



FCC CFR47 PART 15 SUBPART H
CERTIFICATION TEST REPORT
FOR
BROADBAND VHF/UHF NETWORKING RADIO SYSTEM

MODEL NUMBER: RaptorX 50739, RaptorX-228

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Prepared for
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: METRIC SYSTEMS CORP.
3055 ENTERPRISE COURT
VISTA, CA 92081

EUT DESCRIPTION: BROADBAND VHF/UHF NETWORKING RADIO SYSTEM

MODEL NUMBERS: RaptorX 50739, RaptorX-228

SERIAL NUMBER: X001


DATE TESTED: February 9, 2015 to March 25, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART H	Pass

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

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

Approved & Released For
UL Verification Services Inc. By:



FRANCISCO DE ANDA
PROJECT LEAD
UL Verification Services Inc.

Tested By:



J. VANG
EMC ENGINEER
UL Verification Services Inc.

2. SCOPE

This report documents the results of RF and emissions tests. It does not include database test results.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 15 Subpart H, KDB 416721 D01 v02, and ANSI C63.4-2009.

4. FACILITIES AND ACCREDITATION

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

47173 Benicia Street		47266 Benicia Street	
<input type="checkbox"/> Chamber A		<input type="checkbox"/> Chamber D	<input type="checkbox"/> Chamber G
<input type="checkbox"/> Chamber B		<input type="checkbox"/> Chamber E	<input checked="" type="checkbox"/> Chamber H
<input type="checkbox"/> Chamber C		<input type="checkbox"/> Chamber F	

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

5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

5.3. 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
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB

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

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

EUT is an unlicensed fixed mode White Space broadband half-duplex Tx/Rx networking radio system operating in the authorized high VHF (174 MHz -216 MHz) and UHF (470 MHz-698 MHz) bands, with the exception of channels 36-38.

EUT Assemblies				
Description	Manufacturer	Model	S/N	FCC ID
Base Unit	Metric System Corp	Raptor X VHF/UHF Broadband Network Radio	X001	N/A
Base Power Unit	Metric System Corp	50900 X1	Power Supply 1	N/A
Remote Unit	Metric System Corp	Raptor X VHF/UHF Broadband Network Radio	X002	N/A
Remote Power Unit	Metric System Corp	50900 X2	Power Supply 2	N/A

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows;.

	Frequency Range	Output Power	Output Power
BAND	(MHz)	(dBm)	(mW)
UHF	470 -698	14.91	30.97
VHF	174 -216	16.96	49.66

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio can be configured with the following antenna types, and highest gain for each type:

Type	Band	Gain
Directonal	VHF	9 dBi
Directonal	UHF	8 dBi

6.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version 4.2.0.

6.5. WORST-CASE CONFIGURATION AND MODE

Preliminary baseline tests were performed with the both antennas and at all data rates for supported modulations.

The worst case radiated mode was determined to be for data rate for 64QAM.

6.6. MODIFICATIONS

The following modifications were made to meet FCC requirements;

- Added three(3X) ferrite on AC Mains Power Cable;
Vendor: Pan Pacific,
Part Number: SF-130
- Added one(1X) on SMA output cable;
Vendor: Fair Rite,
Part Number: 0461164281

6.7. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

PERIPHERAL SUPPORT EQUIPMENT				
Description	Manufacturer	Model	Serial Number	FCC ID
UHF Antenna	Kathrein Inc.	CL-1469B150	LFF3368961	N/A
VHF Antenna	Kathrein Inc.	DRV VHF-TV	LPH4516244	N/A

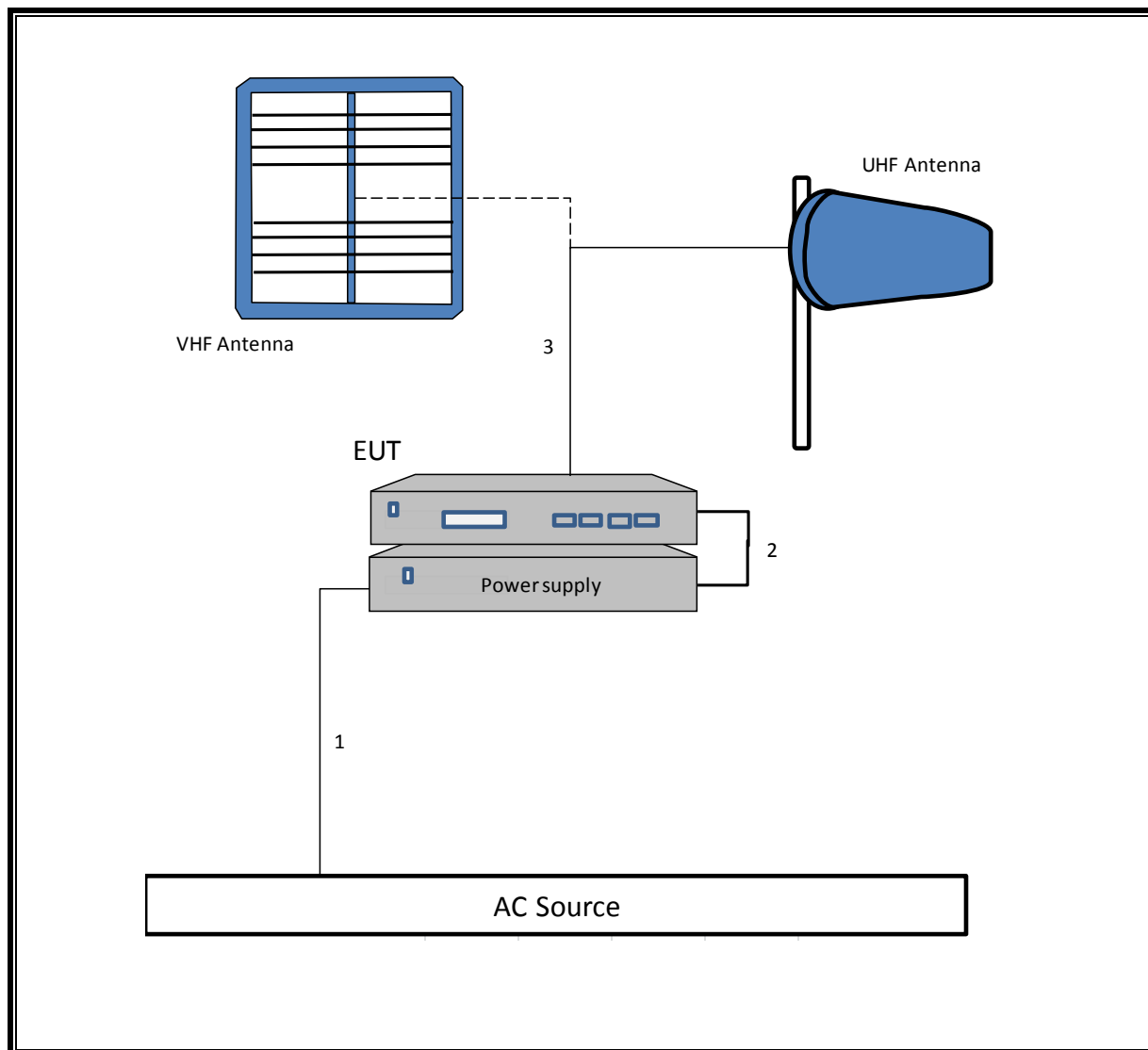
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	No. of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	3-Prong	Un-shielded	1.5m	
2	DC	2	MIL-DTL-5015	Shielded	0.2	Power to radio unit
3	RF	1	Type N	Shielded	1.2	To antennas

TEST SETUP

Transmitter tests were made in a continuous transmission mode, with the device operating at 100% duty cycle.

TEST SETUP DIAGRAM



7. 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
Switch Driver	Agilent	11713A	2508A04258	05/14/15
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	MY53310959	05/07/15
Antenna, Horn 1-18GHz	ETS Lindgren	3117	165319	04/14/15
Antenna, Broadband Hybird, 30MHz to 2000MHz	Sunol Sciences	JB3	A051314-1	03/28/15
Amplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-	1818462	06/05/15
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	325117	06/05/15
Filter, Notch, 30 to 1000MHz, Notch at 473MHz	EWT	EWT-14-0337	M1	07/08/15
Filter, Notch, 30 to 1000MHz, Notch at 587MHz	EWT	EWT-14-0338	M1	07/08/15
Filter, Notch, 30 to 1000MHz, Notch at 695MHz	EWT	EWT-14-0339	M1	07/08/15
Filter, Band Pass, 30 to 1000MHz, BandPass 608 to 615MHz,	EWT	EWT-11-0780	M1	07/08/15
Filter, High Pass 250 to 1000MHz	EWT	EWT-57-0248	R1	01/13/16
Filter, Band Reject Fo: 177MHz	EWT	EWT-14-0500	R1	01/13/16
Filter, Band Reject Fo: 195MHz	EWT	EWT-14-0501	R1	01/13/16
Filter, Band Reject Fo: 213MHz	EWT	EWT-14-0502	R1	01/13/16
EMI Test Reciever	Rohde & Schwarz	ESCI 7	284	09/16/14
LISN	FCC	50/250-25-2	24	01/16/15

8. APPLICABLE LIMITS AND TEST RESULTS

8.1. ANTENNA PORT TEST RESULTS (UHF CHANNELS)

8.1.1. OUTPUT POWER

LIMITS

§15.709 (a) *Power limits for TVBDs.* (1) For fixed TVBDs, the maximum power delivered to the transmitting antenna shall not exceed one watt per 6 megahertz of bandwidth on which the device operates. The power delivered to the transmitting antenna is the maximum conducted output power reduced by the signal loss experienced in the cable used to connect the transmitter to the transmit antenna. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Fixed TVBD with 8 dBi Antenna Assembly Gain, Limit = 28 dBm in a 6 MHz band.

TEST PROCEDURE

KDB 416721 D01 v02

RESULTS

Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Delta (dB)
473	14.91	28.00	-13.09
587	14.82	28.00	-13.18
695	2.84	28.00	-25.16

8.1.2. POWER SPECTRAL DENSITY

LIMITS

§15.709 (5) The power spectral density from the TVBD shall not be greater than the following values when measured in any 100 kHz band during any time interval of continuous transmission.

(i) Fixed devices: 12.6 dBm conducted power. If transmitting antennas of directional gain greater than 6 dBi are used, this conducted power level shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Fixed TVBD with 8 dBi Antenna Assembly Gain, **Limit = 10.6 dBm** measured in a 100 kHz band.

TEST PROCEDURE

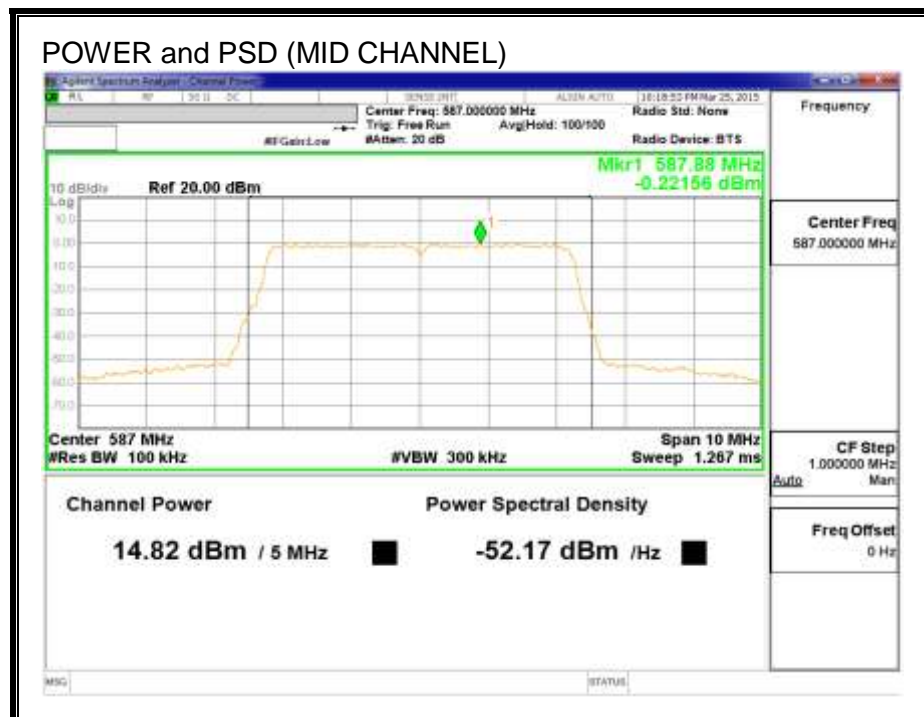
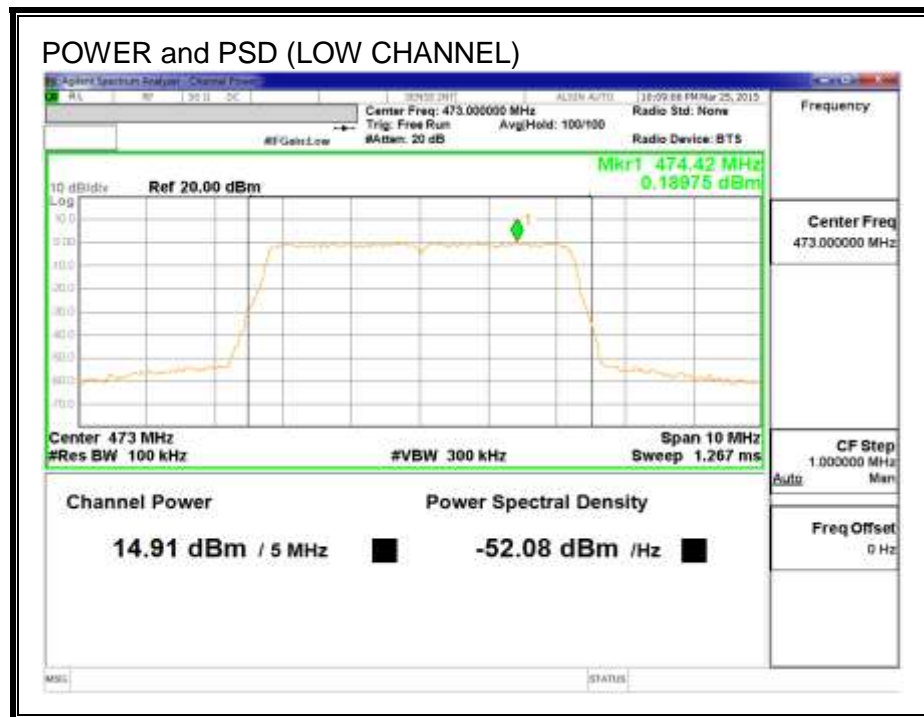
KDB 416721 D01 v02

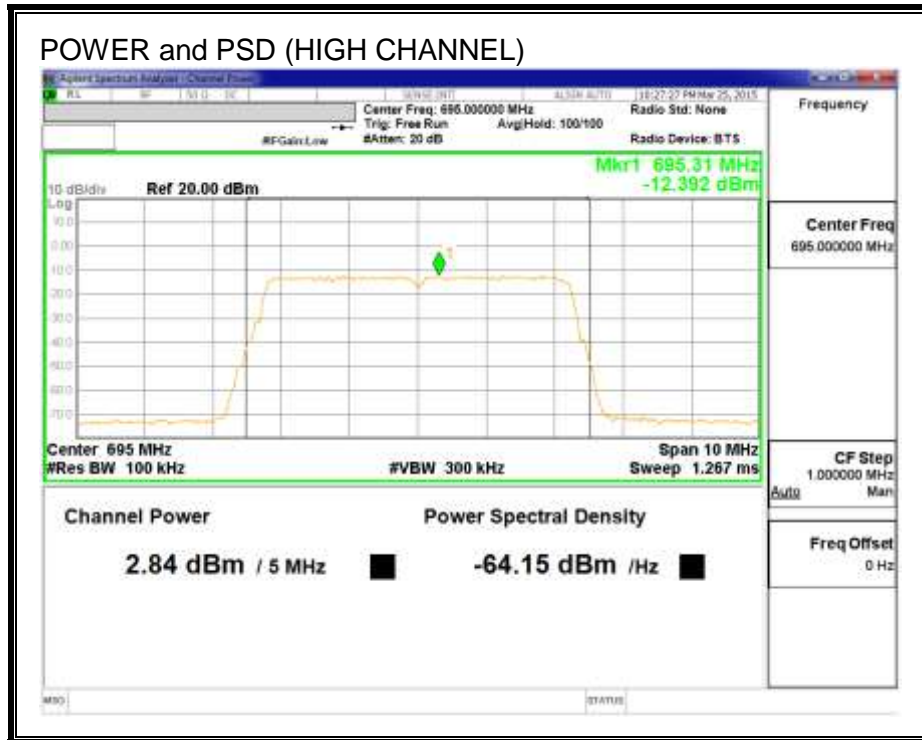
RESULTS

Frequency (MHz)	PSD (dBm/100 kHz)	PSD Limit (dBm/100 kHz)	Delta (dB)
473	0.19	10.60	-10.41
587	-0.22	10.60	-10.82
695	-12.39	10.60	-22.99

