**FCC CFR47 PART 15 SUBPART C**
**INDUSTRY CANADA RSS-210 ISSUE 8**

# CERTIFICATION TEST REPORT

**FOR**
**Monsoon Multimedia Inc.**
**1730 S. Amphlett Blvd., suite 101**
**San Mateo, CA 94402**

**EUT**

**MODEL NUMBERS:**
**VULKANO3 BLAST, VULKANO3 LAVA, VULKANO3 FLOW, VULKANO3 STREAM**

**FCC ID: YPC-VULKANO3**

**IC ID: 7867A-VULKANO3**

**REPORT NUMBER: 11U13725-4, Revision C**

**ISSUE DATE: August 4, 2011**

*Prepared for*
**Monsoon Multimedia Inc.**
**1730 S. Amphlett Blvd., suite 101**
**San Mateo, CA 94402**

*Prepared by*
**Underwriters Laboratories Inc.**
**333 Pfingsten Road**
**Northbrook, IL 60062, USA**
**TEL: 847-272-8800**

**NvLap Code 200065-0** & **100414-0**

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 07/15/11 | Initial Issue | B. Mucha |
| A | 07/21/11 | Revised model numbers | A. Zaffar |
| B | 07/22/11 | Updated model numbers on attestation page. | A. Zaffar |
| C | 08/04/11 | Corrected power table | B. Mucha |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062

**EUT DESCRIPTION:** Media Center Box

**MODEL:** VULKANO3 BLAST, VULKANO3 LAVA, VULKANO3 FLOW, VULKANO3 STREAM

**SERIAL NUMBER:** Prototype

**DATE TESTED:** June 14, 2011 to June 30, 2011

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | Pass |
| INDUSTRY CANADA RSS-210 Issue 8 Annex 8 | Pass |
| INDUSTRY CANADA RSS-GEN Issue 3 | Pass |

Underwriters Laboratories 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 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 and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL 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.

Test Engineer and Report Writer:

Bart Mucha
Staff Engineer
UL

Reviewer:

Michael Ferrer
Senior Project Engineer
UL

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, 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 Benicia Street, Fremont, California, USA. and 333 Pfingsten Road, Northbrook ,IL.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. And UL Northbrook NvLap is 10414-0.

CALIBRATION AND UNCERTAINTY

## 3.1. 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.

## 3.2. 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

## 3.3. 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 | 0.6 dB |
| Radiated Disturbance, 30 to 1000 MHz | 1.2 dB |

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

# 4. EQUIPMENT UNDER TEST

## 4.1. DESCRIPTION OF EUT

The EUT is a Media Box with 802.11b/g/n transceiver.

## 4.2. MAXIMUM OUTPUT POWER

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

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 2412 - 2462 | 802.11b | 17.40 | 54.95 |
| 2412 - 2462 | 802.11g | 21.09 | 128.53 |
| 2412 - 2462 | 802.11n HT20 | 26.68 | 465.59 |
| 2422 - 2452 | 802.11n HT40 | 21.26 | 133.66 |

## 4.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of 3 dBi.

## 4.4. SOFTWARE AND FIRMWARE

Blast firmware version 16/703235.
Blast hardware version 20-HA-7X00-00-YY.
Software version PC Player ver. 1.8.3.109.

## 4.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

For radiated spurious emissions below 1GHz and for line conducted emissions operating mode made no difference therefore only single set of data is included in this report.

Manufacturer declares the following for worst case modes:
802.11b – 1Mbps
802.11g – 6Mbps
802.11n 20MHz – MCS0
802.11n 40MHz – MCS0

## 4.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Use | Product Type | Manufacturer | Model | Comments |
|---|---|---|---|---|
| **EUT** | Media Box | Monsoon Multimedia | Vulkano3 | None |
| **AE** | Laptop Computer | Gateway | MX6500 | Used to program the WiFi Chip |
| Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test) | | | | |

**I/O CABLES**

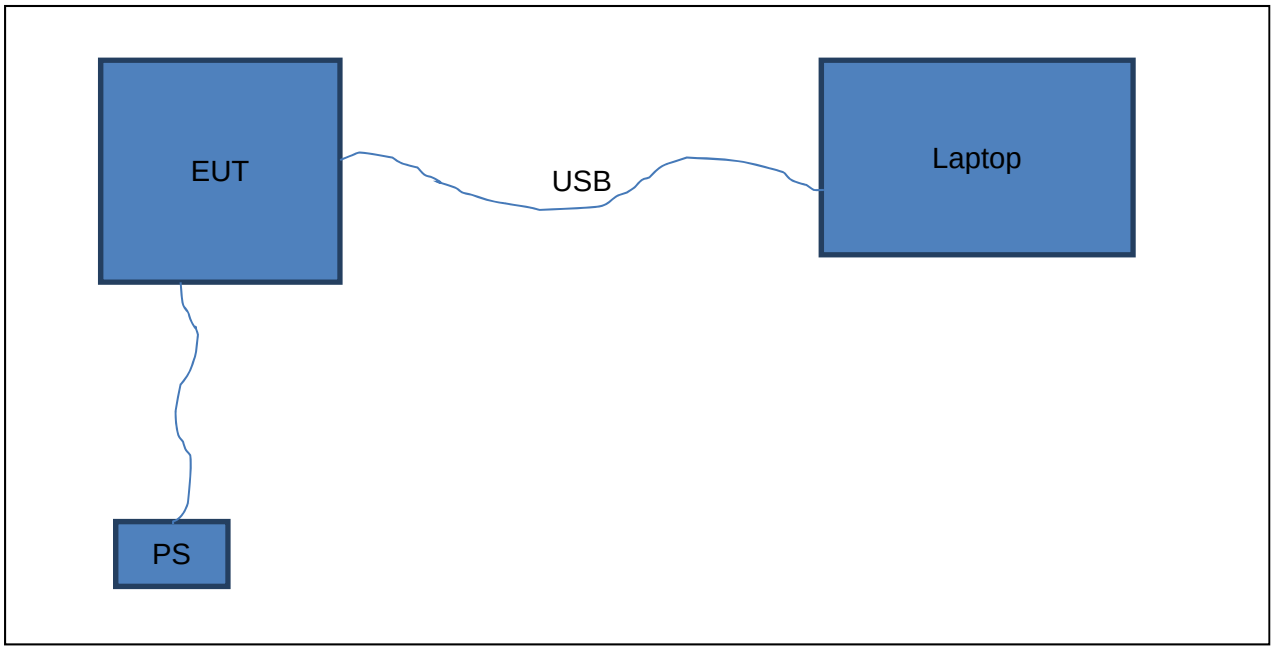
| Port # | Name | Type* | Cable Max. >3m (Y/N) | Cable Shielded (Y/N) | Comments |
|---|---|---|---|---|---|
| 0 | Enclosure | N/E | — | — | None |
| 1 | Mains | AC | N | N | AC/DC SMPS |
| 2 | USB | I/O | N | Y | Used to program the WiFi Chip |

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

**TEST SETUP**

The EUT is stand-alone device connected to host computer via USB cable. Test software is used to exercise the radio.

**SETUP DIAGRAM FOR TESTS**



## SETUP FOR DIGITAL DEVICE TESTS

### SUPPORT EQUIPMENT

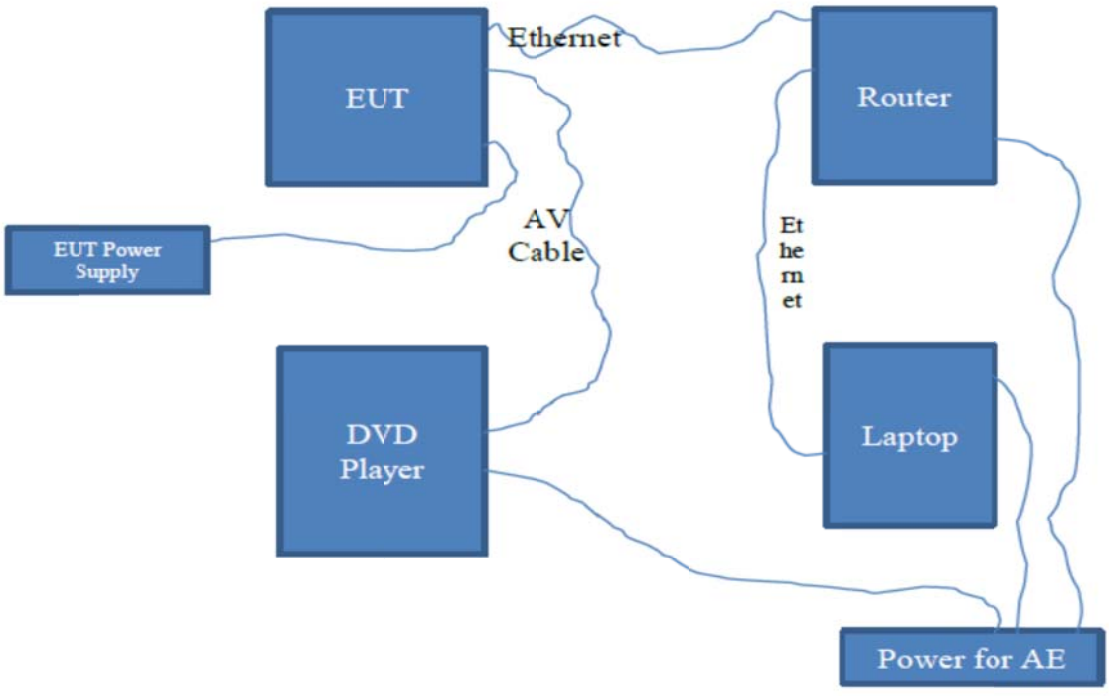
| Use | Product Type | Manufacturer | Model | Comments |
|---|---|---|---|---|
| **EUT** | Media Box | Monsoon Multimedia | Vulkano3 | None |
| **AE** | DVD Player | Curtis | DVD1041B | Used as composite video source |
| **AE** | Laptop Computer | Gateway | MA2A | None |
| **AE** | Wireless Router | Linksys | WRT54G | None |
| Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, o**r SIM** - Simulator (Not Subjected to Test) | | | | |

### I/O CABLES

| Port # | Name | Type* | Cable Max. >3m (Y/N) | Cable Shielded (Y/N) | Comments |
|---|---|---|---|---|---|
| 0 | Enclosure | N/E | — | — | None |
| 1 | Mains | AC | N | N | None |
| 2 | Audio / Video | I/O | N | Y | None |
| 3 | Ethernet | I/O | Y | N | None |

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

### TEST SETUP




* For some tests the Ethernet is disconnected at the EUT side and streaming of video is done via WiFi connection.

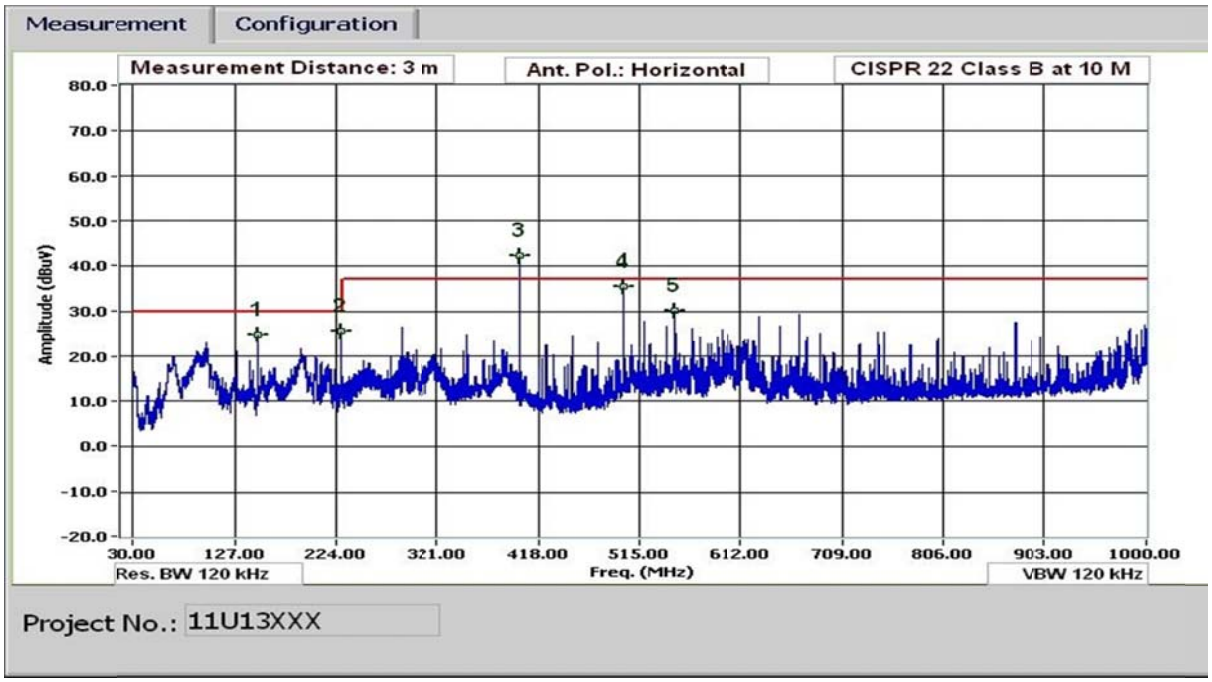
# 5. TEST AND MEASUREMENT EQUIPMENT

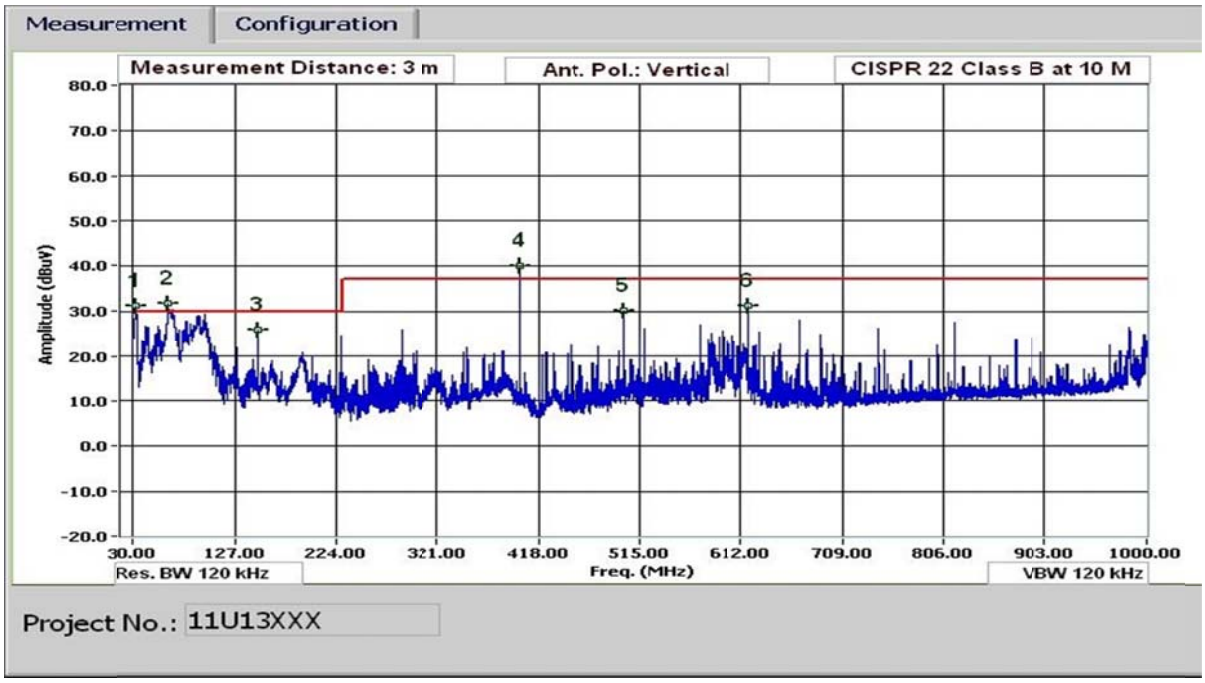
The following test and measurement equipment was utilized for the tests documented in this report:

| | | | | | |
|---|---|---|---|---|---|
| RF Cable | DigiKey | - | | | |
| EMI Test Receiver | R & S | ESCI | EMC4328 | 12/29/2010 | 12/30/2011 |
| Transient Limiter | Electro-Metrics | EM7600-2 | EMC4224 | 1/6/2010 | 1/6/2011 |
| HighPass Filter | Solar Electronics | 2803-150 | EMC4327 | 1/6/2010 | 1/6/2011 |
| Attenuator | HP | 8494B | 2831A00838 | 1/6/2010 | 1/6/2011 |
| LISN - L1 | Solar | 8602-50-TS-50-N | EMC4052 | 1/6/2010 | 1/6/2011 |
| LISN - L2 | Solar | 8602-50-TS-50-N | EMC4064 | 1/6/2010 | 1/6/2011 |
| EMI Test Receiver | R & S | ESU | EMC4323 | 12/30/2010 | 12/30/2011 |
| Spectrum Analyzer | R & S | FSEK | EMC4182 | 12/28/2010 | 12/30/2011 |
| Antenna Array | UL | BOMS | EMC4276 | 10/21/2010 | 10/21/2011 |
| BiCon Antenna | Schaffner / Chase | VBA6105 | EMC4078 | 12/2/2010 | 12/30/2011 |
| LogP Antenna | Schaffnet / Chase | UPA6109 | EMC4258 | 8/20/2010 | 8/31/2011 |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01179 | 40562 | 40927 |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01178 | 40420 | 40785 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00885 | 40570 | 40935 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01052 | 40373 | 40738 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00945 | 40358 | 40723 |
| Antenna, Bilog, 2 GHz | Sunol Sciences | JB1 | C01016 | 40371 | 40736 |
| | | | | | |

# 6. DIGITAL / RECEIVER DEVICE BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (DIGITAL DEVICE)**



## Table 1 Radiated Emissions Data Points below 1GHz

**30-1000MHz Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber**

**Test Engr:** Mengistu Mekuria
**Date:** 02/12/11
**Project #:** 11U13725 (Sample #2)
**Company:** Monsoon
**Test Target:** CISPR Class B
**Mode Oper:** Video Streaming

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Margin | Margin vs. Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | | |
| Read | Analyzer Reading | Filter | Filter Insert Loss | | |
| AF | Antenna Factor | Corr. | Calculated Field Strength | | |
| CL | Cable Loss | Limit | Field Strength Limit | | |

| f MHz | Dist (m) | Read dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Pad dB | Corr. dBuV/m | Limit dBuV/m | Margin dB | Ant. Pol. V/H | Det. P/A/QP | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vertical_Sample #2 | | | | | | | | | | | | | |
| 33.12 | 3.0 | 51.8 | 18.9 | 0.5 | 29.7 | -10.5 | 0.0 | 31.1 | 30.0 | 1.1 | V | P | |
| 33.318 | 3.0 | 48.6 | 18.8 | 0.5 | 29.7 | -10.5 | 0.0 | 27.8 | 30.0 | -2.2 | V | QP | |
| 63.961 | 3.0 | 63.2 | 8.0 | 0.7 | 29.6 | -10.5 | 0.0 | 31.8 | 30.0 | 1.8 | V | P | |
| 63.966 | 3.0 | 59.3 | 8.0 | 0.7 | 29.6 | -10.5 | 0.0 | 27.9 | 30.0 | -2.1 | V | QP | |
| 148.445 | 3.0 | 51.8 | 12.7 | 1.1 | 29.3 | -10.5 | 0.0 | 25.8 | 30.0 | -4.2 | V | P | |
| 399.975 | 3.0 | 62.9 | 15.0 | 1.9 | 29.3 | -10.5 | 0.0 | 40.1 | 37.0 | 3.1 | V | P | |
| 399.996 | 3.0 | 48.8 | 15.0 | 1.9 | 29.3 | -10.5 | 0.0 | 26.0 | 37.0 | -11.0 | V | QP | |
| 499.939 | 3.0 | 51.3 | 16.8 | 2.1 | 29.7 | -10.5 | 0.0 | 30.1 | 37.0 | -6.9 | V | P | |
| 619.464 | 3.0 | 50.4 | 18.4 | 2.4 | 29.6 | -10.5 | 0.0 | 31.2 | 37.0 | -5.8 | V | P | |
| Horizontal_Sample #2 | | | | | | | | | | | | | |
| 148.565 | 3.0 | 50.8 | 12.7 | 1.1 | 29.3 | -10.5 | 0.0 | 24.8 | 30.0 | -5.2 | H | P | |
| 299.994 | 3.0 | 50.0 | 13.3 | 1.6 | 28.8 | -10.5 | 0.0 | 25.6 | 37.0 | -11.4 | H | P | |
| 300.003 | 3.0 | 47.5 | 13.3 | 1.6 | 28.8 | -10.5 | 0.0 | 23.1 | 37.0 | -13.9 | H | QP | |
| 399.975 | 3.0 | 65.1 | 15.0 | 1.9 | 29.3 | -10.5 | 0.0 | 42.3 | 37.0 | 5.3 | H | P | |
| 399.997 | 3.0 | 52.4 | 15.0 | 1.9 | 29.3 | -10.5 | 0.0 | 29.6 | 37.0 | -7.4 | H | QP | |
| 499.999 | 3.0 | 58.8 | 16.8 | 2.1 | 29.7 | -10.5 | 0.0 | 37.5 | 37.0 | 0.5 | H | P | |
| 500.001 | 3.0 | 58.2 | 16.8 | 2.1 | 29.7 | -10.5 | 0.0 | 37.0 | 37.0 | 0.0 | H | QP | |
| 549.021 | 3.0 | 50.5 | 17.5 | 2.3 | 29.7 | -10.5 | 0.0 | 30.2 | 37.0 | -6.8 | H | P | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**Rev. 1.27.09**
**Note: No other emissions were detected above the system noise floor.**

## 6.1. DIGITAL / RECEIVER ABOVE 1 GHz

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber**

**Company:** Monsoon
**Project #:** !1U
**Date:** 2011-4-30
**Test Engineer:** Chin Pang
**Configuration:** EUT and Support Equipment
**Mode:** Vulkano Series

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz |
|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | | |

CISPR Class B

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 |
|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 |

| HPF | Reject Filter |
|---|---|
| | |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

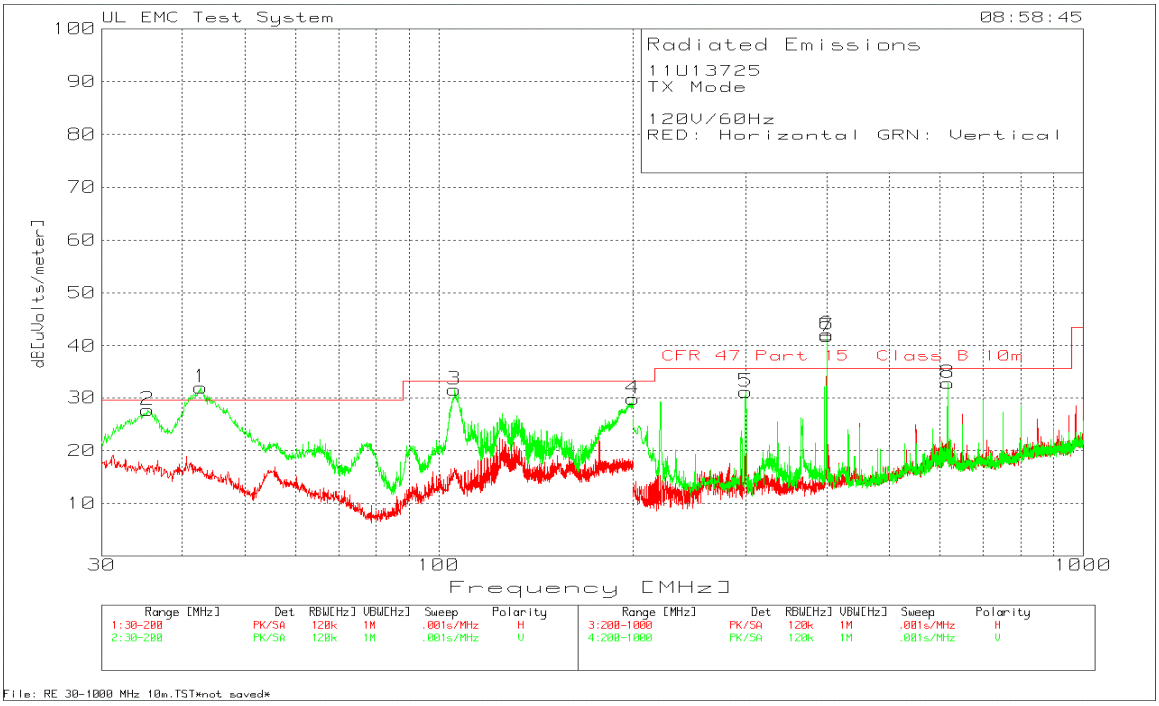
| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.200 | 3.0 | 69.4 | 54.8 | 24.5 | 2.6 | -39.2 | 0.0 | 0.0 | 57.3 | 42.7 | 70.0 | 50.0 | -12.7 | -7.3 | V |
| 2.000 | 3.0 | 62.0 | 47.5 | 27.2 | 3.5 | -38.1 | 0.0 | 0.0 | 54.6 | 40.1 | 70.0 | 50.0 | -15.4 | -9.9 | V |
| 4.925 | 3.0 | 62.0 | 40.0 | 33.1 | 5.9 | -36.5 | 0.0 | 0.0 | 64.6 | 42.6 | 74.0 | 54.0 | -9.4 | -11.4 | V |
| 1.200 | 3.0 | 66.7 | 51.7 | 24.5 | 2.6 | -39.2 | 0.0 | 0.0 | 54.7 | 39.6 | 70.0 | 50.0 | -15.3 | -10.4 | H |
| 2.000 | 3.0 | 56.0 | 46.7 | 27.2 | 3.5 | -38.1 | 0.0 | 0.0 | 48.6 | 39.3 | 70.0 | 50.0 | -21.4 | -10.7 | H |
| 4.925 | 3.0 | 58.0 | 37.8 | 33.1 | 5.9 | -36.5 | 0.0 | 0.0 | 60.6 | 40.4 | 74.0 | 54.0 | -13.4 | -13.6 | H |

Rev. 07.22.09

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

## 6.2. TRANSMITTER BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (CONFIGURATION)**




11U13725
TX Mode
120V/60Hz
RED: Horizontal GRN: Vertical

| Test Frequency | Meter Reading | Detector | VBA6106A SN1246 EMC4078 Bicon [dB] | West 30-200MHz with Miteq [dB] | dB[uV/m] | CFR 47 Part 15 Class B 10m | Margin | Height [cm] | Azimuth | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 42.7436 | 49.24 | PK | 13 | -30.3 | 31.94 | 29.6 | 2.34 | 99 | - | Vert |
| 35.3523 | 41.95 | PK | 16 | -30.3 | 27.65 | 29.6 | -1.95 | 99 | - | Vert |
| 105.7821 | 50.04 | PK | 11.4 | -29.9 | 31.54 | 33.1 | -1.56 | 99 | - | Vert |
| 200 | 43.55 | PK | 16 | -29.7 | 29.85 | 33.1 | -3.25 | 99 | - | Vert |
| *399.8668 | 58.71 | PK | 15.7 | -32.2 | 42.21 | 35.6 | 6.61 | 300 | - | Horz |
| 299.9334 | 50.96 | PK | 13 | -32.8 | 31.16 | 35.6 | -4.44 | 299 | - | Vert |
| *399.8668 | 58.33 | PK | 15.7 | -32.2 | 41.83 | 35.6 | 6.23 | 100 | - | Vert |
| 615.9893 | 43.59 | PK | 20.2 | -31 | 32.79 | 35.6 | -2.81 | 299 | - | Vert |
| 42.7756 | 43.41 | QP | 13 | -30.3 | 26.11 | 29.6 | -3.49 | 266 | 105 | Vert |
| 35.524359 | 37.06 | QP | 15.8 | -30.3 | 22.56 | 29.6 | -7.04 | 165 | 100 | Vert |
| 105.84 | 45.83 | QP | 11.4 | -29.9 | 27.33 | 33.1 | -5.77 | 164 | 110 | Vert |
| 199.99 | 40.77 | QP | 16 | -29.7 | 27.07 | 33.1 | -6.03 | 81 | 100 | Vert |
| 616.007859 | 29.29 | QP | 20.2 | -31 | 18.49 | 35.6 | -17.11 | 36 | 398 | Vert |

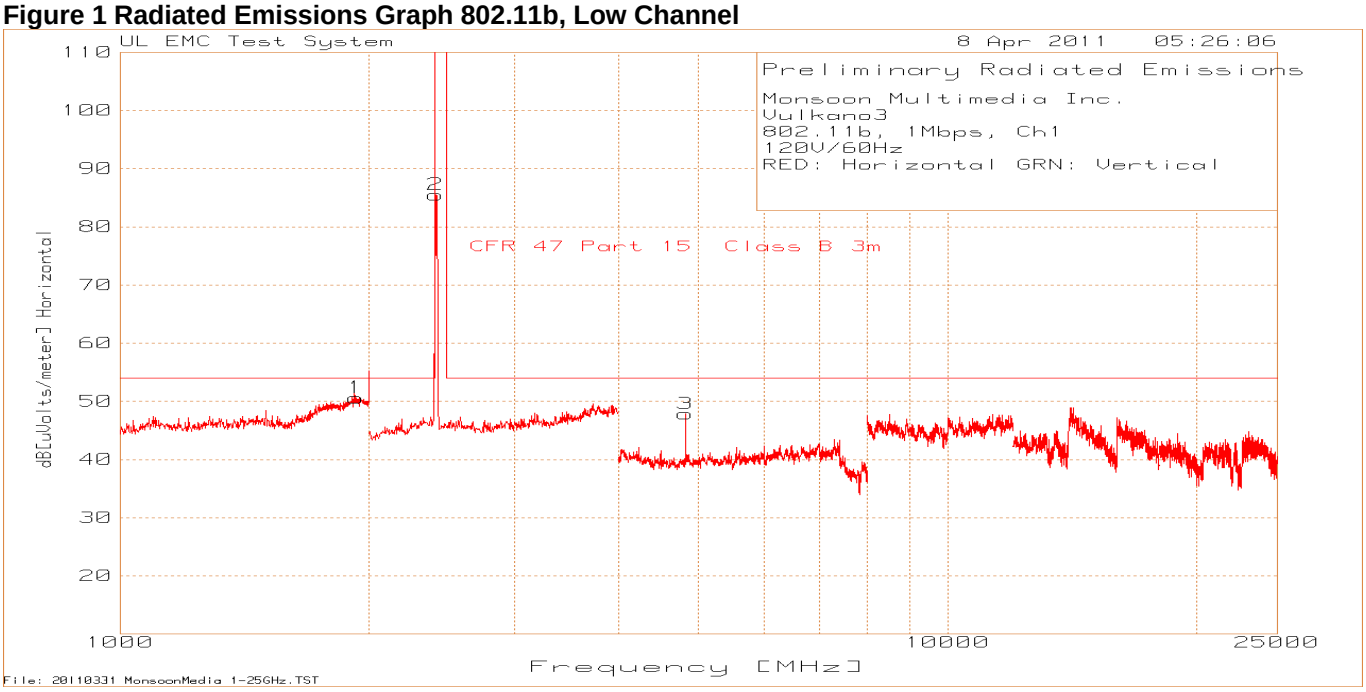
*400MHz emissions are from the USB interface that has been modified for radio test. These emissions are much lower in production line sample. Please see section for digital radiated emissions 30MHz-1GHz. In addition there was no difference in emissions below 1GHz in different modes.

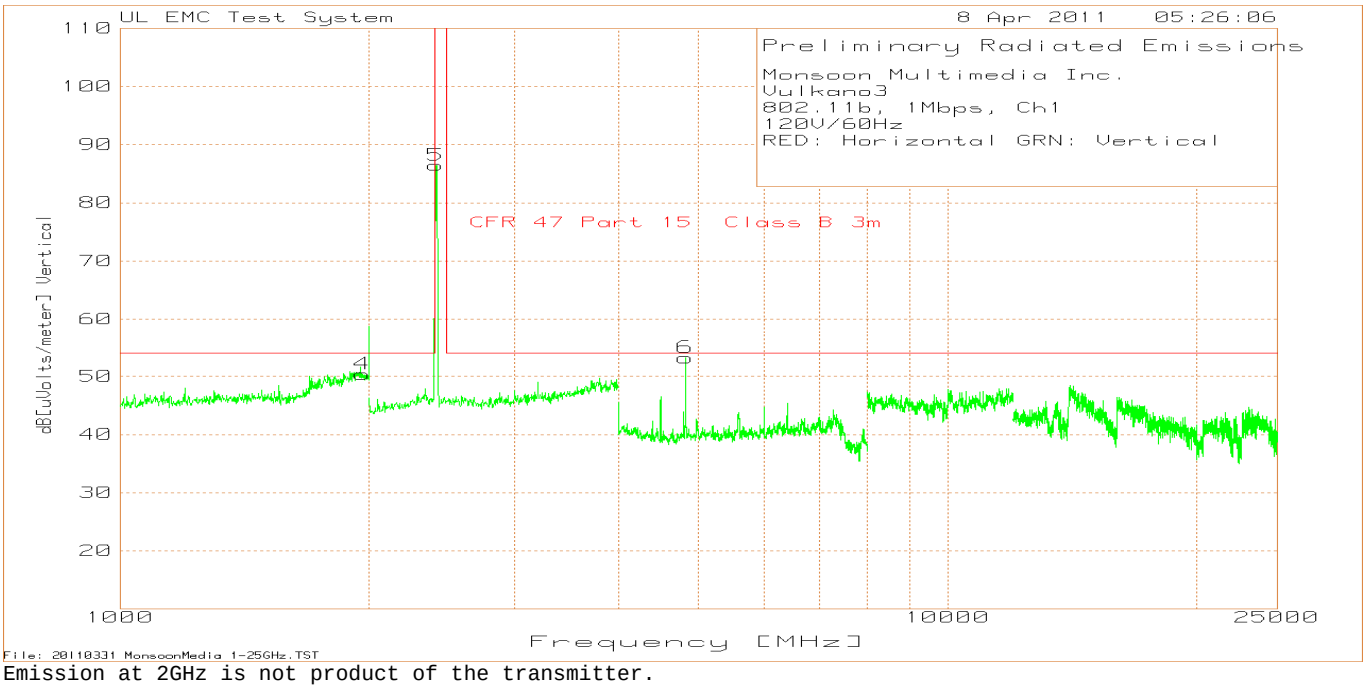
PK - Peak detector
QP - Quasi-Peak detector

## 6.3. TRANSMITTER ABOVE 1 GHz

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

**Figure 1 Radiated Emissions Graph 802.11b, Low Channel**




Emission at 2GHz is not product of the transmitter.

**Table 2 Radiated Emissions Data Points 802.11b, Low Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11b, 1Mbps, Ch1
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1931.864 | 19.47 | PK | 3.55 | 27.6 | 50.62 | 54 | -3.38 | 136 | Horz |
| 2 | 2408.818 | 59.58 | PK | 4.17 | 21.8 | 85.55 | | | 100 | Horz |
| 3 | 4820.821 | 70.88 | PK | -50.75 | 27.7 | 47.83 | 54 | -6.17 | 100 | Horz |
| 4 | 1965.932 | 19.41 | PK | 3.48 | 27.5 | 50.39 | 54 | -3.61 | 100 | Vert |
| 5 | 2408.818 | 60.5 | PK | 4.17 | 21.8 | 86.47 | | | 150 | Vert |
| 6 | 4824.825 | 76.08 | PK | -50.59 | 27.7 | 53.19 | 54 | -0.81 | 149 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector

**Figure 2 Band edge plot, 802.11b, Low Channel, Peak**


**Figure 3 Band edge plot, 802.11b, Low Channel, Average**

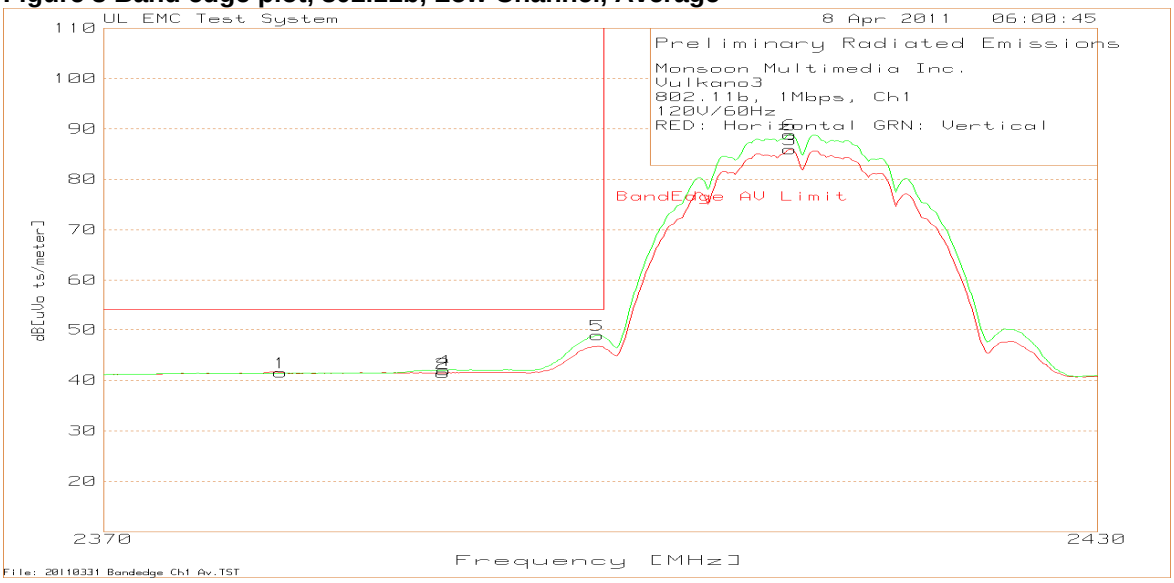
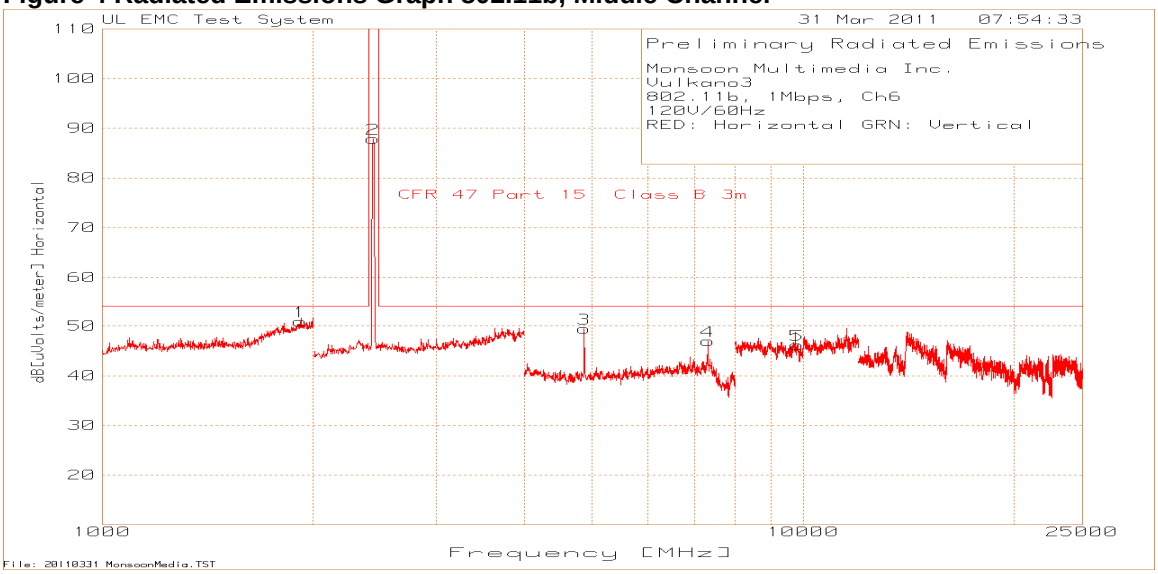


**Figure 4 Radiated Emissions Graph 802.11b, Middle Channel**



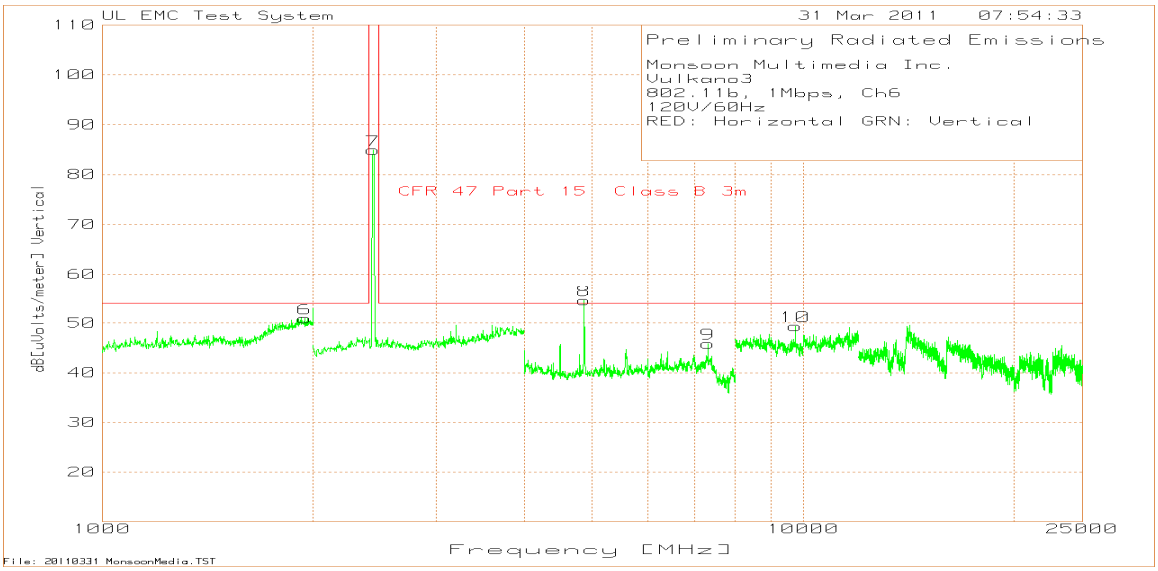



**Table 3 Radiated Emissions Data Points 802.11b, Middle Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11b, 1Mbps, Ch6
120V/60Hz
RED: Horizontal GRN: Vertical

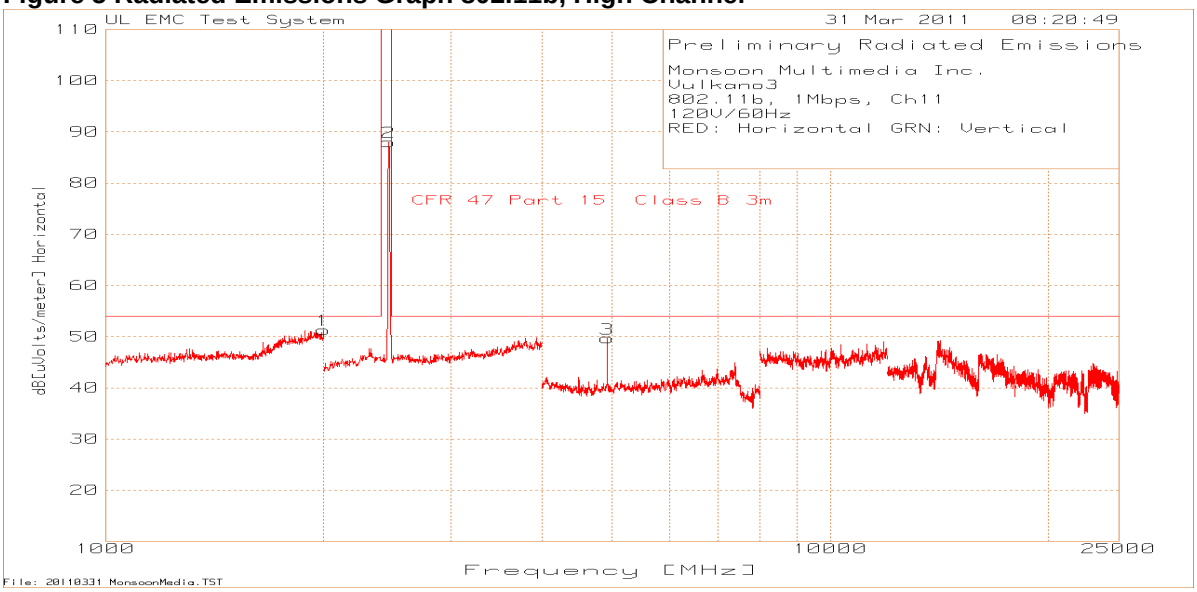
| Marker Number | Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1917.836 | 19.78 | PK | 3.57 | 27.6 | 50.95 | 54 | -3.05 | 100 | Horz |
| 2 | 2436.874 | 61.94 | PK | 4.05 | 21.9 | 87.89 | | | 100 | Horz |
| 3 | 4872.873 | 72.07 | PK | -50.28 | 27.7 | 49.49 | 54 | -4.51 | 150 | Horz |
| 4 | 7311.311 | 61.7 | PK | -45.23 | 30.5 | 46.97 | 54 | -7.03 | 100 | Horz |
| 5 | 9801.802 | 59.01 | PK | -49.24 | 36.4 | 46.17 | 54 | -7.83 | 149 | Horz |
| 6 | 1943.888 | 19.85 | PK | 3.54 | 27.5 | 50.89 | 54 | -3.11 | 100 | Vert |
| 7 | 2436.874 | 58.94 | PK | 4.05 | 21.9 | 84.89 | | | 100 | Vert |
| 8 | 4872.873 | 77.14 | PK | -50.28 | 27.7 | 54.56 | 54 | 0.56 | 149 | Vert |
| 9 | 7311.311 | 60.53 | PK | -45.23 | 30.5 | 45.8 | 54 | -8.2 | 100 | Vert |
| 10 | 9749.75 | 62.1 | PK | -49.17 | 36.4 | 49.33 | 54 | -4.67 | 150 | Vert |

Maximized Measurements

| Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Azimuth [degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 4873.938 | 78.64 | PK | -50.32 | 27.7 | 56.02 | 74 | -17.98 | 345 | 173 | Vert |
| 4873.928 | 76.23 | LnAv | -50.32 | 27.7 | 53.61 | 54 | -0.39 | 345 | 173 | Vert |
| 4873.97 | 73.96 | PK | -50.32 | 27.7 | 51.34 | 74 | -22.66 | 31 | 103 | Horz |
| 4873.929 | 70.99 | LnAv | -50.32 | 27.7 | 48.37 | 54 | -5.63 | 31 | 103 | Horz |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector
AV – Average Detector

**Figure 5 Radiated Emissions Graph 802.11b, High Channel**



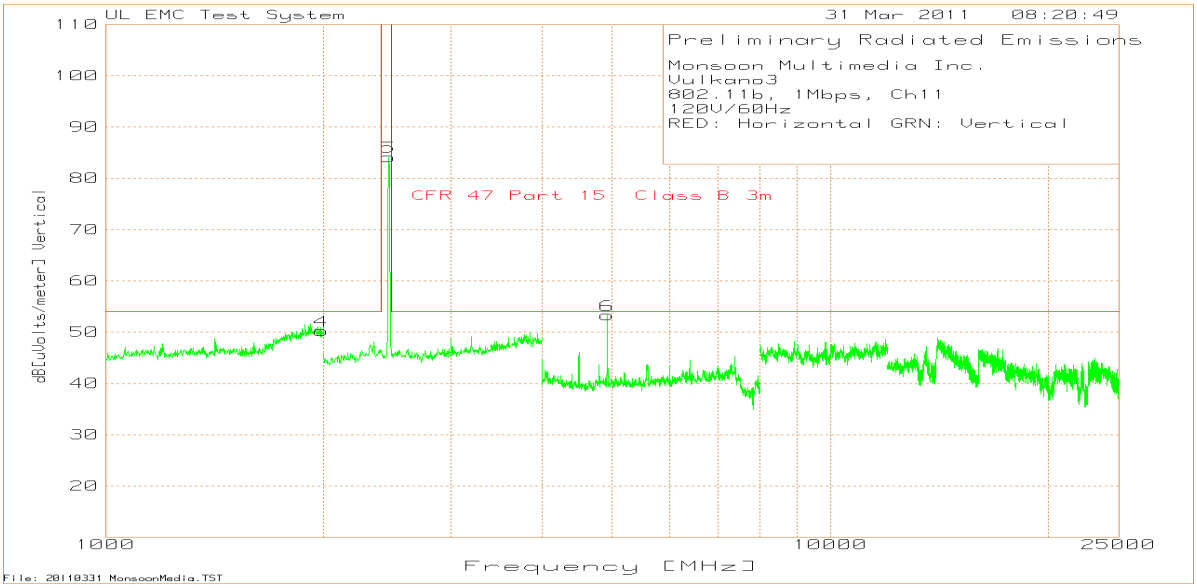



**Table 4 Radiated Emissions Data Points 802.11b, High Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11b, 1Mbps, Ch11
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2000 | 20.23 | PK | 3.59 | 27.5 | 51.32 | 54 | -2.68 | 100 | Horz |
| 2 | 2460.922 | 61.7 | PK | 4.29 | 22 | 87.99 | | | 100 | Horz |
| 3 | 4924.925 | 72.62 | PK | -50.78 | 27.8 | 49.64 | 54 | -4.36 | 150 | Horz |
| 4 | 1985.972 | 19 | PK | 3.71 | 27.5 | 50.21 | 54 | -3.79 | 100 | Vert |
| 5 | 2460.922 | 57.91 | PK | 4.29 | 22 | 84.2 | | | 150 | Vert |
| 6 | 4924.925 | 76.25 | PK | -50.78 | 27.8 | 53.27 | 54 | -0.73 | 150 | Vert |

Maximized Measurements

| Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Azimuth [degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 4923.9589 | 73.58 | PK | -50.81 | 27.8 | 50.57 | 74 | -23.43 | 12 | 103 | Horz |
| 4923.9198 | 70.13 | LnAv | -50.81 | 27.8 | 47.12 | 54 | -6.88 | 12 | 103 | Horz |
| 4923.9248 | 77.41 | PK | -50.81 | 27.8 | 54.4 | 74 | -19.6 | 343 | 158 | Vert |
| 4923.9499 | 74.91 | LnAv | -50.81 | 27.8 | 51.9 | 54 | -2.1 | 343 | 158 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector
AV – Average Detector

