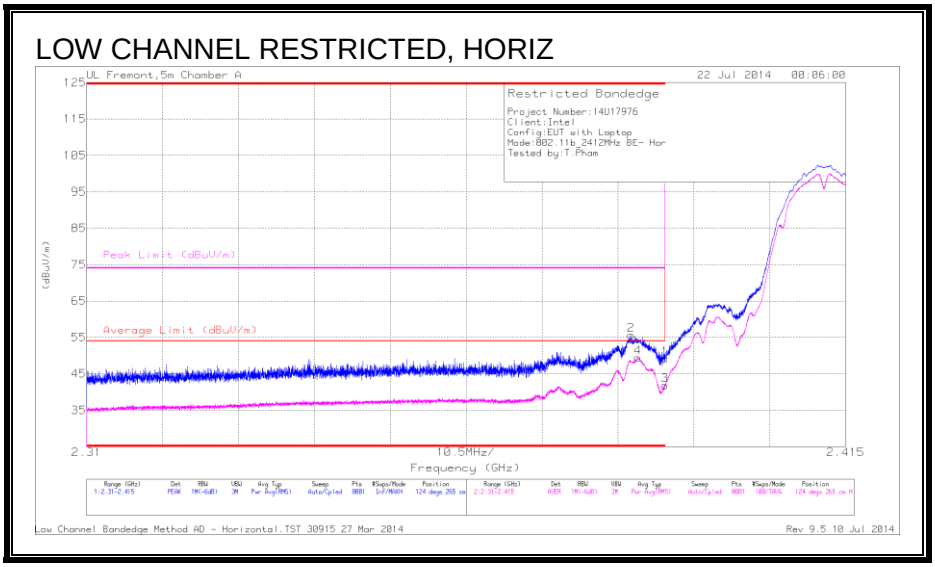
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 9.2. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**




Trace Markers

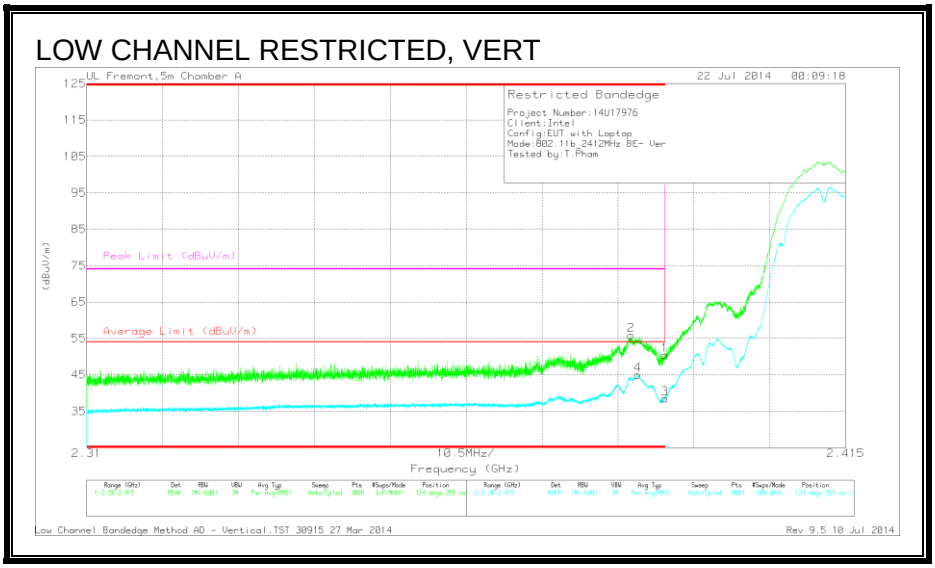
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 41.39 | PK | 32.2 | -24.4 | 0 | 49.19 | - | - | 74 | -24.81 | 124 | 265 | H |
| 2 | * 2.385 | 47.32 | PK | 32.2 | -23.9 | 0 | 55.62 | - | - | 74 | -18.38 | 124 | 265 | H |
| 3 | * 2.39 | 34.03 | RMS | 32.2 | -24.4 | 0 | 41.83 | 54 | -12.17 | - | - | 124 | 265 | H |
| 4 | * 2.386 | 41.27 | RMS | 32.2 | -24 | 0 | 49.47 | 54 | -4.53 | - | - | 124 | 265 | H |

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

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Flt r/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 | 42.57 | PK | 32.2 | -24.4 | 0 | 50.37 | - | - | 74 | -23.63 | 124 | 265 | V |
| 2 | * 2.385 | 47.6 | PK | 32.2 | -23.9 | 0 | 55.9 | - | - | 74 | -18.1 | 124 | 265 | V |
| 3 | * 2.39 | 30.73 | RMS | 32.2 | -24.4 | 0 | 38.53 | 54 | -15.47 | - | - | 124 | 265 | V |
| 4 | * 2.386 | 36.81 | RMS | 32.2 | -24 | 0 | 45.01 | 54 | -8.99 | - | - | 124 | 265 | V |

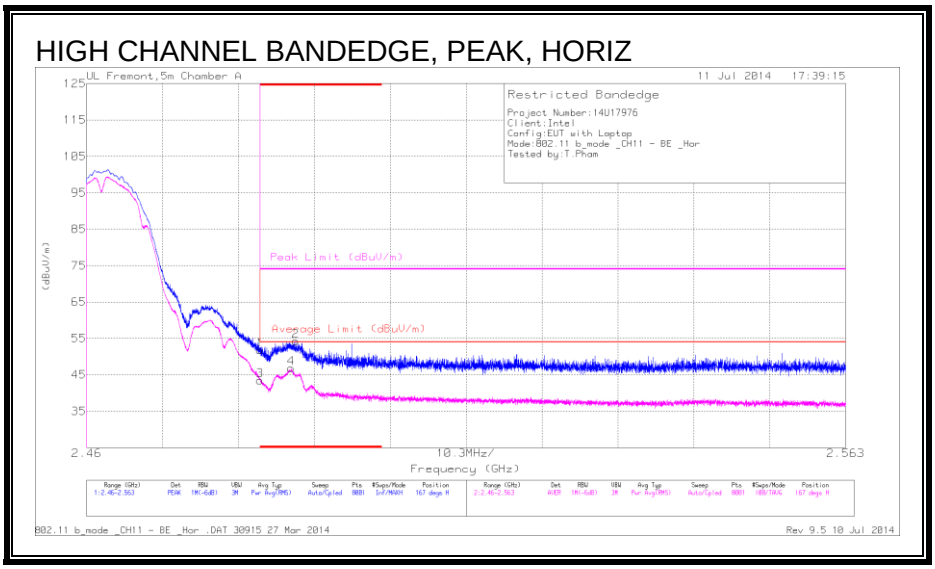
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**




## Trace Markers

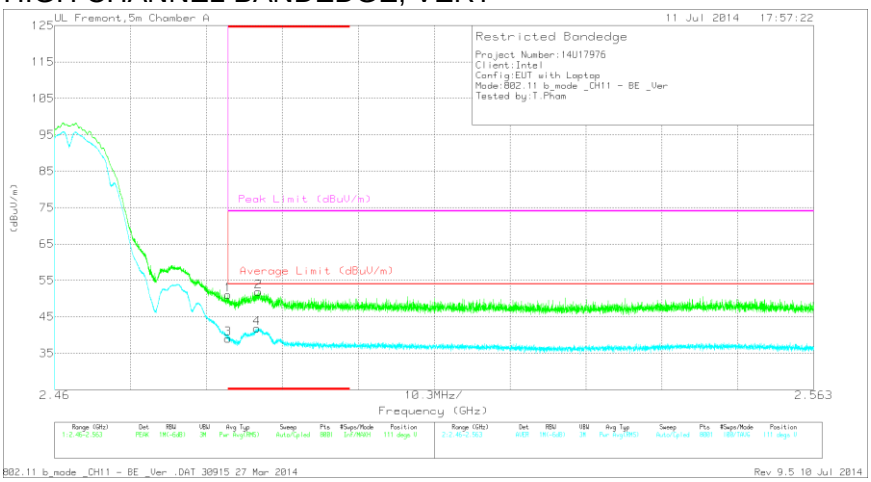
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 42.54 | PK | 32.7 | -23.5 | 0 | 51.74 | - | - | 74 | -22.26 | 167 | 175 | H |
| 2 | * 2.488 | 44.83 | PK | 32.8 | -23.4 | 0 | 54.23 | - | - | 74 | -19.77 | 167 | 175 | H |
| 3 | * 2.484 | 34.29 | RMS | 32.7 | -23.5 | 0 | 43.51 | 54 | -10.49 | - | - | 167 | 175 | H |
| 4 | * 2.488 | 37.38 | RMS | 32.8 | -23.4 | 0 | 46.8 | 54 | -7.2 | - | - | 167 | 175 | H |

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

PK - Peak detector
RMS - RMS detection


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

HIGH CHANNEL BANDEDGE, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Flt r/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 | 41.88 | PK | 32.7 | -23.5 | 0 | 51.08 | - | - | 74 | -22.92 | 111 | 182 | V |
| 2 | * 2.488 | 42.49 | PK | 32.8 | -23.4 | 0 | 51.89 | - | - | 74 | -22.11 | 111 | 182 | V |
| 3 | * 2.484 | 29.75 | RMS | 32.7 | -23.5 | 0 | 38.97 | 54 | -15.03 | - | - | 111 | 182 | V |
| 4 | * 2.487 | 32.46 | RMS | 32.8 | -23.4 | 0 | 41.88 | 54 | -12.12 | - | - | 111 | 182 | V |

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

PK - Peak detector
RMS - RMS detection

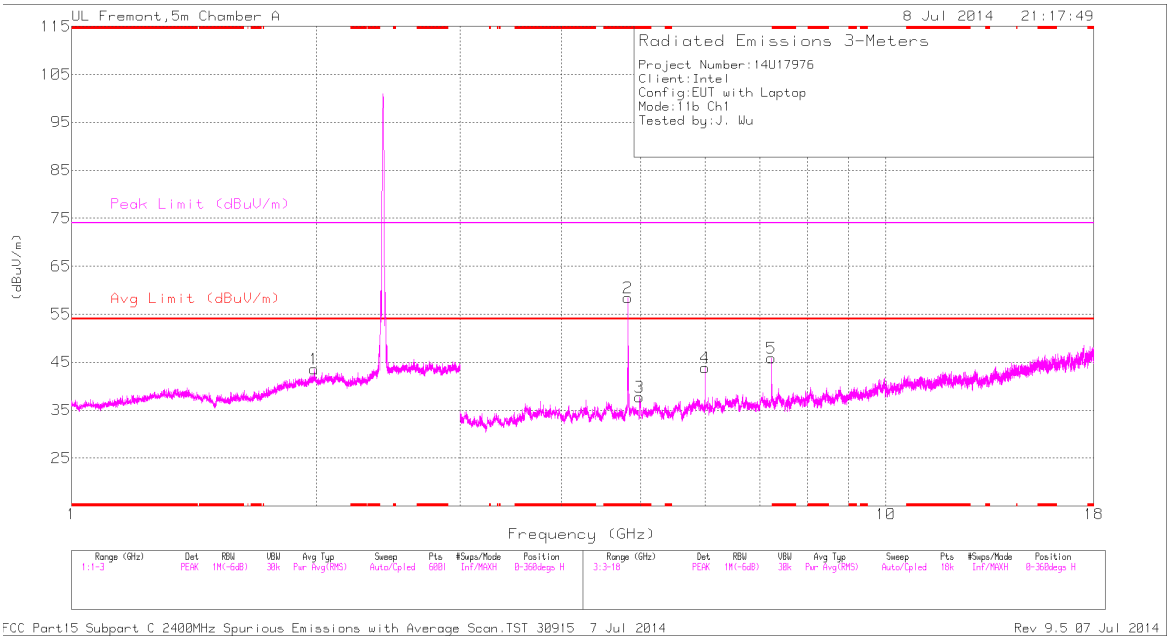


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

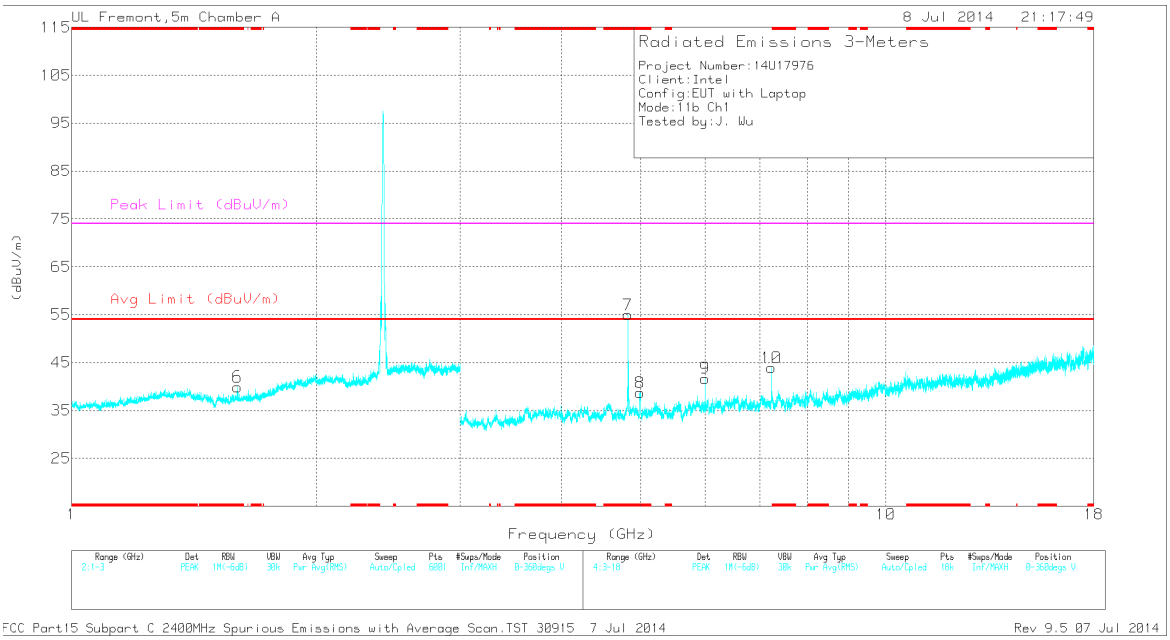
## HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | * 1.604 | 43.86 | PK2 | 28.8 | -26.1 | 0 | 46.56 | - | - | 74 | -27.44 | 304 | 284 | V |
| | * 1.6 | 31.44 | MAv1 | 28.8 | -25.9 | 0 | 34.34 | 54 | -19.66 | - | - | 304 | 284 | V |
| 2 | * 4.824 | 51.98 | PK2 | 34 | -29.4 | 0 | 56.58 | - | - | 74 | -17.42 | 359 | 265 | H |
| | * 4.824 | 49.36 | MAv1 | 34 | -29.4 | 0 | 53.96 | 54 | -.04 | - | - | 359 | 265 | H |
| 3 | * 4.993 | 41.68 | PK2 | 33.9 | -30.1 | 0 | 45.48 | - | - | 74 | -28.52 | 147 | 120 | H |
| | * 4.986 | 28.72 | MAv1 | 33.9 | -30.2 | 0 | 32.42 | 54 | -21.58 | - | - | 147 | 120 | H |
| 7 | * 4.824 | 48.35 | PK2 | 34 | -29.5 | 0 | 52.85 | - | - | 74 | -21.15 | 3 | 102 | V |
| | * 4.824 | 44.88 | MAv1 | 34 | -29.4 | 0 | 49.48 | 54 | -4.52 | - | - | 3 | 102 | V |
| 8 | * 4.992 | 44.82 | PK2 | 33.9 | -30.1 | 0 | 48.62 | - | - | 74 | -25.38 | 153 | 104 | V |
| | * 4.991 | 30.47 | MAv1 | 33.9 | -30.1 | 0 | 34.27 | 54 | -19.73 | - | - | 153 | 104 | V |
| 1 | 1.986 | 36.02 | PK | 32 | -24.4 | 0 | 43.62 | - | - | - | - | 0-360 | 201 | H |
| 4 | 6 | 37.28 | PK | 35.3 | -28.8 | 0 | 43.78 | - | - | - | - | 0-360 | 201 | H |
| 9 | 6 | 35.23 | PK | 35.3 | -28.8 | 0 | 41.73 | - | - | - | - | 0-360 | 201 | V |
| 5 | 7.236 | 36.76 | PK | 35.2 | -26.1 | 0 | 45.86 | - | - | - | - | 0-360 | 201 | H |
| 10 | 7.236 | 34.9 | PK | 35.2 | -26.1 | 0 | 44 | - | - | - | - | 0-360 | 201 | V |