8.1.3. POWER / POWER SPECTRAL DENSITY PLOTS

PLOTS FOR POWER AND PSD





8.1.4. BANDEDGES

LIMITS

Fixed TVBD, Limit = -42.8 dBm/100 kHz

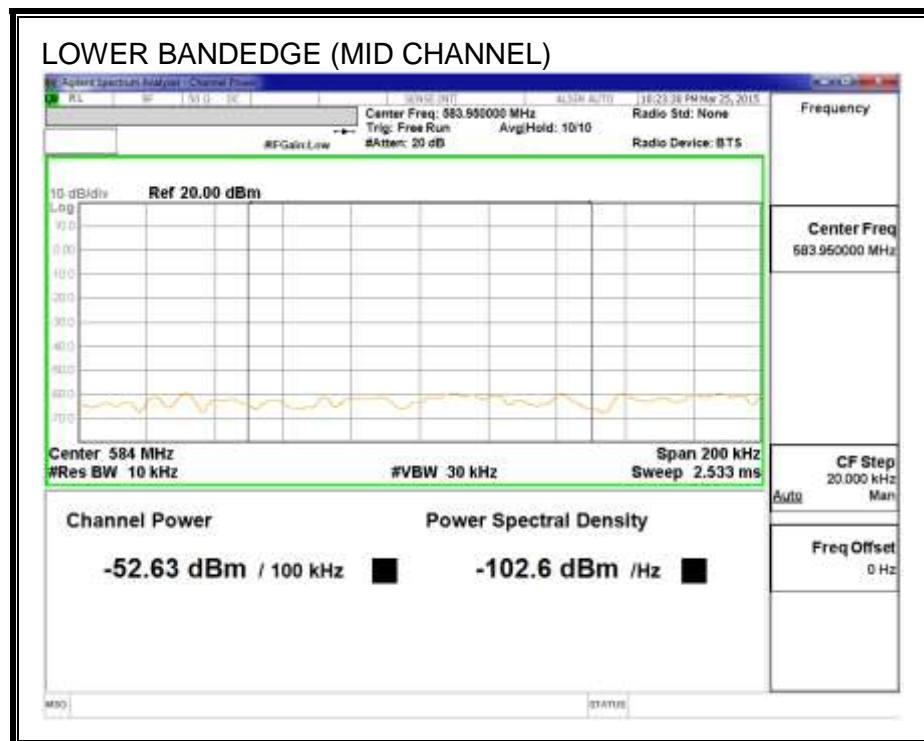
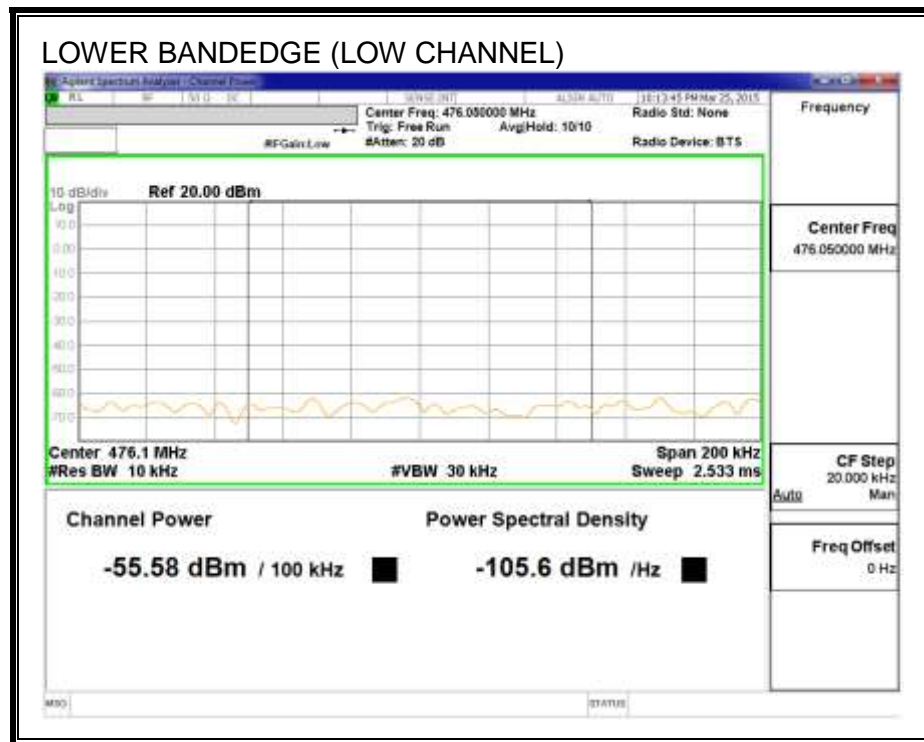
TEST PROCEDURE

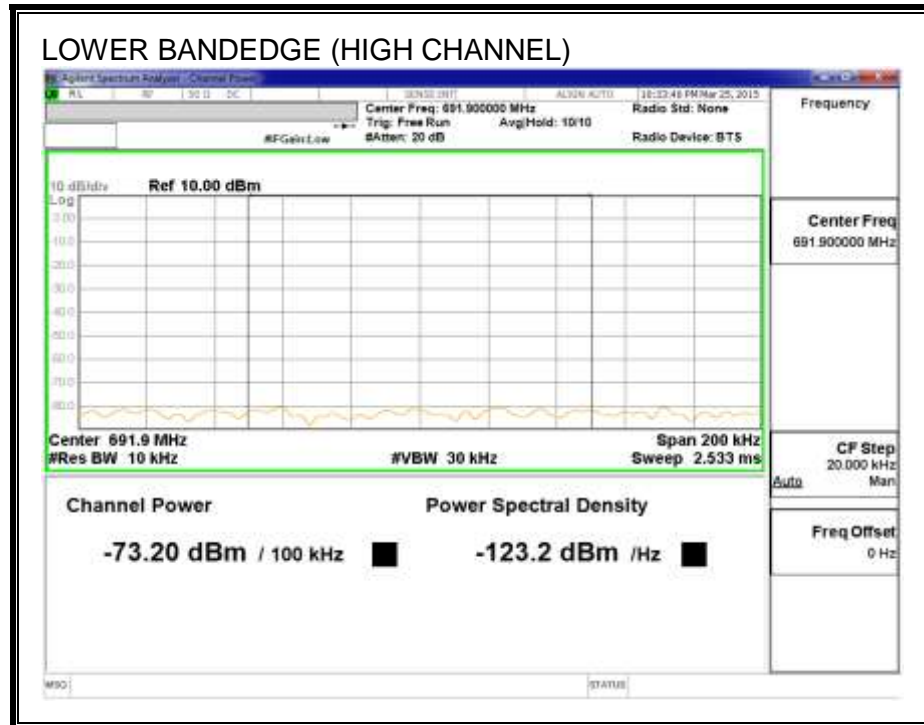
KDB 416721 D01 v02

RESULTS

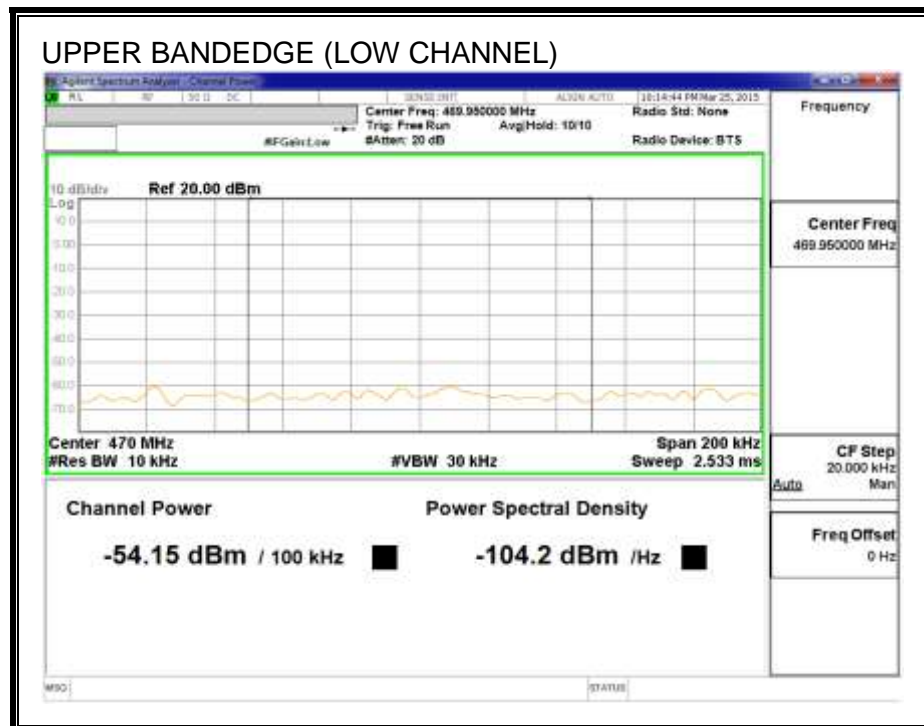
Frequency (MHz)	Bandedge Limit (dBm/100 kHz)	Lower Bandedge (dBm/100 kHz)	Lower Delta (dB)	Upper Bandedge (dBm/100 kHz)	Upper Delta (dB)
473	-42.8	-55.58	-12.78	-54.15	-11.35
587	-42.8	-52.63	-9.83	-53.12	-10.32
695	-42.8	-73.20	-30.40	-72.54	-29.74

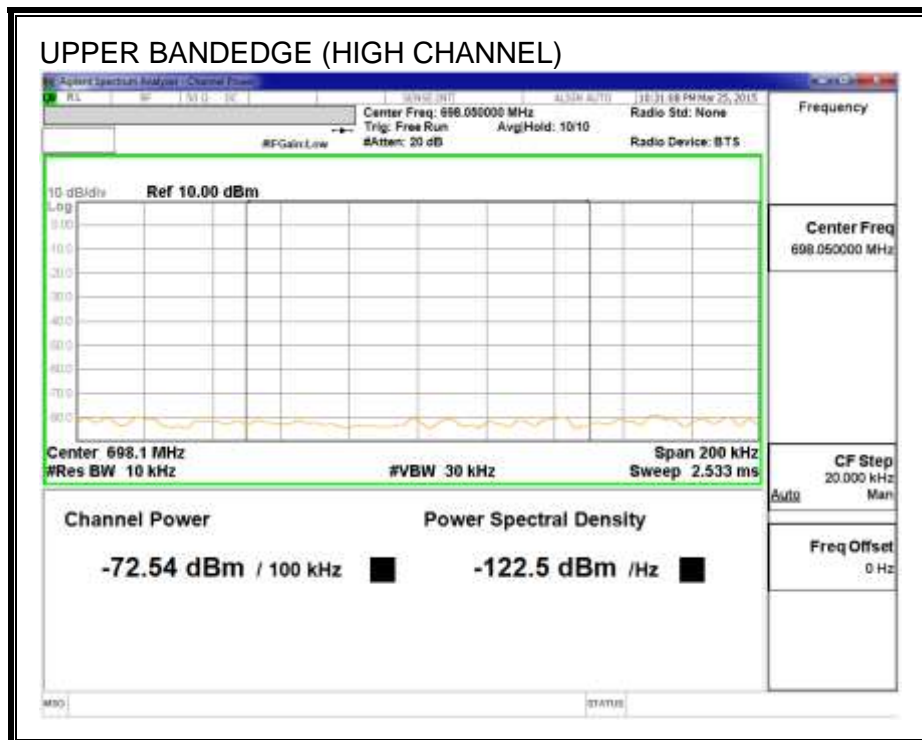
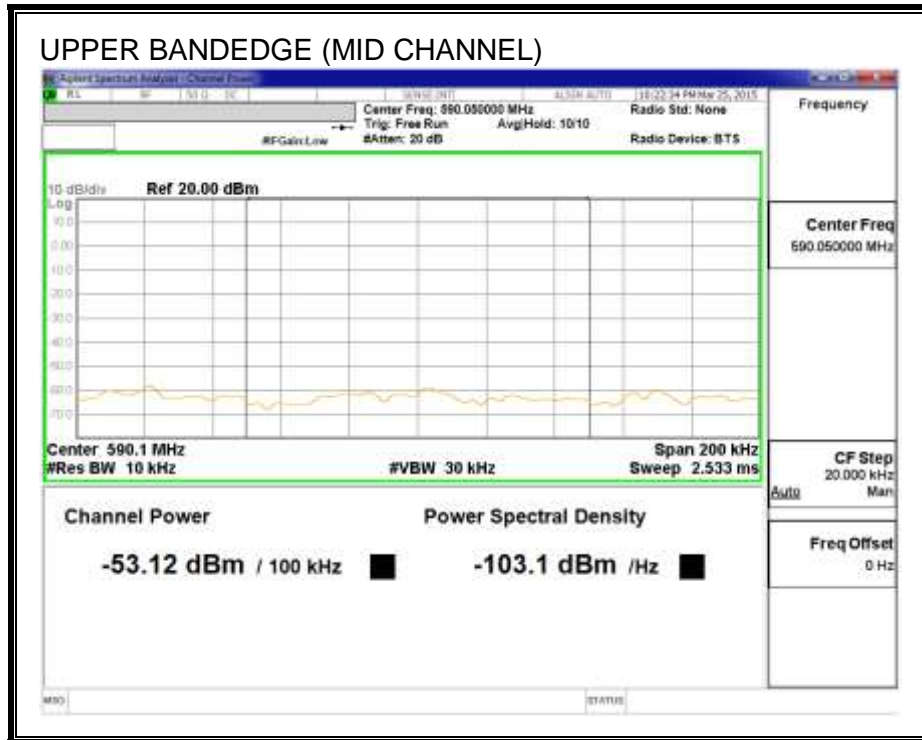
LOWER BANDEDGE





UPPER BANDEDGE





8.1.5. ADJACENT CHANNEL EMISSIONS

LIMITS

§15.709 (c) Emission limits for TVBDs. (1) In the television channels immediately adjacent to the channel in which the TVBD is operating, emissions from the TVBD shall not exceed the following levels.

