



**FCC CFR47 PART 15 SUBPART H  
CLASS II PERMISSIVE CHANGE  
CERTIFICATION TEST REPORT**

**FOR**

**TV BAND DEVICE**

**MODEL NUMBER: ACRS 1.0**

**REPORT NUMBER: 11U13701-2**

**ISSUE DATE: JULY 31, 2012**

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| --   | 7/31/2012  | Initial Issue | M. Heckrotte |

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>1. ATTESTATION OF TEST RESULTS.....</b>                       | <b>4</b>  |
| <b>2. TEST METHODOLOGY .....</b>                                 | <b>5</b>  |
| <b>3. FACILITIES AND ACCREDITATION.....</b>                      | <b>5</b>  |
| <b>4. CALIBRATION AND UNCERTAINTY .....</b>                      | <b>5</b>  |
| 4.1. <i>MEASURING INSTRUMENT CALIBRATION .....</i>               | 5         |
| 4.2. <i>SAMPLE CALCULATION.....</i>                              | 5         |
| 4.3. <i>MEASUREMENT UNCERTAINTY.....</i>                         | 5         |
| <b>5. EQUIPMENT UNDER TEST .....</b>                             | <b>6</b>  |
| 5.1. <i>DESCRIPTION OF EUT .....</i>                             | 6         |
| 5.1. <i>DESCRIPTION OF CLASS II PERMISSIVE CHANGE.....</i>       | 6         |
| 5.1. <i>WORST-CASE CONFIGURATION AND MODE.....</i>               | 6         |
| 5.4. <i>DETAILS OF TESTED SYSTEM.....</i>                        | 7         |
| <b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>                   | <b>9</b>  |
| <b>7. APPLICABLE LIMITS AND TEST RESULTS .....</b>               | <b>10</b> |
| 7.1. <i>RADIATED EMISSIONS .....</i>                             | 10        |
| 7.2. <i>BOWTIE WITH REFLECTOR ANTENNA .....</i>                  | 12        |
| 7.2.1. <i>RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL) .....</i> | 12        |
| 7.2.2. <i>RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL).....</i>  | 15        |
| 7.2.1. <i>RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL).....</i> | 18        |
| 7.2.1. <i>RADIATED EMISSIONS ABOVE 1 GHz.....</i>                | 21        |
| 7.2.1. <i>RADIATED EMISSIONS 602 TO 620 MHz.....</i>             | 22        |
| 7.3. <i>PCB ANTENNA .....</i>                                    | 28        |
| 7.3.1. <i>RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL) .....</i> | 28        |
| 7.3.2. <i>RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL) .....</i> | 31        |
| 7.3.3. <i>RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL).....</i> | 34        |
| 7.3.4. <i>RADIATED EMISSIONS ABOVE 1 GHz.....</i>                | 37        |
| 7.3.5. <i>RADIATED EMISSIONS 602 TO 620 MHz .....</i>            | 38        |
| <b>8. SETUP PHOTOS.....</b>                                      | <b>44</b> |

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Adaptrum  
25 E. Trimble Road  
San Jose, CA 95131

**EUT DESCRIPTION:** TV Band Device

**MODEL:** ACRS 1.0

**SERIAL NUMBER:** U0009

**DATE TESTED:** JULY 06 - 10, 2012

| APPLICABLE STANDARDS  |              |
|-----------------------|--------------|
| STANDARD              | TEST RESULTS |
| FCC PART 15 SUBPART H | Pass         |

UL CCS 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 CCS 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:



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MICHAEL HECKROTTE  
DIRECTOR OF ENGINEERING  
UL CCS

Tested By:



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VIEN TRAN  
EMC ENGINEER  
UL CCS

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 15 Subpart H, KDB 416271 R2, and ANSI C63.4-2009.

## 3. FACILITIES AND ACCREDITATION

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

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

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

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 4.3. MEASUREMENT UNCERTAINTY

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

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

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a TV Band Device. Available modulations are QPSK, 16QAM and 64QAM. The EUT can be configured as a Fixed TVBD, a Mode I Personal TVBD, or a Mode II Personal TVBD.

### 5.1. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application is the addition of two antenna types, a Antenna Direct DB2E Antenna with a maximum gain of 11.8 dBi, and a PCB antenna with a maximum gain of 2.3 dBi.

### 5.1. WORST-CASE CONFIGURATION AND MODE

Preliminary baseline tests were performed at all data rates for all modulations.

The worst case radiated mode was determined to be the lowest data rate for QPSK.

## 5.4. DETAILS OF TESTED SYSTEM

### SUPPORT EQUIPMENT & PERIPHERALS

| PERIPHERAL SUPPORT EQUIPMENT LIST |              |            |                              |        |
|-----------------------------------|--------------|------------|------------------------------|--------|
| Description                       | Manufacturer | Model      | Serial Number                | FCC ID |
| Laptop                            | Dell         | E6510      | CFGY2AA00                    | DoC    |
| AC Adapter                        | Dell         | FA09PE1-00 | CN-OCM889-73245-08S-4965-A01 | N/A    |

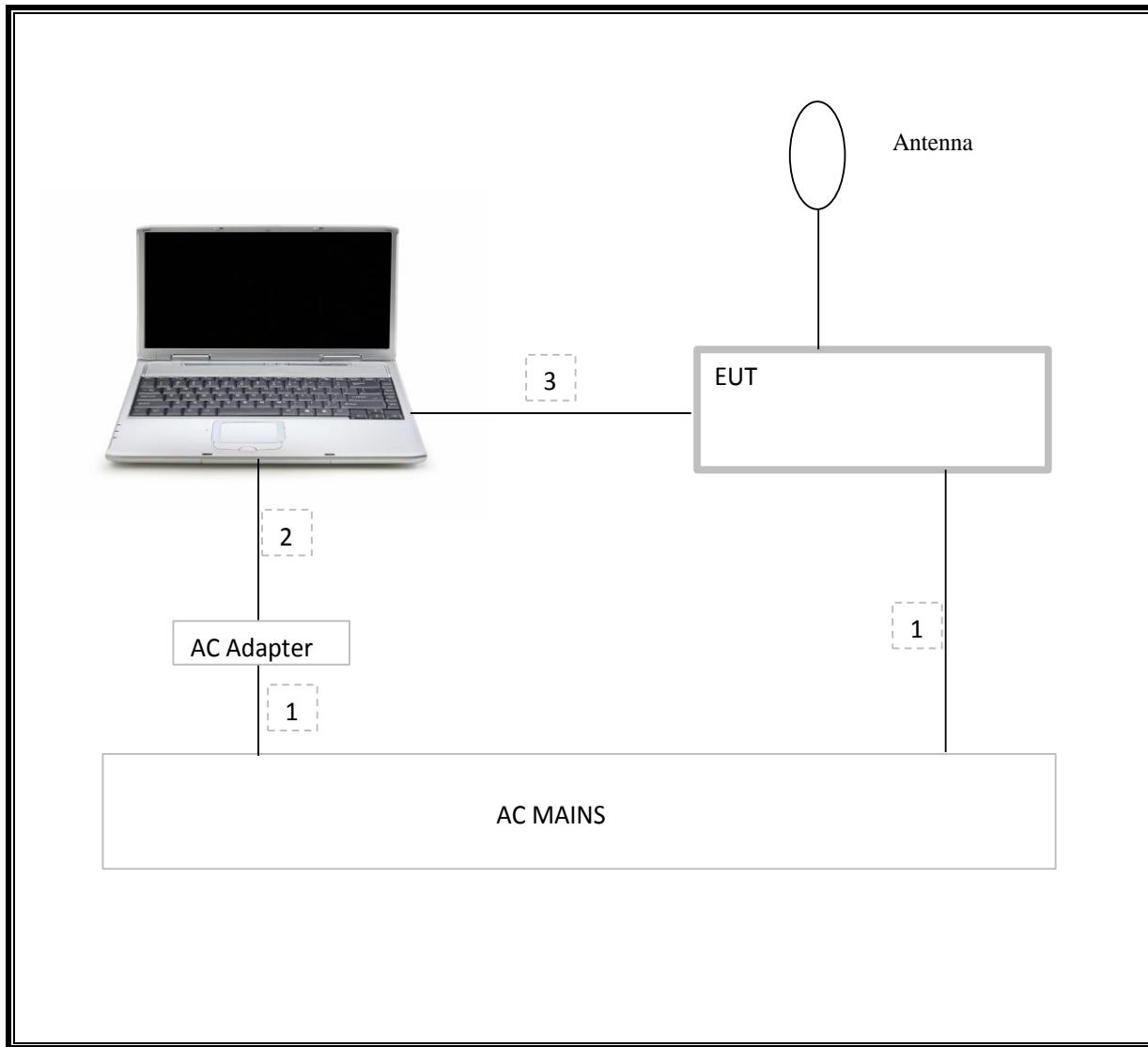
### I/O CABLES

| I/O CABLE LIST |      |                      |                |             |              |                      |
|----------------|------|----------------------|----------------|-------------|--------------|----------------------|
| Cable No.      | Port | # of Identical Ports | Connector Type | Cable Type  | Cable Length | Remarks              |
| 1              | AC   | 2                    | US115V         | Un-shielded | 1.5m         |                      |
| 2              | DC   | 1                    | DC             | Un-shielded | 1.5m         | a ferrite at EUT end |

### TEST SETUP

The laptop is connected to the EUT via Ethernet to control the radio functions. Transmitter tests were made in a continuous transmission mode, with the device operating at the only source-based TDD duty cycle.

**TEST SETUP DIAGRAM**



## 6. TEST AND MEASUREMENT EQUIPMENT

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

| TEST EQUIPMENT LIST       |                |             |        |          |
|---------------------------|----------------|-------------|--------|----------|
| Description               | Manufacturer   | Model       | Asset  | Cal Due  |
| Antenna, Bilog, 2 GHz     | Sunol Sciences | JB1         | C01171 | 01/26/13 |
| Antenna, Horn, 18 GHz     | EMCO           | 3115        | C00872 | 09/20/12 |
| Preamplifier, 26.5 GHz    | Agilent / HP   | 8449B       | C00749 | 07/18/12 |
| Preamplifier, 1300 MHz    | Agilent / HP   | 8447D       | C00558 | 02/21/13 |
| Preamplifier, 1300 MHz    | Sonoma         | 310N        | N02891 | 02/21/13 |
| Notch Filter, 473 MHz     | EWT            | EWT-14-0337 | 337    | 02/15/13 |
| Notch Filter, 587 MHz     | EWT            | EWT-14-0338 | 338    | 02/16/13 |
| Notch Filter, 695 MHz     | EWT            | EWT-14-0339 | 339    | 02/17/13 |
| Bandpass Filter, 611 MHz  | EWT            | EWT-11-0780 | 780    | 02/19/13 |
| Spectrum Analyzer, 44 GHz | Agilent / HP   | E4446A      | C00986 | 12/02/12 |
| EMI Test Receiver, 30 MHz | R & S          | ESHS 20     | N02396 | 08/19/13 |
| Power Meter               | Agilent / HP   | 437B        | #N/A   | 07/28/12 |

## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. RADIATED EMISSIONS

#### LIMITS

FCC §15.709 (c) (3) At frequencies beyond the television channels immediately adjacent to the channel in which the TVBD is operating, the radiated emissions from TVBDs shall meet the requirements of §15.209.

Excluding Carrier Frequency +/- 9 MHz, the §15.209 limits are:

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

FCC §15.701 (c) (4) Emissions in the band 602–620 MHz must also comply with the following field strength limits at a distance of one meter.

| Frequency (MHz) | Field strength dB $\mu$ V/meter/120 kHz |
|-----------------|---|
| 602–607         | 120–5[F(MHz)–602]                       |
| 607–608         | 95                                      |
| 608–614         | 30                                      |
| 614–615         | 95                                      |
| 615–620         | 120–5[620–F(MHz)]                       |

### **STANDARD TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 7 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

High-Q Cavity Notch filters are used to reduce the amplitude of the intentional transmitter and prevent overload of the system preamplifier.

### **INSTRUMENTATION SETUP FOR 1-METER LIMITS FROM 602 TO 620 MHz**

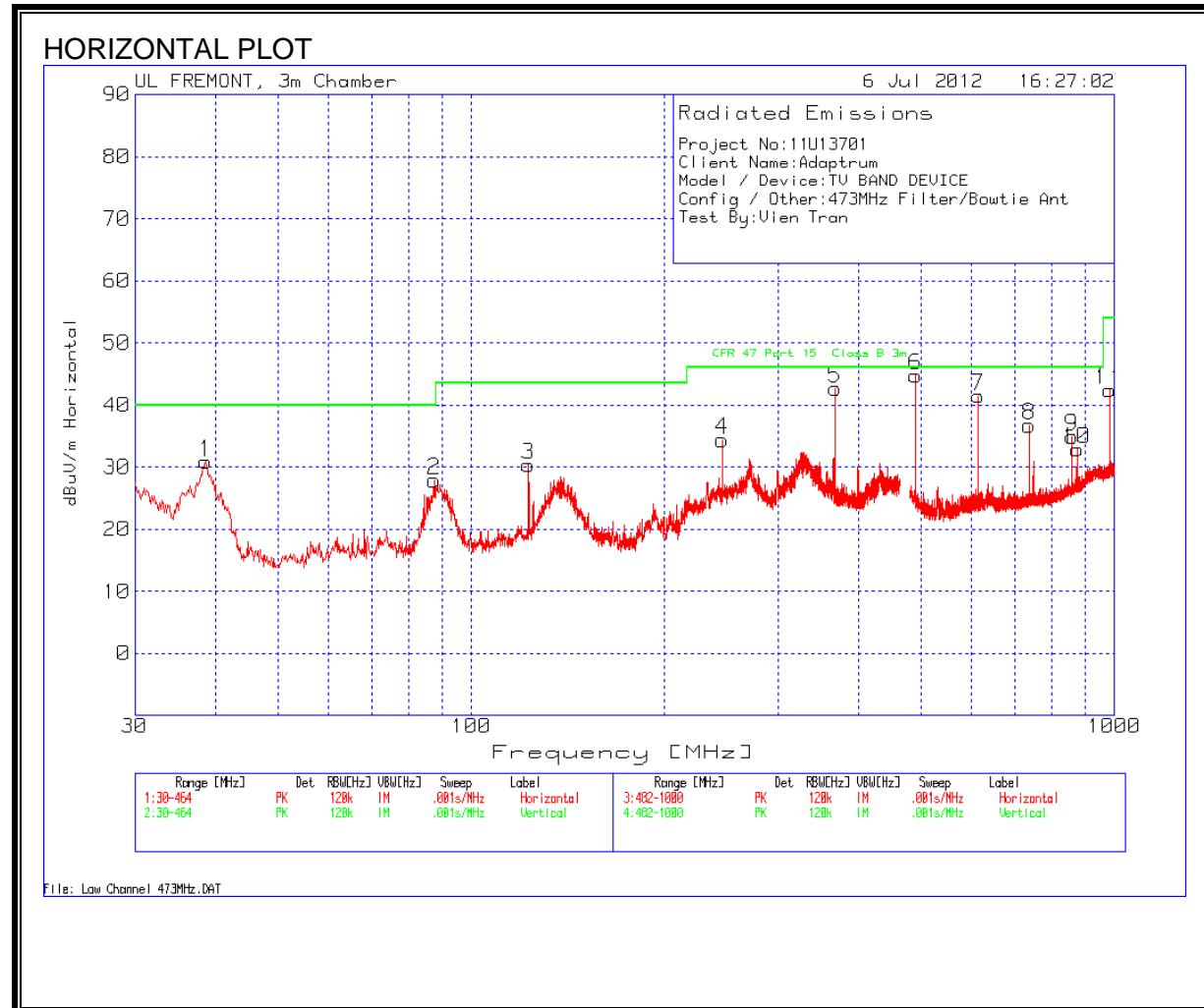
A High-Q Cavity band pass filter is used to reduce the amplitude of the intentional transmitter and prevent overload of the system preamplifier.

The standard test procedure, as otherwise documented above and modified only for the required antenna-to-EUT distance of 1 meter, is utilized.