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

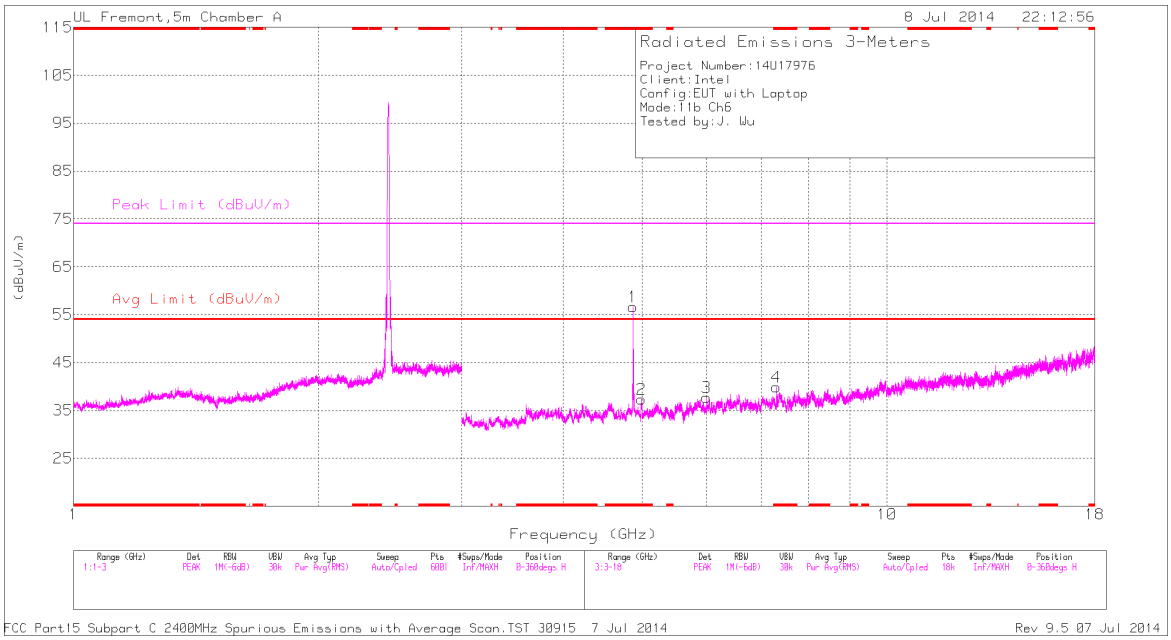
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



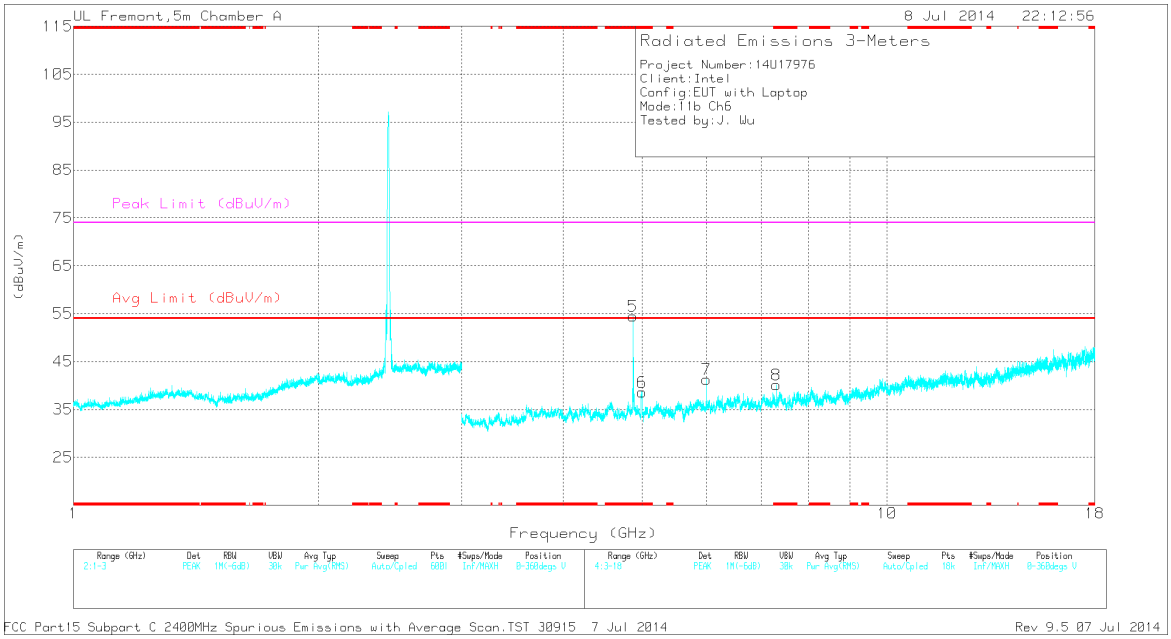
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**MID CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.874 | 50.69 | PK2 | 34 | -28.3 | 0 | 56.39 | - | - | 74 | -17.61 | 0 | 288 | H |
| | * 4.874 | 48.14 | MAv1 | 34 | -28.3 | 0 | 53.84 | 54 | -.16 | - | - | 0 | 288 | H |
| 2 | * 4.995 | 43.18 | PK2 | 33.9 | -30.1 | 0 | 46.98 | - | - | 74 | -27.02 | 142 | 191 | H |
| | * 4.991 | 29.36 | MAv1 | 33.9 | -30.1 | 0 | 33.16 | 54 | -20.84 | - | - | 142 | 191 | H |
| 4 | * 7.31 | 38.35 | PK2 | 35.2 | -27.2 | 0 | 46.35 | - | - | 74 | -27.65 | 330 | 141 | H |
| | * 7.312 | 27.58 | MAv1 | 35.2 | -27.1 | 0 | 35.68 | 54 | -18.32 | - | - | 330 | 141 | H |
| 5 | * 4.874 | 46.5 | PK2 | 34 | -28.3 | 0 | 52.2 | - | - | 74 | -21.8 | 0 | 348 | V |
| | * 4.874 | 42.95 | MAv1 | 34 | -28.3 | 0 | 48.65 | 54 | -5.35 | - | - | 0 | 348 | V |
| 6 | * 4.995 | 43.67 | PK2 | 33.9 | -30.1 | 0 | 47.47 | - | - | 74 | -26.53 | 145 | 120 | V |
| | * 4.982 | 29.61 | MAv1 | 33.9 | -30.3 | 0 | 33.21 | 54 | -20.79 | - | - | 145 | 120 | V |
| 8 | * 7.309 | 37.4 | PK2 | 35.2 | -27.2 | 0 | 45.4 | - | - | 74 | -28.6 | 33 | 155 | V |
| | * 7.31 | 27.11 | MAv1 | 35.2 | -27.2 | 0 | 35.11 | 54 | -18.89 | - | - | 33 | 155 | V |
| 3 | 6 | 31.25 | PK | 35.3 | -28.8 | 0 | 37.75 | - | - | - | - | 0-360 | 201 | H |
| 7 | 6 | 34.82 | PK | 35.3 | -28.8 | 0 | 41.32 | - | - | - | - | 0-360 | 100 | V |

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

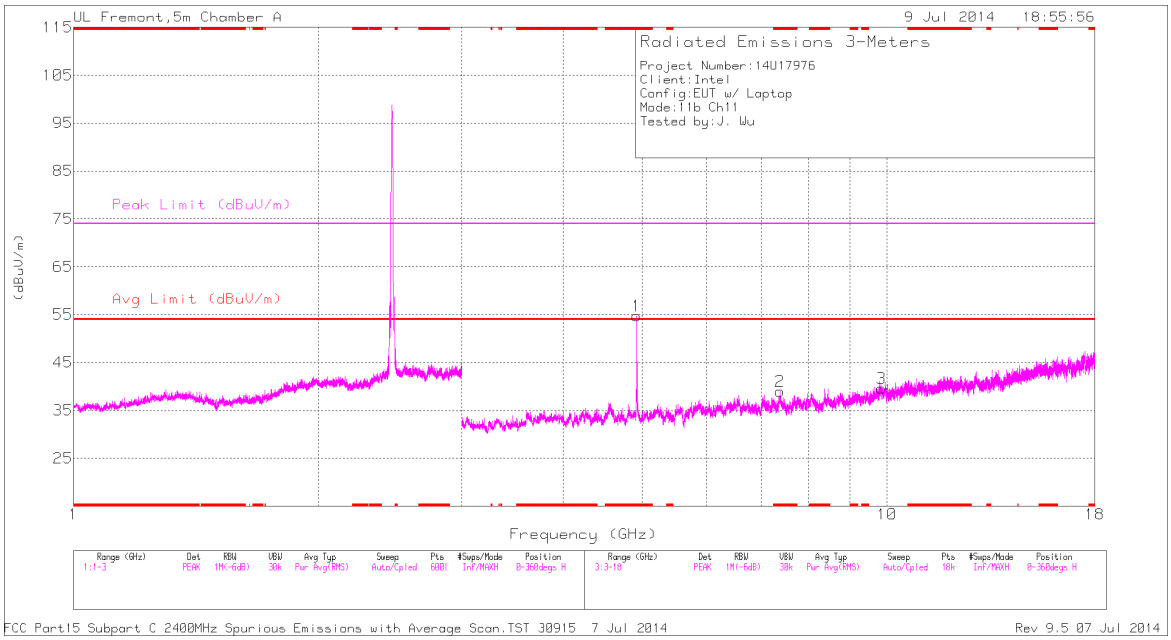
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



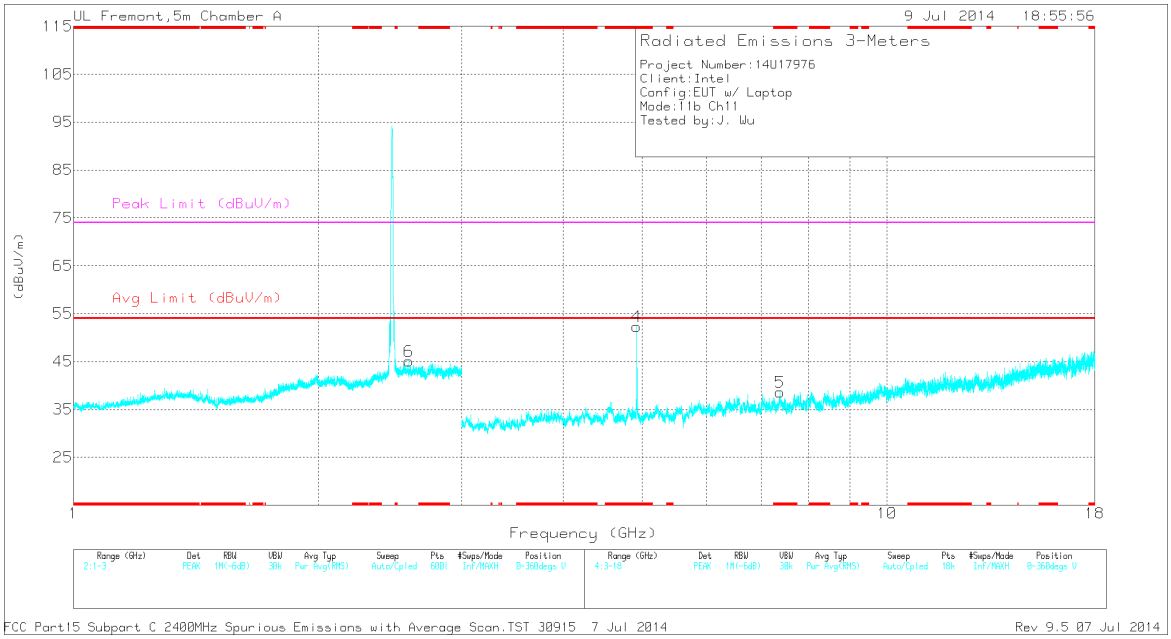
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**HIGH CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.924 | 51.31 | PK2 | 33.9 | -29 | 0 | 56.21 | - | - | 74 | -17.79 | 5 | 256 | H |
| | * 4.924 | 48.82 | MAv1 | 33.9 | -29 | 0 | 53.72 | 54 | -.28 | - | - | 5 | 256 | H |
| 2 | * 7.385 | 36.68 | PK2 | 35.3 | -24.3 | 0 | 47.68 | - | - | 74 | -26.32 | 331 | 151 | H |
| | * 7.385 | 25.03 | MAv1 | 35.3 | -24.3 | 0 | 36.03 | 54 | -17.97 | - | - | 331 | 151 | H |
| 4 | * 4.924 | 48.31 | PK2 | 33.9 | -29 | 0 | 53.21 | - | - | 74 | -20.79 | 3 | 100 | V |
| | * 4.924 | 45.2 | MAv1 | 33.9 | -29 | 0 | 50.1 | 54 | -3.9 | - | - | 3 | 100 | V |
| 5 | * 7.386 | 36.27 | PK2 | 35.3 | -24.3 | 0 | 47.27 | - | - | 74 | -26.73 | 9 | 143 | V |
| | * 7.385 | 23.57 | MAv1 | 35.3 | -24.3 | 0 | 34.57 | 54 | -19.43 | - | - | 9 | 143 | V |
| 6 | 2.581 | 35.73 | PK | 33 | -23.6 | 0 | 45.13 | - | - | - | - | 0-360 | 100 | V |
| 3 | 9.848 | 24.9 | PK | 37 | -22.3 | 0 | 39.6 | - | - | - | - | 0-360 | 201 | H |

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

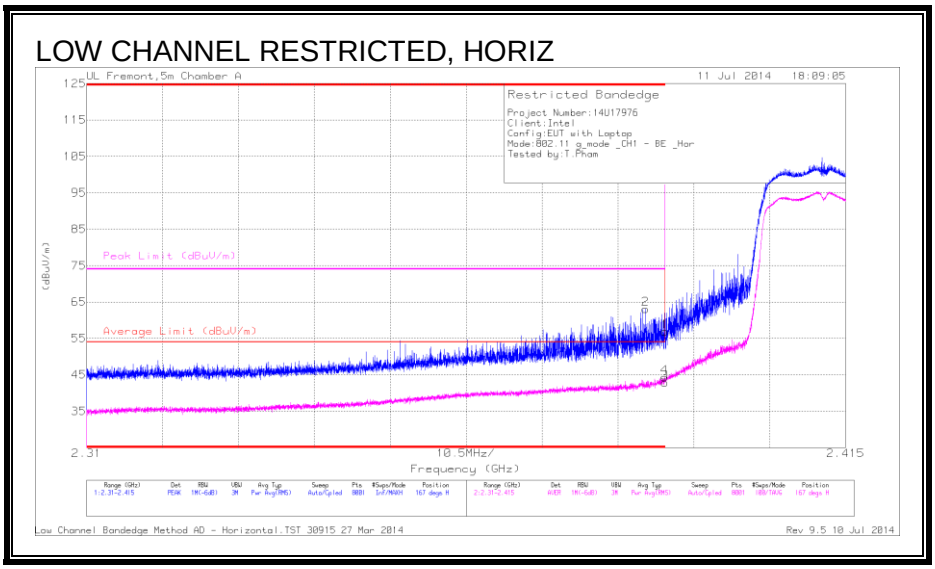
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 9.3. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.387 | 55.03 | PK | 32.2 | -24.1 | 0 | 63.13 | - | - | 74 | -10.87 | 167 | 222 | H |
| 1 | * 2.39 | 49.11 | PK | 32.2 | -24.4 | 0 | 56.91 | - | - | 74 | -17.09 | 167 | 222 | H |
| 3 | * 2.39 | 35.09 | RMS | 32.2 | -24.4 | 0 | 42.89 | 54 | -11.11 | - | - | 167 | 222 | H |
| 4 | * 2.39 | 36.48 | RMS | 32.2 | -24.4 | 0 | 44.28 | 54 | -9.72 | - | - | 167 | 222 | H |

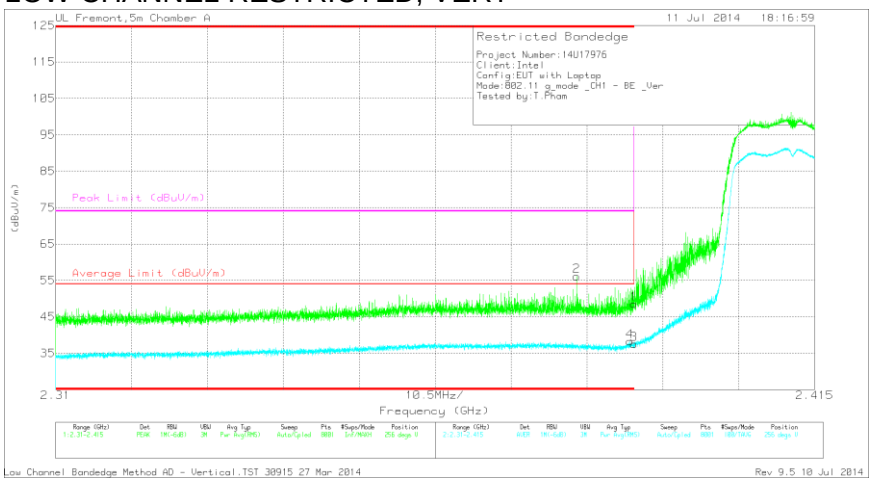
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