Fixed TVBD, Limit = -42.8 dBm/100 kHz

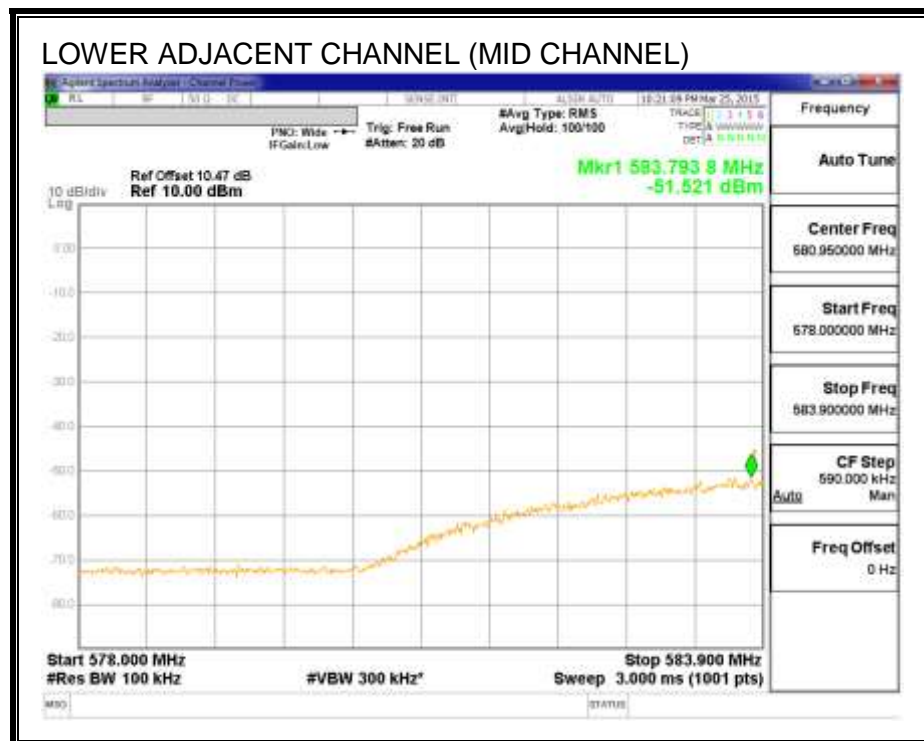
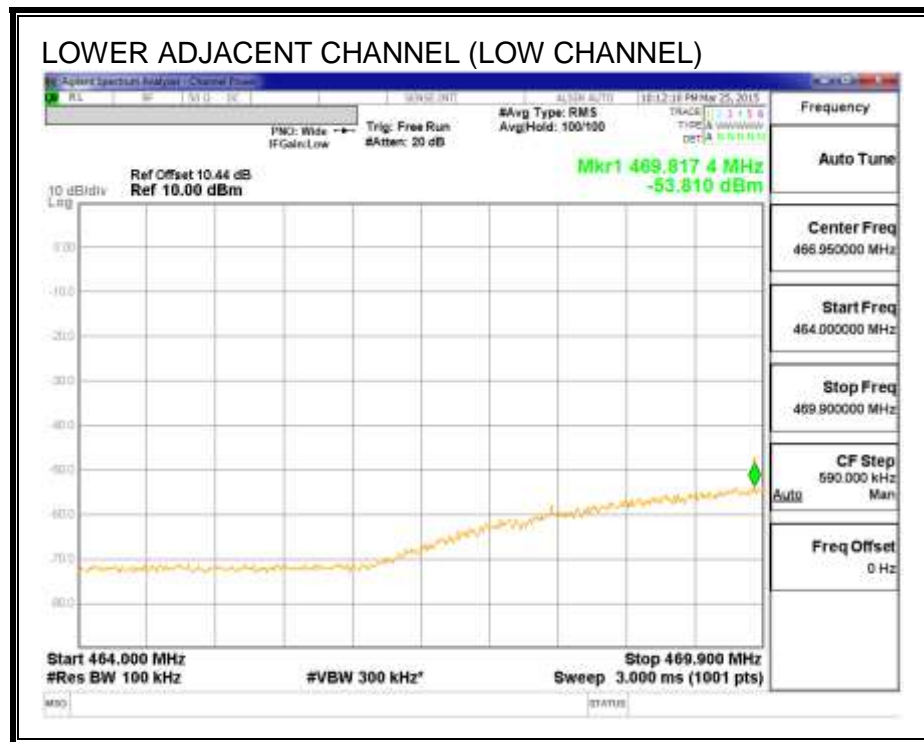
TEST PROCEDURE

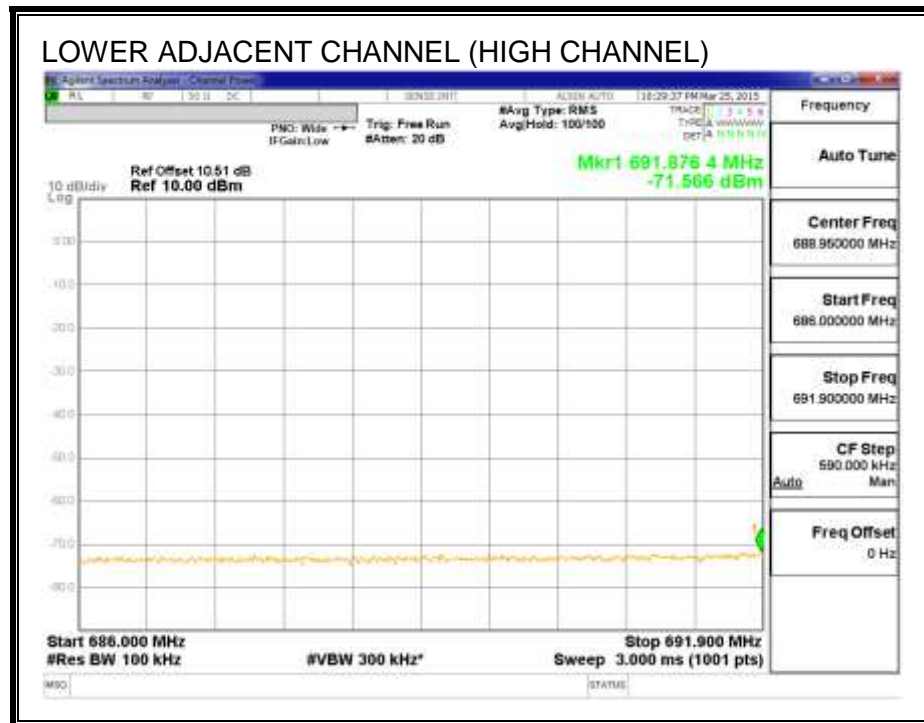
KDB 416721 D01 v02

RESULTS

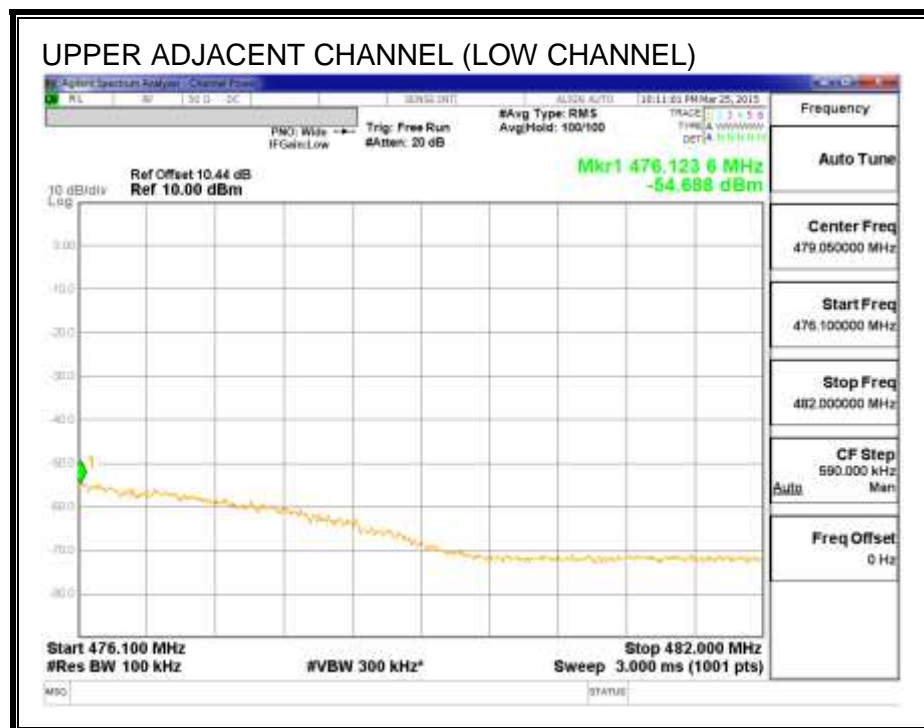
Frequency (MHz)	Emissions Limit (dBm/100 kHz)	Lower Adjacent Channel Emissions (dBm/100 kHz)	Lower Delta (dB)	Upper Adjacent Channel Emissions (dBm/100 kHz)	Upper Delta (dB)
473	-42.8	-53.81	-11.01	-54.69	-11.89
587	-42.8	-51.52	-8.72	-52.00	-9.20
695	-42.8	-71.57	-28.77	-70.45	-27.65

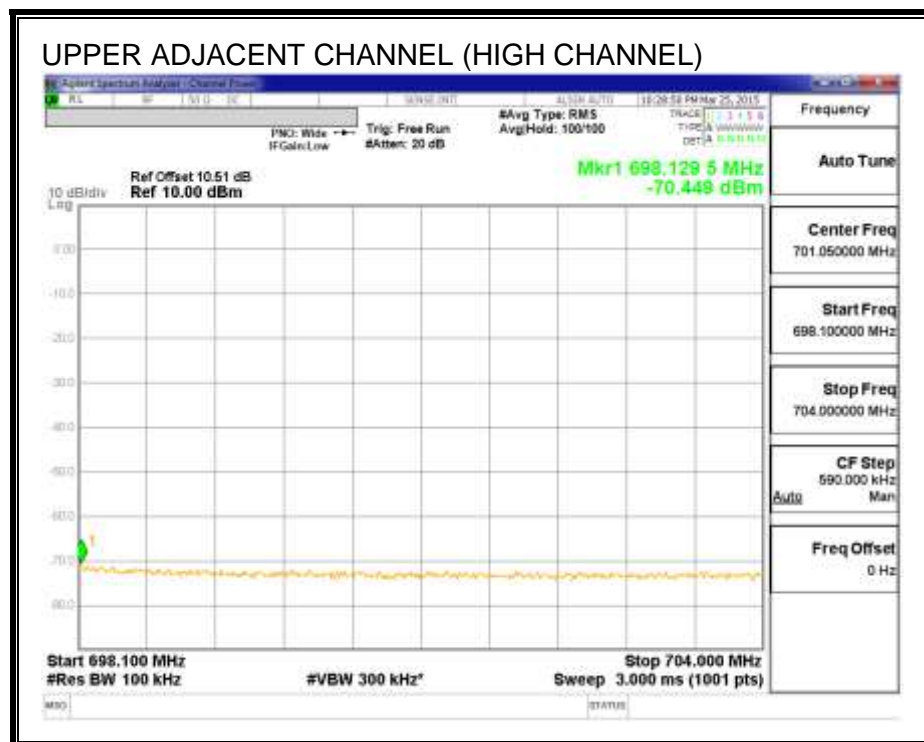
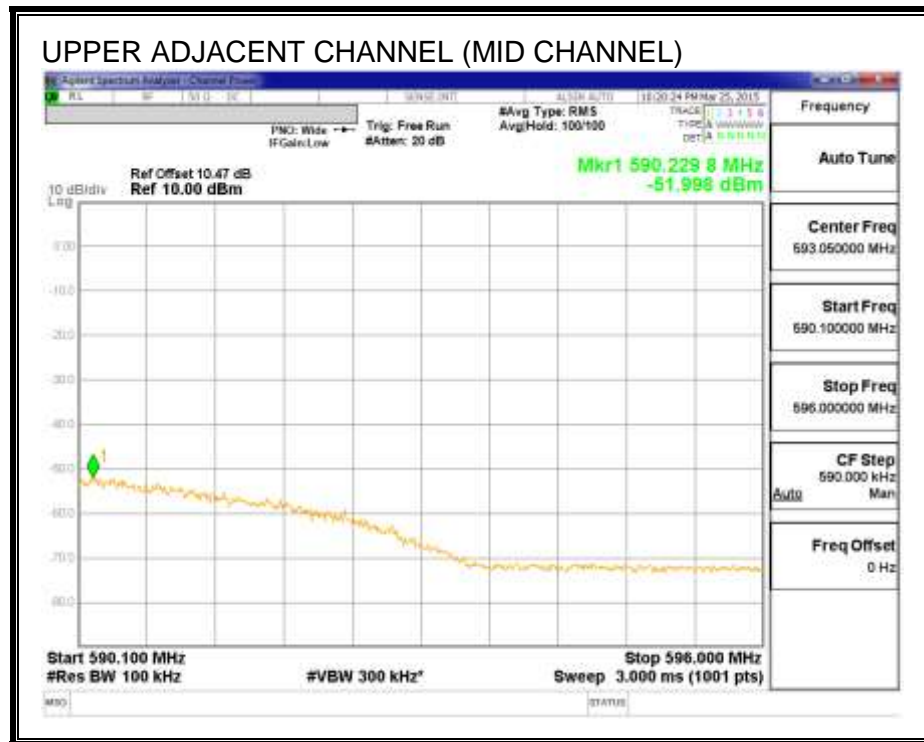
LOWER ADJACENT CHANNEL





UPPER ADJACENT CHANNEL





8.2. ANTENNA PORT TEST RESULTS (VHF CHANNELS)

8.2.1. OUTPUT POWER

LIMITS

§15.709 (a) *Power limits for TVBDs.* (1) For fixed TVBDs, the maximum power delivered to the transmitting antenna shall not exceed one watt per 6 megahertz of bandwidth on which the device operates. The power delivered to the transmitting antenna is the maximum conducted output power reduced by the signal loss experienced in the cable used to connect the transmitter to the transmit antenna. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Fixed TVBD with 9 dBi Antenna Assembly Gain, Limit = 27 dBm in a 6 MHz band.

TEST PROCEDURE

KDB 416721 D01 v02

RESULTS

Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Delta (dB)
177	16.86	27.00	-10.14
195	11.97	27.00	-15.03
213	16.96	27.00	-10.04

8.2.2. POWER SPECTRAL DENSITY

LIMITS

§15.709 (5) The power spectral density from the TVBD shall not be greater than the following values when measured in any 100 kHz band during any time interval of continuous transmission.

(i) Fixed devices: 12.6 dBm conducted power. If transmitting antennas of directional gain greater than 6 dBi are used, this conducted power level shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Fixed TVBD with 9 dBi Antenna Assembly Gain, **Limit = 9.6 dBm** measured in a 100 kHz band.

TEST PROCEDURE

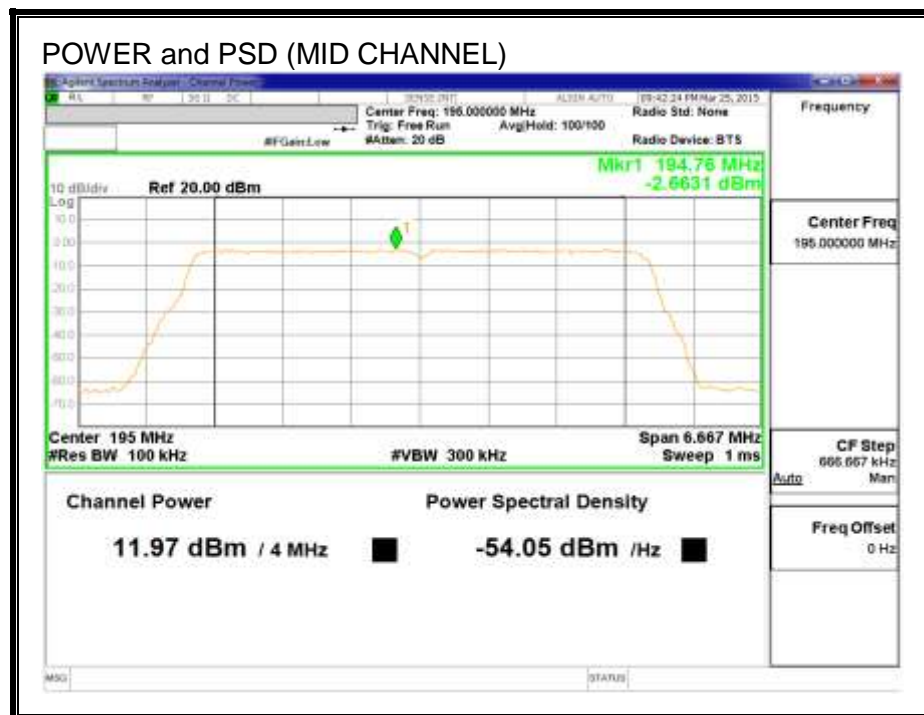
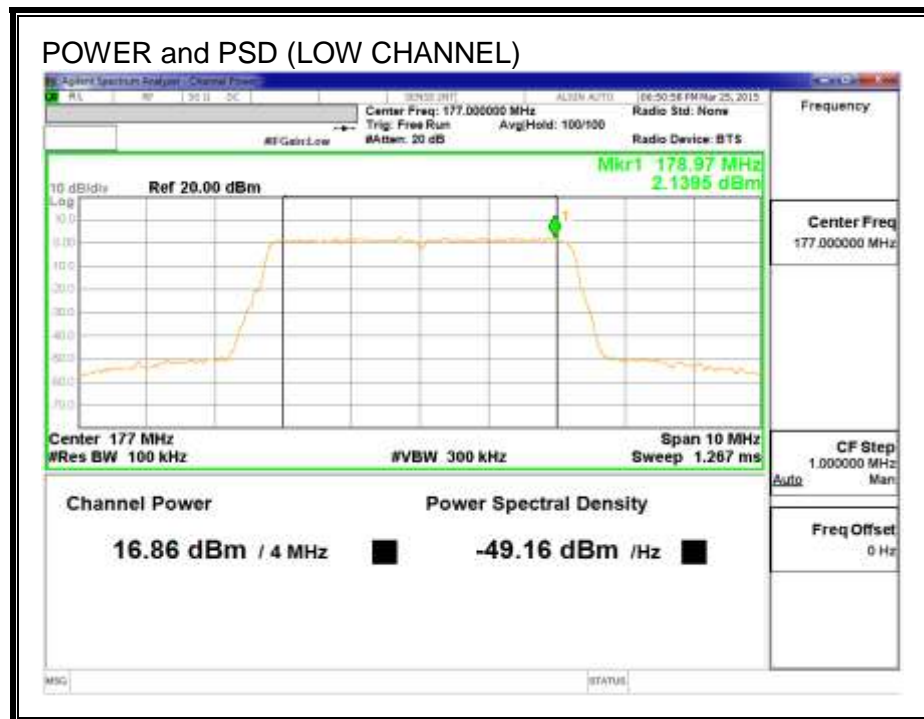
KDB 416721 D01 v02