**Figure 6 Band edge plot, 802.11b, High Channel, Peak**

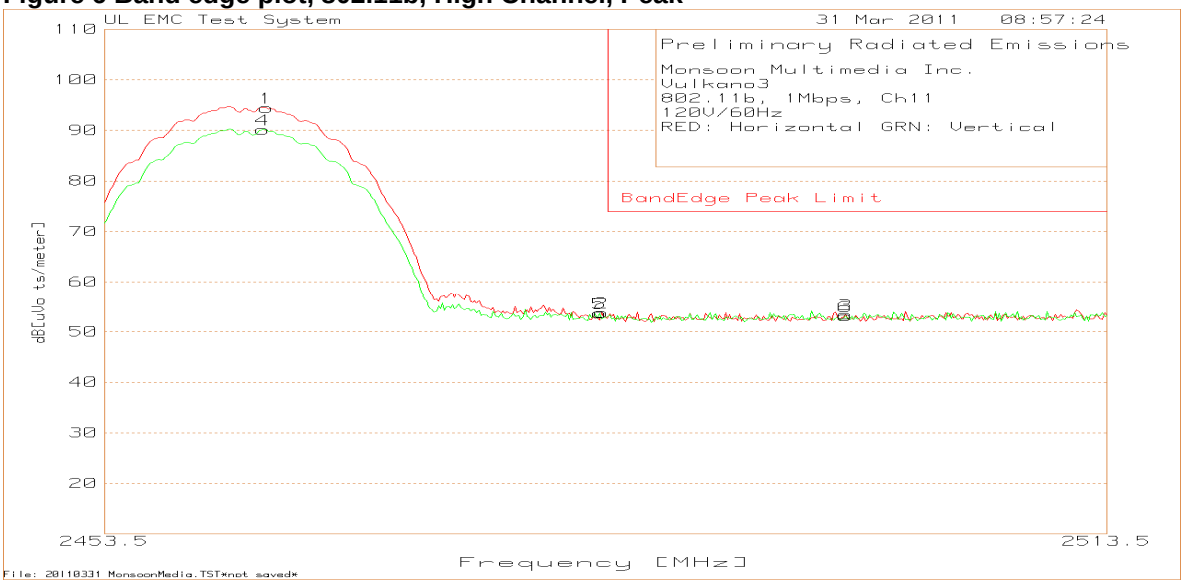
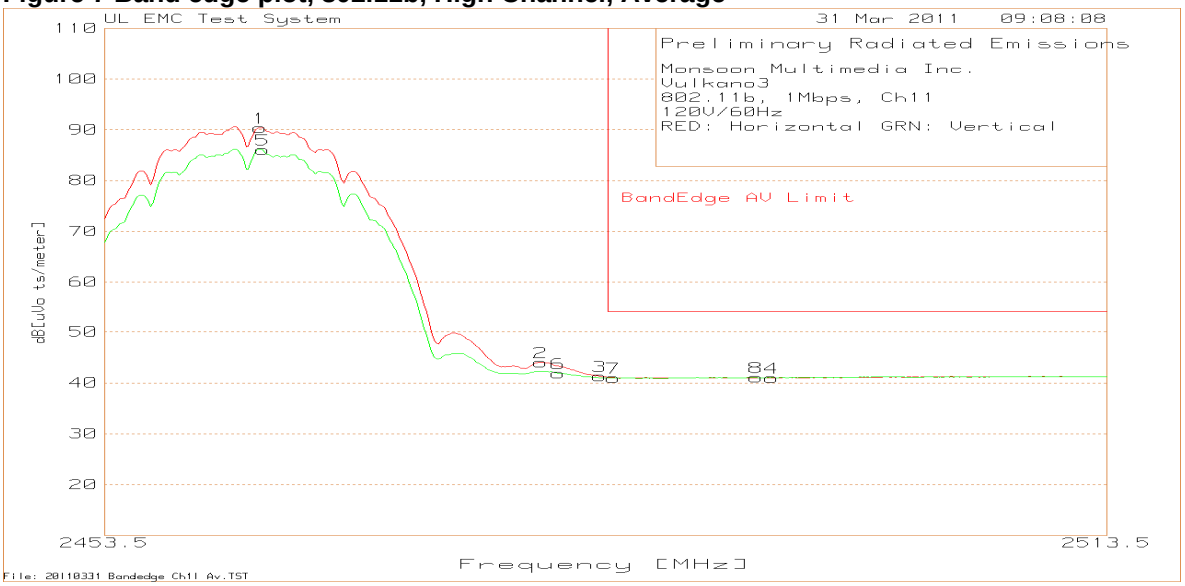
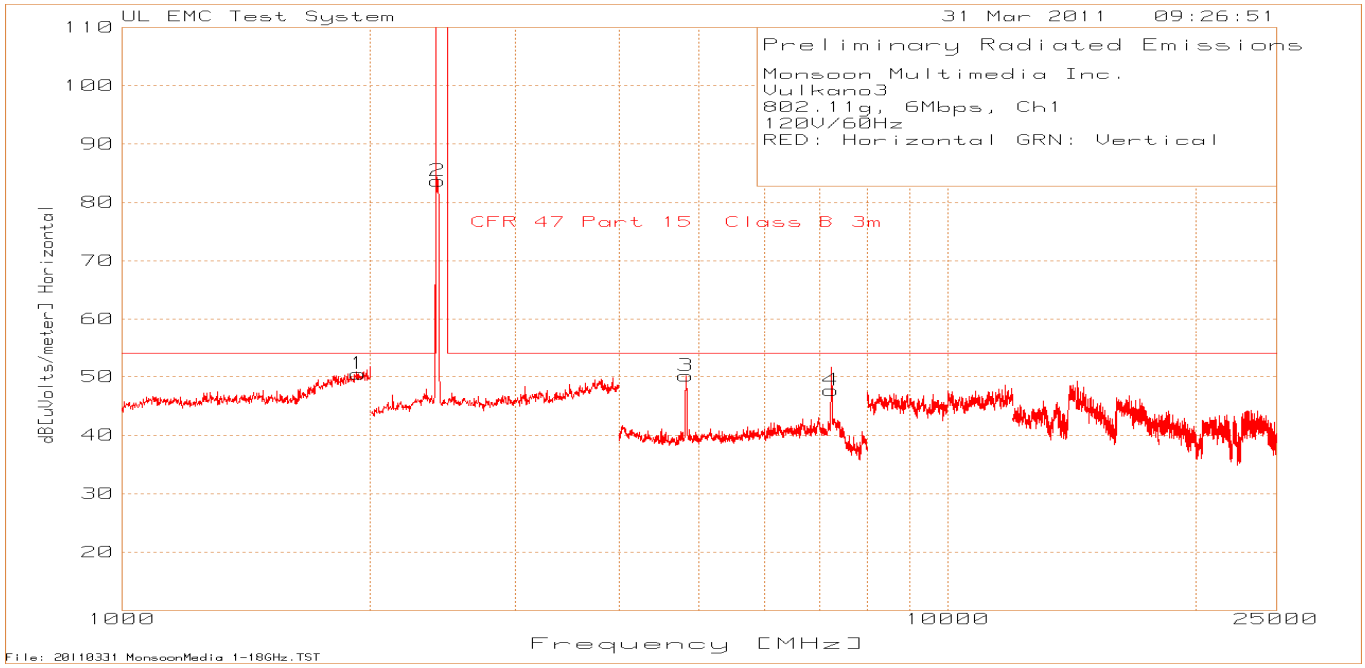



**Figure 7 Band edge plot, 802.11b, High Channel, Average**



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

**Figure 8 Radiated Emissions Graph 802.11g, Low Channel**



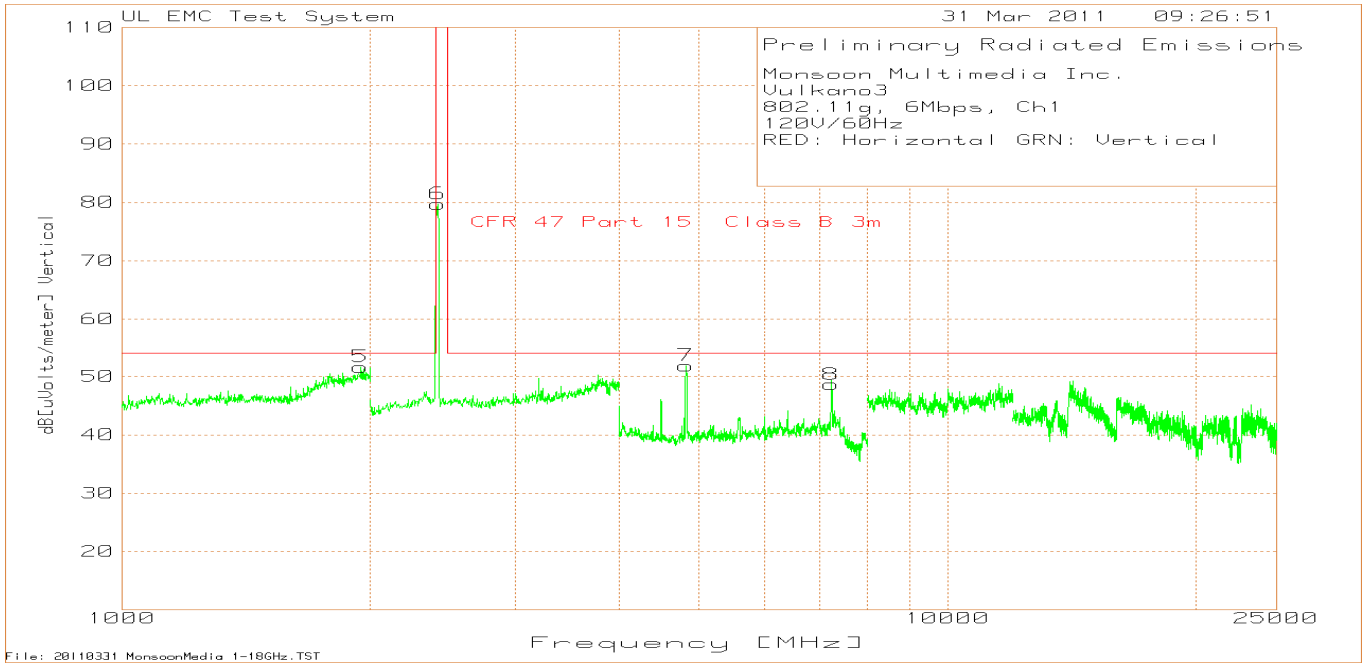



**Table 5 Radiated Emissions Data Points 802.11g, Low Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11g, 6Mbps, Ch1
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1935.872 | 19.36 | PK | 3.53 | 27.6 | 50.49 | 54 | -3.51 | 150 | Horz |
| 2 | 2412.826 | 57.84 | PK | 4.08 | 21.8 | 83.72 | | | 100 | Horz |
| 3 | 4824.825 | 73 | PK | -50.59 | 27.7 | 50.11 | 54 | -3.89 | 150 | Horz |
| 4 | 7231.231 | 64.39 | PK | -46.63 | 29.9 | 47.66 | 54 | -6.34 | 100 | Horz |
| 5 | 1945.892 | 20.59 | PK | 3.54 | 27.5 | 51.63 | 54 | -2.37 | 100 | Vert |
| 6 | 2412.826 | 53.84 | PK | 4.08 | 21.8 | 79.72 | | | 100 | Vert |
| 7 | 4824.825 | 74.78 | PK | -50.59 | 27.7 | 51.89 | 54 | -2.11 | 150 | Vert |
| 8 | 7239.239 | 65.33 | PK | -46.71 | 30 | 48.62 | 54 | -5.38 | 100 | Vert |
| | | | | | | | | | | |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector
Av - Average detector

**Figure 9 Band edge plot, 802.11g, Low Channel, Peak**

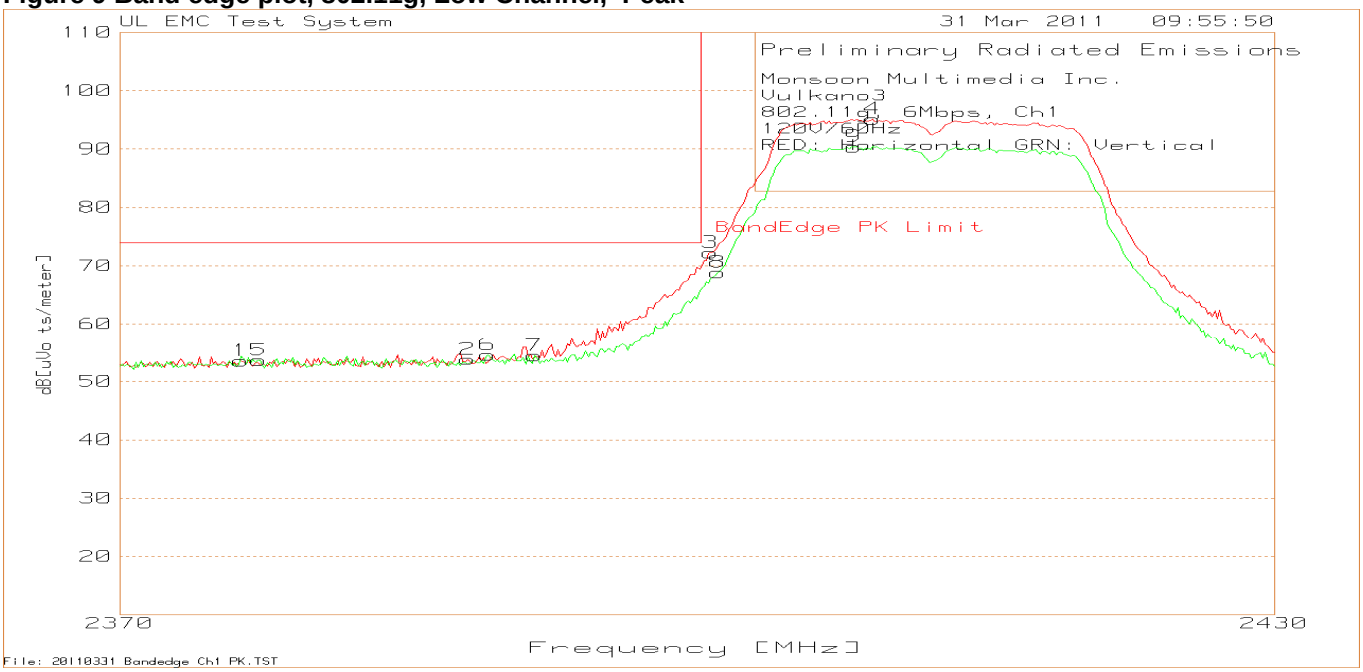



**Figure 10 Band edge plot, 802.11g, Low Channel, Average**

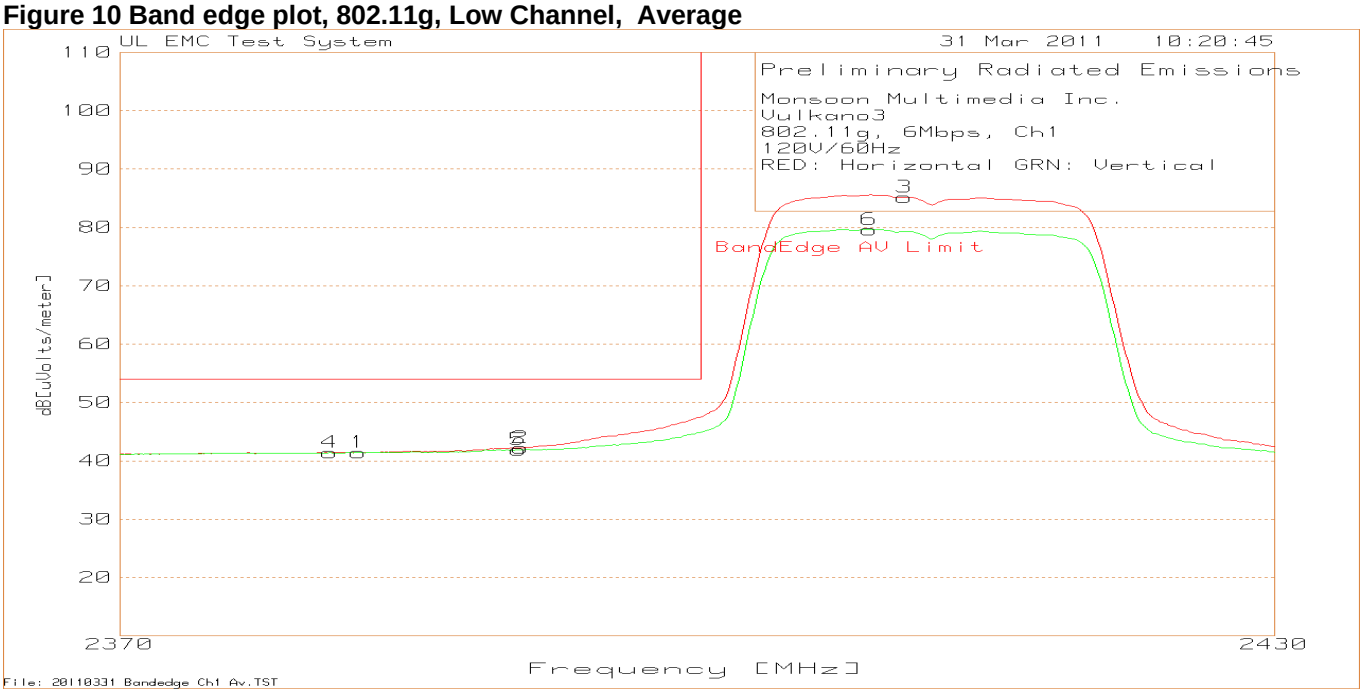
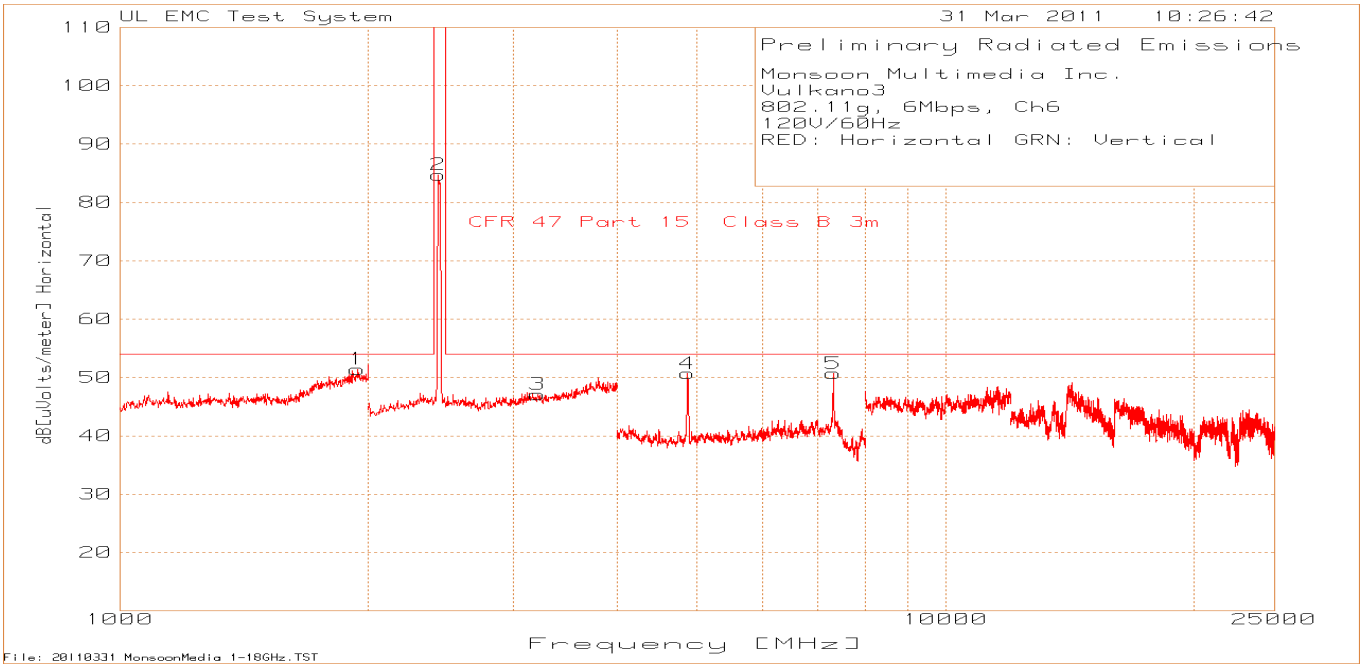


**Figure 11 Radiated Emissions Graph 802.11g, Middle Channel**



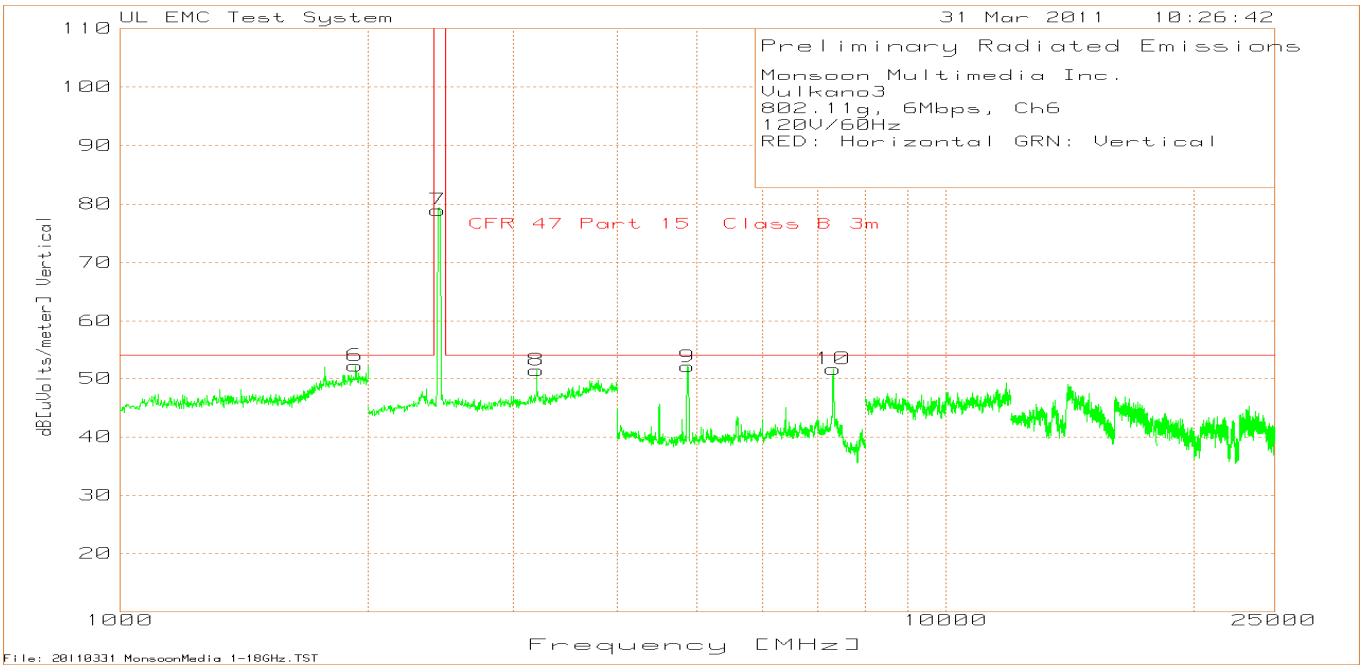



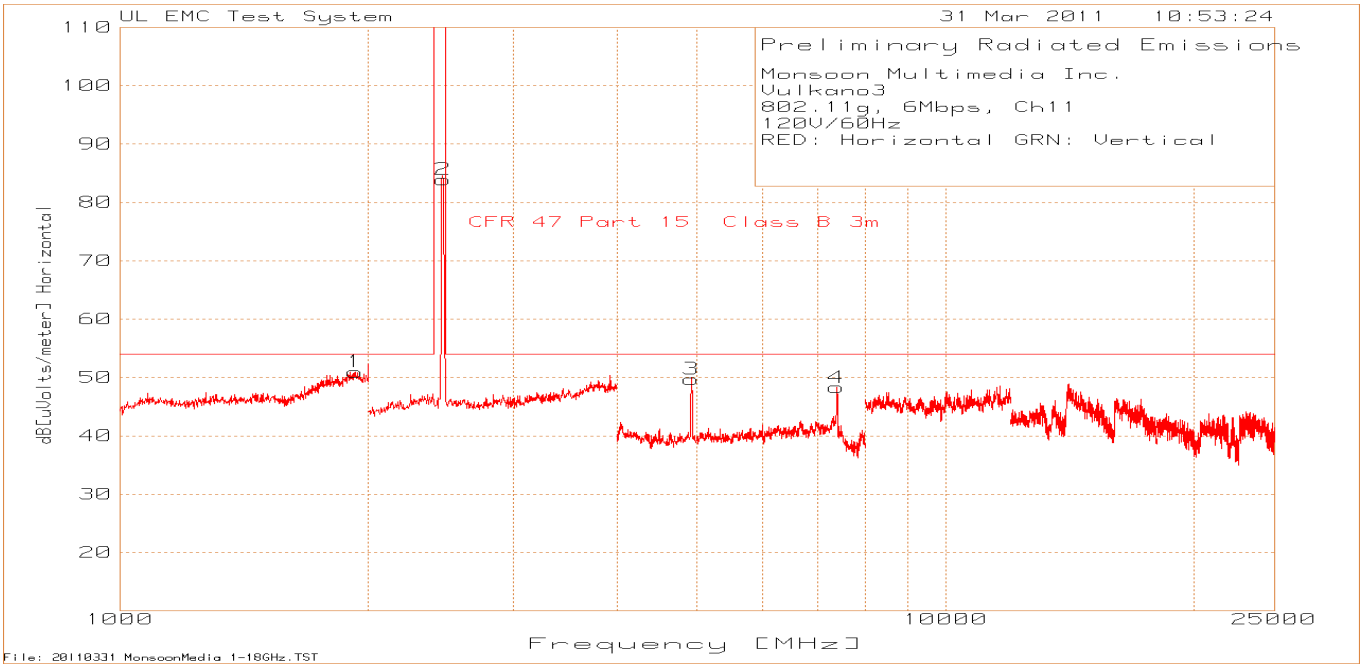
**Table 6 Radiated Emissions Data Points 802.11g, Middle Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11g, 6Mbps, Ch6
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1941.884 | 20.34 | PK | 3.54 | 27.5 | 51.38 | 54 | -2.62 | 150 | Horz |
| 2 | 2432.866 | 58.89 | PK | 3.95 | 21.9 | 84.74 | | | 100 | Horz |
| 3 | 3210.421 | 19.24 | PK | 4.77 | 23.1 | 47.11 | 54 | -6.89 | 100 | Horz |
| 4 | 4872.873 | 73.24 | PK | -50.28 | 27.7 | 50.66 | 54 | -3.34 | 150 | Horz |
| 5 | 7311.311 | 65.39 | PK | -45.23 | 30.5 | 50.66 | 54 | -3.34 | 150 | Horz |
| 6 | 1931.864 | 20.99 | PK | 3.55 | 27.6 | 52.14 | 54 | -1.86 | 100 | Vert |
| 7 | 2428.858 | 53.12 | PK | 3.9 | 21.9 | 78.92 | | | 100 | Vert |
| 8 | 3198.397 | 23.43 | PK | 4.76 | 23.2 | 51.39 | 54 | -2.61 | 100 | Vert |
| 9 | 4872.873 | 74.6 | PK | -50.28 | 27.7 | 52.02 | 54 | -1.98 | 150 | Vert |
| 10 | 7311.311 | 66.33 | PK | -45.23 | 30.5 | 51.6 | 54 | -2.4 | 100 | Vert |
| | | | | | | | | | | |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector

**Figure 12 Radiated Emissions Graph 802.11g, High Channel**



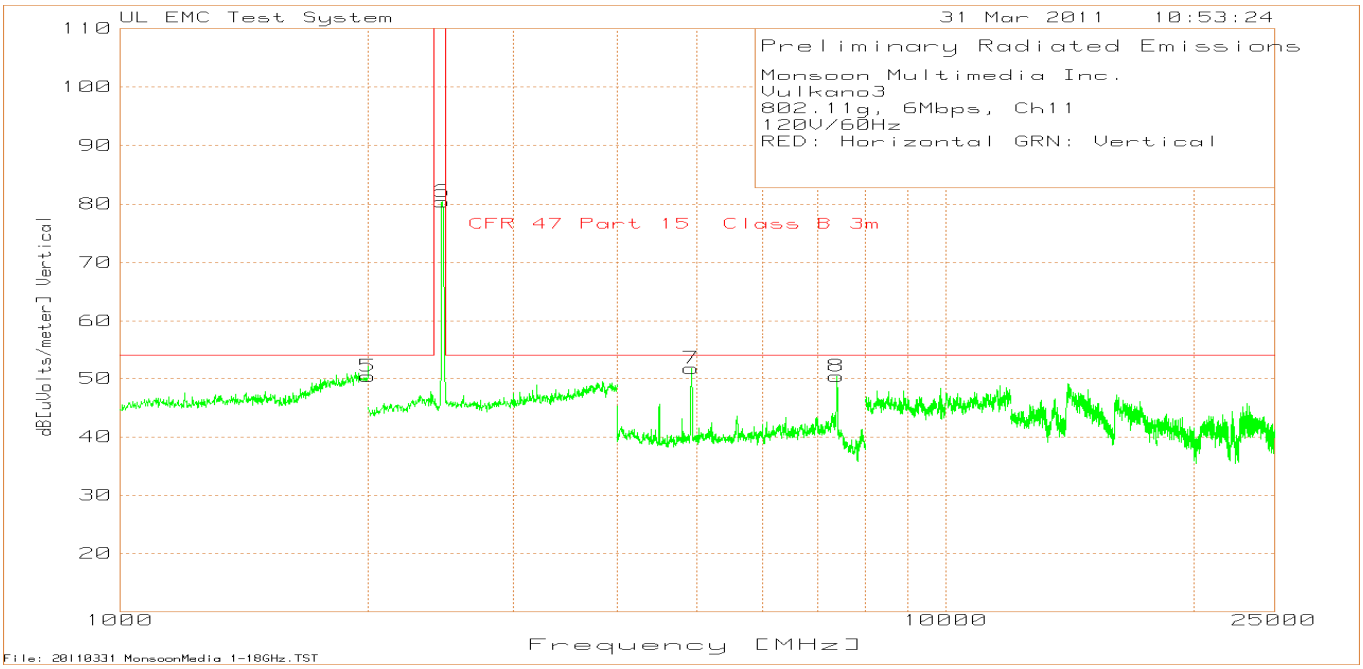



**Table 7 Radiated Emissions Data Points 802.11g, High Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11g, 6Mbps, Ch11
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading dBuV | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1929.86 | 19.79 | PK | 3.57 | 27.6 | 50.96 | 54 | -3.04 | 100 | Horz |
| 2 | 2464.93 | 57.65 | PK | 4.27 | 22 | 83.92 | | | 100 | Horz |
| 3 | 4924.925 | 72.71 | PK | -50.78 | 27.8 | 49.73 | 54 | -4.27 | 150 | Horz |
| 4 | 7391.391 | 63.53 | PK | -46.35 | 31.1 | 48.28 | 54 | -5.72 | 150 | Horz |
| 5 | 1995.992 | 19.24 | PK | 3.63 | 27.5 | 50.37 | 54 | -3.63 | 100 | Vert |
| 6 | 2456.914 | 54.07 | PK | 4.31 | 22 | 80.38 | | | 100 | Vert |
| 7 | 4924.925 | 74.73 | PK | -50.78 | 27.8 | 51.75 | 54 | -2.25 | 150 | Vert |
| 8 | 7383.383 | 65.65 | PK | -46.37 | 31.1 | 50.38 | 54 | -3.62 | 150 | Vert |
| | | | | | | | | | | |

LIMIT 1: CFR 47 Part 15 Class B 3m
PK - Peak detector

**Figure 13 Band edge plot, 802.11g, High Channel, Peak**

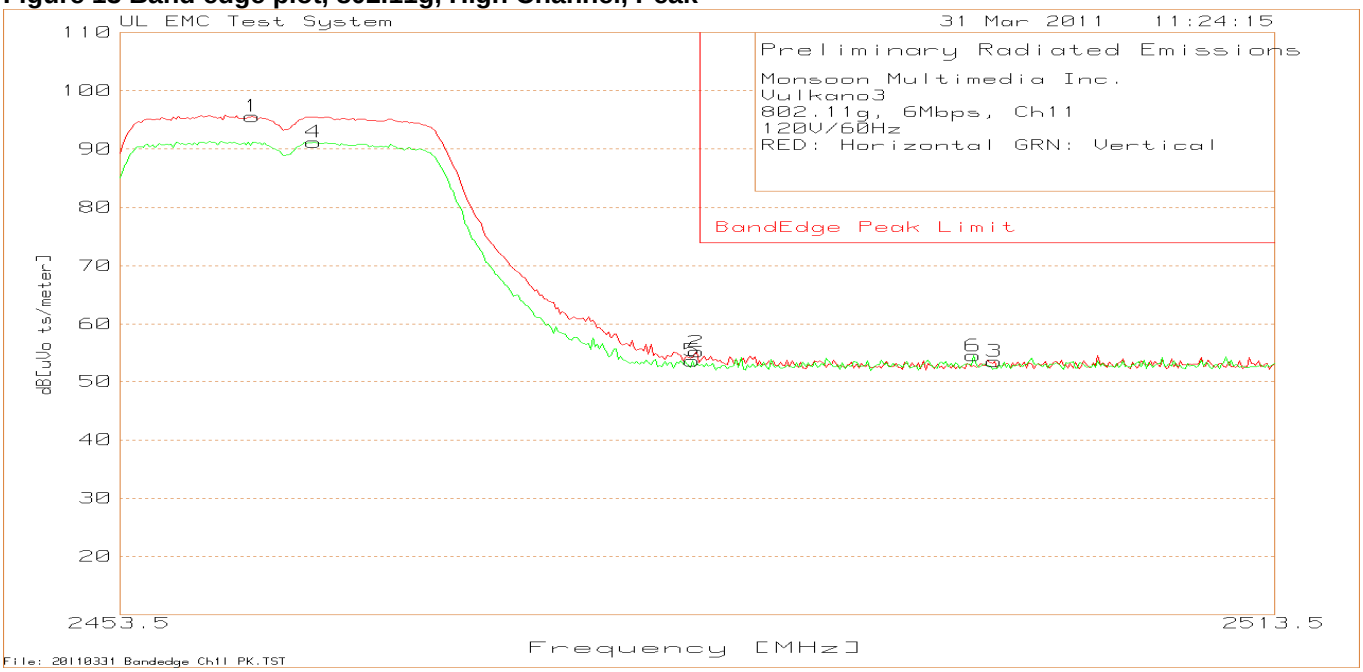
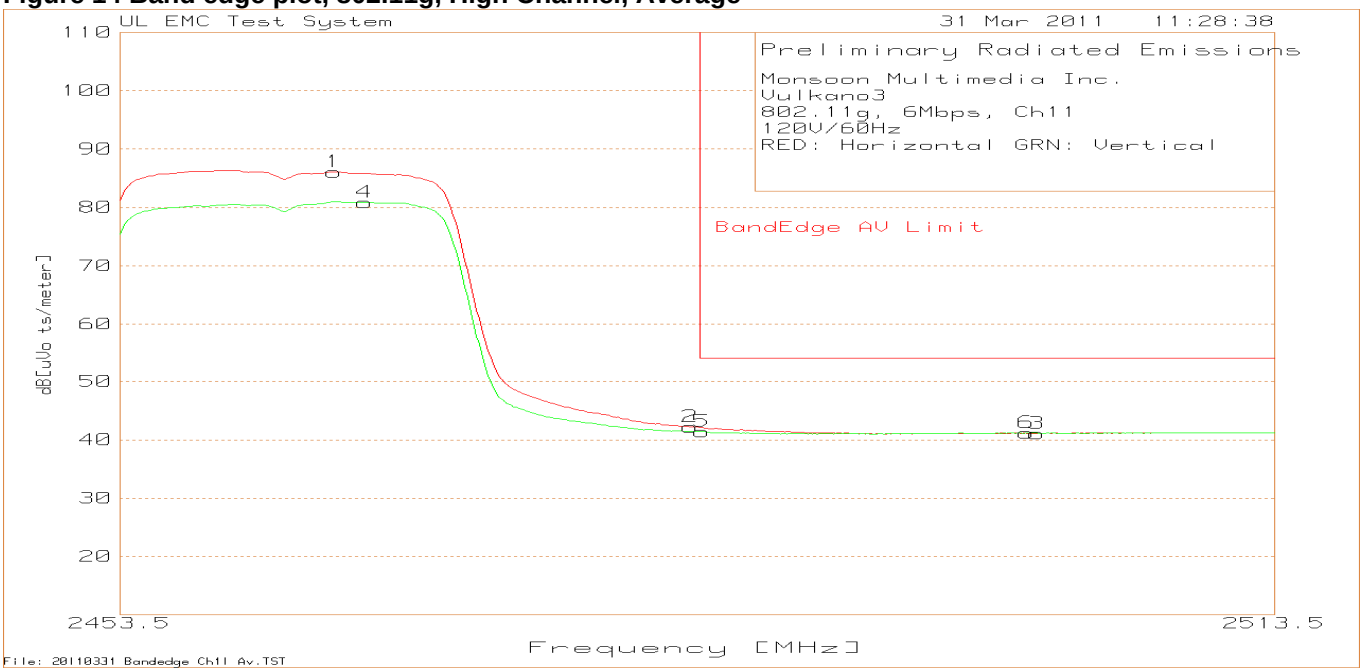
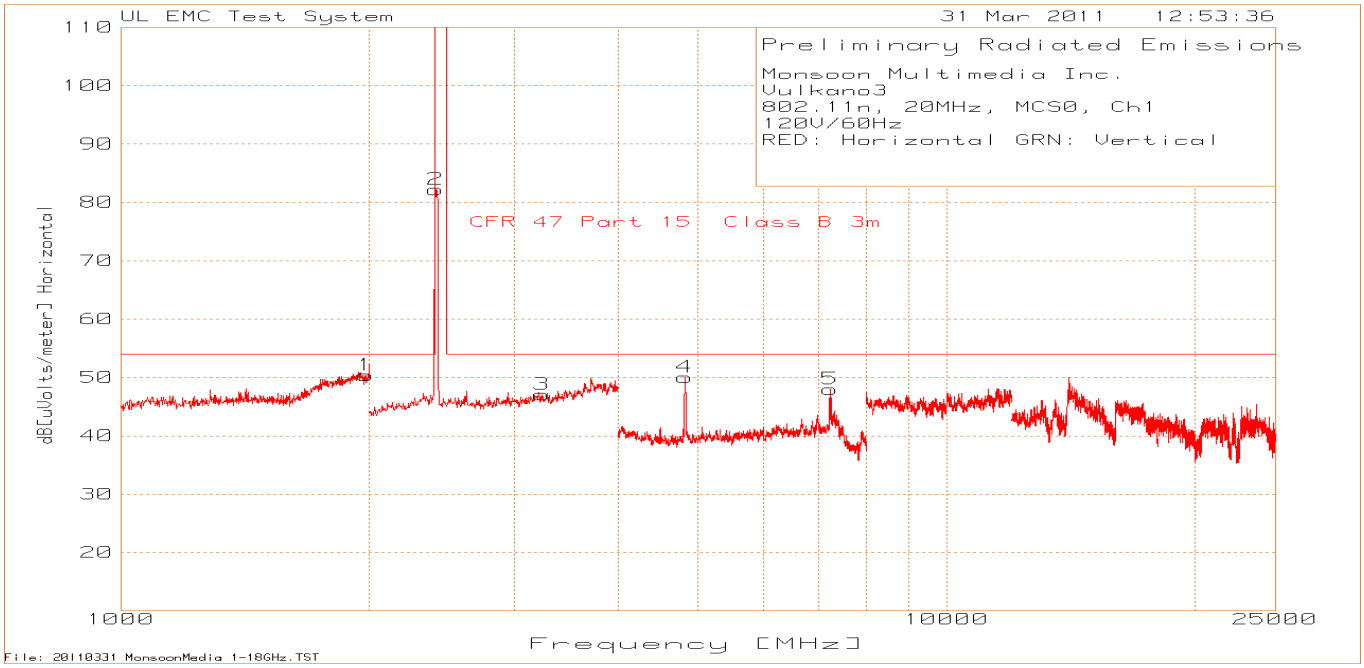



**Figure 14 Band edge plot, 802.11g, High Channel, Average**



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

**Figure 15 Radiated Emissions Graph 802.11n 20MHz, Low Channel**



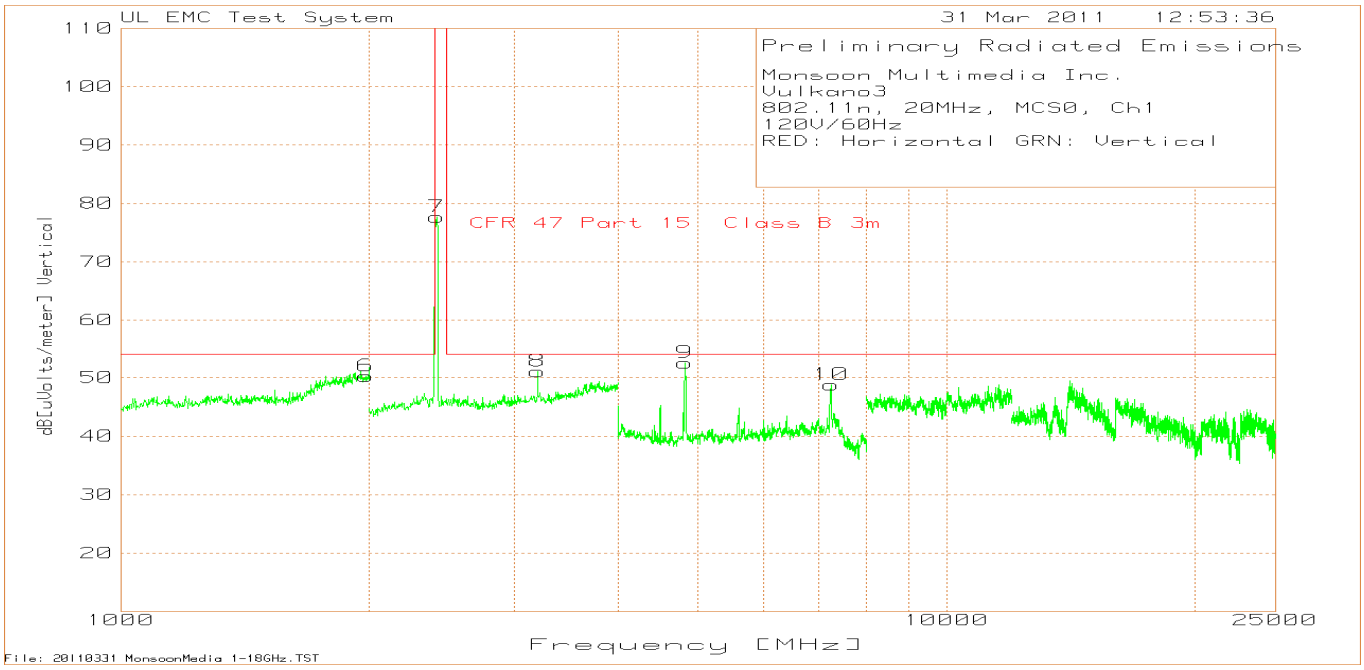



**Table 8 Radiated Emissions Data Points 802.11n 20MHz, Low Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11n, 20MHz, MCS0, Ch1
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts/meter] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1979.96 | 19.13 | PK | 3.7 | 27.5 | 50.33 | 54 | -3.67 | 100 | Horz |
| 2 | 2404.81 | 56.13 | PK | 4.26 | 21.8 | 82.19 | | | 100 | Horz |
| 3 | 3234.469 | 19.5 | PK | 4.57 | 23 | 47.07 | 54 | -6.93 | 150 | Horz |
| 4 | 4824.825 | 72.96 | PK | -50.59 | 27.7 | 50.07 | 54 | -3.93 | 150 | Horz |
| 5 | 7235.235 | 64.71 | PK | -46.69 | 30 | 48.02 | 54 | -5.98 | 100 | Horz |
| 6 | 1979.96 | 19.06 | PK | 3.7 | 27.5 | 50.26 | 54 | -3.74 | 100 | Vert |
| 7 | 2412.826 | 51.85 | PK | 4.08 | 21.8 | 77.73 | | | 100 | Vert |
| 8 | 3198.397 | 23.08 | PK | 4.76 | 23.2 | 51.04 | 54 | -2.96 | 100 | Vert |
| 9 | 4820.821 | 75.57 | PK | -50.75 | 27.7 | 52.52 | 54 | -1.48 | 150 | Vert |
| 10 | 7251.251 | 65.13 | PK | -46.44 | 30.1 | 48.79 | 54 | -5.21 | 100 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

**Figure 16 Band edge plot, 802.11n 20MHz, Low Channel, Peak**

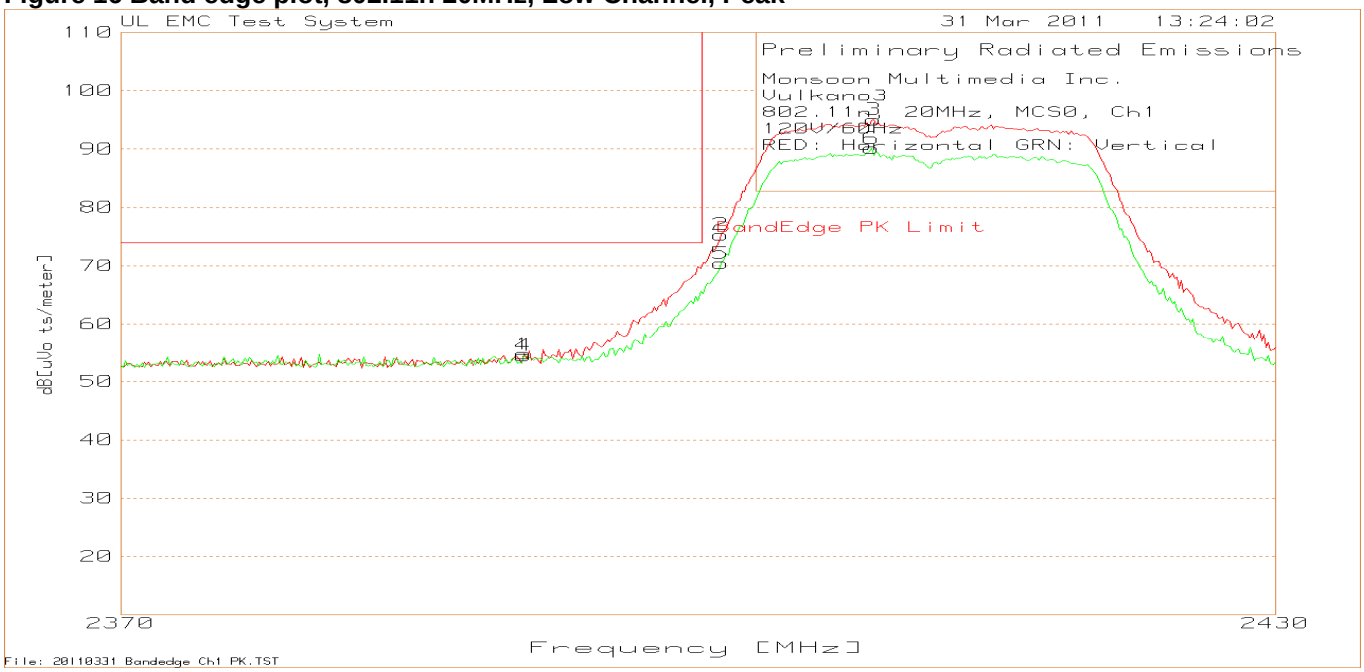



**Figure 17 Band edge plot, 802.11n 20MHz, Low Channel, Average**

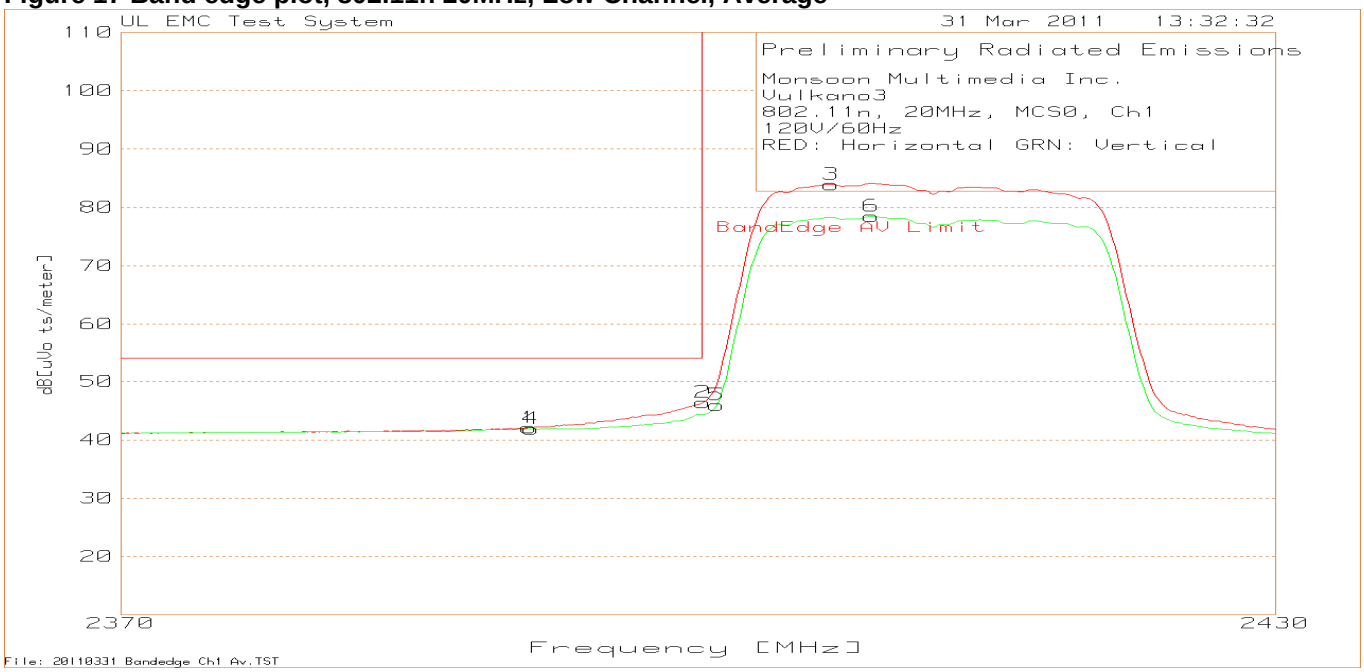
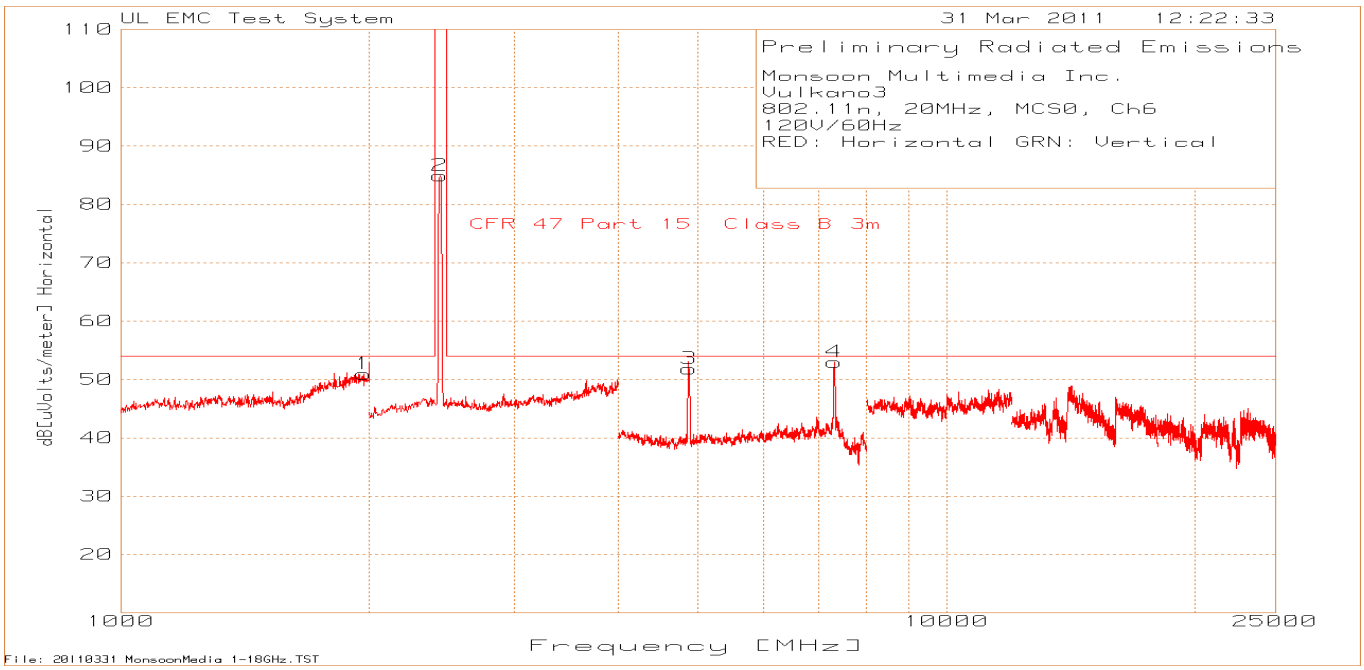