LOW CHANNEL RESTRICTED, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.382 | 47.59 | PK | 32.2 | -23.6 | 0 | 56.19 | - | - | 74 | -17.81 | 256 | 324 | V |
| 4 | * 2.389 | 30.4 | RMS | 32.2 | -24.4 | 0 | 38.2 | 54 | -15.8 | - | - | 256 | 324 | V |
| 1 | * 2.39 | 40.75 | PK | 32.2 | -24.4 | 0 | 48.55 | - | - | 74 | -25.45 | 256 | 324 | V |
| 3 | * 2.39 | 29.76 | RMS | 32.2 | -24.4 | 0 | 37.56 | 54 | -16.44 | - | - | 256 | 324 | V |

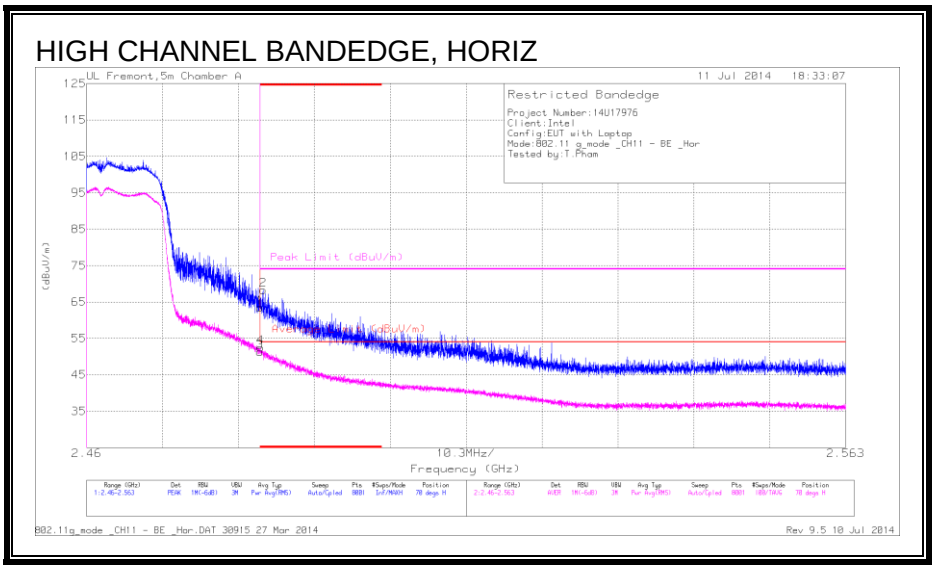
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**




## Trace Markers

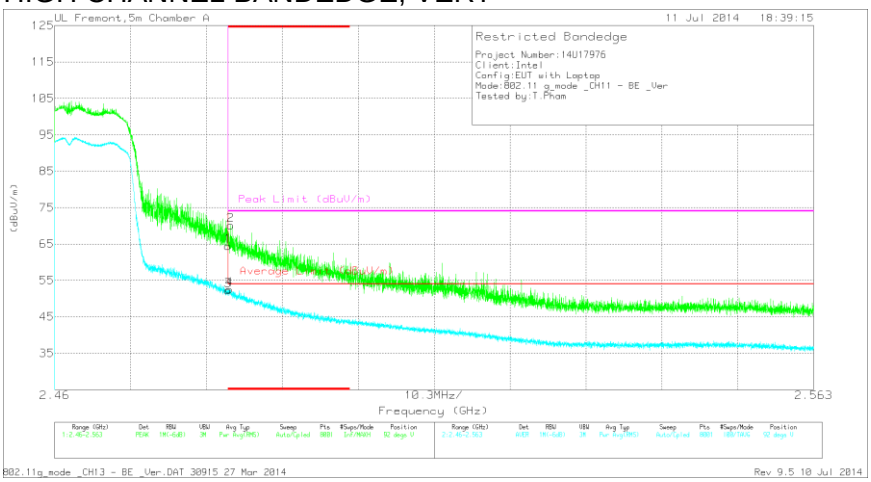
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 54.21 | PK | 32.7 | -23.5 | 0 | 63.41 | - | - | 74 | -10.59 | 70 | 337 | H |
| 2 | * 2.484 | 59.13 | PK | 32.7 | -23.5 | 0 | 68.33 | - | - | 74 | -5.67 | 70 | 337 | H |
| 3 | * 2.484 | 42.13 | RMS | 32.7 | -23.5 | 0 | 51.33 | 54 | -2.67 | - | - | 70 | 337 | H |
| 4 | * 2.484 | 43.33 | RMS | 32.7 | -23.5 | 0 | 52.53 | 54 | -1.47 | - | - | 70 | 337 | H |

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

PK - Peak detector
RMS - RMS detection


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

HIGH CHANNEL BANDEDGE, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | 55.2 | PK | 32.7 | -23.5 | 0 | 64.4 | - | - | 74 | -9.6 | 92 | 277 | V |
| 2 | * 2.484 | 60.91 | PK | 32.7 | -23.5 | 0 | 70.11 | - | - | 74 | -3.89 | 92 | 277 | V |
| 3 | * 2.484 | 43.05 | RMS | 32.7 | -23.5 | 0 | 52.25 | 54 | -1.75 | - | - | 92 | 277 | V |
| 4 | * 2.484 | 43.36 | RMS | 32.7 | -23.5 | 0 | 52.56 | 54 | -1.44 | - | - | 92 | 277 | V |

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

PK - Peak detector
RMS - RMS detection

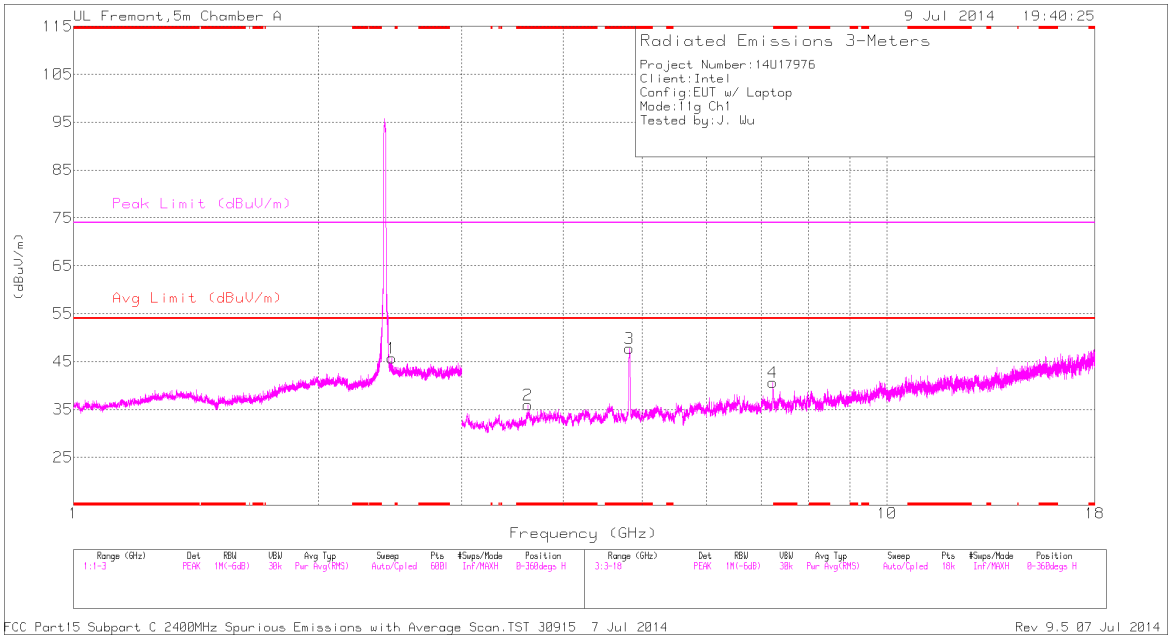


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

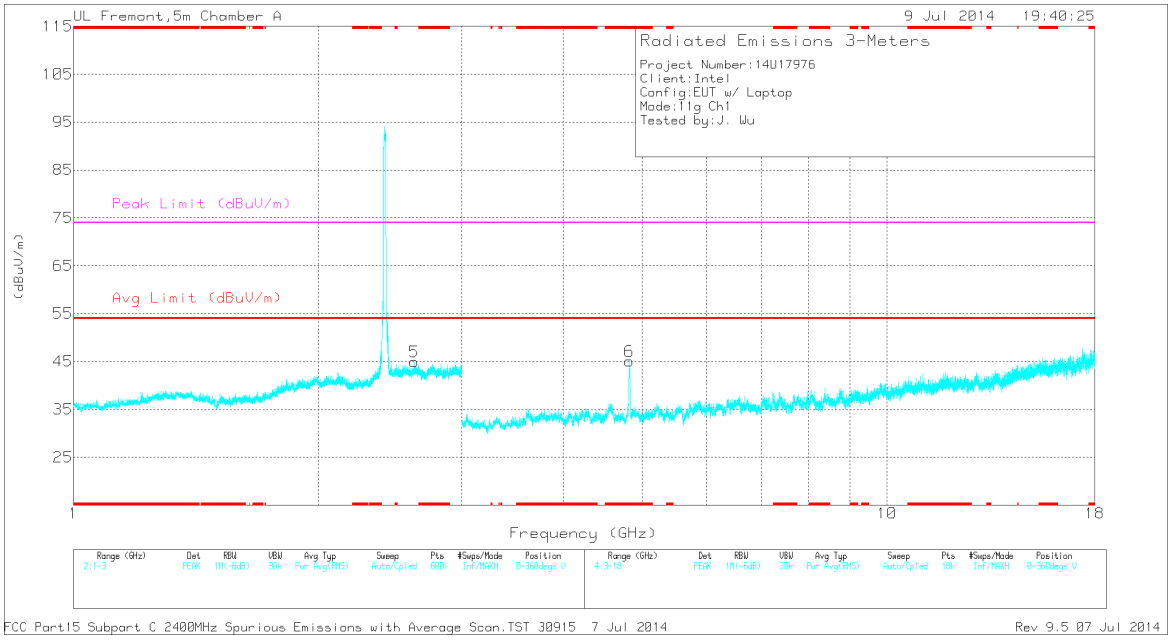
## HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 3.619 | 39.43 | PK2 | 33.2 | -30.6 | 0 | 42.03 | - | - | 74 | -31.97 | 136 | 200 | H |
| | * 3.618 | 29.95 | MAv1 | 33.2 | -30.6 | 0 | 32.55 | 54 | -21.45 | - | - | 136 | 200 | H |
| 3 | * 4.823 | 54.83 | PK2 | 34 | -29.5 | 0 | 59.33 | - | - | 74 | -14.67 | 13 | 264 | H |
| | * 4.824 | 42.8 | MAv1 | 34 | -29.5 | 0 | 47.3 | 54 | -6.7 | - | - | 13 | 264 | H |
| 6 | * 4.83 | 50.41 | PK2 | 34 | -29.1 | 0 | 55.31 | - | - | 74 | -18.69 | 1 | 101 | V |
| | * 4.824 | 38.02 | MAv1 | 34 | -29.5 | 0 | 42.52 | 54 | -11.48 | - | - | 1 | 101 | V |
| 1 | 2.462 | 36.79 | PK | 32.6 | -23.7 | 0 | 45.69 | - | - | - | - | 0-360 | 100 | H |
| 5 | 2.623 | 35.4 | PK | 32.9 | -23.3 | 0 | 45 | - | - | - | - | 0-360 | 100 | V |
| 4 | 7.236 | 31.69 | PK | 35.2 | -26.2 | 0 | 40.69 | - | - | - | - | 0-360 | 201 | H |

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

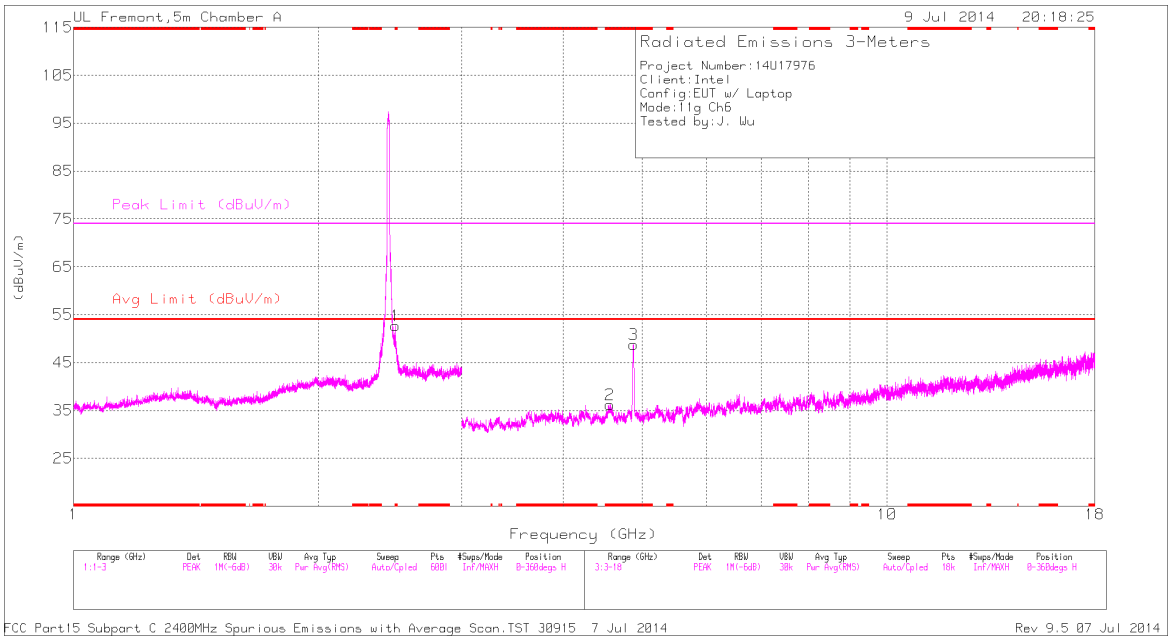
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



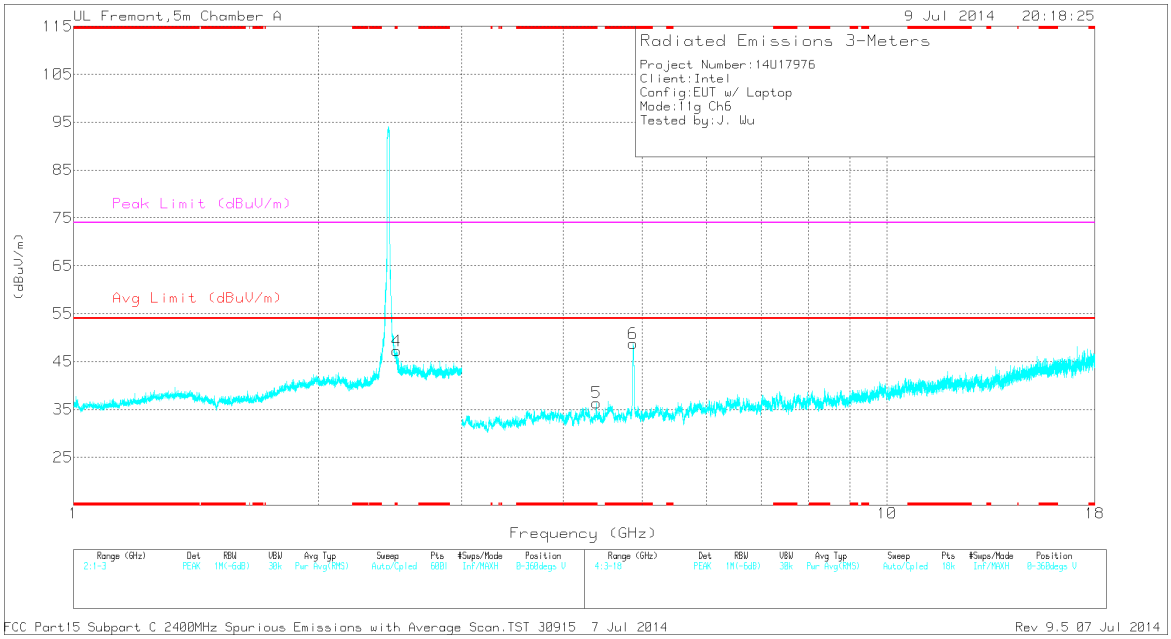
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**MID CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 2.487 | 58.26 | PK2 | 32.8 | -23.4 | 0 | 67.66 | - | - | 74 | -6.34 | 69 | 259 | H |
| | * 2.484 | 39.18 | MAv1 | 32.7 | -23.5 | 0 | 48.38 | 54 | -5.62 | - | - | 69 | 259 | H |
| 4 | * 2.486 | 55.75 | PK2 | 32.8 | -23.4 | 0 | 65.15 | - | - | 74 | -8.85 | 114 | 400 | V |
| | * 2.484 | 37.23 | MAv1 | 32.7 | -23.5 | 0 | 46.43 | 54 | -7.57 | - | - | 114 | 400 | V |
| 2 | * 4.567 | 38.42 | PK2 | 33.9 | -28.4 | 0 | 43.92 | - | - | 74 | -30.08 | 317 | 159 | H |
| | * 4.569 | 26.51 | MAv1 | 33.9 | -28.5 | 0 | 31.91 | 54 | -22.09 | - | - | 317 | 159 | H |
| 3 | * 4.873 | 55.78 | PK2 | 34 | -28.3 | 0 | 61.48 | - | - | 74 | -12.52 | 7 | 285 | H |
| | * 4.874 | 43.21 | MAv1 | 34 | -28.3 | 0 | 48.91 | 54 | -5.09 | - | - | 7 | 285 | H |
| 5 | * 4.39 | 38.86 | PK2 | 33.9 | -30.1 | 0 | 42.66 | - | - | 74 | -31.34 | 174 | 114 | V |
| | * 4.392 | 26.81 | MAv1 | 33.9 | -30.2 | 0 | 30.51 | 54 | -23.49 | - | - | 174 | 114 | V |
| 6 | * 4.877 | 51.43 | PK2 | 34 | -28.1 | 0 | 57.33 | - | - | 74 | -16.67 | 2 | 102 | V |
| | * 4.874 | 39.12 | MAv1 | 34 | -28.3 | 0 | 44.82 | 54 | -9.18 | - | - | 2 | 102 | V |

