



**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**

*Prepared for*

**ADAPTRUM**

**25 E. TRIMBLE ROAD**

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*Prepared by*

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**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Issue Date	Revisions	Revised By
--	7/31/2012	Initial Issue	M. Heckrotte

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## 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:

Tested By:



MICHAEL HECKROTTE  
DIRECTOR OF ENGINEERING  
UL CCS

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:

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

### 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

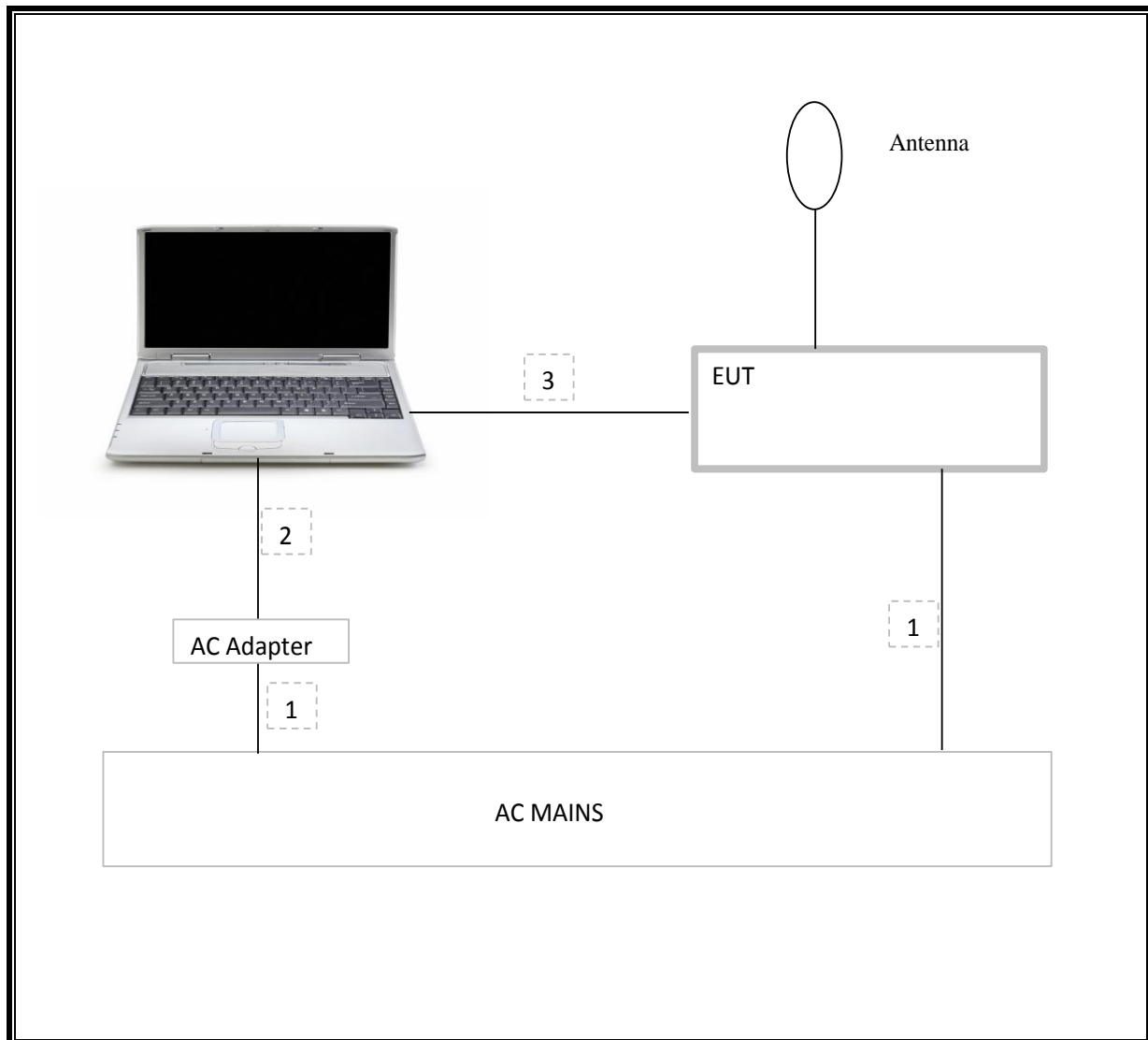
### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identic 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 dBuV/meter/120 kHz
602–607	$120-5[F(\text{MHz})-602]$
607–608	95
608–614	30
614–615	95
615–620	$120-5[620-F(\text{MHz})]$

## **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**

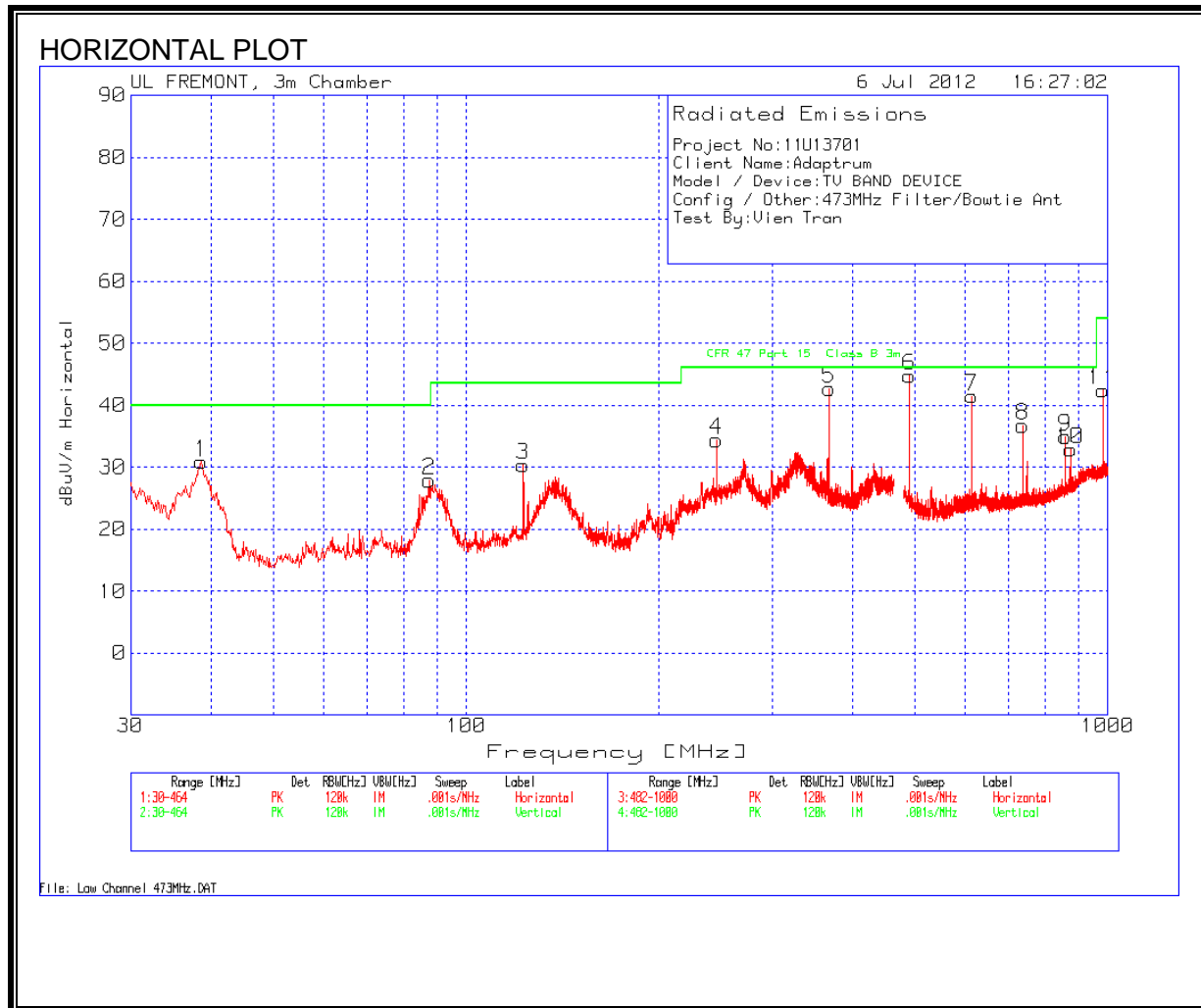
A High-Q Cavity band pass filter is used to reduce the amplitude of the intentional transmitter and prevent overload of the system preamplifier.