**Figure 18 Radiated Emissions Graph 802.11n 20MHz, Middle Channel**



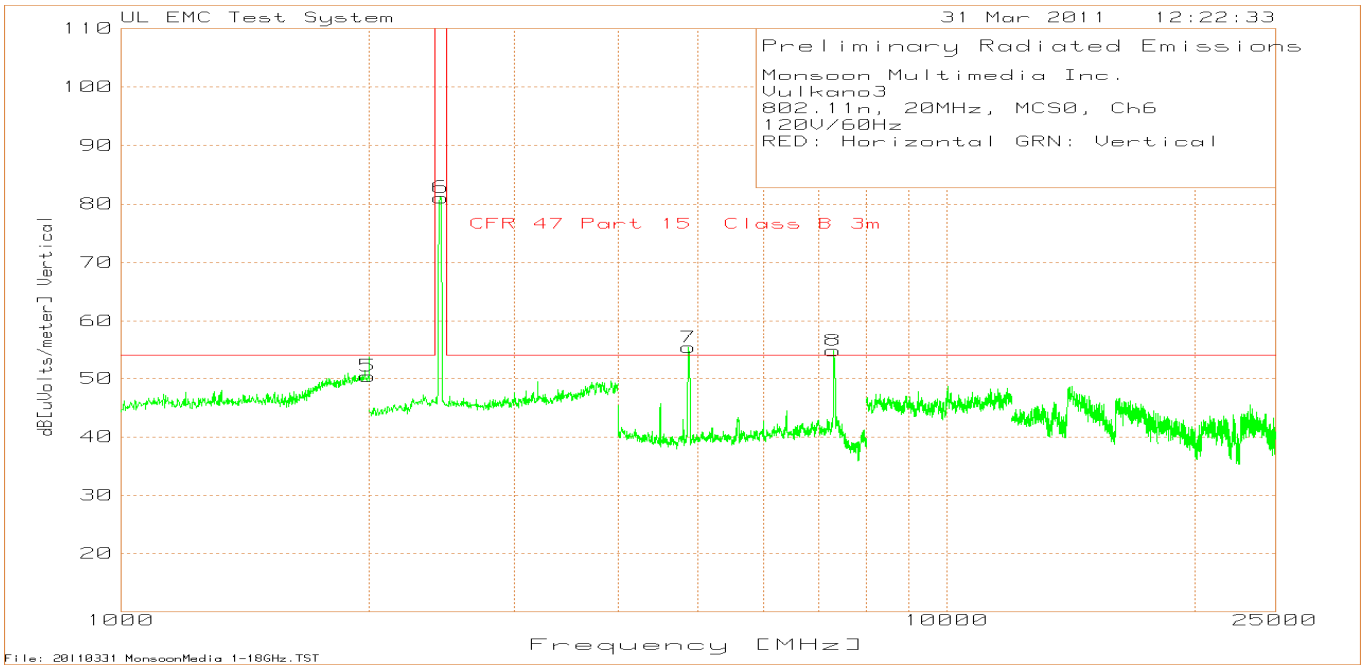



**Table 9 Radiated Emissions Data Points 802.11n 20MHz, Middle Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11n, 20MHz, MCS0, Ch6
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts /meter] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1967.936 | 19.89 | PK | 3.51 | 27.5 | 50.9 | 54 | -3.1 | 150 | Horz |
| 2 | 2436.874 | 58.97 | PK | 4.05 | 21.9 | 84.92 | | | 100 | Horz |
| 3 | 4880.881 | 74.72 | PK | -50.53 | 27.7 | 51.89 | 54 | -2.11 | 149 | Horz |
| 4 | 7307.307 | 67.69 | PK | -45.2 | 30.5 | 52.99 | 54 | -1.01 | 100 | Horz |
| 5 | 1991.984 | 19.17 | PK | 3.67 | 27.5 | 50.34 | 54 | -3.66 | 100 | Vert |
| 6 | 2444.89 | 54.92 | PK | 4.31 | 21.9 | 81.13 | | | 100 | Vert |
| 7 | 4872.873 | 77.93 | PK | -50.28 | 27.7 | 55.35 | 54 | 1.35 | 150 | Vert |
| 8 | 7299.299 | 69.55 | PK | -45.11 | 30.4 | 54.84 | 54 | .84 | 100 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

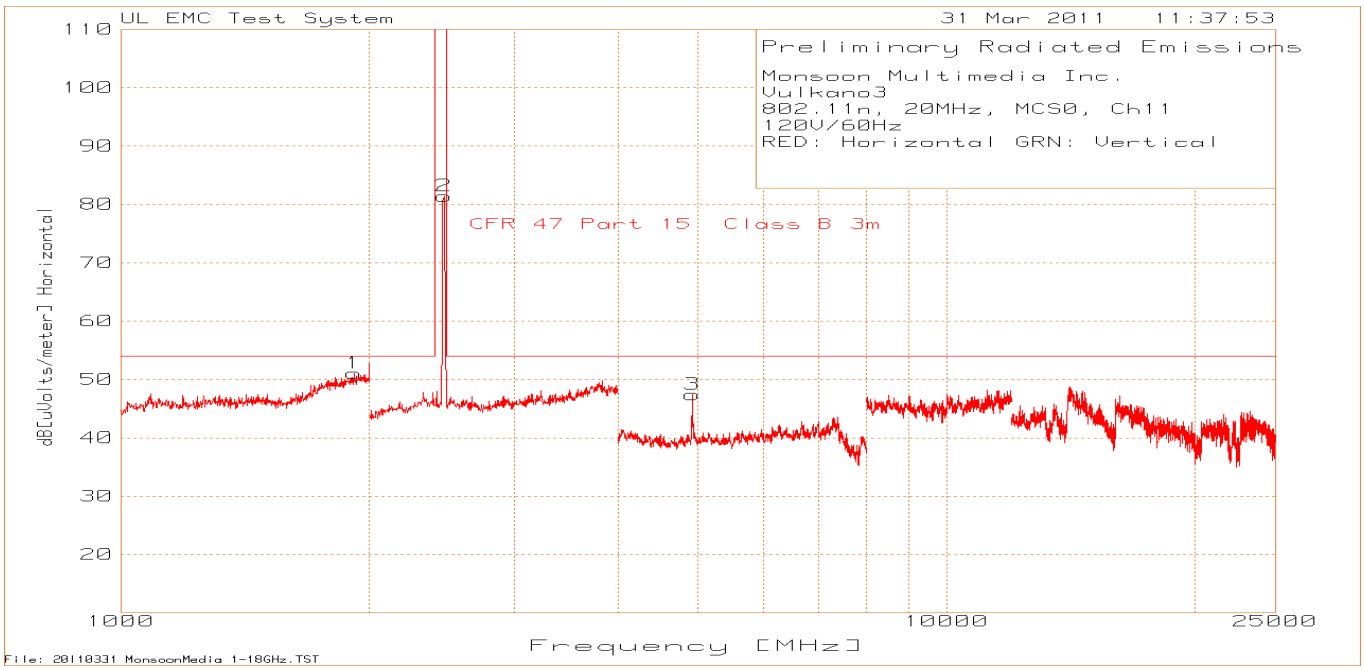
Monsoon Multimedia Inc.
Vulkano3
802.11n, 20MHz, MCS0, Ch6
120V/60Hz, ANT A
RED: Horizontal GRN: Vertical

| Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uV/m] | Limit 1 | Margin 1[dB] | Azimuth [degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 4873.967 | 66.96 | LnAv | -50.32 | 27.7 | 44.34 | 54 | -9.66 | 185 | 204 | Vert |
| 4873.997 | 68.27 | LnAv | -50.32 | 27.7 | 45.65 | 54 | -8.35 | 37 | 100 | Horz |
| 4874.292 | 79.1 | PK | -50.34 | 27.7 | 56.46 | 74 | -17.54 | 185 | 204 | Vert |
| 4875.079 | 75.58 | PK | -50.37 | 27.7 | 52.91 | 74 | -21.09 | 37 | 100 | Horz |
| 7309.059 | 55.86 | LnAv | -45.21 | 30.5 | 41.15 | 54 | -12.85 | 11 | 103 | Horz |
| 7309.149 | 58.01 | LnAv | -45.21 | 30.5 | 43.3 | 54 | -10.7 | 352 | 107 | Vert |
| 7309.55 | 73.65 | PK | -45.21 | 30.5 | 58.94 | 74 | -15.06 | 352 | 107 | Vert |
| 7309.57 | 71.21 | PK | -45.21 | 30.5 | 56.5 | 74 | -17.5 | 11 | 103 | Horz |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector
Av - Average detector

**Figure 19 Radiated Emissions Graph 802.11n 20MHz, High Channel**



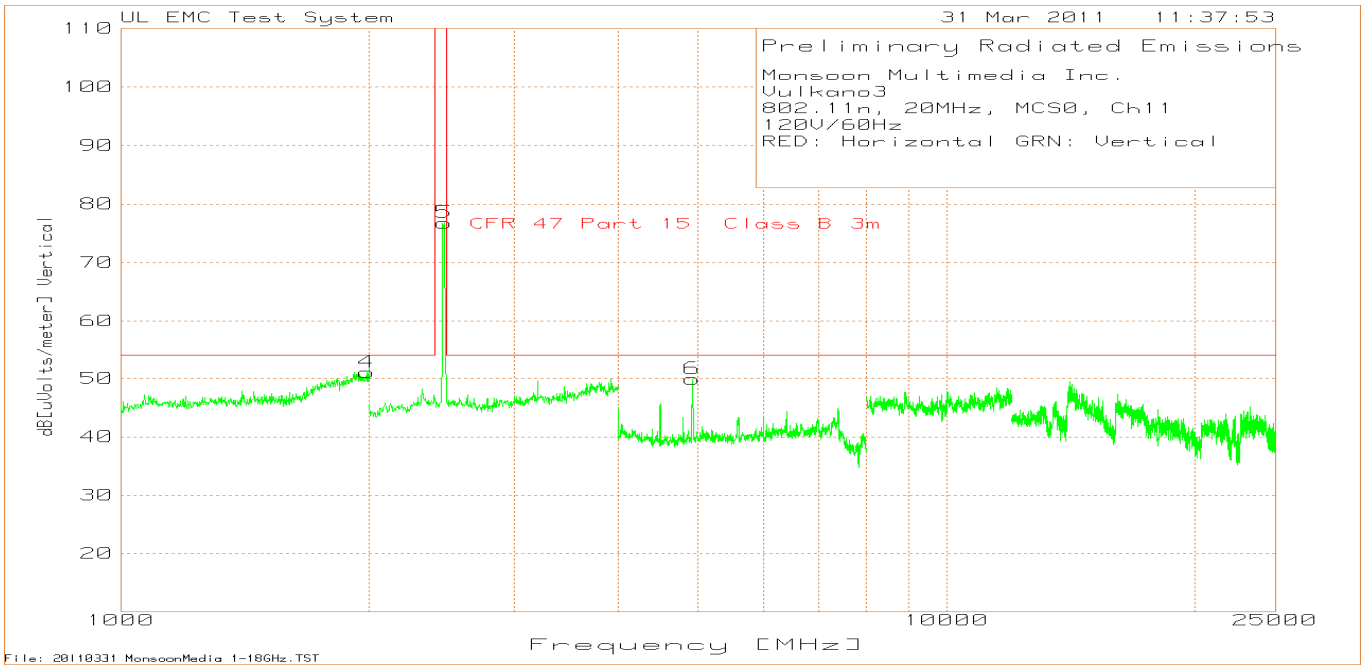



**Table 10 Radiated Emissions Data Points 802.11n 20MHz, High Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11n, 20MHz, MCS0, Ch11
120V/60Hz
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uV/m] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1915.832 | 19.92 | PK | 3.56 | 27.6 | 51.08 | 54 | -2.92 | 150 | Horz |
| 2 | 2464.93 | 55.2 | PK | 4.27 | 22 | 81.47 | | | 150 | Horz |
| 3 | 4924.925 | 70.39 | PK | -50.78 | 27.8 | 47.41 | 54 | -6.59 | 100 | Horz |
| 4 | 1985.972 | 19.8 | PK | 3.71 | 27.5 | 51.01 | 54 | -2.99 | 100 | Vert |
| 5 | 2464.93 | 50.55 | PK | 4.27 | 22 | 76.82 | | | 100 | Vert |
| 6 | 4924.925 | 72.89 | PK | -50.78 | 27.8 | 49.91 | 54 | -4.09 | 150 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

**Figure 20 Band edge plot, 802.11n 20MHz, High Channel, Peak**

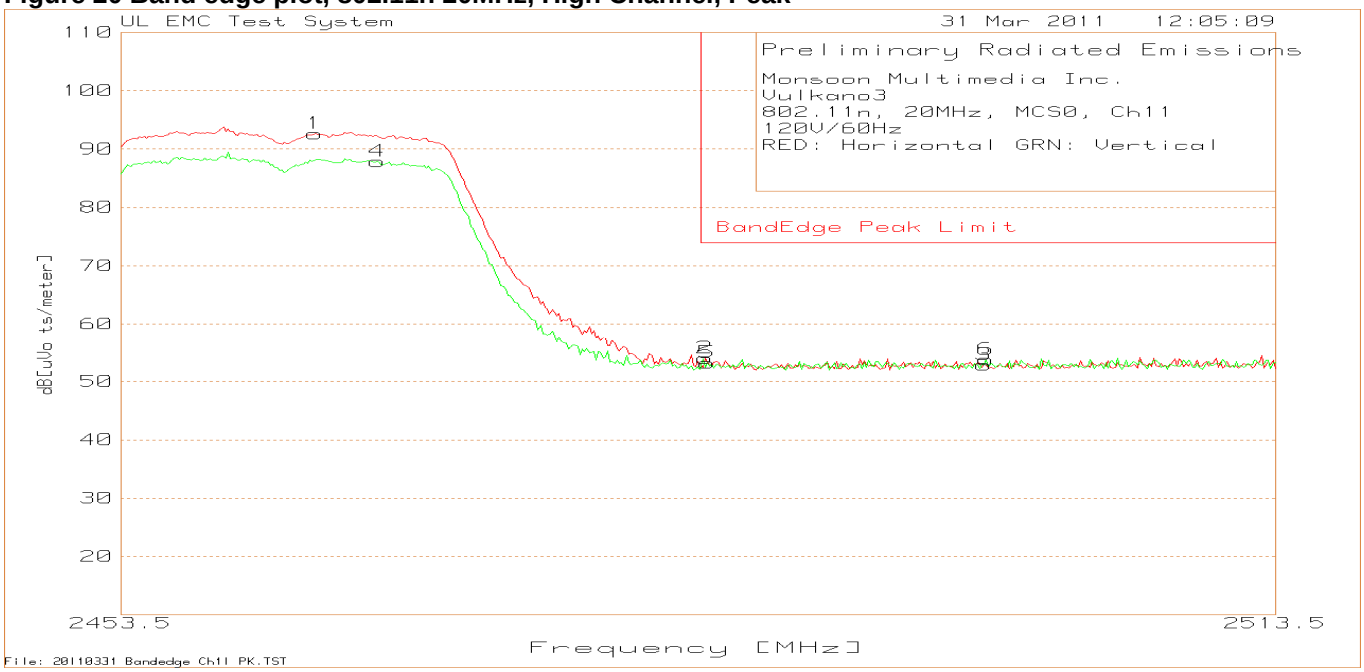
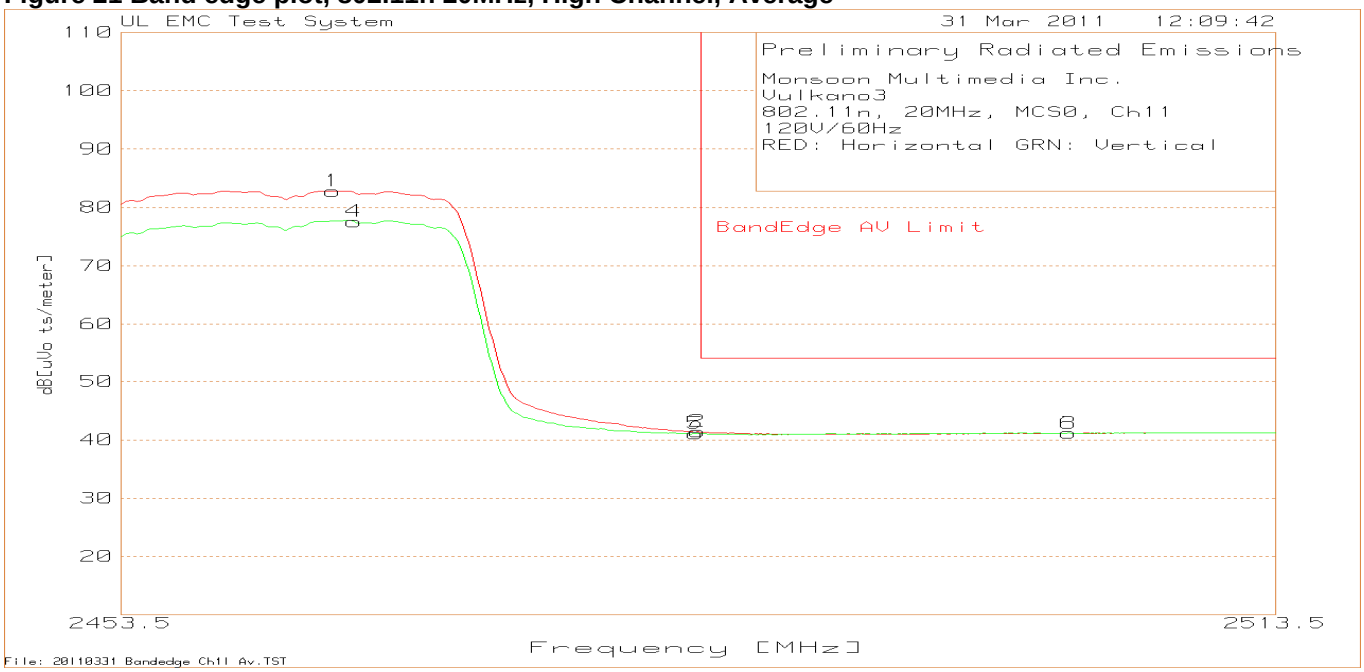
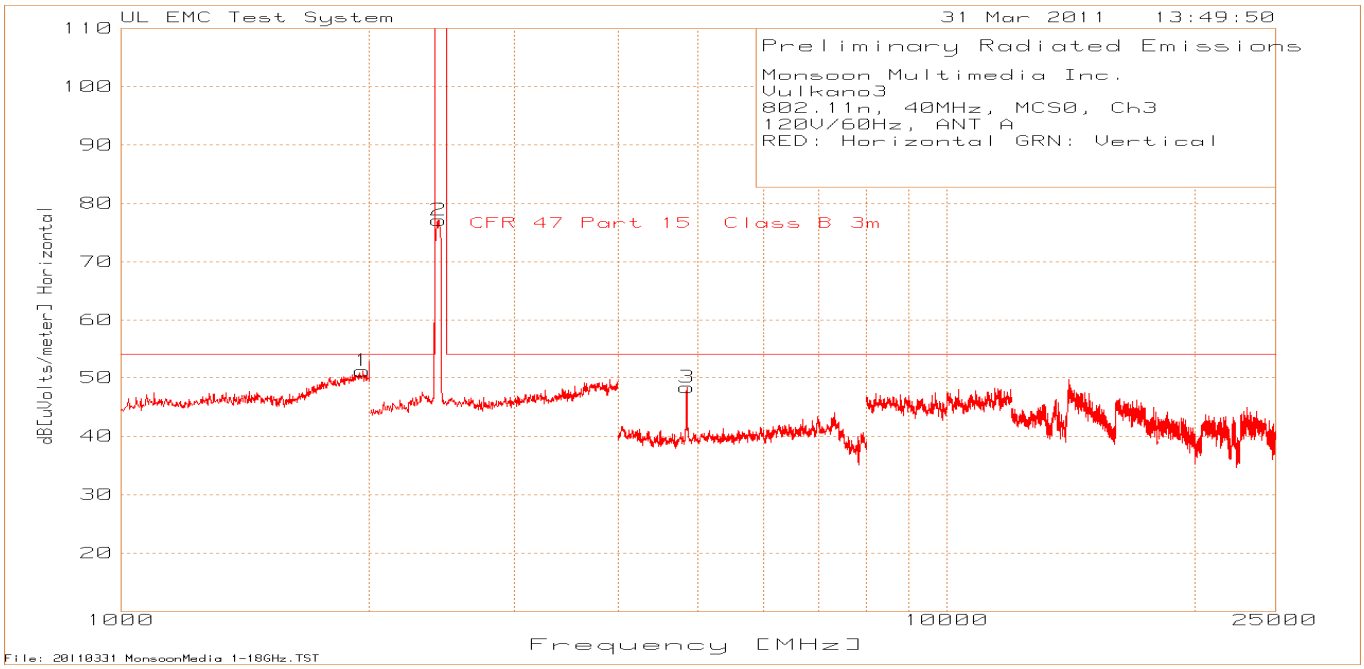



**Figure 21 Band edge plot, 802.11n 20MHz, High Channel, Average**



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

**Figure 22 Radiated Emissions Graph 802.11n 40MHz, Low Channel**



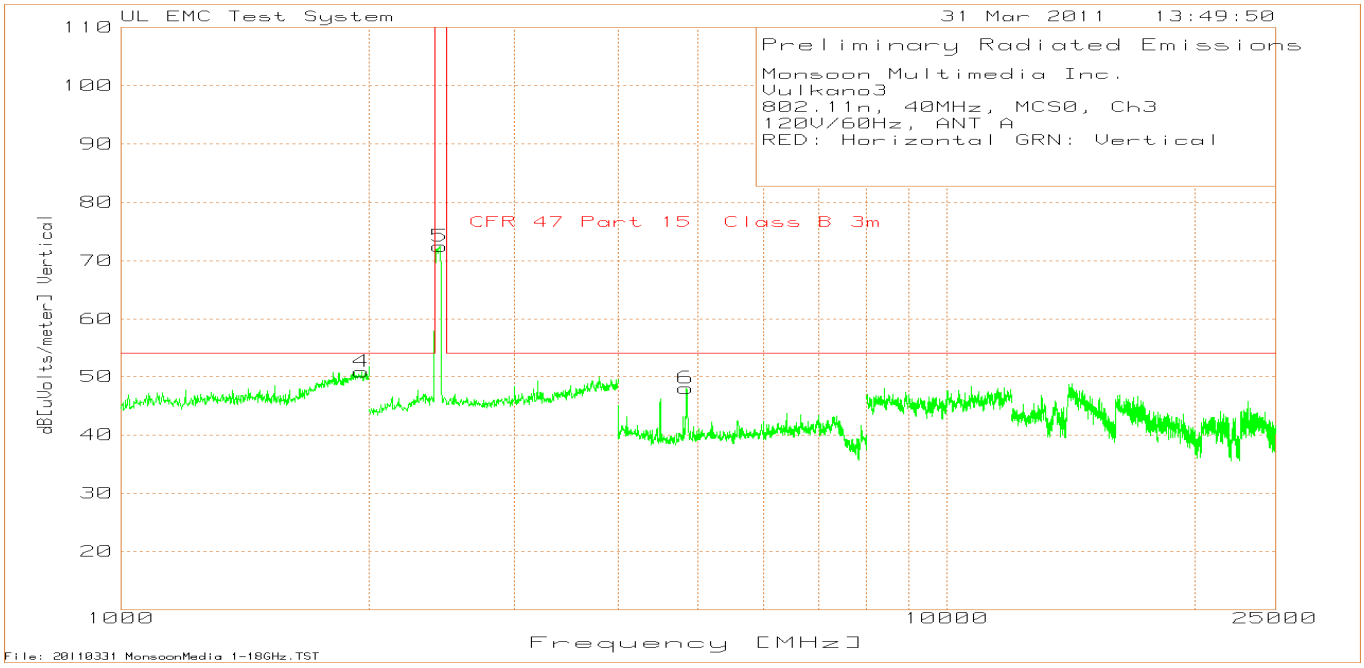



**Table 11 Radiated Emissions Data Points 802.11n 40MHz, Low Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11n, 40MHz, MCS0, Ch3
120V/60Hz, ANT A
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dBuV/m | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1965.932 | 20.24 | PK | 3.48 | 27.5 | 51.22 | 54 | -2.78 | 150 | Horz |
| 2 | 2426.854 | 51.36 | PK | 3.87 | 21.9 | 77.13 | | | 100 | Horz |
| 3 | 4844.845 | 70.79 | PK | -50.16 | 27.7 | 48.33 | 54 | -5.67 | 100 | Horz |
| 4 | 1957.916 | 19.87 | PK | 3.45 | 27.5 | 50.82 | 54 | -3.18 | 100 | Vert |
| 5 | 2436.874 | 46.54 | PK | 4.05 | 21.9 | 72.49 | | | 100 | Vert |
| 6 | 4840.841 | 70.48 | PK | -50.23 | 27.7 | 47.95 | 54 | -6.05 | 150 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

**Figure 23 Band edge plot, 802.11n 40MHz, Low Channel, Peak**

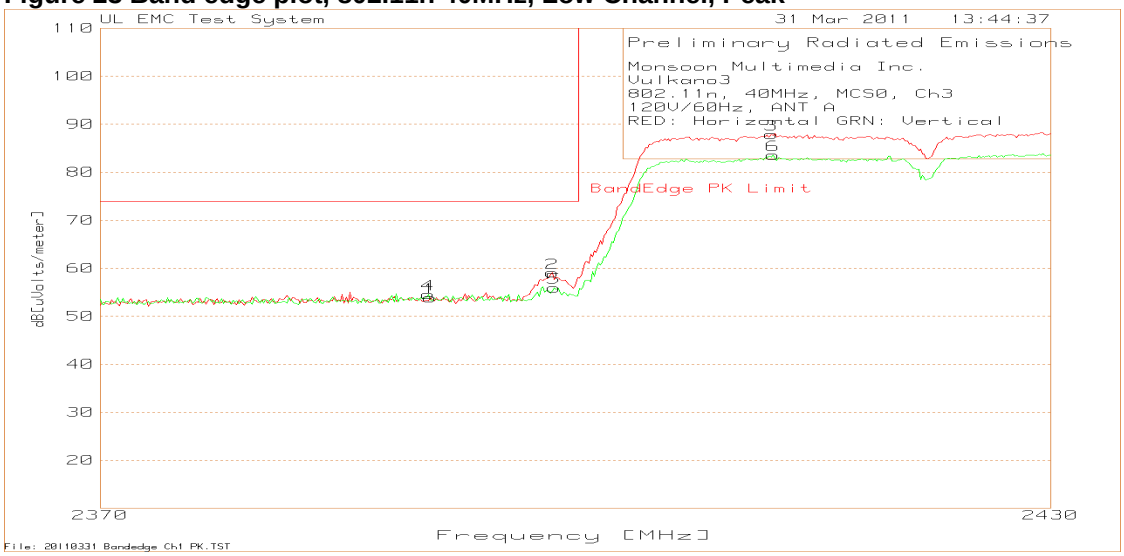



**Figure 24 Band edge plot, 802.11n 40MHz, Low Channel, Average**

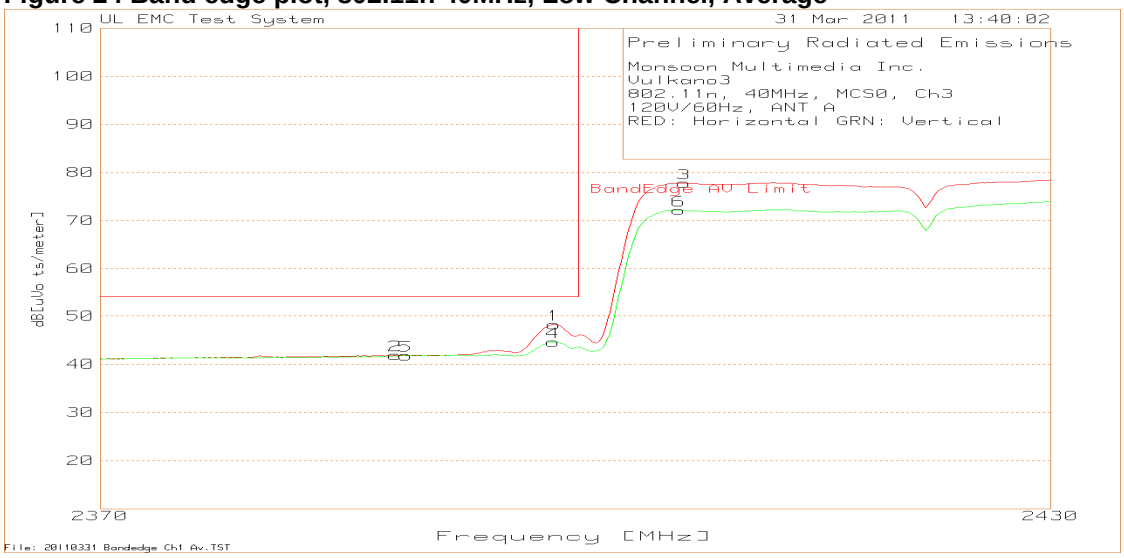
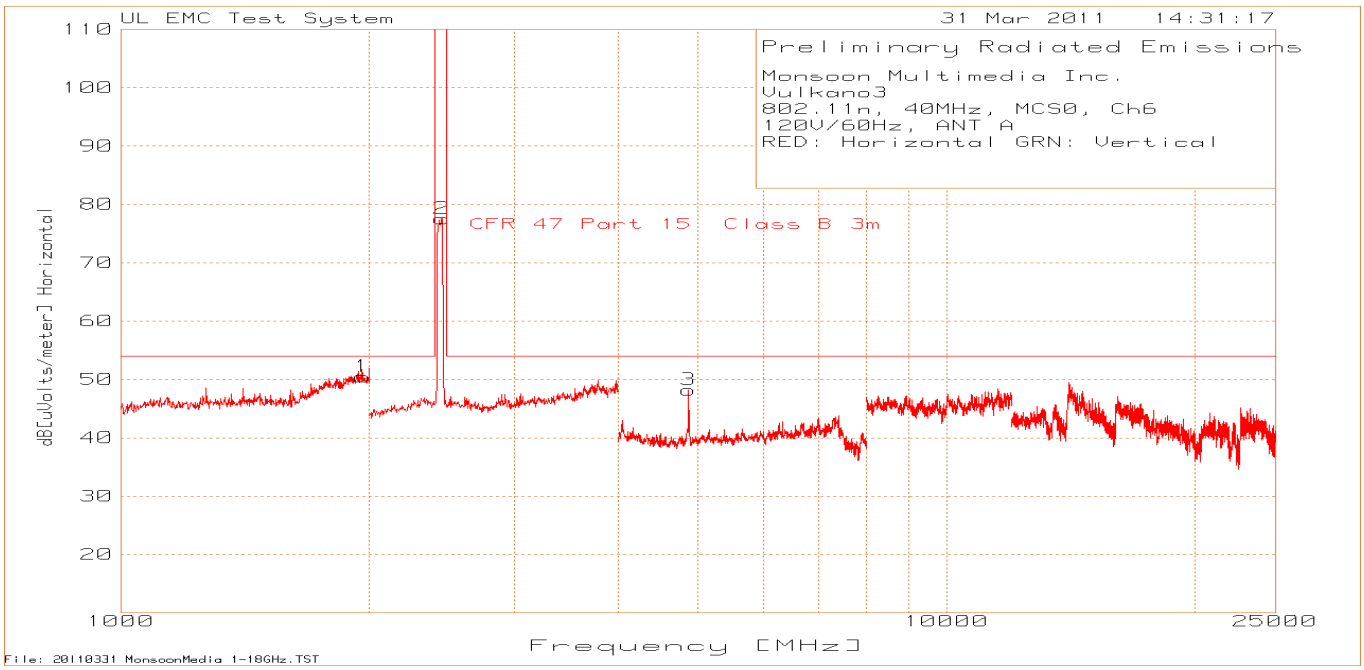


**Figure 25 Radiated Emissions Graph 802.11n 40MHz, Middle Channel**



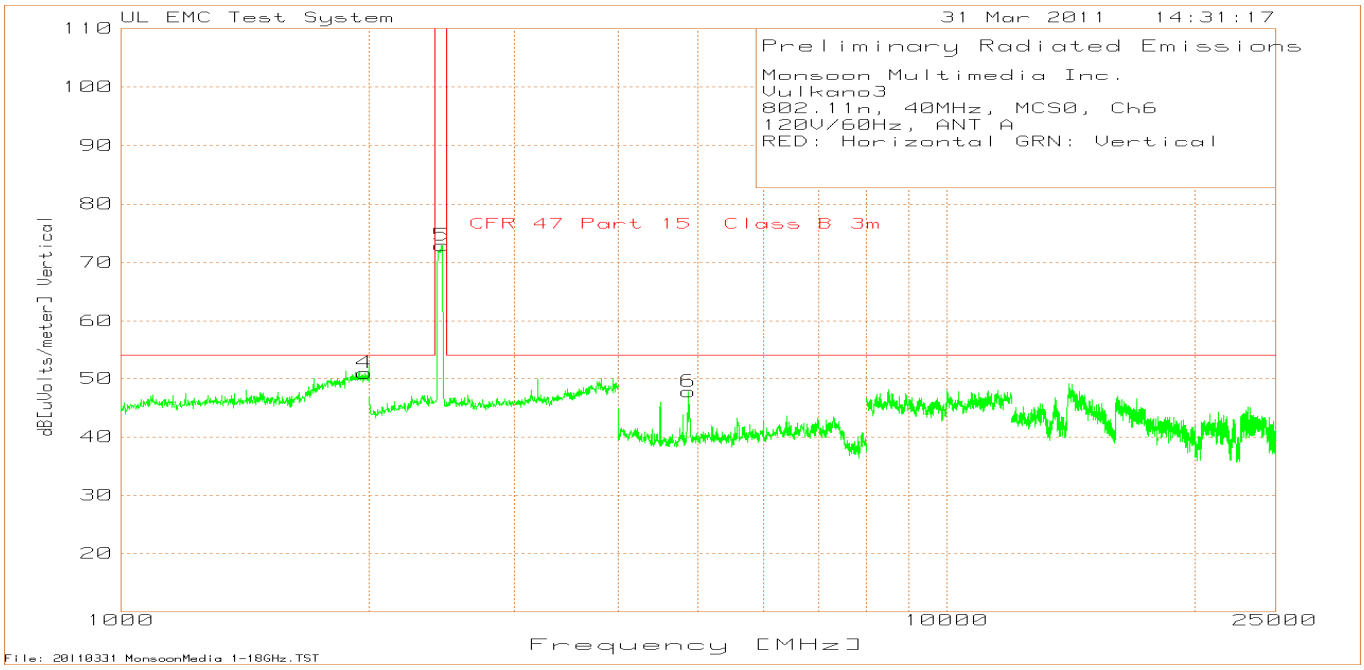



**Table 12 Radiated Emissions Data Points 802.11n 40MHz, Middle Channel**

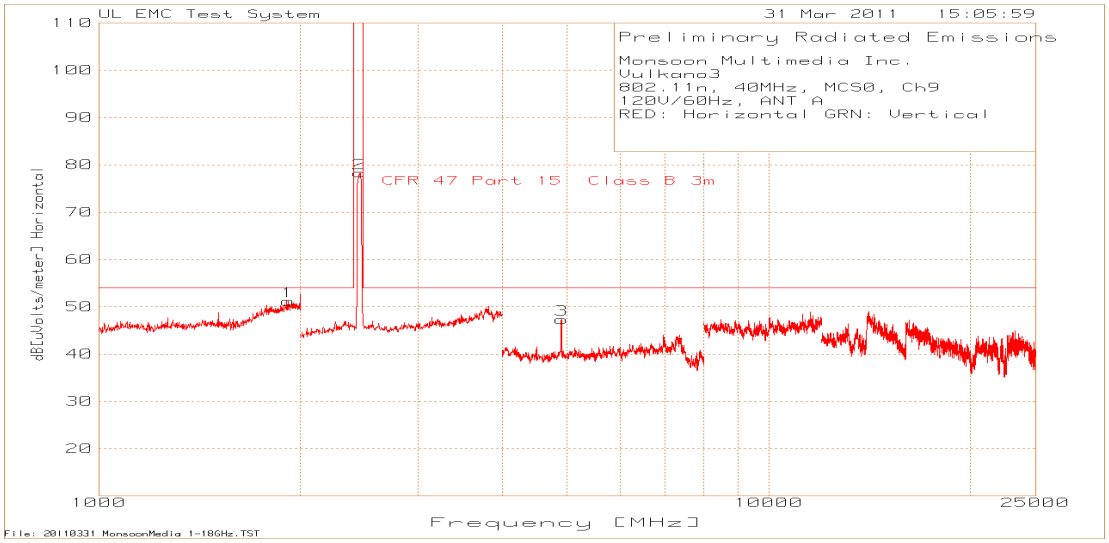
Monsoon Multimedia Inc.
Vulkano3
802.11n, 40MHz, MCS0, Ch6
120V/60Hz, ANT A
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uV/m] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1965.932 | 19.56 | PK | 3.48 | 27.5 | 50.54 | 54 | -3.46 | 100 | Horz |
| 2 | 2448.898 | 51.4 | PK | 4.32 | 21.9 | 77.62 | | | 100 | Horz |
| 3 | 4872.873 | 70.79 | PK | -50.28 | 27.7 | 48.21 | 54 | -5.79 | 100 | Horz |
| 4 | 1975.952 | 19.73 | PK | 3.67 | 27.5 | 50.9 | 54 | -3.1 | 100 | Vert |
| 5 | 2452.906 | 46.62 | PK | 4.32 | 22 | 72.94 | | | 100 | Vert |
| 6 | 4872.873 | 70.39 | PK | -50.28 | 27.7 | 47.81 | 54 | -6.19 | 150 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

**Figure 26 Radiated Emissions Graph 802.11n 40MHz, High Channel**



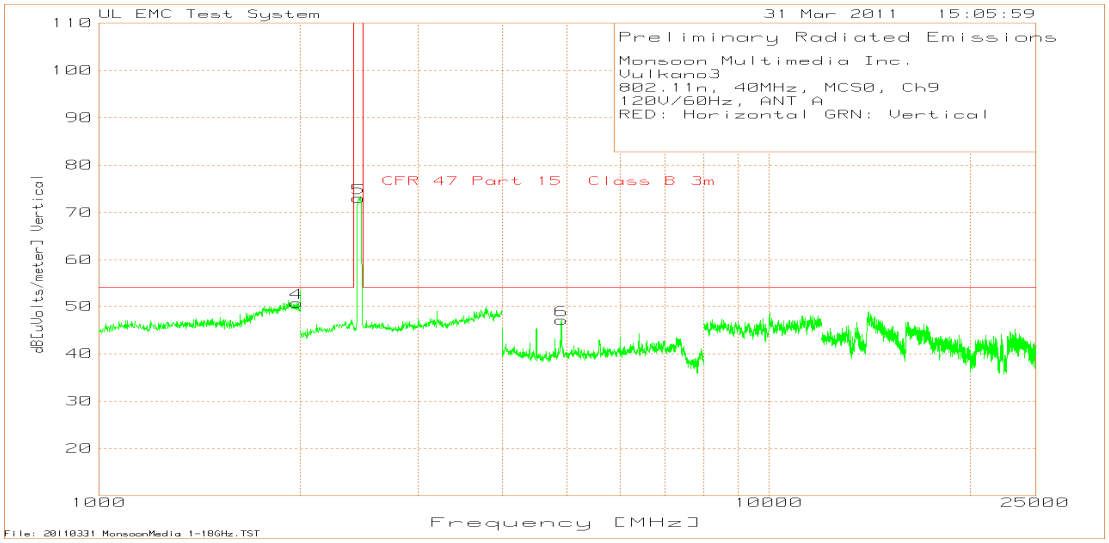



**Table 13 Radiated Emissions Data Points 802.11n 40MHz, High Channel**

Monsoon Multimedia Inc.
Vulkano3
802.11n, 40MHz, MCS0, Ch9
120V/60Hz, ANT A
RED: Horizontal GRN: Vertical

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uV/m] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1919.84 | 20.02 | PK | 3.58 | 27.6 | 51.2 | 54 | -2.8 | 100 | Horz |
| 2 | 2452.906 | 51.99 | PK | 4.32 | 22 | 78.31 | | | 100 | Horz |
| 3 | 4904.905 | 70.49 | PK | -50.98 | 27.8 | 47.31 | 54 | -6.69 | 100 | Horz |
| 4 | 1975.952 | 19.5 | PK | 3.67 | 27.5 | 50.67 | 54 | -3.33 | 100 | Vert |
| 5 | 2440.882 | 46.91 | PK | 4.18 | 21.9 | 72.99 | | | 100 | Vert |
| 6 | 4904.905 | 70.27 | PK | -50.98 | 27.8 | 47.09 | 54 | -6.91 | 100 | Vert |

LIMIT 1: CFR 47 Part 15 Class B 3m

PK - Peak detector

**Figure 27 Band edge plot, 802.11n 40MHz, High Channel, Peak**

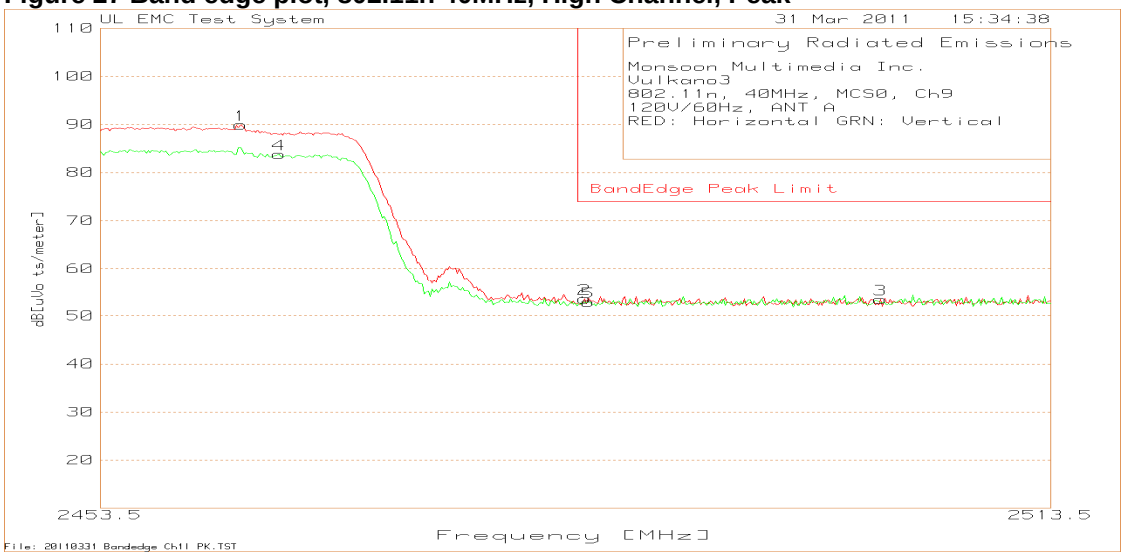
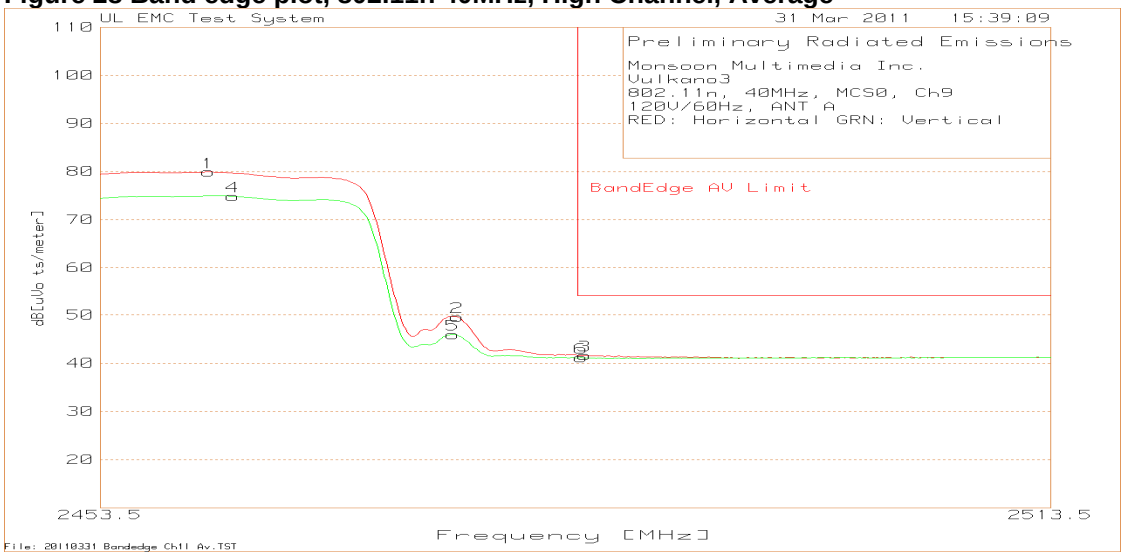



**Figure 28 Band edge plot, 802.11n 40MHz, High Channel, Average**



# 7. ANTENNA PORT TEST RESULTS

## 7.1. 802.11b MODE IN THE 2.4 GHz BAND

### 7.1.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

**TEST PROCEDURE**

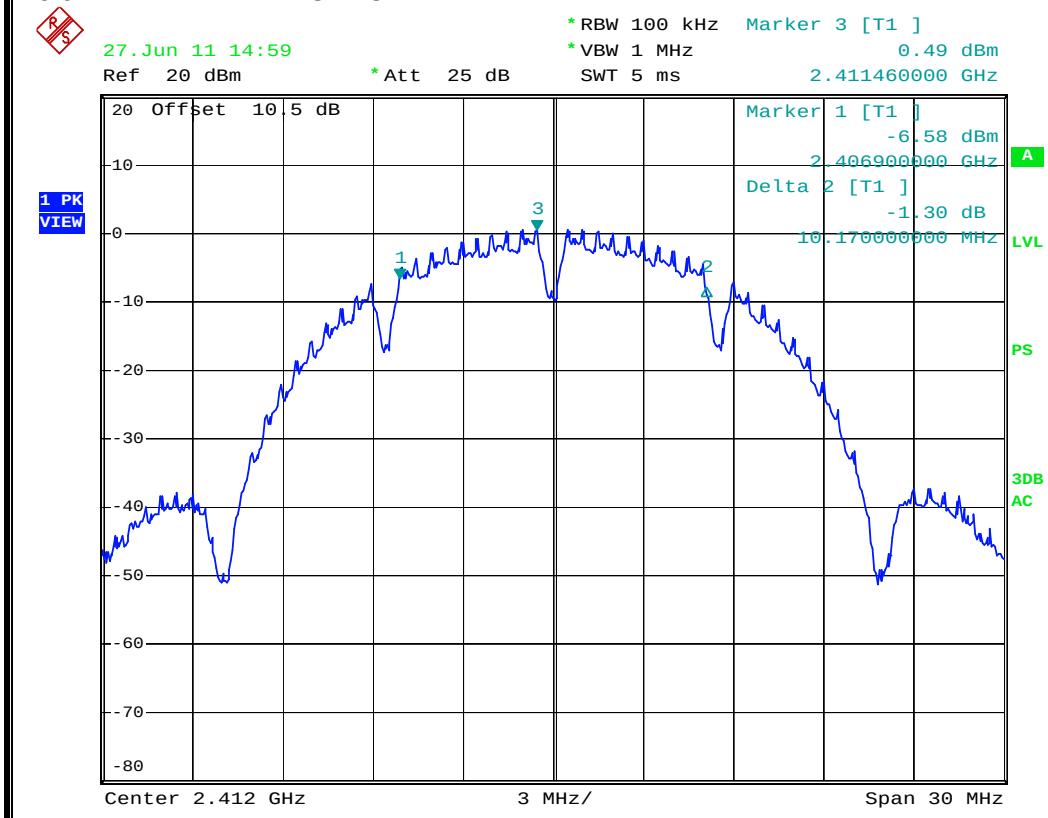
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 1000 kHz. The sweep time is coupled.