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

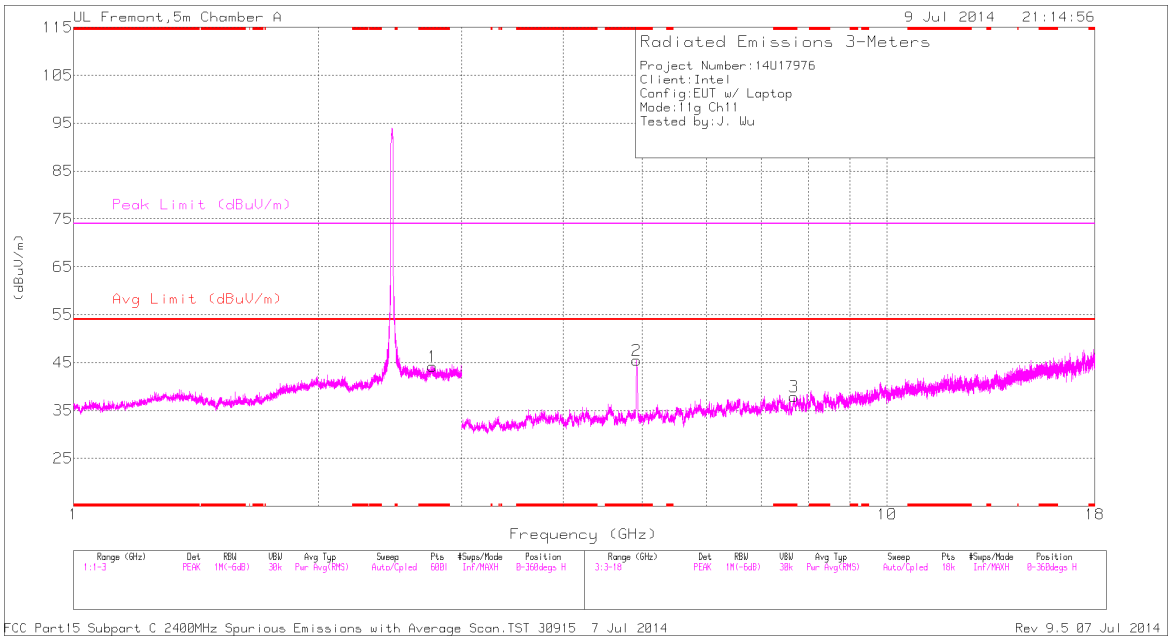
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



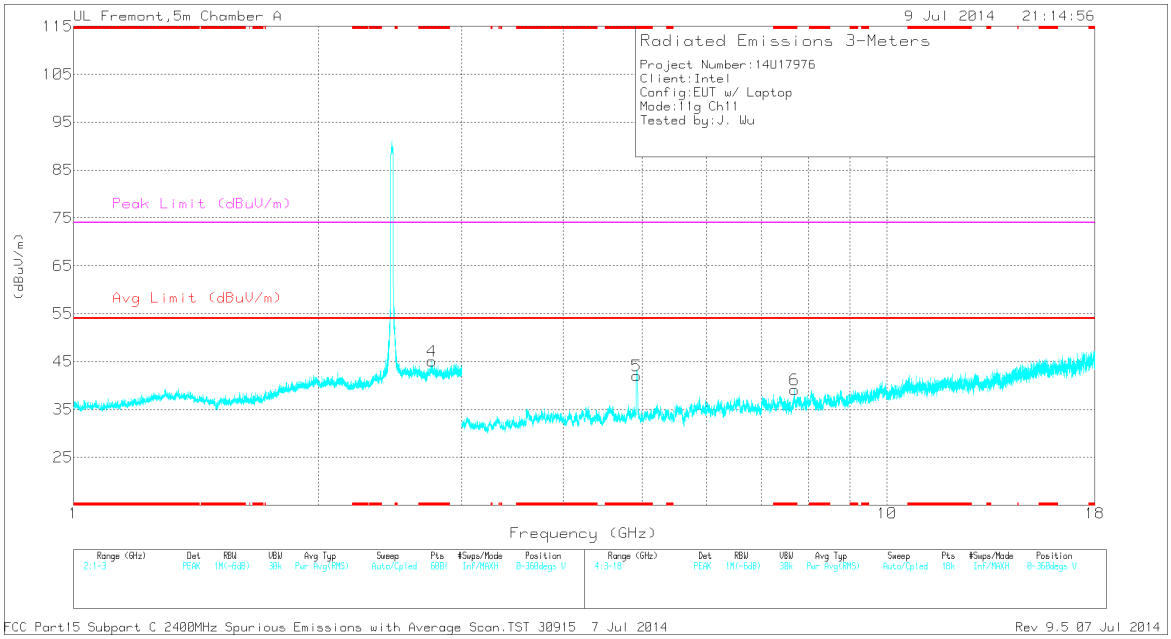
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**HIGH CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 2.759 | 41.28 | PK2 | 32.7 | -22.5 | 0 | 51.48 | - | - | 74 | -22.52 | 265 | 400 | H |
| | * 2.763 | 27.75 | MAv1 | 32.7 | -22.7 | 0 | 37.75 | 54 | -16.25 | - | - | 265 | 400 | H |
| 4 | * 2.761 | 41.2 | PK2 | 32.7 | -22.6 | 0 | 51.3 | - | - | 74 | -22.7 | 176 | 354 | V |
| | * 2.761 | 27.73 | MAv1 | 32.7 | -22.6 | 0 | 37.83 | 54 | -16.17 | - | - | 176 | 354 | V |
| 2 | * 4.924 | 52.51 | PK2 | 33.9 | -29 | 0 | 57.41 | - | - | 74 | -16.59 | 7 | 259 | H |
| | * 4.924 | 41.1 | MAv1 | 33.9 | -29 | 0 | 46 | 54 | -8 | - | - | 7 | 259 | H |
| 3 | * 7.681 | 35.49 | PK2 | 35.4 | -25.5 | 0 | 45.39 | - | - | 74 | -28.61 | 98 | 154 | H |
| | * 7.682 | 23.09 | MAv1 | 35.4 | -25.5 | 0 | 32.99 | 54 | -21.01 | - | - | 98 | 154 | H |
| 5 | * 4.93 | 48.07 | PK2 | 33.9 | -28.9 | 0 | 53.07 | - | - | 74 | -20.93 | 3 | 100 | V |
| | * 4.924 | 36.6 | MAv1 | 33.9 | -29 | 0 | 41.5 | 54 | -12.5 | - | - | 3 | 100 | V |
| 6 | * 7.688 | 35.65 | PK2 | 35.4 | -24.9 | 0 | 46.15 | - | - | 74 | -27.85 | 62 | 260 | V |
| | * 7.689 | 22.98 | MAv1 | 35.4 | -24.9 | 0 | 33.48 | 54 | -20.52 | - | - | 62 | 260 | V |

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

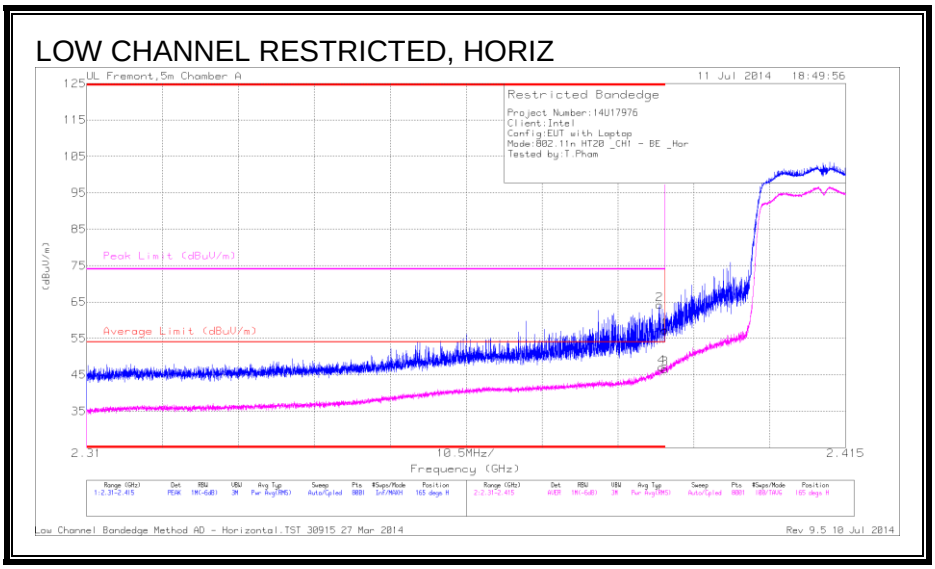
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 9.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.389 | 56.36 | PK | 32.2 | -24.3 | 0 | 64.26 | - | - | 74 | -9.74 | 165 | 225 | H |
| 1 | * 2.39 | 49.47 | PK | 32.2 | -24.4 | 0 | 57.27 | - | - | 74 | -16.73 | 165 | 225 | H |
| 3 | * 2.39 | 38.83 | RMS | 32.2 | -24.4 | 0 | 46.63 | 54 | -7.37 | - | - | 165 | 225 | H |
| 4 | * 2.39 | 39.23 | RMS | 32.2 | -24.4 | 0 | 47.03 | 54 | -6.97 | - | - | 165 | 225 | H |

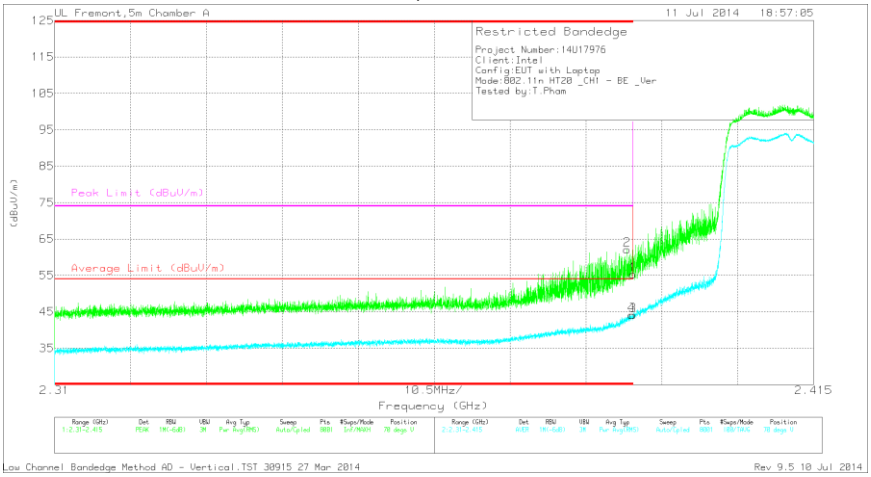
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

LOW CHANNEL RESTRICTED, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.389 | 54.2 | PK | 32.2 | -24.3 | 0 | 62.1 | - | - | 74 | -11.9 | 70 | 367 | V |
| 1 | * 2.39 | 47.5 | PK | 32.2 | -24.4 | 0 | 55.3 | - | - | 74 | -18.7 | 70 | 367 | V |
| 3 | * 2.39 | 36.24 | RMS | 32.2 | -24.4 | 0 | 44.04 | 54 | -9.96 | - | - | 70 | 367 | V |
| 4 | * 2.39 | 36.3 | RMS | 32.2 | -24.4 | 0 | 44.1 | 54 | -9.9 | - | - | 70 | 367 | V |

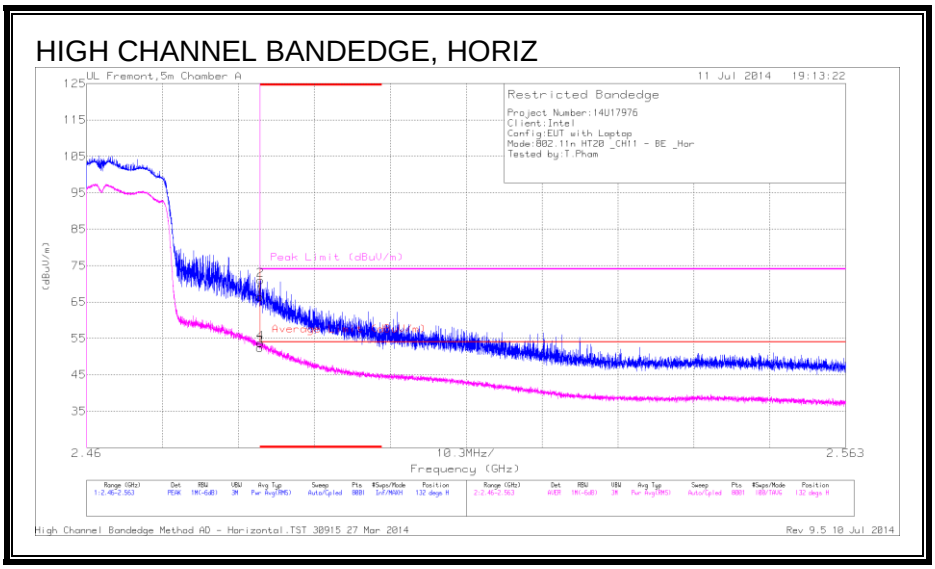
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**




## Trace Markers

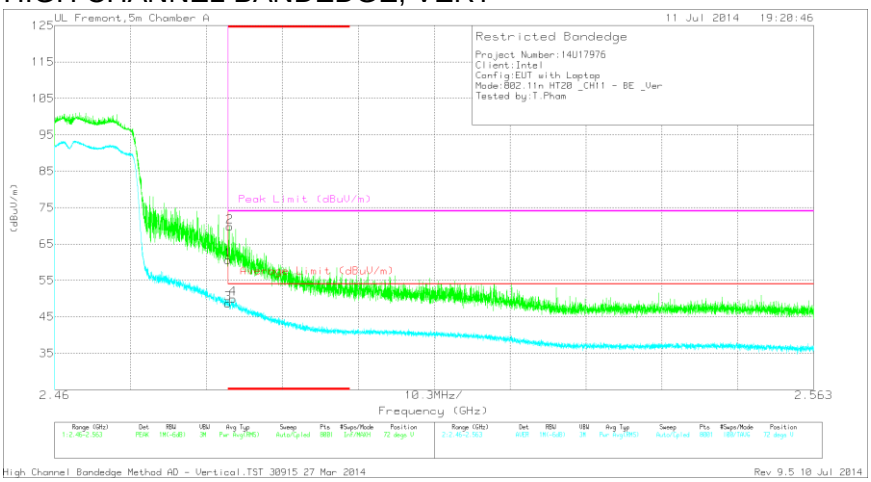
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 57.22 | PK | 32.7 | -23.5 | 0 | 66.42 | - | - | 74 | -7.58 | 132 | 227 | H |
| 2 | * 2.484 | 61.79 | PK | 32.7 | -23.5 | 0 | 70.99 | - | - | 74 | -3.01 | 132 | 227 | H |
| 3 | * 2.484 | 43.18 | RMS | 32.7 | -23.5 | 0 | 52.38 | 54 | -1.62 | - | - | 132 | 227 | H |
| 4 | * 2.484 | 44.59 | RMS | 32.7 | -23.5 | 0 | 53.79 | 54 | -.21 | - | - | 132 | 227 | H |

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

PK - Peak detector
RMS - RMS detection


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

HIGH CHANNEL BANDEDGE, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | 51.42 | PK | 32.7 | -23.5 | 0 | 60.62 | - | - | 74 | -13.38 | 72 | 340 | V |
| 2 | * 2.484 | 60.53 | PK | 32.7 | -23.5 | 0 | 69.73 | - | - | 74 | -4.27 | 72 | 340 | V |
| 3 | * 2.484 | 39.48 | RMS | 32.7 | -23.5 | 0 | 48.68 | 54 | -5.32 | - | - | 72 | 340 | V |
| 4 | * 2.484 | 40.78 | RMS | 32.7 | -23.5 | 0 | 49.98 | 54 | -4.02 | - | - | 72 | 340 | V |