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

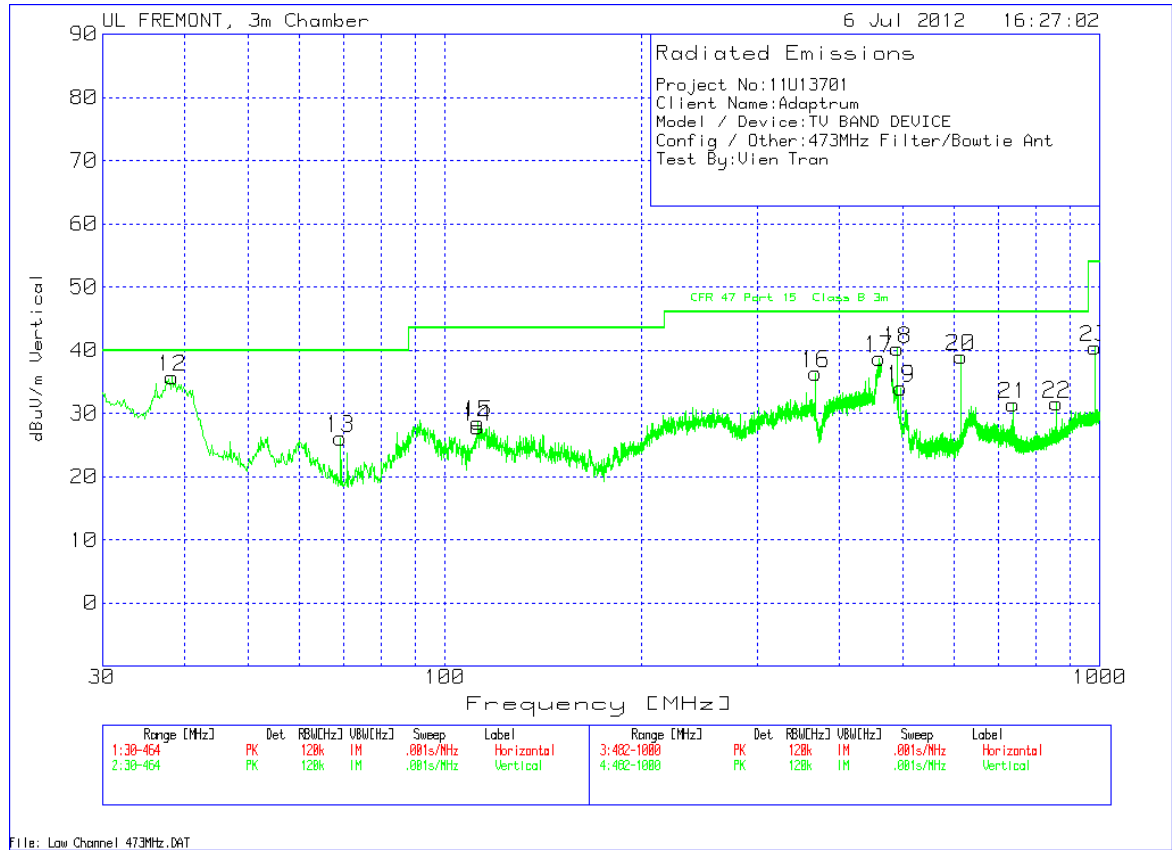
### 7.2.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)

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



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

**VERTICAL PLOT**



# 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 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>										
38.6742	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

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>Vertical 30 - 464MHz</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

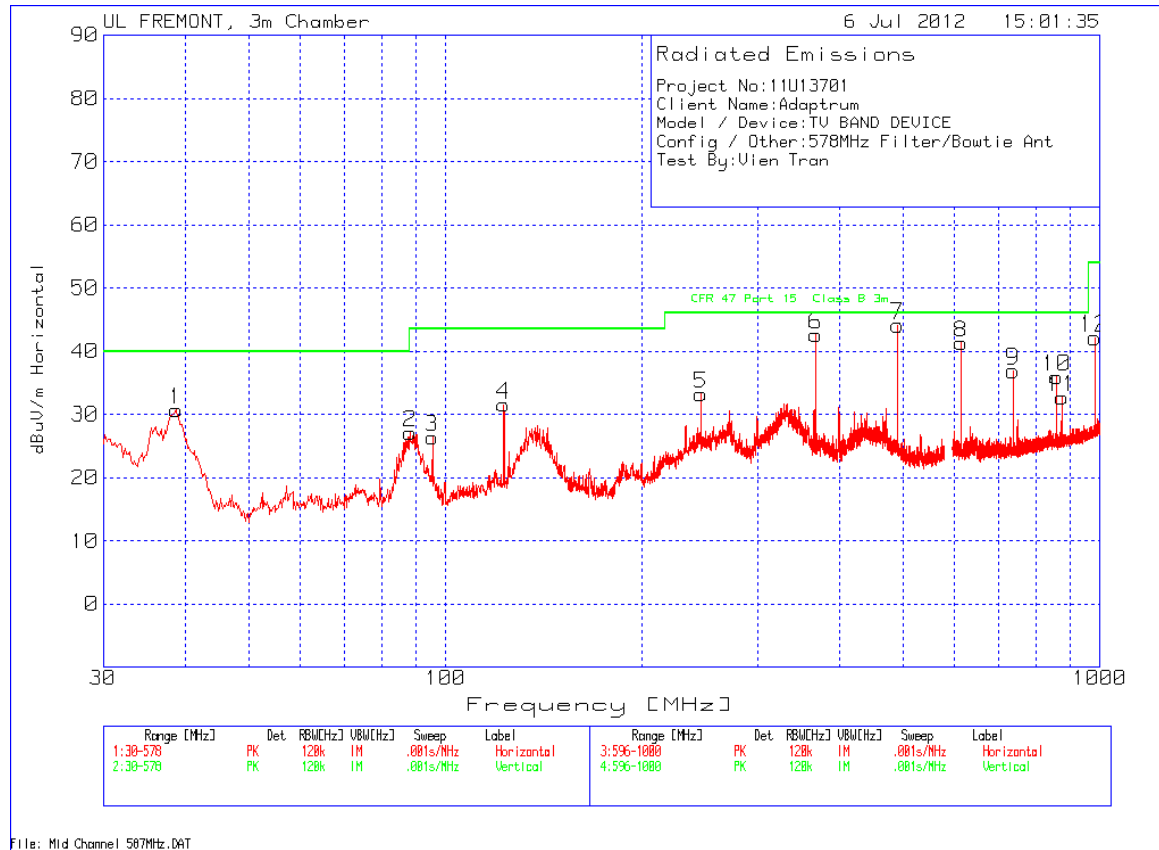
RMS - RMS detection

CRMS - CISPR RMS detection

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

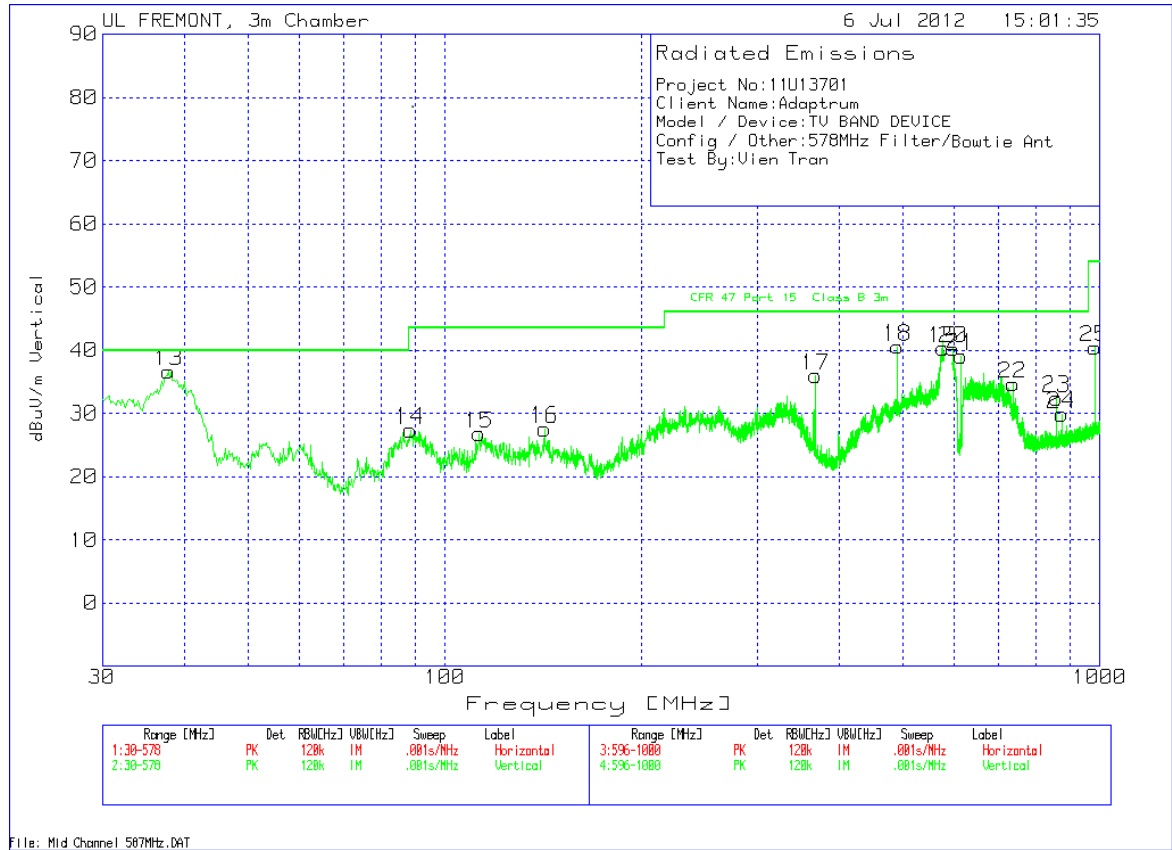
### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