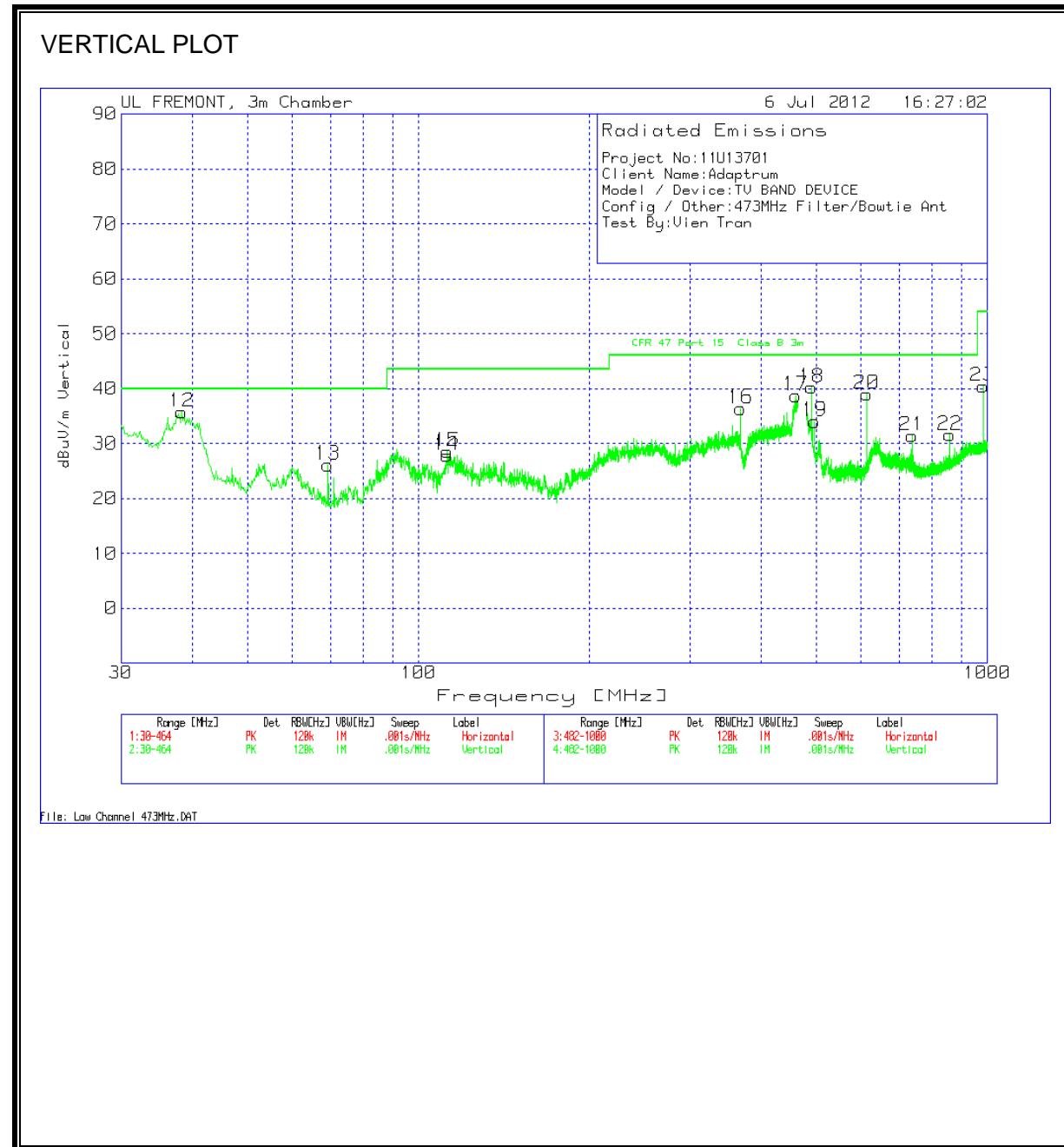
## 7.2. BOWTIE WITH REFLECTOR ANTENNA

### 7.2.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:473MHz Filter / Bowtie Antenna

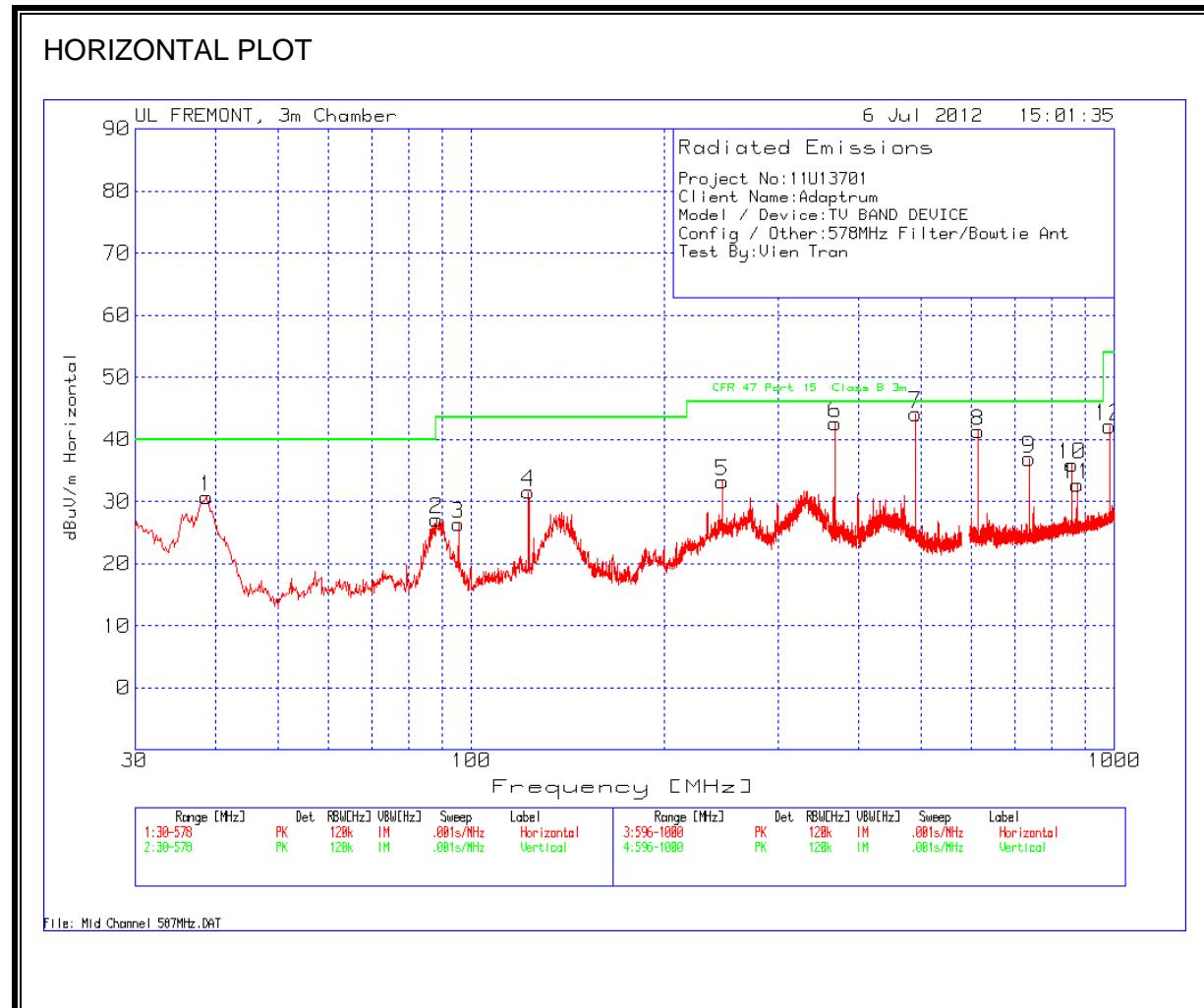
Test By:Vien Tran

LOW CHANNEL, 473MHz

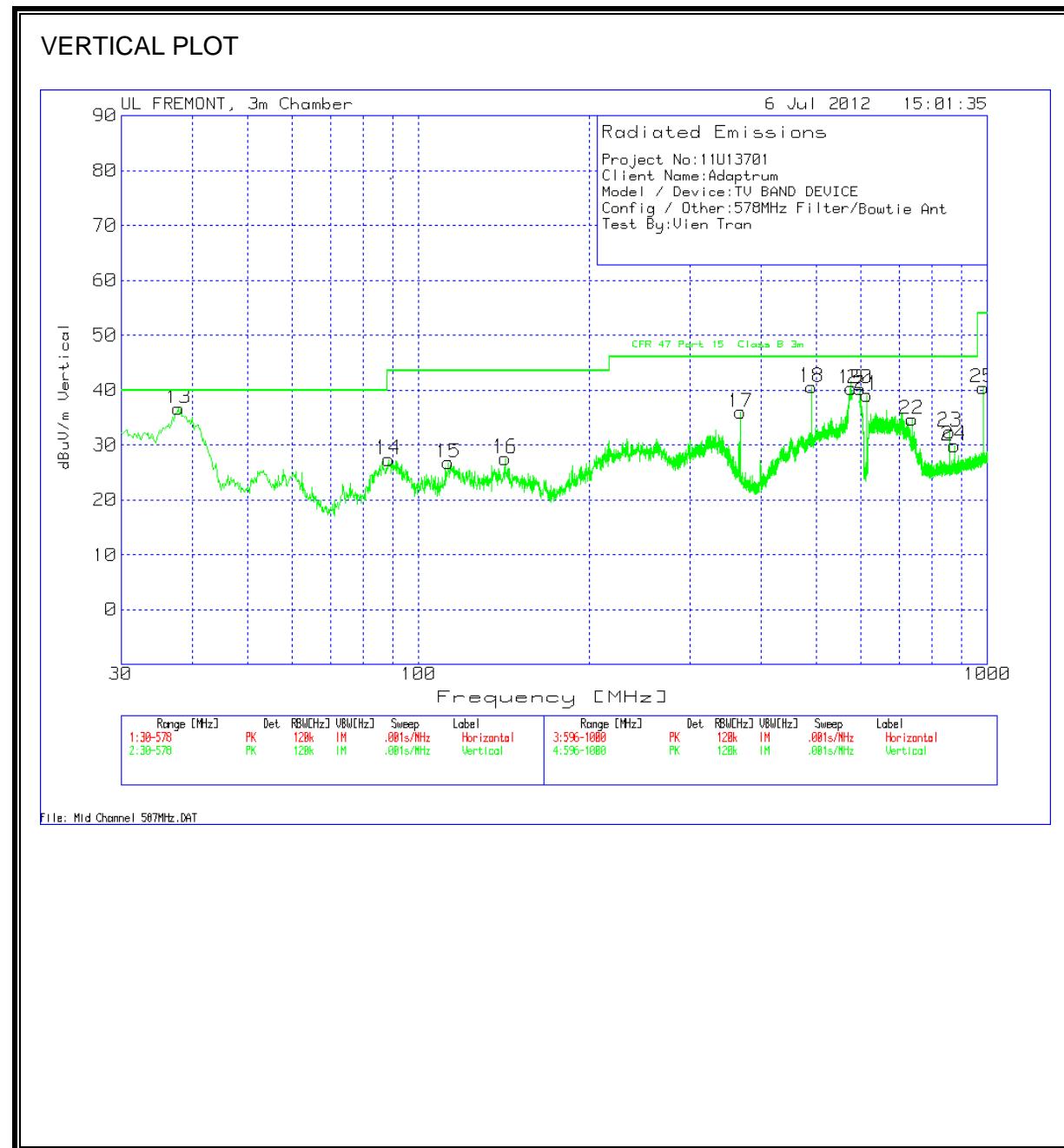
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz<br>Chambr 3m<br>Amplified<br>(dB) | Antenna<br>T185 (dB) | T242 Notch<br>Filter<br>473MHz.TXT<br>(dB) | dBuV/m | CFR 47<br>Part 15<br>Class B 3m | Margin | Height<br>[cm] | Polarity |
|---------------------------------|---------------|----------|--|----------------------|--|--------|---------------------------------|--------|----------------|----------|
| <b>Horizontal 30 - 464MHz</b>   |               |          |  |                      |  |        |                                 |        |                |          |
| 38.6742                         | 43.46         | PK       | -27.40                                       | 14.80                | 0.00                                       | 30.86  | 40.00                           | -9.14  | 301            | Horz     |
| 87.539                          | 47.43         | PK       | -27.00                                       | 7.40                 | 0.10                                       | 27.93  | 40.00                           | -12.07 | 400            | Horz     |
| 122.8141                        | 42.76         | PK       | -26.50                                       | 14.00                | 0.10                                       | 30.36  | 43.50                           | -13.14 | 200            | Horz     |
| 245.6989                        | 48.03         | PK       | -25.40                                       | 11.70                | 0.10                                       | 34.43  | 46.00                           | -11.57 | 100            | Horz     |
| 368.7282                        | 53.02         | PK       | -25.50                                       | 15.00                | 0.20                                       | 42.72  | 46.00                           | -3.28  | 100            | Horz     |
| <b>Horizontal 482 - 1000MHz</b> |               |          |  |                      |  |        |                                 |        |                |          |
| 491.4903                        | 52.57         | PK       | -25.80                                       | 17.80                | 0.20                                       | 44.77  | 46.00                           | -1.23  | 201            | Horz     |
| 614.3471                        | 47.97         | PK       | -25.60                                       | 18.90                | 0.20                                       | 41.47  | 46.00                           | -4.53  | 100            | Horz     |
| 737.2039                        | 40.97         | PK       | -24.90                                       | 20.40                | 0.30                                       | 36.77  | 46.00                           | -9.23  | 100            | Horz     |
| 860.2332                        | 36.65         | PK       | -24.30                                       | 21.70                | 0.90                                       | 34.95  | 46.00                           | -11.05 | 100            | Horz     |
| 875.0726                        | 33.89         | PK       | -24.20                                       | 21.90                | 1.30                                       | 32.89  | 46.00                           | -13.11 | 100            | Horz     |
| 983.0899                        | 40.41         | PK       | -23.40                                       | 23.00                | 2.40                                       | 42.41  | 54.00                           | -11.59 | 100            | Horz     |
| <b>Vertical 30 - 464MHz</b>     |               |          |  |                      |  |        |                                 |        |                |          |
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz<br>Chambr 3m<br>Amplified<br>(dB) | Antenna<br>T185 (dB) | T242 Notch<br>Filter<br>473MHz.TXT<br>(dB) | dBuV/m | CFR 47<br>Part 15<br>Class B 3m | Margin | Height<br>[cm] | Polarity |
| <b>Vertical 482 - 1000MHz</b>   |               |          |  |                      |  |        |                                 |        |                |          |
| 38.3851                         | 48.14         | PK       | -27.40                                       | 15.00                | 0.00                                       | 35.74  | 40.00                           | -4.26  | 101            | Vert     |
| 69.3231                         | 45.16         | PK       | -27.10                                       | 8.10                 | 0.00                                       | 26.16  | 40.00                           | -13.84 | 400            | Vert     |
| 112.1159                        | 41.62         | PK       | -26.70                                       | 12.80                | 0.10                                       | 27.82  | 43.50                           | -15.68 | 101            | Vert     |
| 112.4051                        | 42.27         | PK       | -26.60                                       | 12.80                | 0.10                                       | 28.57  | 43.50                           | -14.93 | 101            | Vert     |
| 368.7282                        | 46.72         | PK       | -25.50                                       | 15.00                | 0.20                                       | 36.42  | 46.00                           | -9.58  | 101            | Vert     |
| 460.8195                        | 46.85         | PK       | -25.80                                       | 17.00                | 0.70                                       | 38.75  | 46.00                           | -7.25  | 200            | Vert     |
| <b>Vertical 482 - 1000MHz</b>   |               |          |  |                      |  |        |                                 |        |                |          |
| 491.4903                        | 48.02         | PK       | -25.80                                       | 17.80                | 0.20                                       | 40.22  | 46.00                           | -5.78  | 200            | Vert     |
| 497.7022                        | 42.04         | PK       | -25.90                                       | 17.70                | 0.20                                       | 34.04  | 46.00                           | -11.96 | 200            | Vert     |
| 614.3471                        | 45.5          | PK       | -25.60                                       | 18.90                | 0.20                                       | 39.00  | 46.00                           | -7.00  | 101            | Vert     |
| 737.2039                        | 35.66         | PK       | -24.90                                       | 20.40                | 0.30                                       | 31.46  | 46.00                           | -14.54 | 200            | Vert     |
| 860.2332                        | 33.28         | PK       | -24.30                                       | 21.70                | 0.90                                       | 31.58  | 46.00                           | -14.42 | 101            | Vert     |
| 983.0899                        | 38.41         | PK       | -23.40                                       | 23.00                | 2.40                                       | 40.41  | 54.00                           | -13.59 | 101            | Vert     |
| PK - Peak detector              |               |          |  |                      |  |        |                                 |        |                |          |
| QP - Quasi-Peak detector        |               |          |  |                      |  |        |                                 |        |                |          |
| LnAv - Linear Average detector  |               |          |  |                      |  |        |                                 |        |                |          |
| LgAv - Log Average detector     |               |          |  |                      |  |        |                                 |        |                |          |
| Av - Average detector           |               |          |  |                      |  |        |                                 |        |                |          |
| CAV - CISPR Average detector    |               |          |  |                      |  |        |                                 |        |                |          |
| RMS - RMS detection             |               |          |  |                      |  |        |                                 |        |                |          |
| CRMS - CISPR RMS detection      |               |          |  |                      |  |        |                                 |        |                |          |