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

PK - Peak detector
RMS - RMS detection

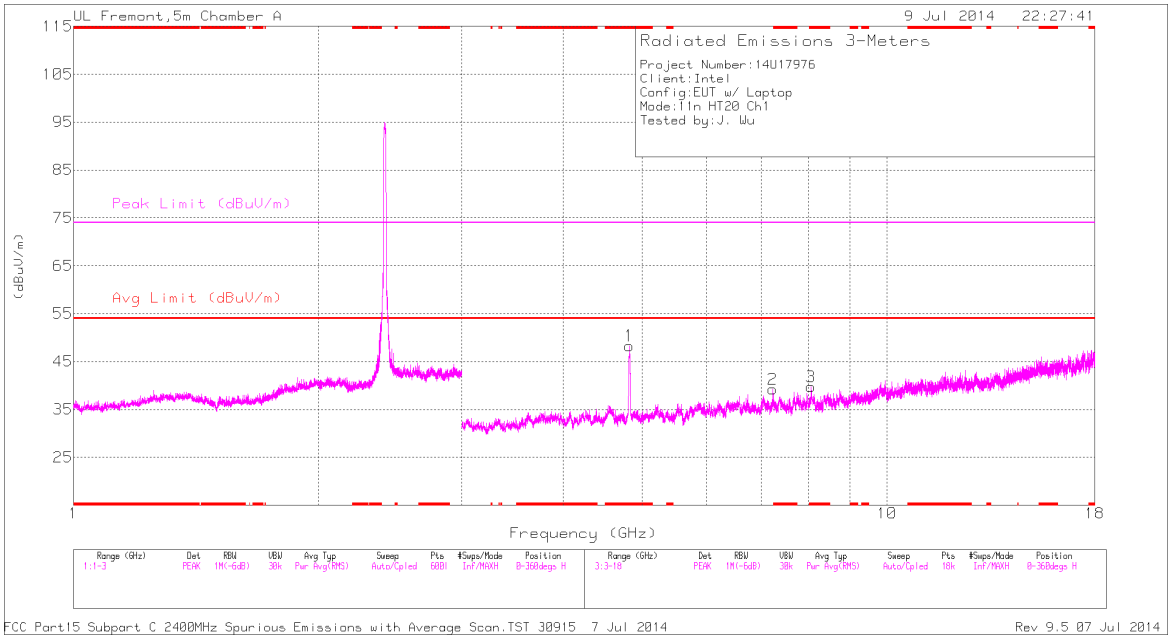


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

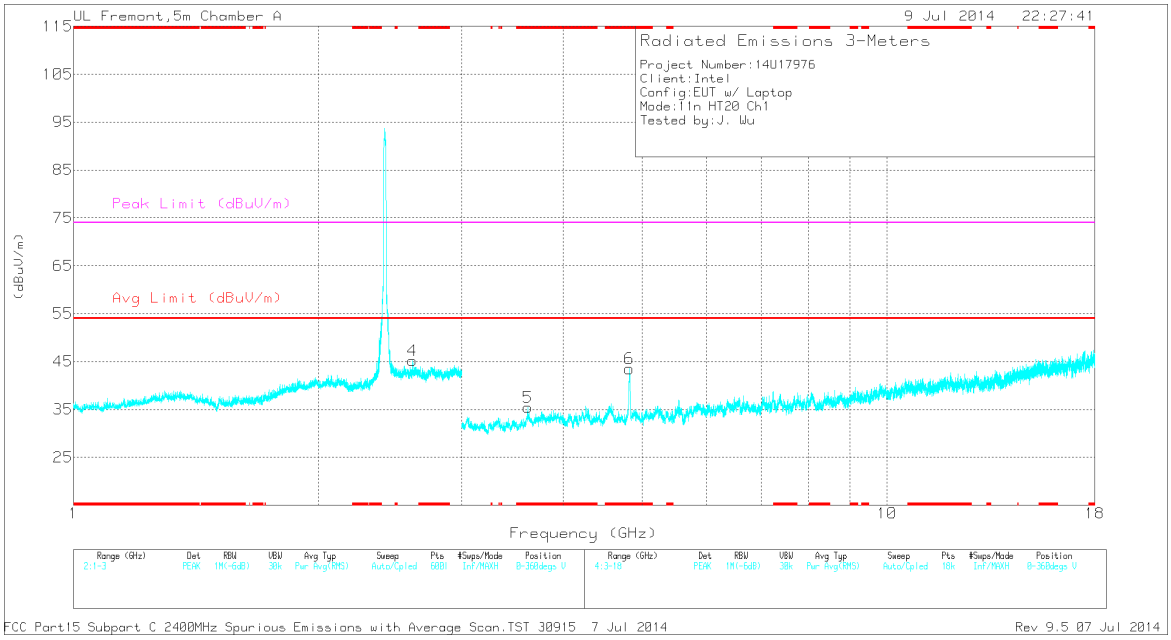
## HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.825 | 53.7 | PK2 | 34 | -29.4 | 0 | 58.3 | - | - | 74 | -15.7 | 4 | 264 | H |
| | * 4.824 | 42.04 | MAv1 | 34 | -29.5 | 0 | 46.54 | 54 | -7.46 | - | - | 4 | 264 | H |
| 3 | * 8.066 | 35.19 | PK2 | 35.5 | -24.2 | 0 | 46.49 | - | - | 74 | -27.51 | 48 | 291 | H |
| | * 8.07 | 22.27 | MAv1 | 35.5 | -23.9 | 0 | 33.87 | 54 | -20.13 | - | - | 48 | 291 | H |
| 5 | * 3.618 | 40.08 | PK2 | 33.2 | -30.6 | 0 | 42.68 | - | - | 74 | -31.32 | 258 | 297 | V |
| | * 3.618 | 28.98 | MAv1 | 33.2 | -30.6 | 0 | 31.58 | 54 | -22.42 | - | - | 258 | 297 | V |
| 6 | * 4.826 | 49.51 | PK2 | 34 | -29.4 | 0 | 54.11 | - | - | 74 | -19.89 | 5 | 345 | V |
| | * 4.824 | 36.76 | MAv1 | 34 | -29.4 | 0 | 41.36 | 54 | -12.64 | - | - | 5 | 345 | V |
| 4 | 2.609 | 35.92 | PK | 33 | -23.7 | 0 | 45.22 | - | - | - | - | 0-360 | 100 | V |
| 2 | 7.24 | 30.15 | PK | 35.2 | -26.1 | 0 | 39.25 | - | - | - | - | 0-360 | 201 | H |

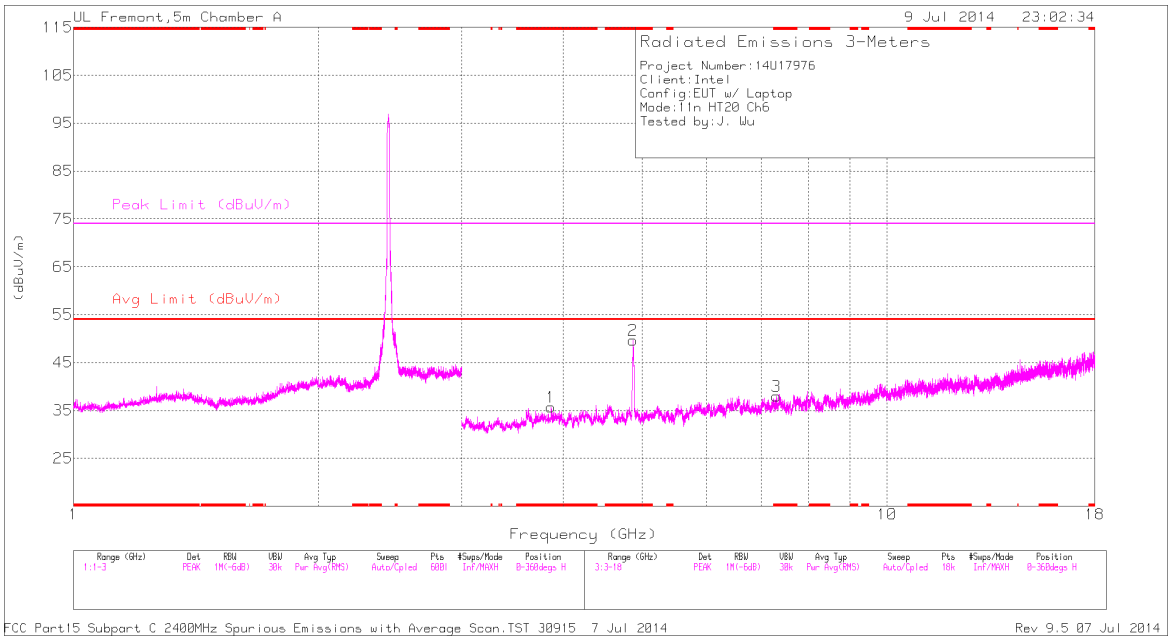
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

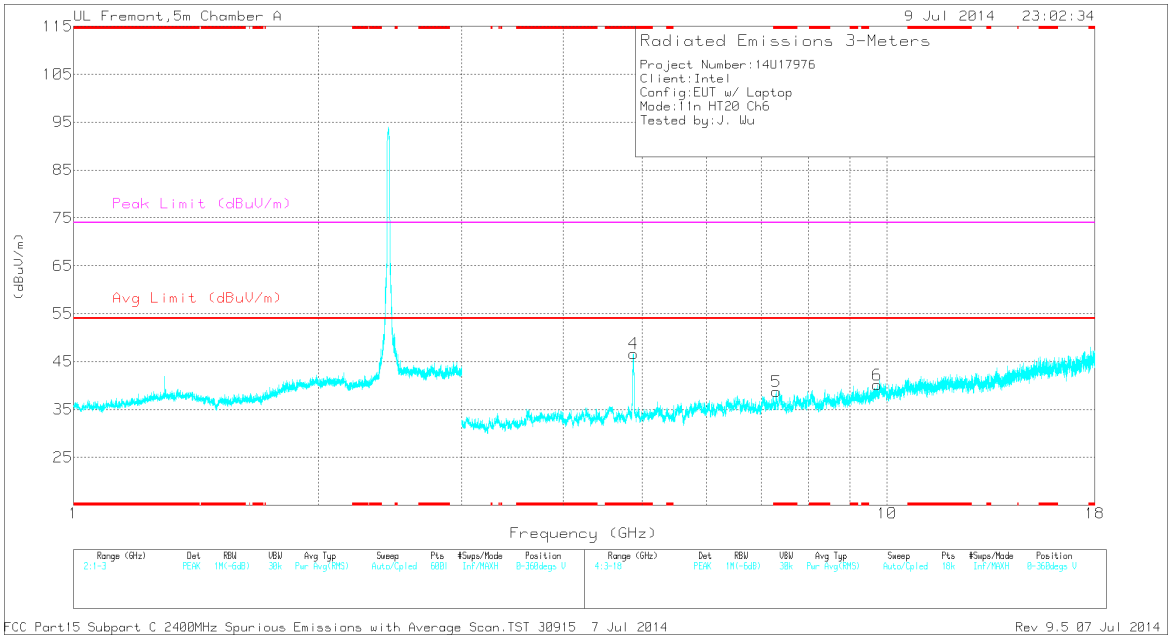

*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**MID CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 3.858 | 39.79 | PK2 | 33.7 | -31.1 | 0 | 42.39 | - | - | 74 | -31.61 | 353 | 314 | H |
| | * 3.86 | 27.33 | MAv1 | 33.7 | -31 | 0 | 30.03 | 54 | -23.97 | - | - | 353 | 314 | H |
| 2 | * 4.878 | 55.1 | PK2 | 34 | -28.1 | 0 | 61 | - | - | 74 | -13 | 2 | 260 | H |
| | * 4.874 | 42.4 | MAv1 | 34 | -28.3 | 0 | 48.1 | 54 | -5.9 | - | - | 2 | 260 | H |
| 3 | * 7.312 | 39.28 | PK2 | 35.2 | -27.1 | 0 | 47.38 | - | - | 74 | -26.62 | 326 | 238 | H |
| | * 7.311 | 25.94 | MAv1 | 35.2 | -27.2 | 0 | 33.94 | 54 | -20.06 | - | - | 326 | 238 | H |
| 4 | * 4.877 | 49.65 | PK2 | 34 | -28.1 | 0 | 55.55 | - | - | 74 | -18.45 | 7 | 340 | V |
| | * 4.874 | 37.7 | MAv1 | 34 | -28.3 | 0 | 43.4 | 54 | -10.6 | - | - | 7 | 340 | V |
| 5 | * 7.304 | 40.37 | PK2 | 35.2 | -27.1 | 0 | 48.47 | - | - | 74 | -25.53 | 8 | 178 | V |
| | * 7.311 | 27.81 | MAv1 | 35.2 | -27.2 | 0 | 35.81 | 54 | -18.19 | - | - | 8 | 178 | V |
| 6 | 9.72 | 27.47 | PK | 36.8 | -24.1 | 0 | 40.17 | - | - | - | - | 0-360 | 201 | V |

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

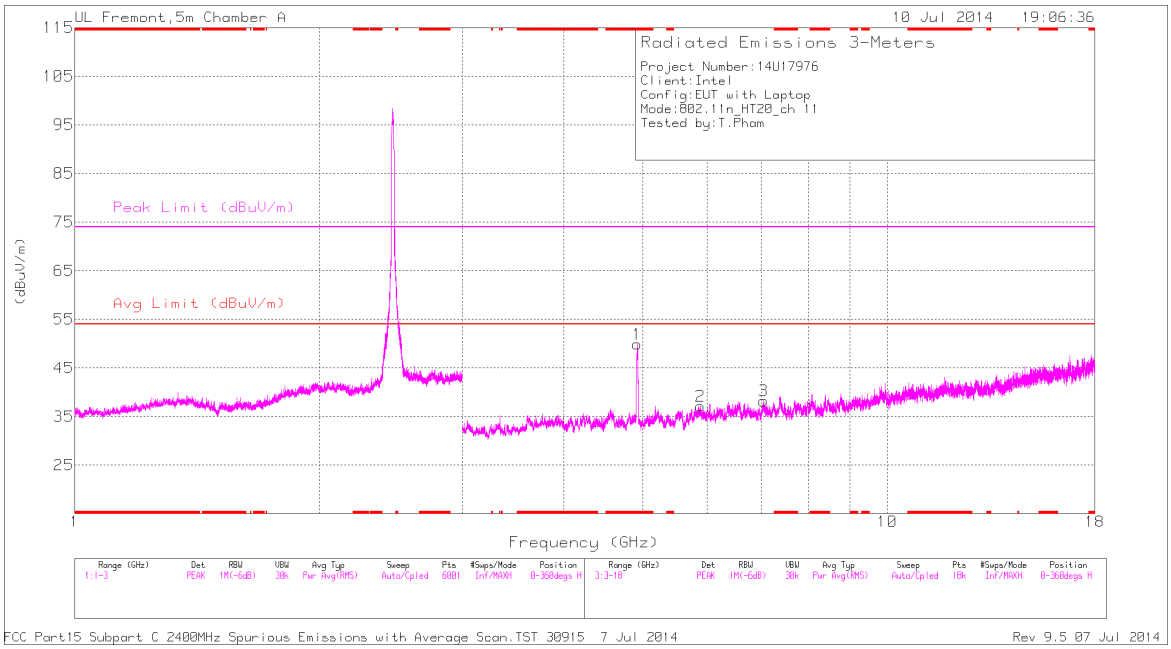
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