#### HORIZONTAL PLOT



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

**VERTICAL PLOT**





## 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

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>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

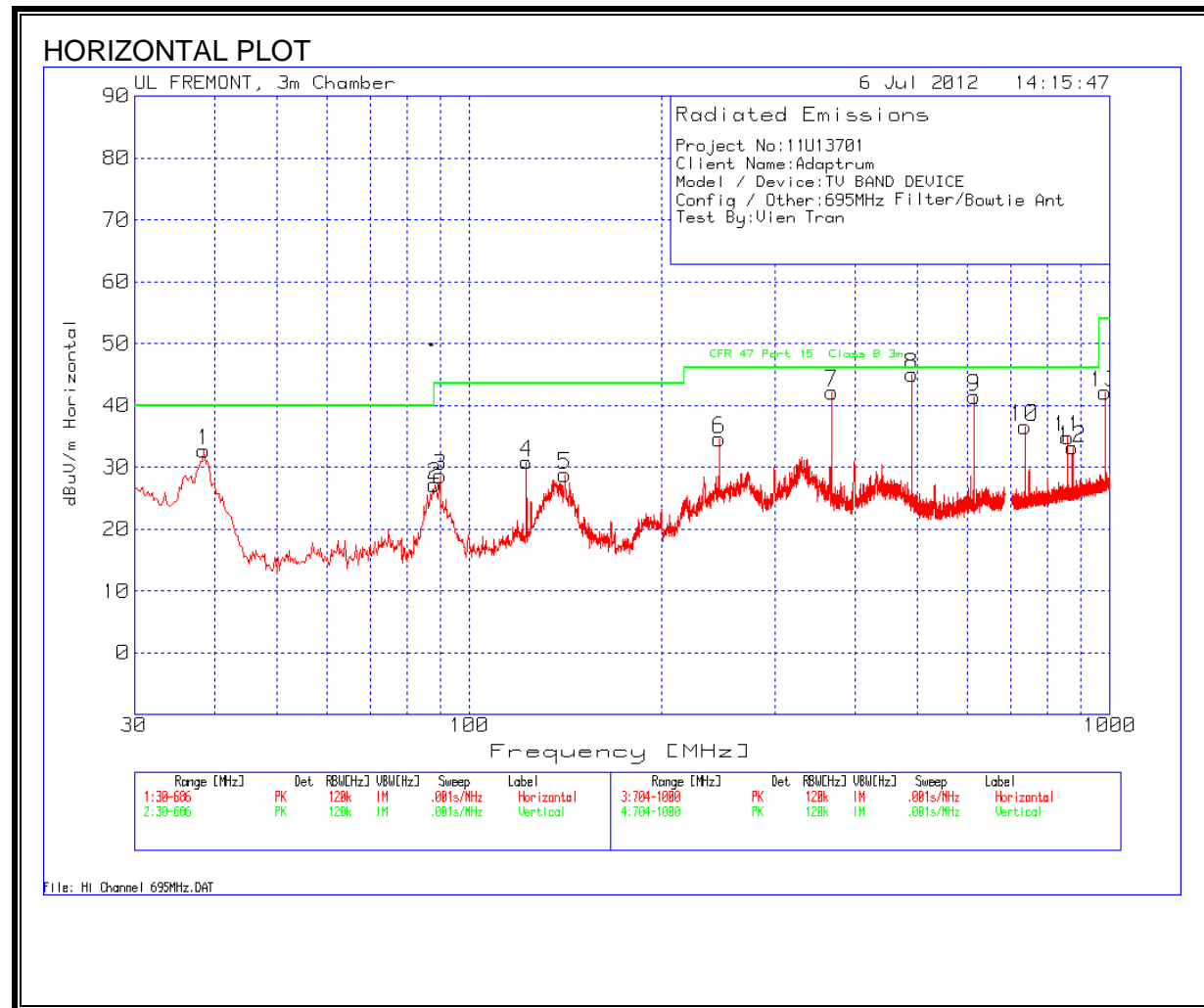
CAV - CISPR Average detector

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)





## 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

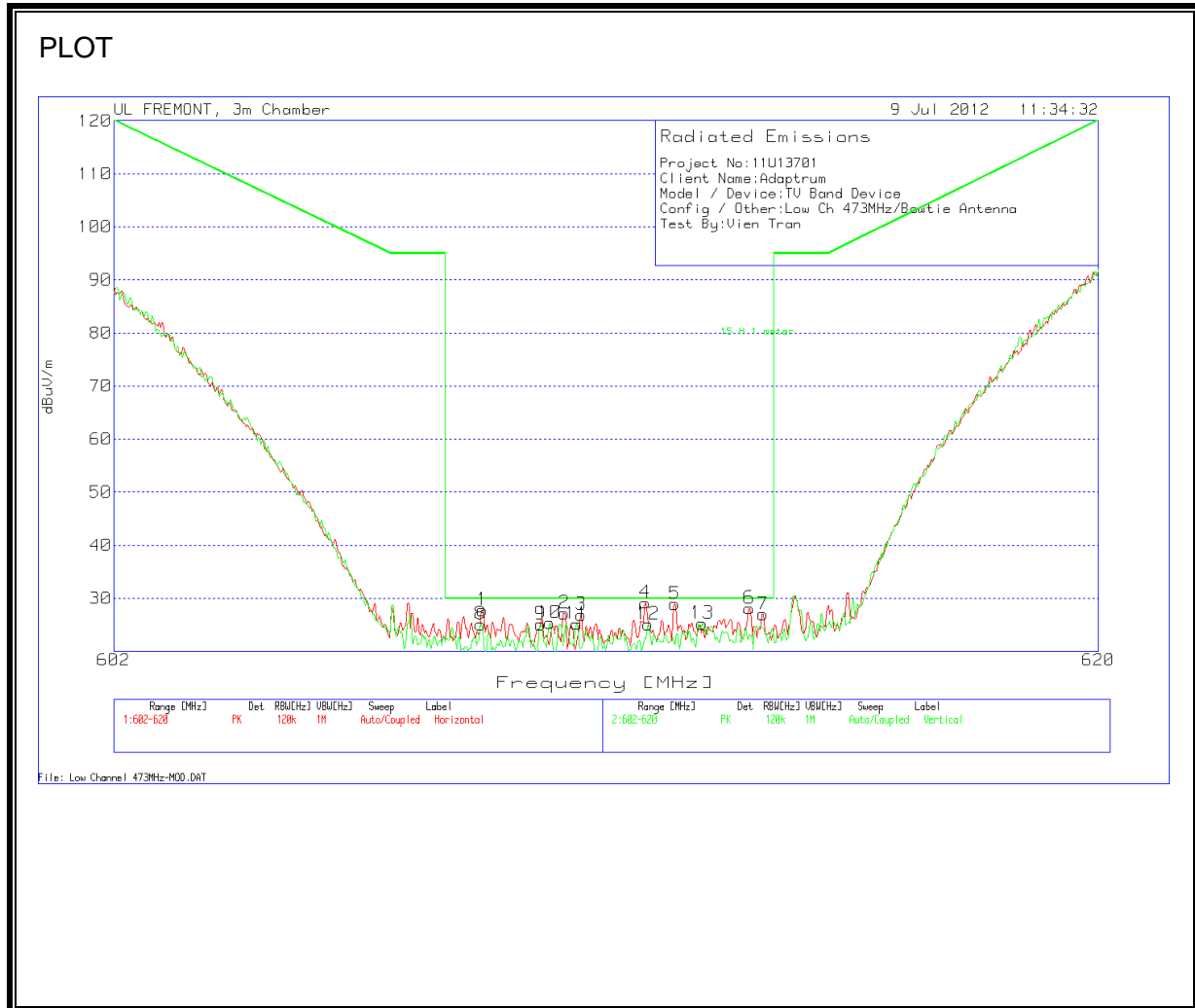
## 7.2.1. RADIATED EMISSIONS ABOVE 1 GHz