## 7.2.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:587MHz Filter / Bowtie Antenna

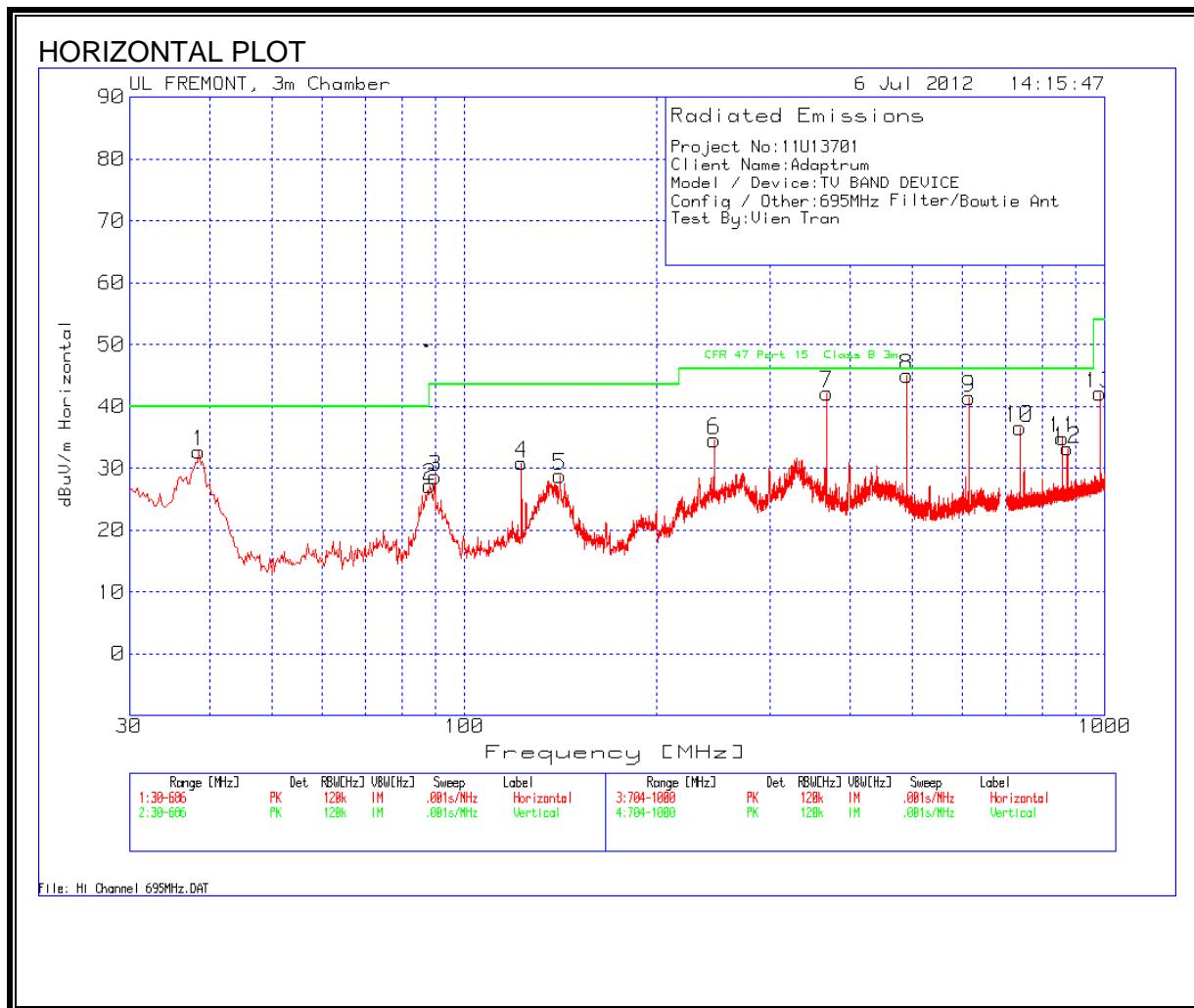
Test By:Vien Tran

#### MID CHANNEL, 587 MHz

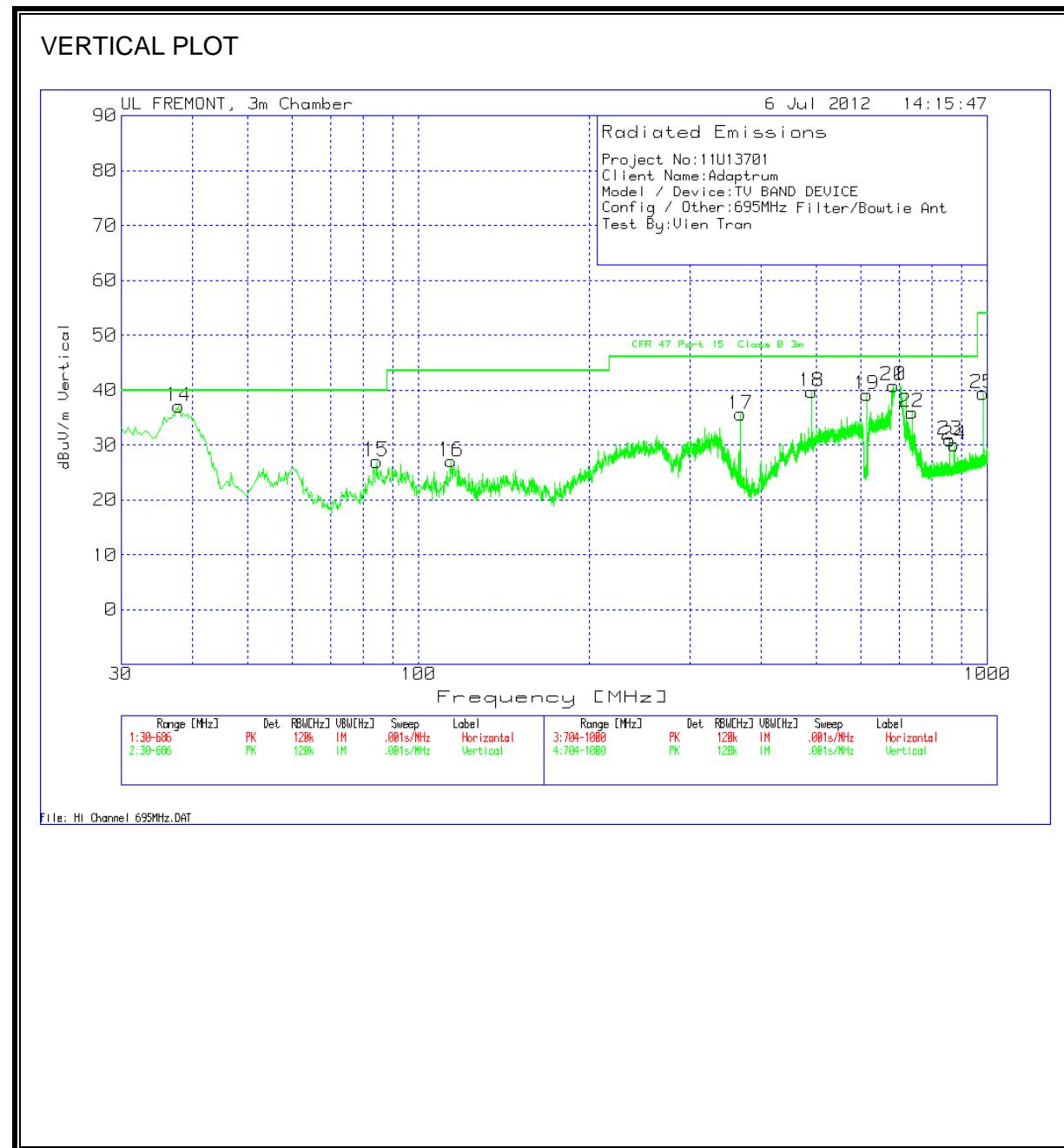
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz Chambr 3m Amplified (dB) | Antenna T185 (dB) | T239 Notch Filter 587MHz.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|---------------------------------|---------------|----------|-------------------------------------|-------------------|-----------------------------------|--------|---------------------------|--------|-------------|----------|
| <b>Horizontal 30 - 578MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 38.7622                         | 43.39         | PK       | -27.40                              | 14.70             | 0.00                              | 30.69  | 40.00                     | -9.31  | 301         | Horz     |
| 88.2318                         | 46.72         | PK       | -27.00                              | 7.40              | 0.00                              | 27.12  | 43.50                     | -16.38 | 400         | Horz     |
| 95.5336                         | 44.48         | PK       | -26.90                              | 8.70              | 0.10                              | 26.38  | 43.50                     | -17.12 | 201         | Horz     |
| 122.7328                        | 43.97         | PK       | -26.50                              | 14.00             | 0.10                              | 31.57  | 43.50                     | -11.93 | 201         | Horz     |
| 245.7682                        | 46.81         | PK       | -25.40                              | 11.70             | 0.10                              | 33.21  | 46.00                     | -12.79 | 100         | Horz     |
| 368.6209                        | 52.97         | PK       | -25.50                              | 15.00             | 0.10                              | 42.57  | 46.00                     | -3.43  | 100         | Horz     |
| 491.6562                        | 52.04         | PK       | -25.80                              | 17.80             | 0.10                              | 44.14  | 46.00                     | -1.86  | 201         | Horz     |
| <b>Horizontal 596 - 1000MHz</b> |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 614.437                         | 47.81         | PK       | -25.60                              | 18.90             | 0.20                              | 41.31  | 46.00                     | -4.69  | 100         | Horz     |
| 737.3058                        | 41.33         | PK       | -24.90                              | 20.40             | 0.10                              | 36.93  | 46.00                     | -9.07  | 100         | Horz     |
| 860.1746                        | 38.35         | PK       | -24.30                              | 21.70             | 0.20                              | 35.95  | 46.00                     | -10.05 | 100         | Horz     |
| 875.1126                        | 34.77         | PK       | -24.20                              | 21.90             | 0.20                              | 32.67  | 46.00                     | -13.33 | 100         | Horz     |
| 983.0433                        | 42.18         | PK       | -23.40                              | 23.00             | 0.40                              | 42.18  | 54.00                     | -11.82 | 100         | Horz     |
| <b>Vertical 30 - 578MHz</b>     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 37.8494                         | 48.64         | PK       | -27.40                              | 15.40             | 0.00                              | 36.64  | 40.00                     | -3.36  | 100         | Vert     |
| 88.5969                         | 46.88         | PK       | -27.00                              | 7.50              | 0.00                              | 27.38  | 43.50                     | -16.12 | 301         | Vert     |
| 112.8754                        | 40.41         | PK       | -26.60                              | 12.90             | 0.10                              | 26.81  | 43.50                     | -16.69 | 100         | Vert     |
| 142.0826                        | 40.99         | PK       | -26.40                              | 12.90             | 0.10                              | 27.59  | 43.50                     | -15.91 | 100         | Vert     |
| 368.6209                        | 46.4          | PK       | -25.50                              | 15.00             | 0.10                              | 36.00  | 46.00                     | -10.00 | 100         | Vert     |
| 491.4737                        | 48.47         | PK       | -25.80                              | 17.80             | 0.10                              | 40.57  | 46.00                     | -5.43  | 201         | Vert     |
| 576.5396                        | 46.41         | PK       | -25.70                              | 18.70             | 0.90                              | 40.31  | 46.00                     | -5.69  | 201         | Vert     |
| <b>Vertical 596 - 1000MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 598.0187                        | 46.77         | PK       | -25.70                              | 18.30             | 0.90                              | 40.27  | 46.00                     | -5.73  | 201         | Vert     |
| 614.437                         | 45.61         | PK       | -25.60                              | 18.90             | 0.20                              | 39.11  | 46.00                     | -6.89  | 100         | Vert     |
| 737.3058                        | 39.06         | PK       | -24.90                              | 20.40             | 0.10                              | 34.66  | 46.00                     | -11.34 | 201         | Vert     |
| 860.04                          | 34.83         | PK       | -24.30                              | 21.70             | 0.20                              | 32.43  | 46.00                     | -13.57 | 201         | Vert     |
| 875.1126                        | 32.00         | PK       | -24.20                              | 21.90             | 0.20                              | 29.90  | 46.00                     | -16.10 | 201         | Vert     |
| 983.0433                        | 40.42         | PK       | -23.40                              | 23.00             | 0.40                              | 40.42  | 54.00                     | -13.58 | 100         | Vert     |
| PK - Peak detector              |               |          |                                     |                   |                                   |        |                           |        |             |          |
| QP - Quasi-Peak detector        |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LnAv - Linear Average detector  |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LgAv - Log Average detector     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| Av - Average detector           |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CAV - CISPR Average detector    |               |          |                                     |                   |                                   |        |                           |        |             |          |
| RMS - RMS detection             |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CRMS - CISPR RMS detection      |               |          |                                     |                   |                                   |        |                           |        |             |          |

### 7.2.1. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:695MHz Filter / Bowtie Antenna

Test By:Vien Tran

HIGH CHANNEL, 695 MHz

| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz Chambr 3m Amplified (dB) | Antenna T185 (dB) | T238 Notch Filter 695MHz.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|---------------------------------|---------------|----------|-------------------------------------|-------------------|-----------------------------------|--------|---------------------------|--------|-------------|----------|
| <b>Horizontal 30 - 686MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 38.5223                         | 45.22         | PK       | -27.40                              | 14.90             | 0.00                              | 32.72  | 40.00                     | -7.28  | 300         | Horz     |
| 88.3451                         | 46.80         | PK       | -27.00                              | 7.40              | 0.00                              | 27.20  | 43.50                     | -16.30 | 400         | Horz     |
| 90.0933                         | 48.02         | PK       | -27.00                              | 7.60              | 0.00                              | 28.62  | 43.50                     | -14.88 | 400         | Horz     |
| 122.8714                        | 43.25         | PK       | -26.50                              | 14.00             | 0.10                              | 30.85  | 43.50                     | -12.65 | 201         | Horz     |
| 141.0087                        | 42.06         | PK       | -26.40                              | 13.10             | 0.10                              | 28.86  | 43.50                     | -14.64 | 201         | Horz     |
| 245.6802                        | 48.21         | PK       | -25.40                              | 11.70             | 0.10                              | 34.61  | 46.00                     | -11.39 | 100         | Horz     |
| 368.7075                        | 52.58         | PK       | -25.50                              | 15.00             | 0.10                              | 42.18  | 46.00                     | -3.82  | 100         | Horz     |
| 491.7348                        | 52.9          | PK       | -25.80                              | 17.80             | 0.10                              | 45.00  | 46.00                     | -1.00  | 201         | Horz     |
| 614.5436                        | 47.95         | PK       | -25.60                              | 18.90             | 0.20                              | 41.45  | 46.00                     | -4.55  | 100         | Horz     |
| <b>Horizontal 704 - 1000MHz</b> |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 737.2285                        | 40.9          | PK       | -24.90                              | 20.40             | 0.20                              | 36.60  | 46.00                     | -9.40  | 100         | Horz     |
| 860.1839                        | 37.39         | PK       | -24.30                              | 21.70             | 0.10                              | 34.89  | 46.00                     | -11.11 | 100         | Horz     |
| 874.974                         | 35.29         | PK       | -24.20                              | 21.90             | 0.20                              | 33.19  | 46.00                     | -12.81 | 100         | Horz     |
| 983.0406                        | 42.23         | PK       | -23.40                              | 23.00             | 0.30                              | 42.13  | 54.00                     | -11.87 | 100         | Horz     |

| Test Frequency                | Meter Reading | Detector | 25MHz-1GHz Chambr 3m Amplified (dB) | Antenna T185 (dB) | T238 Notch Filter 695MHz.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|-------------------------------|---------------|----------|-------------------------------------|-------------------|-----------------------------------|--------|---------------------------|--------|-------------|----------|
| <b>Vertical 30 - 686MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 37.8668                       | 49.07         | PK       | -27.40                              | 15.40             | 0.00                              | 37.07  | 40.00                     | -2.93  | 100         | Vert     |
| 84.4117                       | 46.63         | PK       | -27.00                              | 7.40              | 0.00                              | 27.03  | 40.00                     | -12.97 | 100         | Vert     |
| 114.1306                      | 40.47         | PK       | -26.60                              | 13.10             | 0.10                              | 27.07  | 43.50                     | -16.43 | 100         | Vert     |
| 368.7075                      | 46.03         | PK       | -25.50                              | 15.00             | 0.10                              | 35.63  | 46.00                     | -10.37 | 100         | Vert     |
| 491.7348                      | 47.61         | PK       | -25.80                              | 17.80             | 0.10                              | 39.71  | 46.00                     | -6.29  | 201         | Vert     |
| 614.5436                      | 45.66         | PK       | -25.60                              | 18.90             | 0.20                              | 39.16  | 46.00                     | -6.84  | 100         | Vert     |
| 684.4704                      | 44.72         | PK       | -25.30                              | 19.90             | 1.50                              | 40.82  | 46.00                     | -5.18  | 201         | Vert     |
| 684.4704                      | 44.72         | PK       | -25.30                              | 19.90             | 1.50                              | 40.82  | 46.00                     | -5.18  | 201         | Vert     |
| <b>Vertical 704 - 1000MHz</b> |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 737.2285                      | 40.23         | PK       | -24.90                              | 20.40             | 0.20                              | 35.93  | 46.00                     | -10.07 | 201         | Vert     |
| 860.1839                      | 33.47         | PK       | -24.30                              | 21.70             | 0.10                              | 30.97  | 46.00                     | -15.03 | 201         | Vert     |
| 874.974                       | 32.15         | PK       | -24.20                              | 21.90             | 0.20                              | 30.05  | 46.00                     | -15.95 | 201         | Vert     |
| 983.0406                      | 39.51         | PK       | -23.40                              | 23.00             | 0.30                              | 39.41  | 54.00                     | -14.59 | 101         | Vert     |