**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 10.17 | 0.5 |
| Middle | 2437 | 10.14 | 0.5 |
| High | 2462 | 10.14 | 0.5 |

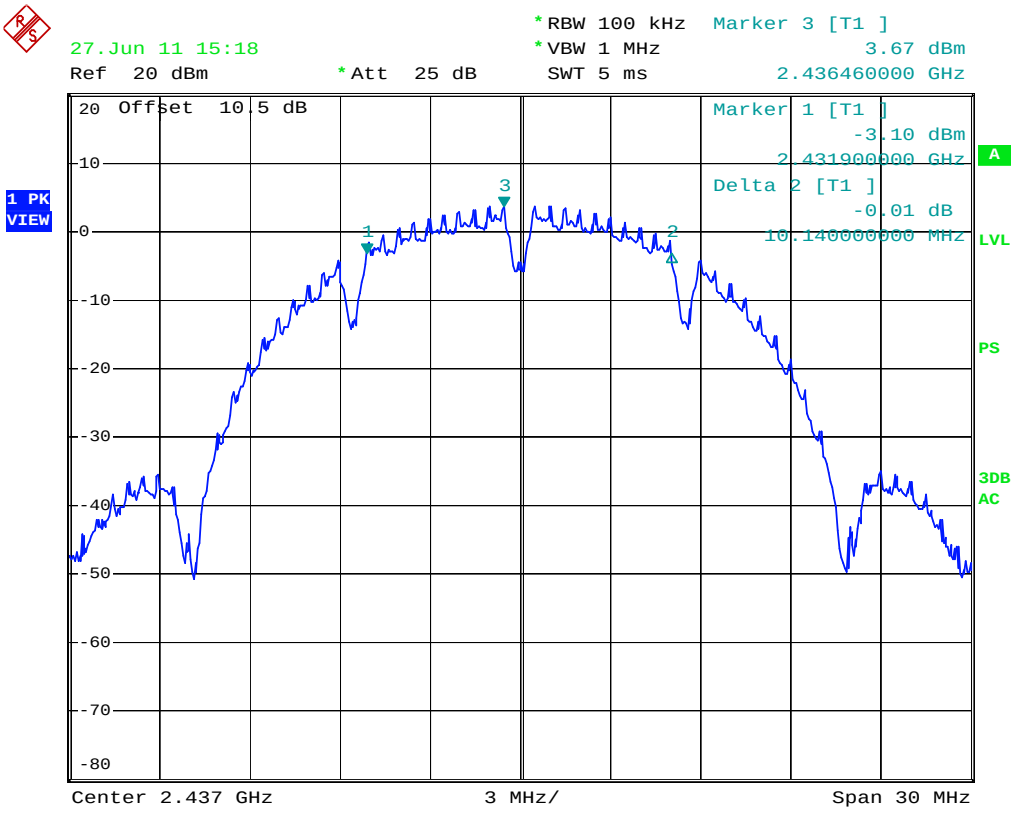
**6 dB BANDWIDTH**

6 dB BANDWIDTH LOW CH

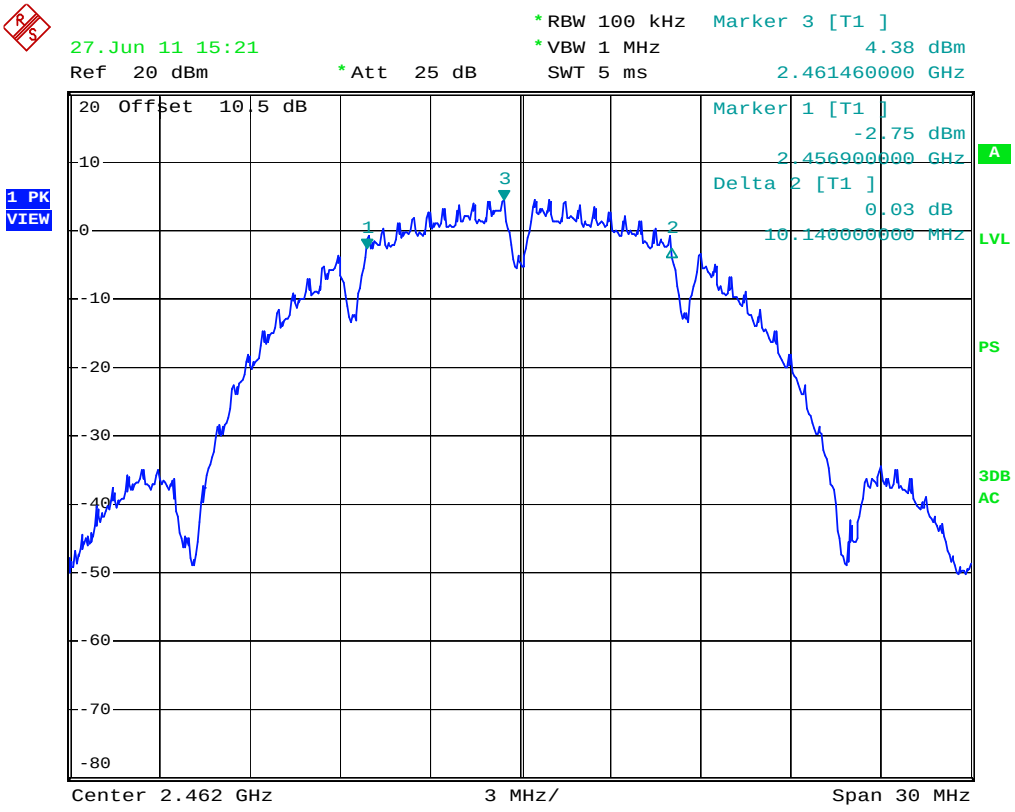



Date: 27.JUN.2011 14:59:07

6 dB BANDWIDTH MID CH



## 6 dB BANDWIDTH HIGH CH




Date: 27.JUN.2011 15:21:29

### 7.1.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

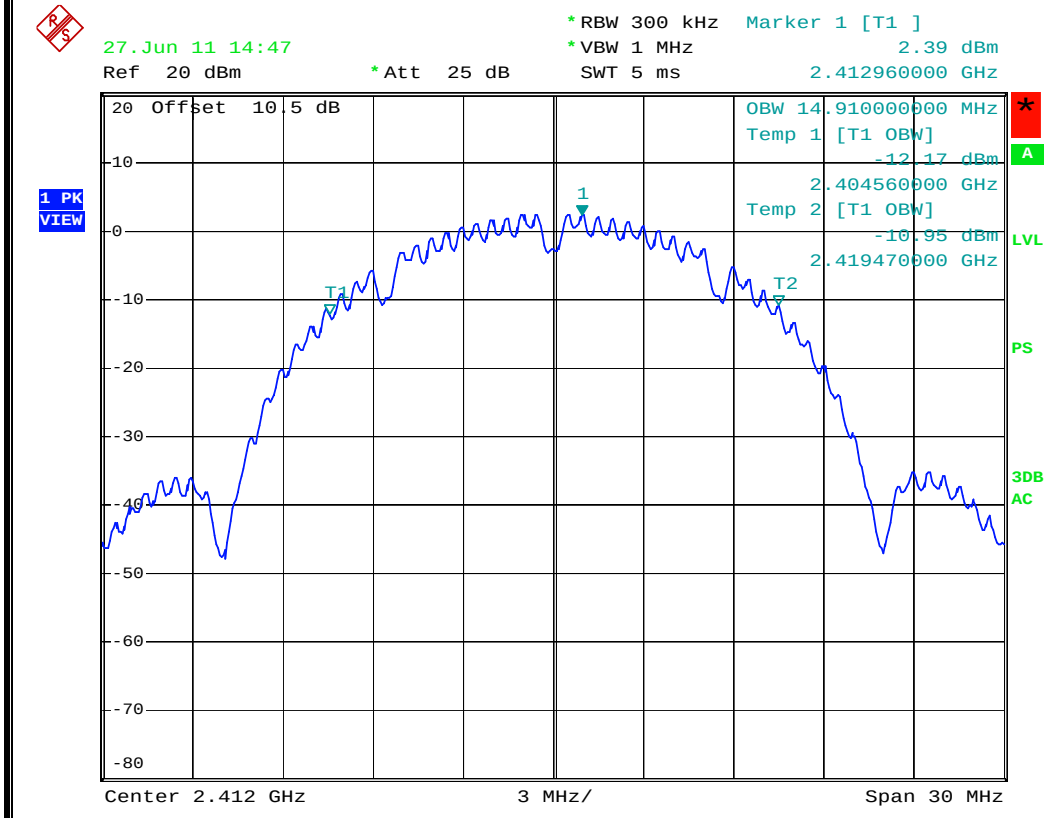
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to at least 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 14.91 |
| Middle | 2437 | 14.88 |
| High | 2462 | 14.88 |

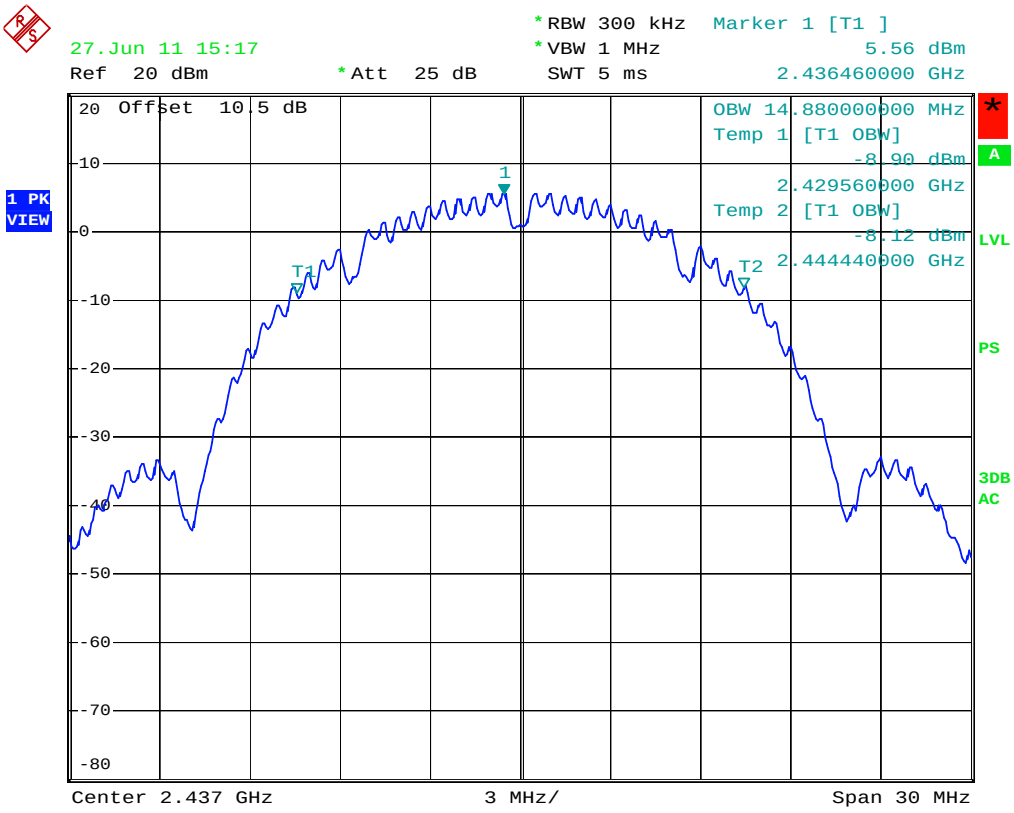
**99% BANDWIDTH**

99% BANDWIDTH LOW CH



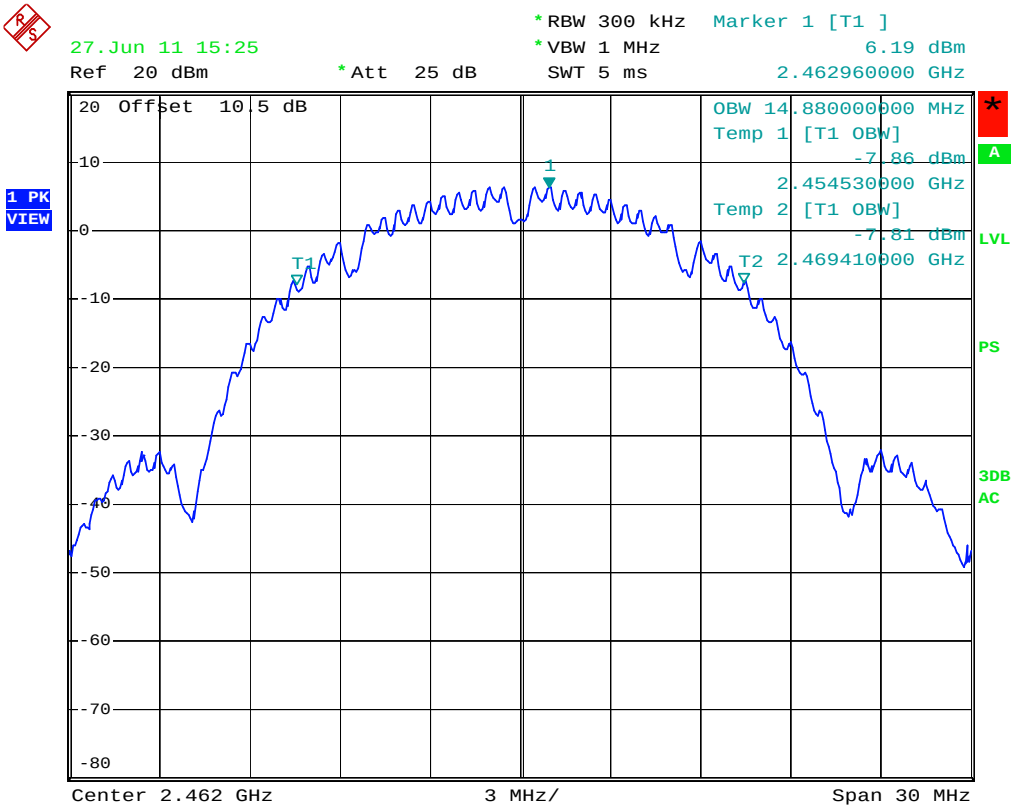

Date: 27.JUN.2011 14:47:33

99% BANDWIDTH MID CH




Date: 27.JUN.2011 15:17:16

99% BANDWIDTH HIGH CH




Date: 27.JUN.2011 15:25:36

## 7.1.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

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

**TEST PROCEDURE**

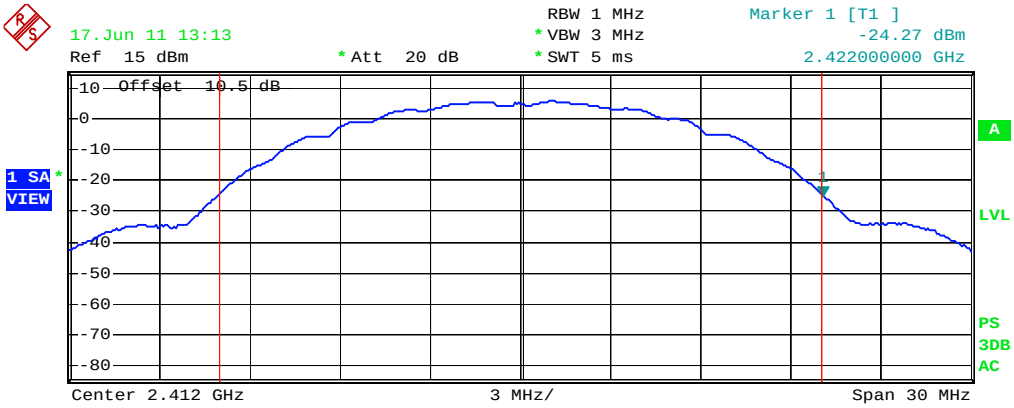
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

| Channel | Frequency (MHz) | Spectrum Analyzer Reading (dBm) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | 13.58 | 13.58 | 30 | -16.42 |
| Middle | 2437 | 16.8 | 16.80 | 30 | -13.20 |
| High | 2462 | 17.4 | 17.40 | 30 | -12.60 |
| Attenuantor and cable offsets are included as offset in spectrum analyzer. | | | | | |

**OUTPUT POWER**

OUTPUT POWER LOW CH

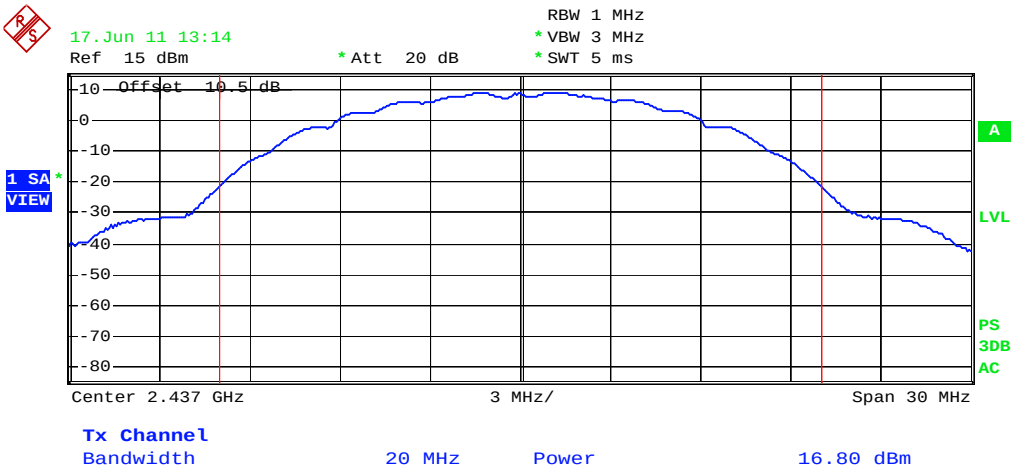



**Tx Channel**

| | | | |
|---|---|---|---|
| Bandwidth | 20 MHz | Power | 13.58 dBm |

Date: 17.JUN.2011 13:13:10

OUTPUT POWER MID CH

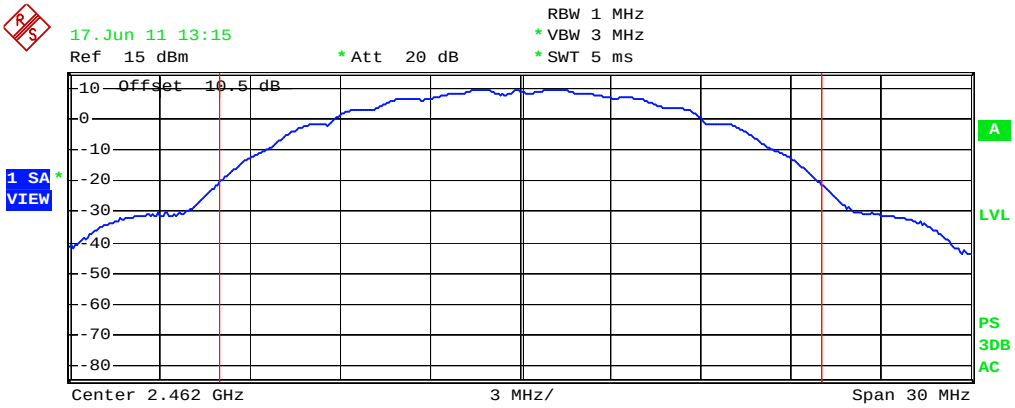



**Tx Channel**

| Bandwidth | 20 MHz | Power | 16.80 dBm |
|---|---|---|---|

Date: 17.JUN.2011 13:14:53

OUTPUT POWER HIGH CH




**Tx Channel**

| Bandwidth | 20 MHz | Power | 17.40 dBm |
|---|---|---|---|

Date: 17.JUN.2011 13:15:51

## 7.1.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 2412 | 10.60 |
| Middle | 2437 | 13.72 |
| High | 2462 | 14.42 |

## 7.1.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

**TEST PROCEDURE**

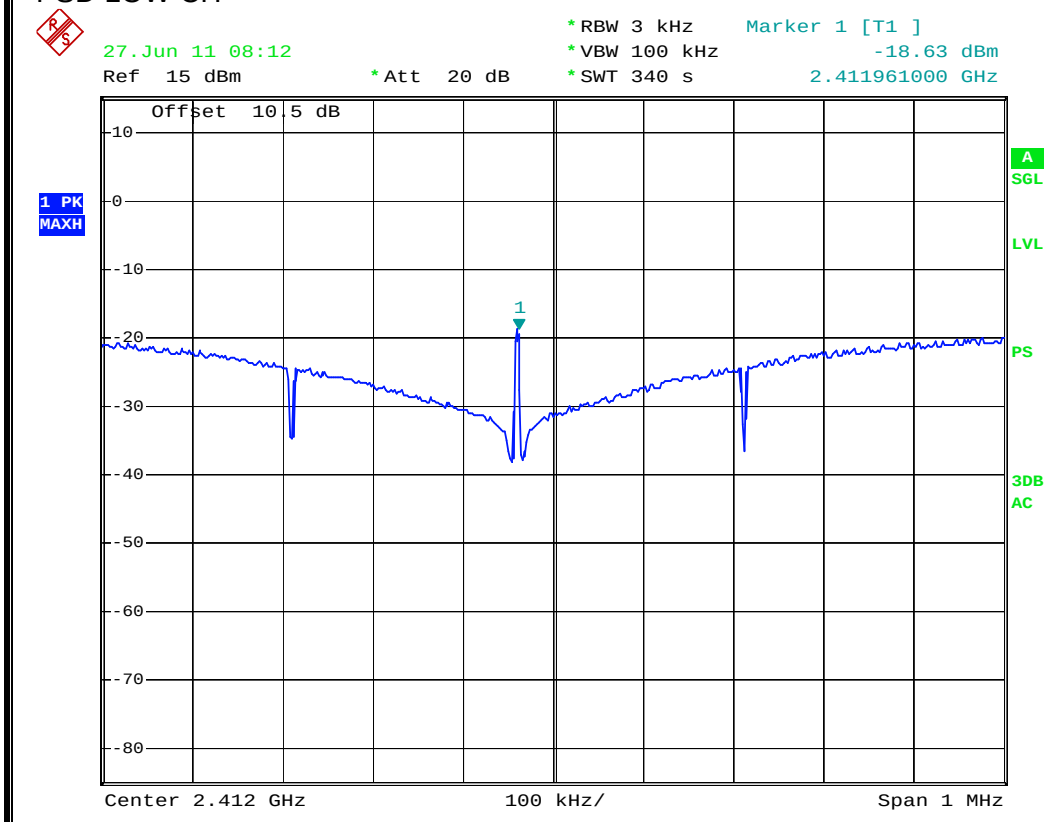
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

**RESULTS**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | -18.63 | 8 | -26.63 |
| Middle | 2437 | -12.31 | 8 | -20.31 |
| High | 2462 | -11.78 | 8 | -19.78 |

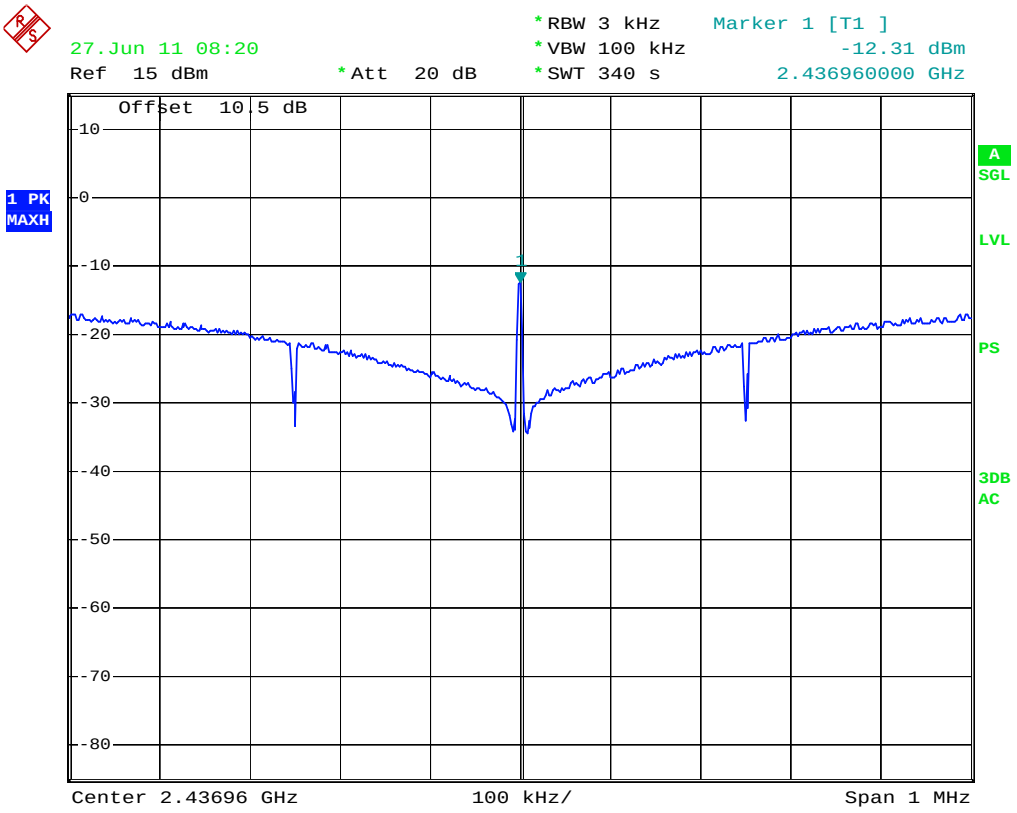
**POWER SPECTRAL DENSITY**

PSD LOW CH



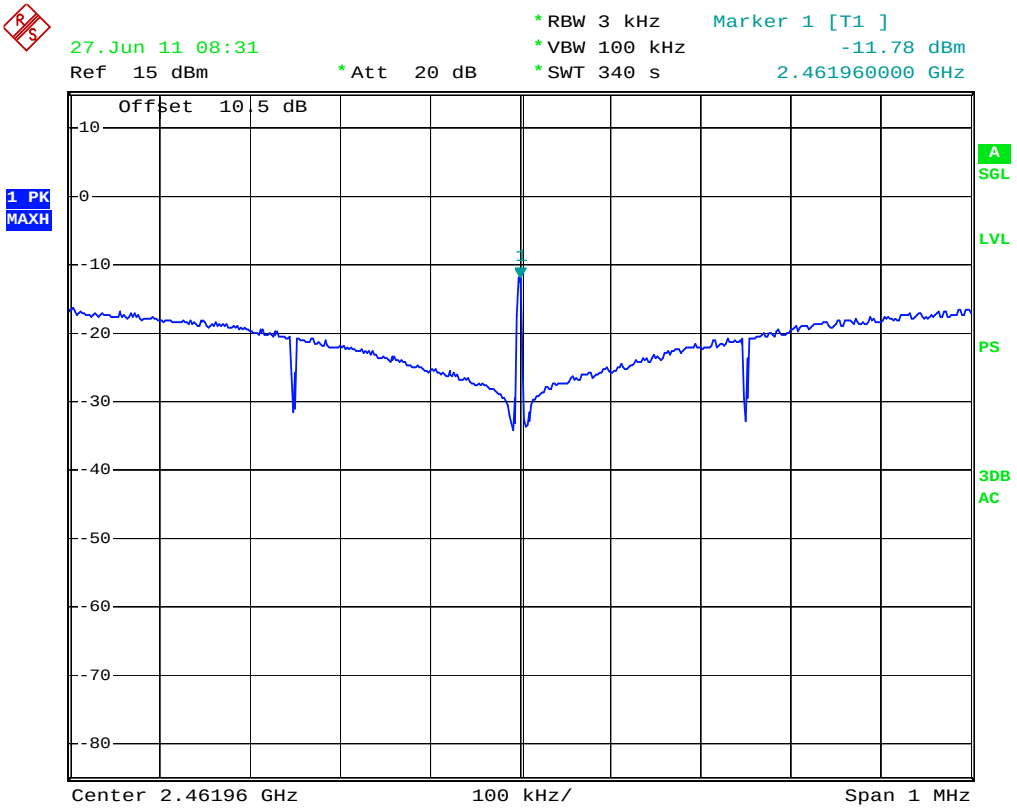

Date: 27.JUN.2011 08:12:49

PSD MID CH




Date: 27.JUN.2011 08:20:46

PSD HIGH CH




Date: 27.JUN.2011 08:31:49

## 7.1.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

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

**TEST PROCEDURE**

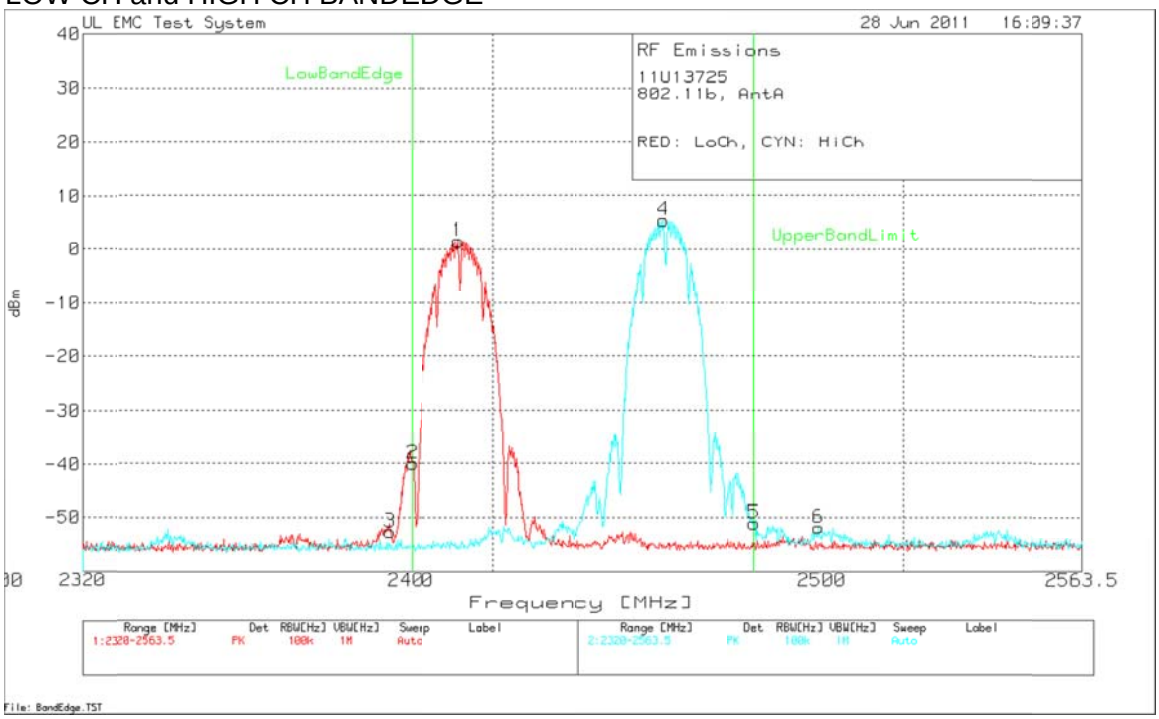
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

## SPURIOUS EMISSIONS

LOW CH and HIGH CH BANDEDGE

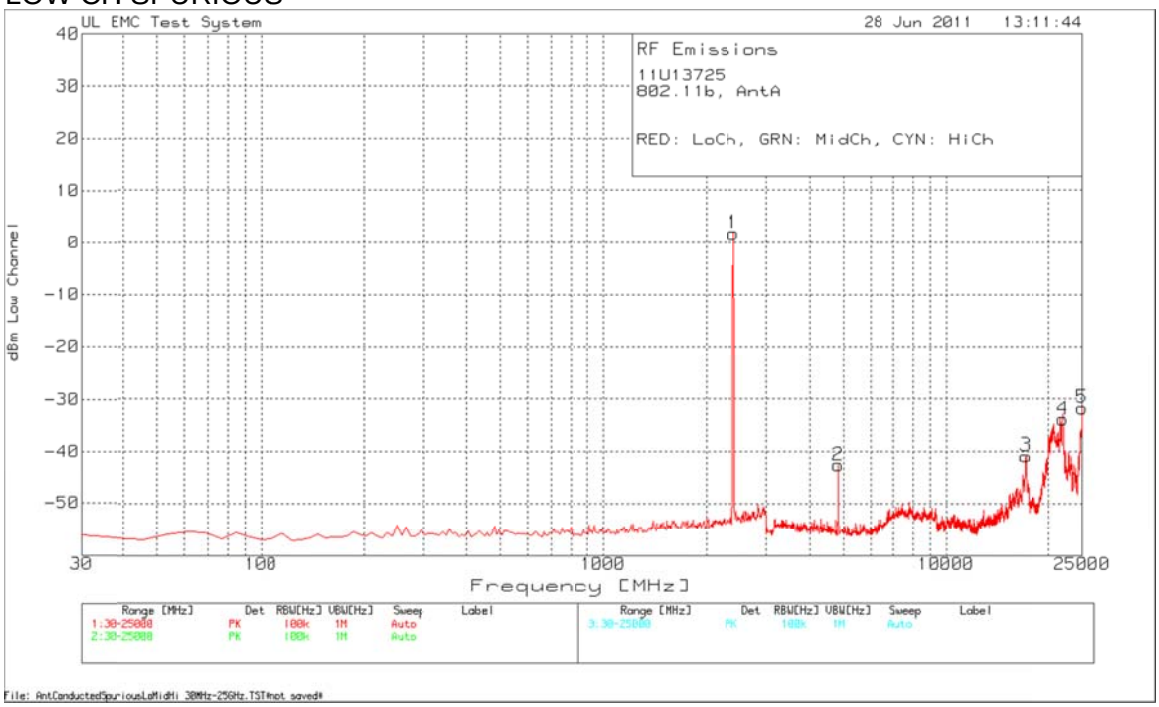



11U13725
802.11b, AntA
RED: LoCh, CYN: HiCh

| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2411.566 | 98.01 | PK | -107 | 10.5 | 1.51 |
| 2400.019 | 56.51 | PK | -107 | 10.5 | -39.99 |
| 2394.549 | 43.85 | PK | -107 | 10.5 | -52.65 |
| | | | | | |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2461.4 | 101.74 | PK | -107 | 10.6 | 5.34 |
| 2483.684 | 45.31 | PK | -107 | 10.6 | -51.09 |
| 2499.08 | 44.52 | PK | -107 | 10.6 | -51.88 |

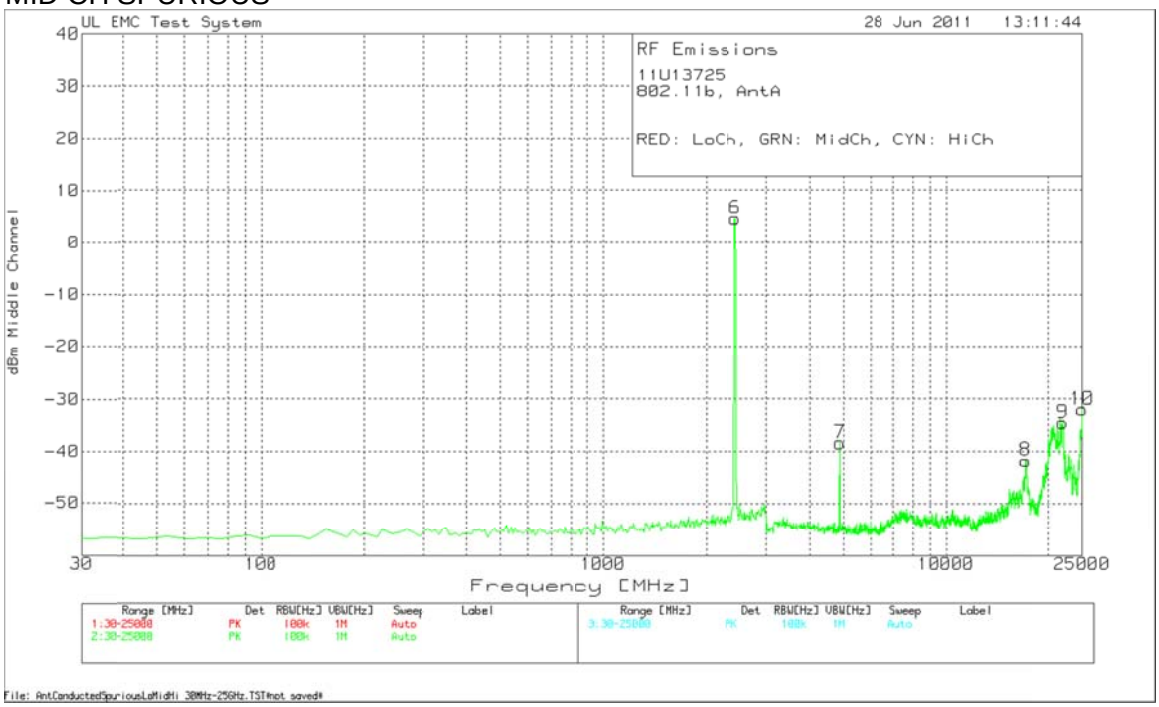
PK - Peak detector

LOW CH SPURIOUS



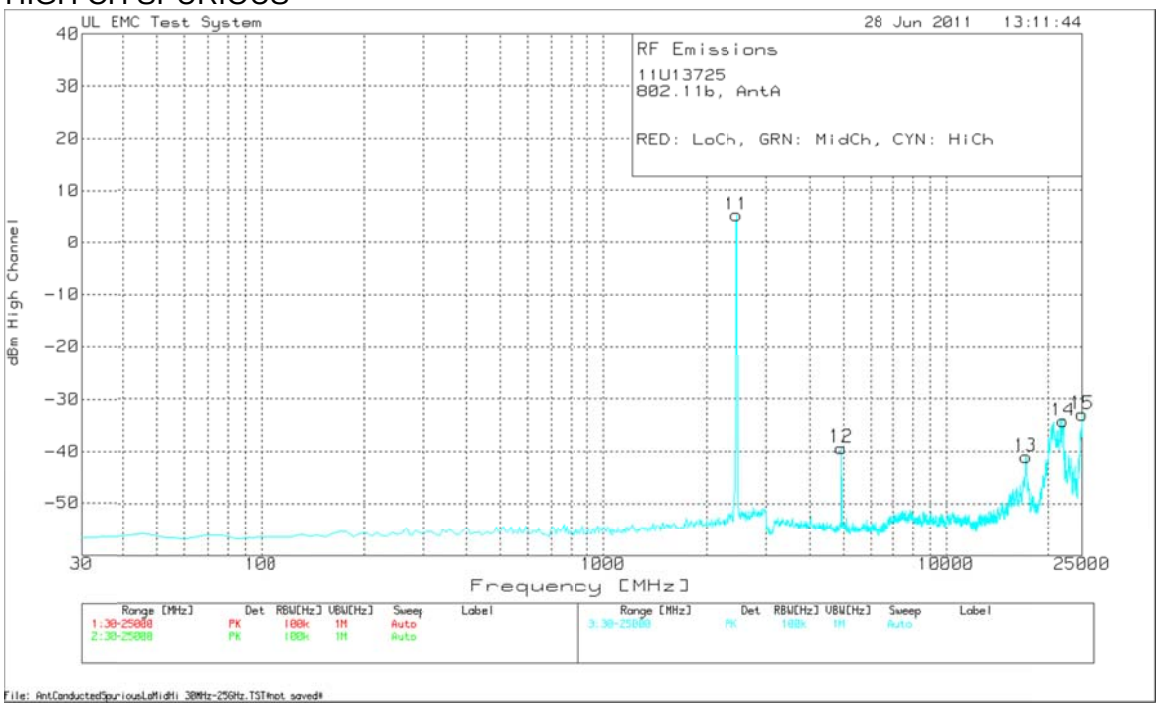

| Low Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2404.758 | 98.11 | PK | -107 | 10.5 | 1.61 |
| 4826.233 | 53.45 | PK | -107 | 10.9 | -42.65 |
| 17027.04 | 42.15 | PK | -107 | 23.9 | -40.95 |
| 21994.57 | 41.53 | PK | -107 | 31.5 | -33.97 |
| 25000 | 43.24 | PK | -107 | 31.9 | -31.86 |

MID CH SPURIOUS




| Middle Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2435.903 | 101.03 | PK | -107 | 10.5 | 4.53 |
| 4872.95 | 57.54 | PK | -107 | 11 | -38.46 |
| 16988.11 | 41.49 | PK | -107 | 23.7 | -41.81 |
| 21963.42 | 41.03 | PK | -107 | 31.3 | -34.67 |
| 25000 | 42.98 | PK | -107 | 31.9 | -32.12 |

HIGH CH SPURIOUS




| High Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2459.261 | 101.6 | PK | -107 | 10.6 | 5.2 |
| 4919.666 | 56.52 | PK | -107 | 11.1 | -39.38 |
| 17019.26 | 41.98 | PK | -107 | 24 | -41.02 |
| 22041.29 | 41.81 | PK | -107 | 30.9 | -34.29 |
| 25000 | 42.04 | PK | -107 | 31.9 | -33.06 |

## 7.2. 802.11g MODE IN THE 2.4 GHz BAND

### 7.2.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

**TEST PROCEDURE**

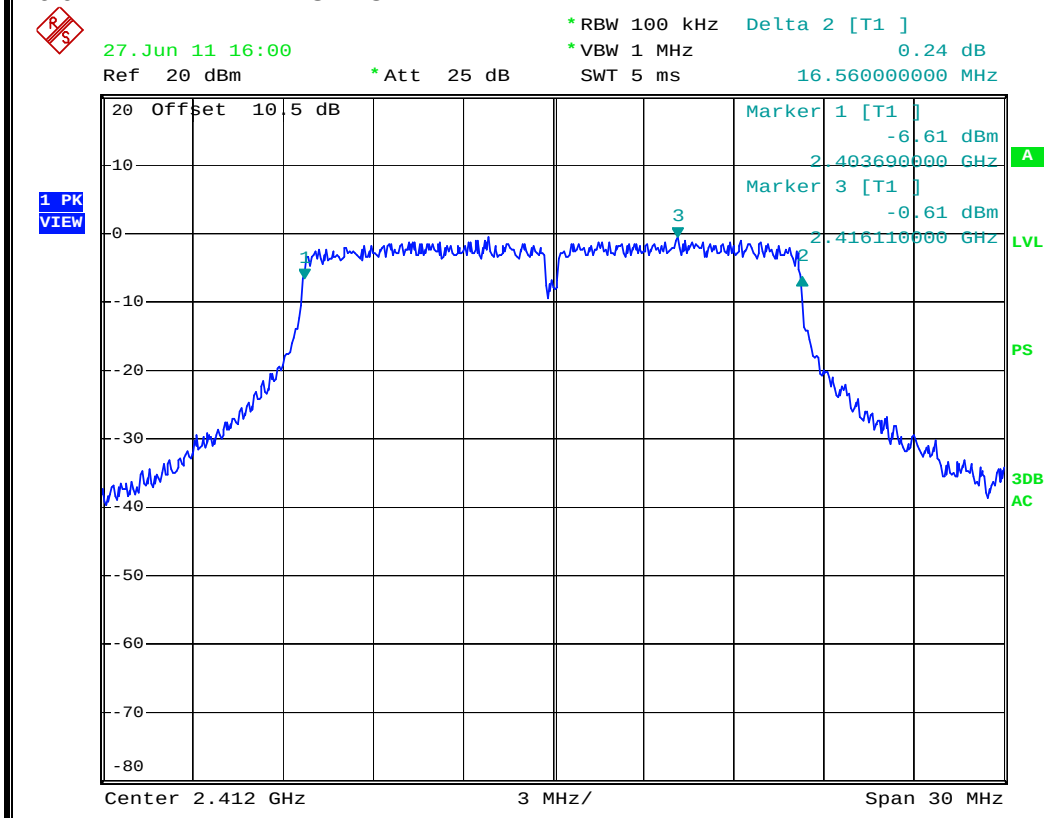
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 1000 kHz. The sweep time is coupled.

**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 16.56 | 0.5 |
| Middle | 2437 | 16.62 | 0.5 |
| High | 2462 | 16.56 | 0.5 |

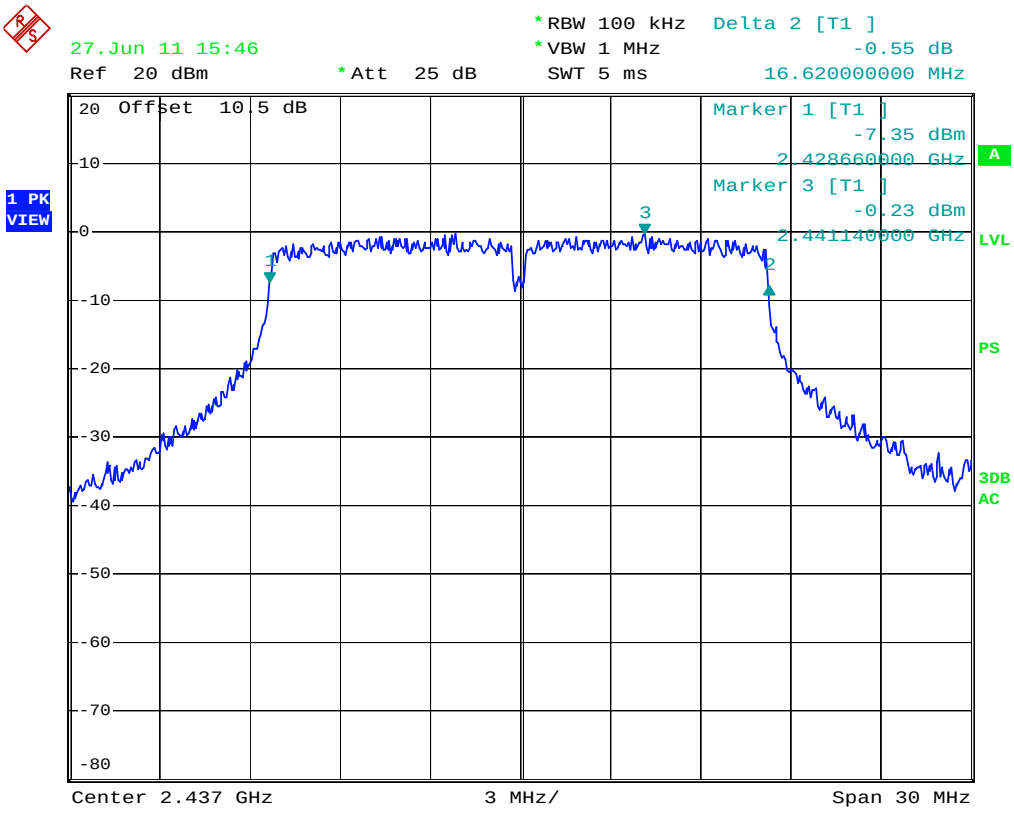
**6 dB BANDWIDTH**

6 dB BANDWIDTH LOW CH

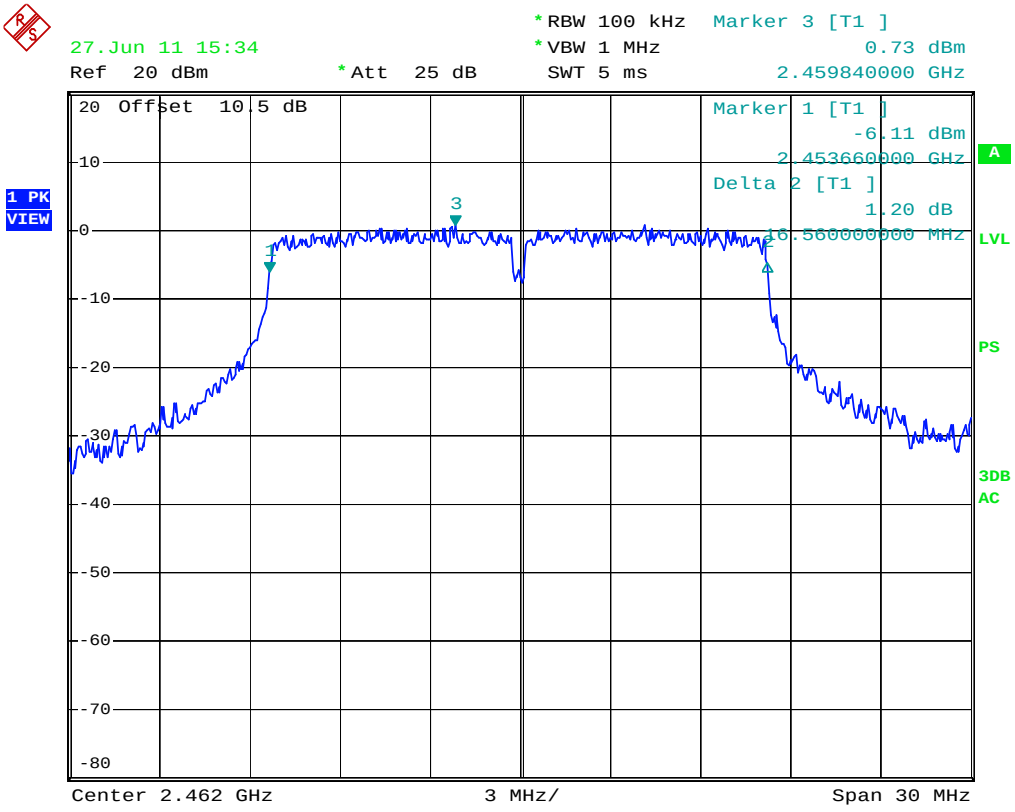



Date: 27.JUN.2011 16:00:45

## 6 dB BANDWIDTH MID CH



## 6 dB BANDWIDTH HIGH CH



### 7.2.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

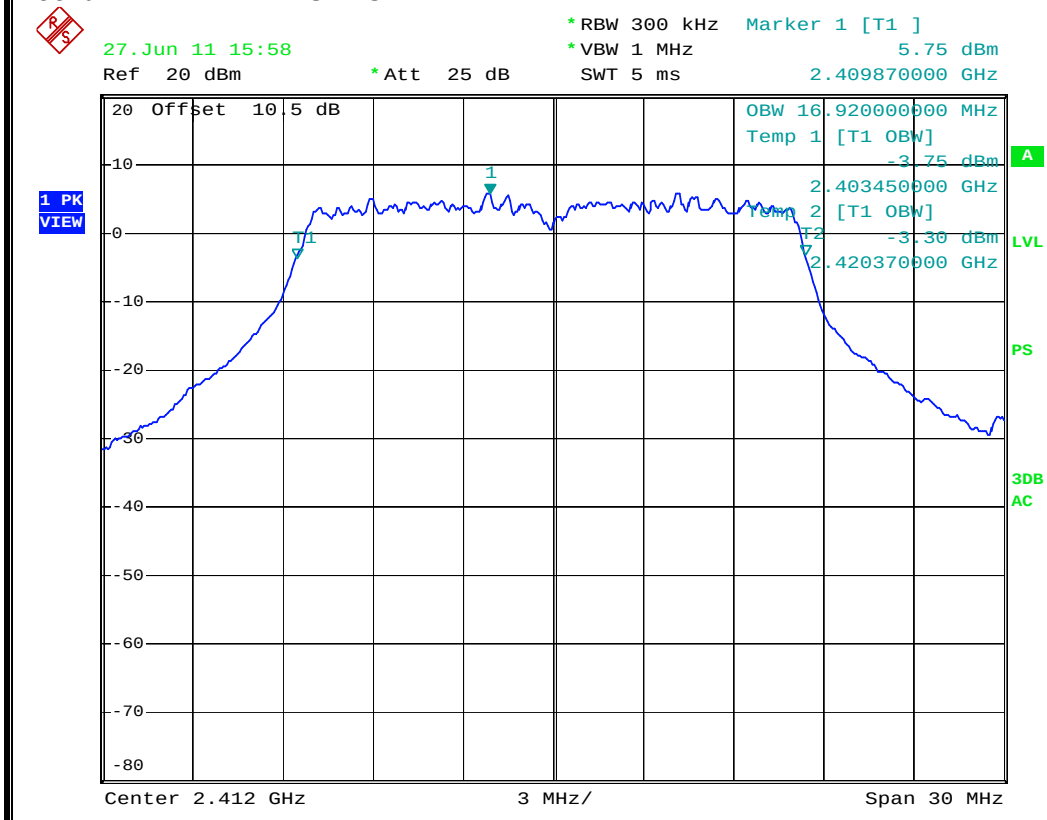
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to at least 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 16.92 |
| Middle | 2437 | 16.89 |
| High | 2462 | 16.98 |

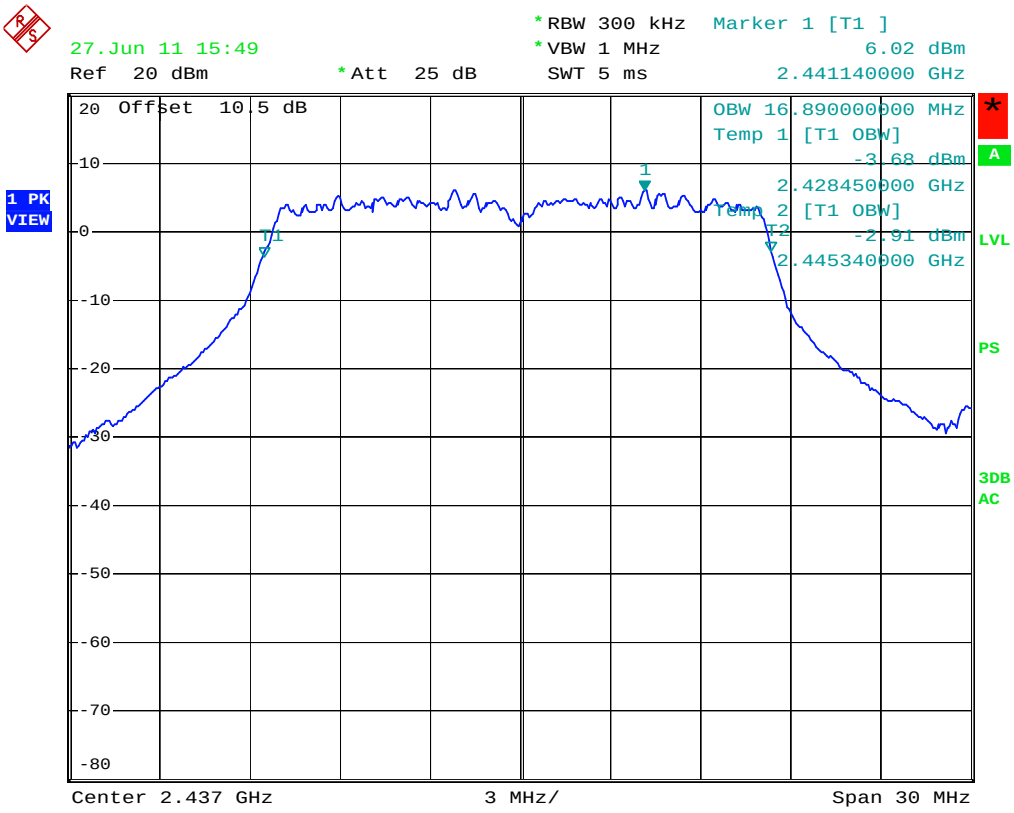
**99% BANDWIDTH**

99% BANDWIDTH LOW CH



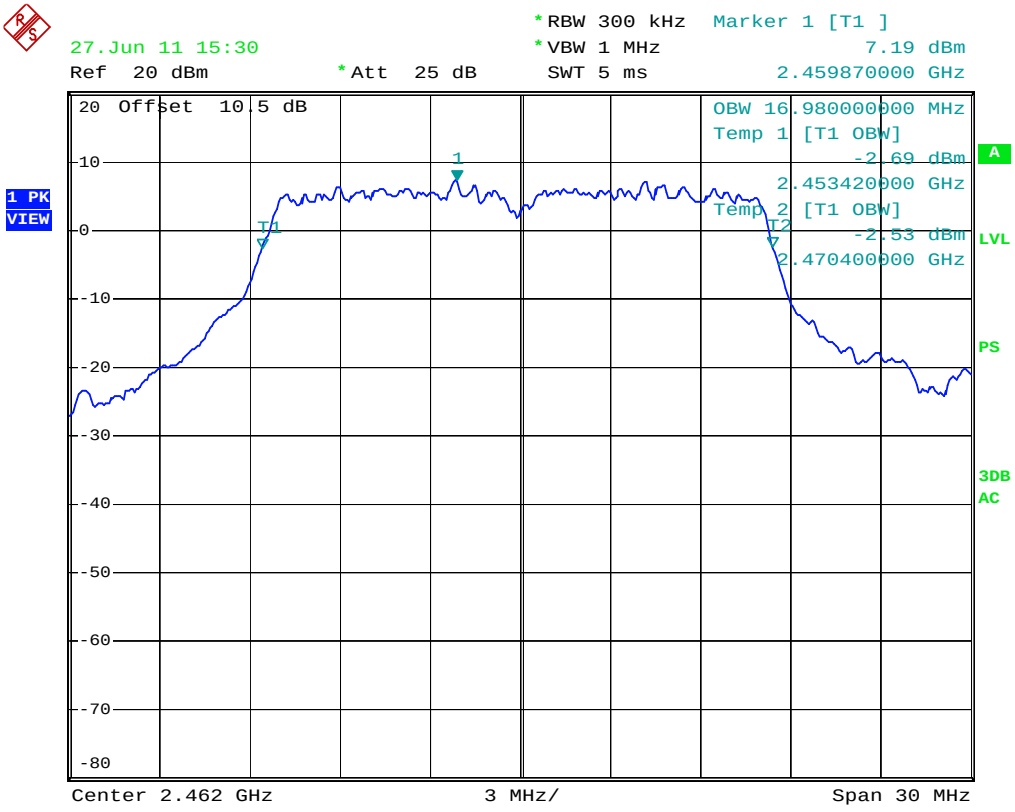

Date: 27.JUN.2011 15:58:11

99% BANDWIDTH MID CH




Date: 27.JUN.2011 15:49:18

99% BANDWIDTH HIGH CH




Date: 27.JUN.2011 15:30:26

## 7.2.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

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

**TEST PROCEDURE**

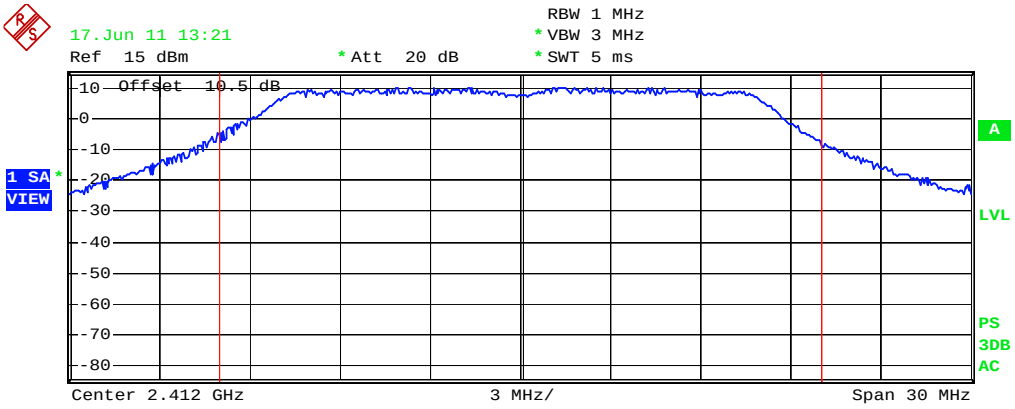
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

| Channel | Frequency (MHz) | Spectrum Analyzer Reading (dBm) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 2412 | 20.28 | 20.28 | 30 | -9.72 |
| Middle | 2437 | 20.19 | 20.19 | 30 | -9.81 |
| High | 2462 | 21.09 | 21.09 | 30 | -8.91 |
| Attenuator and path loss are included as offset in spectrum analyzer reading. | | | | | |