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

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Adaptrum													
Project #:		11U13701													
Date:		7/10/2012													
Test Engineer:		Vien Tran													
Configuration:		EUT with Bowtie Antenna													
Mode:		Tx On													
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 RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500											
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL, 473MHz															
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
MID CHANNEL, 587MHz															
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
HIGH CHANNEL, 695MHz															
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					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit		
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit		
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit		
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit		
CL	Cable Loss					HPF	High Pass Filter								

## 7.2.1. RADIATED EMISSIONS 602 TO 620 MHz

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

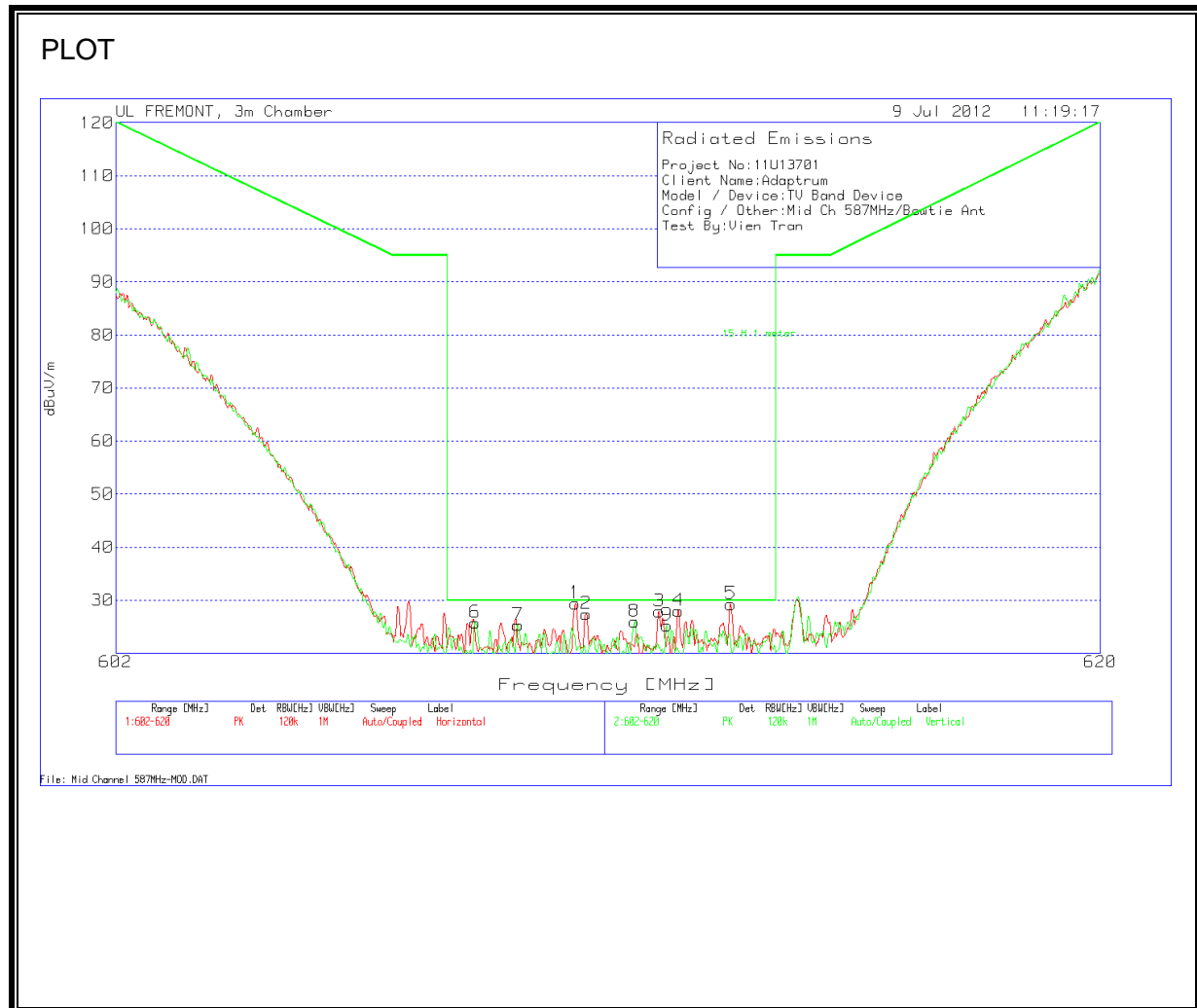


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)**

**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
<b>Range: 1 602 - 620MHz HORIZONTAL</b>											
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
<b>Range: 2 602 - 620MHz VERTICAL</b>											
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											
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)**



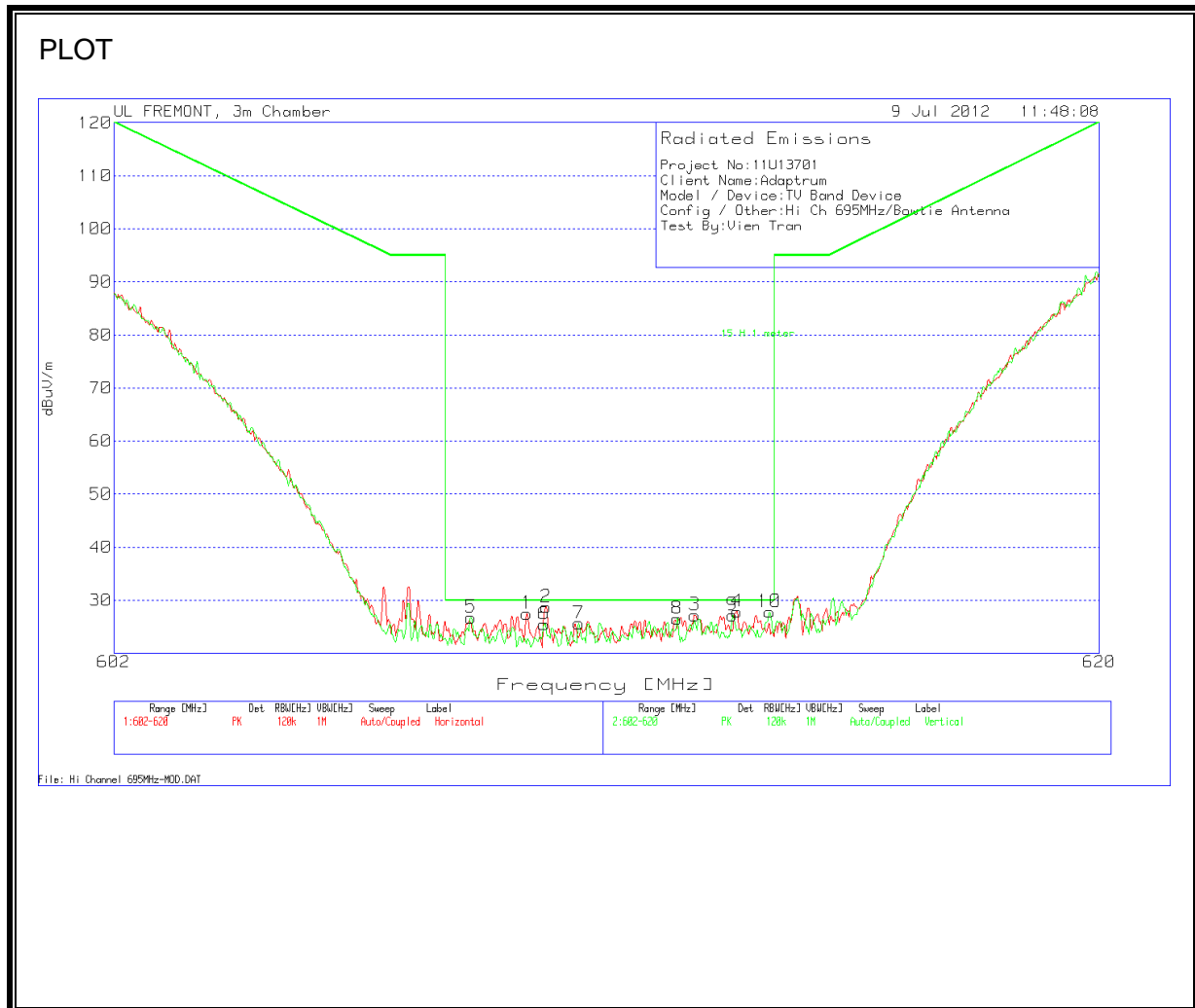


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

**TABULAR LISTING**

Project No:11U13701											
Client Name:Adaptrum											
Model / Device:TV Band Device											
Config / Other:Mid Ch 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 SunoI JB1.TXT (dB)	T173 Sonoma Preamp.TXT (dB)	dBuV/m	15 H 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)**