PK - Peak detector

QP - Quasi-Peak detector

LnAv - Linear Average detector

LgAv - Log Average detector

Av - Average detector

CAV - CISPR Average detector

RMS - RMS detection

## 7.2.1. RADIATED EMISSIONS ABOVE 1 GHz

### SPURIOUS AND HARMONIC EMISSIONS ABOVE 1 GHz (LOW, MID AND HIGH CHANNELS)

| High Frequency Measurement<br>Compliance Certification Services, Fremont 3m Chamber   |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|-----------------------|------------------------|-------------------|--------------------|-------------------|-----------|---------------|------------|----------------------|---------------|---------------------|-------------------|--------------|---------------|----------------|--------------|-----------------------|------------------------|--------------|-------|--------------------|--------------|--|--|------------|---------------------|--|--|--|--|-------------------|--|--------------|--|----------------------|--|---------------------|--|--|--|-------------------|--|--------------------|--|--------------------|--|-----|---------------|--|--|--|--|--|--|--|--|-------------------|--|--------------------|--|--------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>Test Equipment:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Horn 1-18GHz</td><td style="width: 20%;">Pre-amplifier 1-26GHz</td><td style="width: 20%;">Pre-amplifier 26-40GHz</td><td style="width: 20%;">Horn &gt; 18GHz</td><td style="width: 20%;">Limit</td></tr> <tr> <td>T60; S/N: 2238 @3m</td><td>T34 HP 8449B</td><td></td><td></td><td>FCC 15.209</td></tr> <tr> <td colspan="5">Hi Frequency Cables</td><td colspan="2">Peak Measurements</td><td colspan="2">RBW=VBW=1MHz</td><td colspan="2">Average Measurements</td><td colspan="2">RBW=1MHz ; VBW=10Hz</td><td colspan="2"></td></tr> <tr> <td colspan="2">3' cable 22807700</td><td colspan="2">12' cable 22807600</td><td colspan="2">20' cable 22807500</td><td>HPF</td><td>Reject Filter</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> <tr> <td colspan="2">3' cable 22807700</td><td colspan="2" rowspan="3">12' cable 22807600</td><td colspan="2">20' cable 22807500</td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> <tr> <td colspan="5"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> <tr> <td colspan="5"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> </table> |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                | Horn 1-18GHz | Pre-amplifier 1-26GHz | Pre-amplifier 26-40GHz | Horn > 18GHz | Limit | T60; S/N: 2238 @3m | T34 HP 8449B |  |  | FCC 15.209 | Hi Frequency Cables |  |  |  |  | Peak Measurements |  | RBW=VBW=1MHz |  | Average Measurements |  | RBW=1MHz ; VBW=10Hz |  |  |  | 3' cable 22807700 |  | 12' cable 22807600 |  | 20' cable 22807500 |  | HPF | Reject Filter |  |  |  |  |  |  |  |  | 3' cable 22807700 |  | 12' cable 22807600 |  | 20' cable 22807500 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Horn 1-18GHz  | Pre-amplifier 1-26GHz | Pre-amplifier 26-40GHz | Horn > 18GHz      | Limit              |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T60; S/N: 2238 @3m  | T34 HP 8449B          |                        |                   | FCC 15.209         |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hi Frequency Cables   |                       |                        |                   |                    | Peak Measurements |           | RBW=VBW=1MHz  |            | Average Measurements |               | RBW=1MHz ; VBW=10Hz |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3' cable 22807700   |                       | 12' cable 22807600     |                   | 20' cable 22807500 |                   | HPF       | Reject Filter |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3' cable 22807700   |                       | 12' cable 22807600     |                   | 20' cable 22807500 |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|   |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|   |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| f<br>GHz  | Dist<br>(m)           | Read Pk<br>dBuV        | Read Avg.<br>dBuV | AF<br>dB/m         | CL<br>dB          | Amp<br>dB | D Corr<br>dB  | Fltr<br>dB | Peak<br>dBuV/m       | Avg<br>dBuV/m | Pk Lim<br>dBuV/m    | Avg Lim<br>dBuV/m | Pk Mar<br>dB | Avg Mar<br>dB | Notes<br>(V/H) |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>LOW CHANNEL, 473MHz</b>  |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                   | 53.9                   | 51.6              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 47.3                 | 45.0          | 74                  | 54                | -26.7        | -9.0          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 50.5                   | 46.9              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 45.4                 | 41.7          | 74                  | 54                | -28.6        | -12.3         | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.043   | 3.0                   | 47.9                   | 44.1              | 28.1               | 4.1               | -36.2     | 0.0           | 0.0        | 43.8                 | 40.0          | 74                  | 54                | -30.2        | -14.0         | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.080   | 3.0                   | 44.2                   | 40.8              | 32.6               | 6.3               | -34.3     | 0.0           | 0.0        | 48.8                 | 45.4          | 74                  | 54                | -25.2        | -8.6          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                   | 53.0                   | 49.6              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 46.4                 | 43.0          | 74                  | 54                | -27.6        | -11.0         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 49.0                   | 45.4              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 43.8                 | 40.2          | 74                  | 54                | -30.2        | -13.8         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.043   | 3.0                   | 46.4                   | 42.6              | 28.1               | 4.1               | -36.2     | 0.0           | 0.0        | 42.3                 | 38.5          | 74                  | 54                | -31.7        | -15.5         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.080   | 3.0                   | 42.7                   | 39.3              | 32.6               | 6.3               | -34.3     | 0.0           | 0.0        | 47.2                 | 43.8          | 74                  | 54                | -26.8        | -10.2         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>MID CHANNEL, 587MHz</b>  |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                   | 56.3                   | 53.1              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 49.7                 | 46.5          | 74                  | 54                | -24.3        | -7.5          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 50.2                   | 47.5              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 45.0                 | 42.3          | 74                  | 54                | -29.0        | -11.7         | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.157   | 3.0                   | 51.9                   | 49.6              | 28.2               | 4.2               | -36.1     | 0.0           | 0.0        | 48.3                 | 46.0          | 74                  | 54                | -25.7        | -8.0          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                   | 52.1                   | 50.5              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 45.5                 | 43.9          | 74                  | 54                | -28.5        | -10.1         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 48.8                   | 45.5              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 43.6                 | 40.3          | 74                  | 54                | -30.4        | -13.7         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.157   | 3.0                   | 50.4                   | 47.2              | 28.2               | 4.2               | -36.1     | 0.0           | 0.0        | 46.8                 | 43.6          | 74                  | 54                | -27.2        | -10.4         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>HIGH CHANNEL, 695MHz</b>   |                       |                        |                   |                    |                   |           |               |            |                      |               |                     |                   |              |               |                |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                   | 54.4                   | 52.2              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 47.8                 | 45.6          | 74                  | 54                | -26.2        | -8.4          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 51.1                   | 47.9              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 45.9                 | 42.7          | 74                  | 54                | -28.1        | -11.3         | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.226   | 3.0                   | 53.1                   | 50.9              | 28.3               | 4.3               | -36.0     | 0.0           | 0.0        | 49.8                 | 47.6          | 74                  | 54                | -24.2        | -6.4          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.533   | 3.0                   | 45.6                   | 40.3              | 32.9               | 6.6               | -34.2     | 0.0           | 0.0        | 50.9                 | 45.6          | 74                  | 54                | -23.1        | -8.4          | V              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                   | 52.3                   | 49.7              | 26.8               | 3.5               | -36.9     | 0.0           | 0.0        | 45.7                 | 43.1          | 74                  | 54                | -28.3        | -10.9         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                   | 48.9                   | 46.9              | 27.5               | 3.8               | -36.5     | 0.0           | 0.0        | 43.7                 | 41.7          | 74                  | 54                | -30.3        | -12.3         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.226   | 3.0                   | 50.1                   | 48.5              | 28.3               | 4.3               | -36.0     | 0.0           | 0.0        | 46.8                 | 45.2          | 74                  | 54                | -27.2        | -8.8          | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.533   | 3.0                   | 44.2                   | 37.8              | 32.9               | 6.6               | -34.2     | 0.0           | 0.0        | 49.5                 | 43.1          | 74                  | 54                | -24.5        | -10.9         | H              |              |                       |                        |              |       |                    |              |  |  |            |                     |  |  |  |  |                   |  |              |  |                      |  |                     |  |  |  |                   |  |                    |  |                    |  |     |               |  |  |  |  |  |  |  |  |                   |  |                    |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

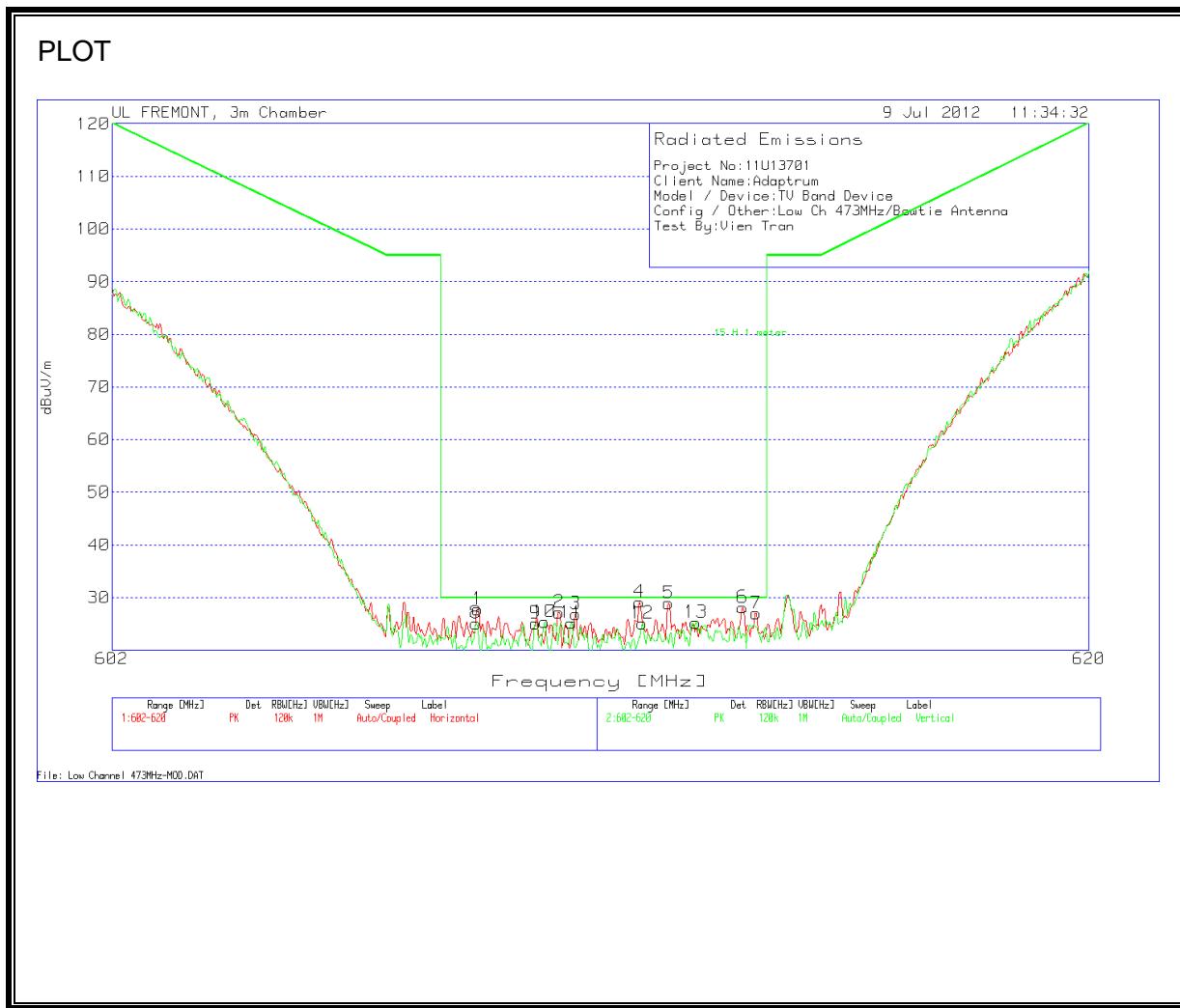
f Measurement Frequency  
 Dist Distance to Antenna  
 Read Analyzer Reading  
 AF Antenna Factor  
 CL Cable Loss

Amp Preamp Gain  
 D Corr Distance Correct to 3 meters  
 Avg Average Field Strength @ 3 m  
 Peak Calculated Peak Field Strength  
 HPF High Pass Filter

Avg Lim Average Field Strength Limit  
 Pk Lim Peak Field Strength Limit  
 Avg Mar Margin vs. Average Limit  
 Pk Mar Margin vs. Peak Limit

### 7.2.1. RADIATED EMISSIONS 602 TO 620 MHz

#### PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)

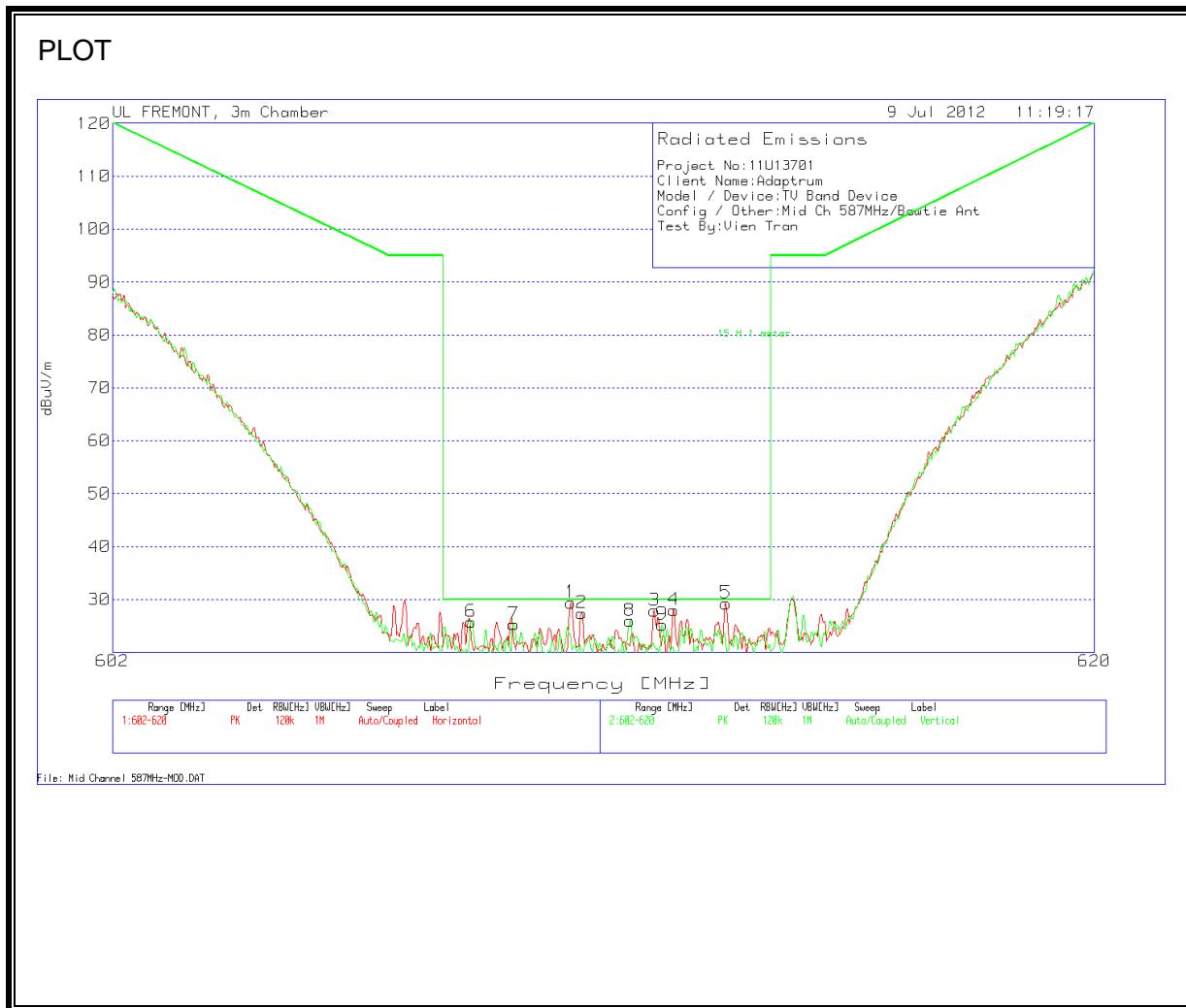


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)**

**TABULAR LISTING**

| Project No:11U13701  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
|--|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|--------|--------------|--------|-------------|----------|
| Client Name:Adaptrum   |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| Model / Device:TV Band Device  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| Config / Other:Low Ch 473MHz/Bowtie Antenna  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| Test By:Vien Tran  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| LOW CHANNEL, 473MHz  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| Test Frequency   | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz,T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | dBuV/m | 15 H 1 meter | Margin | Height [cm] | Polarity |
| <i>Range: 1 602 - 620MHz HORIZONTAL</i>  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| 608.678  | 36.48         | PK       | 2.9                               | 2.4                                 | 18.6                    | -32.6                       | 27.78  | 30           | -2.22  | 100         | Horz     |
| 610.172  | 36.22         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 27.22  | 30           | -2.78  | 100         | Horz     |
| 610.478  | 35.90         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 26.9   | 30           | -3.10  | 100         | Horz     |
| 611.648  | 38.17         | PK       | 2.9                               | 1.9                                 | 18.8                    | -32.6                       | 29.17  | 30           | -0.83  | 100         | Horz     |
| 612.188  | 37.82         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 28.92  | 30           | -1.08  | 100         | Horz     |
| 613.556  | 36.83         | PK       | 2.9                               | 2.2                                 | 18.8                    | -32.6                       | 28.13  | 30           | -1.87  | 100         | Horz     |
| 613.808  | 35.48         | PK       | 2.9                               | 2.3                                 | 18.9                    | -32.6                       | 26.98  | 30           | -3.02  | 100         | Horz     |
| <i>Range: 2 602 - 620MHz VERTICAL</i>  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |
| 608.642  | 33.81         | PK       | 2.9                               | 2.4                                 | 18.6                    | -32.6                       | 25.11  | 30           | -4.89  | 100         | Vert     |
| 609.74   | 34.14         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 25.14  | 30           | -4.86  | 100         | Vert     |
| 609.902  | 34.35         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 25.35  | 30           | -4.65  | 100         | Vert     |
| 610.397  | 34.17         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 25.17  | 30           | -4.83  | 100         | Vert     |
| 611.702  | 34.07         | PK       | 2.9                               | 1.9                                 | 18.8                    | -32.6                       | 25.07  | 30           | -4.93  | 100         | Vert     |
| 612.692  | 34.12         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 25.22  | 30           | -4.78  | 100         | Vert     |
| PK - Peak detector<br>QP - Quasi-Peak detector<br>LnAv - Linear Average detector<br>LgAv - Log Average detector<br>Av - Average detector<br>CAV - CISPR Average detector<br>RMS - RMS detection<br>CRMS - CISPR RMS detection<br>Text File: Low Channel 473MHz.TXT<br>File: Low Channel 473MHz.DAT |               |          |                                   |                                     |                         |                             |        |              |        |             |          |

**PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

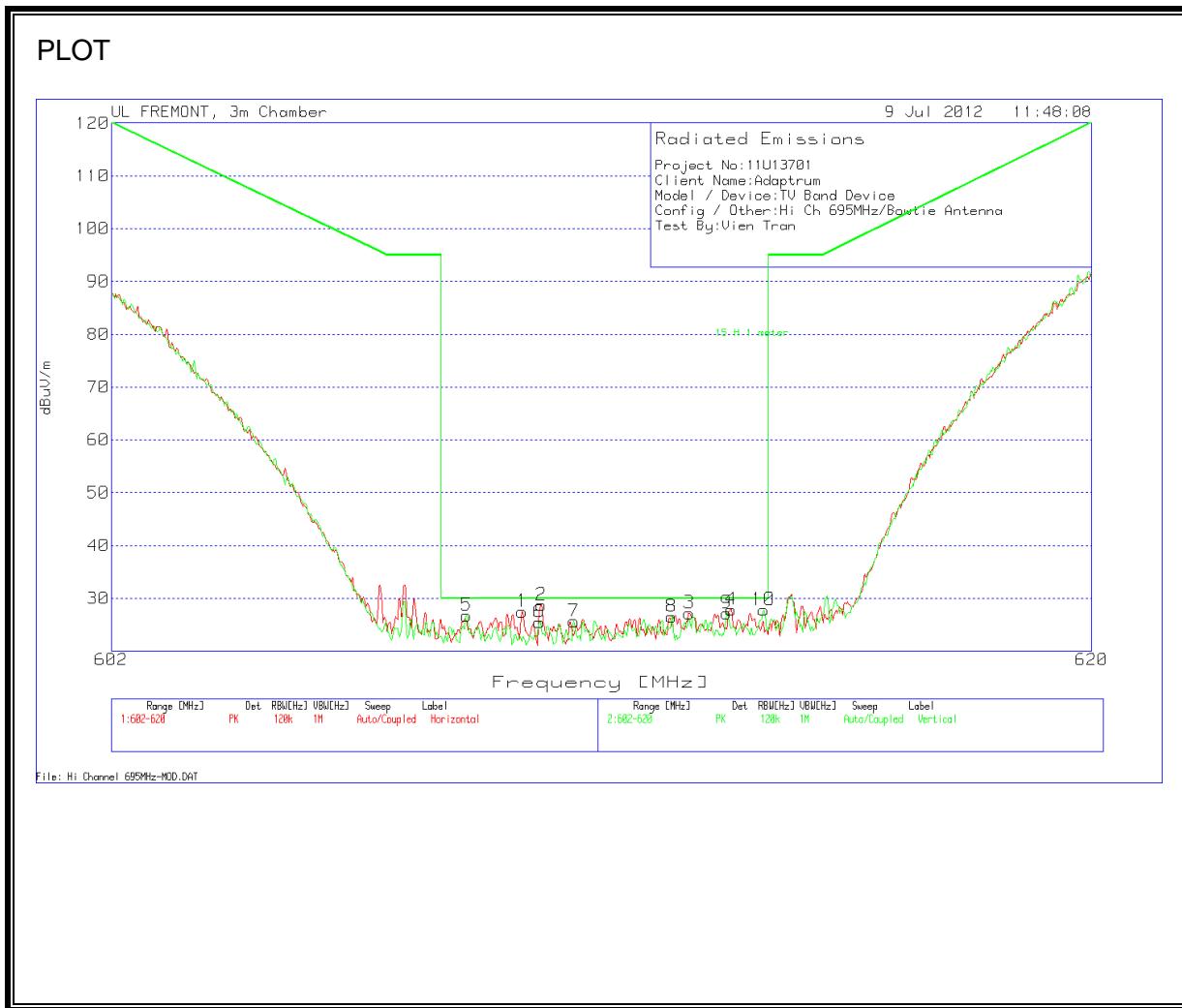


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

**TABULAR LISTING**

| Project No:11U13701                         |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
|---|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|-------------|---------|--------|-------------|----------|
| Client Name:Adaptrum                        |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Model / Device:TV Band Device               |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Config / Other:Mid Ch 587MHz/Bowtie Antenna |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Test By:Vien Tran                           |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| MID CHANNEL, 587MHz                         |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Test Frequency                              | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz.T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | 15 H dBuV/m | 1 meter | Margin | Height [cm] | Polarity |
| <b>Range: 1 602 - 620MHz HORIZONTAL</b>     |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| 610.334                                     | 38.42         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 29.42       | 30      | -0.58  | 100         | Horz     |
| 610.532                                     | 36.42         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 27.42       | 30      | -2.58  | 100         | Horz     |
| 611.864                                     | 36.78         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 27.88       | 30      | -2.12  | 100         | Horz     |
| 612.224                                     | 36.9          | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 28          | 30      | -2     | 100         | Horz     |
| 613.178                                     | 38.07         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 29.27       | 30      | -0.73  | 100         | Horz     |
| <b>Range: 2 602 - 620MHz VERTICAL</b>       |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| 608.507                                     | 34.36         | PK       | 2.9                               | 2.5                                 | 18.6                    | -32.6                       | 25.76       | 30      | -4.24  | 100         | Vert     |
| 609.29                                      | 34.23         | PK       | 2.9                               | 2.1                                 | 18.7                    | -32.6                       | 25.33       | 30      | -4.67  | 100         | Vert     |
| 611.414                                     | 34.95         | PK       | 2.9                               | 1.9                                 | 18.8                    | -32.6                       | 25.95       | 30      | -4.05  | 100         | Vert     |
| 612.008                                     | 34.2          | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 25.3        | 30      | -4.7   | 100         | Vert     |
| PK - Peak detector                          |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| QP - Quasi-Peak detector                    |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| LnAv - Linear Average detector              |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| LgAv - Log Average detector                 |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Av - Average detector                       |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| CAV - CISPR Average detector                |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| RMS - RMS detection                         |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| CRMS - CISPR RMS detection                  |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| Text File: Mid Channel 587MHz.TXT           |               |          |                                   |                                     |                         |                             |             |         |        |             |          |
| File: Mid Channel 587MHz.DAT                |               |          |                                   |                                     |                         |                             |             |         |        |             |          |

**PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (HIGH CHANNEL)**



**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (HIGH CHANNEL)**

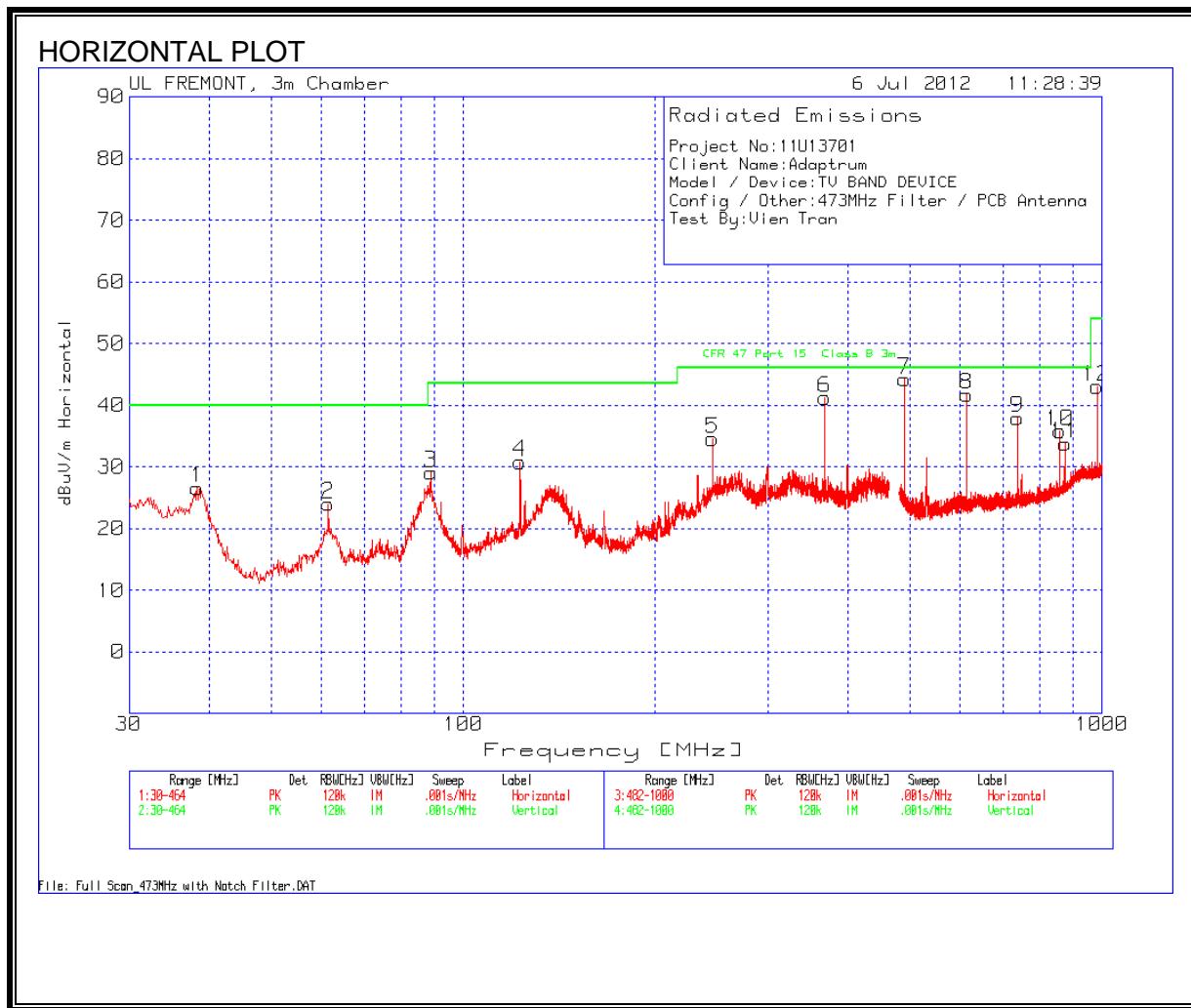
**TABULAR LISTING**

| Project No:11U13701                        |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
|--|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|--------|--------------|--------|-------------|-------------|----------|
| Client Name:Adaptrum                       |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Model / Device:TV Band Device              |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Config / Other:Hi Ch 695MHz/Bowtie Antenna |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Test By:Vien Tran                          |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| HIGH CHANNEL 695MHz                        |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Test Frequency                             | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz.T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | dBuV/m | 15 H 1 meter | Margin | Height [cm] | Height [cm] | Polarity |
| <b>Range: 1 602 - 620MHz HORIZONTAL</b>    |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| 609.479                                    | 36.42         | PK       | 2.9                               | 2.1                                 | 18.7                    | -32.6                       | 27.52  | 30           | -2.48  | 100         | 100         | Horz     |
| 609.83                                     | 37.73         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 28.73  | 30           | -1.27  | 100         | 100         | Horz     |
| 612.548                                    | 36.08         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 27.18  | 30           | -2.82  | 100         | 100         | Horz     |
| 613.322                                    | 36.65         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 27.85  | 30           | -2.15  | 100         | 100         | Horz     |
| <b>Range: 2 602 - 620MHz VERTICAL</b>      |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| 608.462                                    | 35.37         | PK       | 2.9                               | 2.5                                 | 18.6                    | -32.6                       | 26.77  | 30           | -3.23  | 100         | 100         | Vert     |
| 609.794                                    | 34.48         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 25.48  | 30           | -4.52  | 100         | 100         | Vert     |
| 610.424                                    | 34.65         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 25.65  | 30           | -4.35  | 100         | 100         | Vert     |
| 612.224                                    | 35.42         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 26.52  | 30           | -3.48  | 100         | 100         | Vert     |
| 613.232                                    | 35.96         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 27.16  | 30           | -2.84  | 100         | 100         | Vert     |
| 613.916                                    | 36.23         | PK       | 2.9                               | 2.4                                 | 18.9                    | -32.6                       | 27.83  | 30           | -2.17  | 100         | 100         | Vert     |
| PK - Peak detector                         |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| QP - Quasi-Peak detector                   |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| LnAv - Linear Average detector             |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| LgAv - Log Average detector                |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Av - Average detector                      |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| CAV - CISPR Average detector               |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| RMS - RMS detection                        |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| CRMS - CISPR RMS detection                 |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| Text File: Hi Channel 695MHz.TXT           |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |
| File: Hi Channel 695MHz.DAT                |               |          |                                   |                                     |                         |                             |        |              |        |             |             |          |