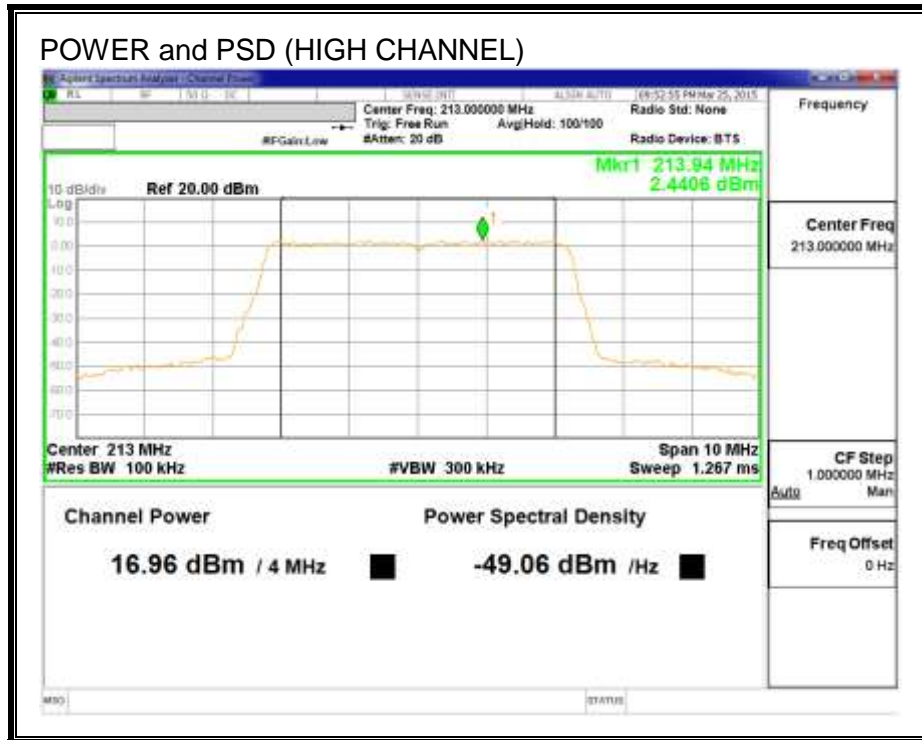
RESULTS

Frequency (MHz)	PSD (dBm/100 kHz)	PSD Limit (dBm/100 kHz)	Delta (dB)
177	2.14	9.60	-7.46
195	-2.66	9.60	-12.26
213	2.44	9.60	-7.16

8.2.3. POWER / POWER SPECTRAL DENSITY PLOTS

PLOTS FOR POWER AND PSD





8.2.4. BANDEDGES

LIMITS

Fixed TVBD, Limit = -42.8 dBm/100 kHz

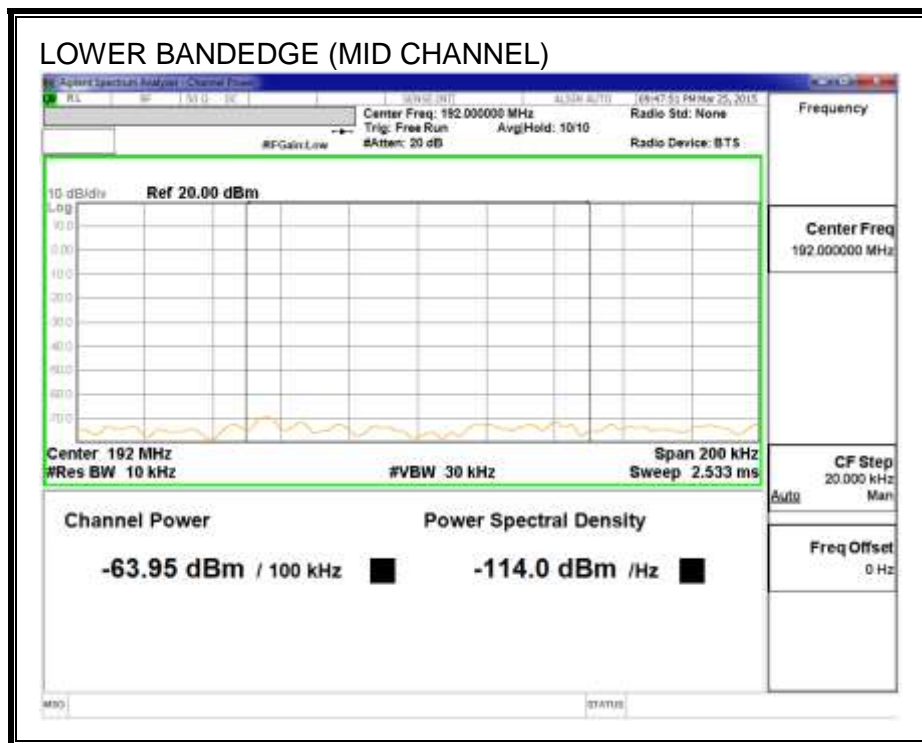
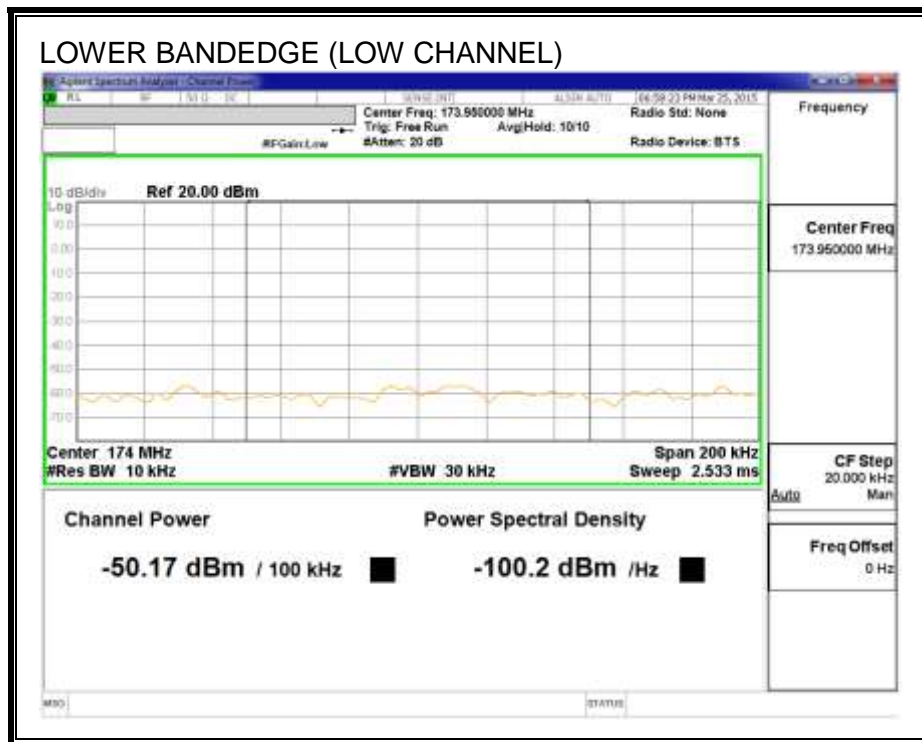
TEST PROCEDURE

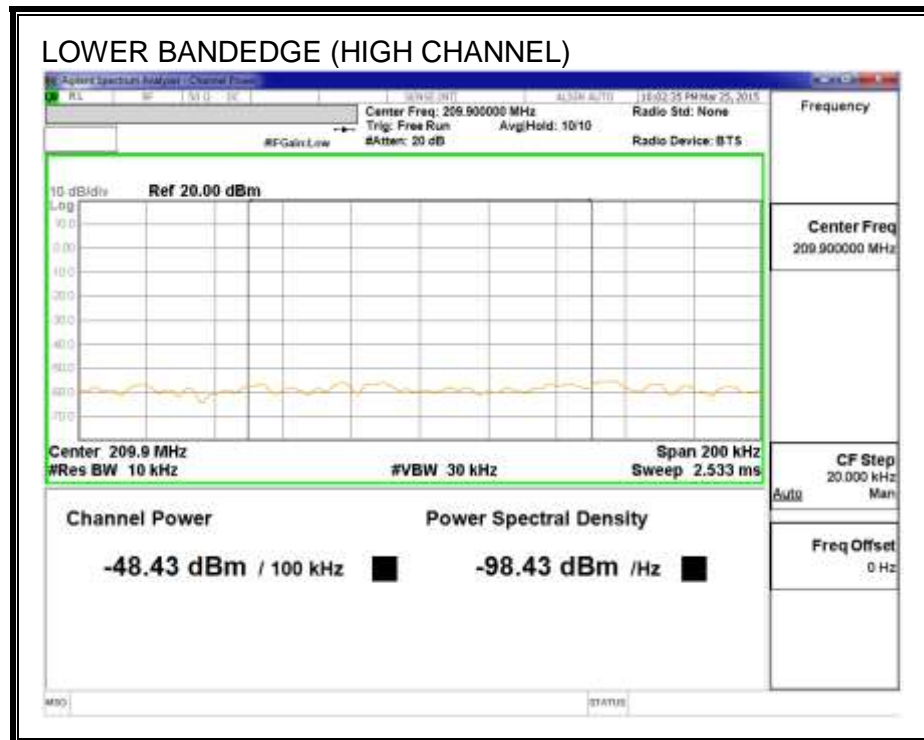
KDB 416721 D01 v02

RESULTS

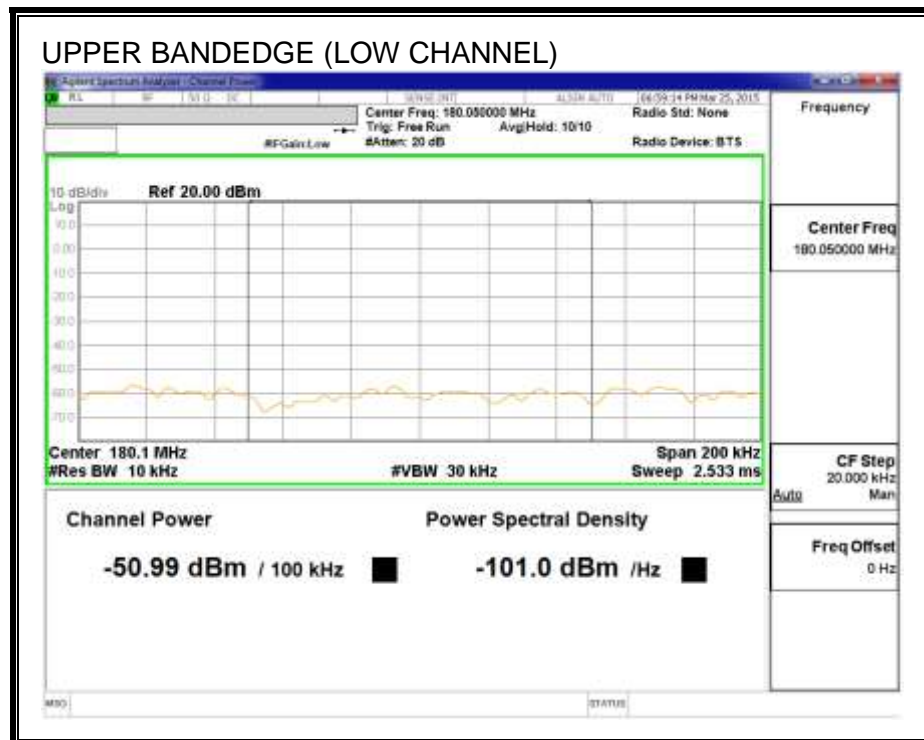
Frequency (MHz)	Bandedge Limit (dBm/100 kHz)	Lower Bandedge (dBm/100 kHz)	Lower Delta (dB)	Upper Bandedge (dBm/100 kHz)	Upper Delta (dB)
177	-42.8	-50.17	-7.37	-50.99	-8.19
195	-42.8	-63.95	-21.15	-63.86	-21.06
213	-42.8	-48.43	-5.63	-46.89	-4.09

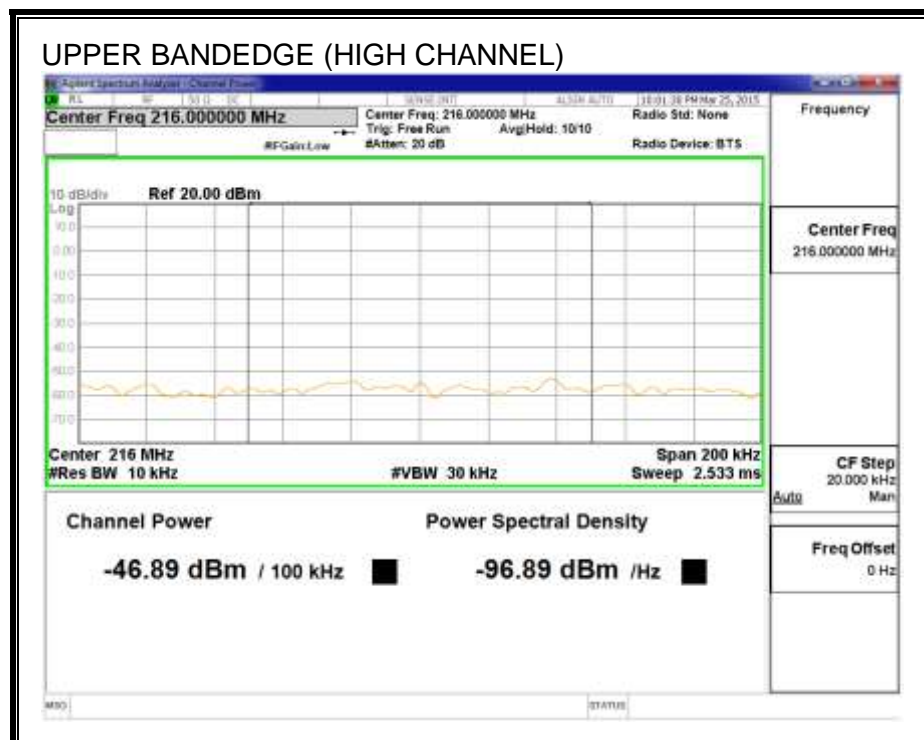
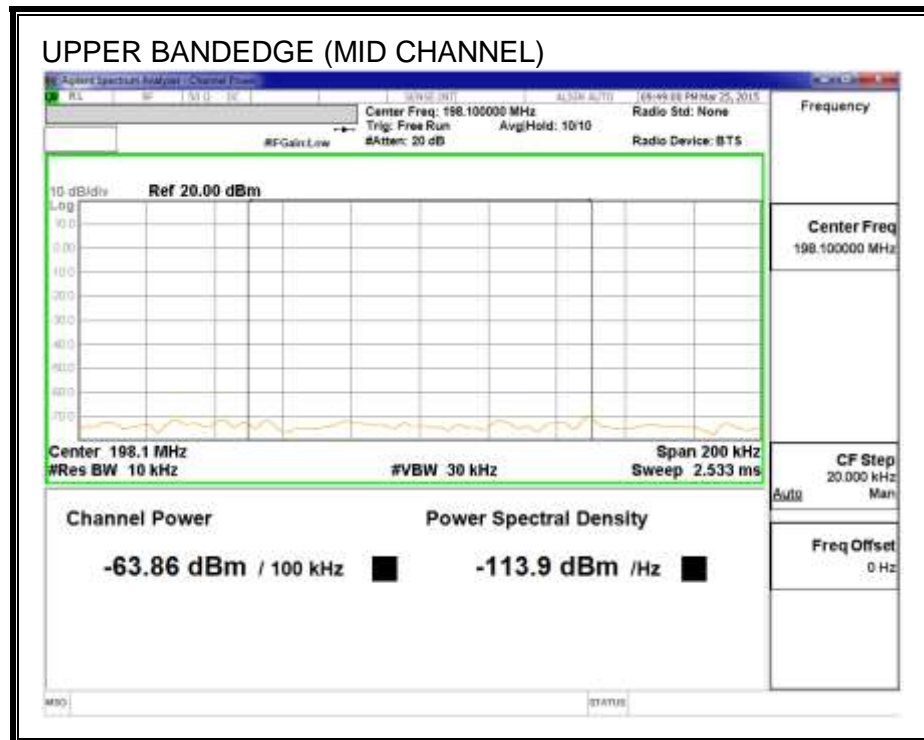
LOWER BANDEDGE





UPPER BANDEDGE





8.2.5. ADJACENT CHANNEL EMISSIONS

LIMITS

§15.709 (c) Emission limits for TVBDs. (1) In the television channels immediately adjacent to the channel in which the TVBD is operating, emissions from the TVBD shall not exceed the following levels.