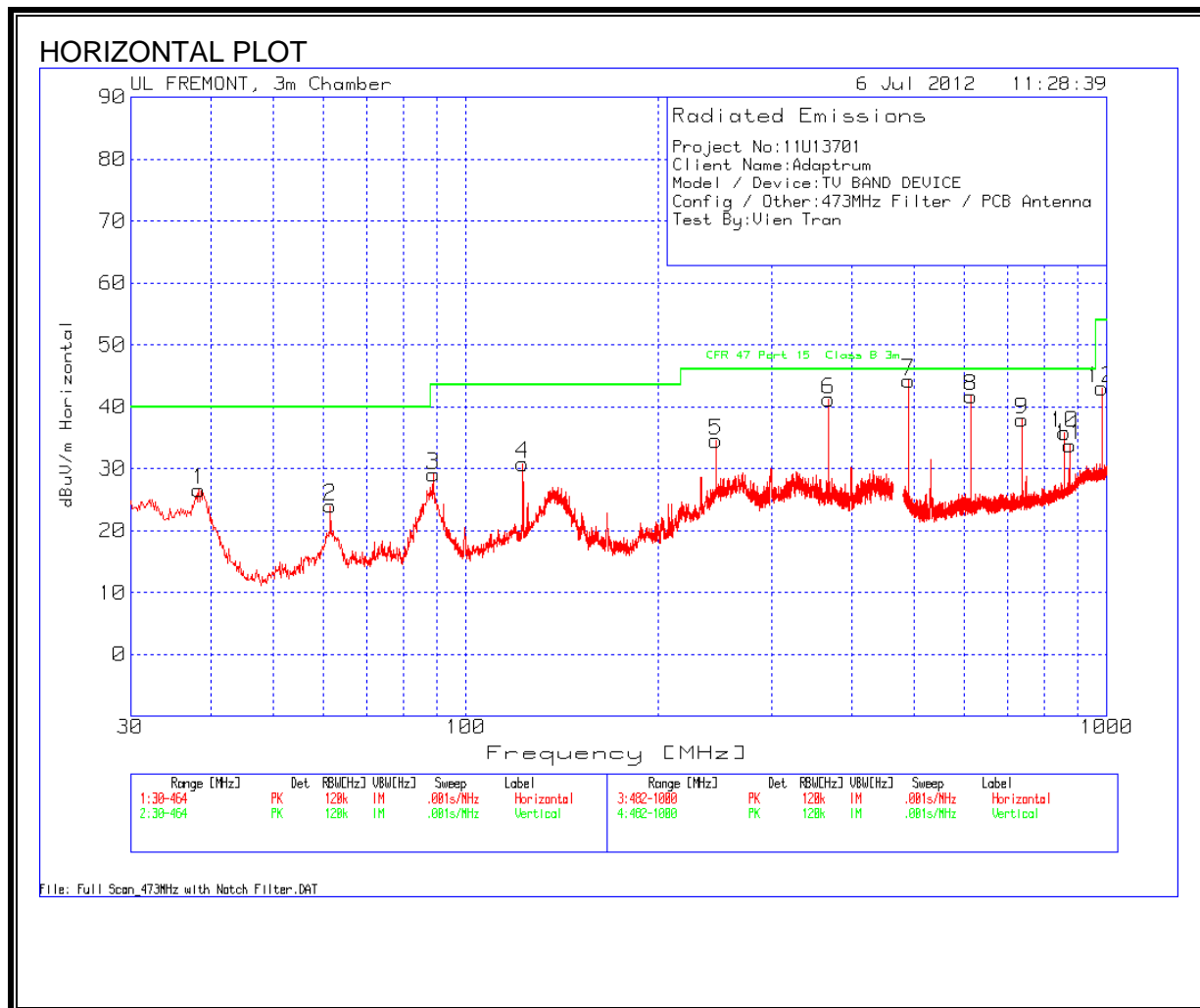
**TABULAR LISTING**

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]	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	Horz
609.83	37.73	PK	2.9	2.0	18.7	-32.6	28.73	30	-1.27	100	Horz
612.548	36.08	PK	2.9	2.0	18.8	-32.6	27.18	30	-2.82	100	Horz
613.322	36.65	PK	2.9	2.1	18.8	-32.6	27.85	30	-2.15	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	Vert
609.794	34.48	PK	2.9	2.0	18.7	-32.6	25.48	30	-4.52	100	Vert
610.424	34.65	PK	2.9	2.0	18.7	-32.6	25.65	30	-4.35	100	Vert
612.224	35.42	PK	2.9	2.0	18.8	-32.6	26.52	30	-3.48	100	Vert
613.232	35.96	PK	2.9	2.1	18.8	-32.6	27.16	30	-2.84	100	Vert
613.916	36.23	PK	2.9	2.4	18.9	-32.6	27.83	30	-2.17	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

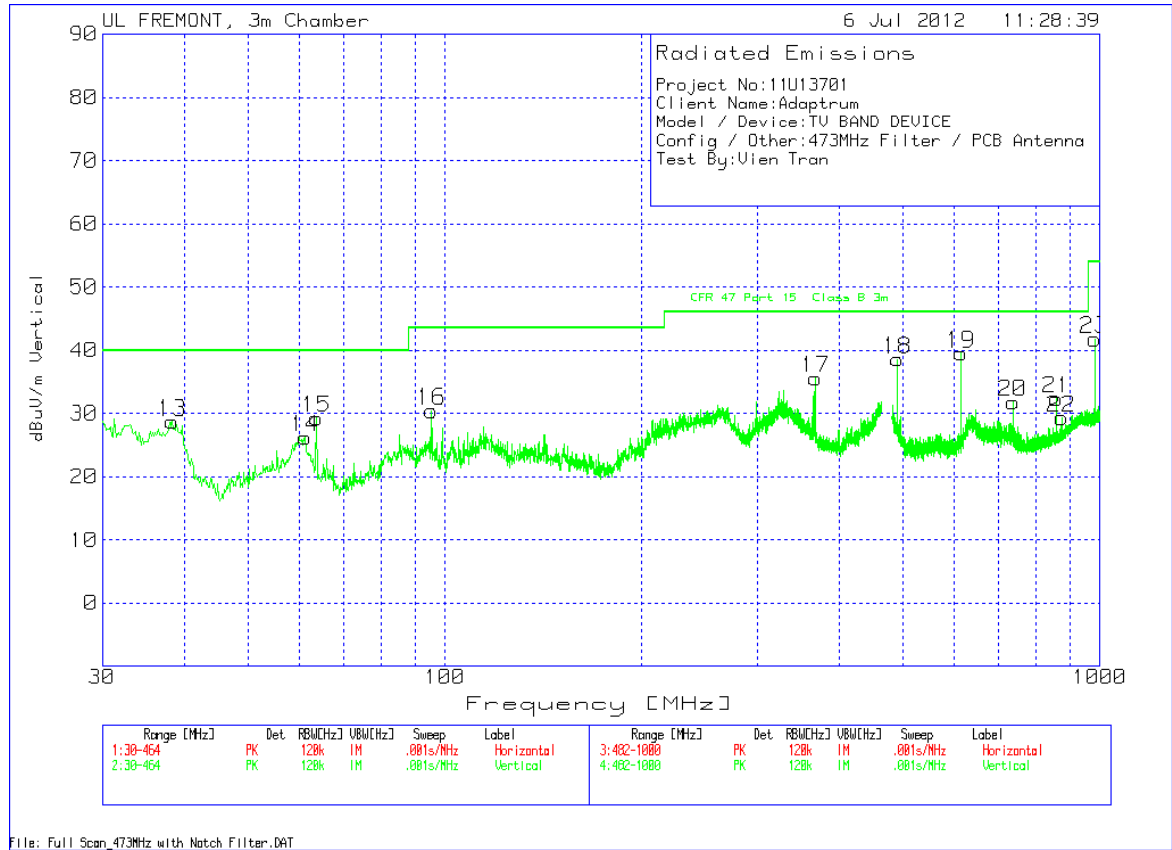
### 7.3.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)