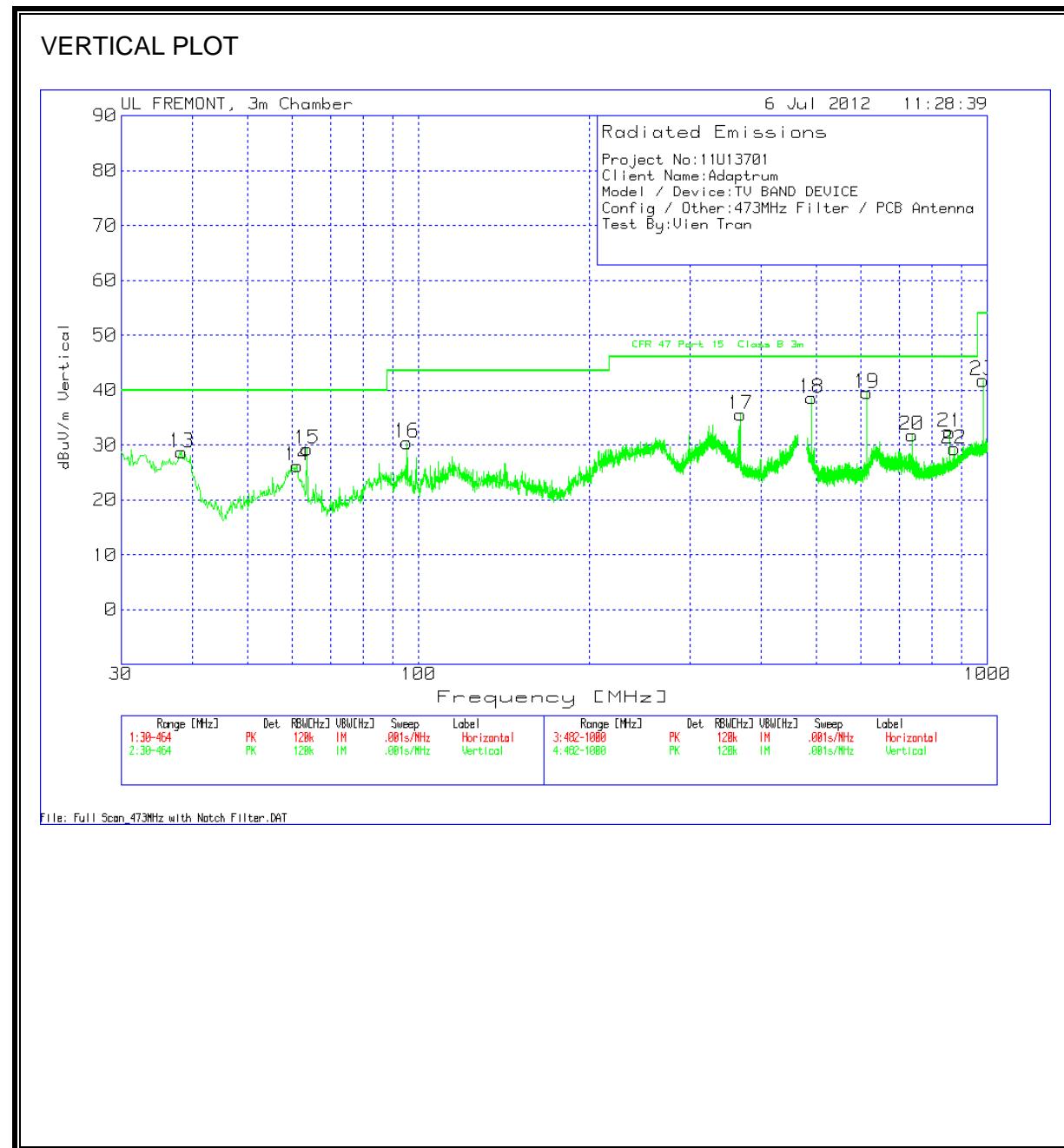
## 7.3. PCB ANTENNA

### 7.3.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:473MHz Filter / PCB Antenna

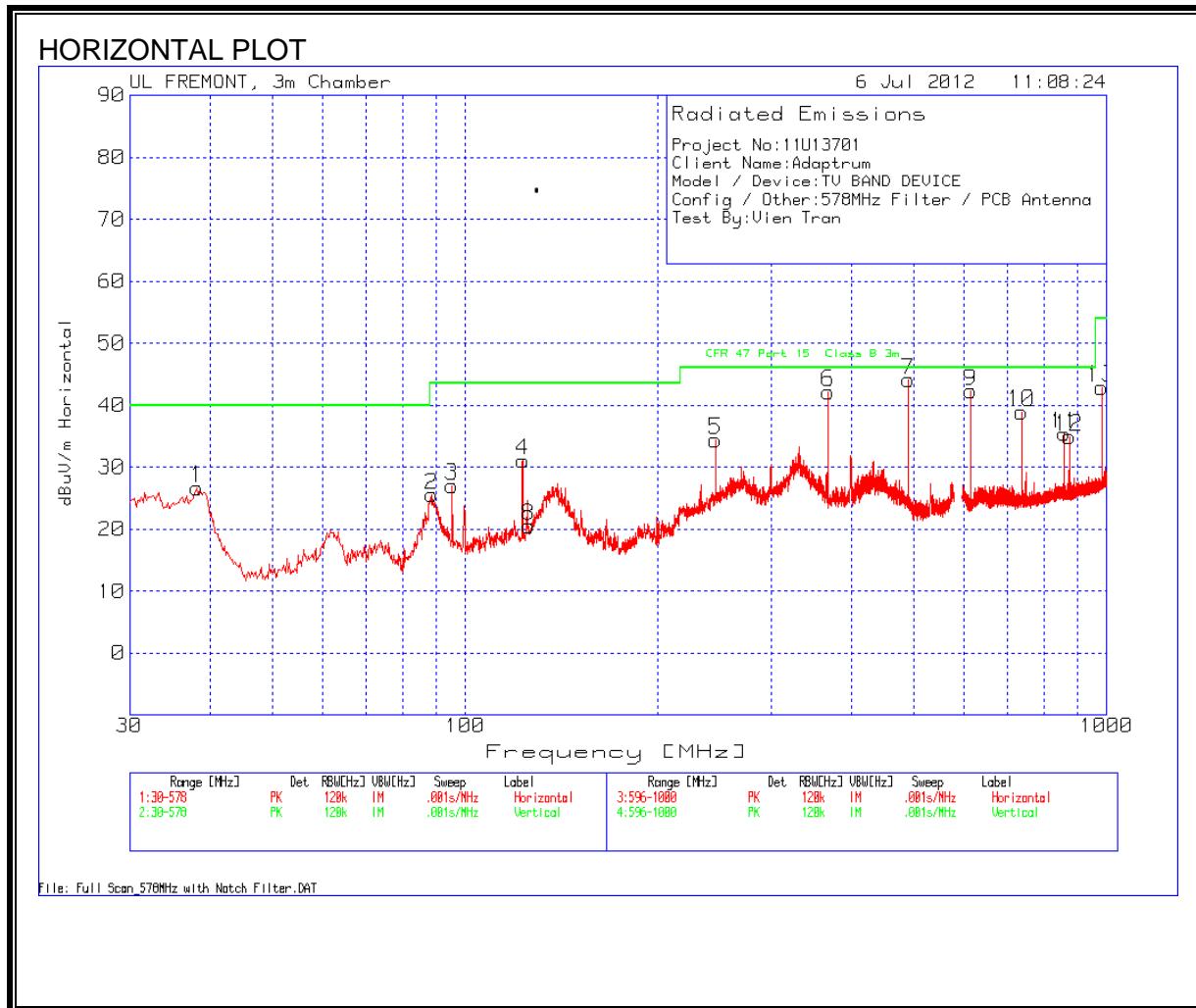
Test By:Vien Tran

LOW CHANNEL, 473 MHz

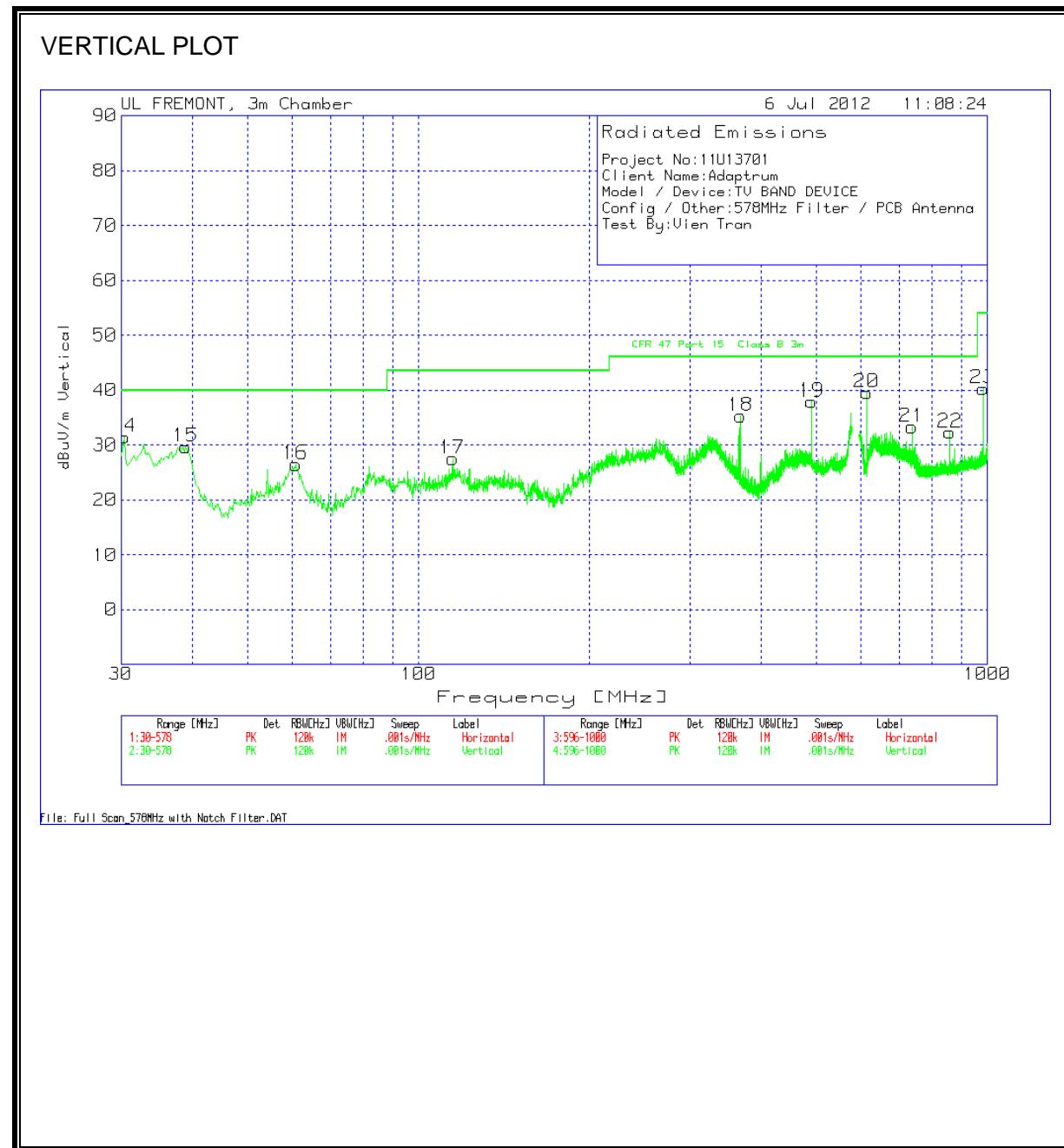
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz Chambr 3m Amplified (dB) | Antenna T185 (dB) | T242 Notch Filter 473MHz.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|---------------------------------|---------------|----------|-------------------------------------|-------------------|-----------------------------------|--------|---------------------------|--------|-------------|----------|
| <b>Horizontal 30 - 464MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 38.3851                         | 39.00         | PK       | -27.40                              | 15.00             | 0.00                              | 26.60  | 40.00                     | -13.40 | 300         | Horz     |
| 61.5163                         | 43.81         | PK       | -27.20                              | 7.40              | 0.00                              | 24.01  | 40.00                     | -15.99 | 100         | Horz     |
| 88.9847                         | 48.46         | PK       | -27.00                              | 7.50              | 0.10                              | 29.06  | 43.50                     | -14.44 | 400         | Horz     |
| 122.8141                        | 43.24         | PK       | -26.50                              | 14.00             | 0.10                              | 30.84  | 43.50                     | -12.66 | 201         | Horz     |
| 245.8434                        | 48.16         | PK       | -25.40                              | 11.70             | 0.10                              | 34.56  | 46.00                     | -11.44 | 100         | Horz     |
| 368.7282                        | 51.51         | PK       | -25.50                              | 15.00             | 0.20                              | 41.21  | 46.00                     | -4.79  | 100         | Horz     |
| <b>Horizontal 482 - 1000MHz</b> |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 491.4903                        | 51.98         | PK       | -25.8                               | 17.8              | 0.2                               | 44.18  | 46                        | -1.82  | 200         | Horz     |
| 614.3471                        | 48.21         | PK       | -25.60                              | 18.90             | 0.20                              | 41.71  | 46.00                     | -4.29  | 100         | Horz     |
| 737.2039                        | 42.11         | PK       | -24.90                              | 20.40             | 0.30                              | 37.91  | 46.00                     | -8.09  | 100         | Horz     |
| 860.2332                        | 37.53         | PK       | -24.30                              | 21.70             | 0.90                              | 35.83  | 46.00                     | -10.17 | 100         | Horz     |
| 875.0726                        | 34.79         | PK       | -24.20                              | 21.90             | 1.30                              | 33.79  | 46.00                     | -12.21 | 100         | Horz     |
| 983.0899                        | 41.01         | PK       | -23.40                              | 23.00             | 2.40                              | 43.01  | 54.00                     | -10.99 | 100         | Horz     |
| <b>Vertical 30 - 464MHz</b>     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 38.3851                         | 41.1          | PK       | -27.40                              | 15.00             | 0.00                              | 28.70  | 40.00                     | -11.30 | 100         | Vert     |
| 61.2272                         | 46.1          | PK       | -27.20                              | 7.30              | 0.00                              | 26.20  | 40.00                     | -13.80 | 100         | Vert     |
| 63.6849                         | 48.87         | PK       | -27.20                              | 7.60              | 0.00                              | 29.27  | 40.00                     | -10.73 | 301         | Vert     |
| 95.4903                         | 48.66         | PK       | -26.90                              | 8.60              | 0.10                              | 30.46  | 43.50                     | -13.04 | 100         | Vert     |
| 368.7282                        | 45.88         | PK       | -25.50                              | 15.00             | 0.20                              | 35.58  | 46.00                     | -10.42 | 100         | Vert     |
| <b>Vertical 482 - 1000MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 491.4903                        | 46.39         | PK       | -25.80                              | 17.80             | 0.20                              | 38.59  | 46.00                     | -7.41  | 201         | Vert     |
| 614.3471                        | 46.00         | PK       | -25.60                              | 18.90             | 0.20                              | 39.50  | 46.00                     | -6.50  | 100         | Vert     |
| 737.3764                        | 36.01         | PK       | -24.90                              | 20.40             | 0.30                              | 31.81  | 46.00                     | -14.19 | 201         | Vert     |
| 860.2332                        | 34.06         | PK       | -24.30                              | 21.70             | 0.90                              | 32.36  | 46.00                     | -13.64 | 201         | Vert     |
| 875.0726                        | 30.33         | PK       | -24.20                              | 21.90             | 1.30                              | 29.33  | 46.00                     | -16.67 | 201         | Vert     |
| 983.0899                        | 39.82         | PK       | -23.40                              | 23.00             | 2.40                              | 41.82  | 54.00                     | -12.18 | 100         | Vert     |
| PK - Peak detector              |               |          |                                     |                   |                                   |        |                           |        |             |          |
| QP - Quasi-Peak detector        |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LnAv - Linear Average detector  |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LgAv - Log Average detector     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| Av - Average detector           |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CAV - CISPR Average detector    |               |          |                                     |                   |                                   |        |                           |        |             |          |
| RMS - RMS detection             |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CRMS - CISPR RMS detection      |               |          |                                     |                   |                                   |        |                           |        |             |          |

### 7.3.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:578MHz Filter / PCB Antenna

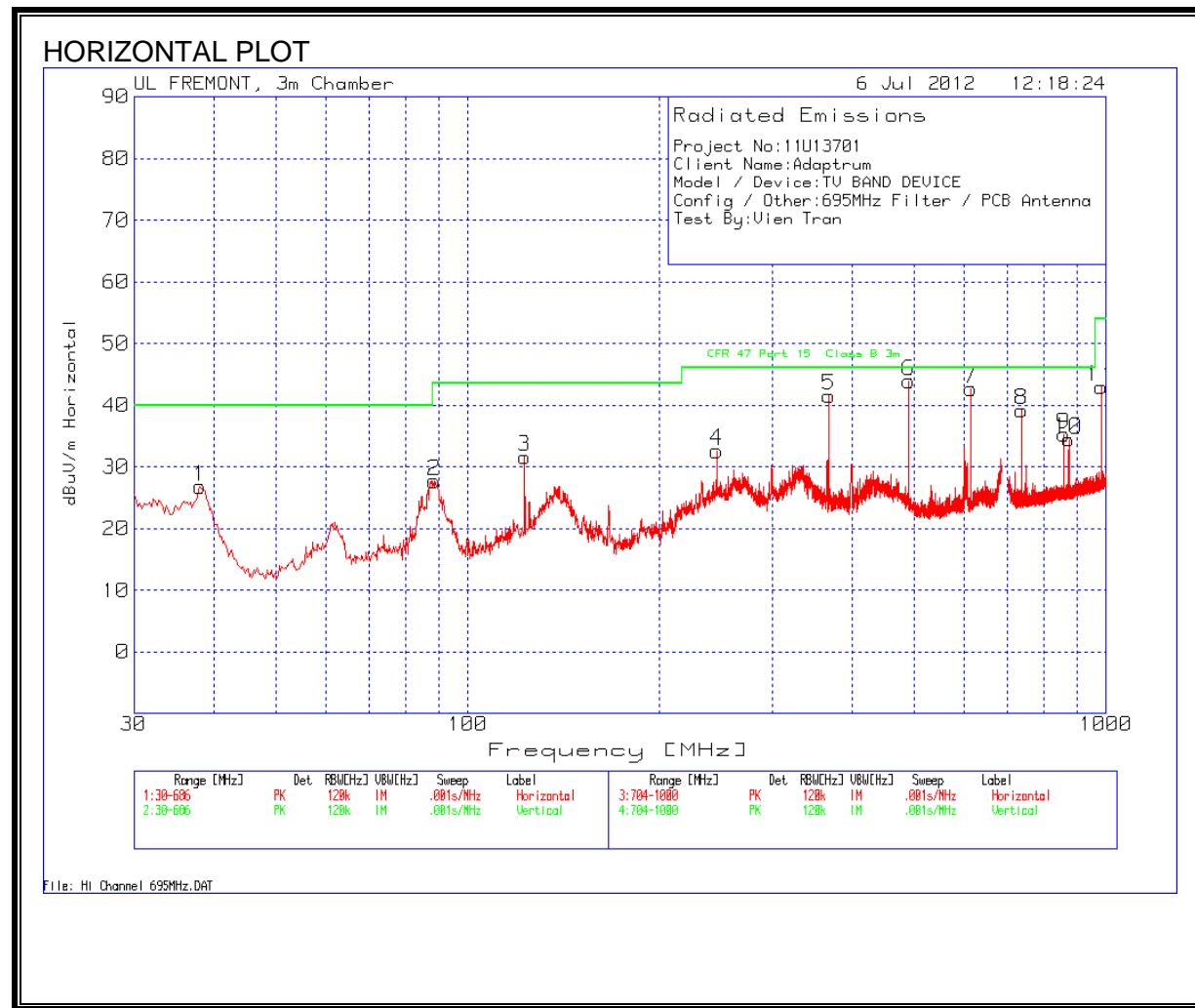
Test By:Vien Tran

MID CHANNEL, 587 MHz

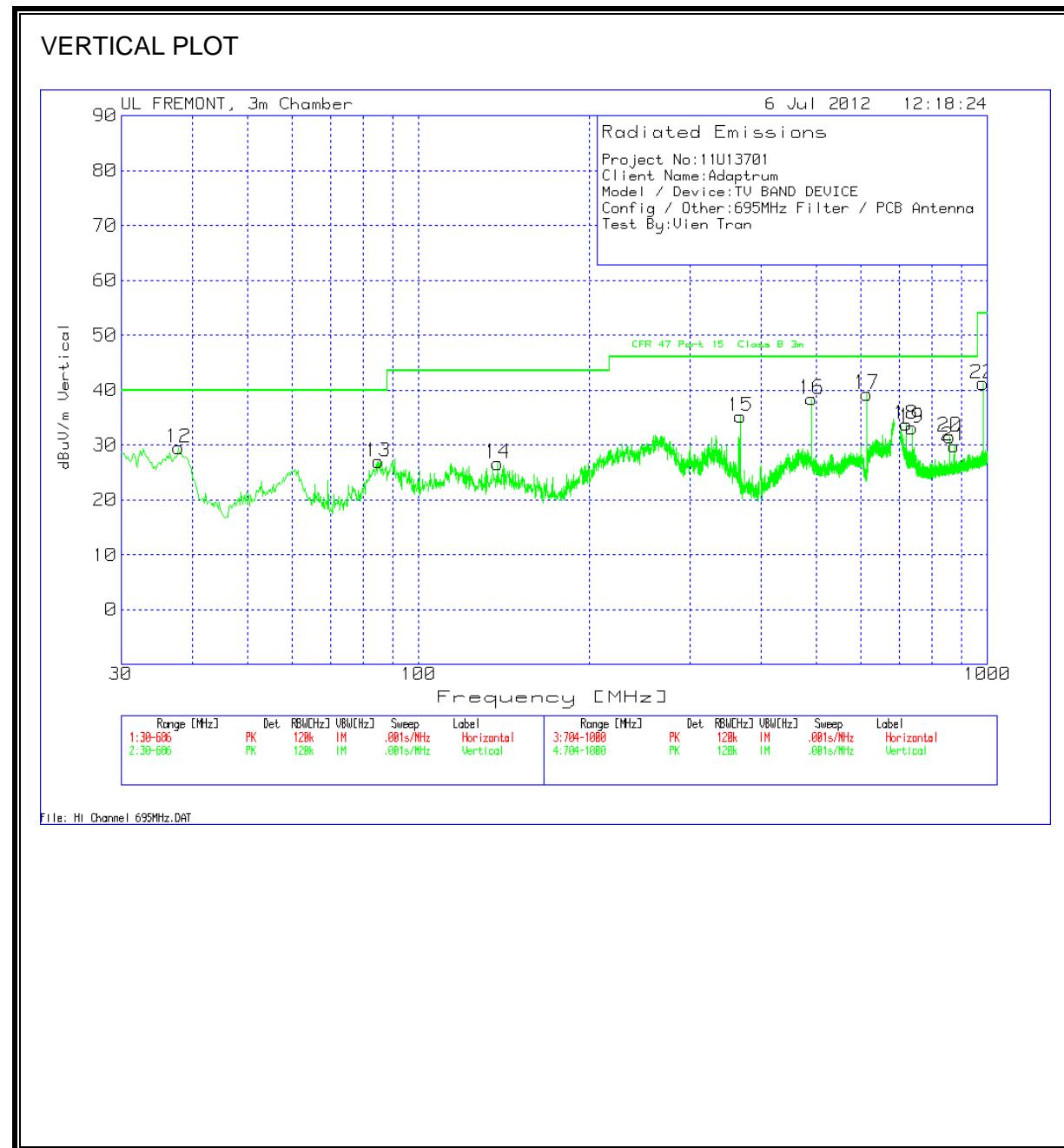
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz Chambr 3m Amplified (dB) | Antenna T185 (dB) | T239 Notch Filter 587MHz.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|---------------------------------|---------------|----------|-------------------------------------|-------------------|-----------------------------------|--------|---------------------------|--------|-------------|----------|
| <b>Horizontal 30 - 578MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 38.2145                         | 38.96         | PK       | -27.40                              | 15.10             | 0.00                              | 26.66  | 40.00                     | -13.34 | 301         | Horz     |
| 88.7795                         | 45.06         | PK       | -27.00                              | 7.50              | 0.00                              | 25.56  | 43.50                     | -17.94 | 400         | Horz     |
| 95.3511                         | 45.26         | PK       | -26.90                              | 8.60              | 0.10                              | 27.06  | 43.50                     | -16.44 | 201         | Horz     |
| 122.9154                        | 43.50         | PK       | -26.50                              | 14.00             | 0.10                              | 31.10  | 43.50                     | -12.40 | 201         | Horz     |
| 245.7682                        | 48.03         | PK       | -25.40                              | 11.70             | 0.10                              | 34.43  | 46.00                     | -11.57 | 99          | Horz     |
| 368.6209                        | 52.54         | PK       | -25.50                              | 15.00             | 0.10                              | 42.14  | 46.00                     | -3.86  | 99          | Horz     |
| 491.6562                        | 51.99         | PK       | -25.80                              | 17.80             | 0.10                              | 44.09  | 46.00                     | -1.91  | 99          | Horz     |
| <b>Horizontal 596 - 1000MHz</b> |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 614.437                         | 48.81         | PK       | -25.60                              | 18.90             | 0.20                              | 42.31  | 46.00                     | -3.69  | 100         | Horz     |
| 737.3058                        | 43.32         | PK       | -24.90                              | 20.40             | 0.10                              | 38.92  | 46.00                     | -7.08  | 100         | Horz     |
| 860.1746                        | 37.84         | PK       | -24.30                              | 21.70             | 0.20                              | 35.44  | 46.00                     | -10.56 | 100         | Horz     |
| 875.1126                        | 37.04         | PK       | -24.20                              | 21.90             | 0.20                              | 34.94  | 46.00                     | -11.06 | 100         | Horz     |
| 983.0433                        | 42.87         | PK       | -23.40                              | 23.00             | 0.40                              | 42.87  | 54.00                     | -11.13 | 100         | Horz     |
| <b>Vertical 30 - 578MHz</b>     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 30.3651                         | 38.06         | PK       | -27.50                              | 20.90             | 0.00                              | 31.46  | 40.00                     | -8.54  | 400         | Vert     |
| 38.9447                         | 42.58         | PK       | -27.40                              | 14.50             | 0.00                              | 29.68  | 40.00                     | -10.32 | 101         | Vert     |
| 60.8501                         | 46.39         | PK       | -27.20                              | 7.30              | 0.00                              | 26.49  | 40.00                     | -13.51 | 101         | Vert     |
| 114.8834                        | 40.83         | PK       | -26.60                              | 13.20             | 0.10                              | 27.53  | 43.50                     | -15.97 | 101         | Vert     |
| 368.6209                        | 45.69         | PK       | -25.50                              | 15.00             | 0.10                              | 35.29  | 46.00                     | -10.71 | 101         | Vert     |
| 491.6562                        | 45.78         | PK       | -25.80                              | 17.80             | 0.10                              | 37.88  | 46.00                     | -8.12  | 201         | Vert     |
| <b>Vertical 596 - 1000MHz</b>   |               |          |                                     |                   |                                   |        |                           |        |             |          |
| 614.437                         | 46.01         | PK       | -25.60                              | 18.90             | 0.20                              | 39.51  | 46.00                     | -6.49  | 101         | Vert     |
| 737.3058                        | 37.71         | PK       | -24.90                              | 20.40             | 0.10                              | 33.31  | 46.00                     | -12.69 | 201         | Vert     |
| 860.1746                        | 34.7          | PK       | -24.30                              | 21.70             | 0.20                              | 32.30  | 46.00                     | -13.70 | 201         | Vert     |
| 983.0433                        | 40.25         | PK       | -23.40                              | 23.00             | 0.40                              | 40.25  | 54.00                     | -13.75 | 101         | Vert     |
| PK - Peak detector              |               |          |                                     |                   |                                   |        |                           |        |             |          |
| QP - Quasi-Peak detector        |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LnAv - Linear Average detector  |               |          |                                     |                   |                                   |        |                           |        |             |          |
| LgAv - Log Average detector     |               |          |                                     |                   |                                   |        |                           |        |             |          |
| Av - Average detector           |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CAV - CISPR Average detector    |               |          |                                     |                   |                                   |        |                           |        |             |          |
| RMS - RMS detection             |               |          |                                     |                   |                                   |        |                           |        |             |          |
| CRMS - CISPR RMS detection      |               |          |                                     |                   |                                   |        |                           |        |             |          |