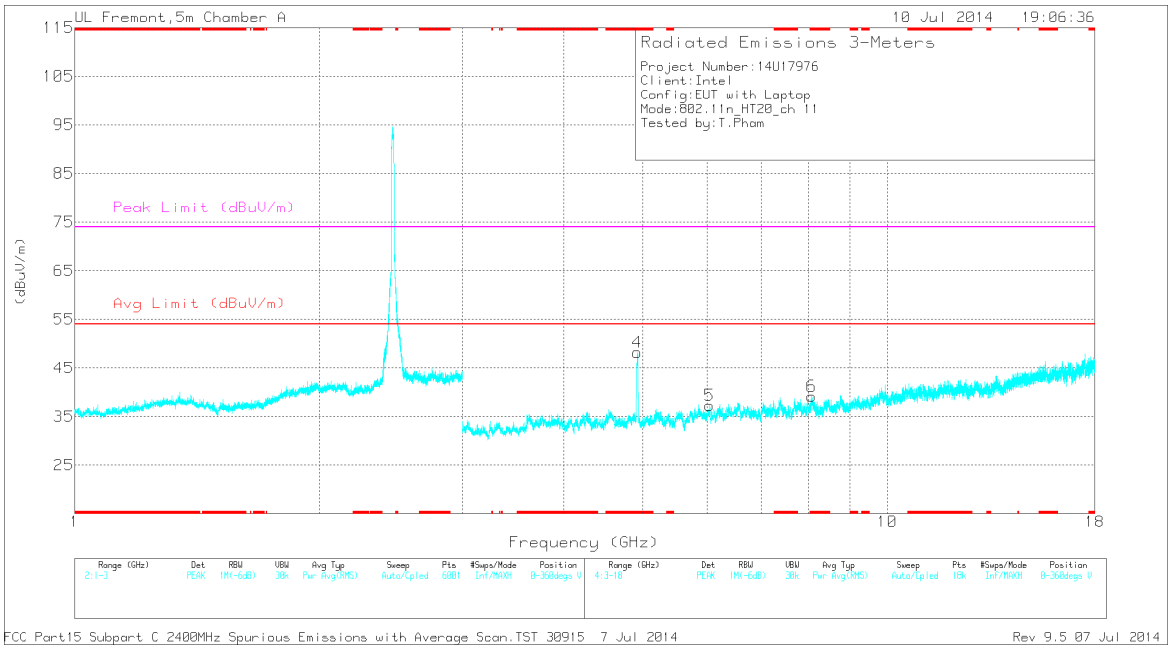
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**HIGH CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.923 | 55.4 | PK2 | 33.9 | -29 | 0 | 60.3 | - | - | 74 | -13.7 | 4 | 186 | H |
| | * 4.924 | 43.55 | MAv1 | 33.9 | -29 | 0 | 48.45 | 54 | -5.55 | - | - | 4 | 186 | H |
| 4 | * 4.925 | 52.01 | PK2 | 33.9 | -29 | 0 | 56.91 | - | - | 74 | -17.09 | 360 | 330 | V |
| | * 4.924 | 40.15 | MAv1 | 33.9 | -29 | 0 | 45.05 | 54 | -8.95 | - | - | 360 | 330 | V |
| 6 | * 8.066 | 35.45 | PK2 | 35.5 | -24.2 | 0 | 46.75 | - | - | 74 | -27.25 | 360 | 200 | V |
| | * 8.064 | 23.46 | MAv1 | 35.5 | -24.4 | 0 | 34.56 | 54 | -19.44 | - | - | 360 | 200 | V |
| 2 | 5.89 | 30.13 | PK | 35 | -28 | 0 | 37.13 | - | - | - | - | 0-360 | 100 | H |
| 5 | 6.045 | 30.11 | PK | 35.3 | -28.1 | 0 | 37.31 | - | - | - | - | 0-360 | 201 | V |
| 3 | 7.041 | 29.04 | PK | 35.3 | -26.1 | 0 | 38.24 | - | - | - | - | 0-360 | 100 | H |

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

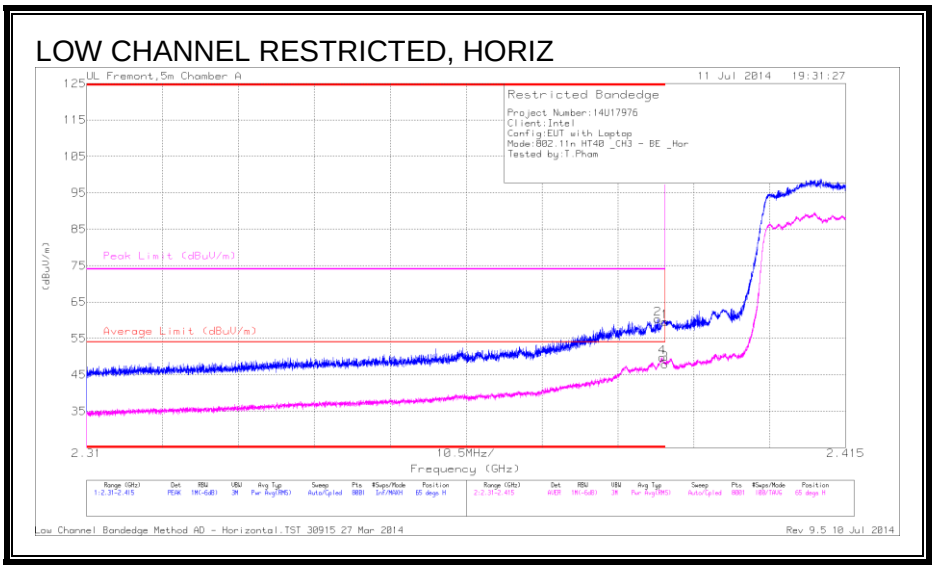
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 9.5. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.389 | 52.4 | PK | 32.2 | -24.3 | 0 | 60.3 | - | - | 74 | -13.7 | 65 | 282 | H |
| 1 | * 2.39 | 51.79 | PK | 32.2 | -24.4 | 0 | 59.59 | - | - | 74 | -14.41 | 65 | 282 | H |
| 3 | * 2.39 | 40.05 | RMS | 32.2 | -24.4 | .14 | 47.99 | 54 | -6.01 | - | - | 65 | 282 | H |
| 4 | * 2.39 | 41.91 | RMS | 32.2 | -24.4 | .14 | 49.85 | 54 | -4.15 | - | - | 65 | 282 | H |

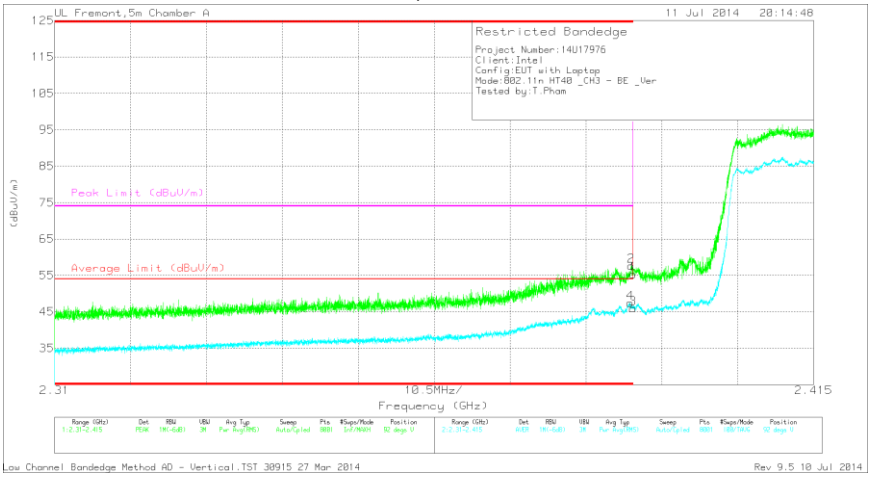
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

LOW CHANNEL RESTRICTED, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | 47.44 | PK | 32.2 | -24.4 | 0 | 55.24 | - | - | 74 | -18.76 | 92 | 281 | V |
| 2 | * 2.39 | 49.87 | PK | 32.2 | -24.4 | 0 | 57.67 | - | - | 74 | -16.33 | 92 | 281 | V |
| 3 | * 2.39 | 38.03 | RMS | 32.2 | -24.4 | .14 | 45.97 | 54 | -8.03 | - | - | 92 | 281 | V |
| 4 | * 2.39 | 39.45 | RMS | 32.2 | -24.4 | .14 | 47.39 | 54 | -6.61 | - | - | 92 | 281 | V |

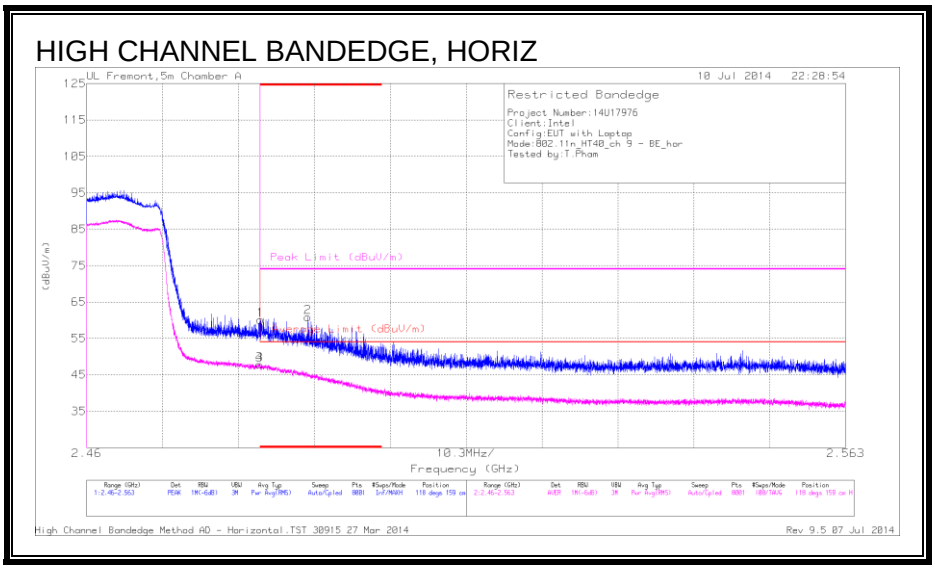
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
RMS - RMS detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**




## Trace Markers

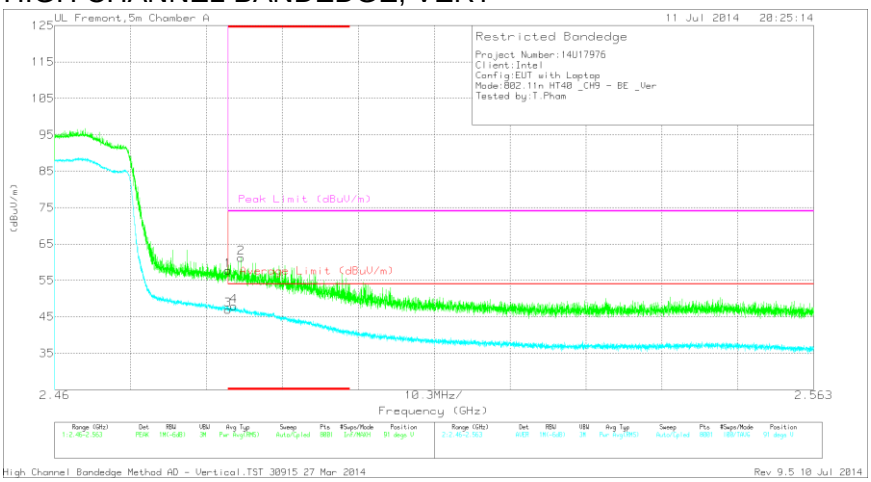
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 50.88 | PK | 32.7 | -23.5 | 0 | 60.08 | - | - | 74 | -13.92 | 118 | 159 | H |
| 2 | * 2.49 | 51.4 | PK | 32.8 | -23.4 | 0 | 60.8 | - | - | 74 | -13.2 | 118 | 159 | H |
| 3 | 2.483 | 38.66 | RMS | 32.7 | -23.5 | .14 | 48 | 54 | -6 | - | - | 118 | 159 | H |
| 4 | 2.483 | 38.66 | RMS | 32.7 | -23.5 | .14 | 48 | 54 | -6 | - | - | 118 | 159 | H |

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

PK - Peak detector
RMS - RMS detection


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

HIGH CHANNEL BANDEDGE, VERT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | 48.55 | PK | 32.7 | -23.5 | 0 | 57.75 | - | - | 74 | -16.25 | 91 | 283 | V |
| 2 | * 2.485 | 52.05 | PK | 32.7 | -23.5 | 0 | 61.25 | - | - | 74 | -12.75 | 91 | 283 | V |
| 3 | * 2.484 | 37.64 | RMS | 32.7 | -23.5 | .14 | 46.98 | 54 | -7.02 | - | - | 91 | 283 | V |
| 4 | * 2.484 | 38.63 | RMS | 32.7 | -23.5 | .14 | 47.97 | 54 | -6.03 | - | - | 91 | 283 | V |

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

PK - Peak detector
RMS - RMS detection

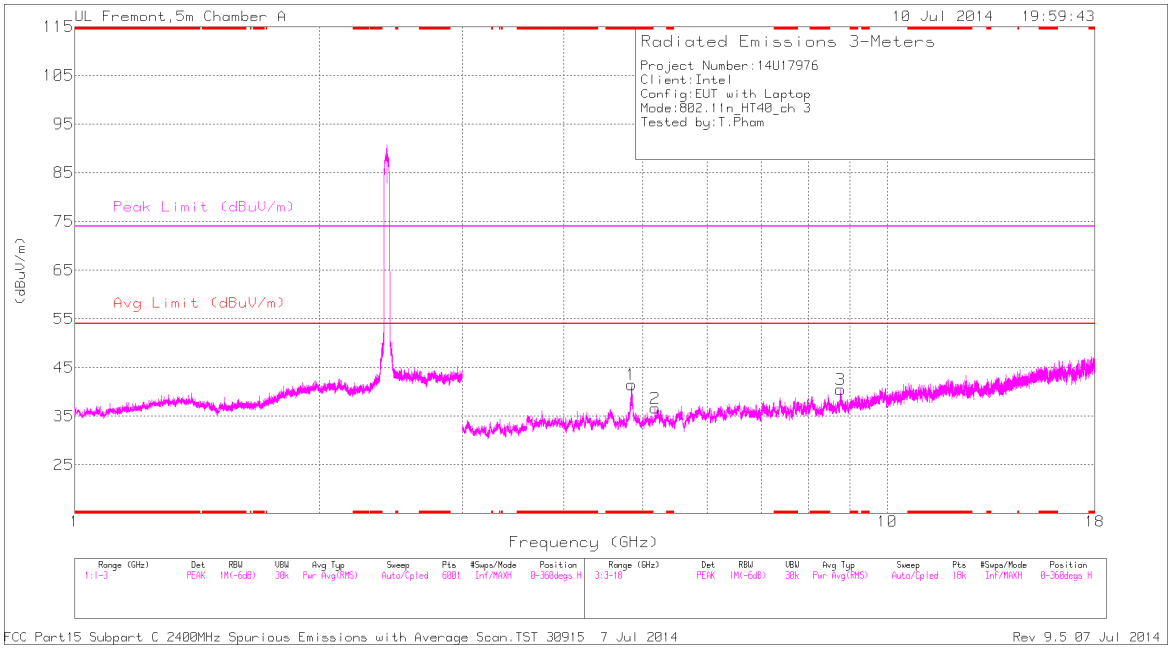


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

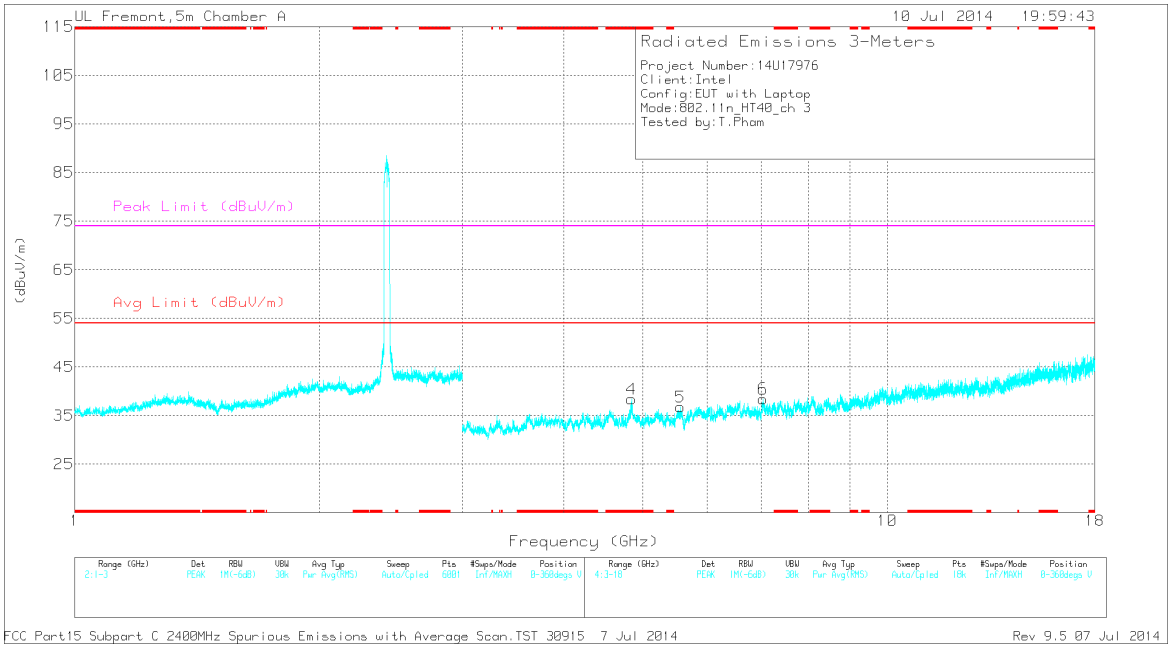
## HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.844 | 46.97 | PK2 | 34 | -28.9 | 0 | 52.07 | - | - | 74 | -21.93 | 3 | 191 | H |
| | * 4.844 | 36.05 | MAv1 | 34 | -28.9 | .14 | 41.29 | 54 | -12.71 | - | - | 3 | 191 | H |
| 4 | * 4.845 | 43.26 | PK2 | 34 | -28.9 | 0 | 48.36 | - | - | 74 | -25.64 | 0 | 309 | V |
| | * 4.844 | 32.26 | MAv1 | 34 | -28.9 | .14 | 37.5 | 54 | -16.5 | - | - | 0 | 309 | V |
| 2 | 5.18 | 31.54 | PK | 34.1 | -29 | 0 | 36.64 | - | - | - | - | 0-360 | 100 | H |
| 5 | 5.564 | 30.67 | PK | 34.4 | -28.3 | 0 | 36.77 | - | - | - | - | 0-360 | 100 | V |
| 6 | 7.031 | 29.14 | PK | 35.3 | -26 | 0 | 38.44 | - | - | - | - | 0-360 | 100 | V |
| 3 | 8.756 | 28.48 | PK | 35.8 | -23.8 | 0 | 40.48 | - | - | - | - | 0-360 | 201 | H |