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



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

**VERTICAL PLOT**



## 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

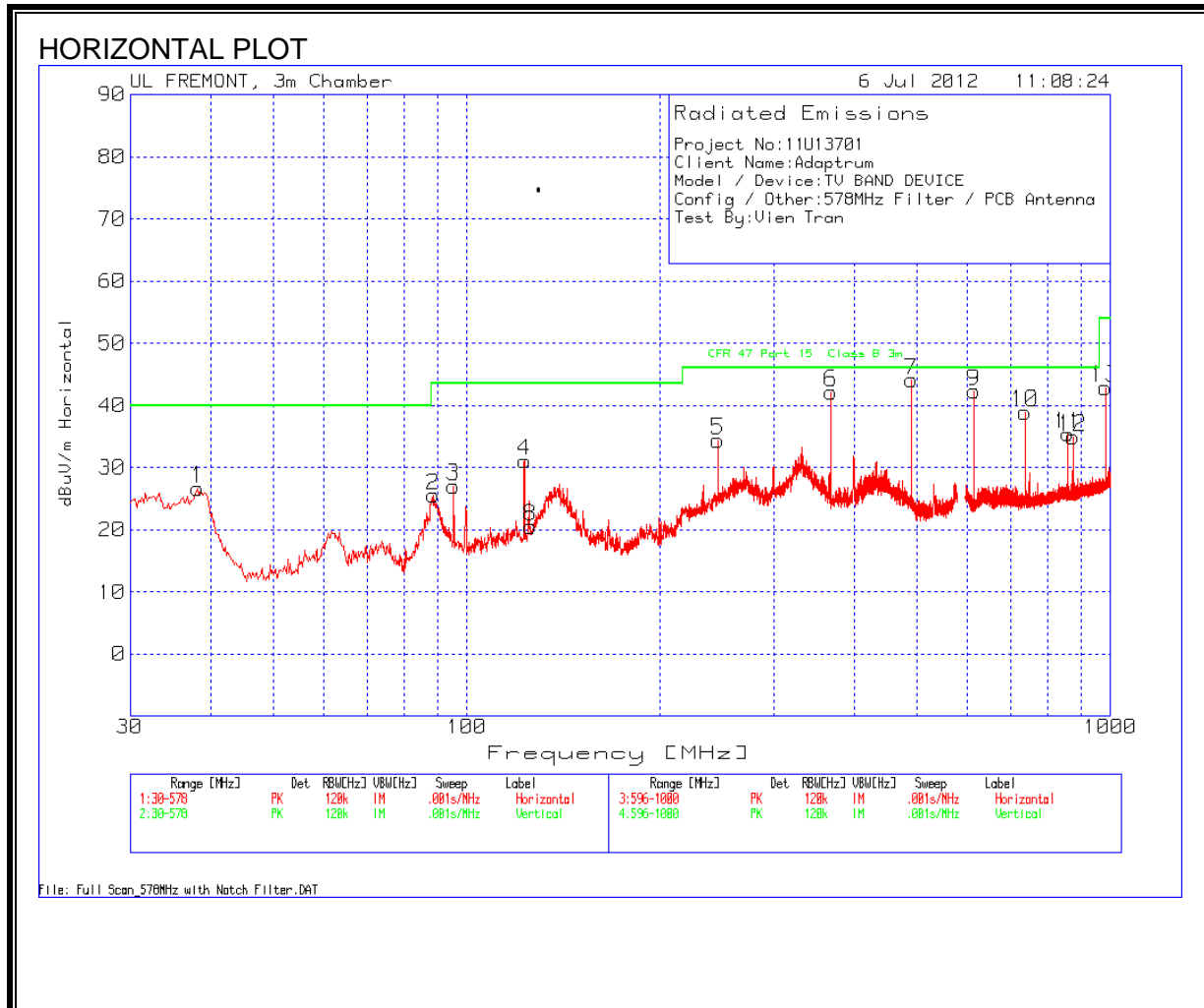
CAV - CISPR Average detector

RMS - RMS detection

CRMS - CISPR RMS detection

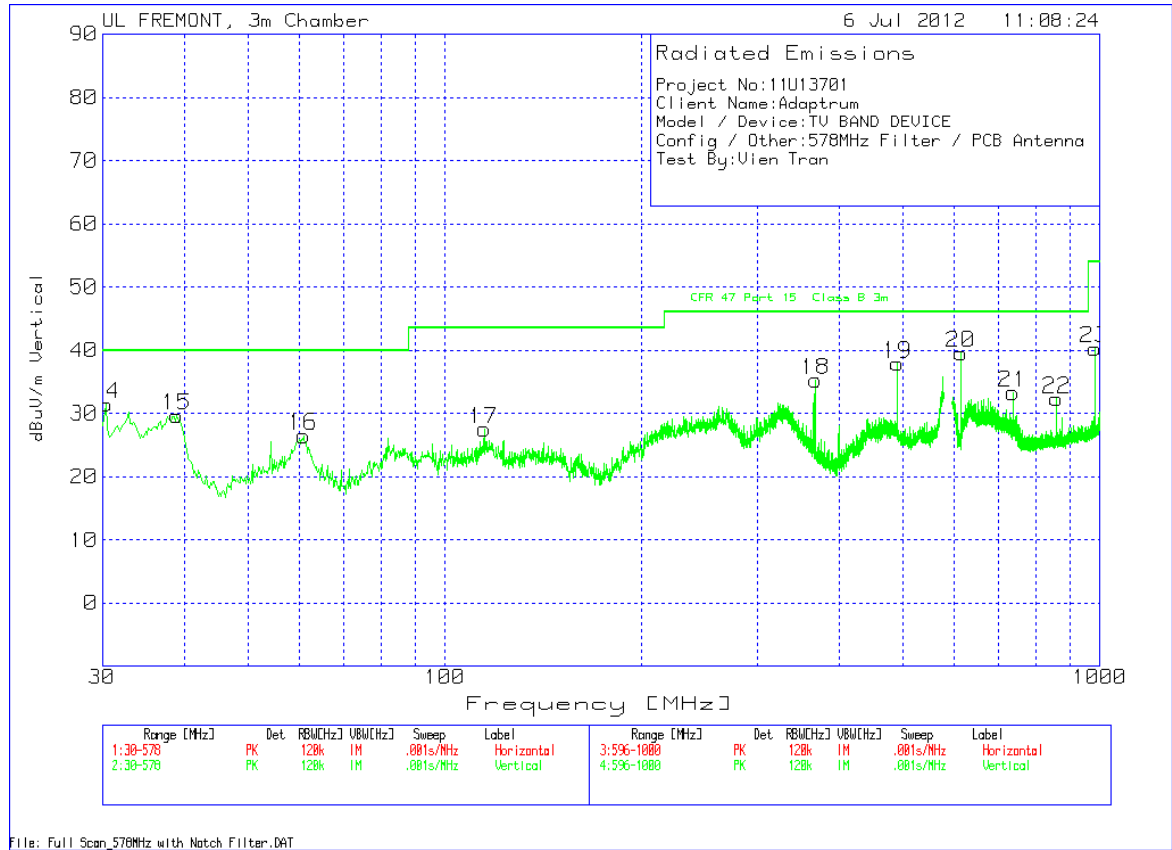
### 7.3.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