### 7.3.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)

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



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



### HORIZONTAL & VERTICAL DATA

Project No:11U13701

Client Name:Adaptrum

Model / Device:TV BAND DEVICE

Config / Other:695MHz Filter / PCB Antenna

Test By:Vien Tran

HIGH CHANNEL, 695 MHz

| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz<br>Chambr 3m<br>Amplified<br>(dB) | Antenna<br>T185 (dB) | T238 Notch<br>Filter<br>695MHz.TXT<br>(dB) | CFR 47<br>Part 15<br>dBuV/m | Class B 3m | Margin | Height<br>[cm] | Polarity |
|---------------------------------|---------------|----------|--|----------------------|--|-----------------------------|------------|--------|----------------|----------|
| <b>Horizontal 30 - 686MHz</b>   |               |          |  |                      |  |                             |            |        |                |          |
| 38.0853                         | 39.02         | PK       | -27.40                                       | 15.20                | 0.00                                       | 26.82                       | 40.00      | -13.18 | 301            | Horz     |
| 88.5636                         | 47.22         | PK       | -27.00                                       | 7.50                 | 0.00                                       | 27.72                       | 43.50      | -15.78 | 201            | Horz     |
| 122.8714                        | 44.00         | PK       | -26.50                                       | 14.00                | 0.10                                       | 31.60                       | 43.50      | -11.90 | 201            | Horz     |
| 245.6802                        | 46.23         | PK       | -25.40                                       | 11.70                | 0.10                                       | 32.63                       | 46.00      | -13.37 | 100            | Horz     |
| 368.7075                        | 51.92         | PK       | -25.50                                       | 15.00                | 0.10                                       | 41.52                       | 46.00      | -4.48  | 100            | Horz     |
| 491.7348                        | 51.82         | PK       | -25.80                                       | 17.80                | 0.10                                       | 43.92                       | 46.00      | -2.08  | 100            | Horz     |
| 614.5436                        | 49.18         | PK       | -25.60                                       | 18.90                | 0.20                                       | 42.68                       | 46.00      | -3.32  | 100            | Horz     |
| <b>Horizontal 704 - 1000MHz</b> |               |          |  |                      |  |                             |            |        |                |          |
| 737.2285                        | 43.48         | PK       | -24.90                                       | 20.40                | 0.20                                       | 39.18                       | 46.00      | -6.82  | 100            | Horz     |
| 860.1839                        | 37.77         | PK       | -24.30                                       | 21.70                | 0.10                                       | 35.27                       | 46.00      | -10.73 | 100            | Horz     |
| 874.974                         | 36.55         | PK       | -24.20                                       | 21.90                | 0.20                                       | 34.45                       | 46.00      | -11.55 | 100            | Horz     |
| 983.0406                        | 43.07         | PK       | -23.40                                       | 23.00                | 0.30                                       | 42.97                       | 54.00      | -11.03 | 100            | Horz     |
|                                 |               |          |  |                      |  |                             |            |        |                |          |
| Test Frequency                  | Meter Reading | Detector | 25MHz-1GHz<br>Chambr 3m<br>Amplified<br>(dB) | Antenna<br>T185 (dB) | T238 Notch<br>Filter<br>695MHz.TXT<br>(dB) | CFR 47<br>Part 15<br>dBuV/m | Class B 3m | Margin | Height<br>[cm] | Polarity |
| <b>Vertical 30 - 686MHz</b>     |               |          |  |                      |  |                             |            |        |                |          |
| 37.8668                         | 41.53         | PK       | -27.40                                       | 15.40                | 0.00                                       | 29.53                       | 40.00      | -10.47 | 100            | Vert     |
| 85.0673                         | 46.6          | PK       | -27.00                                       | 7.40                 | 0.00                                       | 27.00                       | 40.00      | -13.00 | 100            | Vert     |
| 137.9494                        | 39.79         | PK       | -26.50                                       | 13.30                | 0.10                                       | 26.69                       | 43.50      | -16.81 | 100            | Vert     |
| 368.7075                        | 45.62         | PK       | -25.50                                       | 15.00                | 0.10                                       | 35.22                       | 46.00      | -10.78 | 100            | Vert     |
| 491.7348                        | 46.31         | PK       | -25.80                                       | 17.80                | 0.10                                       | 38.41                       | 46.00      | -7.59  | 201            | Vert     |
| 614.5436                        | 45.79         | PK       | -25.60                                       | 18.90                | 0.20                                       | 39.29                       | 46.00      | -6.71  | 100            | Vert     |
| <b>Vertical 704 - 1000MHz</b>   |               |          |  |                      |  |                             |            |        |                |          |
| 719.8748                        | 38.19         | PK       | -25.10                                       | 20.40                | 0.30                                       | 33.79                       | 46.00      | -12.21 | 100            | Vert     |
| 737.2285                        | 37.46         | PK       | -24.90                                       | 20.40                | 0.20                                       | 33.16                       | 46.00      | -12.84 | 200            | Vert     |
| 860.1839                        | 34.06         | PK       | -24.30                                       | 21.70                | 0.10                                       | 31.56                       | 46.00      | -14.44 | 200            | Vert     |
| 874.974                         | 31.9          | PK       | -24.20                                       | 21.90                | 0.20                                       | 29.80                       | 46.00      | -16.20 | 200            | Vert     |
| 983.0406                        | 41.32         | PK       | -23.40                                       | 23.00                | 0.30                                       | 41.22                       | 54.00      | -12.78 | 100            | Vert     |
|                                 |               |          |  |                      |  |                             |            |        |                |          |
| PK - Peak detector              |               |          |  |                      |  |                             |            |        |                |          |
| QP - Quasi-Peak detector        |               |          |  |                      |  |                             |            |        |                |          |
| LnAv - Linear Average detector  |               |          |  |                      |  |                             |            |        |                |          |
| LgAv - Log Average detector     |               |          |  |                      |  |                             |            |        |                |          |
| Av - Average detector           |               |          |  |                      |  |                             |            |        |                |          |
| CAV - CISPR Average detector    |               |          |  |                      |  |                             |            |        |                |          |
| RMS - RMS detection             |               |          |  |                      |  |                             |            |        |                |          |
| CRMS - CISPR RMS detection      |               |          |  |                      |  |                             |            |        |                |          |

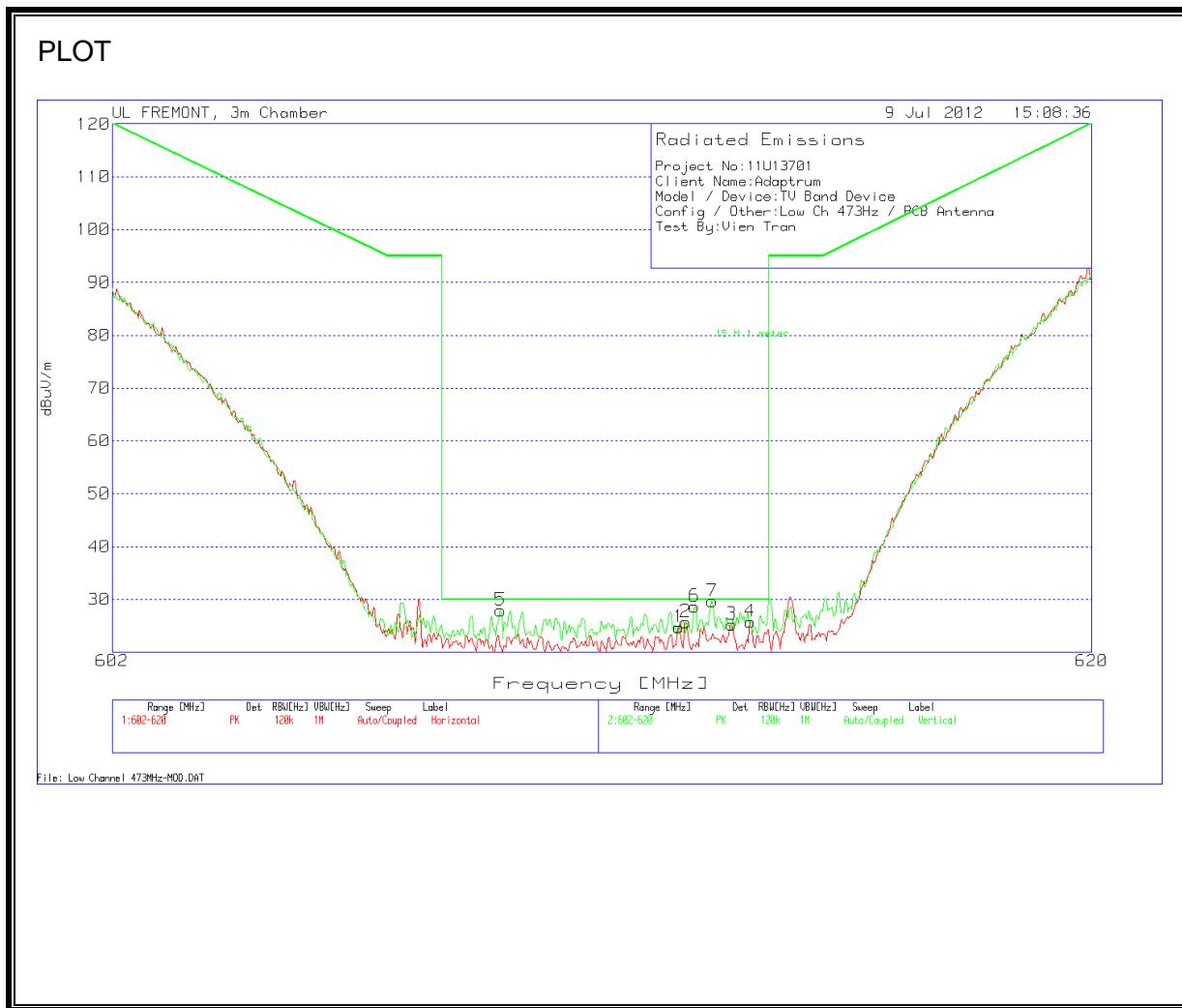
### 7.3.4. RADIATED EMISSIONS ABOVE 1 GHz

#### SPURIOUS AND HARMONIC EMISSIONS ABOVE 1 GHz (LOW, MID AND HIGH CHANNELS)

| High Frequency Measurement<br>Compliance Certification Services, Fremont 3m Chamber |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---------------------|-----------------------|--------------------|------------------------|----------|--------------------|--------------|------------|-------------------------------------|---------------|------------------|-------------------|-----------------------------------|---------------|---|--|--|--|--|--|--|--|--|--|--|--|--|
| Test Equipment:   |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Horn 1-18GHz  |                     | Pre-amplifier 1-26GHz |                    | Pre-amplifier 26-40GHz |          | Horn > 18GHz       |              | Limit      |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| T60; S/N: 2238 @3m  |                     | T34 HP 8449B          |                    |                        |          |                    |              | FCC 15.209 |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Hi Frequency Cables   |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 3' cable 22807700   |                     |                       | 12' cable 22807600 |                        |          | 20' cable 22807500 |              |            | HPF                                 |               | Reject Filter    |                   | Peak Measurements<br>RBW=VBW=1MHz |               | Average Measurements<br>RBW=1MHz ; VBW=10Hz |  |  |  |  |  |  |  |  |  |  |  |  |
| 3' cable 22807700   |                     |                       | 12' cable 22807600 |                        |          | 20' cable 22807500 |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| f<br>GHz  | Dist<br>(m)         | Read Pk<br>dBuV       | Read Avg.<br>dBuV  | AF<br>dB/m             | CL<br>dB | Amp<br>dB          | D Corr<br>dB | Fltr<br>dB | Peak<br>dBuV/m                      | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB                      | Avg Mar<br>dB | Notes<br>(V/H)                              |  |  |  |  |  |  |  |  |  |  |  |  |
| LOW CHANNEL, 473MHz   |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.351   | 3.0                 | 53.3                  | 50.6               | 26.0                   | 3.2      | -37.3              | 0.0          | 0.0        | 45.2                                | 42.5          | 74               | 54                | -28.8                             | -11.5         | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                 | 55.0                  | 52.5               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 48.4                                | 45.9          | 74               | 54                | -25.6                             | -8.1          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 51.6                  | 48.1               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 46.4                                | 42.9          | 74               | 54                | -27.6                             | -11.1         | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.173   | 3.0                 | 51.6                  | 49.2               | 28.3                   | 4.2      | -36.1              | 0.0          | 0.0        | 48.1                                | 45.6          | 74               | 54                | -25.9                             | -8.4          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.080   | 3.0                 | 45.3                  | 41.6               | 32.6                   | 6.3      | -34.3              | 0.0          | 0.0        | 49.9                                | 46.2          | 74               | 54                | -24.1                             | -7.8          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.351   | 3.0                 | 56.2                  | 55.0               | 26.0                   | 3.2      | -37.3              | 0.0          | 0.0        | 48.1                                | 46.9          | 74               | 54                | -25.9                             | -7.1          | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.597   | 3.0                 | 54.1                  | 51.9               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 47.5                                | 45.3          | 74               | 54                | -26.5                             | -8.7          | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 52.8                  | 49.8               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 47.6                                | 44.6          | 74               | 54                | -26.4                             | -9.4          | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.173   | 3.0                 | 47.3                  | 41.0               | 28.3                   | 4.2      | -36.1              | 0.0          | 0.0        | 43.7                                | 37.4          | 74               | 54                | -30.3                             | -16.6         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.080   | 3.0                 | 43.3                  | 37.6               | 32.6                   | 6.3      | -34.3              | 0.0          | 0.0        | 47.9                                | 42.2          | 74               | 54                | -26.1                             | -11.8         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| MID CHANNEL, 587MHz   |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                 | 54.8                  | 52.8               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 48.2                                | 46.2          | 74               | 54                | -25.8                             | -7.8          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 52.0                  | 48.8               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 46.8                                | 43.6          | 74               | 54                | -27.2                             | -10.4         | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.155   | 3.0                 | 52.5                  | 49.6               | 28.2                   | 4.2      | -36.1              | 0.0          | 0.0        | 48.9                                | 45.9          | 74               | 54                | -25.1                             | -8.1          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                 | 53.6                  | 49.8               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 47.0                                | 43.2          | 74               | 54                | -27.0                             | -10.8         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 47.9                  | 44.3               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 42.7                                | 39.1          | 74               | 54                | -31.3                             | -14.9         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.155   | 3.0                 | 49.8                  | 45.6               | 28.2                   | 4.2      | -36.1              | 0.0          | 0.0        | 46.2                                | 42.0          | 74               | 54                | -27.8                             | -12.0         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| HIGH CHANNEL, 695MHz  |                     |                       |                    |                        |          |                    |              |            |                                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                 | 54.3                  | 52.1               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 47.7                                | 45.5          | 74               | 54                | -26.3                             | -8.5          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 52.3                  | 47.8               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 47.1                                | 42.6          | 74               | 54                | -26.9                             | -11.4         | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.226   | 3.0                 | 53.9                  | 50.7               | 28.3                   | 4.3      | -36.0              | 0.0          | 0.0        | 50.6                                | 47.4          | 74               | 54                | -23.4                             | -6.6          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.533   | 3.0                 | 44.6                  | 38.8               | 32.9                   | 6.6      | -34.2              | 0.0          | 0.0        | 49.9                                | 44.1          | 74               | 54                | -24.1                             | -9.9          | V   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.595   | 3.0                 | 52.1                  | 49.5               | 26.8                   | 3.5      | -36.9              | 0.0          | 0.0        | 45.5                                | 42.9          | 74               | 54                | -28.5                             | -11.1         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.843   | 3.0                 | 50.8                  | 46.2               | 27.5                   | 3.8      | -36.5              | 0.0          | 0.0        | 45.6                                | 41.0          | 74               | 54                | -28.4                             | -13.0         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.226   | 3.0                 | 51.8                  | 49.2               | 28.3                   | 4.3      | -36.0              | 0.0          | 0.0        | 48.5                                | 45.9          | 74               | 54                | -25.5                             | -8.1          | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.533   | 3.0                 | 42.3                  | 37.0               | 32.9                   | 6.6      | -34.2              | 0.0          | 0.0        | 47.6                                | 42.3          | 74               | 54                | -26.4                             | -11.7         | H   |  |  |  |  |  |  |  |  |  |  |  |  |
| f Measurement Frequency   |                     |                       |                    |                        |          |                    |              |            | Amp Preamp Gain                     |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Dist  | Distance to Antenna |                       |                    |                        |          |                    |              |            | D Corr Distance Correct to 3 meters |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Read  | Analyzer Reading    |                       |                    |                        |          |                    |              |            | Avg Average Field Strength @ 3 m    |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| AF  | Antenna Factor      |                       |                    |                        |          |                    |              |            | Peak Calculated Peak Field Strength |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| CL  | Cable Loss          |                       |                    |                        |          |                    |              |            | HPF High Pass Filter                |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Avg Lim Average Field Strength Limit  |                     |                       |                    |                        |          |                    |              |            | Pk Lim Peak Field Strength Limit    |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Avg Mar Margin vs. Average Limit  |                     |                       |                    |                        |          |                    |              |            | Pk Mar Margin vs. Peak Limit        |               |                  |                   |                                   |               |   |  |  |  |  |  |  |  |  |  |  |  |  |