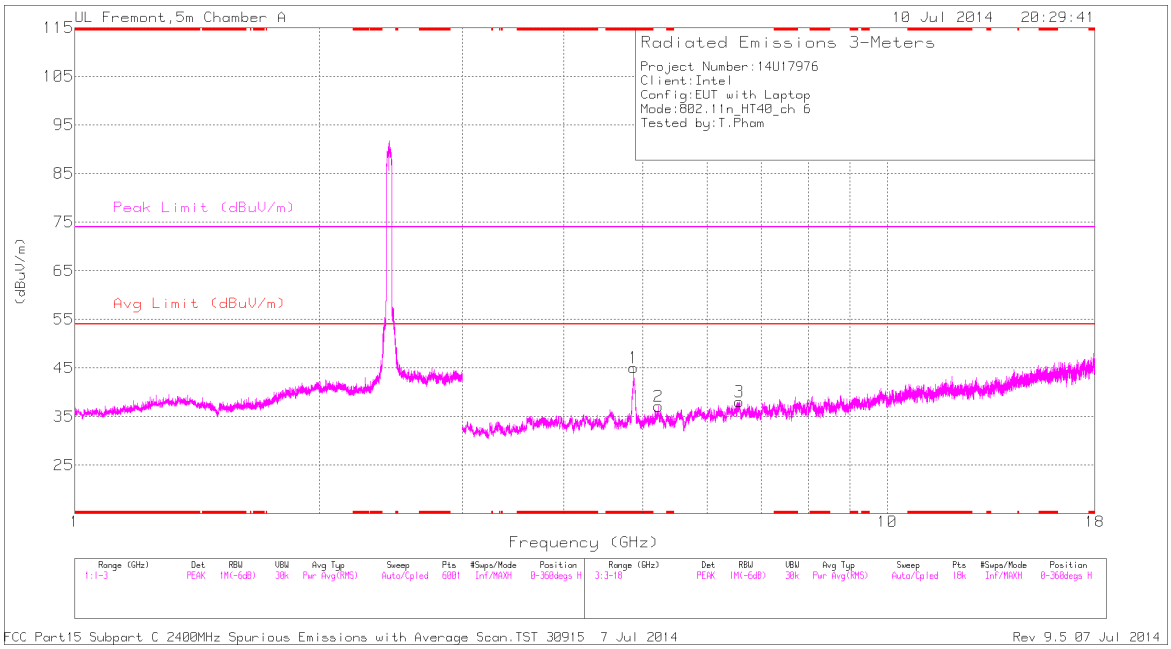
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

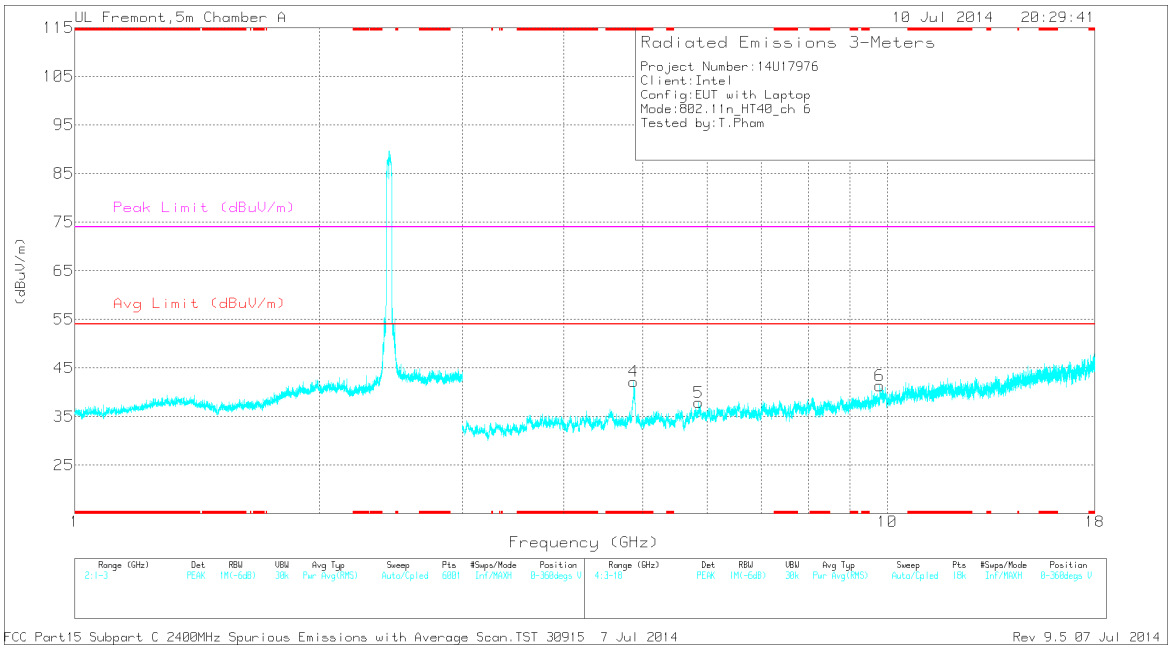

*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**MID CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.875 | 49.11 | PK2 | 34 | -28.2 | 0 | 54.91 | - | - | 74 | -19.09 | 4 | 288 | H |
| | * 4.874 | 38.39 | MAv1 | 34 | -28.3 | .14 | 44.23 | 54 | -9.77 | - | - | 4 | 288 | H |
| 4 | * 4.874 | 45.04 | PK2 | 34 | -28.3 | 0 | 50.74 | - | - | 74 | -23.26 | 358 | 278 | V |
| | * 4.874 | 34.11 | MAv1 | 34 | -28.3 | .14 | 39.95 | 54 | -14.05 | - | - | 358 | 278 | V |
| 2 | 5.227 | 30.62 | PK | 34.2 | -27.7 | 0 | 37.12 | - | - | - | - | 0-360 | 201 | H |
| 5 | 5.857 | 30.3 | PK | 34.9 | -27.3 | 0 | 37.9 | - | - | - | - | 0-360 | 100 | V |
| 3 | 6.579 | 29.17 | PK | 35.5 | -26.6 | 0 | 38.07 | - | - | - | - | 0-360 | 201 | H |
| 6 | 9.785 | 27.16 | PK | 36.9 | -22.7 | 0 | 41.36 | - | - | - | - | 0-360 | 100 | V |

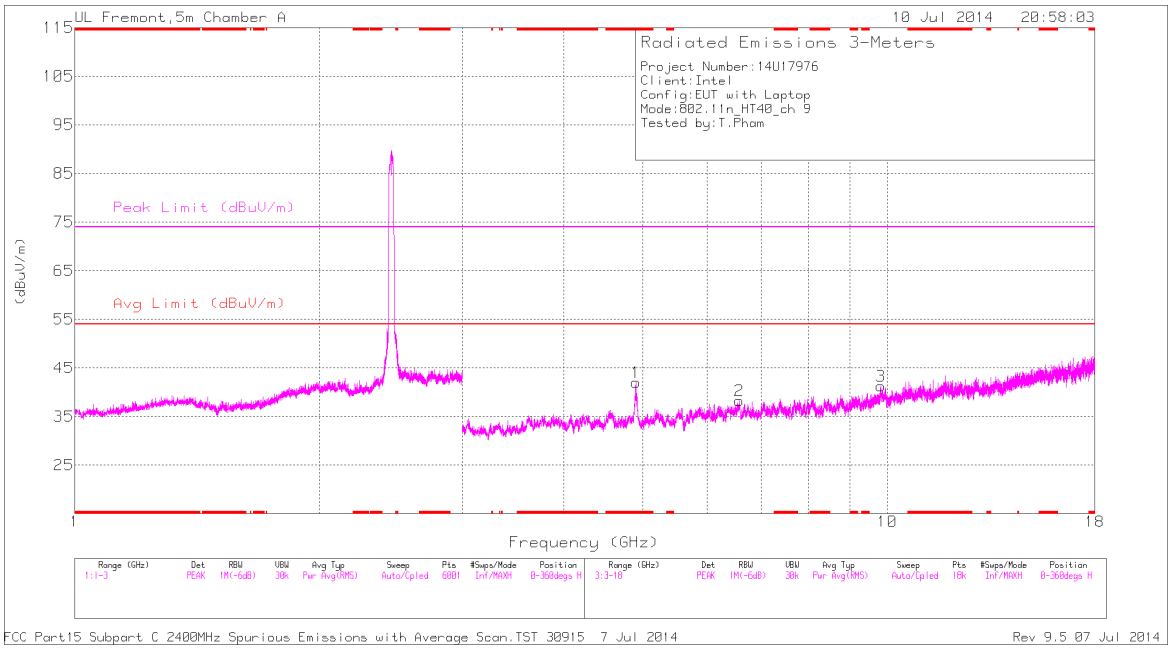
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

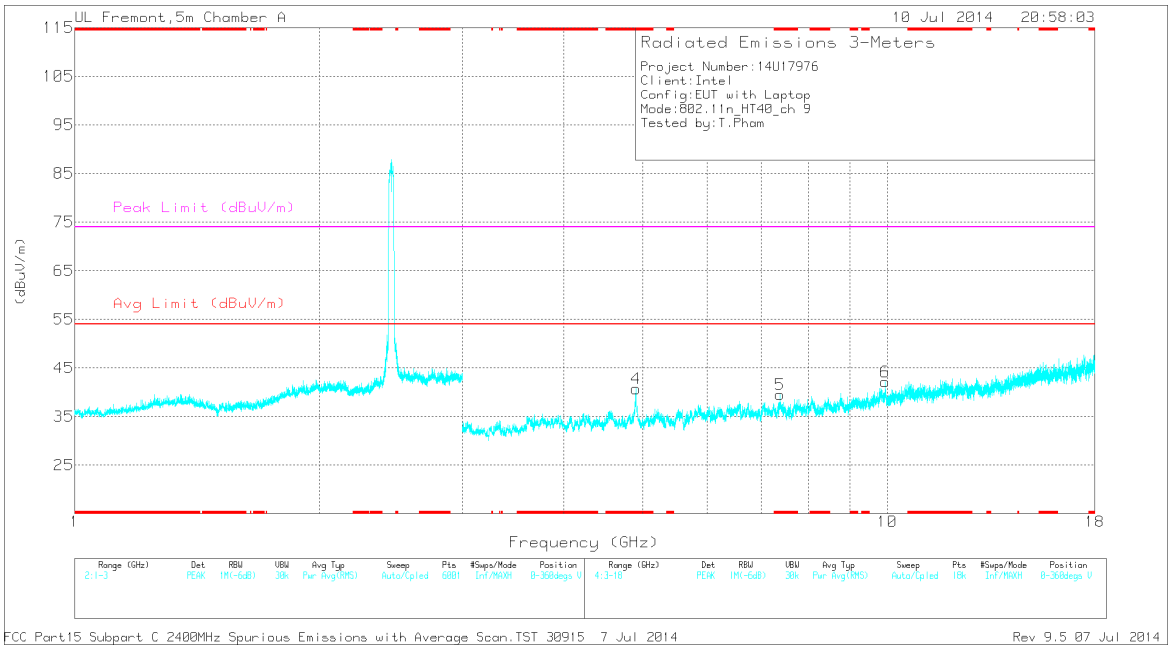

*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**HIGH CHANNEL**

HORIZONTAL




VERTICAL






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (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 | * 4.904 | 49.3 | PK2 | 34 | -29 | 0 | 54.3 | - | - | 74 | -19.7 | 7 | 187 | H |
| | * 4.904 | 37.56 | MAv1 | 34 | -29 | .14 | 42.7 | 54 | -11.3 | - | - | 7 | 187 | H |
| 4 | * 4.904 | 45.2 | PK2 | 34 | -29 | 0 | 50.2 | - | - | 74 | -23.8 | 0 | 337 | V |
| | * 4.904 | 33.74 | MAv1 | 34 | -29 | .14 | 38.88 | 54 | -15.12 | - | - | 0 | 337 | V |
| 5 | * 7.38 | 35.52 | PK2 | 35.3 | -24.4 | 0 | 46.42 | - | - | 74 | -27.58 | 0 | 200 | V |
| | * 7.38 | 23.32 | MAv1 | 35.3 | -24.4 | .14 | 34.36 | 54 | -19.64 | - | - | 0 | 200 | V |
| 2 | 6.576 | 29.39 | PK | 35.5 | -26.6 | 0 | 38.29 | - | - | - | - | 0-360 | 100 | H |
| 3 | 9.819 | 26.69 | PK | 36.9 | -22.3 | 0 | 41.29 | - | - | - | - | 0-360 | 100 | H |
| 6 | 9.938 | 27.56 | PK | 37.1 | -22.5 | 0 | 42.16 | - | - | - | - | 0-360 | 100 | V |

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

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

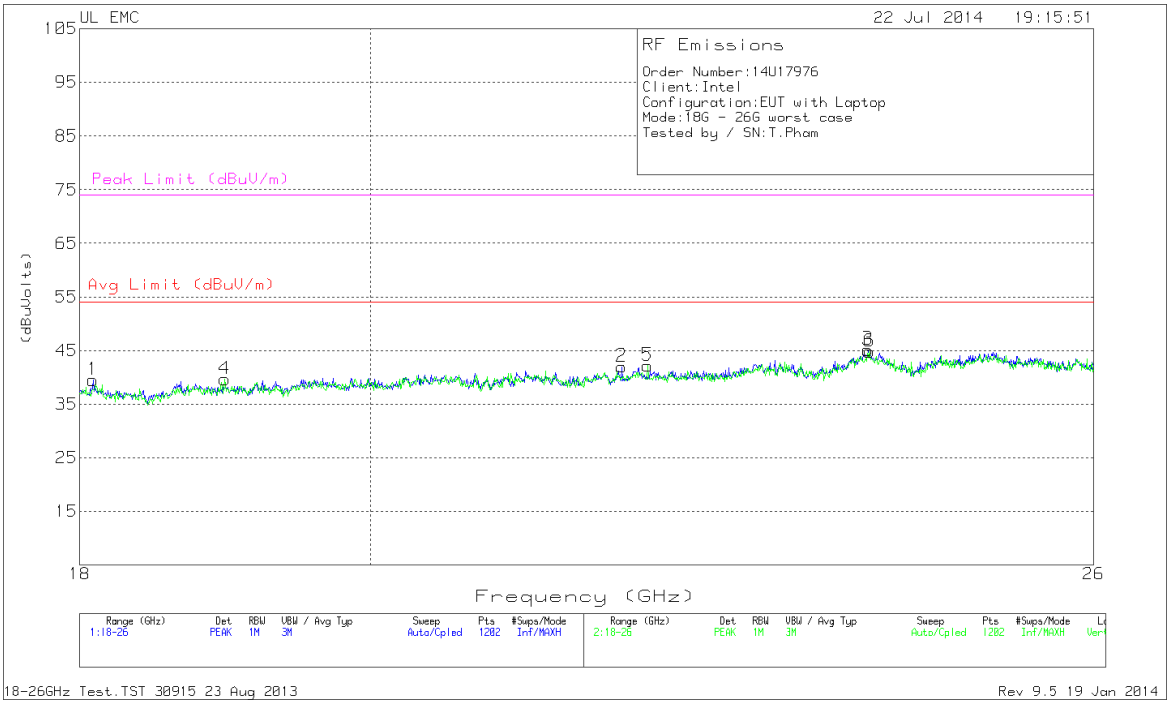


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## 9.6. WORST-CASE 18-26 GHz