Fixed TVBD, Limit = -42.8 dBm/100 kHz

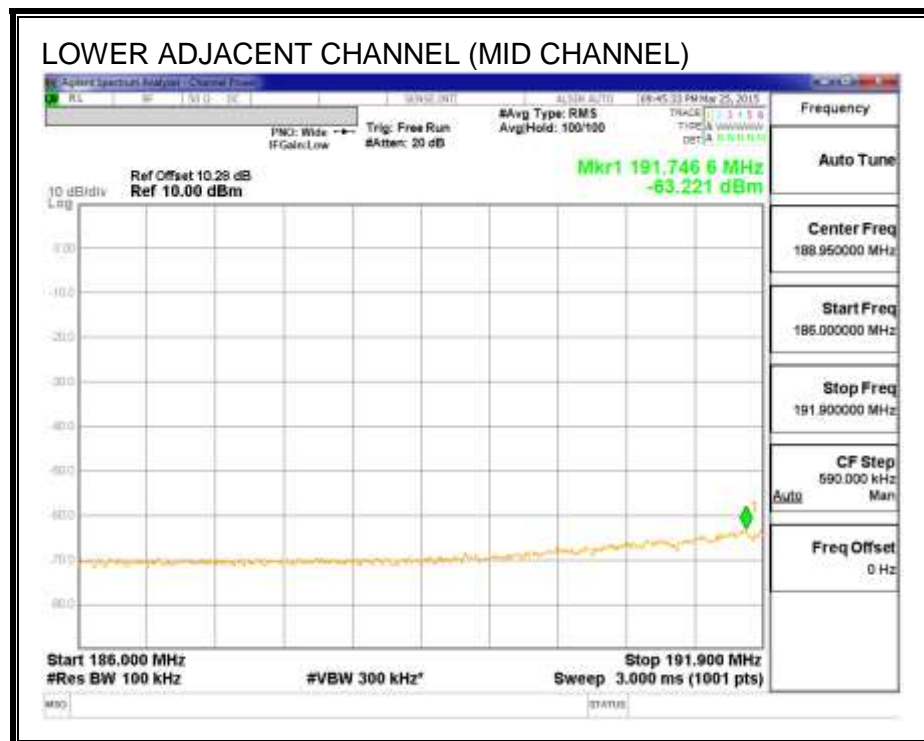
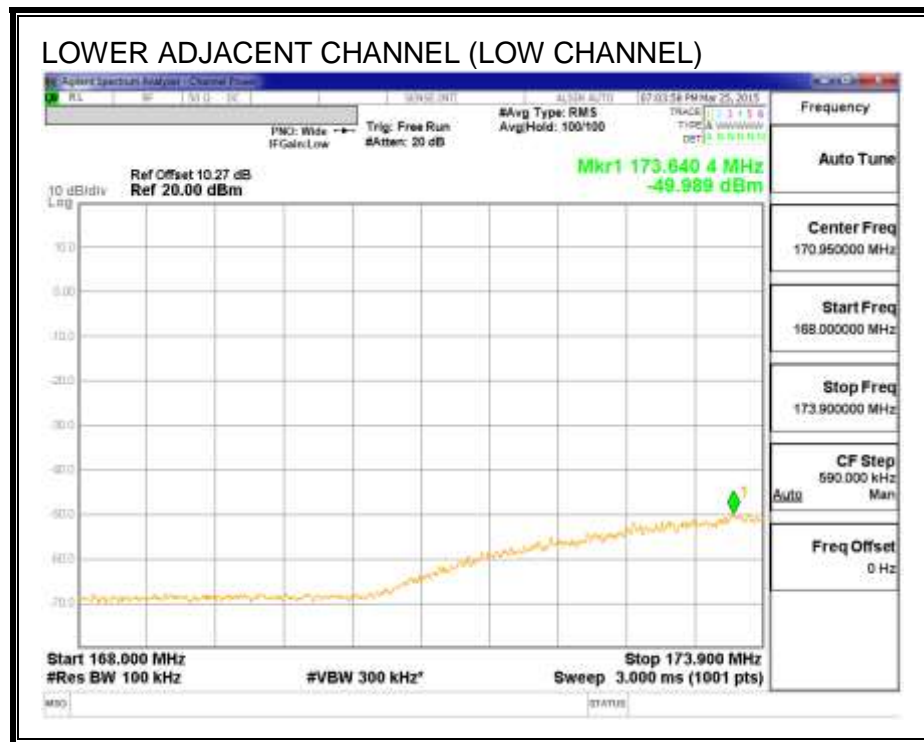
TEST PROCEDURE

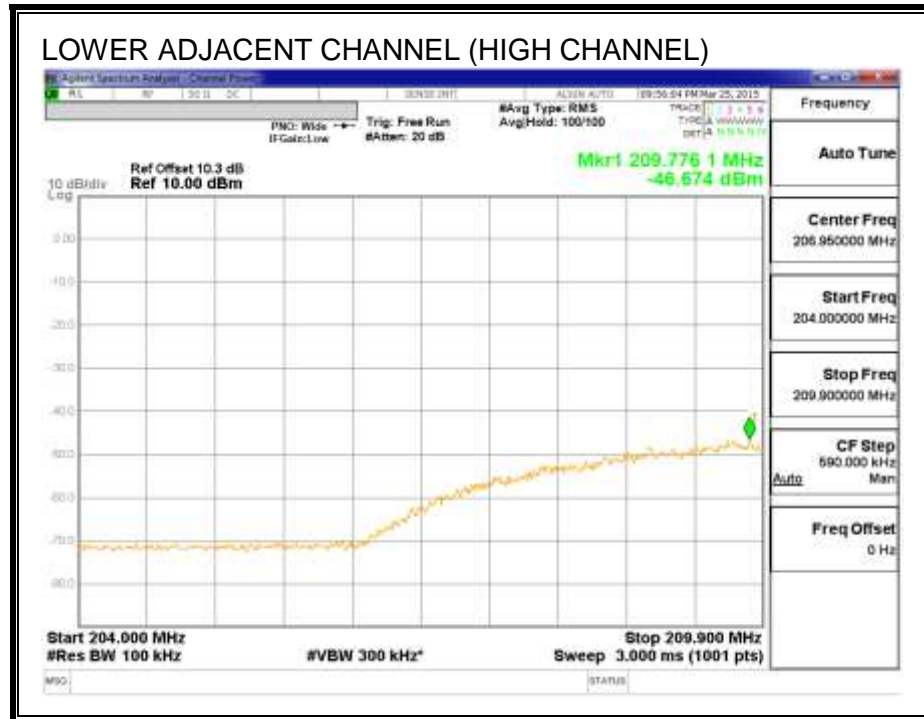
KDB 416721 D01 v02

RESULTS

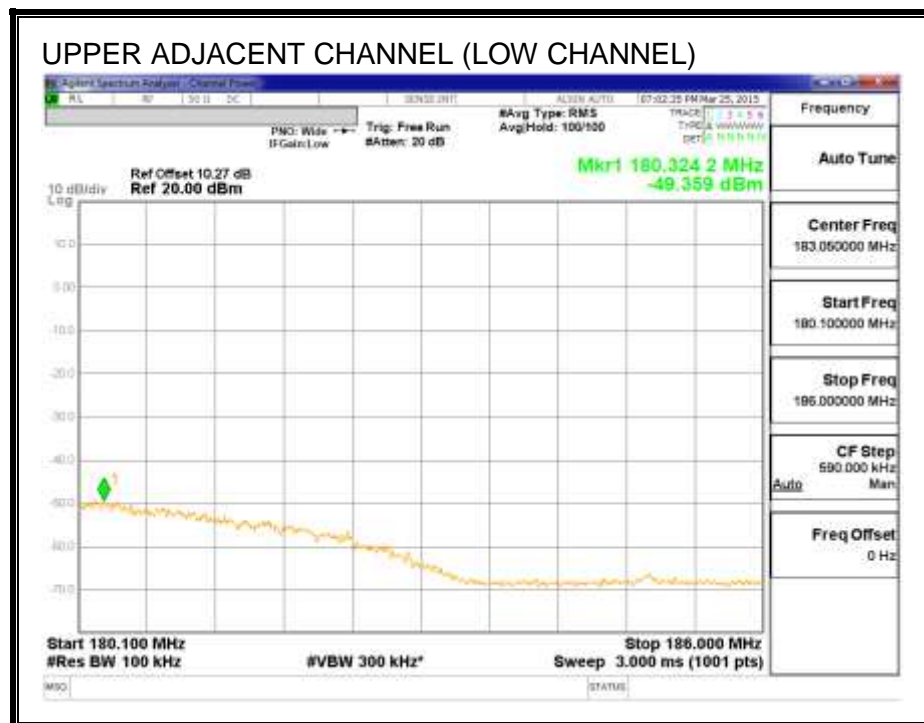
Frequency (MHz)	Emissions Limit (dBm/100 kHz)	Lower Adjacent Channel Emissions (dBm/100 kHz)	Lower Delta (dB)	Upper Adjacent Channel Emissions (dBm/100 kHz)	Upper Delta (dB)
177	-42.8	-49.99	-7.19	-49.36	-6.56
195	-42.8	-63.22	-20.42	-63.25	-20.45
213	-42.8	-46.67	-3.87	-46.87	-4.07

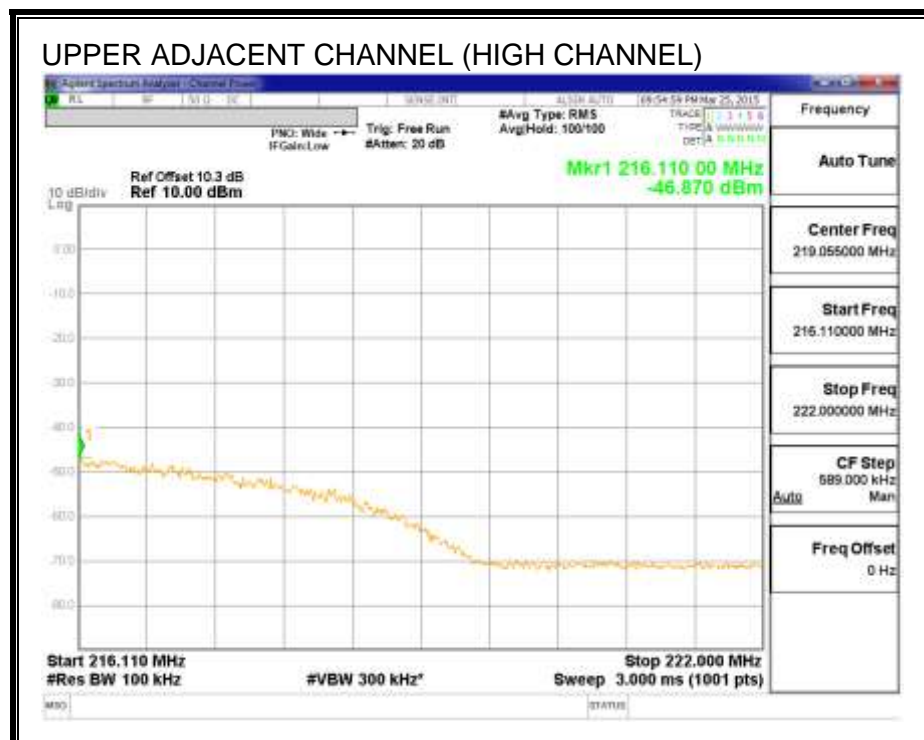
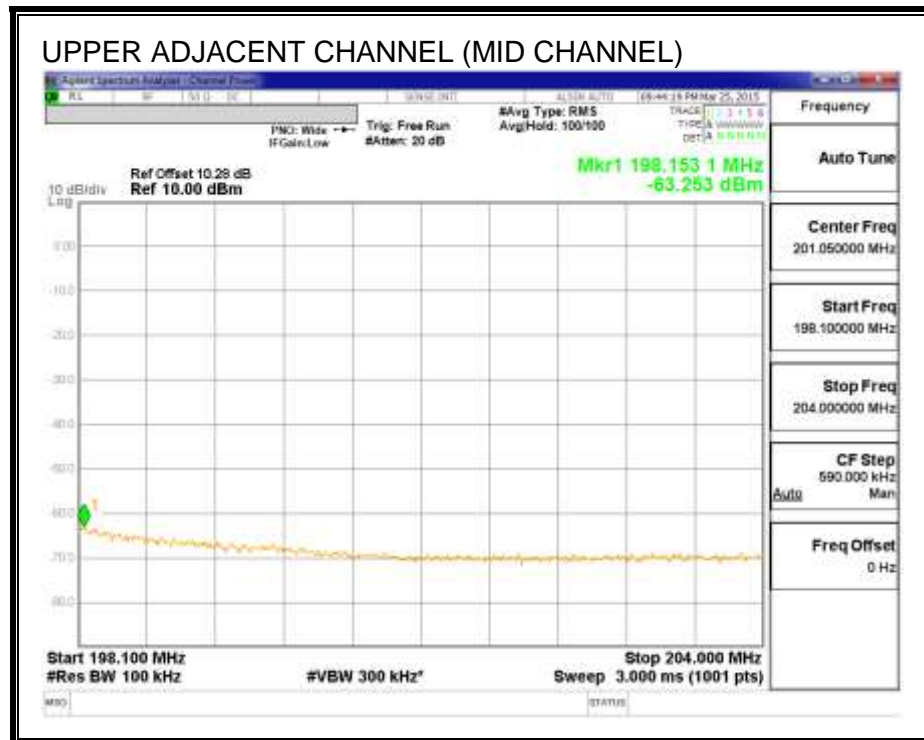
LOWER ADJACENT CHANNEL





UPPER ADJACENT CHANNEL





9. 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	$120-5[620-F(\text{MHz})]$

TEST PROCEDURE

ANSI C63.4-2009.

The EUT is set to transmit in a continuous mode.