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



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

**VERTICAL PLOT**



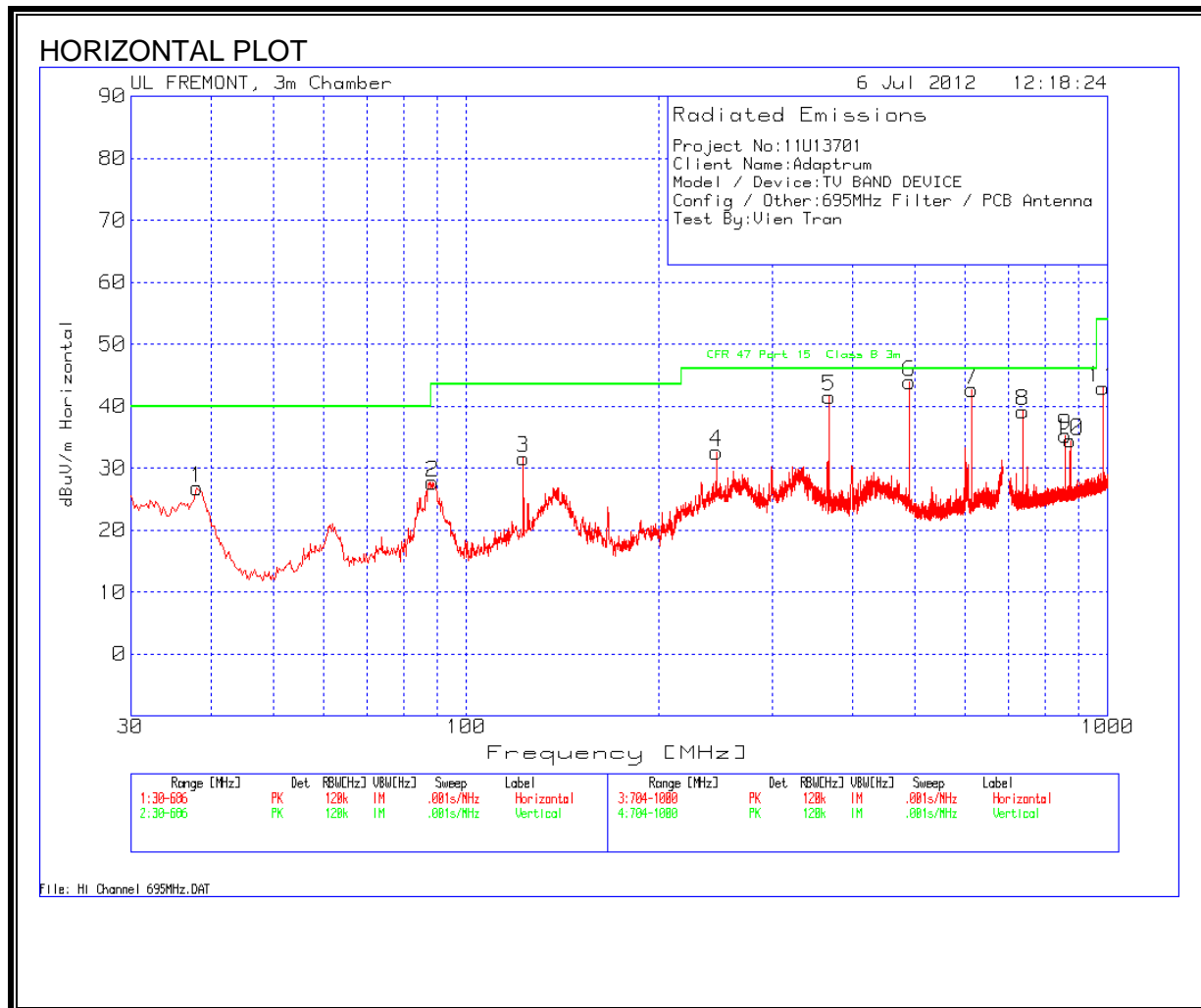


## HORIZONTAL & VERTICAL DATA

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
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>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										

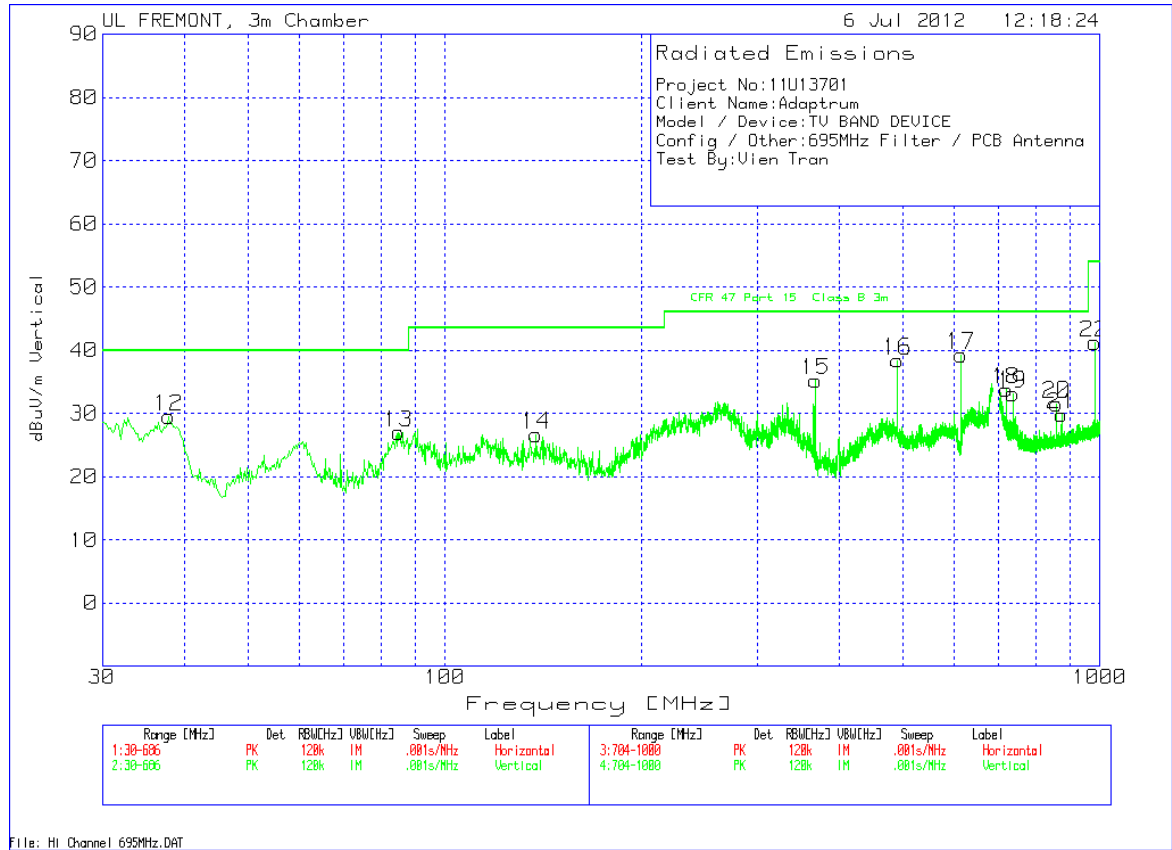
### 7.3.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)

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



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

**VERTICAL PLOT**



## 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 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>										
38.0853	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 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	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										

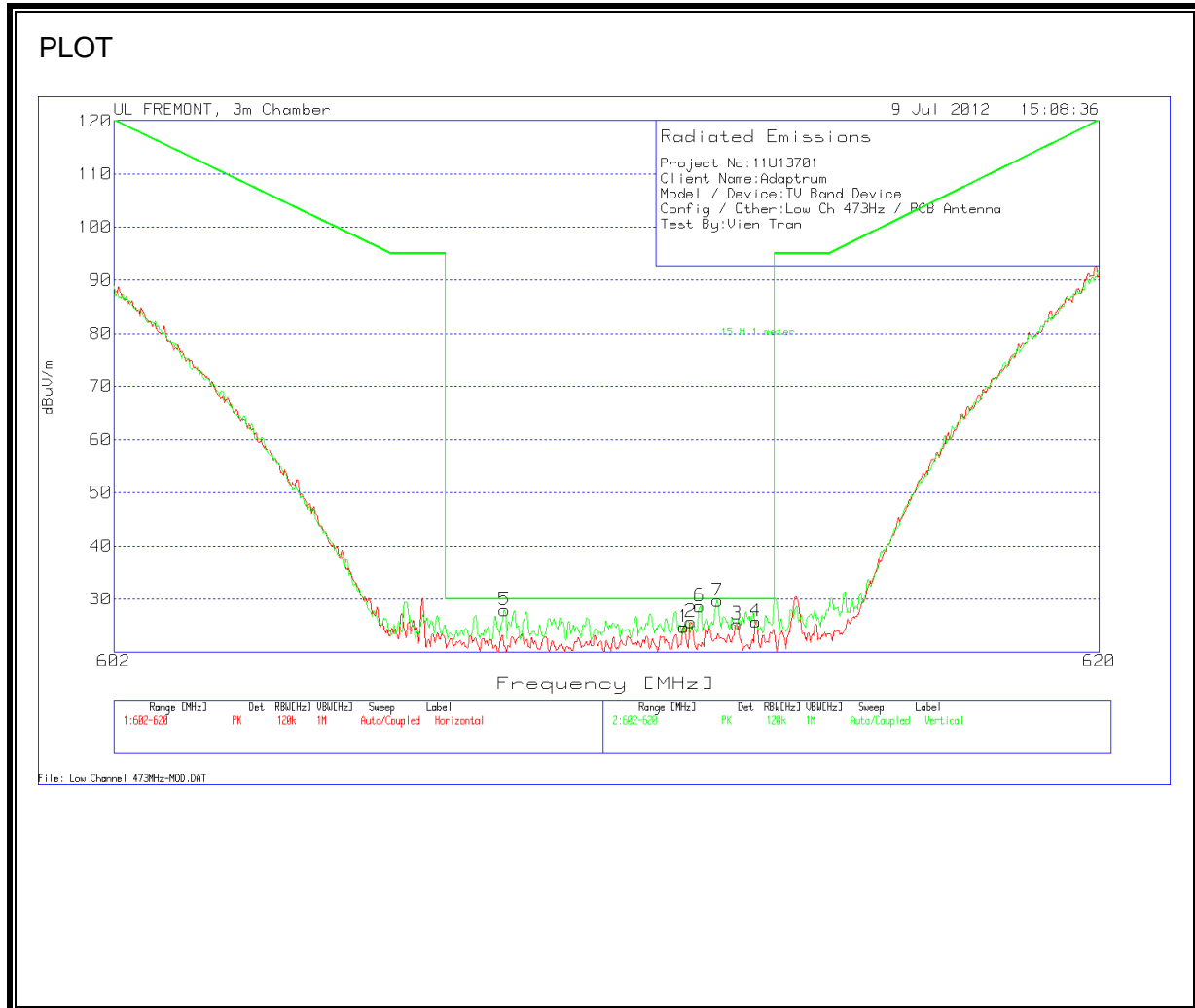
### 7.3.4. RADIATED EMISSIONS ABOVE 1 GHz