**HARMONICS AND SPURIOUS EMISSIONS**

PLOT




## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T89 (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 | 18.087 | 41.5 | PK | 32.4 | -24.9 | -9.5 | 39.5 | 54 | -14.5 | 74 | -34.5 |
| 2 | 21.91 | 42.2 | PK | 33.3 | -24 | -9.5 | 42 | 54 | -12 | 74 | -32 |
| 3 | 23.955 | 43.77 | PK | 33.6 | -22.7 | -9.5 | 45.17 | 54 | -8.83 | 74 | -28.83 |
| 4 | 18.973 | 41.17 | PK | 32.5 | -24.5 | -9.5 | 39.67 | 54 | -14.33 | 74 | -34.33 |
| 5 | 22.117 | 41.97 | PK | 33.3 | -23.6 | -9.5 | 42.17 | 54 | -11.83 | 74 | -31.83 |
| 6 | 23.968 | 43.33 | PK | 33.6 | -22.6 | -9.5 | 44.83 | 54 | -9.17 | 74 | -29.17 |

PK - Peak detector

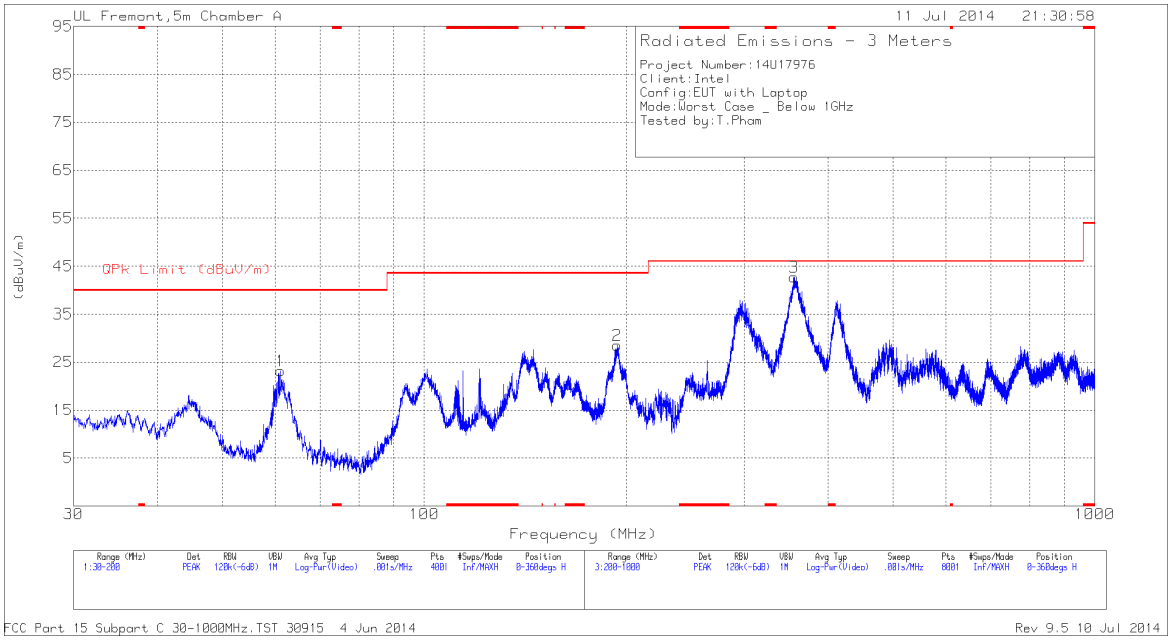


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

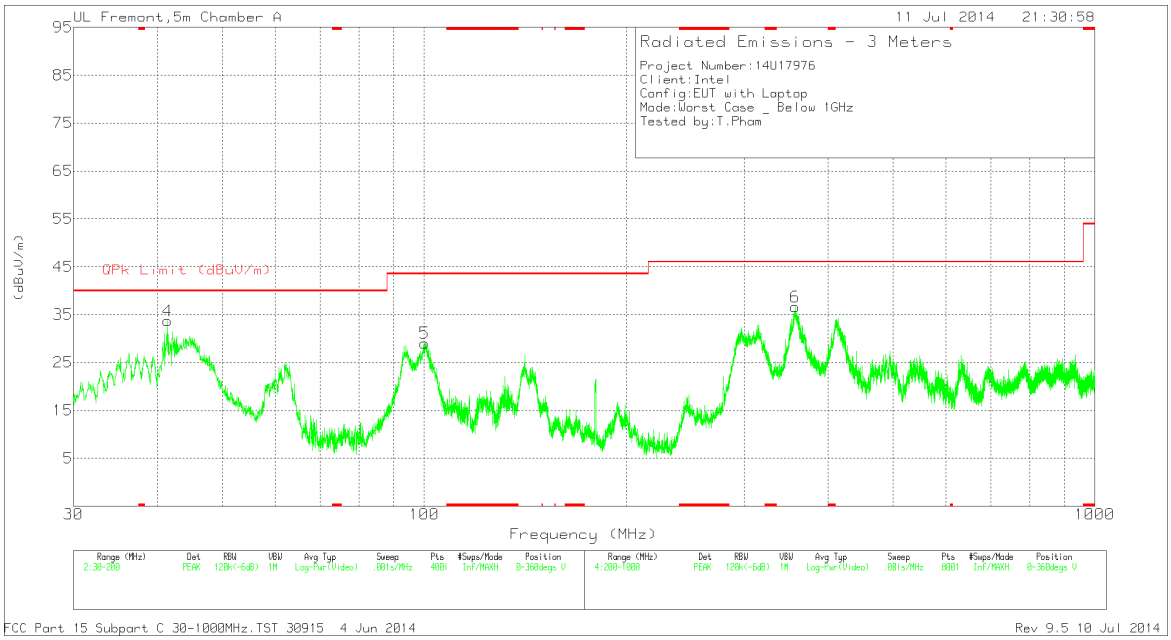
## 9.7. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT




VERTICAL PLOT






*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

Data

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T130 (dB/m) | Amp/Cbl (dB/m) | DC Corr (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 41.4325 | 51.47 | PK | 13.2 | -30.9 | 0 | 33.77 | 40 | -6.23 | 0-360 | 101 | V |
| 1 | 61.0675 | 45.97 | PK | 7.8 | -30.6 | 0 | 23.17 | 40 | -16.83 | 0-360 | 400 | H |
| 5 | 100.0825 | 49.29 | PK | 10.2 | -30.4 | 0 | 29.09 | 43.52 | -14.43 | 0-360 | 101 | V |
| 2 | 194.0075 | 46.77 | PK | 11.8 | -30 | 0 | 28.57 | 43.52 | -14.95 | 0-360 | 101 | H |
| 3 | 355.833 | 53.13 | QP | 14.5 | -28.9 | 0 | 38.73 | 46.02 | -7.29 | 338 | 104 | H |
| 6 | 357.8 | 50.99 | PK | 14.6 | -28.9 | 0 | 36.69 | 46.02 | -9.33 | 0-360 | 300 | V |

PK - Peak detector
QP - Quasi-Peak detector



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

# 10. AC POWER LINE CONDUCTED EMISSIONS

**LIMITS**

FCC §15.207 (a)

RSS-Gen 7.2.2

| 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.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

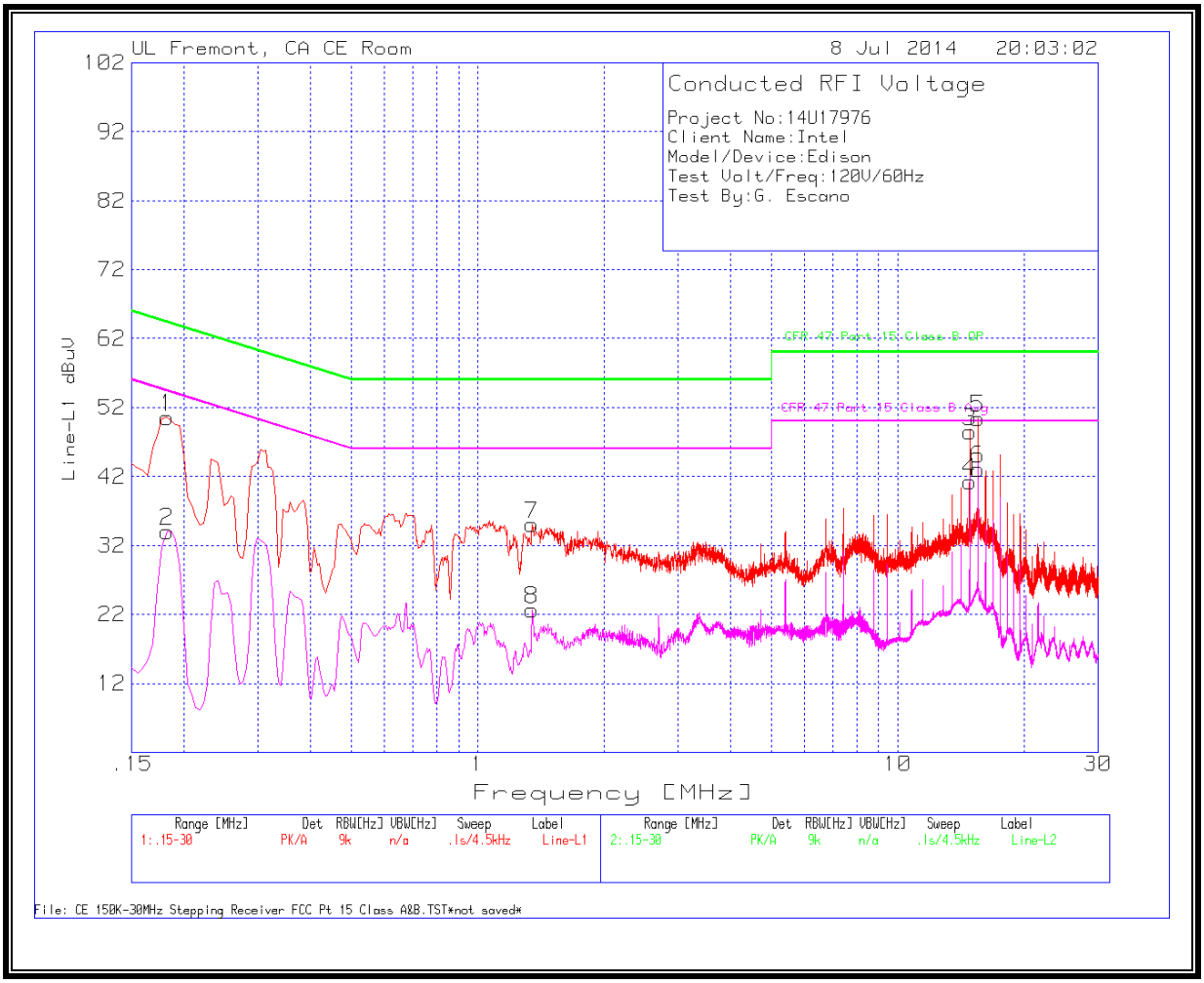


*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

## RESULTS

## 6 WORST EMISSIONS

## LINE 1 RESULTS




## Line-L1 .15 - 30MHz

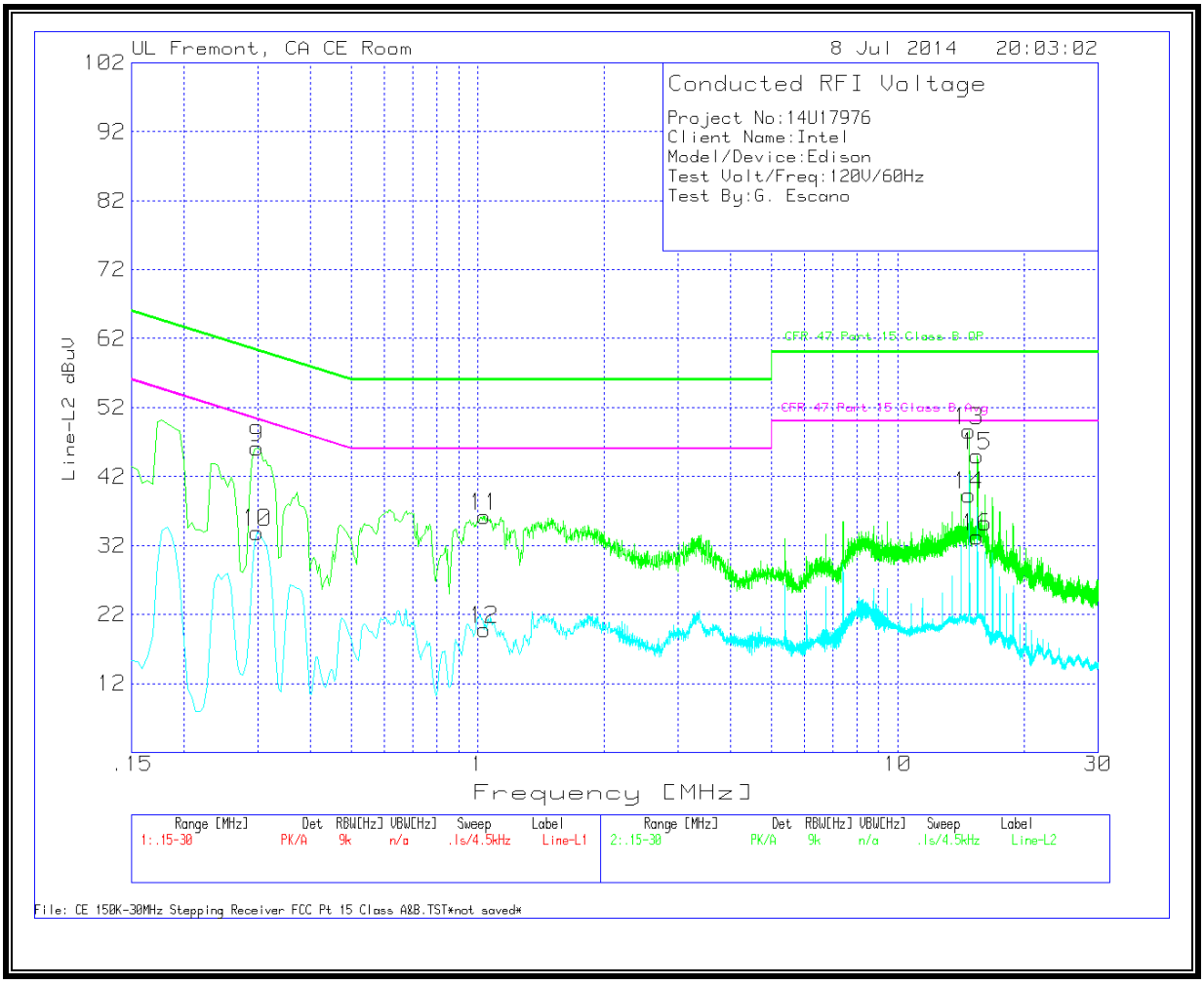
### Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L1 (dB) | LC Cables 1&3 (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | Margin to Limit (dB) | CFR 47 Part 15 Class B Avg | Margin to Limit (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .1815 | 49.42 | PK | 1.1 | 0 | 50.52 | 64.4 | -13.88 | - | - |
| 2 | .1815 | 32.97 | Av | 1.1 | 0 | 34.07 | 64.4 | -30.33 | 54.4 | -20.33 |
| 7 | 1.347 | 34.71 | PK | .2 | .1 | 35.01 | 56 | -20.99 | - | - |
| 8 | 1.347 | 22.4 | Av | .2 | .1 | 22.7 | 56 | -33.3 | 46 | -23.3 |
| 3 | 14.8335 | 48.14 | PK | .2 | .2 | 48.54 | 60 | -11.46 | - | -- |
| 4 | 14.8335 | 40.82 | Av | .2 | .2 | 41.22 | 60 | -18.78 | 50 | -8.78 |
| 5 | 15.5085 | 49.95 | PK | .3 | .2 | 50.45 | 60 | -9.55 | - | - |
| 6 | 15.5085 | 42.59 | Av | .3 | .2 | 43.09 | 60 | -16.91 | 50 | -6.91 |



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*

**LINE 2 RESULTS**




## Line-L2 .15 - 30MHz

### Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L2 (dB) | LC Cables 2&3 (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | Margin to Limit (dB) | CFR 47 Part 15 Class B Avg | Margin to Limit (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | .2985 | 45.54 | PK | .6 | 0 | 46.14 | 60.3 | -14.16 | - | -- |
| 10 | .2985 | 33.28 | Av | .6 | 0 | 33.88 | 60.3 | -26.42 | 50.3 | -16.42 |
| 11 | 1.0365 | 35.96 | PK | .3 | 0 | 36.26 | 56 | -19.74 | - | -- |
| 12 | 1.0365 | 19.49 | Av | .3 | 0 | 19.79 | 56 | -36.21 | 46 | -26.21 |
| 13 | 14.811 | 48.08 | PK | .3 | .2 | 48.58 | 60 | -11.42 | - | - |
| 14 | 14.811 | 38.81 | Av | .3 | .2 | 39.31 | 60 | -20.69 | 50 | -10.69 |
| 15 | 15.468 | 44.55 | PK | .3 | .2 | 45.05 | 60 | -14.95 | - | - |
| 16 | 15.468 | 32.8 | Av | .3 | .2 | 33.3 | 60 | -26.7 | 50 | -16.7 |

PK - Peak detector
Av - average detection



*This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.*