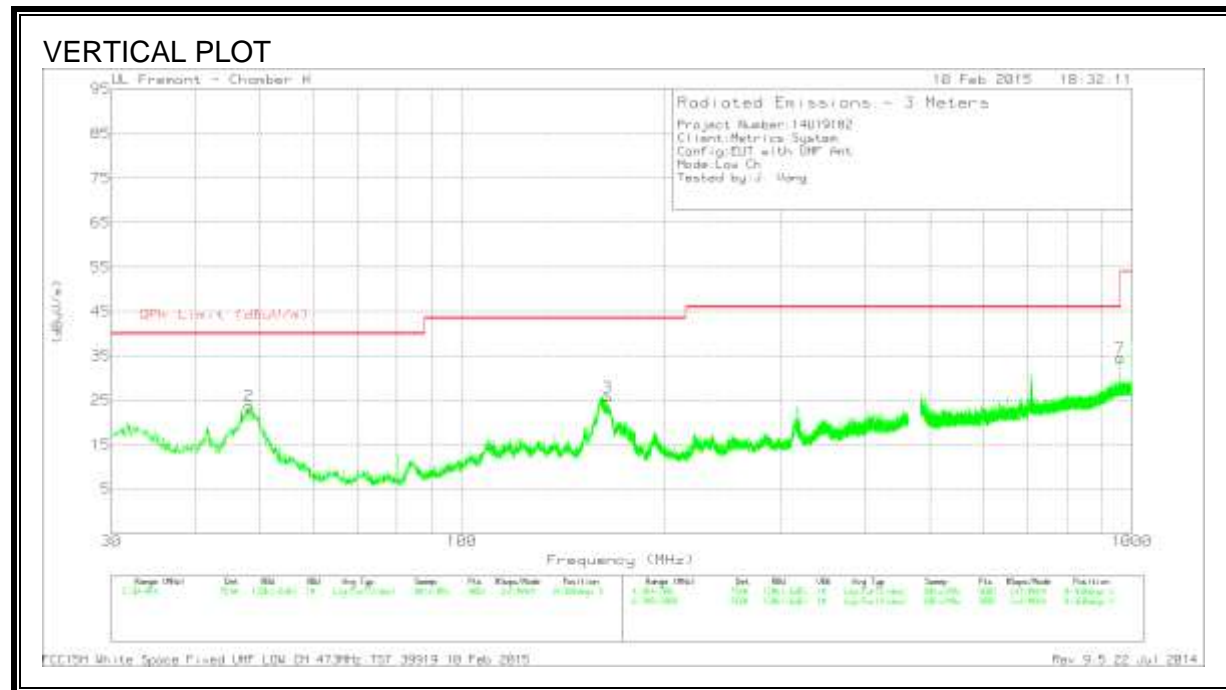
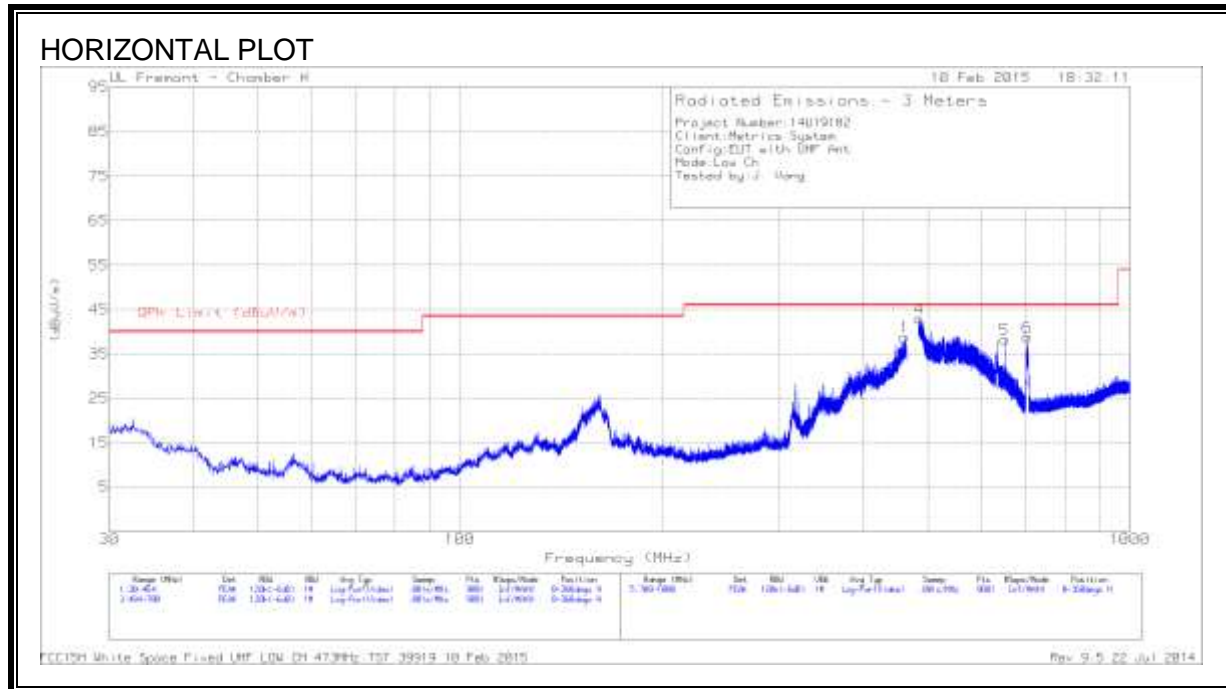
High-Q Cavity Notch filters are used to reduce the amplitude of the intentional transmitter and prevent overload of the system preamplifier.

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

For the additional 602-620 MHz tests a High-Q Cavity band pass filter is used to reduce the amplitude of the intentional transmitter and prevent overload of the system preamplifier and the measurement distance is set to 1 meter.

9.1. UHF ANTENNA HORIZONTAL POSITION

9.1.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 164.8287	40.71	PK	15	-30	.1	25.81	43.5	-17.69	0-360	102	V
2	48.1797	43.23	PK	11.6	-31	.1	23.93	40	-16.07	0-360	102	V
1	460.8153	47.12	PK	20	-28.4	.1	38.82	46	-7.18	0-360	99	H
4	484.936	50.73	PK	20.5	-28.4	.1	42.93	46	-3.07	0-360	101	H
	485.4257	47.6	QP	20.5	-28.4	.1	39.8	46	-6.2	292	106	H
5	650.008	43.34	PK	22.6	-27.8	.1	38.24	46	-7.76	0-360	201	H
6	702.1	42.43	PK	23.3	-27.7	.8	38.83	46	-7.17	0-360	201	H
7	959.9974	34.35	PK	25.8	-25.8	.2	34.55	46	-11.45	0-360	100	V

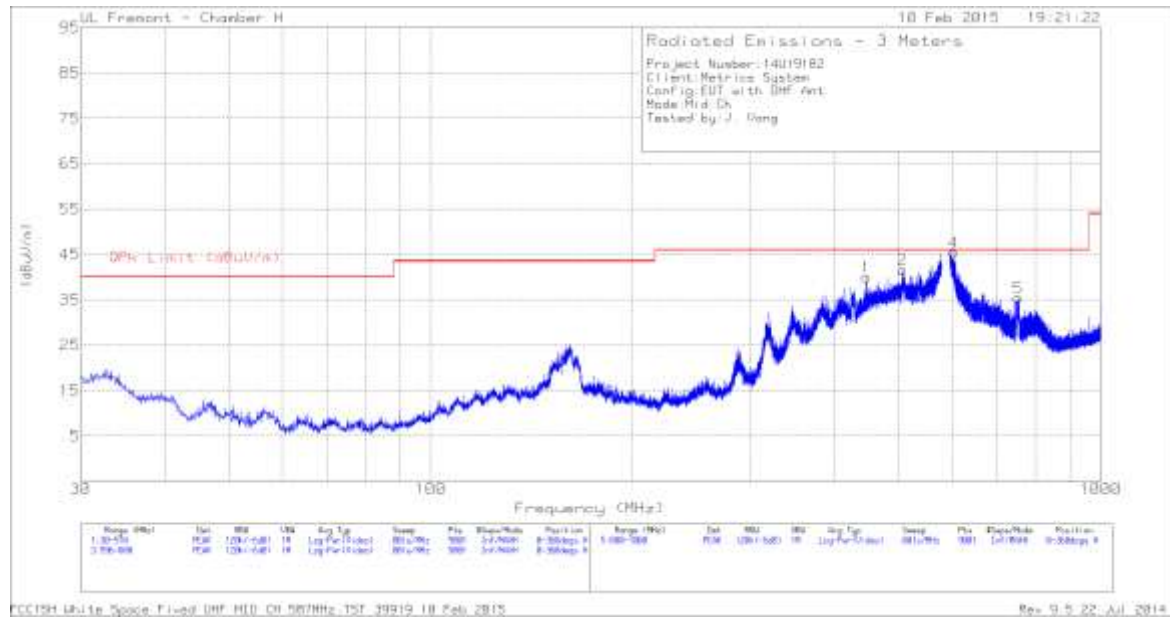
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

QP - Quasi-Peak detector

9.1.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

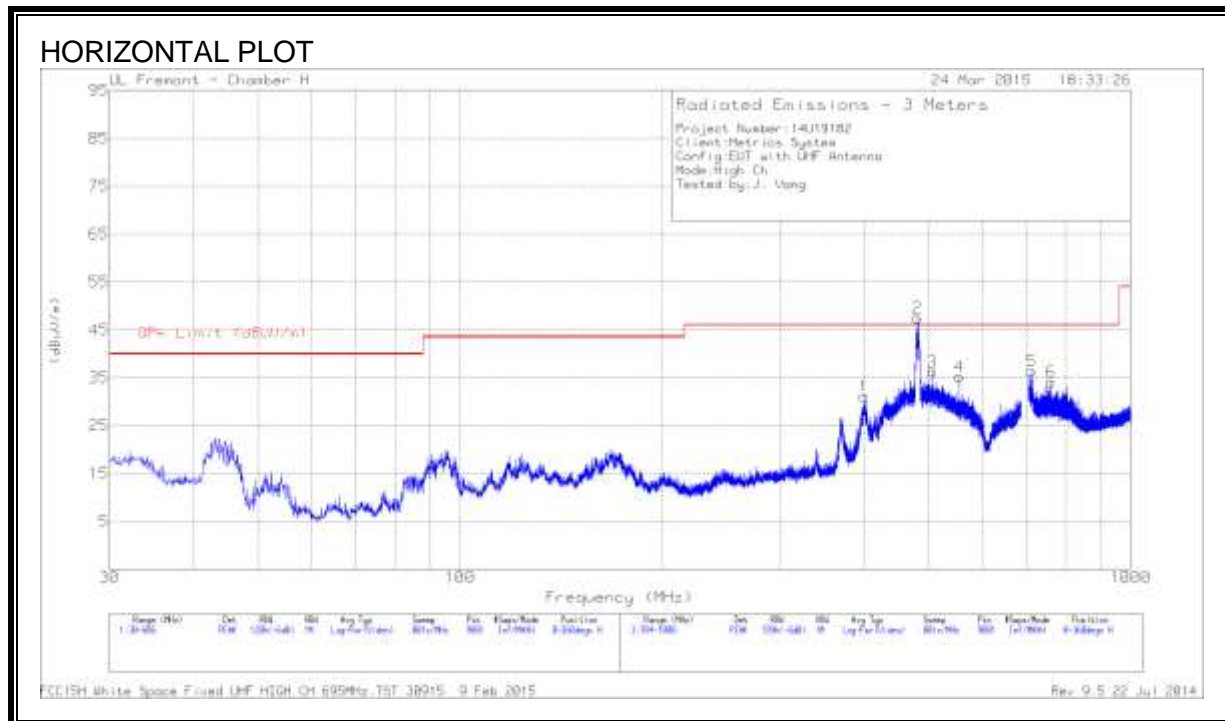
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 960.0428	34.36	PK	25.8	-25.8	.2	34.56	54	-19.44	0-360	100	V
7	* 999.9758	38.12	PK	26.4	-25.3	.3	39.52	54	-14.48	0-360	100	V
3	47.6578	44.09	PK	11.9	-31.1	.1	24.99	40	-15.01	0-360	100	V
1	446.9679	48.6	PK	19.7	-28.4	.1	40	46	-6	0-360	100	H
2	506.3955	49.23	PK	20.6	-28.3	.1	41.63	46	-4.37	0-360	100	H
	506.1838	45.89	QP	20.6	-28.3	.1	38.29	46	-7.71	279	115	H
4	603.5254	51.79	PK	21.5	-27.9	.1	45.49	46	-.51	0-360	99	H
	603.7491	45.25	QP	21.6	-27.9	.1	39.05	46	-6.95	271	166	H
5	753.0823	39.11	PK	23.7	-27.5	.1	35.41	46	-10.59	0-360	99	H

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

PK - Peak detector

QP - Quasi-Peak detector

9.1.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)



HORIZONTAL & VERTICAL DATA

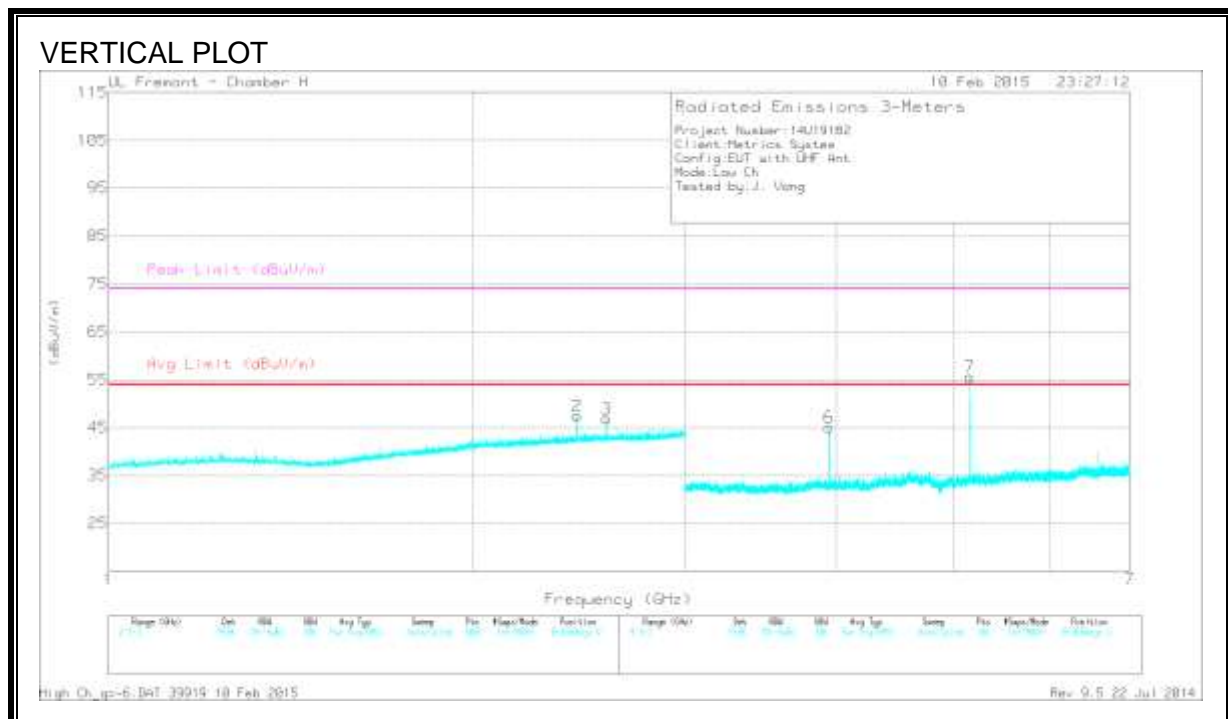
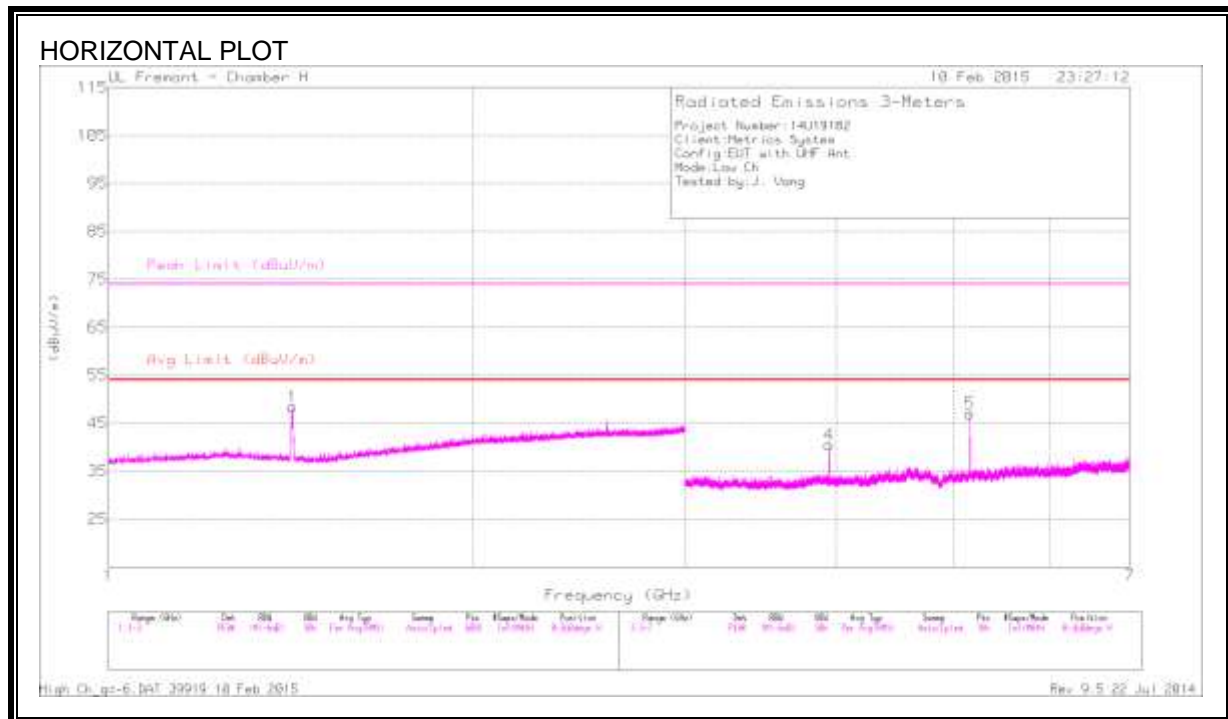
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 400.349	41.17	PK	18.6	-28.6	0	31.17	46	-14.83	0-360	100	H
7	44.1405	53.27	PK	14.1	-31.1	0	36.27	40	-3.73	0-360	98	V
	43.8885	49.89	QP	14.3	-31.1	0	33.09	40	-6.91	211	115	V
8	95.2357	45.98	PK	11.7	-30.5	0	27.18	43.5	-16.32	0-360	98	V
9	159.3051	41.84	PK	15.3	-30	0	27.14	43.5	-16.36	0-360	98	V
2	480.9411	51.48	QP	20.5	-28.3	0	43.68	46	-2.32	314	174	H
10	481.4745	39.66	PK	20.5	-28.3	0	31.86	46	-14.14	0-360	201	V
3	506.3296	43.99	PK	20.6	-28.3	0	36.29	46	-9.71	0-360	201	H
4	554.9466	41.9	PK	21.4	-28.1	0	35.2	46	-10.8	0-360	301	H
5	711.0382	40.04	PK	23.3	-27.7	.8	36.44	46	-9.56	0-360	103	H
6	760.9966	37.25	PK	23.8	-27.5	.5	34.05	46	-11.95	0-360	103	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