**OUTPUT POWER**

OUTPUT POWER LOW CH

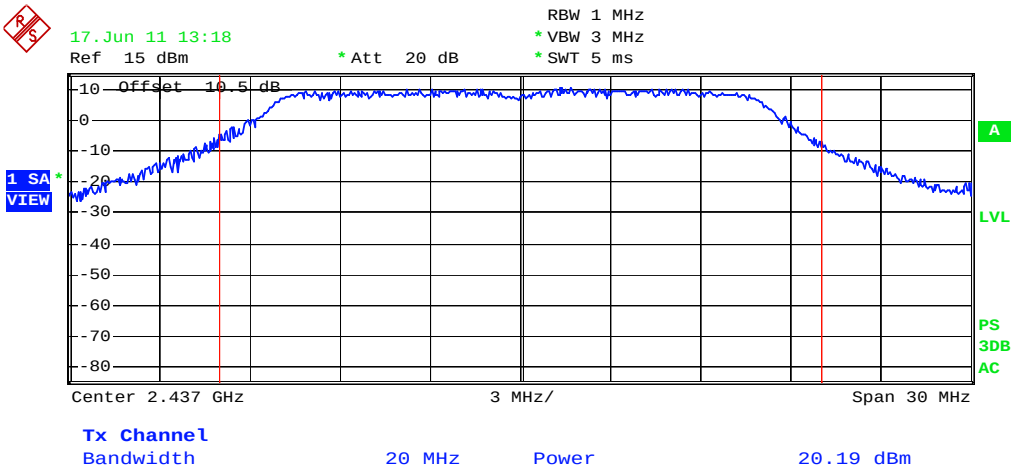



**Tx Channel**

| | | | |
|---|---|---|---|
| Bandwidth | 20 MHz | Power | 20.28 dBm |

Date: 17.JUN.2011 13:21:19

OUTPUT POWER MID CH

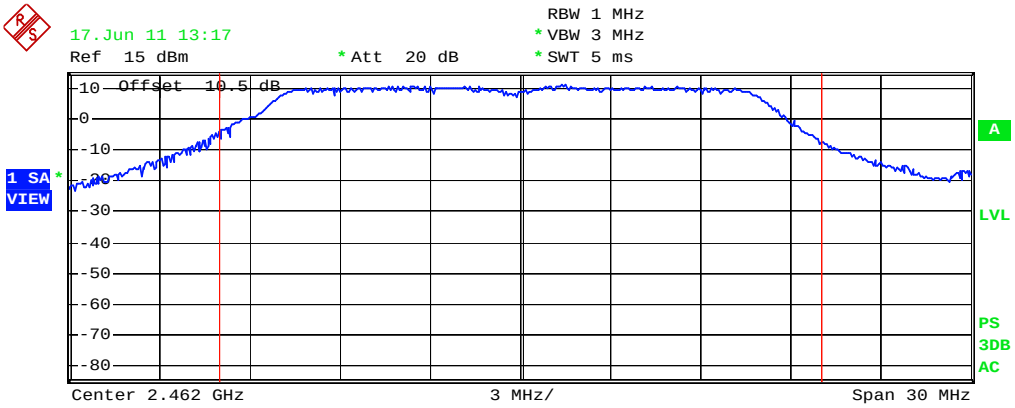



**Tx Channel**

| Bandwidth | 20 MHz | Power | 20.19 dBm |
|---|---|---|---|

Date: 17.JUN.2011 13:18:48

OUTPUT POWER HIGH CH




**Tx Channel**

| Bandwidth | 20 MHz | Power | 21.09 dBm |
|---|---|---|---|

Date: 17.JUN.2011 13:17:42

## 7.2.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 2412 | 13.57 |
| Middle | 2437 | 13.71 |
| High | 2462 | 14.22 |

## 7.2.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

**TEST PROCEDURE**

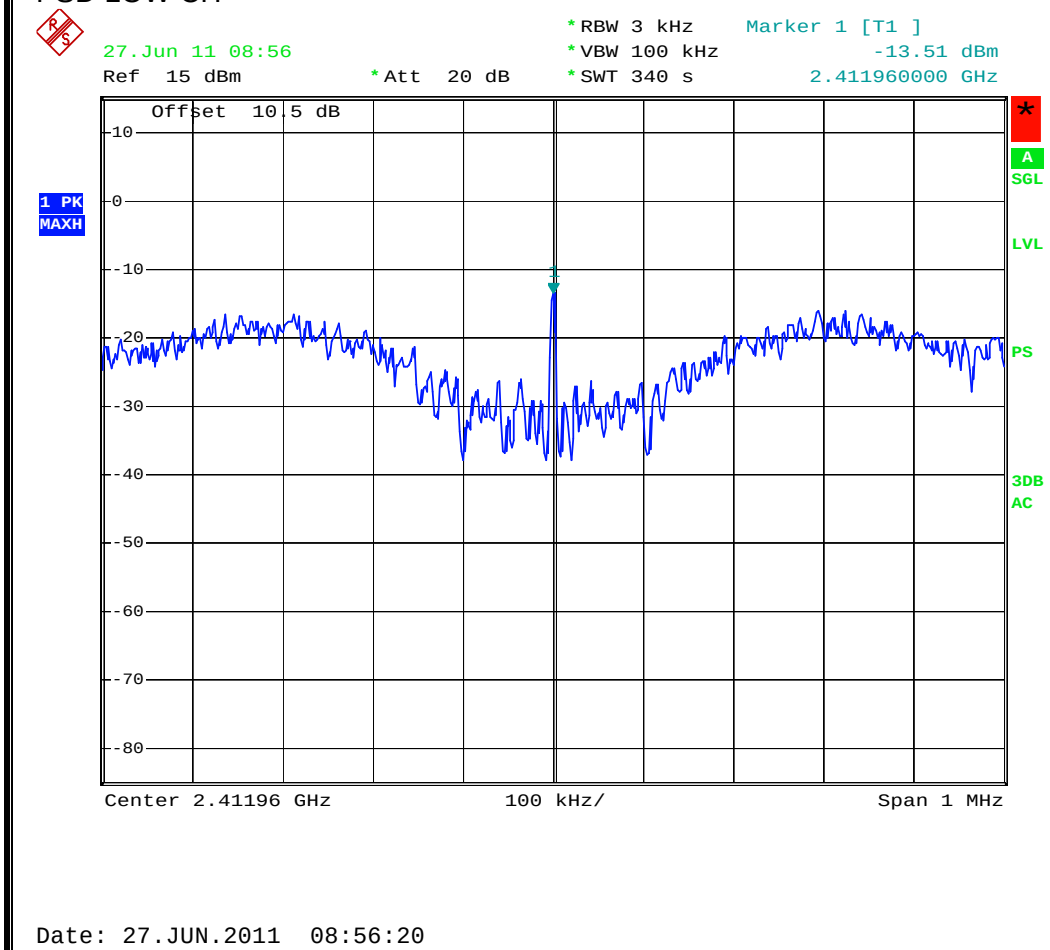
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

**RESULTS**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | -13.51 | 8 | -21.51 |
| Middle | 2437 | -12.69 | 8 | -20.69 |
| High | 2462 | -12.05 | 8 | -20.05 |

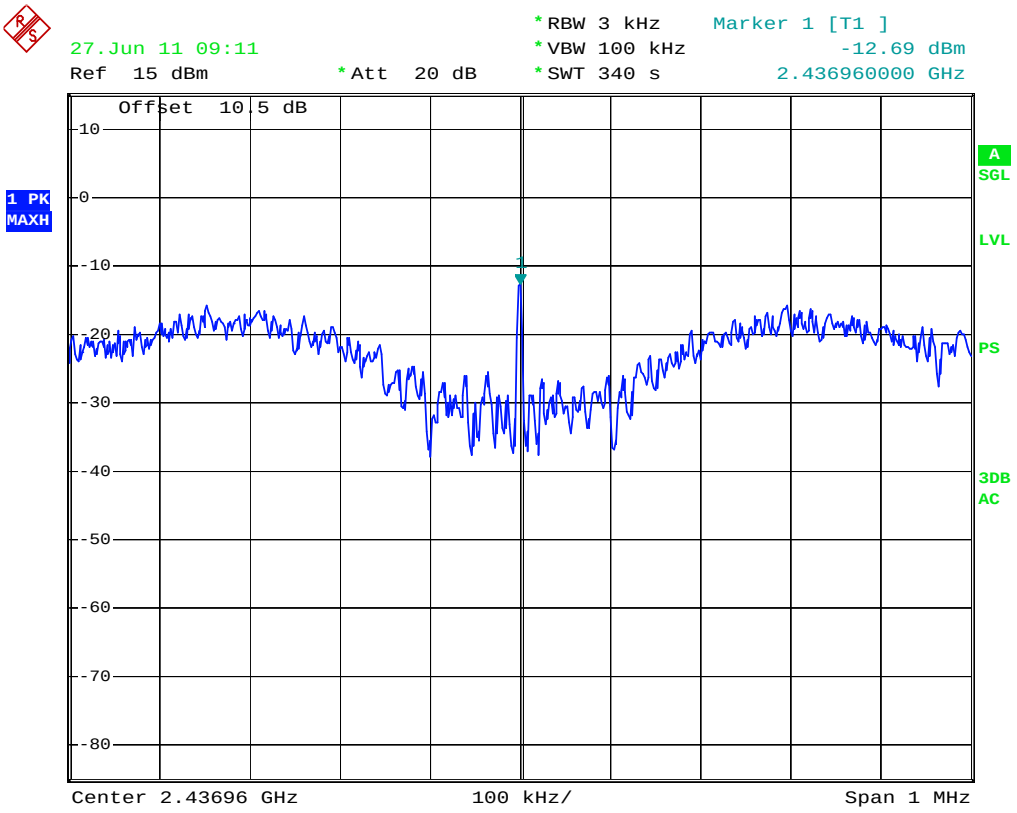
**POWER SPECTRAL DENSITY**

PSD LOW CH



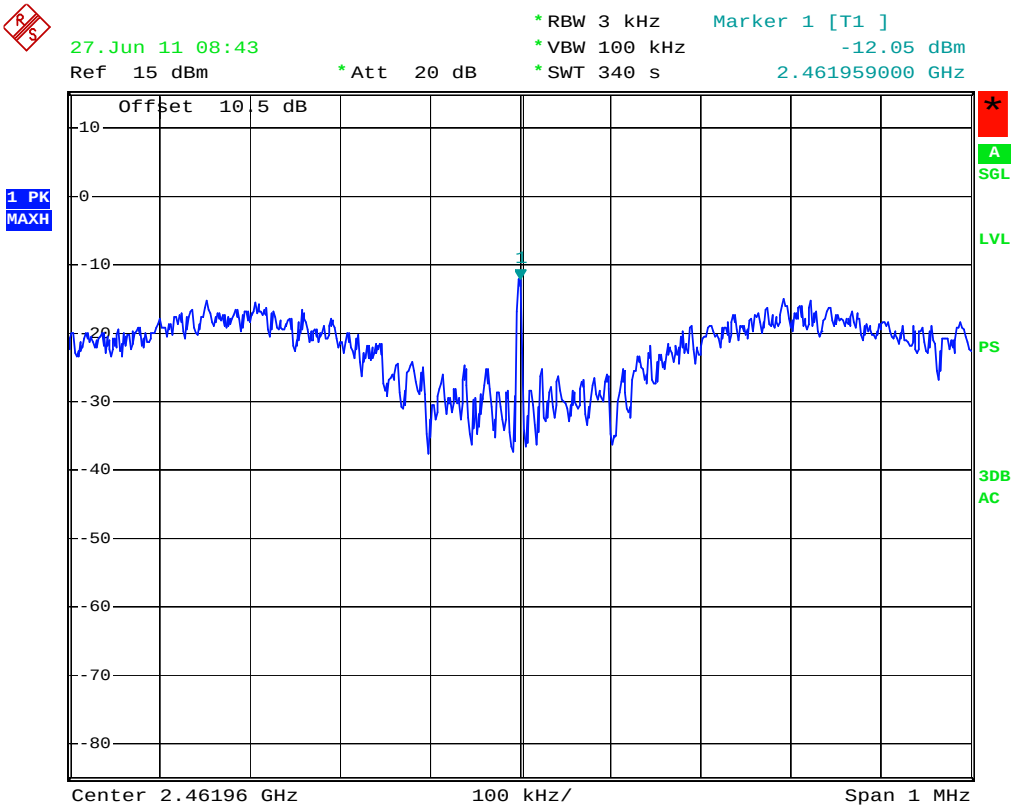

Date: 27.JUN.2011 08:56:20

PSD MID CH




Date: 27.JUN.2011 09:11:47

PSD HIGH CH




Date: 27.JUN.2011 08:43:25

## 7.2.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

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

**TEST PROCEDURE**

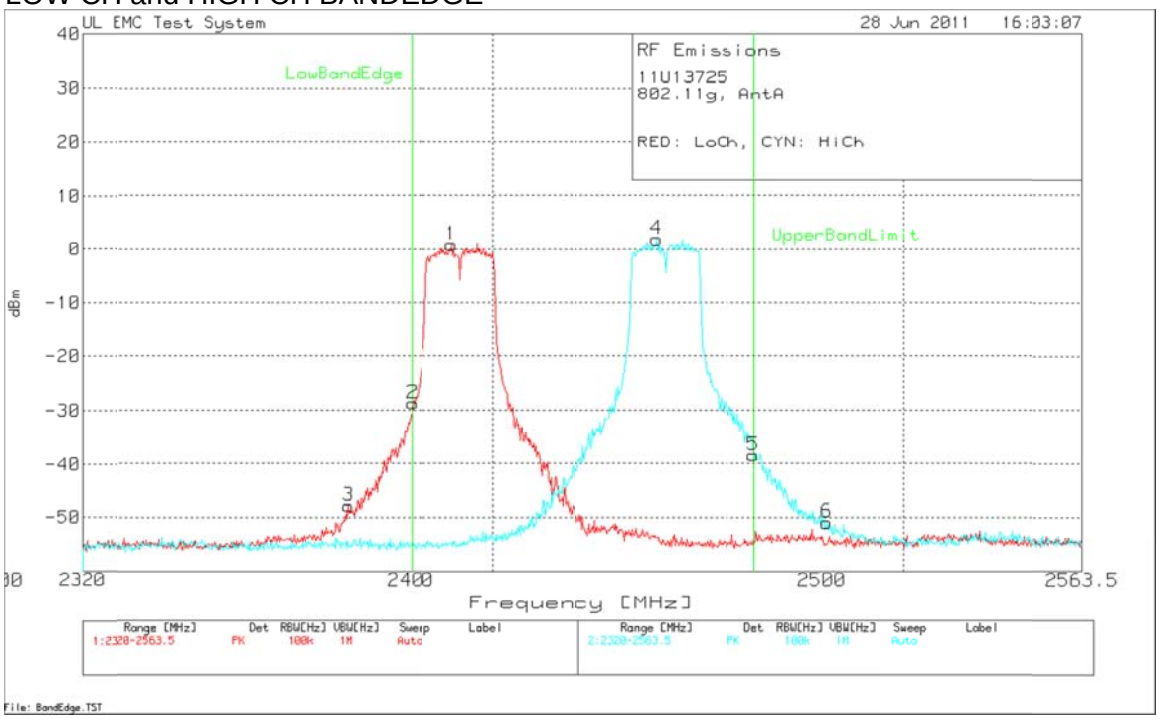
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

## SPURIOUS EMISSIONS

LOW CH and HIGH CH BANDEDGE

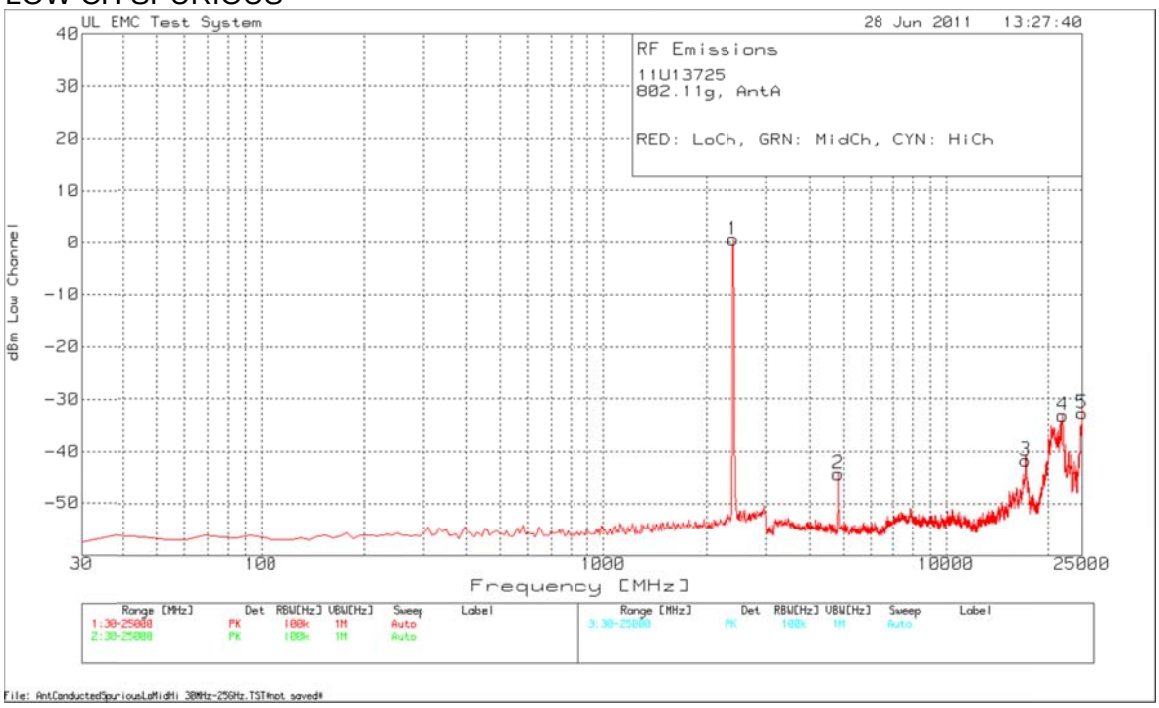



11U13725
802.11g, AntA
RED: LoCh, CYN: HiCh

| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2409.945 | 97.38 | PK | -107 | 10.5 | .88 |
| 2400.019 | 67.81 | PK | -107 | 10.5 | -28.69 |
| 2384.623 | 48.65 | PK | -107 | 10.5 | -47.85 |
| | | | | | |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2459.78 | 98.25 | PK | -107 | 10.6 | 1.85 |
| 2483.481 | 57.98 | PK | -107 | 10.6 | -38.42 |
| 2501.106 | 45.51 | PK | -107 | 10.6 | -50.89 |

PK - Peak detector

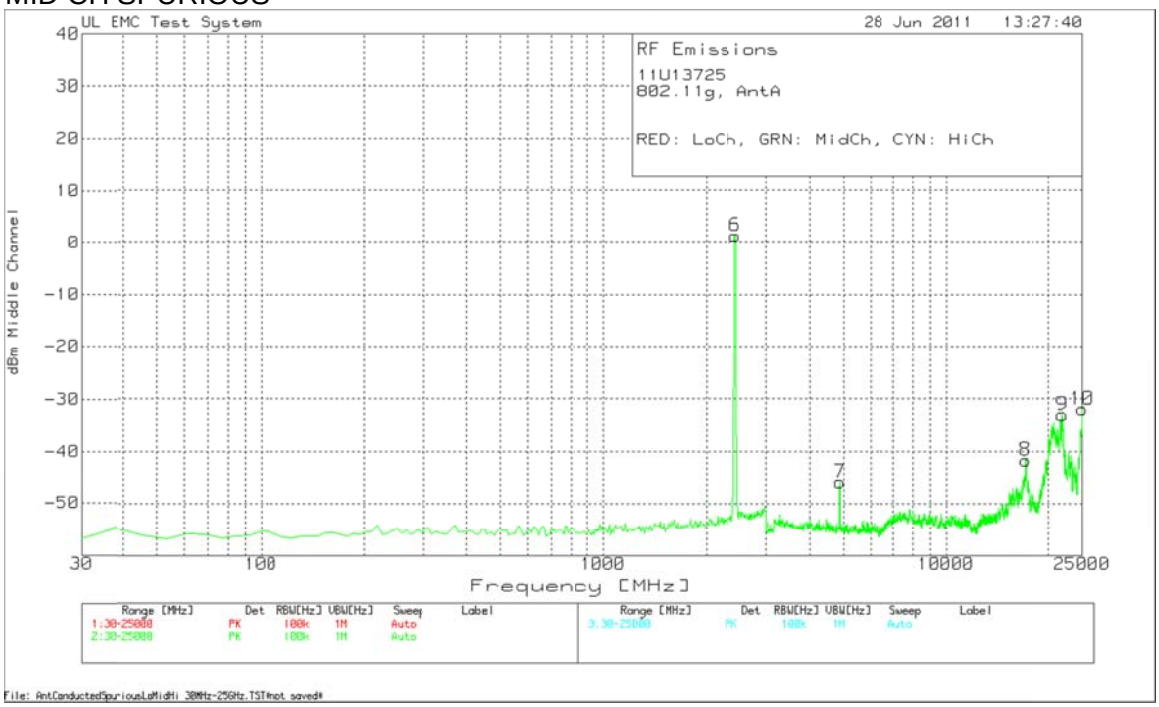
LOW CH SPURIOUS




| Low Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2404.758 | 97.01 | PK | -107 | 10.5 | .51 |
| 4826.233 | 51.84 | PK | -107 | 10.9 | -44.26 |
| 16988.11 | 41.55 | PK | -107 | 23.7 | -41.75 |
| 21994.568 | 42.28 | PK | -107 | 31.5 | -33.22 |
| 24992.214 | 42.54 | PK | -107 | 31.6 | -32.86 |

PK - Peak detector

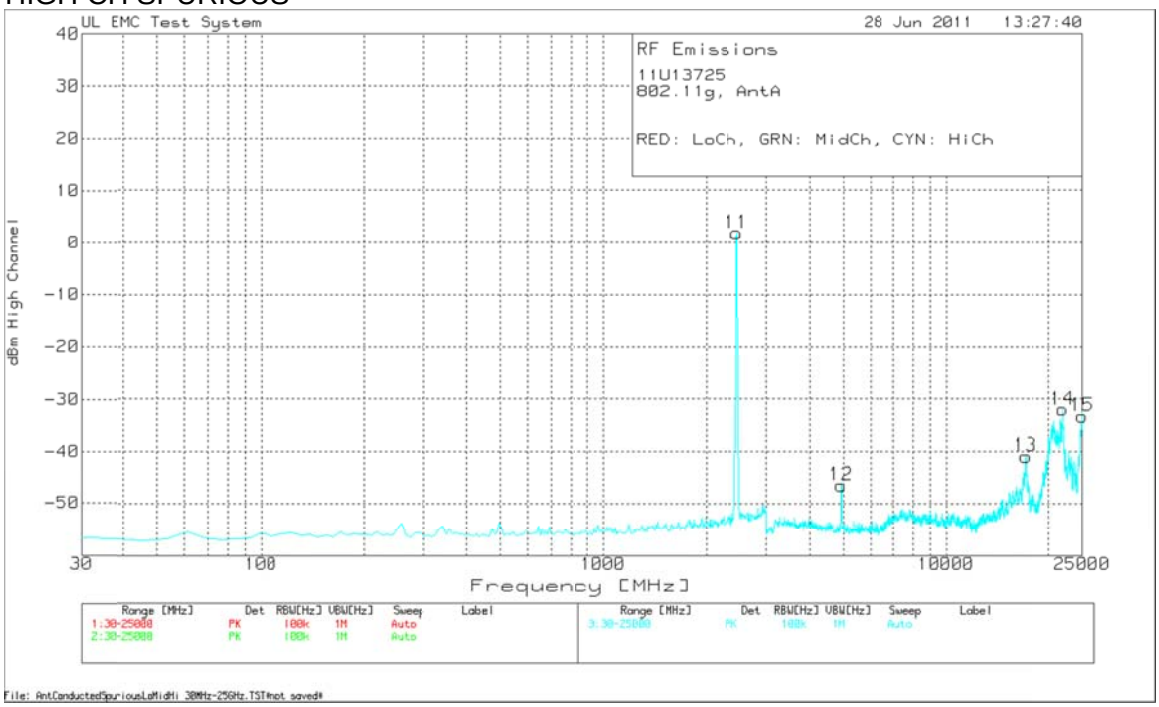
MID CH SPURIOUS




| Middle Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2435.903 | 97.64 | PK | -107 | 10.5 | 1.14 |
| 4872.95 | 50.13 | PK | -107 | 11 | -45.87 |
| 16988.11 | 41.54 | PK | -107 | 23.7 | -41.76 |
| 21924.493 | 43.35 | PK | -107 | 30.5 | -33.15 |
| 24992.214 | 43.33 | PK | -107 | 31.6 | -32.07 |

PK - Peak detector

HIGH CH SPURIOUS




| High Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2459.261 | 98.09 | PK | -107 | 10.6 | 1.69 |
| 4919.666 | 49.38 | PK | -107 | 11.1 | -46.52 |
| 17019.255 | 42 | PK | -107 | 24 | -41 |
| 21986.782 | 43.42 | PK | -107 | 31.5 | -32.08 |
| 24992.214 | 41.99 | PK | -107 | 31.6 | -33.41 |

PK - Peak detector

# 7.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

## 7.3.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

**TEST PROCEDURE**

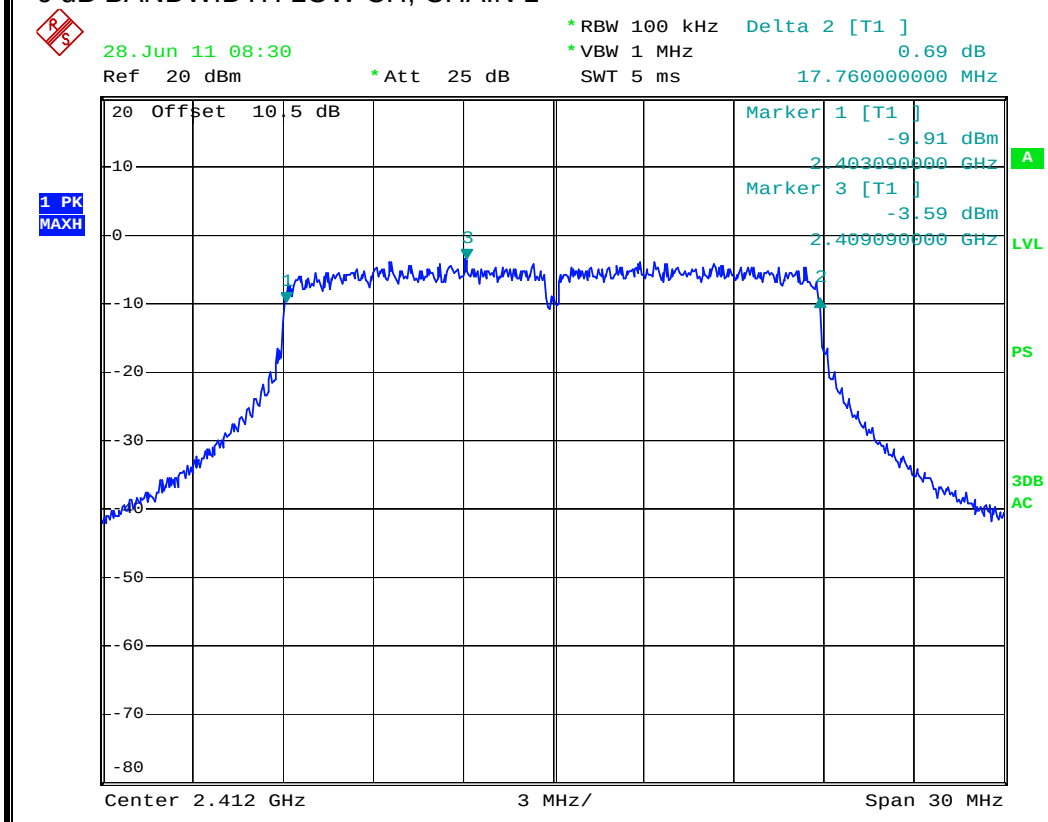
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

**RESULTS**

| Channel | Frequency (MHz) | Chain 1 6 dB BW (MHz) | Chain 2 6 dB BW (MHz) | Minimum Limit (MHz) |
|---|---|---|---|---|
| Low | 2412 | 17.76 | 17.7 | 0.5 |
| Middle | 2437 | 17.82 | 17.7 | 0.5 |
| High | 2462 | 17.76 | 17.7 | 0.5 |

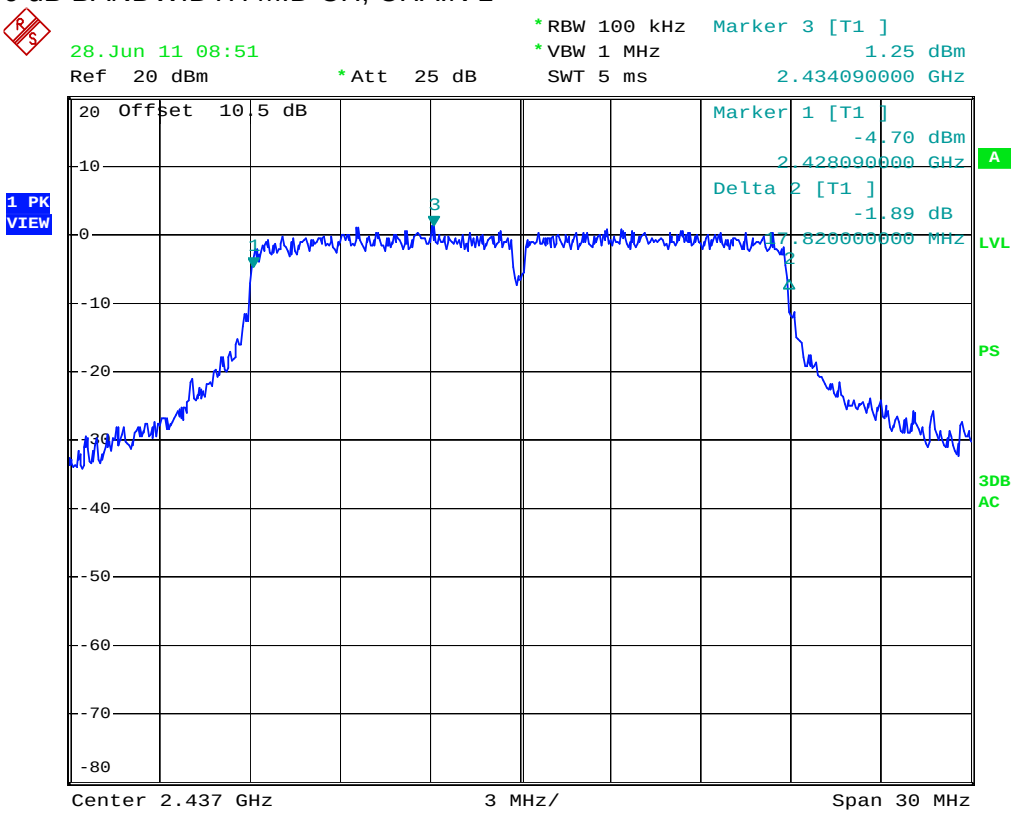
**6 dB BANDWIDTH, CHAIN 1**

6 dB BANDWIDTH LOW CH, CHAIN 1



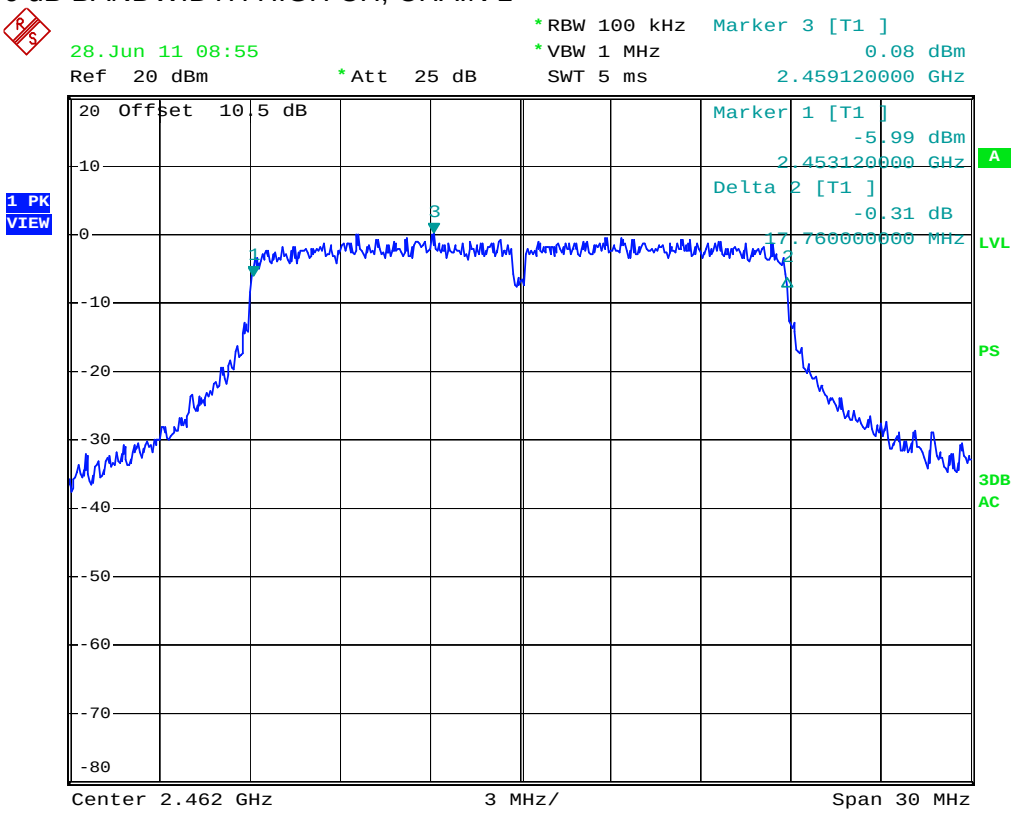

Date: 28.JUN.2011 08:30:25

## 6 dB BANDWIDTH MID CH, CHAIN 1




Date: 28.JUN.2011 08:51:37

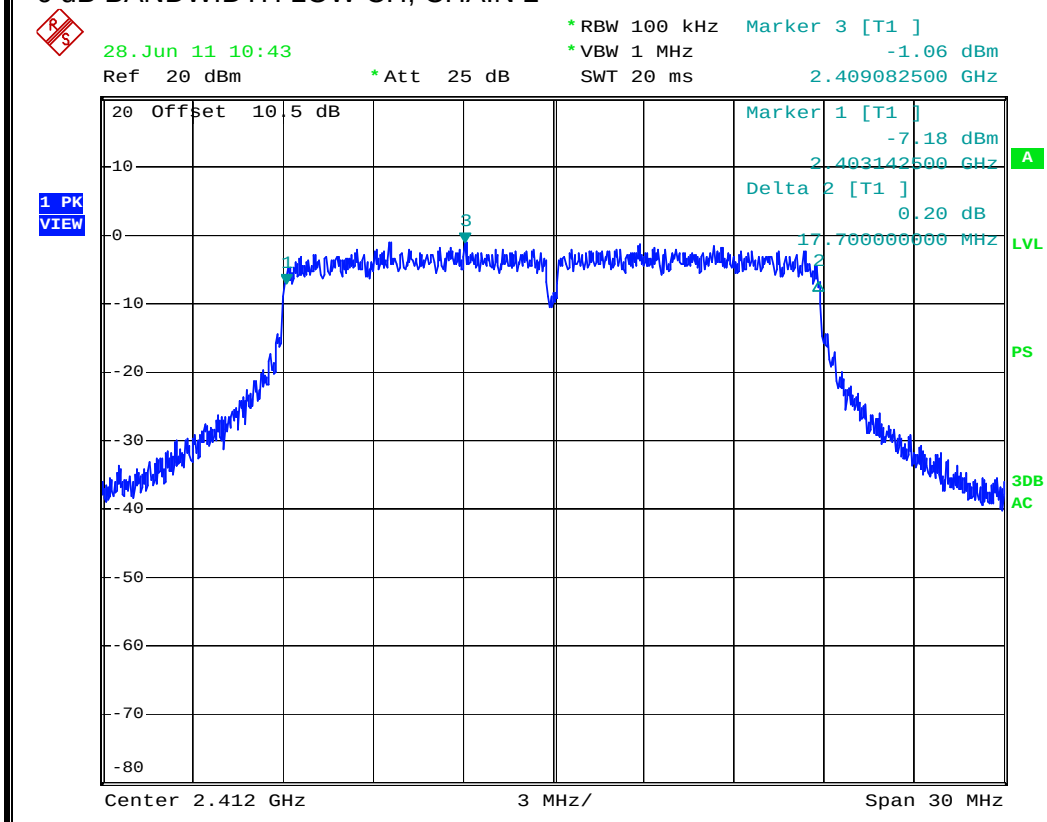
## 6 dB BANDWIDTH HIGH CH, CHAIN 1




Date: 28.JUN.2011 08:55:57

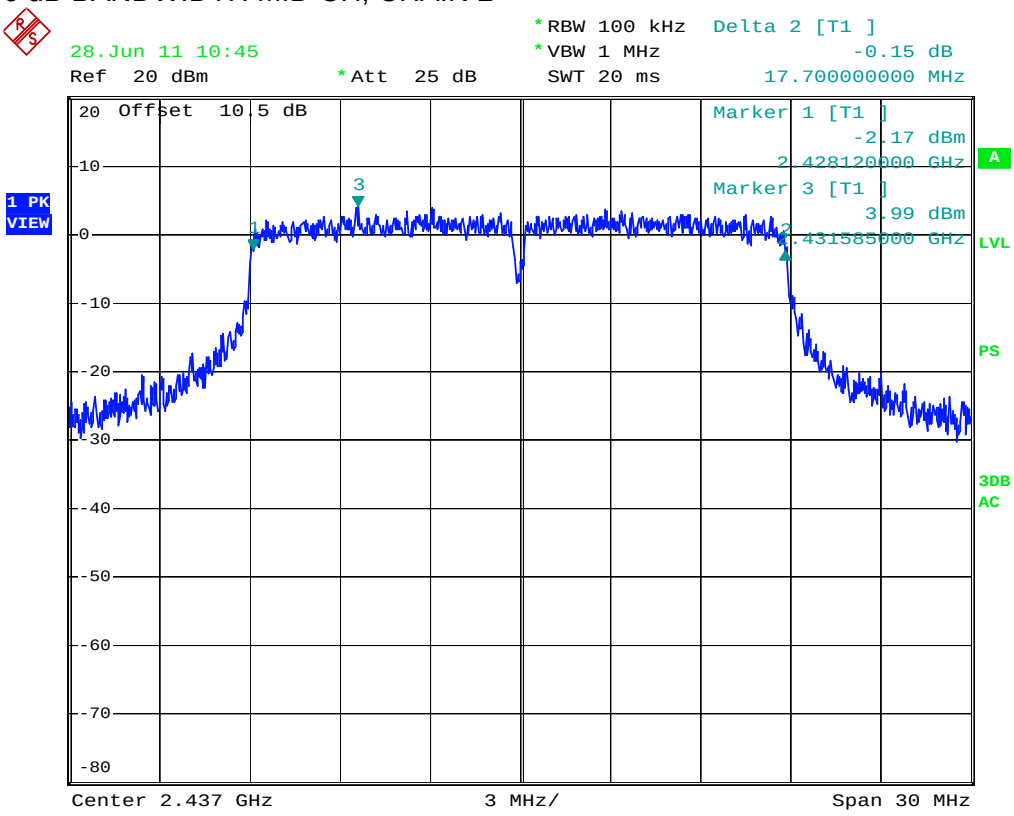
**6 dB BANDWIDTH, CHAIN 2**

6 dB BANDWIDTH LOW CH, CHAIN 2



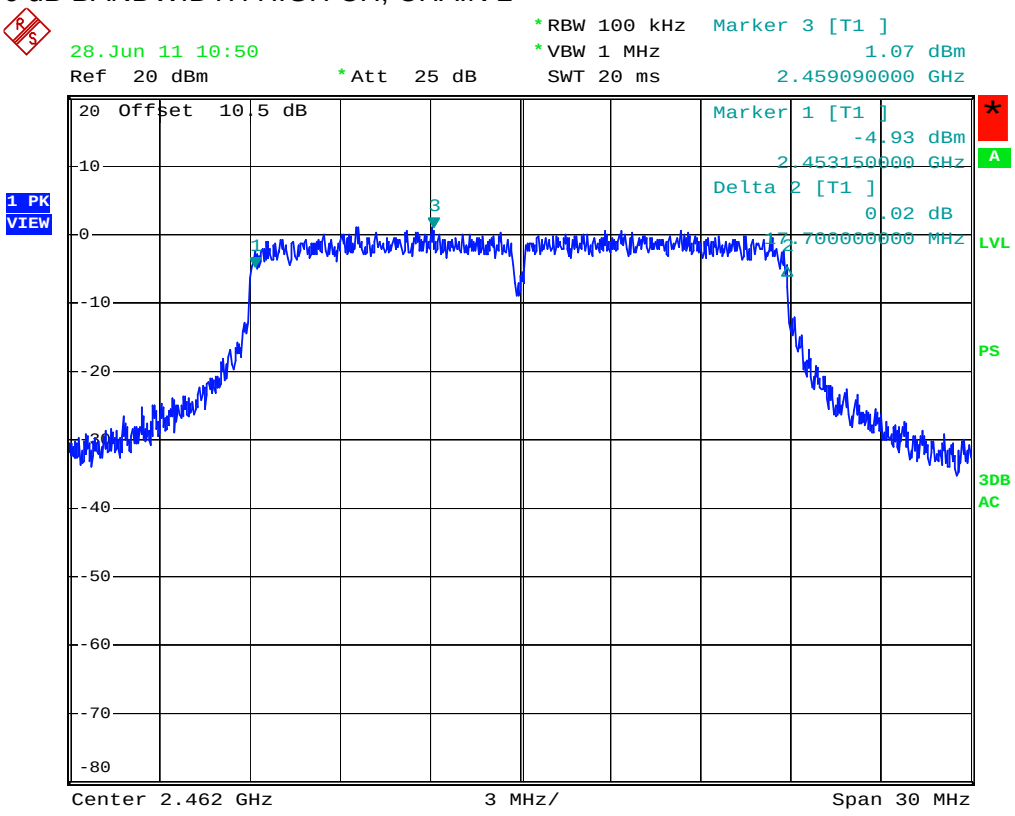

Date: 28.JUN.2011 10:43:19

## 6 dB BANDWIDTH MID CH, CHAIN 2




Date: 28.JUN.2011 10:45:41

## 6 dB BANDWIDTH HIGH CH, CHAIN 2




Date: 28.JUN.2011 10:50:26

### 7.3.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

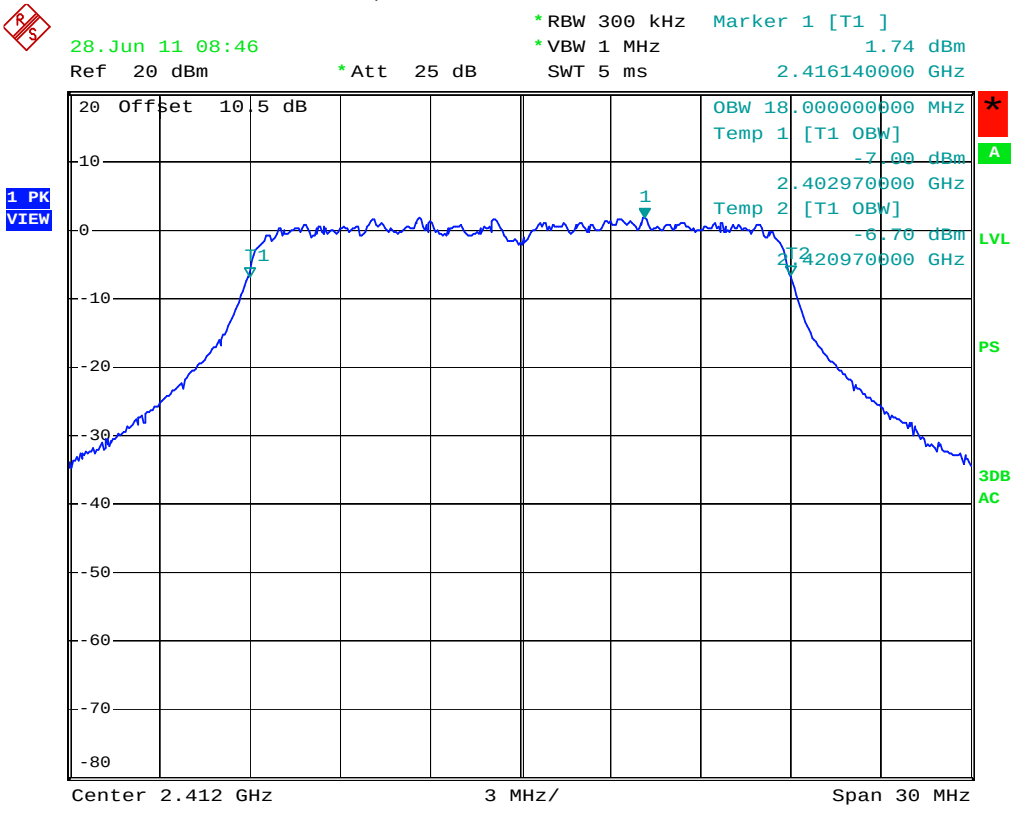
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to minimum 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

| Channel | Frequency (MHz) | Chain 1 99% Bandwidth (MHz) | Chain 2 99% Bandwidth (MHz) |
|---|---|---|---|
| Low | 2412 | 18 | 17.985 |
| Middle | 2437 | 18.09 | 18.0825 |
| High | 2462 | 18.03 | 18.06 |