### 7.3.5. RADIATED EMISSIONS 602 TO 620 MHz

#### PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)

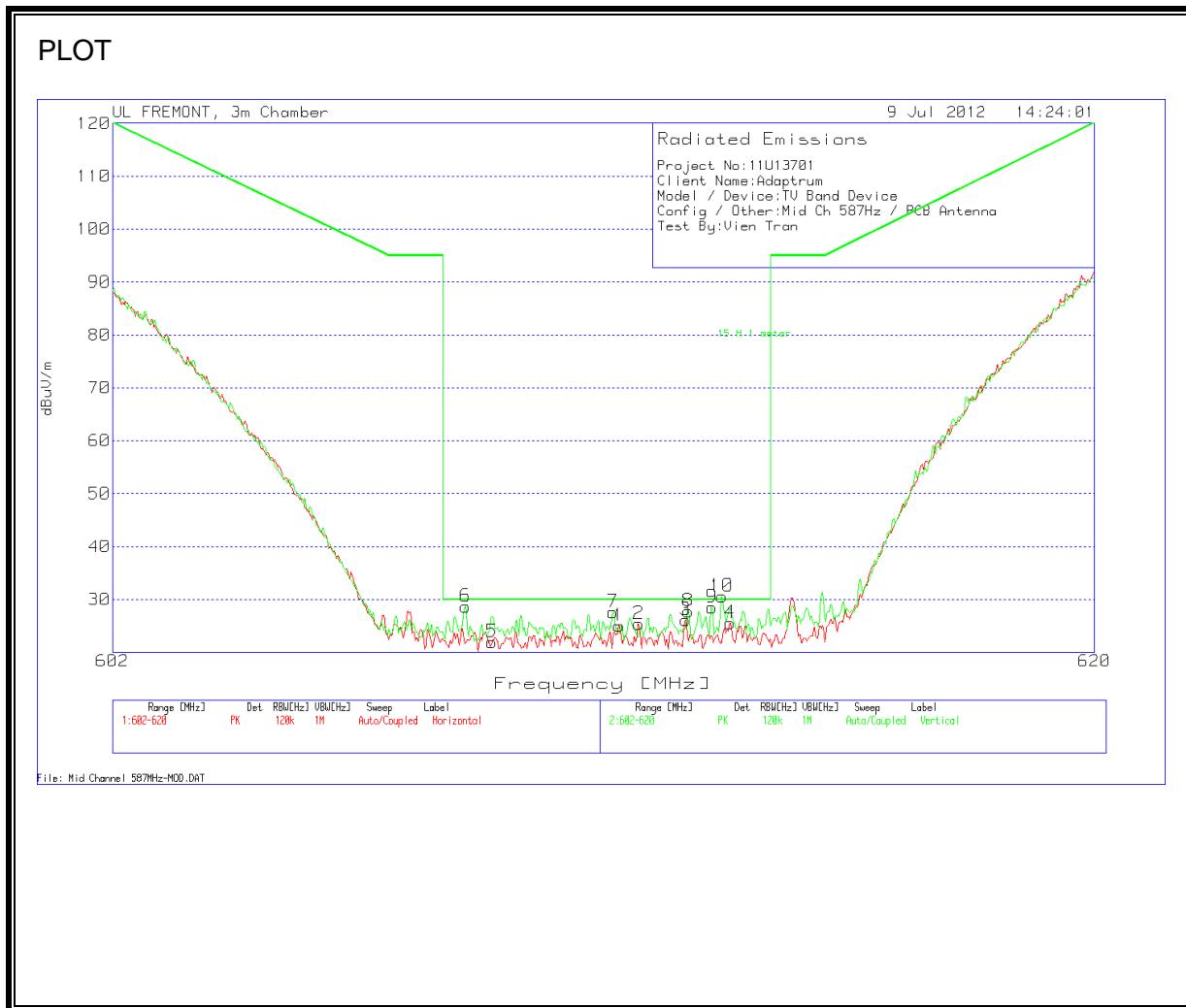


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)**

**TABULAR LISTING**

| Project No:11U13701                       |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
|---|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|-------------|---------|--------|-------------|----------|--|
| Client Name:Adaptrum                      |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Model / Device:TV Band Device             |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Config / Other:Low Ch 473Hz / PCB Antenna |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Test By:Vien Tran                         |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| LOW CHANNEL 473MHz                        |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Test Frequency                            | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz.T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | 15 H dBuV/m | 1 meter | Margin | Height [cm] | Polarity |  |
| <i>Range: 1_ 602 - 620MHz_HORIZONTAL</i>  |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| 612.35                                    | 33.63         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 24.73       | 30      | -5.27  | 100         | Horz     |  |
| 612.476                                   | 34.58         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 25.68       | 30      | -4.32  | 100         | Horz     |  |
| 613.322                                   | 34.07         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 25.27       | 30      | -4.73  | 100         | Horz     |  |
| 613.664                                   | 34.37         | PK       | 2.9                               | 2.3                                 | 18.8                    | -32.6                       | 25.77       | 30      | -4.23  | 100         | Horz     |  |
| <i>Range: 2_ 602 - 620MHz_VERTICAL</i>    |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| 609.074                                   | 36.74         | PK       | 2.9                               | 2.2                                 | 18.7                    | -32.6                       | 27.94       | 30      | -2.06  | 100         | Vert     |  |
| 612.638                                   | 37.55         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 28.65       | 30      | -1.35  | 100         | Vert     |  |
| 612.962                                   | 38.46         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 29.66       | 30      | -0.34  | 100         | Vert     |  |
| PK - Peak detector                        |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| QP - Quasi-Peak detector                  |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| LnAv - Linear Average detector            |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| LgAv - Log Average detector               |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Av - Average detector                     |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| CAV - CISPR Average detector              |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| RMS - RMS detection                       |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| CRMS - CISPR RMS detection                |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| Text File: Low Channel 473MHz.TXT         |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |
| File: Low Channel 473MHz.DAT              |               |          |                                   |                                     |                         |                             |             |         |        |             |          |  |

**PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

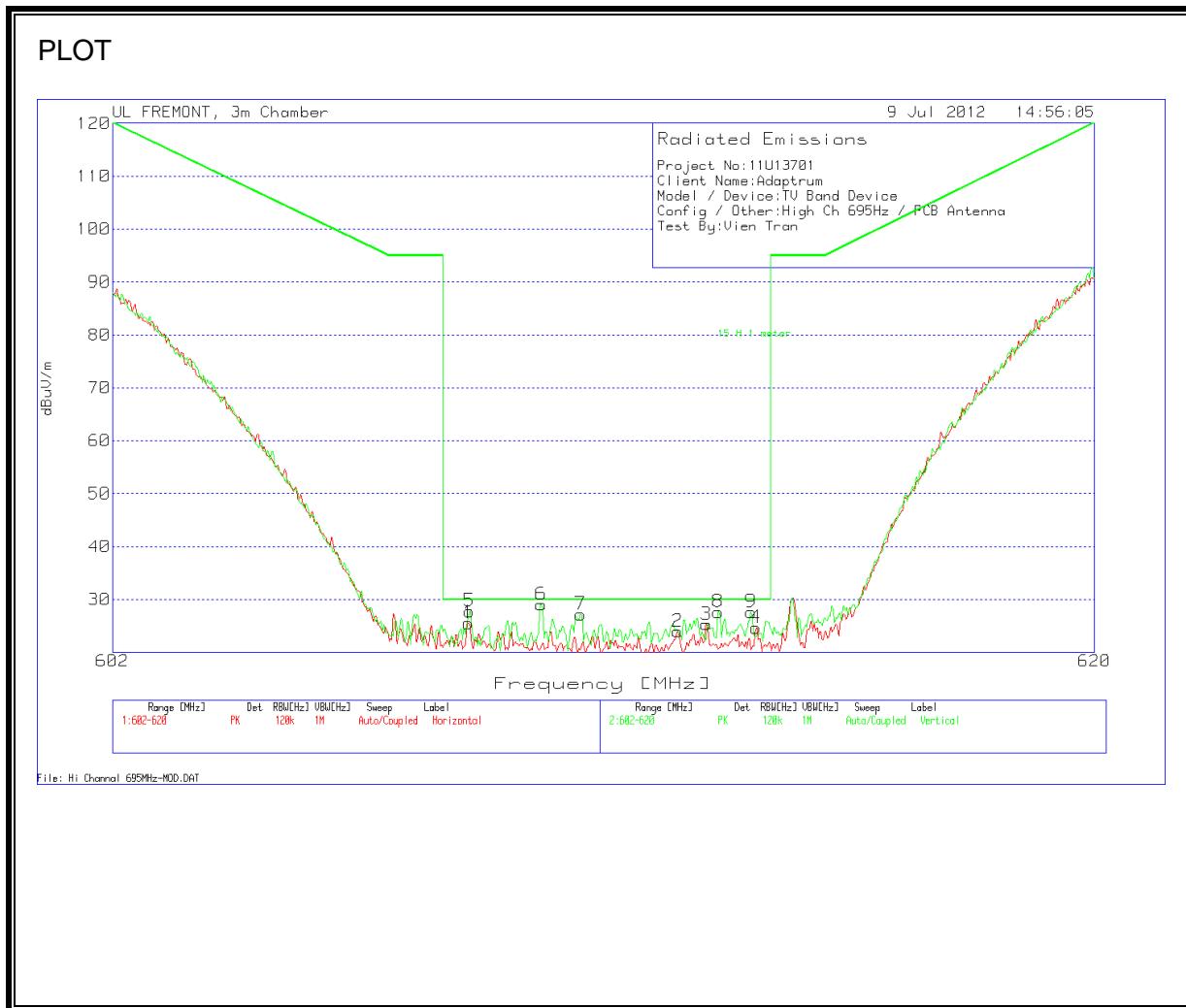


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

**TABULAR LISTING**

| Project No:11U13701                       |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
|---|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|--------|--------------|--------|-------------|----------|--|
| Client Name:Adaptrum                      |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Model / Device:TV Band Device             |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Config / Other:Mid Ch 587Hz / PCB Antenna |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Test By:Vien Tran                         |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| MID CHANNEL 587MHz                        |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Test Frequency                            | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz.T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | dBuV/m | 15 H 1 meter | Margin | Height [cm] | Polarity |  |
| <i>Range: 1 602 - 620MHz HORIZONTAL</i>   |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| 611.216                                   | 34.13         | PK       | 2.9                               | 1.9                                 | 18.7                    | -32.6                       | 25.03  | 30           | -4.97  | 100         | Horz     |  |
| 611.576                                   | 34.44         | PK       | 2.9                               | 1.9                                 | 18.8                    | -32.6                       | 25.44  | 30           | -4.56  | 100         | Horz     |  |
| 612.44                                    | 35.09         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 26.19  | 30           | -3.81  | 100         | Horz     |  |
| 613.259                                   | 34.39         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 25.59  | 30           | -4.41  | 100         | Horz     |  |
| 608.894                                   | 30.73         | PK       | 2.9                               | 2.3                                 | 18.7                    | -32.6                       | 22.03  | 30           | -7.97  | 100         | Horz     |  |
| <i>Range: 2 602 - 620MHz VERTICAL</i>     |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| 608.408                                   | 37.3          | PK       | 2.9                               | 2.5                                 | 18.6                    | -32.6                       | 28.7   | 30           | -1.3   | 100         | Vert     |  |
| 611.108                                   | 36.73         | PK       | 2.9                               | 1.9                                 | 18.7                    | -32.6                       | 27.63  | 30           | -2.37  | 100         | Vert     |  |
| 612.485                                   | 36.69         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 27.79  | 30           | -2.21  | 100         | Vert     |  |
| 612.926                                   | 37.31         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 28.51  | 30           | -1.49  | 100         | Vert     |  |
| 613.106                                   | 39.43         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 30.63  | 30           | 0.63   | 100         | Vert     |  |
| 613.106                                   | 31.00         | QP       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 22.2   | 30           | -7.8   | 100         | Vert     |  |
| PK - Peak detector                        |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| QP - Quasi-Peak detector                  |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| LnAv - Linear Average detector            |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| LgAv - Log Average detector               |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Av - Average detector                     |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| CAV - CISPR Average detector              |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| RMS - RMS detection                       |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| CRMS - CISPR RMS detection                |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |

**PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (HIGH CHANNEL)**



**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (HIGH CHANNEL)**

**TABULAR LISTING**

| Project No:11U13701                        |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
|--|---------------|----------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------|--------|--------------|--------|-------------|----------|--|
| Client Name:Adaptrum                       |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Model / Device:TV Band Device              |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Config / Other:High Ch 695Hz / PCB Antenna |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Test By:Vien Tran                          |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| HIGH CHANNEL 695MHz                        |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Test Frequency                             | Meter Reading | Detector | 25MHz-1GHz Chamber 3m NonAmp (dB) | T240 Band Pass Filter 611MHz.T (dB) | T185 Sunol JB1.TXT (dB) | T173 Sonoma Preamp.TXT (dB) | dBuV/m | 15 H 1 meter | Margin | Height [cm] | Polarity |  |
| <i>Range: 1_ 602 - 620MHz_HORIZONTAL</i>   |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| 608.462                                    | 34.13         | PK       | 2.9                               | 2.5                                 | 18.6                    | -32.6                       | 25.53  | 30           | -4.47  | 100         | Horz     |  |
| 612.296                                    | 32.87         | PK       | 2.9                               | 2.0                                 | 18.8                    | -32.6                       | 23.97  | 30           | -6.03  | 100         | Horz     |  |
| 612.818                                    | 34.11         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 25.31  | 30           | -4.69  | 100         | Horz     |  |
| 613.736                                    | 33.29         | PK       | 2.9                               | 2.3                                 | 18.8                    | -32.6                       | 24.69  | 30           | -5.31  | 100         | Horz     |  |
| <i>Range: 2_ 602 - 620MHz_VERTICAL</i>     |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| 608.48                                     | 36.36         | PK       | 2.9                               | 2.5                                 | 18.6                    | -32.6                       | 27.76  | 30           | -2.24  | 100         | Vert     |  |
| 609.794                                    | 38.05         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 29.05  | 30           | -0.95  | 100         | Vert     |  |
| 610.514                                    | 36.18         | PK       | 2.9                               | 2.0                                 | 18.7                    | -32.6                       | 27.18  | 30           | -2.82  | 100         | Vert     |  |
| 613.034                                    | 36.45         | PK       | 2.9                               | 2.1                                 | 18.8                    | -32.6                       | 27.65  | 30           | -2.35  | 100         | Vert     |  |
| 613.646                                    | 36.25         | PK       | 2.9                               | 2.3                                 | 18.8                    | -32.6                       | 27.65  | 30           | -2.35  | 100         | Vert     |  |
| PK - Peak detector                         |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| QP - Quasi-Peak detector                   |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| LnAv - Linear Average detector             |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| LgAv - Log Average detector                |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Av - Average detector                      |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| CAV - CISPR Average detector               |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| RMS - RMS detection                        |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| CRMS - CISPR RMS detection                 |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| Text File: Hi Channel 695MHz.TXT           |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |
| File: Hi Channal 695MHz.DAT                |               |          |                                   |                                     |                         |                             |        |              |        |             |          |  |