QP - Quasi-Peak detector

9.1.4. TX SPURIOUS EMISSIONS ABOVE 1 GHz (LOW CH)



HORIZONTAL & VERTICAL DATA

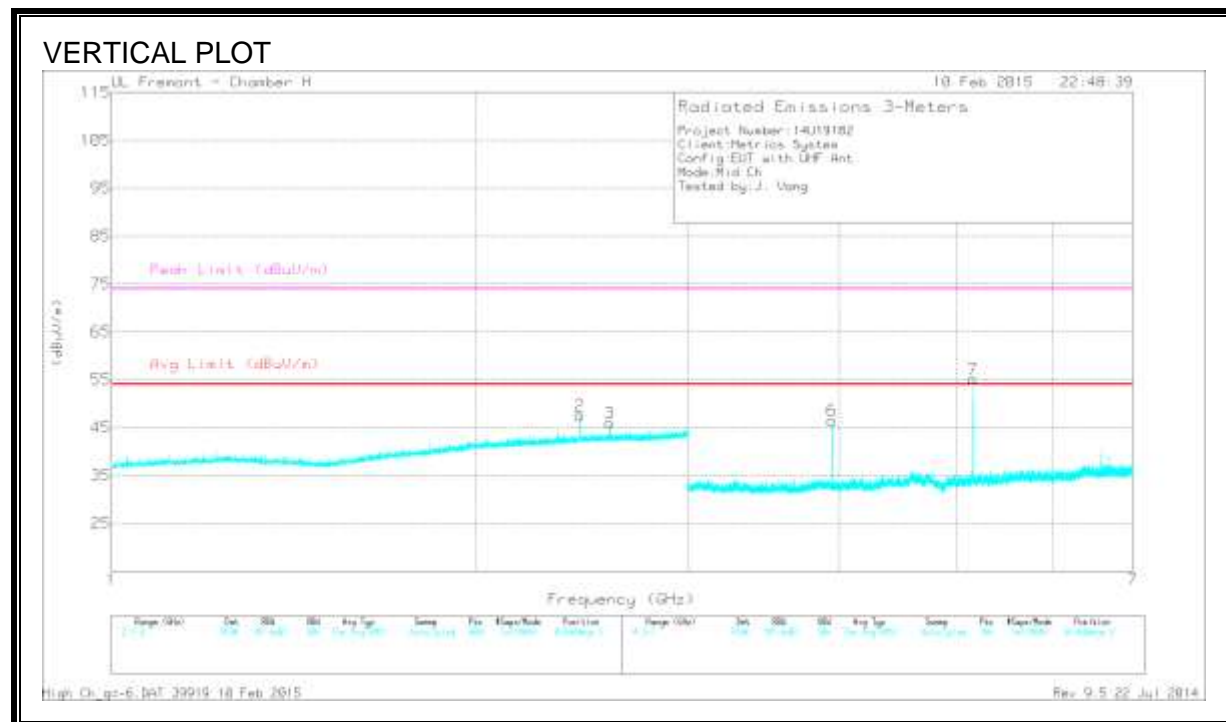
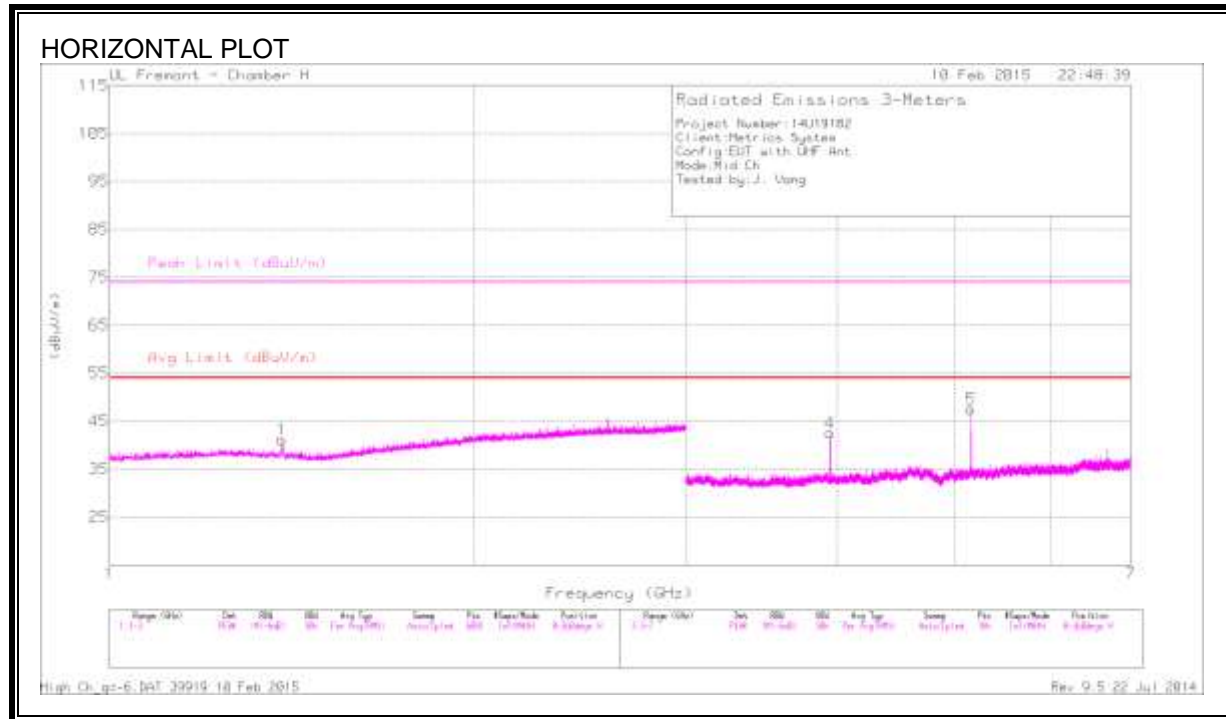
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.419	63.25	PK2	28.1	-25.5	65.85	-	-	74	-8.15	6	136	H
	* 1.419	42.62	MAv1	28.1	-25.5	45.22	54	-8.78	-	-	6	136	H
4	* 3.948	45.55	PK2	33.4	-33.2	45.75	-	-	74	-28.25	316	256	H
	* 3.948	40.1	MAv1	33.4	-33.2	40.3	54	-13.7	-	-	316	256	H
6	* 3.948	48.78	PK2	33.4	-33.2	48.98	-	-	74	-25.02	360	214	V
	* 3.948	45.17	MAv1	33.4	-33.2	45.37	54	-8.63	-	-	360	214	V
2	2.441	48.37	PK2	32.1	-24.5	55.97	-	-	-	-	360	100	V
3	2.582	44.45	PK2	32.2	-24.3	52.35	-	-	-	-	360	100	V
5	5.164	48.39	PK2	34.6	-32.1	50.89	-	-	-	-	54	202	H
7	5.164	54.95	PK2	34.6	-32.1	57.45	-	-	-	-	5	326	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.1.5. TX SPURIOUS EMISSIONS ABOVE 1 GHz (MID CH)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.39	47.05	PK2	28.3	-25.6	49.75	-	-	74	-24.25	18	151	H
	* 1.39	33.12	MAv1	28.3	-25.6	35.82	54	-18.18	-	-	18	151	H
4	* 3.948	47.1	PK2	33.4	-33.2	47.3	-	-	74	-26.7	306	177	H
	* 3.948	42.3	MAv1	33.4	-33.2	42.5	54	-11.5	-	-	306	177	H
6	* 3.948	48.96	PK2	33.4	-33.2	49.16	-	-	74	-24.84	335	106	V
	* 3.948	45.42	MAv1	33.4	-33.2	45.62	54	-8.38	-	-	335	106	V
3	2.441	47.06	PK2	32.1	-24.5	54.66	-	-	-	-	335	101	V
5	5.164	50.63	PK2	34.6	-32.1	53.13	-	-	-	-	52	343	H
7	5.164	55.05	PK2	34.6	-32.1	57.55	-	-	-	-	3	360	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.39	59.83	PK2	28.3	-25.6	62.53	-	-	74	-11.47	24	187	H
	* 1.39	43.09	MAv1	28.3	-25.6	45.79	54	-8.21	-	-	24	187	H
5	* 3.948	43.58	PK2	33.4	-33.2	43.78	-	-	74	-30.22	1	128	H
	* 3.948	35.95	MAv1	33.4	-33.2	36.15	54	-17.85	-	-	1	128	H
6	* 3.741	43.54	PK2	33.2	-32.8	43.94	-	-	74	-30.06	73	207	V
	* 3.742	35.3	MAv1	33.2	-32.7	35.8	54	-18.2	-	-	73	207	V
7	* 3.948	44.98	PK2	33.4	-33.2	45.18	-	-	74	-28.82	214	224	V
	* 3.948	38.86	MAv1	33.4	-33.2	39.06	54	-14.94	-	-	214	224	V
2	2.086	57.93	PK2	31.4	-24.9	64.43	-	-	-	-	21	187	H
3	2.582	46.55	PK2	32.2	-24.3	54.45	-	-	-	-	84	397	H
4	2.582	50.92	PK2	32.2	-24.3	58.82	-	-	-	-	1	109	V
8	5.613	43.85	PK2	35.1	-32.1	46.85	-	-	-	-	32	200	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

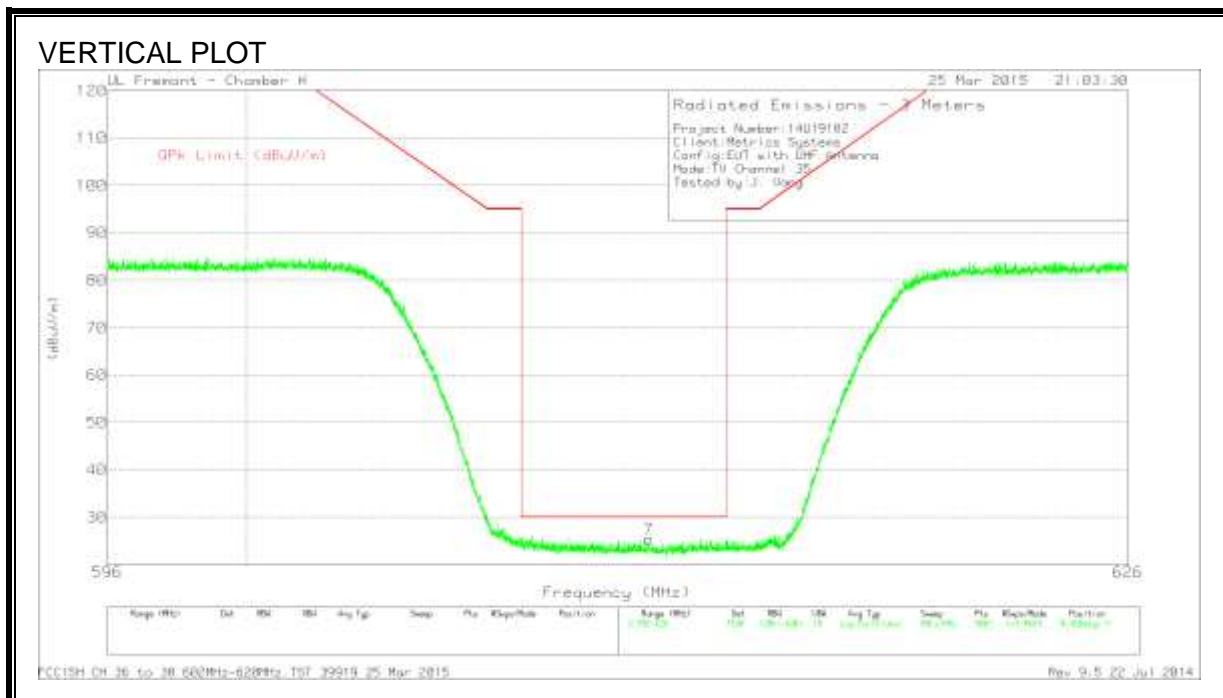
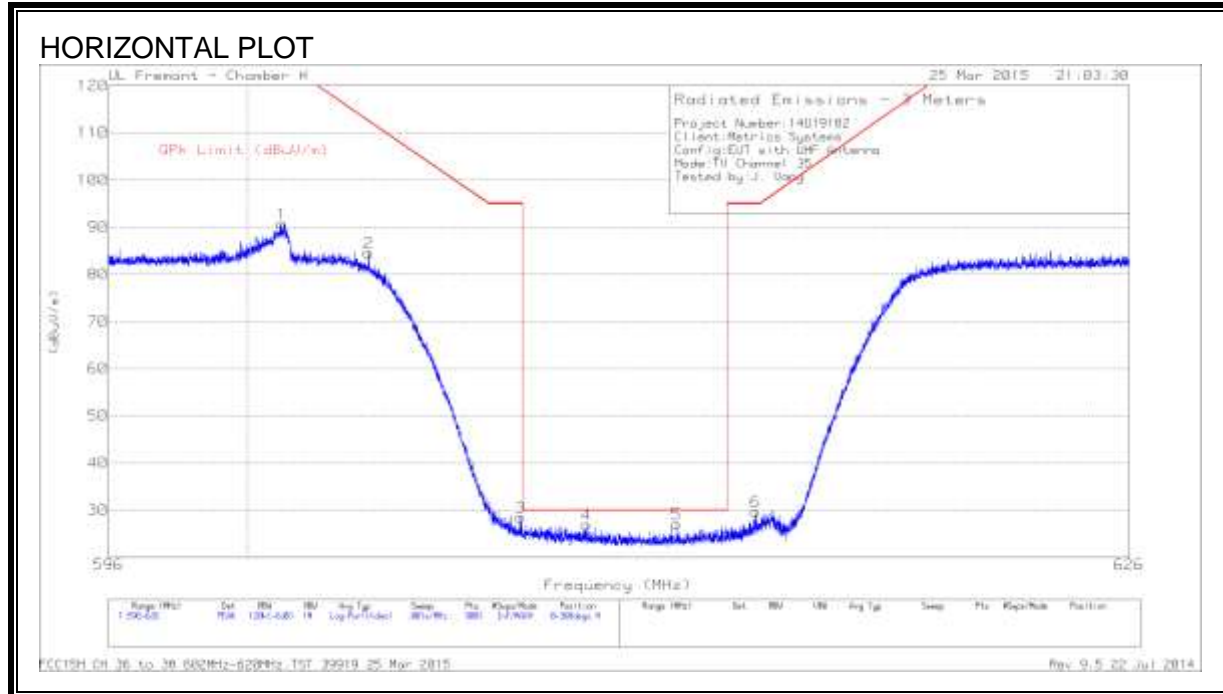
Av - average detection