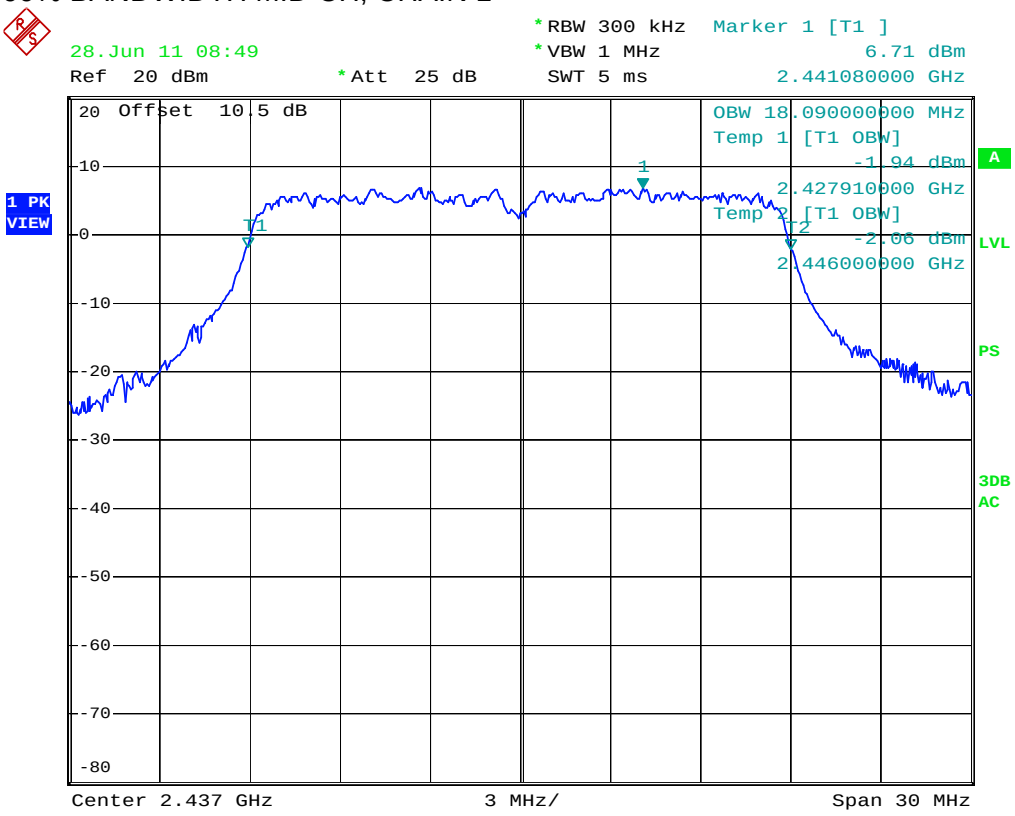
**99% BANDWIDTH, CHAIN 1**

99% BANDWIDTH LOW CH, CHAIN 1



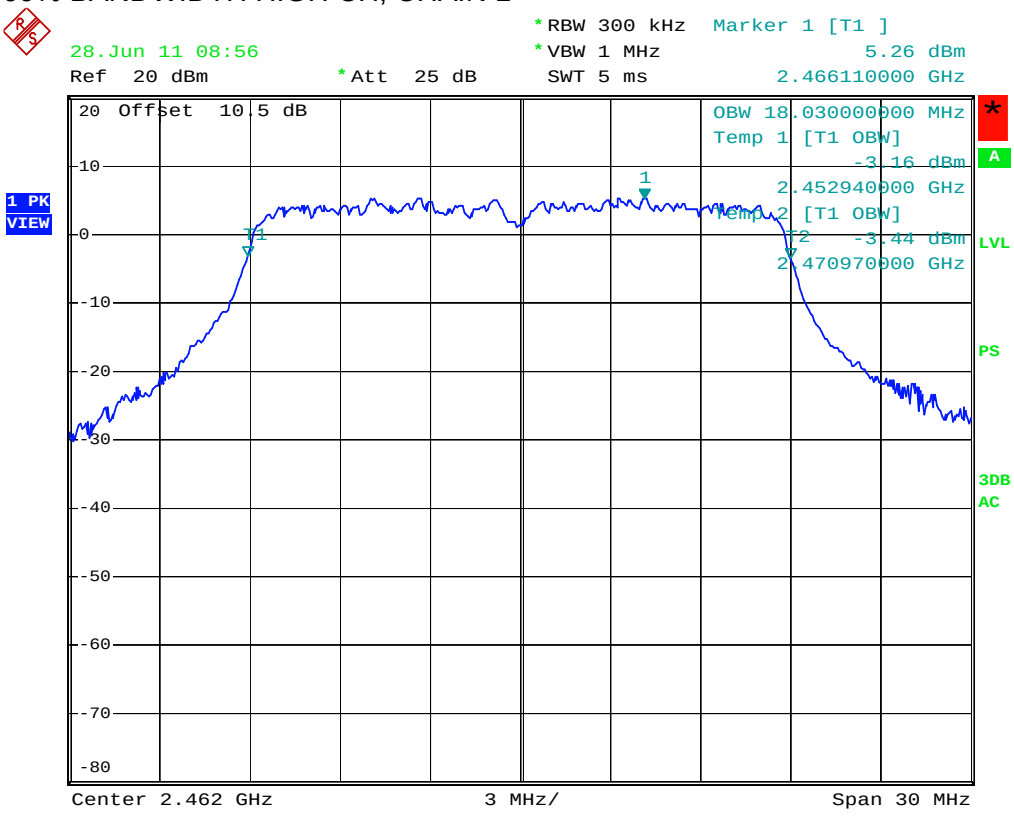

Date: 28.JUN.2011 08:47:00

99% BANDWIDTH MID CH, CHAIN 1




Date: 28.JUN.2011 08:49:27

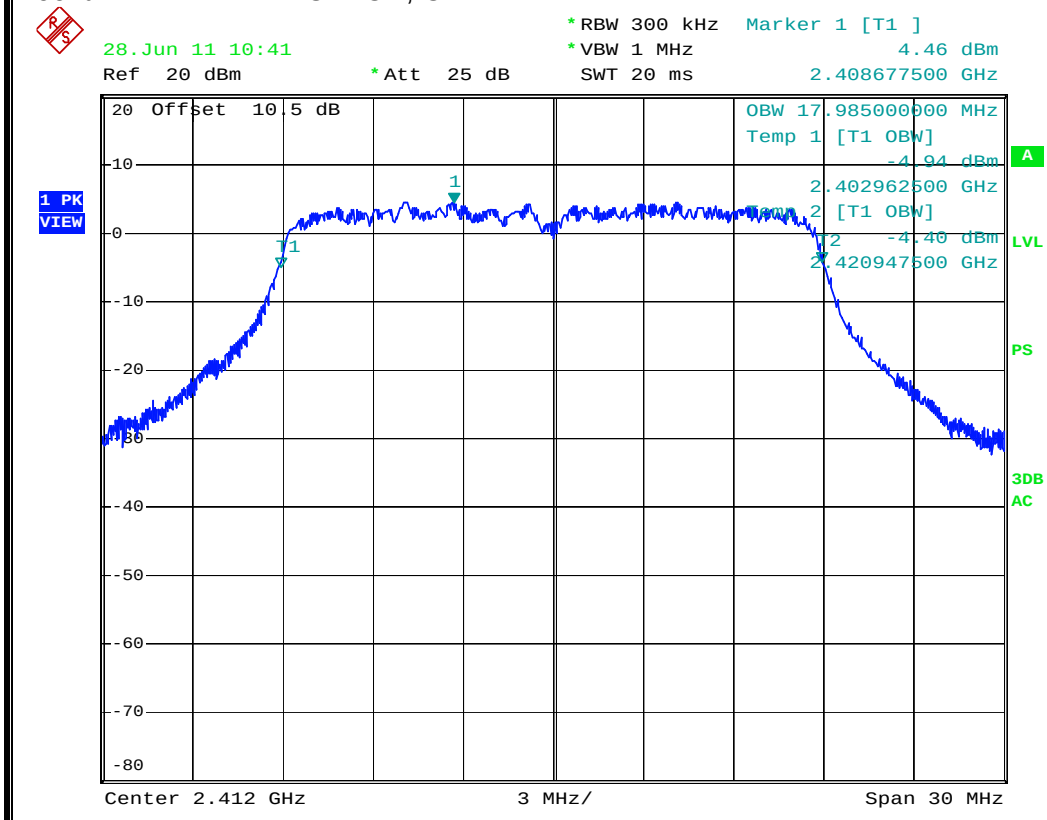
99% BANDWIDTH HIGH CH, CHAIN 1




Date: 28.JUN.2011 08:56:43

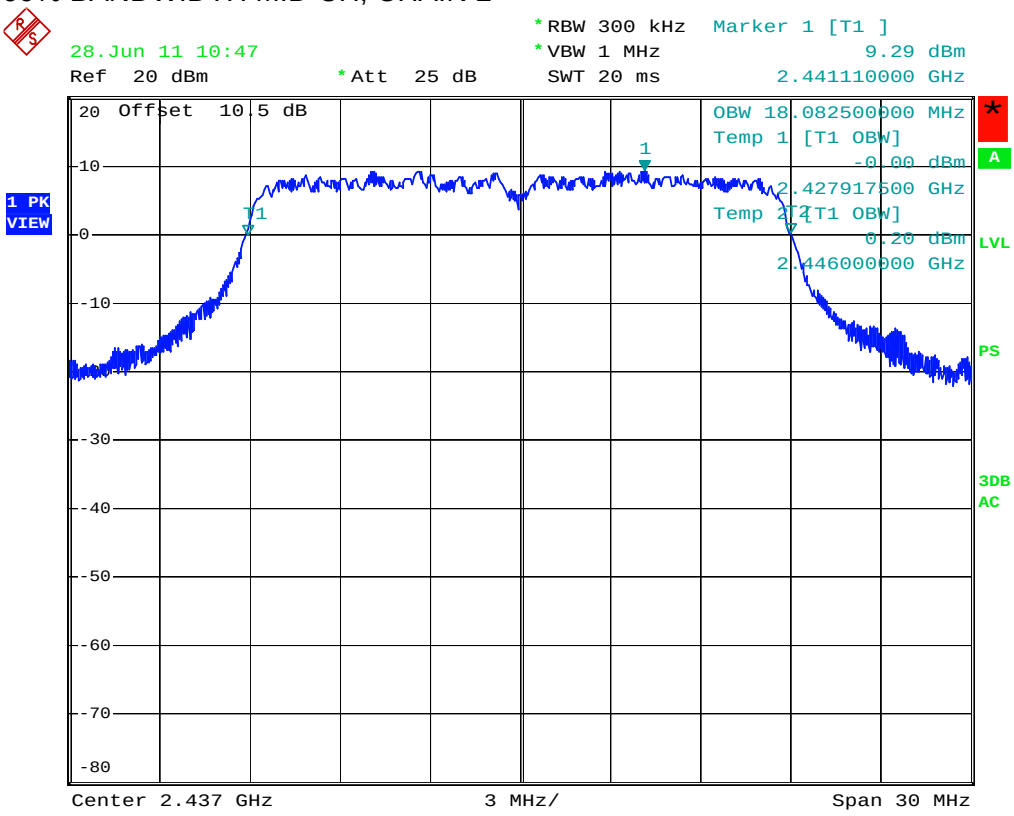
**99% BANDWIDTH, CHAIN 2**

99% BANDWIDTH LOW CH, CHAIN 2



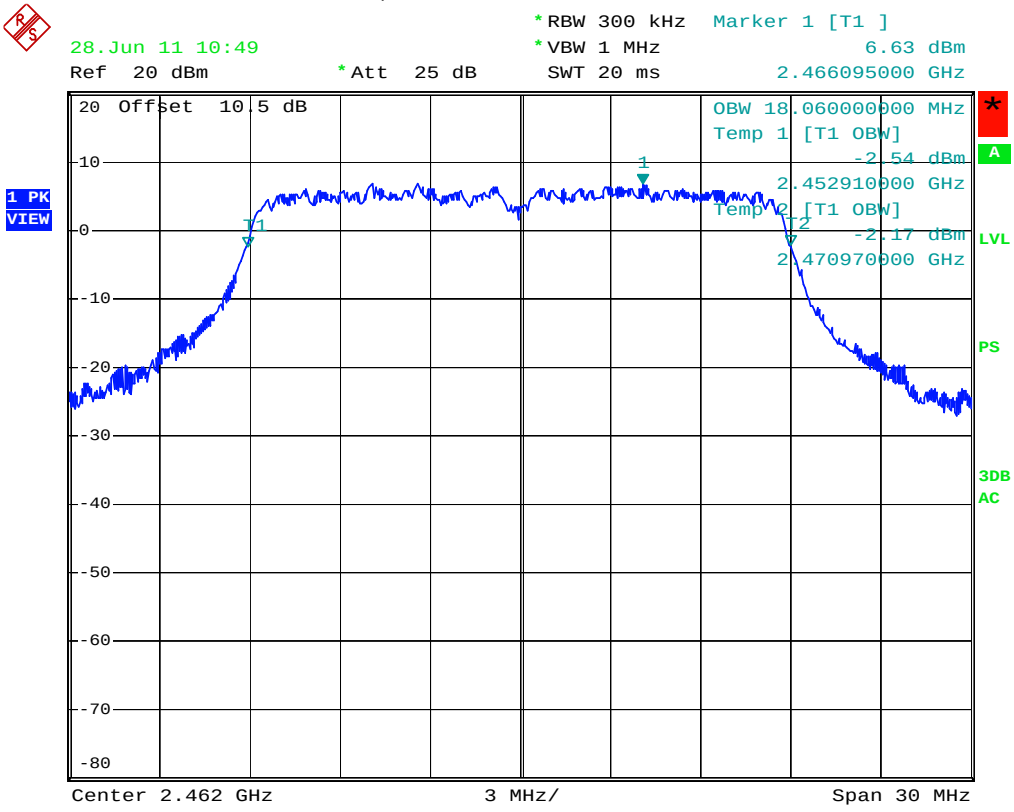

Date: 28.JUN.2011 10:41:33

99% BANDWIDTH MID CH, CHAIN 2




Date: 28.JUN.2011 10:47:06

99% BANDWIDTH HIGH CH, CHAIN 2




Date: 28.JUN.2011 10:49:04

## 7.3.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

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

**TEST PROCEDURE**

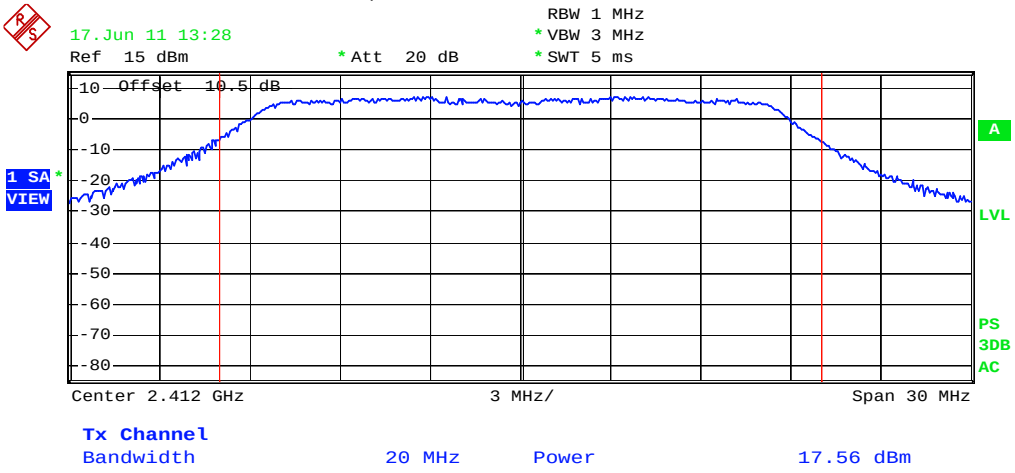
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

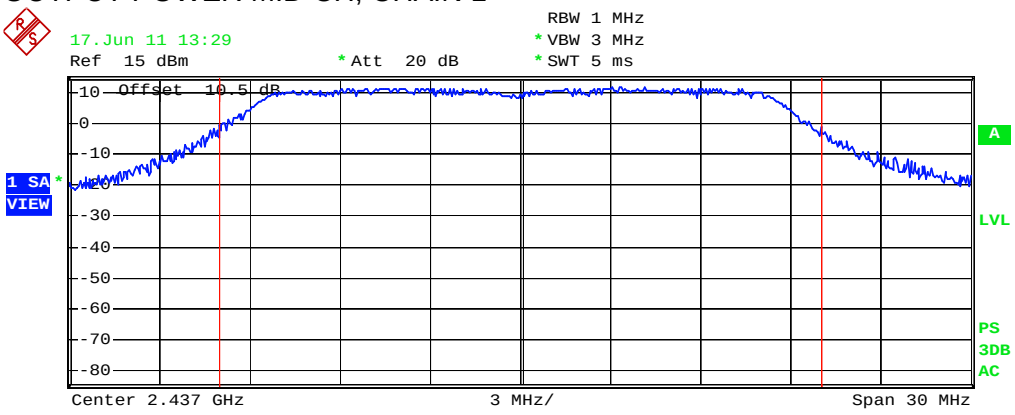
| Channel | Frequency (MHz) | Limit (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | 30.00 | 17.56 | 19.80 | 21.83 | -8.17 |
| Mid | 2437 | 30.00 | 22.00 | 24.87 | 26.68 | -3.32 |
| High | 2462 | 30.00 | 21.03 | 22.40 | 24.78 | -5.22 |
| Pathloss and attenuator is included in the power reading. | | | | | | |

**CHAIN 1 OUTPUT POWER**

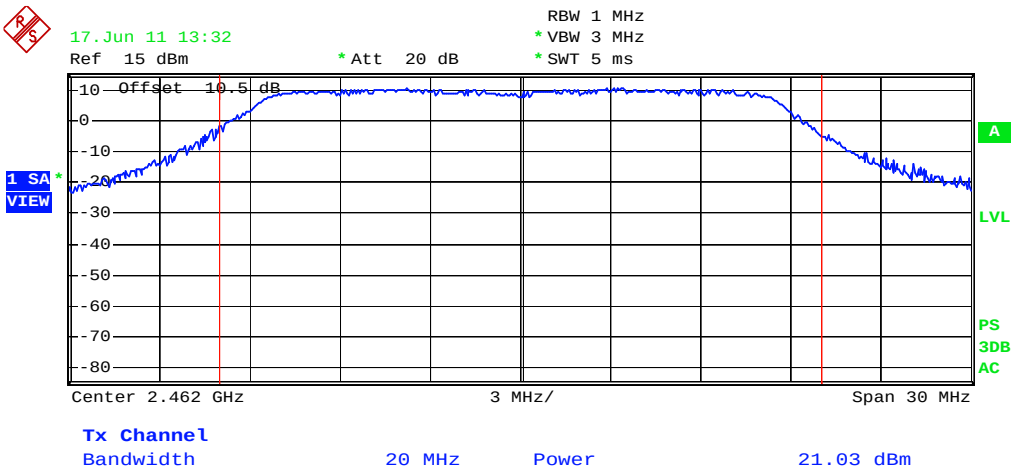
OUTPUT POWER LOW CH, CHAIN 1



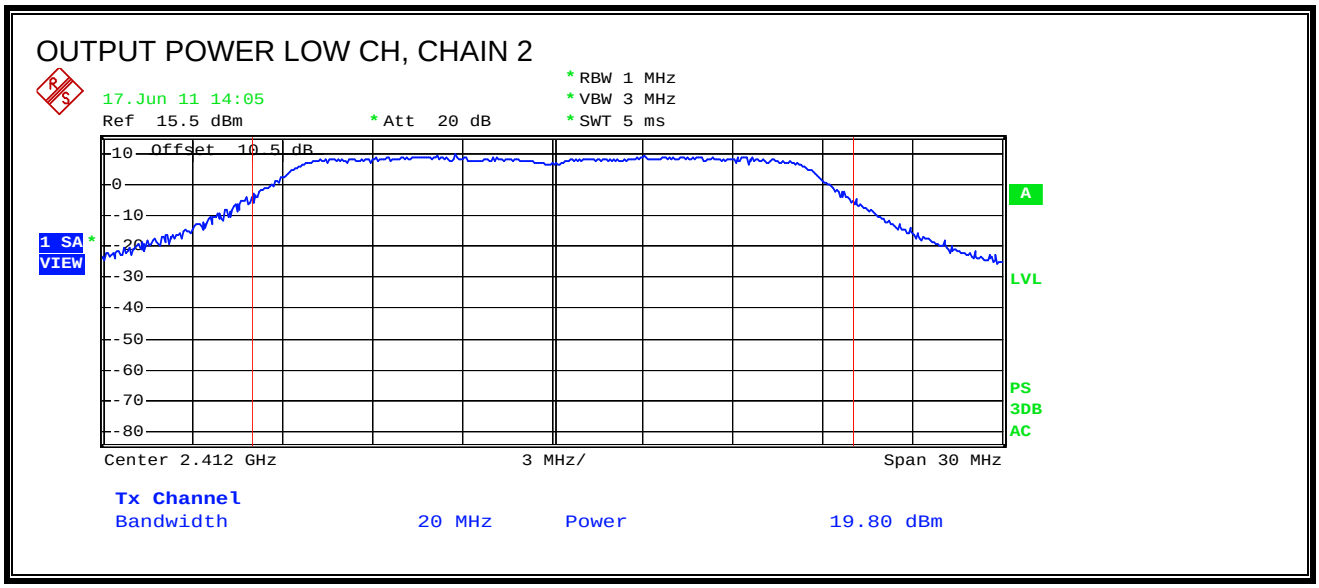
OUTPUT POWER MID CH, CHAIN 1



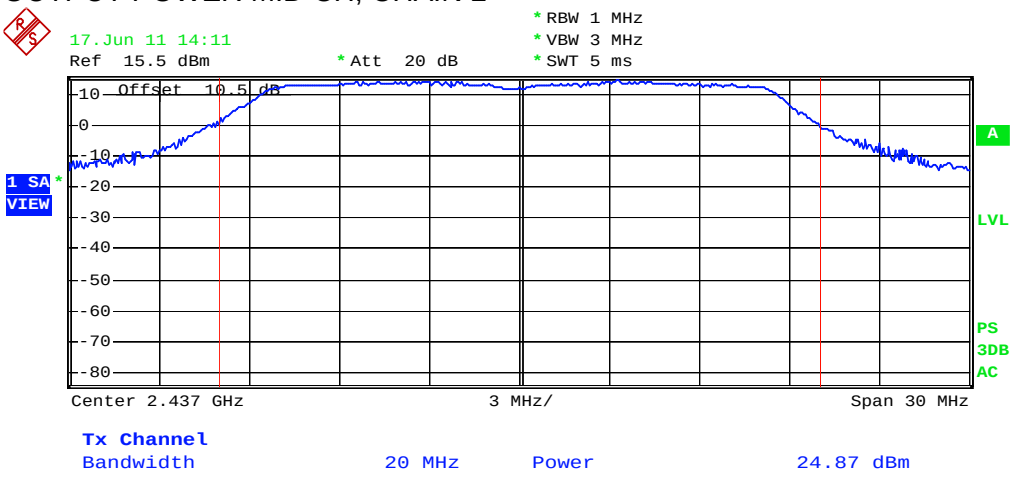
OUTPUT POWER HIGH CH, CHAIN 1



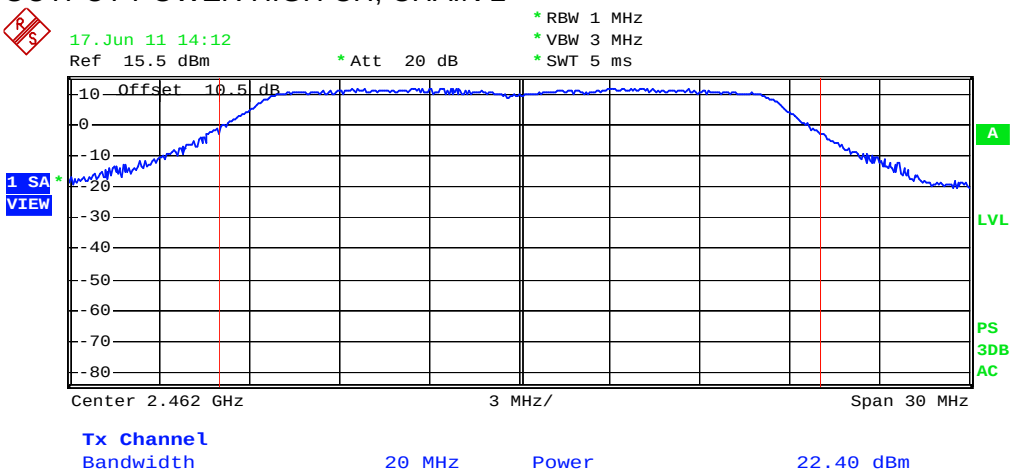
**CHAIN 2 OUTPUT POWER**



OUTPUT POWER MID CH, CHAIN 2



OUTPUT POWER HIGH CH, CHAIN 2



## 7.3.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 2412 | 10.50 | 12.70 | 14.75 |
| Middle | 2437 | 15.30 | 17.80 | 19.74 |
| High | 2462 | 13.95 | 15.28 | 17.68 |

## 7.3.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

**TEST PROCEDURE**

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

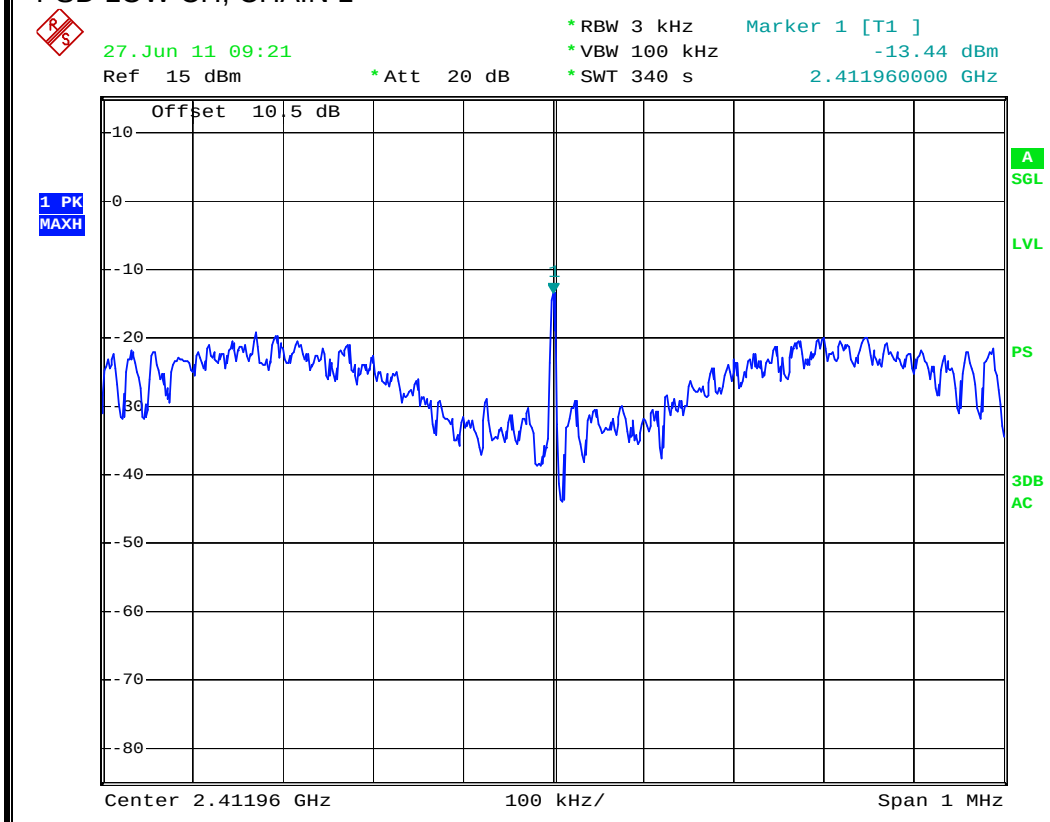
**RESULTS**

| Channel | Frequency (MHz) | Chain 1 PSD (dBm) | Chain 2 PSD (dBm) | Limit (dBm) | Chain 1 Margin (dB) | Chain 2 Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | -10.4297 | -12.0397 | 8 | -18.43 | -20.04 |
| Middle | 2437 | -9.6397 | -7.0597 | 8 | -17.64 | -15.06 |
| High | 2462 | -9.0897 | -11.1997 | 8 | -17.09 | -19.20 |

PSD is calculated using KDB662911, Method 2

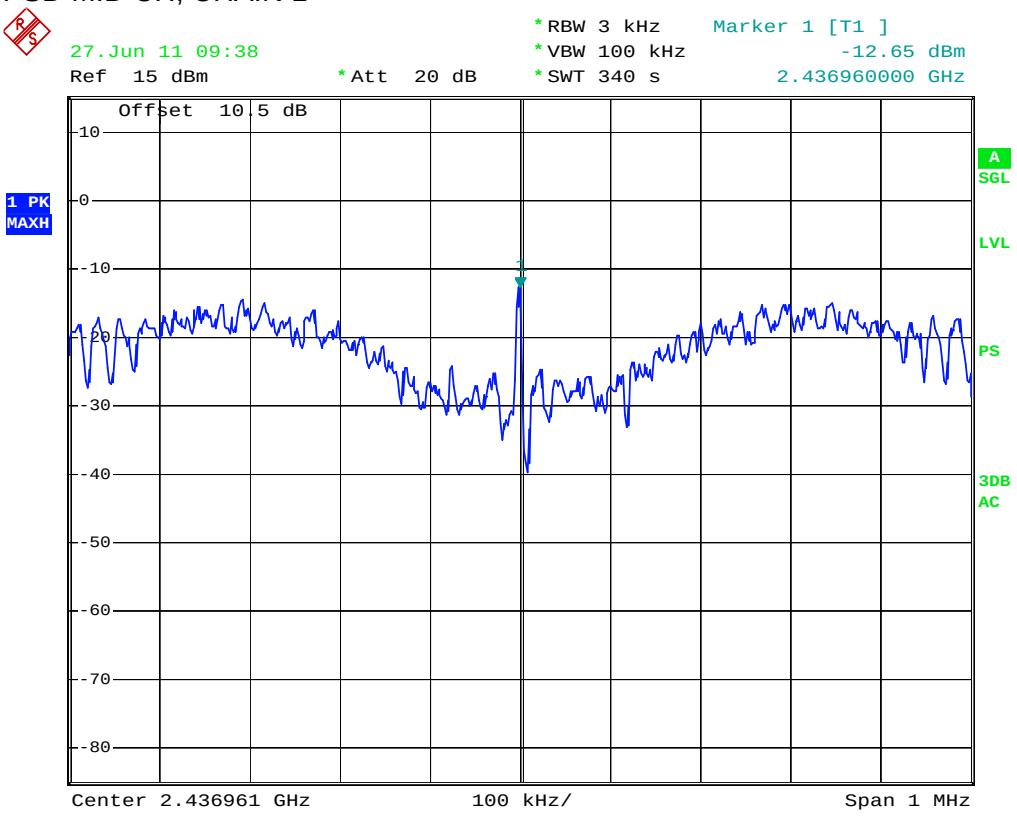
**POWER SPECTRAL DENSITY, CHAIN 1**

PSD LOW CH, CHAIN 1



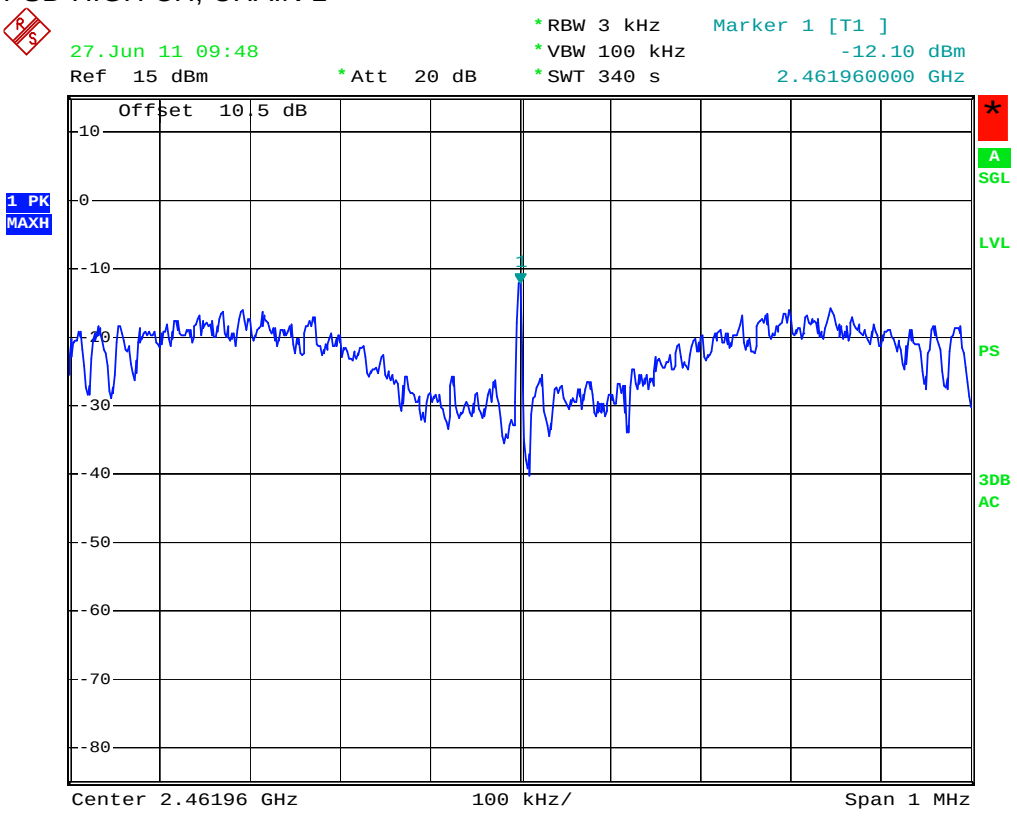

Date: 27.JUN.2011 09:21:14

PSD MID CH, CHAIN 1




Date: 27.JUN.2011 09:38:27

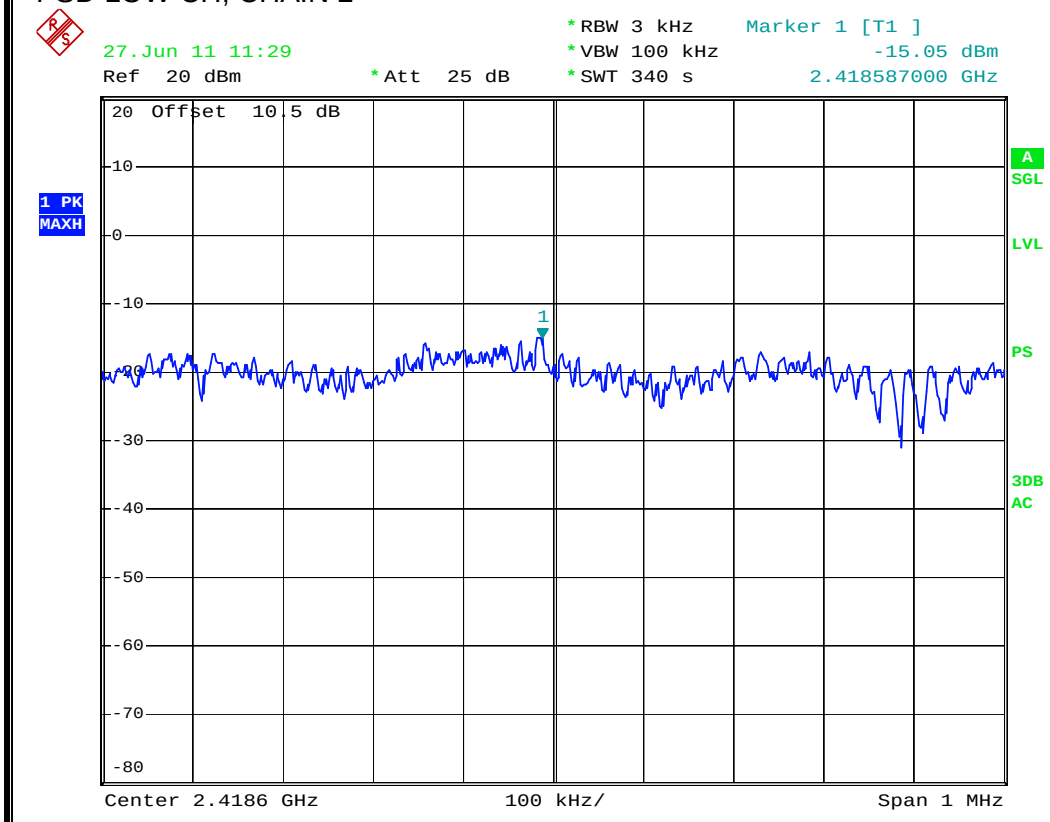
PSD HIGH CH, CHAIN 1




Date: 27.JUN.2011 09:48:37

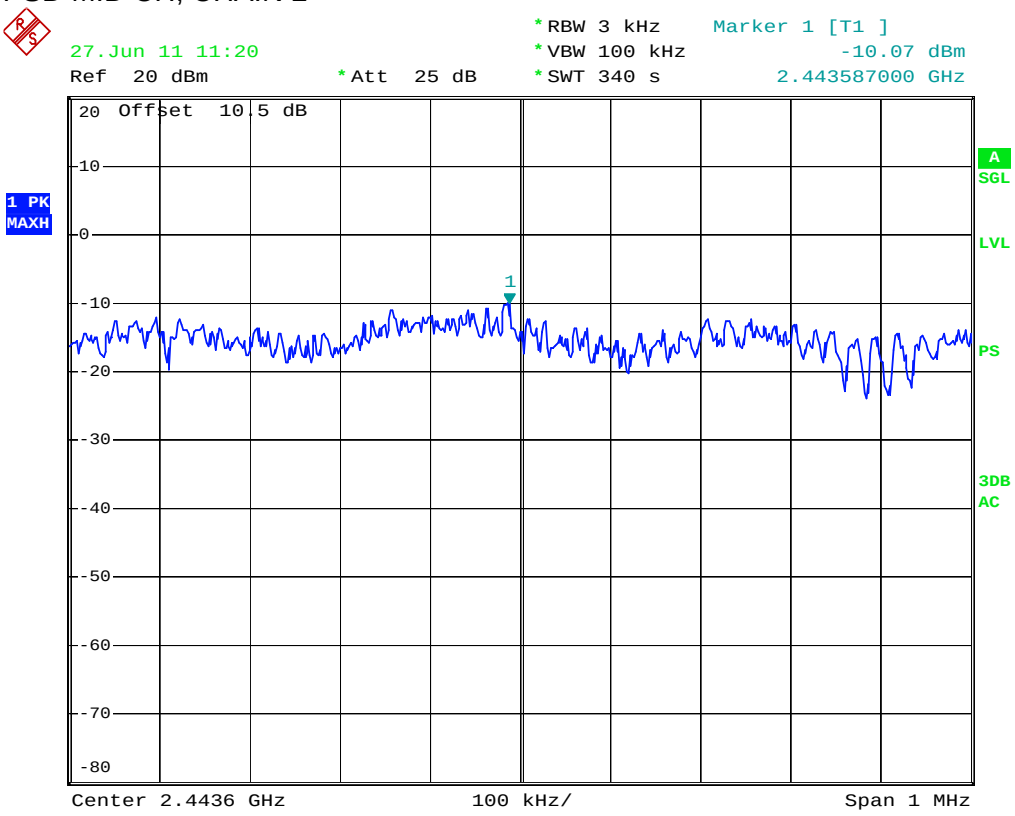
**POWER SPECTRAL DENSITY, CHAIN 2**

PSD LOW CH, CHAIN 2



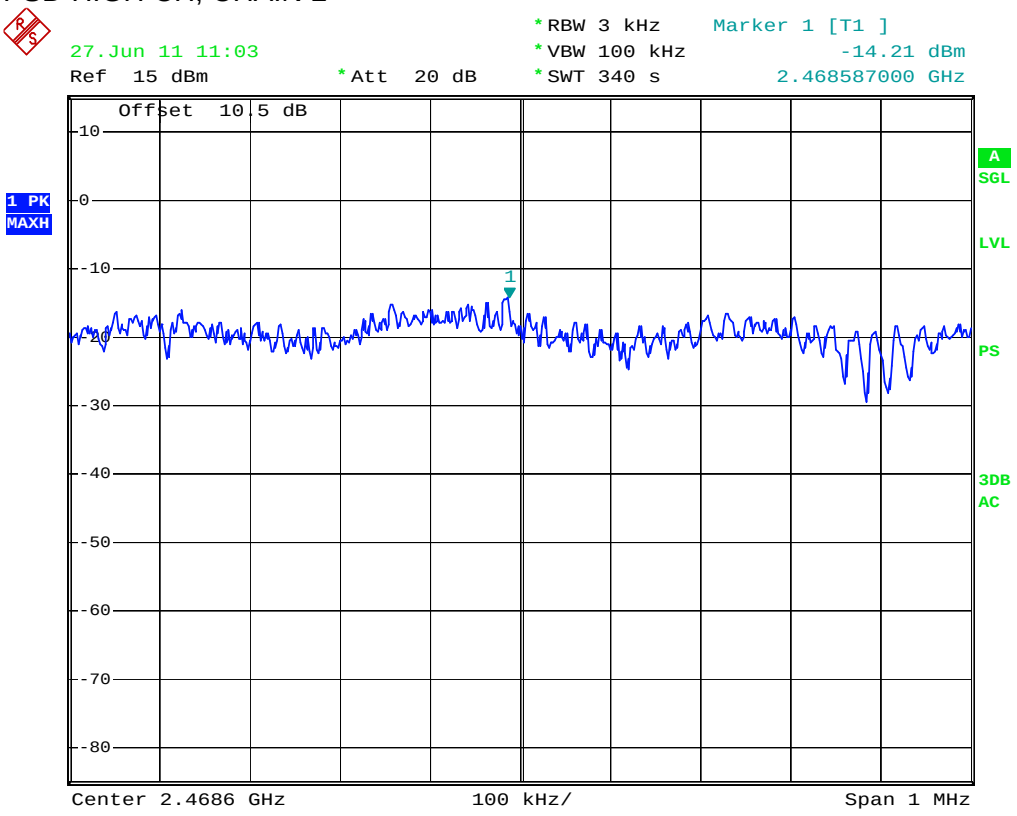

Date: 27.JUN.2011 11:29:32

PSD MID CH, CHAIN 2




Date: 27.JUN.2011 11:20:33

PSD HIGH CH, CHAIN 2




Date: 27.JUN.2011 11:03:36

## 7.3.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

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

**TEST PROCEDURE**

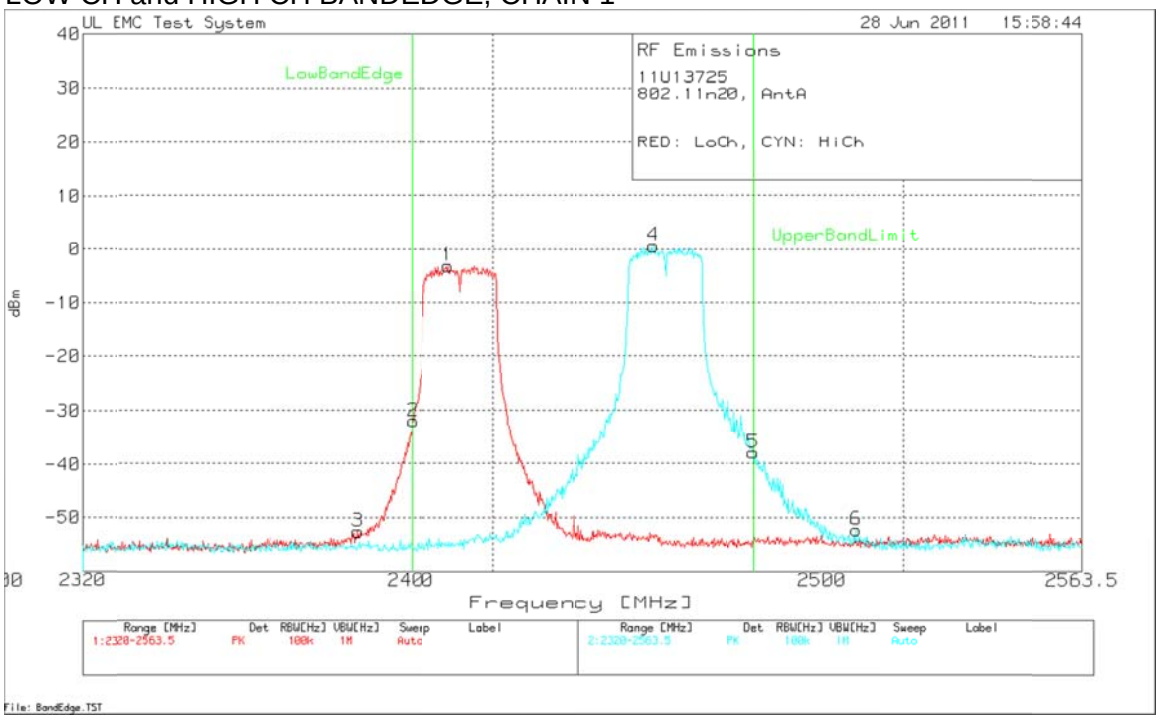
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

## CHAIN 1 SPURIOUS EMISSIONS

LOW CH and HIGH CH BANDEDGE, CHAIN 1



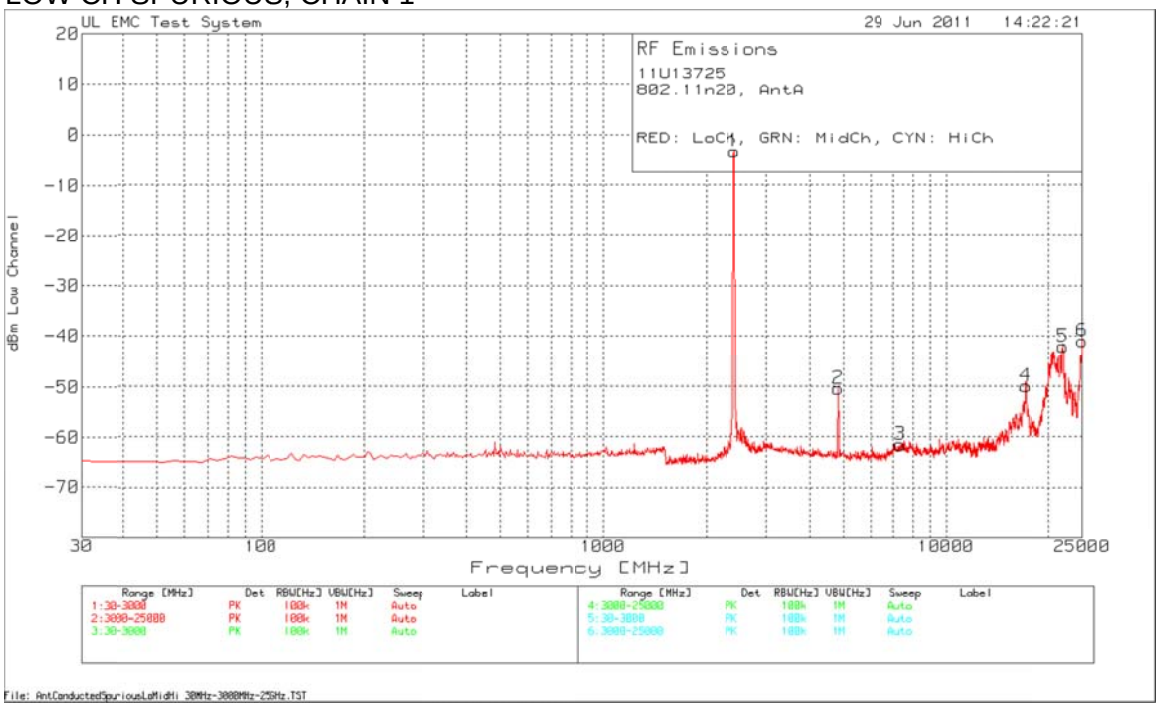

11U13725
802.11n20, AntA
RED: LoCh, CYN: HiCh

| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2409.135 | 93.43 | PK | -107 | 10.5 | -3.07 |
| 2400.221 | 64.49 | PK | -107 | 10.5 | -32.01 |
| 2386.851 | 43.93 | PK | -107 | 10.5 | -52.57 |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2458.969 | 97.06 | PK | -107 | 10.6 | .66 |
| 2483.481 | 58.46 | PK | -107 | 10.6 | -37.94 |
| 2508.196 | 44.1 | PK | -107 | 10.6 | -52.3 |

Both lower and upper band-edge levels are at least 20dB below the maximum inband level.

PK - Peak detector

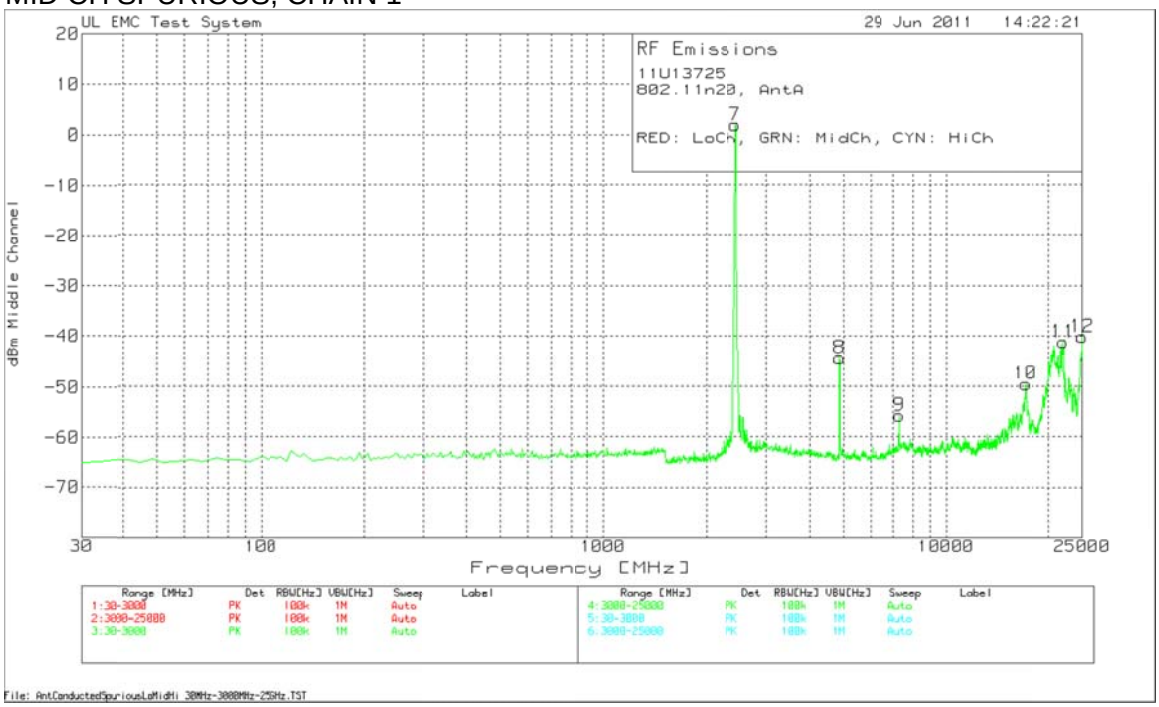
LOW CH SPURIOUS, CHAIN 1




| Low Channel 30 - 3000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2417.865 | 93.23 | PK | -107 | 10.5 | -3.27 |
| 4820.374 | 45.61 | PK | -107 | 10.9 | -50.49 |
| 7354.262 | 33.8 | PK | -107 | 11.6 | -61.6 |
| 17014.137 | 33 | PK | -107 | 24 | -50 |
| 21999.584 | 33.36 | PK | -107 | 31.5 | -42.14 |
| 24990.852 | 34.51 | PK | -107 | 31.5 | -40.99 |

In all cases all spurious levels are at least 20dB below the maximum inband level.

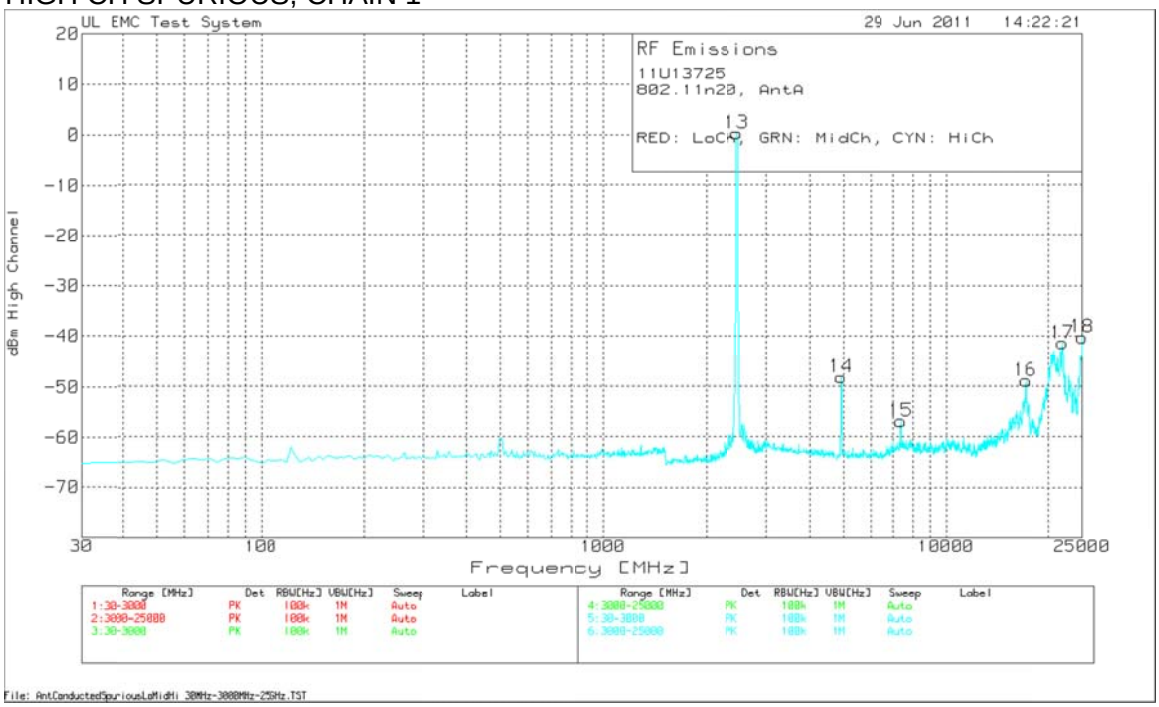
MID CH SPURIOUS, CHAIN 1




| Middle Channel 30 - 3000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2436.404 | 98.5 | PK | -107 | 10.5 | 2 |
| 4866.112 | 51.54 | PK | -107 | 11 | -44.46 |
| 7308.524 | 39.54 | PK | -107 | 11.6 | -55.86 |
| 17014.137 | 33.43 | PK | -107 | 24 | -49.57 |
| 22027.027 | 34.6 | PK | -107 | 31.2 | -41.2 |
| 25000 | 34.93 | PK | -107 | 31.9 | -40.17 |

In all cases all spurious levels are at least 20dB below the maximum inband level.

HIGH CH SPURIOUS, CHAIN 1

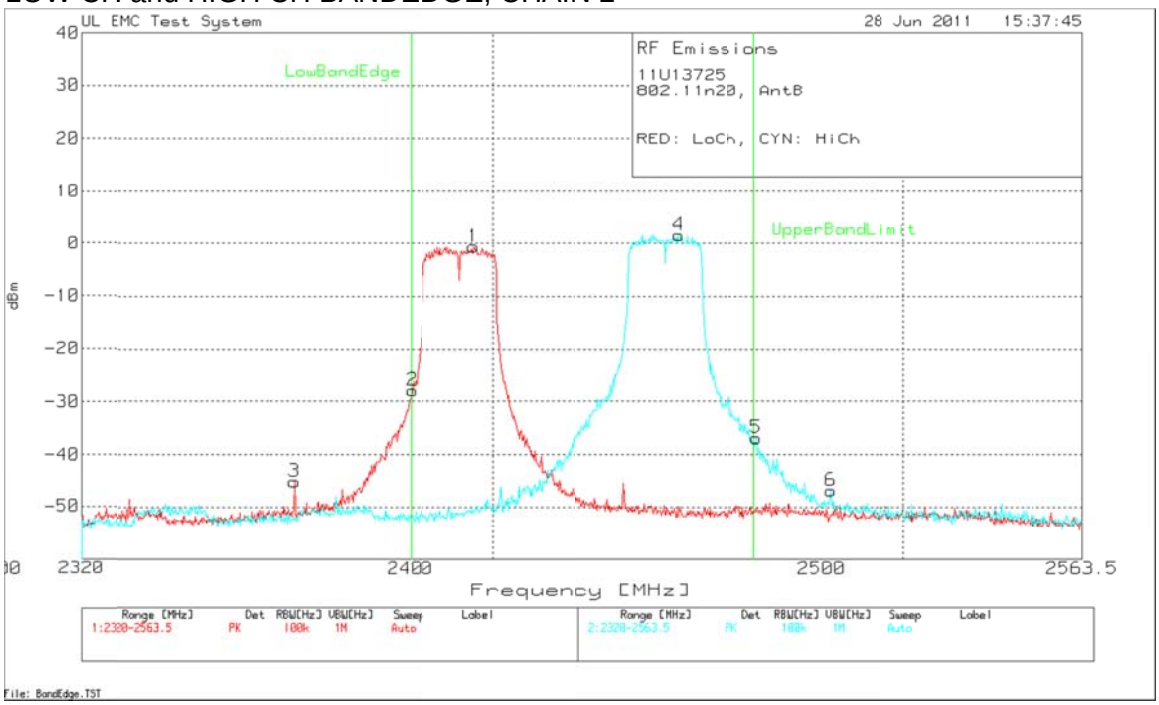



| High Channel 30 - 3000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | PathLoss [dB] | dBm |
| 2458.652 | 96.72 | PK | -107 | 10.6 | .32 |
| 4920.998 | 47.62 | PK | -107 | 11.1 | -48.28 |
| 7390.852 | 38.44 | PK | -107 | 11.6 | -56.96 |
| 17023.285 | 34.18 | PK | -107 | 23.9 | -48.92 |
| 21935.551 | 34.71 | PK | -107 | 30.9 | -41.39 |
| 24990.852 | 35.24 | PK | -107 | 31.5 | -40.26 |

In all cases all spurious levels are at least 20dB below the maximum inband level.