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

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Adaptrum													
Project #:		11U13701													
Date:		7/10/2012													
Test Engineer:		Vien Tran													
Configuration:		EUT with PCB Antenna													
Mode:		Tx On													
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 RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz	
3' cable 22807700		12' cable 22807600		20' cable 22807500											
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (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		Avg Lim	Average Field Strength Limit								
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit								
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit								
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit								
CL	Cable Loss		HPF	High Pass Filter											

### 7.3.5. RADIATED EMISSIONS 602 TO 620 MHz

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

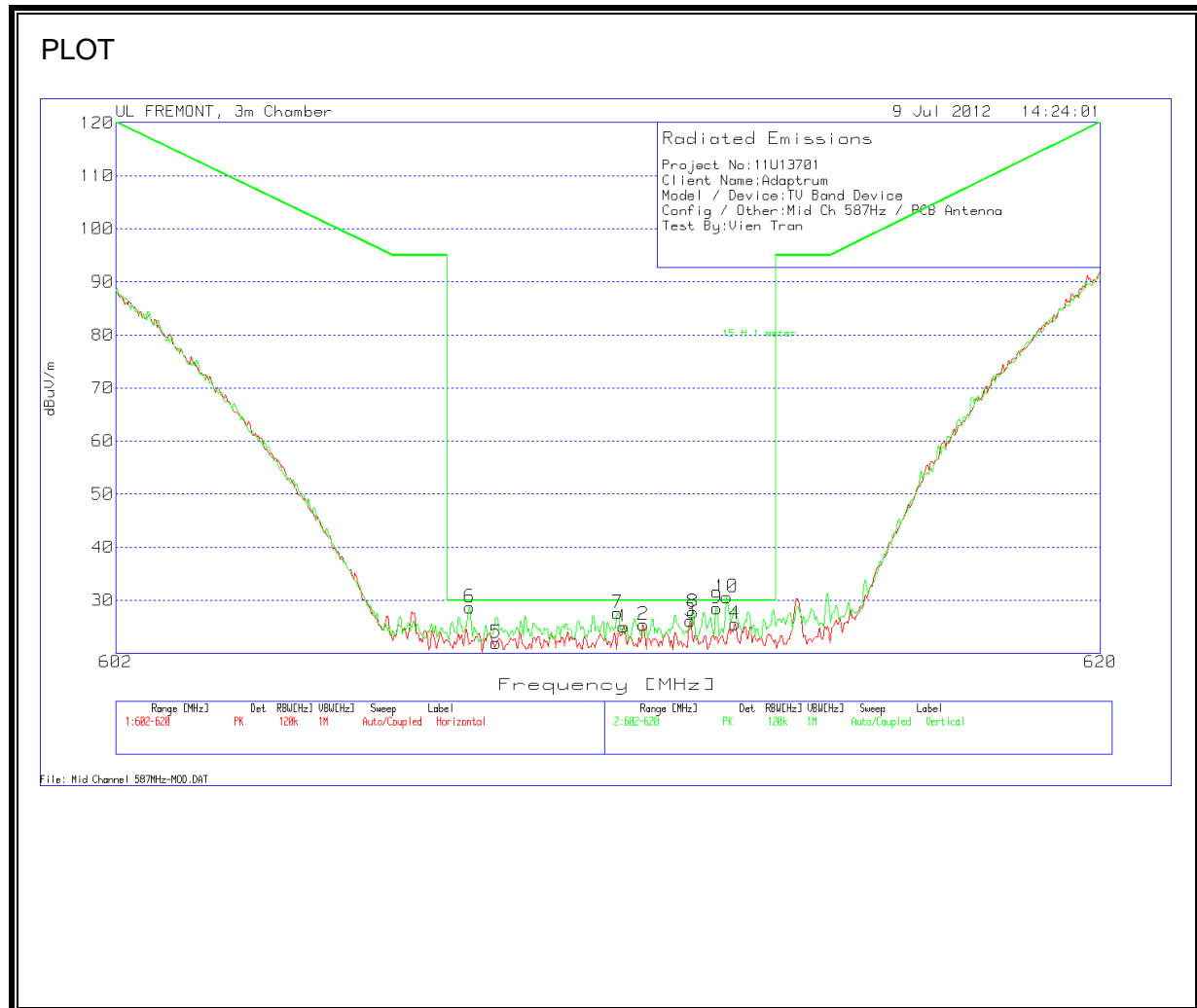


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (LOW CHANNEL)**

**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)	dBuV/m	15 H 1 meter	Margin	Height [cm]	Polarity
<b>Range: 1 602 - 620MHz HORIZONTAL</b>											
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
<b>Range: 2 602 - 620MHz VERTICAL</b>											
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)**



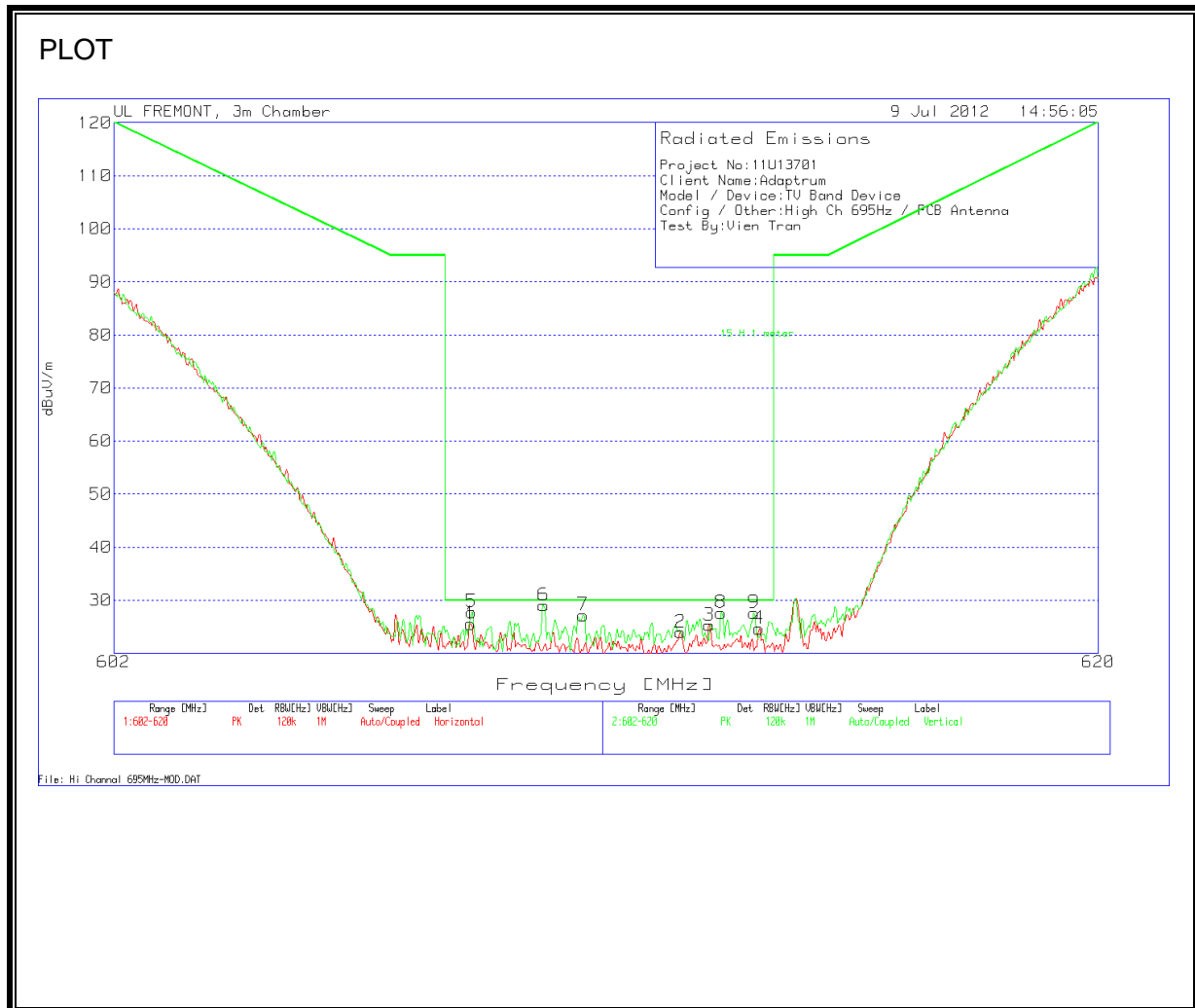


**TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (MID CHANNEL)**

**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
<b>Range: 1 602 - 620MHz HORIZONTAL</b>											
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
<b>Range: 2 602 - 620MHz VERTICAL</b>											
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
<b>Range: 1_ 602 - 620MHz HORIZONTAL</b>											
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
<b>Range: 2_ 602 - 620MHz VERTICAL</b>											
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											