**CHAIN 2 SPURIOUS EMISSIONS**

LOW CH and HIGH CH BANDEDGE, CHAIN 2

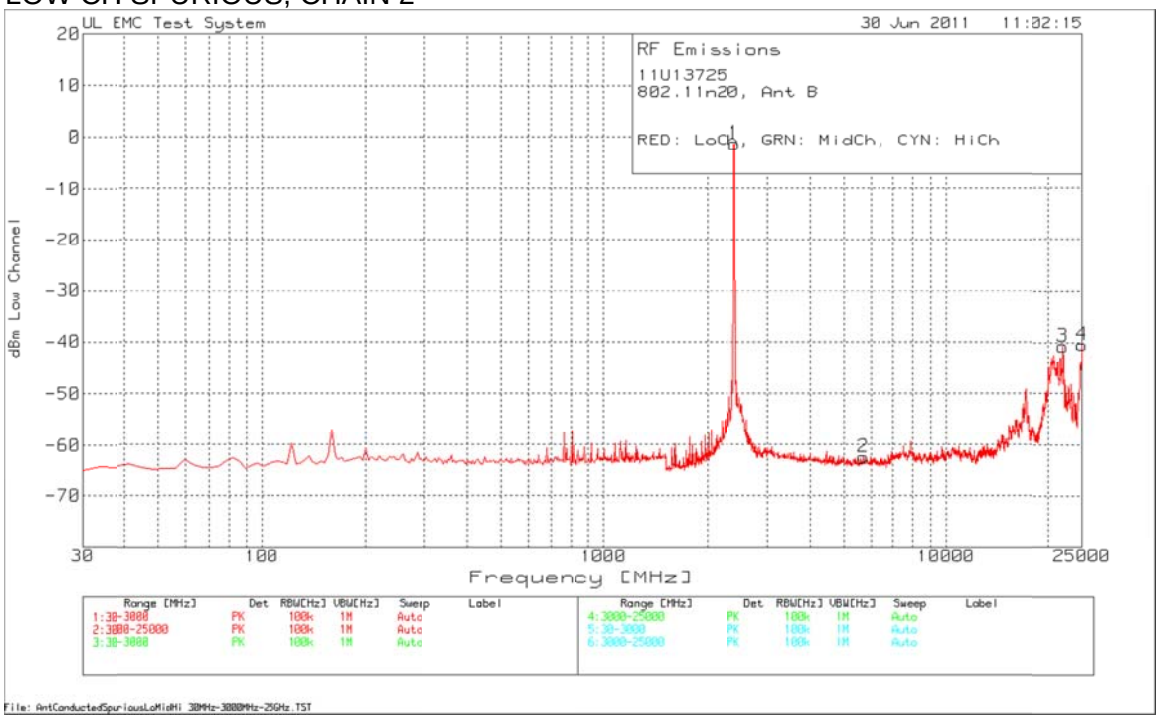



| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2415.415 | 95.89 | PK | -107 | 10.5 | -.61 |
| 2400.221 | 68.56 | PK | -107 | 10.5 | -27.94 |
| 2371.86 | 51.35 | PK | -107 | 10.5 | -45.15 |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2465.249 | 97.95 | PK | -107 | 10.6 | 1.55 |
| 2484.292 | 59.44 | PK | -107 | 10.6 | -36.96 |
| 2502.119 | 49.5 | PK | -107 | 10.6 | -46.9 |

Both lower and upper band-edge levels are at least 20dB below the maximum inband level.

PK - Peak detector

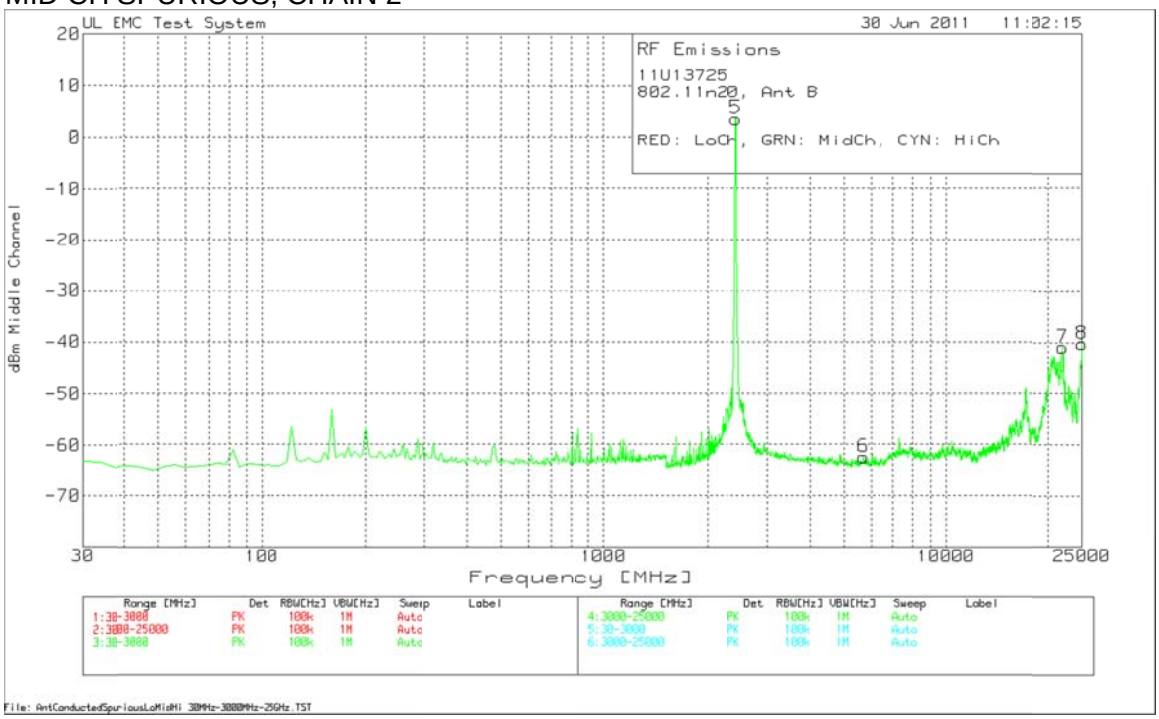
LOW CH SPURIOUS, CHAIN 2




| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel 30 - 3000MHz | | | | | | | | | | |
| 1 | 2417.865 | 95.18 | PK | -107 | 10.5 | -1.32 | - | - | - | - |
| 2 | 5698.545 | 33.01 | PK | -107 | 11.5 | -62.49 | - | - | - | - |
| 3 | 21981.289 | 34.72 | PK | -107 | 31.5 | -40.78 | - | - | - | - |
| 4 | 25000 | 34.62 | PK | -107 | 31.9 | -40.48 | - | - | - | - |

In all cases all spurious levels are at least 20dB below the maximum inband level.

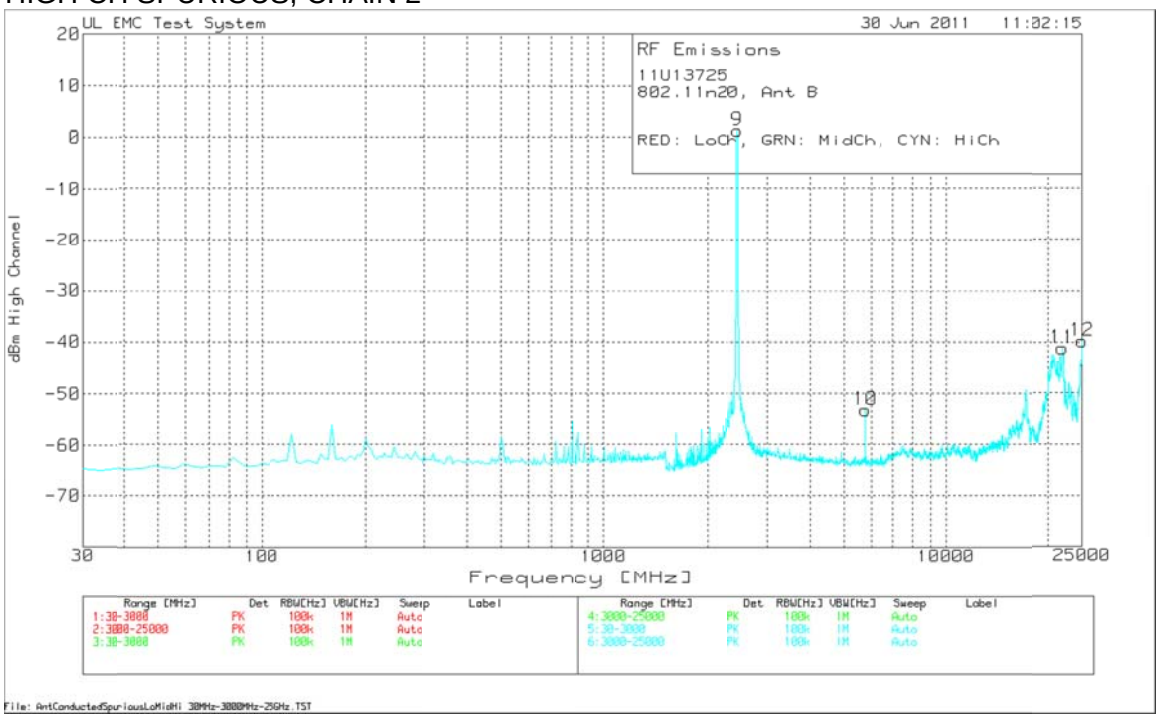
MID CH SPURIOUS, CHAIN 2




| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | |
|---|---|---|---|---|---|---|---|---|---|
| Middle Channel 30 - 3000MHz | | | | | | | | | |
| 5 | 2440.112 | 100.09 | PK | -107 | 10.5 | 3.59 | - | - | - |
| 6 | 5698.545 | 33.02 | PK | -107 | 11.5 | -62.48 | - | - | - |
| 7 | 21944.699 | 34.95 | PK | -107 | 31.1 | -40.95 | - | - | - |
| 8 | 25000 | 34.86 | PK | -107 | 31.9 | -40.24 | - | - | - |

In all cases all spurious levels are at least 20dB below the maximum inband level.

HIGH CH SPURIOUS, CHAIN 2




| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High Channel 30 - 3000MHz | | | | | | | | | |
| 9 | 2466.067 | 97.7 PK | -107 | 10.6 | 1.3 | - | - | - | - |
| 10 | 5762.578 | 42.42 PK | -107 | 11.4 | -53.18 | - | - | - | - |
| 11 | 21926.403 | 35.21 PK | -107 | 30.6 | -41.19 | - | - | - | - |
| 12 | 25000 | 35.28 PK | -107 | 31.9 | -39.82 | - | - | - | - |

In all cases all spurious levels are at least 20dB below the maximum inband level.

# 7.4. 802.11n HT40 MODE IN THE 2.4 GHz BAND

## 7.4.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

**TEST PROCEDURE**

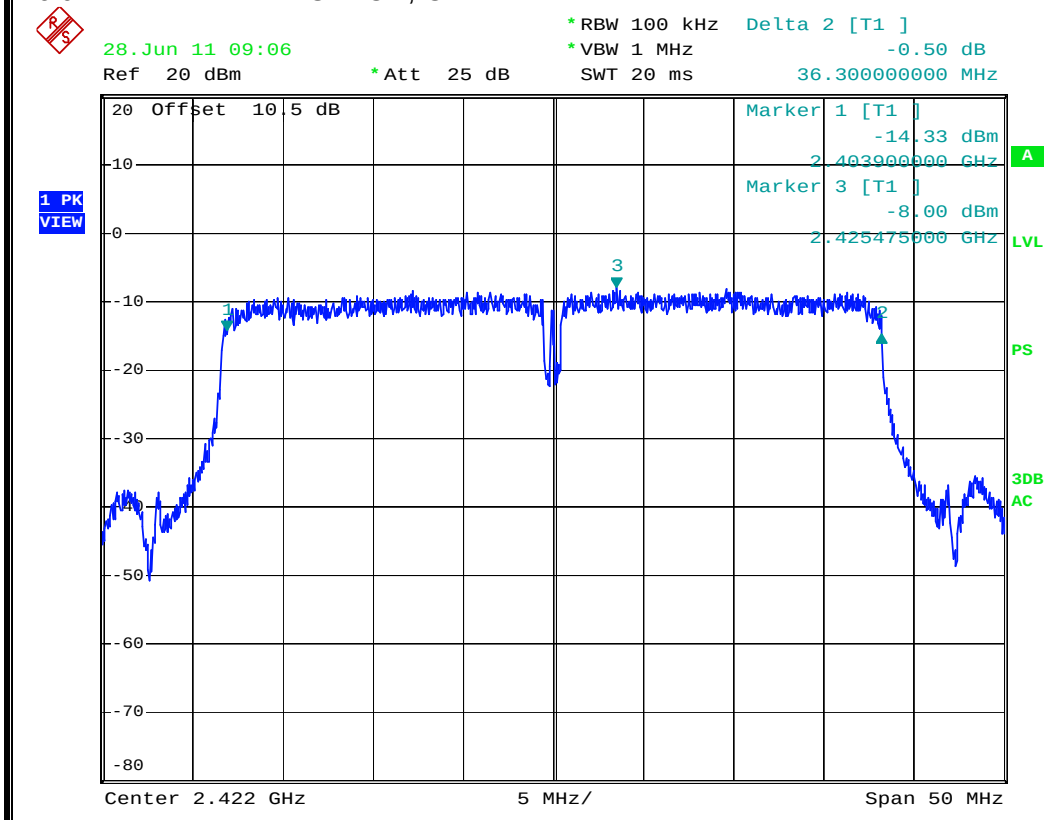
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

**RESULTS**

| Channel | Frequency (MHz) | Chain 1 6 dB BW (MHz) | Chain 2 6 dB BW (MHz) | Minimum Limit (MHz) |
|---|---|---|---|---|
| Low | 2422 | 36.3 | 36.4125 | 0.5 |
| Middle | 2437 | 36.5 | 36.4 | 0.5 |
| High | 2452 | 36.4 | 36.3 | 0.5 |

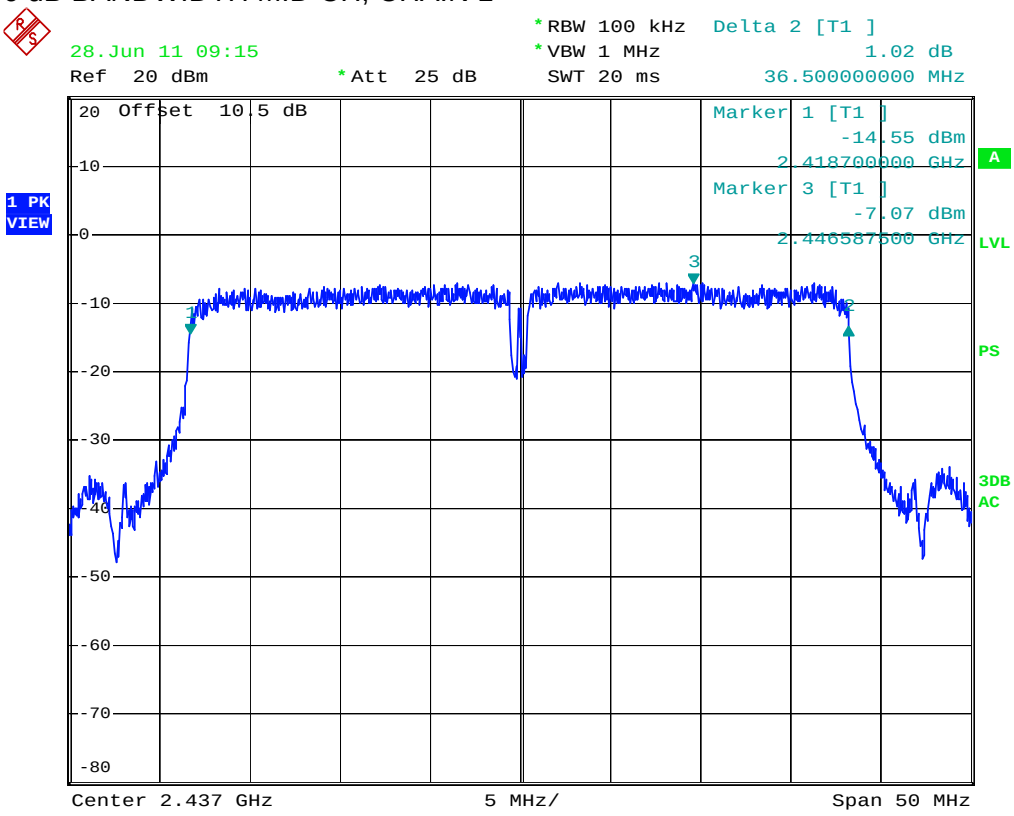
**6 dB BANDWIDTH, CHAIN 1**

6 dB BANDWIDTH LOW CH, CHAIN 1



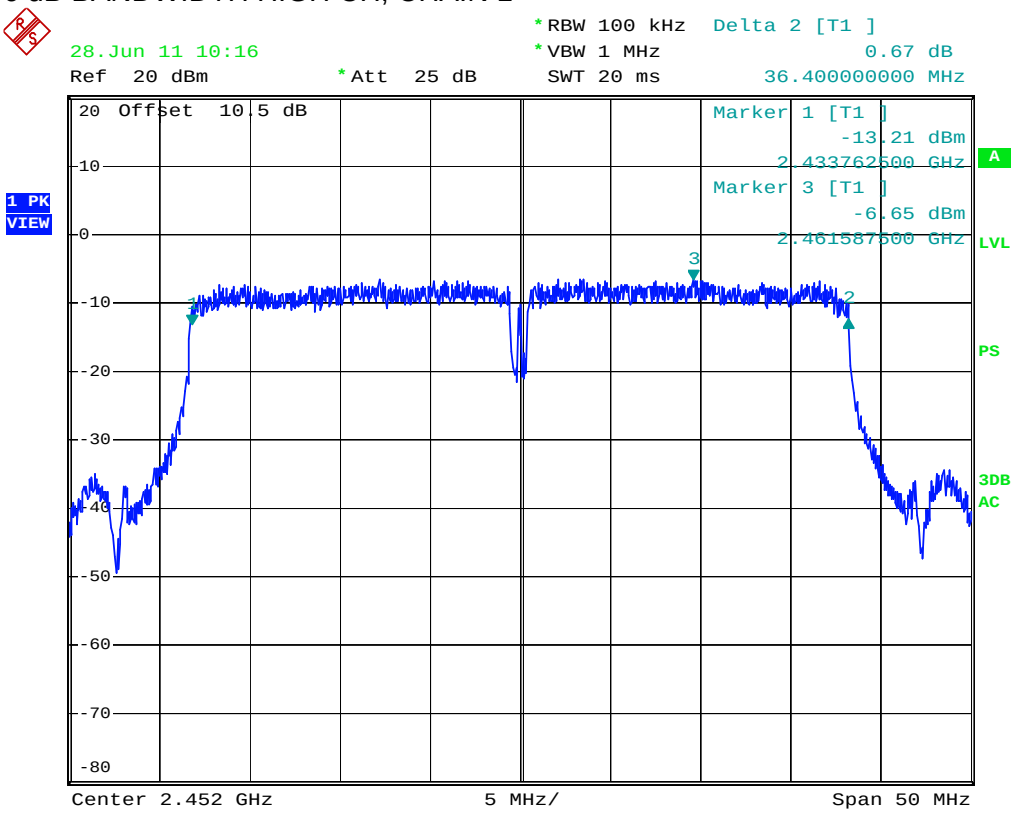

Date: 28.JUN.2011 09:06:45

## 6 dB BANDWIDTH MID CH, CHAIN 1




Date: 28.JUN.2011 09:15:40

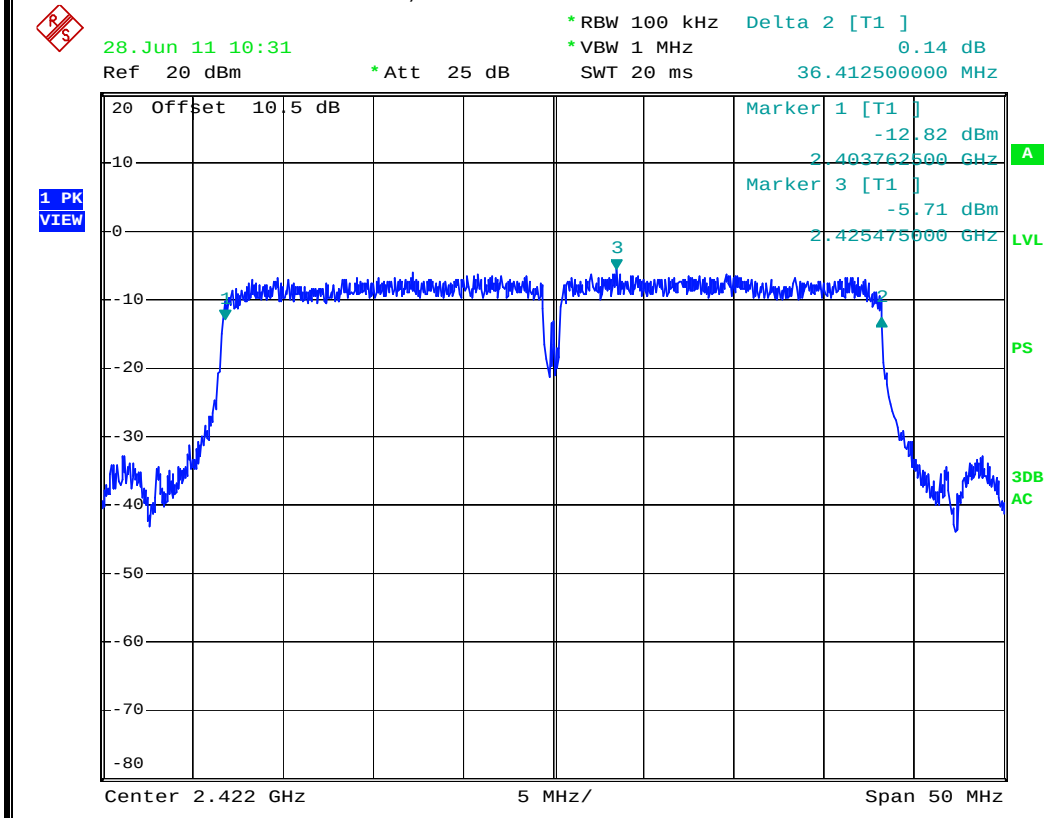
## 6 dB BANDWIDTH HIGH CH, CHAIN 1




Date: 28.JUN.2011 10:16:37

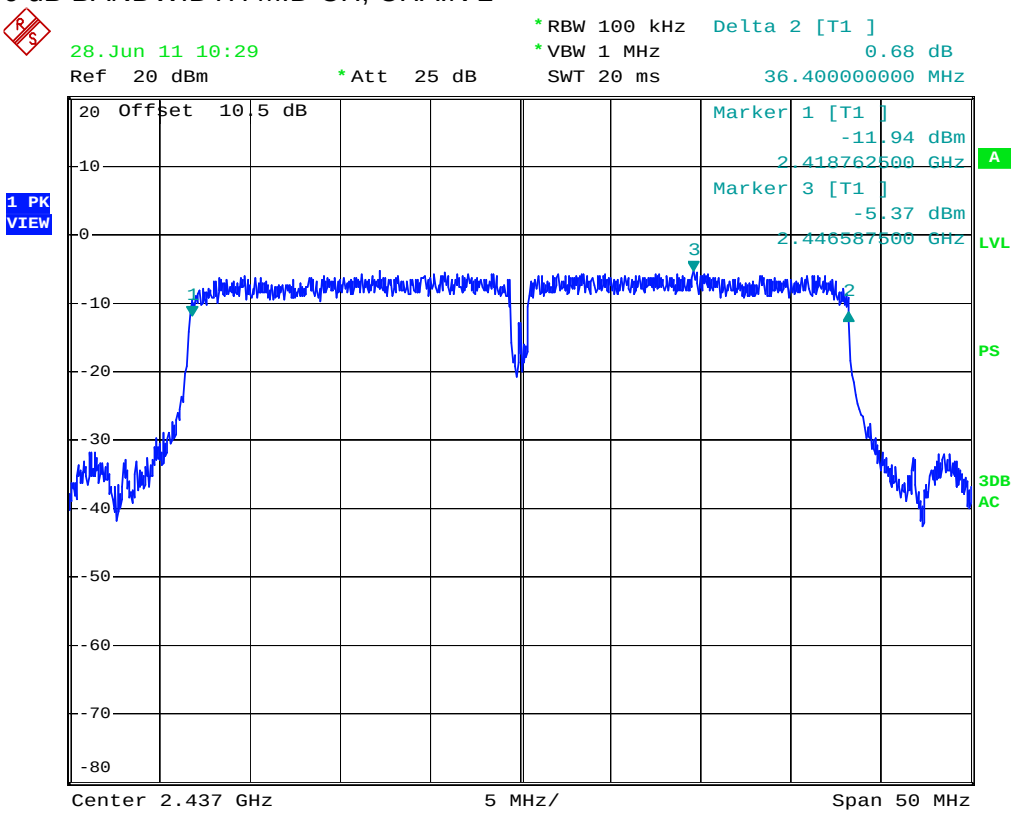
**6 dB BANDWIDTH, CHAIN 2**

6 dB BANDWIDTH LOW CH, CHAIN 2



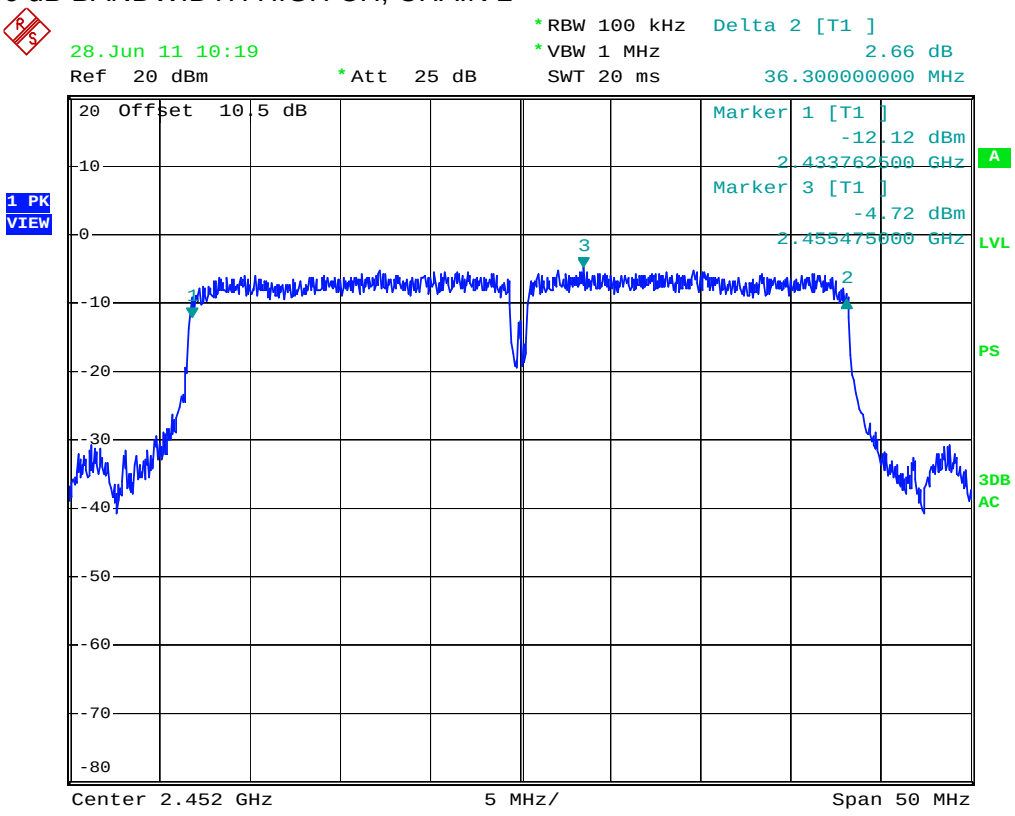

Date: 28.JUN.2011 10:32:00

## 6 dB BANDWIDTH MID CH, CHAIN 2




Date: 28.JUN.2011 10:29:23

## 6 dB BANDWIDTH HIGH CH, CHAIN 2




Date: 28.JUN.2011 10:20:00

### 7.4.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

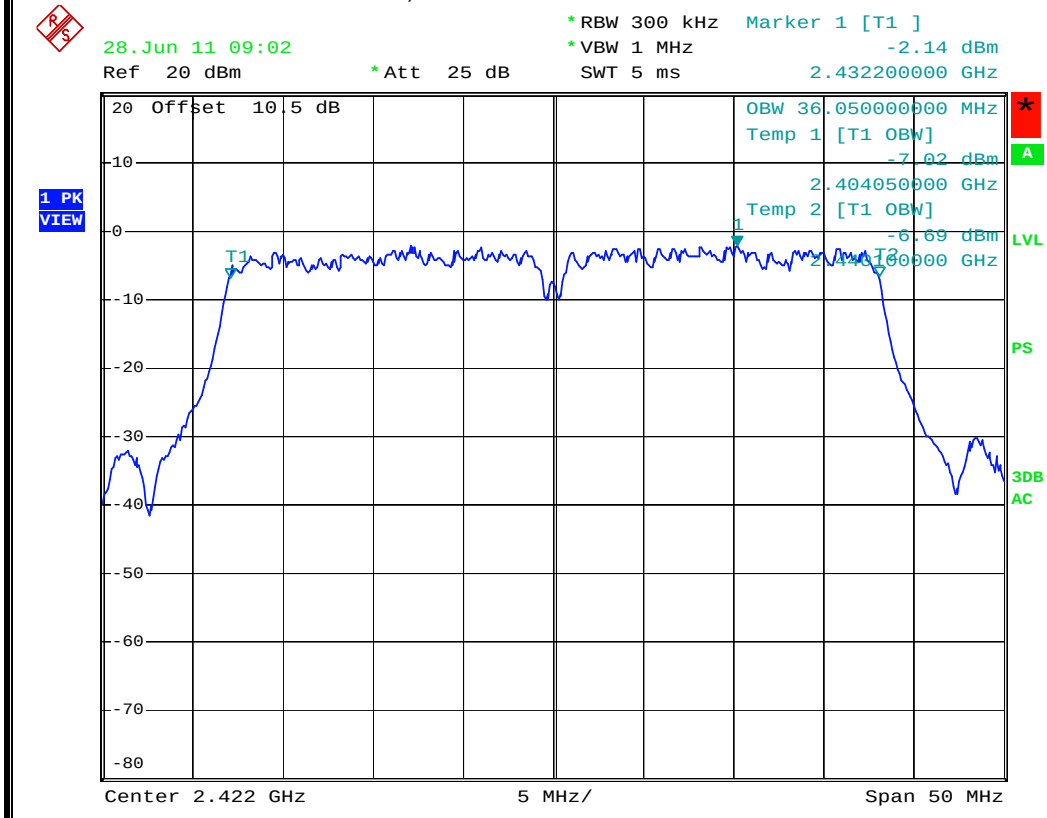
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

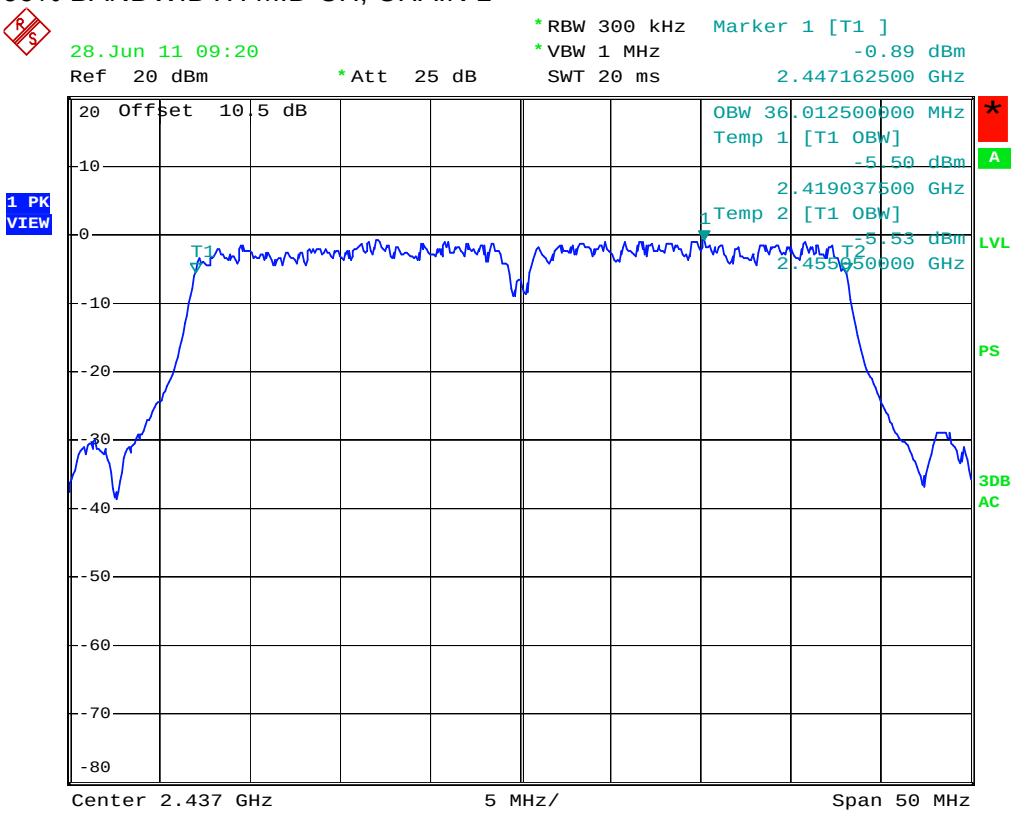
| Channel | Frequency (MHz) | Chain 1 99% Bandwidth (MHz) | Chain 2 99% Bandwidth (MHz) |
|---|---|---|---|
| Low | 2422 | 36.05 | 36.025 |
| Middle | 2437 | 36.0125 | 36.025 |
| High | 2452 | 36 | 36.025 |

**99% BANDWIDTH, CHAIN 1**

99% BANDWIDTH LOW CH, CHAIN 1

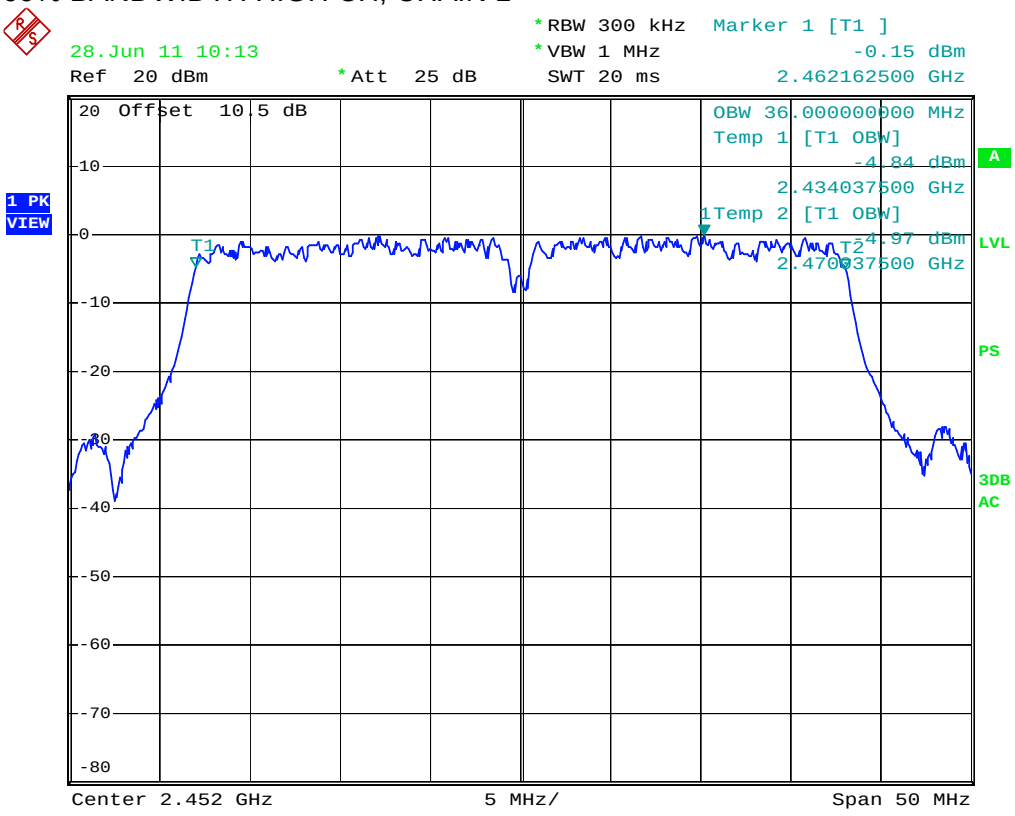


99% BANDWIDTH MID CH, CHAIN 1




Date: 28.JUN.2011 09:20:19

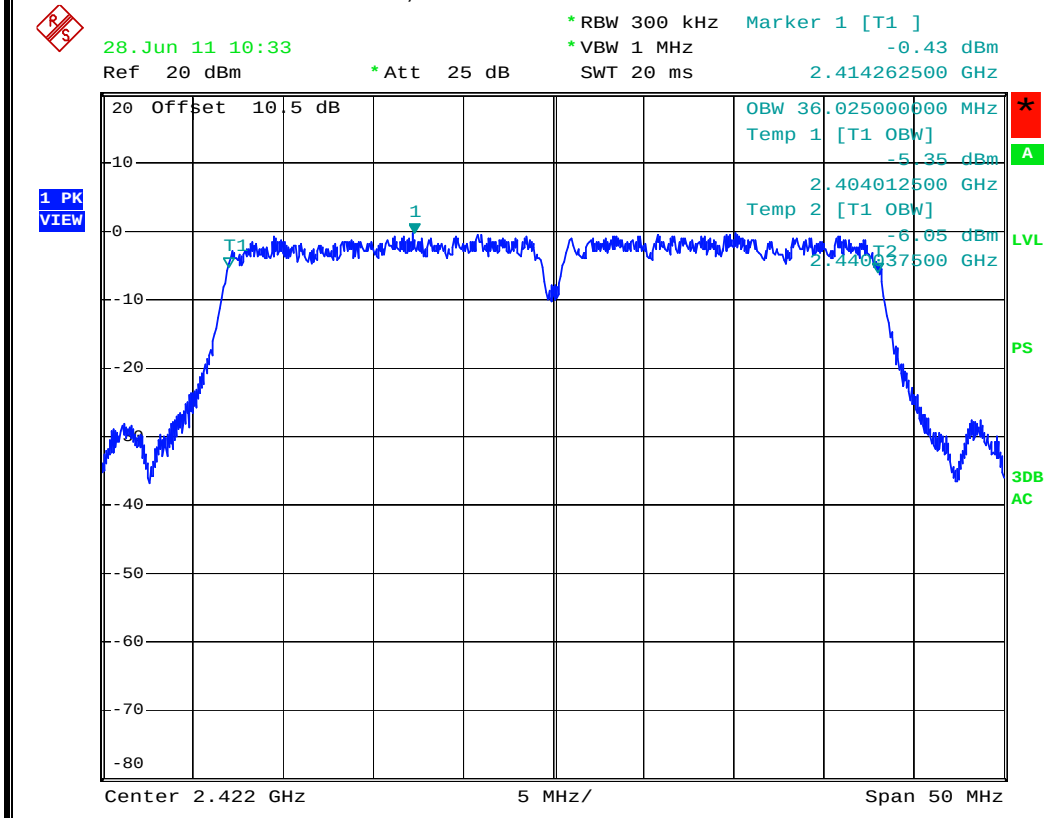
99% BANDWIDTH HIGH CH, CHAIN 1




Date: 28.JUN.2011 10:13:38

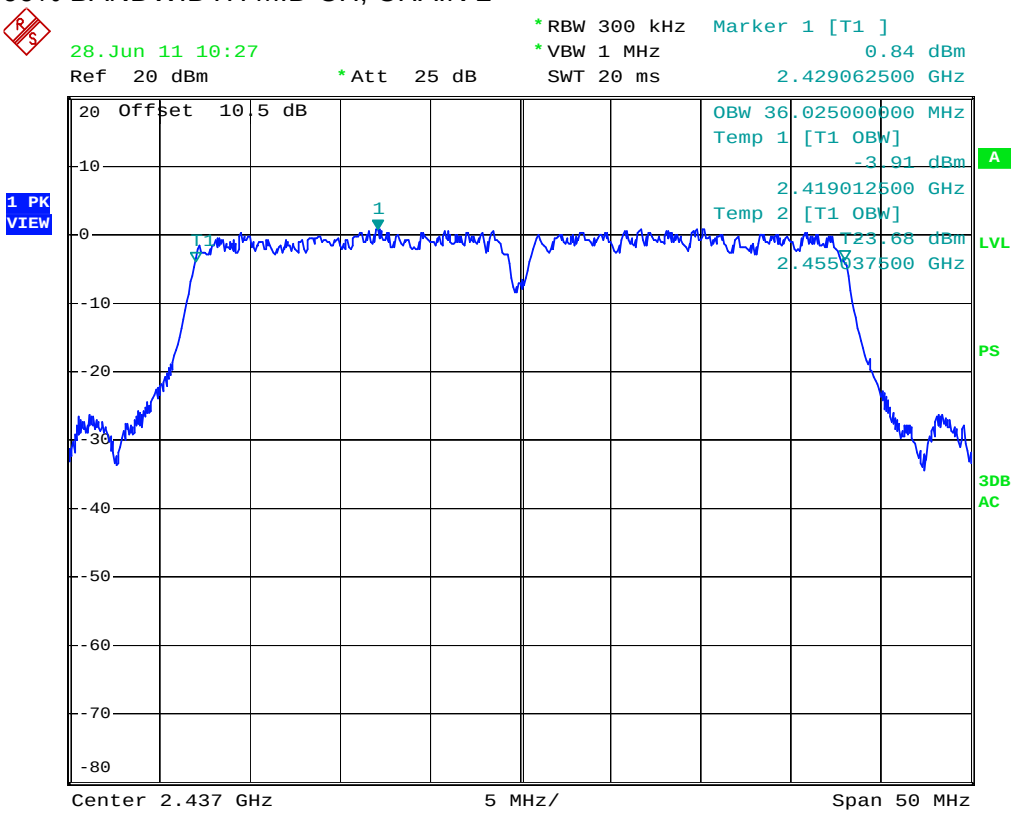
**99% BANDWIDTH, CHAIN 2**

99% BANDWIDTH LOW CH, CHAIN 2



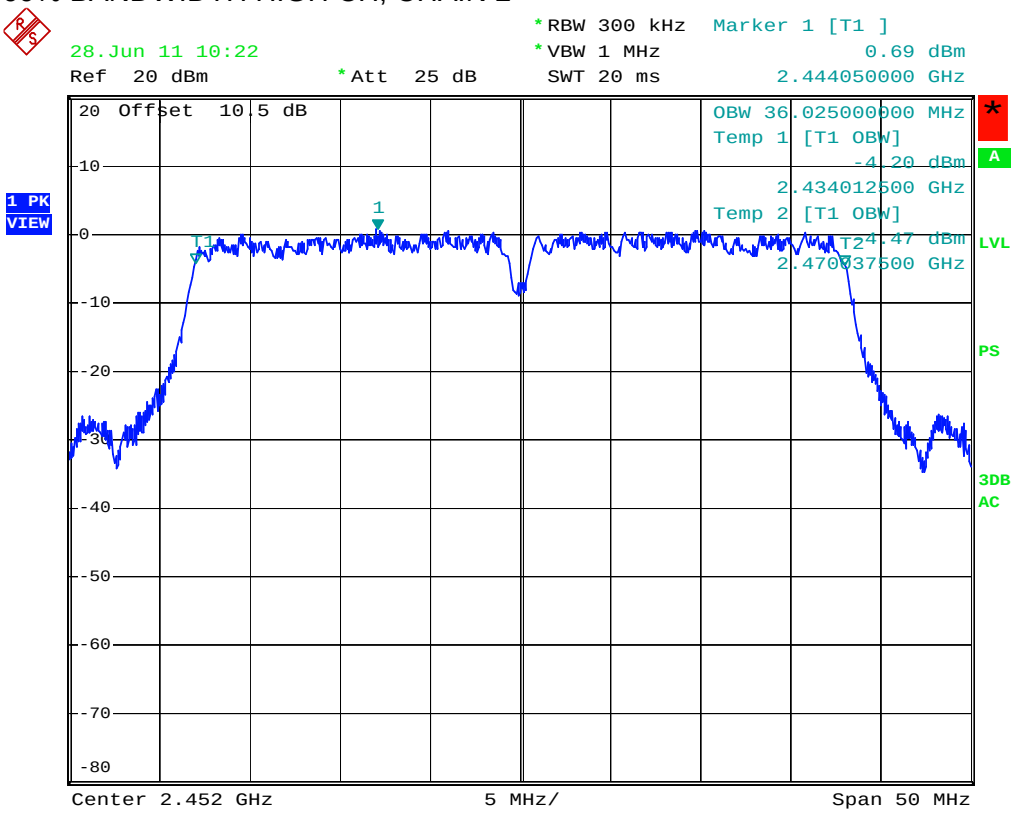

Date: 28.JUN.2011 10:33:58

99% BANDWIDTH MID CH, CHAIN 2




Date: 28.JUN.2011 10:27:02

99% BANDWIDTH HIGH CH, CHAIN 2



## 7.4.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

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

**TEST PROCEDURE**

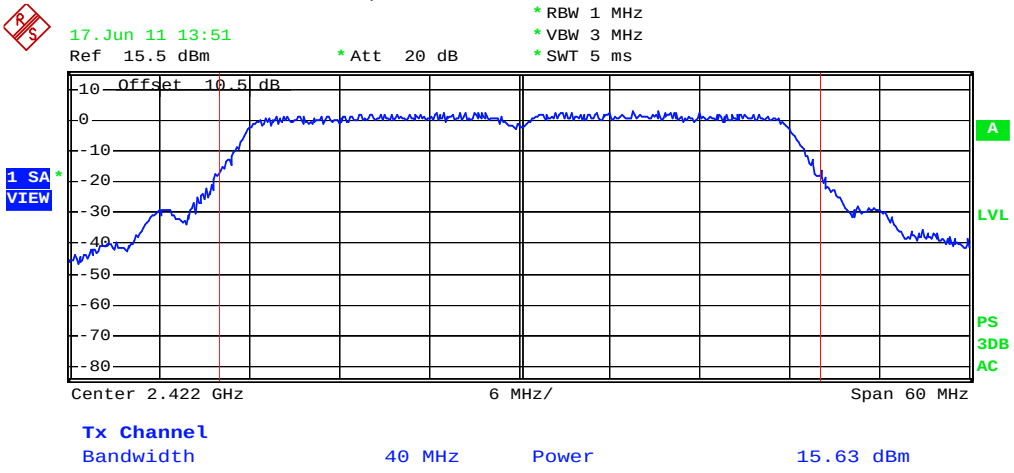
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

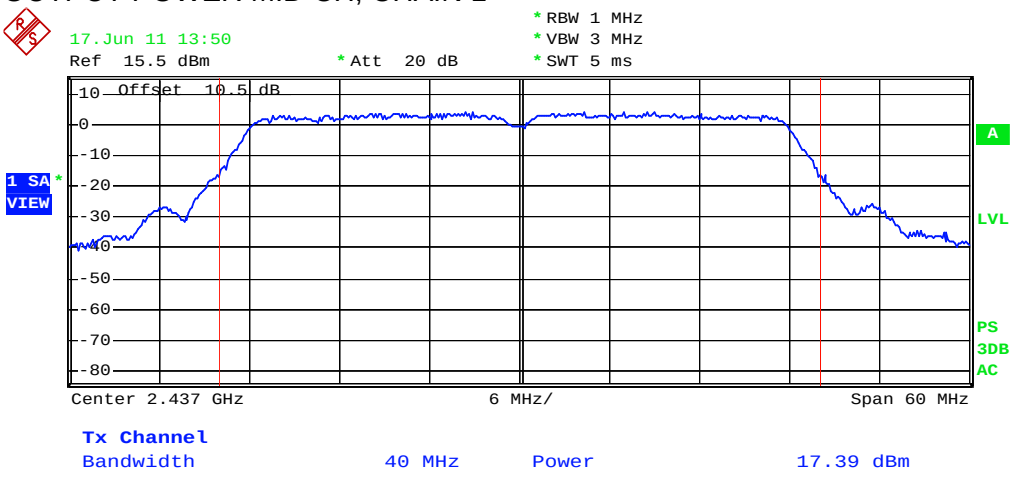
| Channel | Frequency (MHz) | Limit (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2422 | 30.00 | 15.63 | 17.84 | 19.88 | -10.12 |
| Mid | 2437 | 30.00 | 17.39 | 18.85 | 21.19 | -8.81 |
| High | 2452 | 30.00 | 17.64 | 18.78 | 21.26 | -8.74 |
| Attenuator and pathloss factors are included. | | | | | | |

**CHAIN 1 OUTPUT POWER**

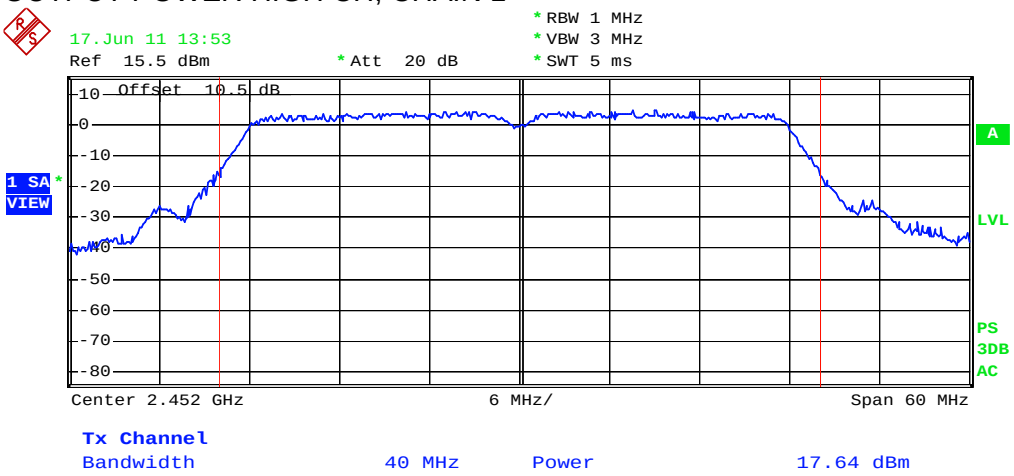
OUTPUT POWER LOW CH, CHAIN 1



OUTPUT POWER MID CH, CHAIN 1

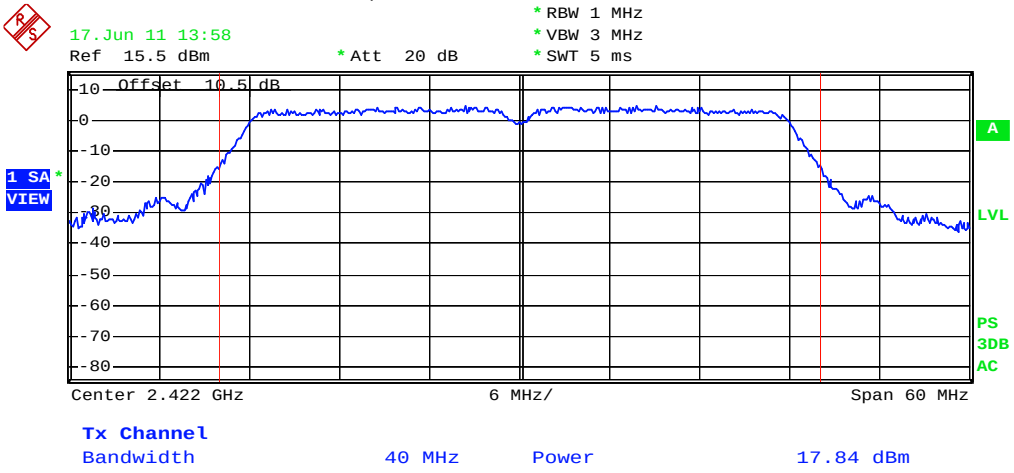


OUTPUT POWER HIGH CH, CHAIN 1

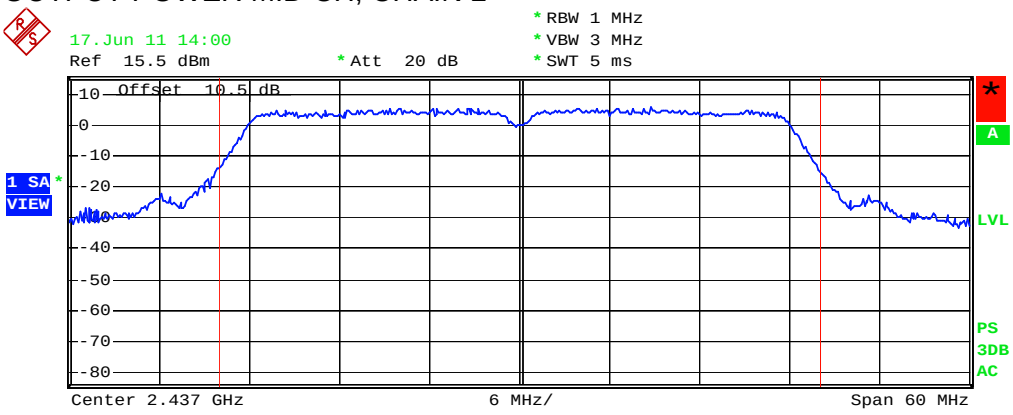


**CHAIN 2 OUTPUT POWER**

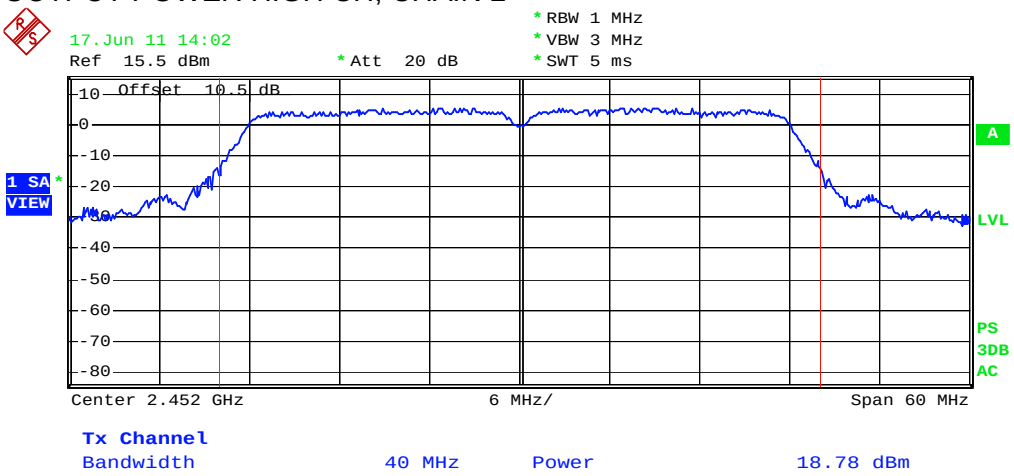
OUTPUT POWER LOW CH, CHAIN 2



OUTPUT POWER MID CH, CHAIN 2



OUTPUT POWER HIGH CH, CHAIN 2



## 7.4.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 2422 | 9.31 | 11.20 | 13.37 |
| Middle | 2437 | 10.50 | 12.30 | 14.50 |
| High | 2452 | 10.95 | 12.18 | 14.62 |

## 7.4.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

**TEST PROCEDURE**

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

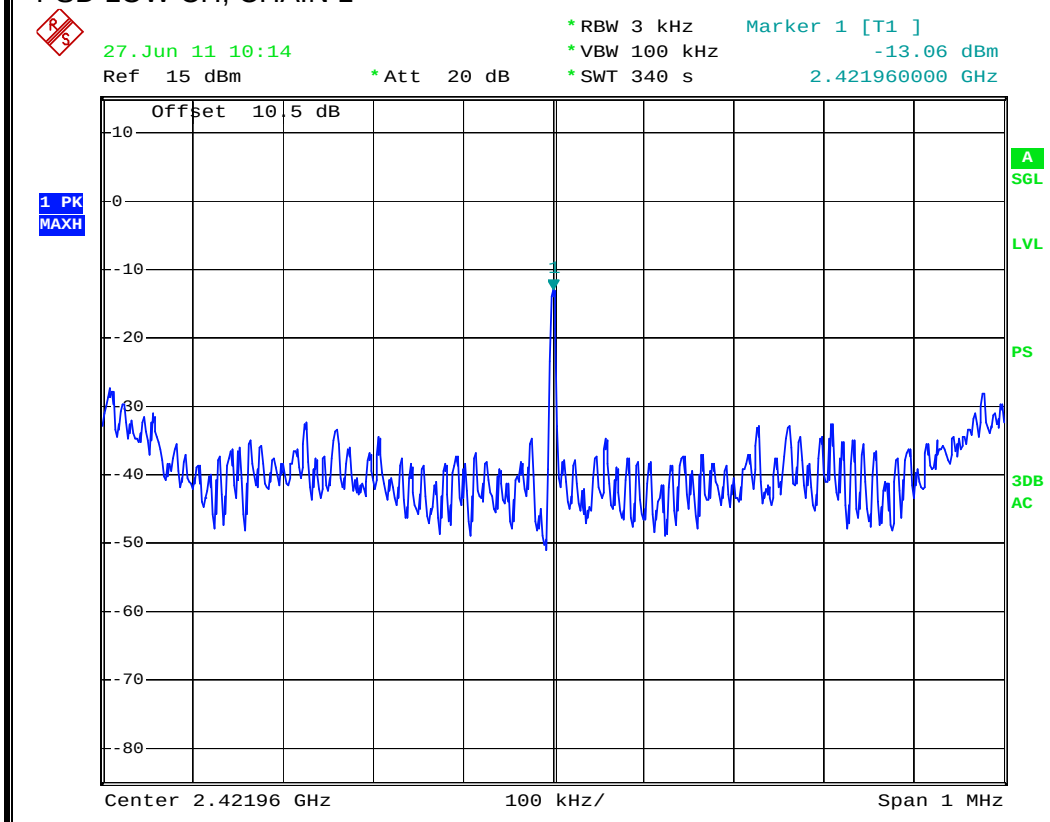
**RESULTS**

| Channel | Frequency (MHz) | Chain 1 PSD (dBm) | Chain 1 PSD (dBm) | Limit (dBm) | Chain 1 Margin (dB) | Chain 2 Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | -10.05 | -15.02 | 8 | -18.05 | -23.02 |
| Middle | 2437 | -9.70 | -13.88 | 8 | -17.70 | -21.88 |
| High | 2452 | -9.28 | -14.19 | 8 | -17.28 | -22.19 |

PSD is calculated per KDB662911, method 2.

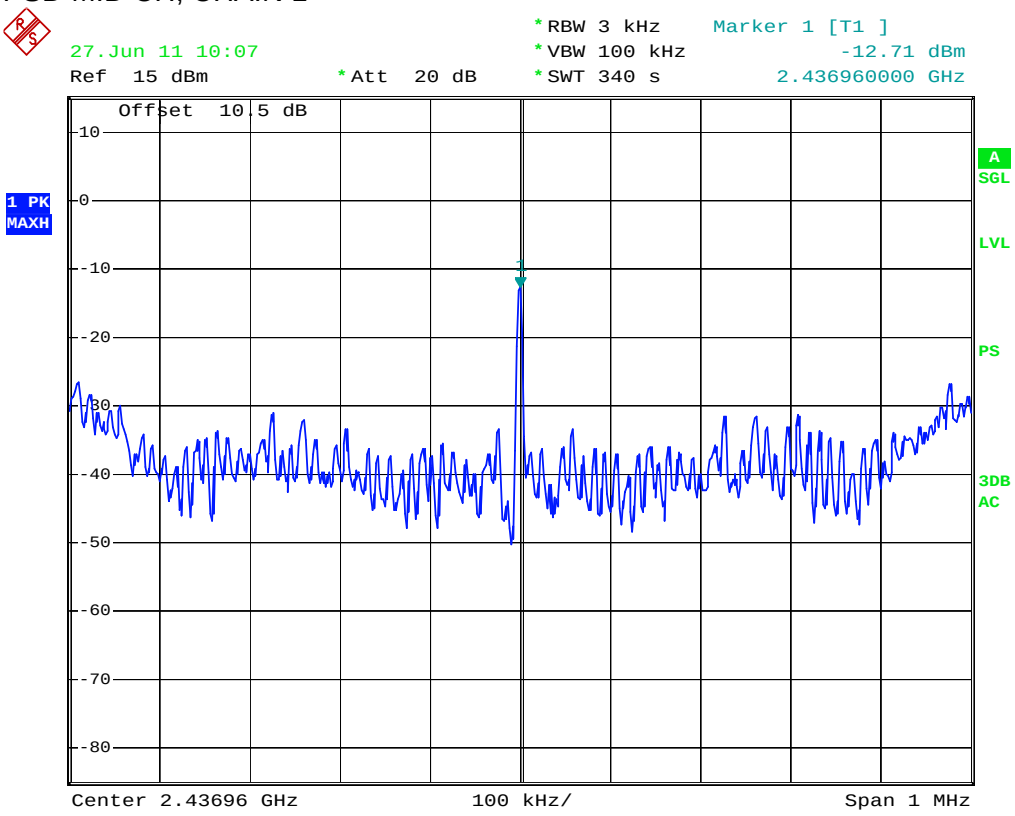
**POWER SPECTRAL DENSITY, CHAIN 1**

PSD LOW CH, CHAIN 1



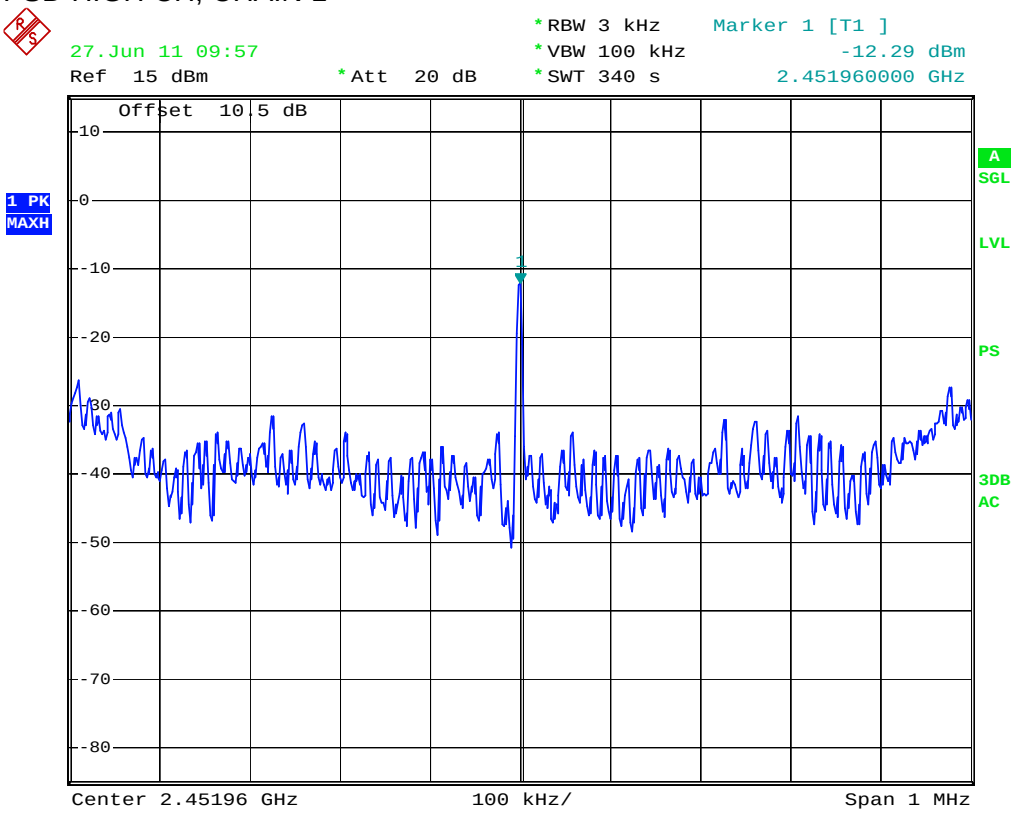

Date: 27.JUN.2011 10:14:50

PSD MID CH, CHAIN 1




Date: 27.JUN.2011 10:07:08

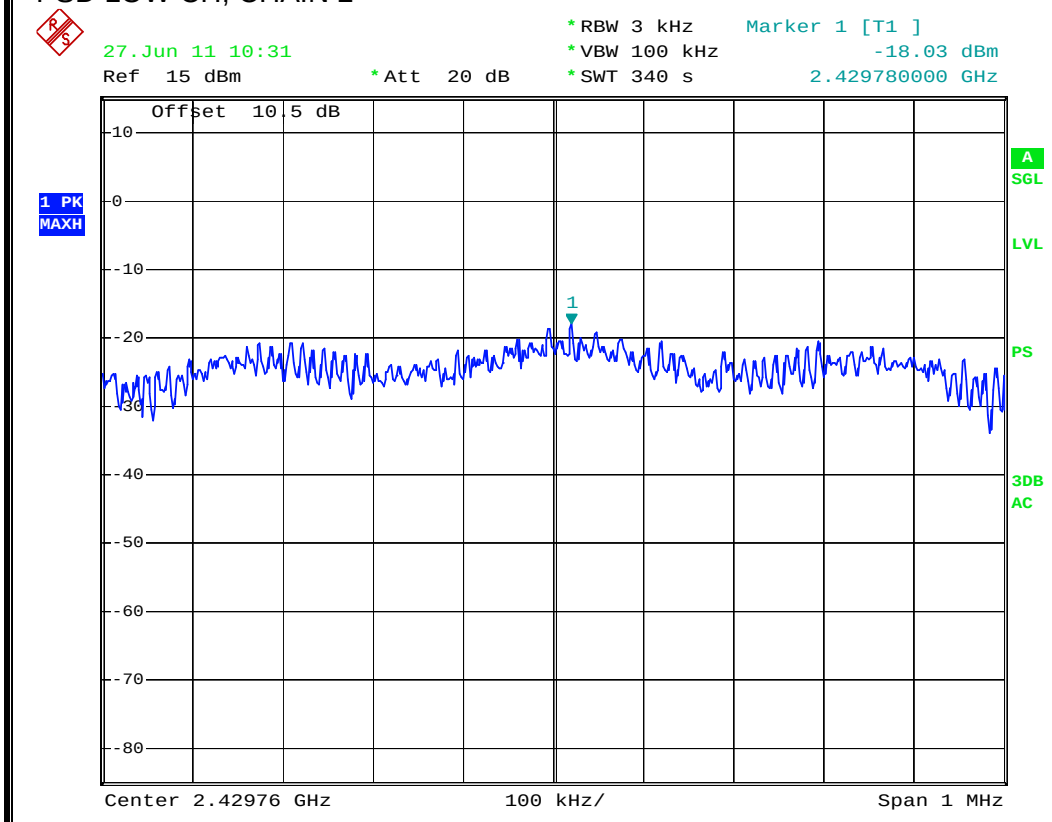
PSD HIGH CH, CHAIN 1




Date: 27.JUN.2011 09:57:28

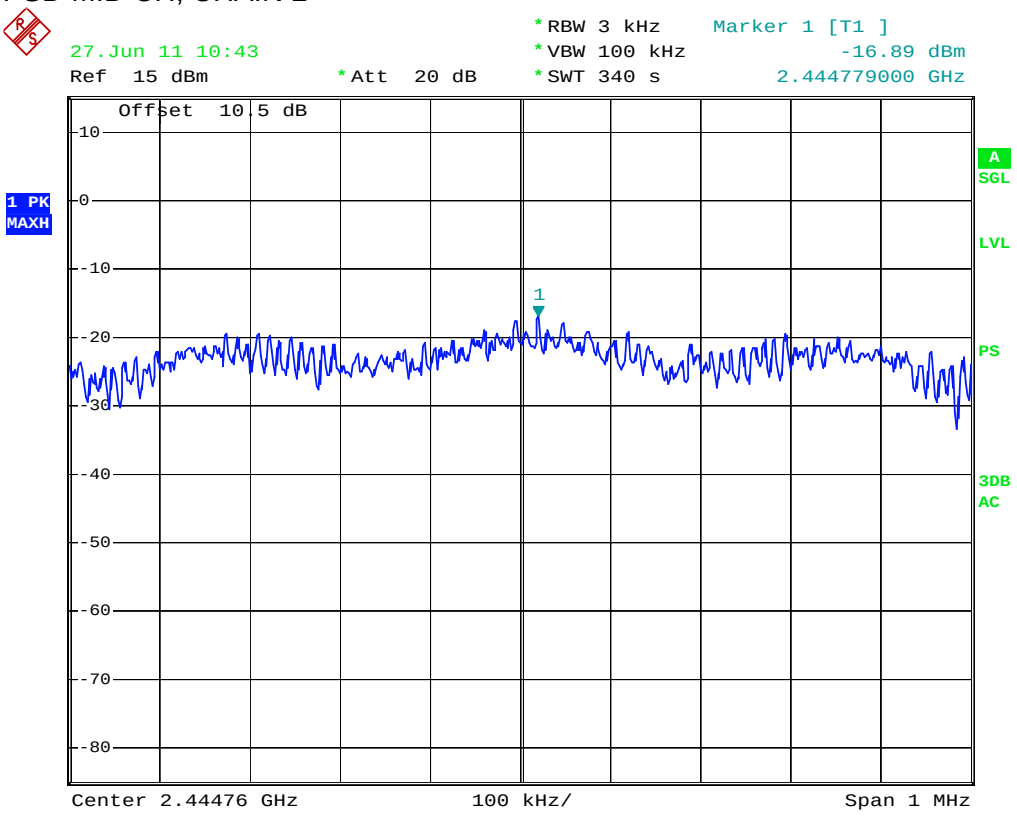
**POWER SPECTRAL DENSITY, CHAIN 2**

PSD LOW CH, CHAIN 2



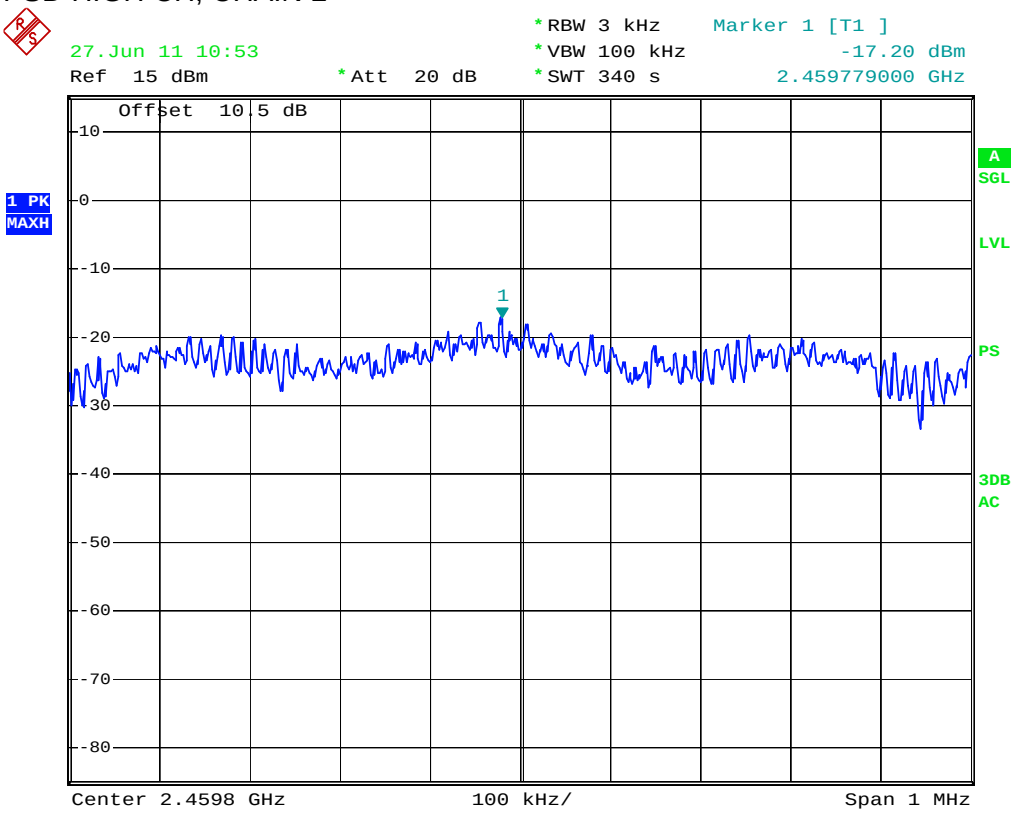

Date: 27.JUN.2011 10:31:30

PSD MID CH, CHAIN 2




Date: 27.JUN.2011 10:43:07

PSD HIGH CH, CHAIN 2




Date: 27.JUN.2011 10:53:51

## 7.4.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

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

**TEST PROCEDURE**

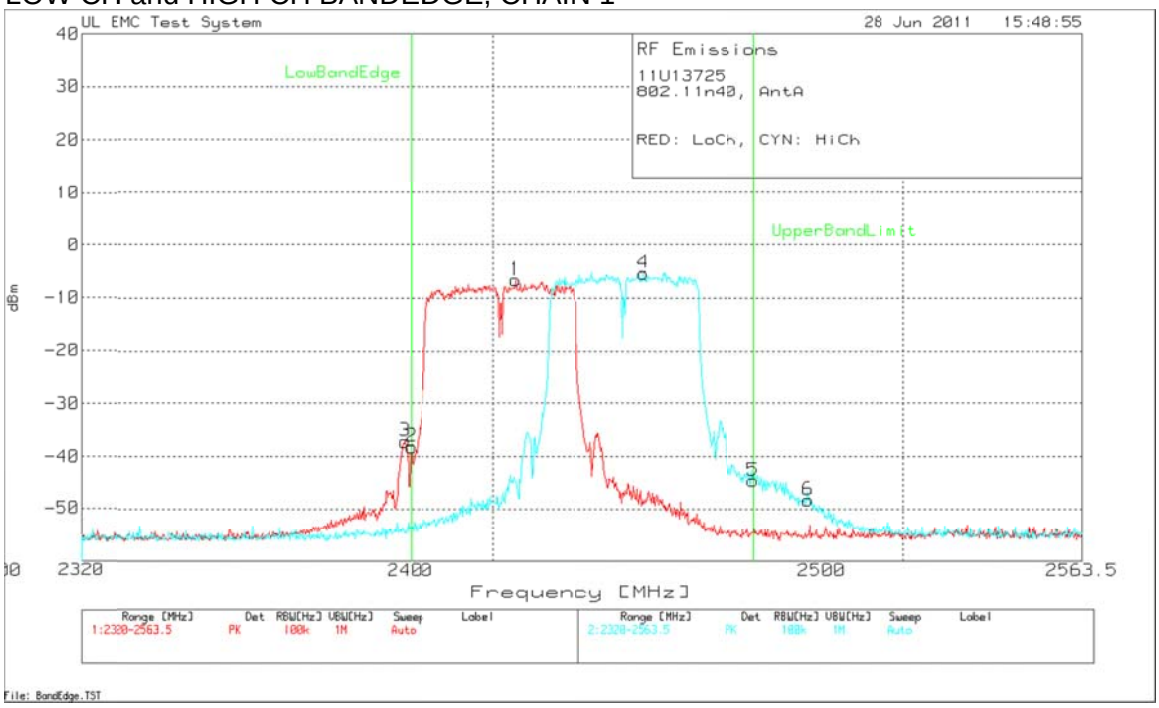
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to at least three times the RBW.

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

## CHAIN 1 SPURIOUS EMISSIONS

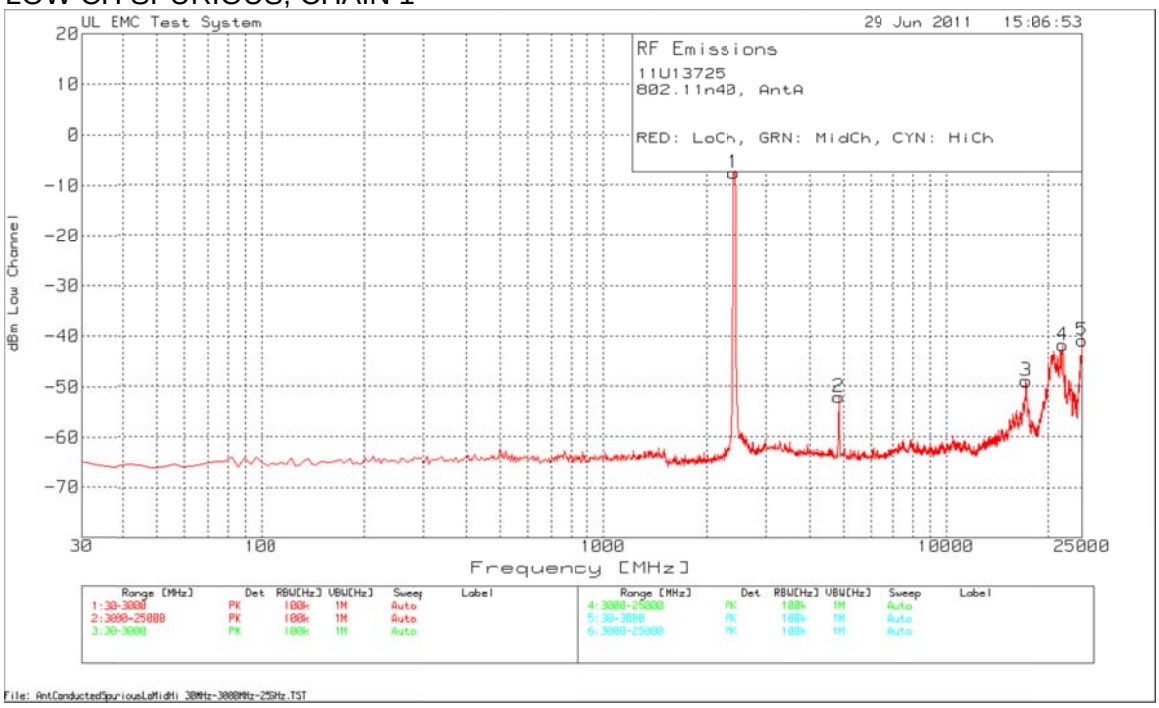
LOW CH and HIGH CH BANDEDGE, CHAIN 1




| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2425.544 | 89.91 | PK | -107 | 10.5 | -6.59 |
| 2400.019 | 58.29 | PK | -107 | 10.5 | -38.21 |
| 2398.398 | 59.3 | PK | -107 | 10.5 | -37.2 |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2456.741 | 91.08 | PK | -107 | 10.6 | -5.32 |
| 2483.481 | 51.83 | PK | -107 | 10.6 | -44.57 |
| 2496.649 | 48.11 | PK | -107 | 10.6 | -48.29 |

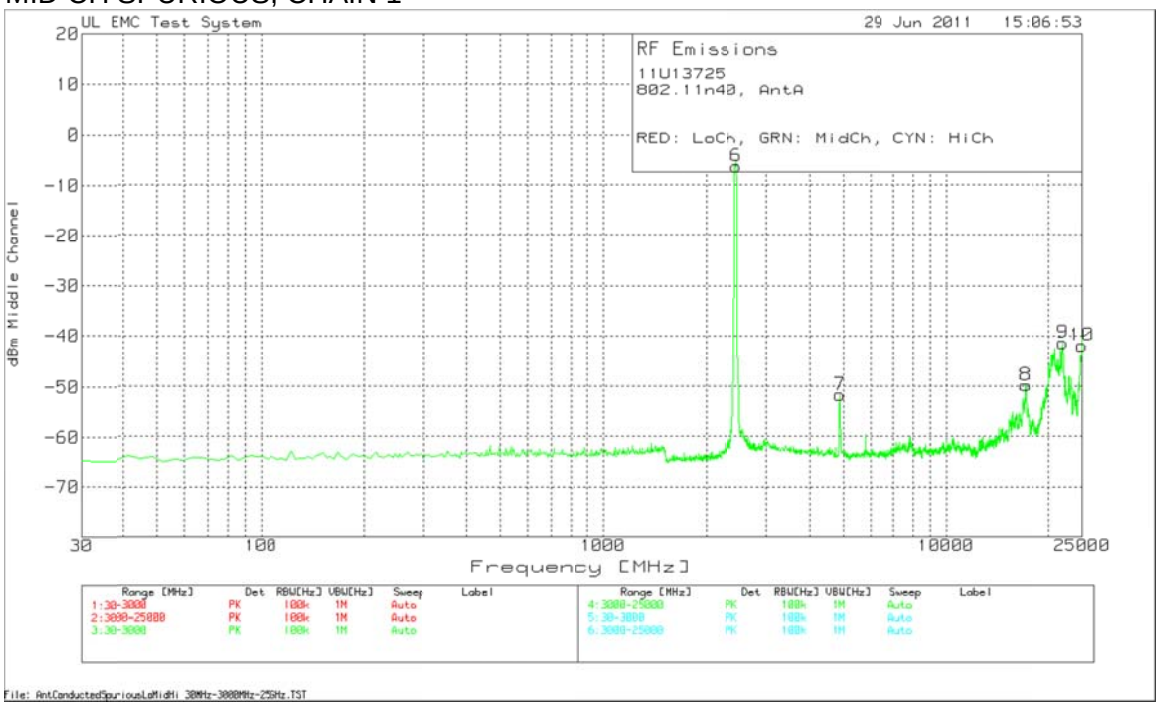
PK - Peak detector

LOW CH SPURIOUS, CHAIN 1



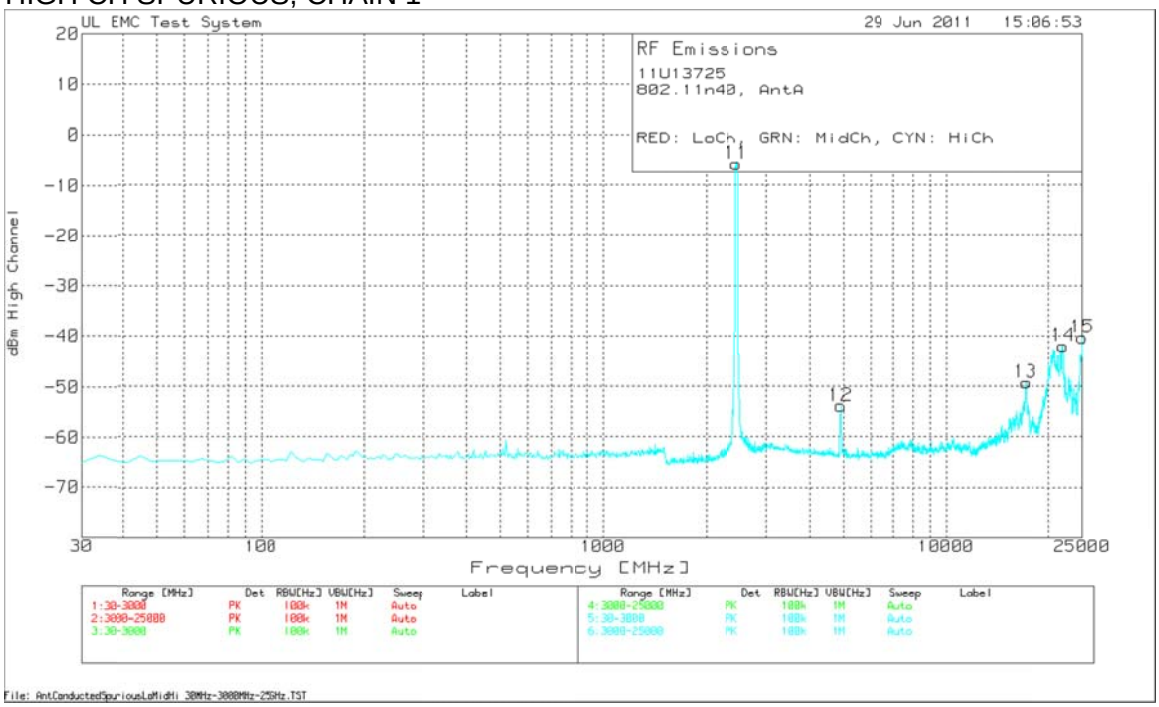

| Low Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2428.117 | 89.47 | PK | -107 | 10.5 | -7.03 |
| 4841.805 | 46.25 | PK | -107 | 10.9 | -49.85 |
| 17019.255 | 42.09 | PK | -107 | 24 | -40.91 |
| 21986.782 | 41.76 | PK | -107 | 31.5 | -33.74 |
| 24992.214 | 43.68 | PK | -107 | 31.6 | -31.72 |

MID CH SPURIOUS, CHAIN 1




| Middle Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2435.903 | 90.62 | PK | -107 | 10.5 | -5.88 |
| 4872.95 | 45.17 | PK | -107 | 11 | -50.83 |
| 16988.11 | 41.71 | PK | -107 | 23.7 | -41.59 |
| 22002.354 | 41.7 | PK | -107 | 31.5 | -33.8 |
| 24992.214 | 43.81 | PK | -107 | 31.6 | -31.59 |

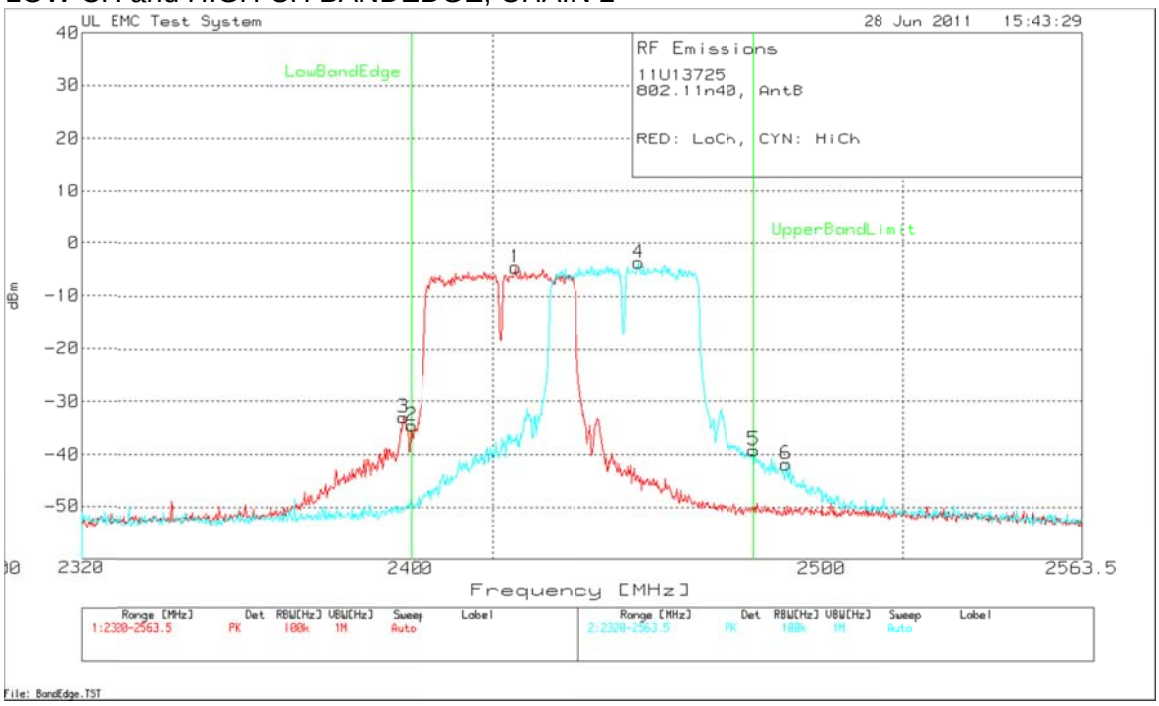
HIGH CH SPURIOUS, CHAIN 1




| High Channel 30 - 25000MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2459.261 | 91.09 | PK | -107 | 10.6 | -5.31 |
| 4904.094 | 45.2 | PK | -107 | 11.1 | -50.7 |
| 17027.041 | 42.47 | PK | -107 | 23.9 | -40.63 |
| 22010.14 | 42.12 | PK | -107 | 31.4 | -33.48 |
| 24992.214 | 42.91 | PK | -107 | 31.6 | -32.49 |

**CHAIN 2 SPURIOUS EMISSIONS**

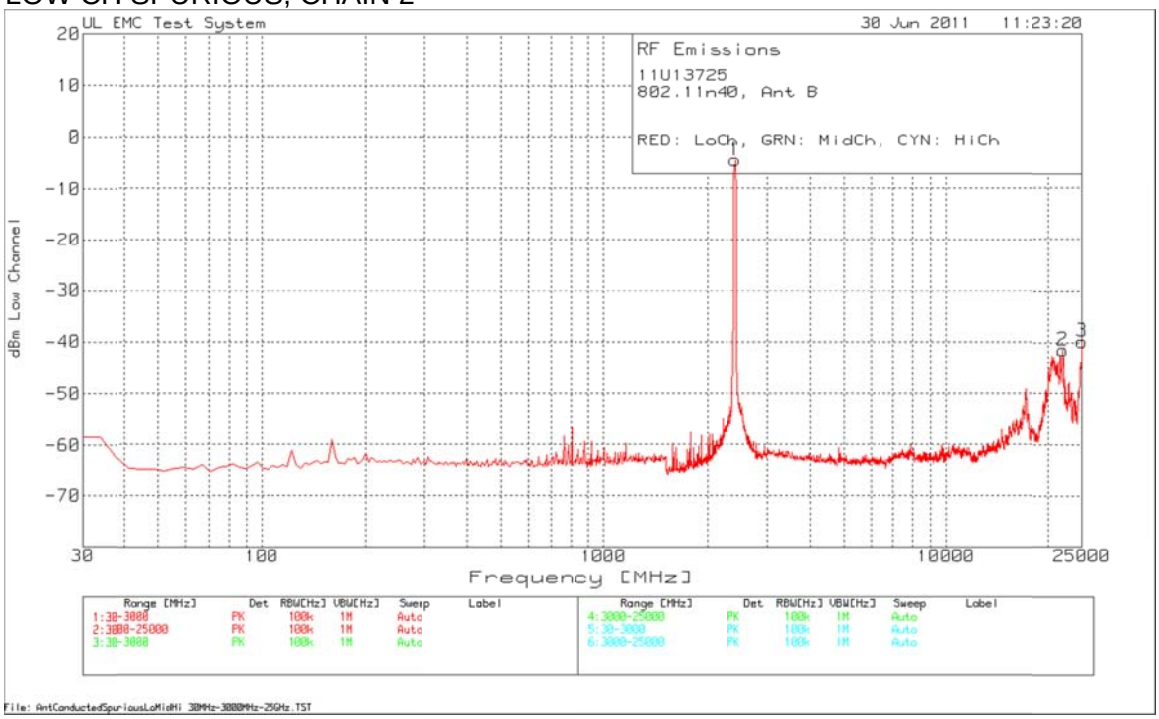
LOW CH and HIGH CH BANDEDGE, CHAIN 2




| Low Channel 2320 - 2563.5MHz | | | | | |
|---|---|---|---|---|---|
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2425.544 | 91.98 | PK | -107 | 10.5 | -4.52 |
| 2400.019 | 61.93 | PK | -107 | 10.5 | -34.57 |
| 2397.993 | 63.43 | PK | -107 | 10.5 | -33.07 |
| High Channel 2320 - 2563.5MHz | | | | | |
| Test Frequency | Meter Reading | Detector | dBuV to dBm [dB] | Monsoon cable with 10dB pad ta [dB] | dBm |
| 2455.525 | 92.71 | PK | -107 | 10.6 | -3.69 |
| 2483.684 | 57.18 | PK | -107 | 10.6 | -39.22 |
| 2491.382 | 54.61 | PK | -107 | 10.6 | -41.79 |

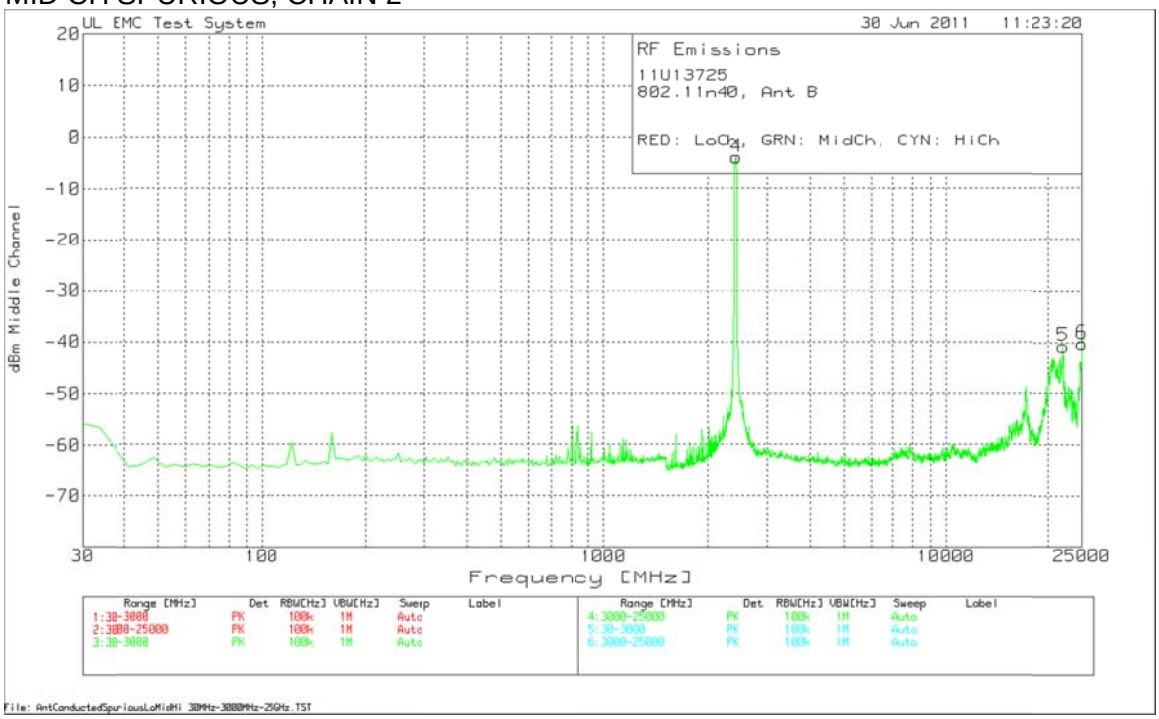
PK - Peak detector

LOW CH SPURIOUS, CHAIN 2



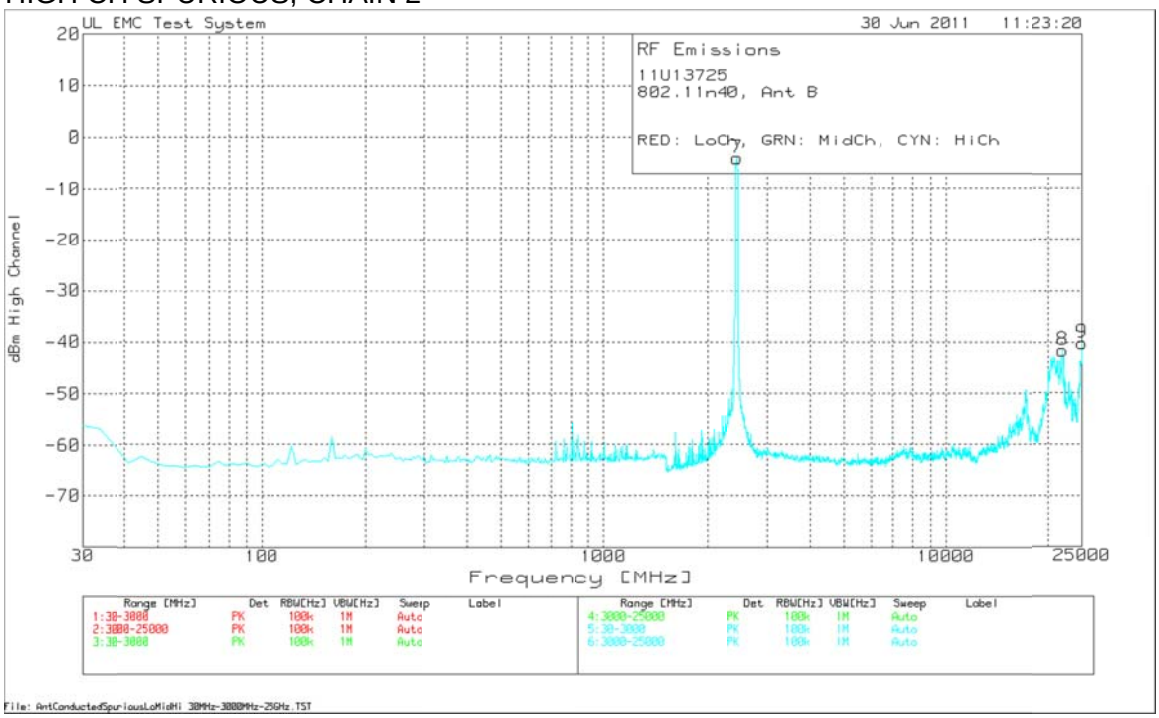

| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel 30 - 3000MHz | | | | | | | | | |
| 1 | 2428.989 | 91.98 PK | -107 | 10.5 | -4.52 | - | - | - | - |
| 2 | 22008.732 | 34.1 PK | -107 | 31.4 | -41.5 | - | - | - | - |
| 3 | 25000 | 35.31 PK | -107 | 31.9 | -39.79 | - | - | - | - |

MID CH SPURIOUS, CHAIN 2




| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Middle Channel 30 - 3000MHz | | | | | | | | | | |
| 4 | 2447.528 | 92.58 | PK | -107 | 10.5 | -3.92 | - | - | - | - |
| 5 | 22027.027 | 35.07 | PK | -107 | 31.2 | -40.73 | - | - | - | - |
| 6 | 25000 | 34.88 | PK | -107 | 31.9 | -40.22 | - | - | - | - |

HIGH CH SPURIOUS, CHAIN 2




| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level dBm | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High Channel 30 - 3000MHz | | | | | | | | | |
| 7 | 2462.36 | 92.28 PK | -107 | 10.6 | -4.12 | - | - | - | - |
| 8 | 21953.846 | 34.19 PK | -107 | 31.2 | -41.61 | - | - | - | - |
| 9 | 25000 | 34.9 PK | -107 | 31.9 | -40.2 | - | - | - | - |

# 8. AC POWER LINE CONDUCTED EMISSIONS

## LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

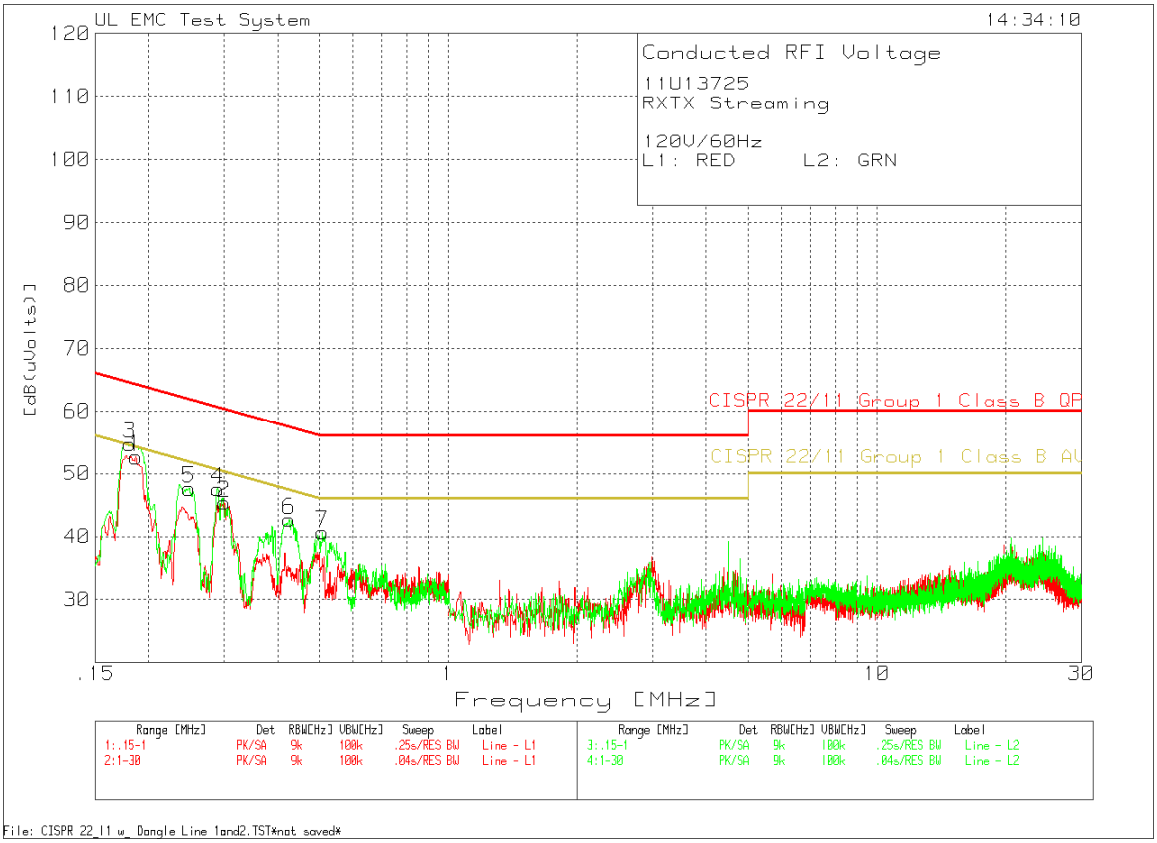
| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

## TEST PROCEDURE

ANSI C63.4

## RESULTS



11U13725
RXTX Streaming
120V/60Hz
L1: RED L2: GRN

| No. | Test Frequency [MHz] | Meter Reading [dB(uV)] | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level [dB(uVolts)] | Limit:1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Line - L1 .15 - 1MHz | | | | | | | | | | |
| 1 | .18674 | 39.65 PK | 1.4 | 11.6 | 52.65 | - | - | 64.2 | 54.2 | - |
| | | | | Margin [dB] | | - | - | -11.55 | -1.55 | - |
| 2 | .30038 | 33.76 PK | .7 | 10.9 | 45.36 | - | - | 60.2 | 50.2 | - |
| | | | | Margin [dB] | | - | - | -14.84 | -4.84 | - |
| Line - L2 .15 - 1MHz | | | | | | | | | | |
| 3 | .18059 | 41.43 PK | 1.5 | 11.8 | 54.73 | - | - | 64.5 | 54.5 | - |
| | | | | Margin [dB] | | - | - | -9.77 | .23 | - |
| 4 | .29018 | 35.82 PK | .7 | 11 | 47.52 | - | - | 60.5 | 50.5 | - |
| | | | | Margin [dB] | | - | - | -12.98 | -2.98 | - |
| 5 | .24855 | 35.31 PK | .9 | 11.4 | 47.61 | - | - | 61.8 | 51.8 | - |
| | | | | Margin [dB] | | - | - | -14.19 | -4.19 | - |
| 6 | .42547 | 31.46 PK | .4 | 10.8 | 42.66 | - | - | 57.3 | 47.3 | - |
| | | | | Margin [dB] | | - | - | -14.64 | -4.64 | - |
| 7 | .50852 | 29.55 PK | .3 | 10.8 | 40.65 | - | - | 56 | 46 | - |
| | | | | Margin [dB] | | - | - | -15.35 | -5.35 | - |

| Test Frequency [MHz] | Meter Reading [dB(uV)] | Transducer Factor [dB] | Gain/Loss Factor [dB] | Level [dB(uVolts)] | Limit:1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| Line - L1 .15 - 1MHz | | | | | | | | | |
| .18614 | 37.09 QP | 1.4 | 11.6 | 50.09 | - | - | 64.21 | 54.21 | - | - |
| | | | Margin [dB]: | | - | - | -14.12 | -4.12 | - | - |
| .29836 | 29.45 QP | .7 | 10.9 | 41.05 | - | - | 60.29 | 50.29 | - | - |
| | | | Margin [dB]: | | - | - | -19.24 | -9.24 | - | - |
| Line - L2 .15 - 1MHz | | | | | | | | | | |
| .1814 | 38.71 QP | 1.4 | 11.8 | 51.91 | - | - | 64.42 | 54.42 | - | - |
| | | | Margin [dB]: | | - | - | -12.51 | -2.51 | - | - |
| .29219 | 28.92 QP | .7 | 11 | 40.62 | - | - | 60.46 | 50.46 | - | - |
| | | | Margin [dB]: | | - | - | -19.84 | -9.84 | - | - |
| .24662 | 32.03 QP | .9 | 11.4 | 44.33 | - | - | 61.87 | 51.87 | - | - |
| | | | Margin [dB]: | | - | - | -17.54 | -7.54 | - | - |
| .42457 | 27.96 QP | .4 | 10.8 | 39.16 | - | - | 57.36 | 47.36 | - | - |
| | | | Margin [dB]: | | - | - | -18.2 | -8.2 | - | - |
| .50776 | 24.75 QP | .3 | 10.8 | 35.85 | - | - | 56 | 46 | - | - |
| | | | Margin [dB]: | | - | - | -20.15 | -10.15 | - | - |

NOTE: "+" - Indicates an emission level in excess of the applicable limit (s).

PK - Peak detector
QP - Quasi-Peak detector

LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

PK - Peak detector