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.1.7. RADIATED EMISSIONS 602 TO 620 MHz

PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 35 - 599MHz)



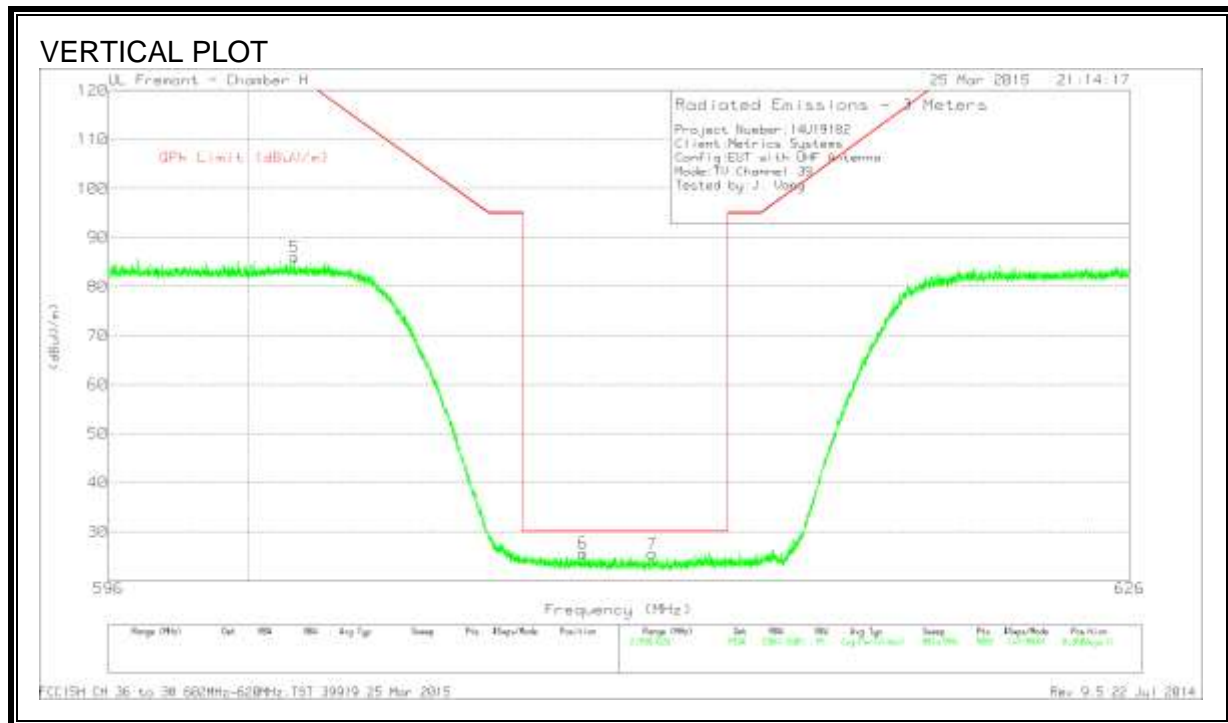
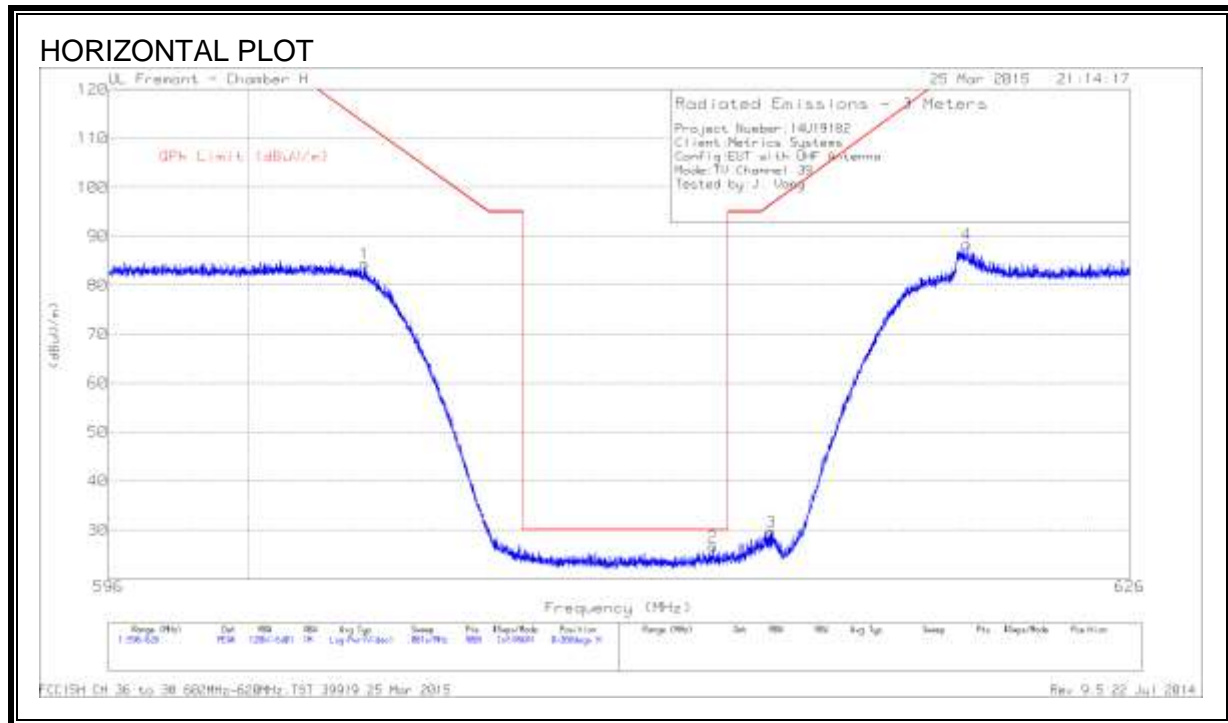
TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 35 - 599MHz)

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 609.8786	30.54	PK	21.8	-28	2.6	26.94	30	-3.06	0-360	201	H
5	* 612.525	30.5	PK	22	-28	2.6	27.1	30	-2.9	0-360	201	H
7	* 611.7284	29.02	PK	21.9	-28	2.5	25.42	30	-4.58	0-360	99	V
1	600.9795	35.6	PK	21.4	-27.9	61.6	90.7	-	-	0-360	100	H
2	603.5059	31.55	PK	21.5	-27.9	59.4	84.55	112.45	-27.9	0-360	201	H
3	607.9321	31.21	PK	21.7	-28.1	3.7	28.51	95	-66.49	0-360	100	H
6	614.8581	32.5	PK	22.1	-28	3.1	29.7	95	-65.3	0-360	100	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 39 - 623MHz)



TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 39 - 623MHz)

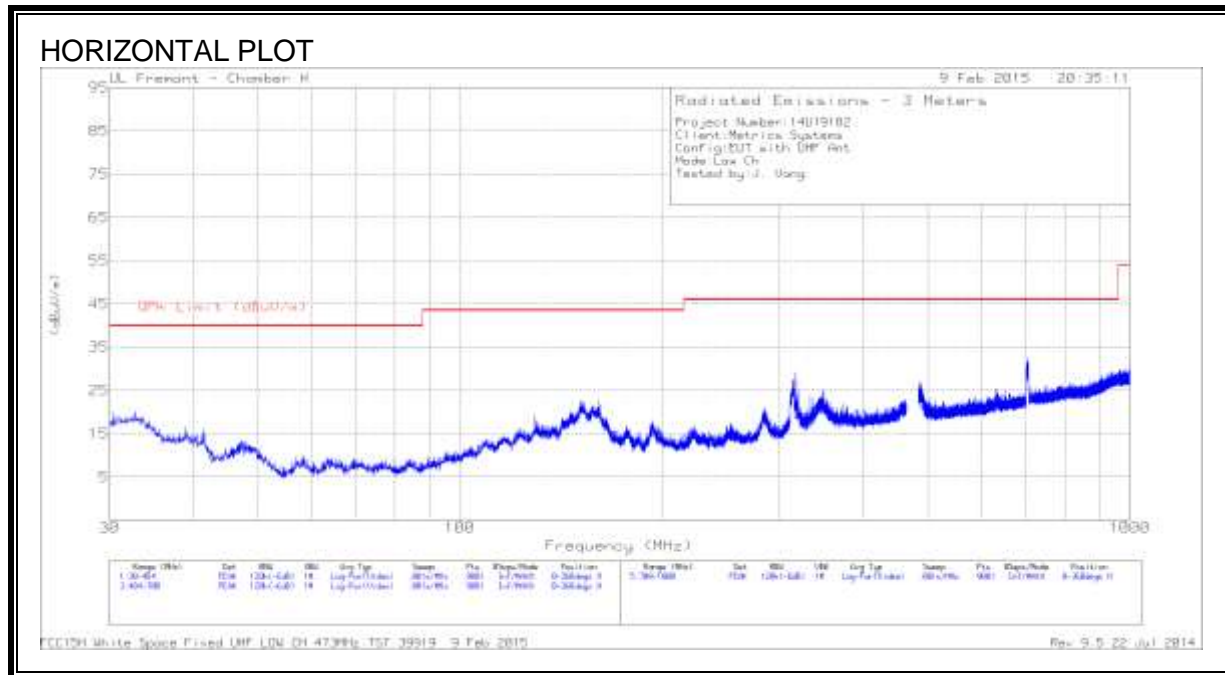
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 613.5682	29.8	PK	22	-28	2.7	26.5	30	-3.5	0-360	202	H
6	* 609.7453	29.18	PK	21.8	-28	2.7	25.68	30	-4.32	0-360	201	V
7	* 611.7851	29.11	PK	21.9	-28	2.5	25.51	30	-4.49	0-360	400	V
5	601.3561	30.9	PK	21.5	-27.9	61.5	86	-	-	0-360	100	V
1	603.3993	31.16	PK	21.5	-27.9	59.6	84.36	112.98	-28.62	0-360	100	H
3	615.3081	31.98	PK	22.1	-28	3.6	29.68	96.55	-66.87	0-360	100	H
4	621.1175	32.49	PK	22.3	-27.9	61.5	88.39	-	-	0-360	100	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

9.2. UHF ANTENNA VERITCAL POSITION

9.2.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)



HORIZONTAL & VERTICAL DATA

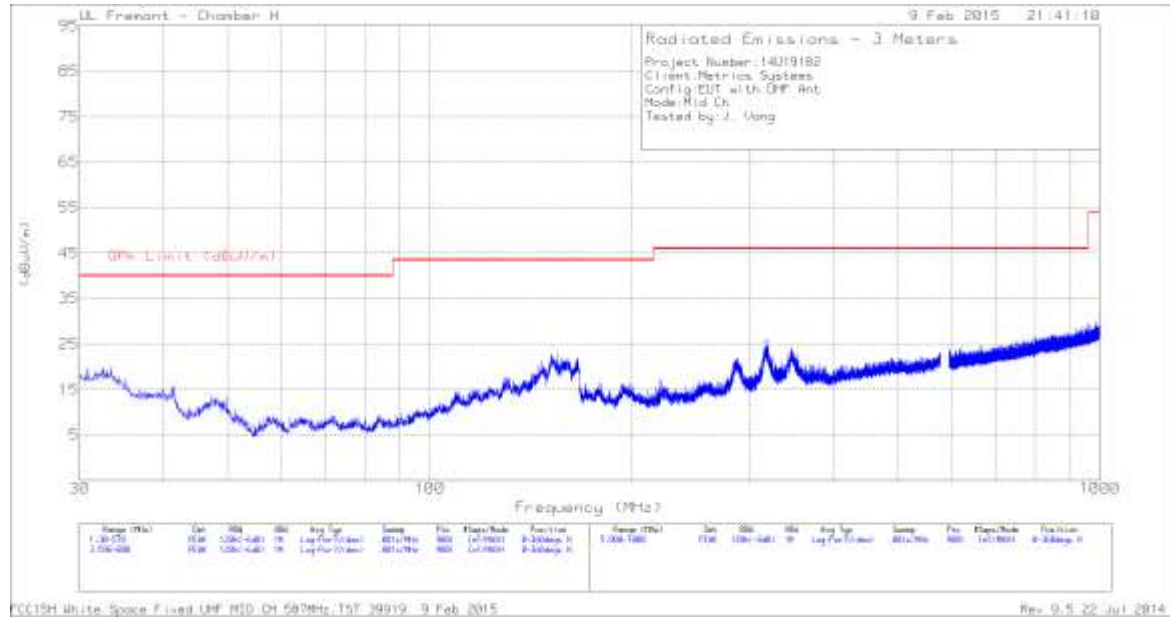
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.035	43.86	PK	11.7	-31.1	.1	24.56	40	-15.44	0-360	100	V
2	158.5599	41.65	PK	15.3	-30	.1	27.05	43.5	-16.45	0-360	100	V
3	454.8358	52.67	PK	19.9	-28.5	.1	44.17	46	-1.83	0-360	100	V
	461.8146	45.23	QP	20	-28.4	.1	36.93	46	-9.07	313	109	V
4	487.744	53.51	PK	20.6	-28.3	.1	45.91	46	-.09	0-360	99	V
	484.4984	46.85	QP	20.5	-28.4	.1	39.05	46	-6.95	294	103	V
5	634.024	43.26	PK	22.5	-28	.1	37.86	46	-8.14	0-360	99	V
6	702.3994	46.4	QP	23.3	-27.7	.8	42.8	46	-3.2	312	125	V
7	946.1309	37.06	PK	25.7	-25.9	.3	37.16	46	-8.84	0-360	99	V

PK - Peak detector

QP - Quasi-Peak detector

9.2.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



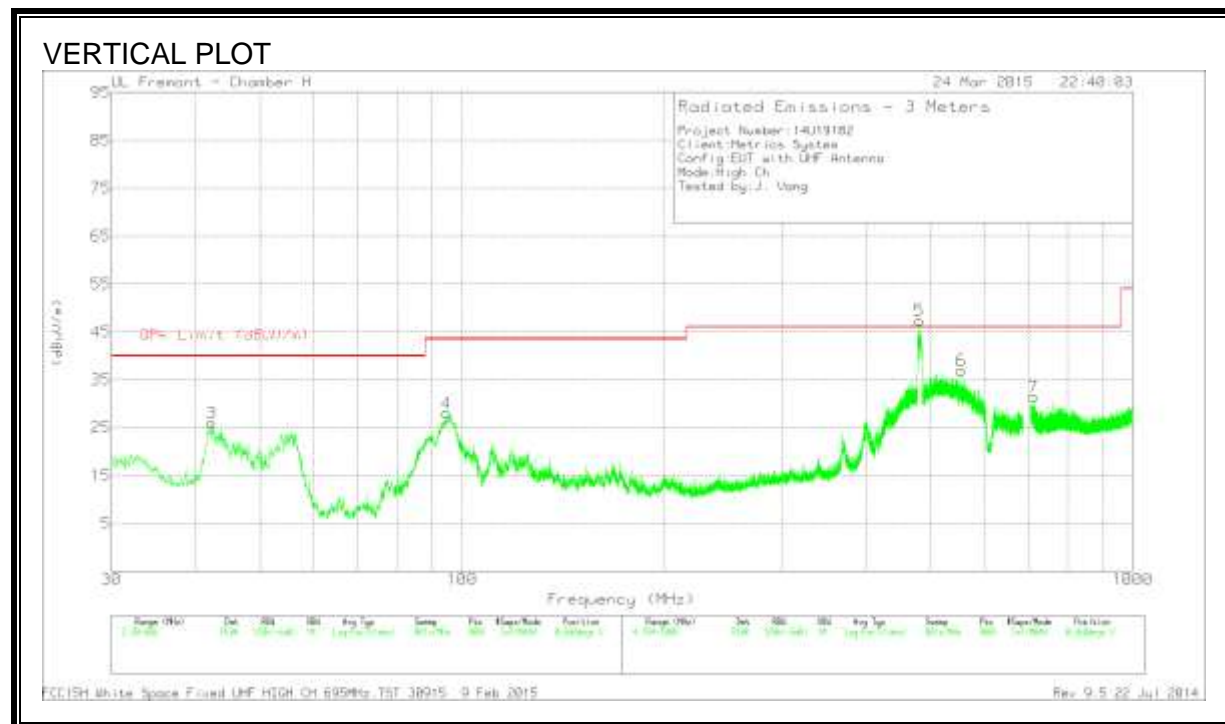
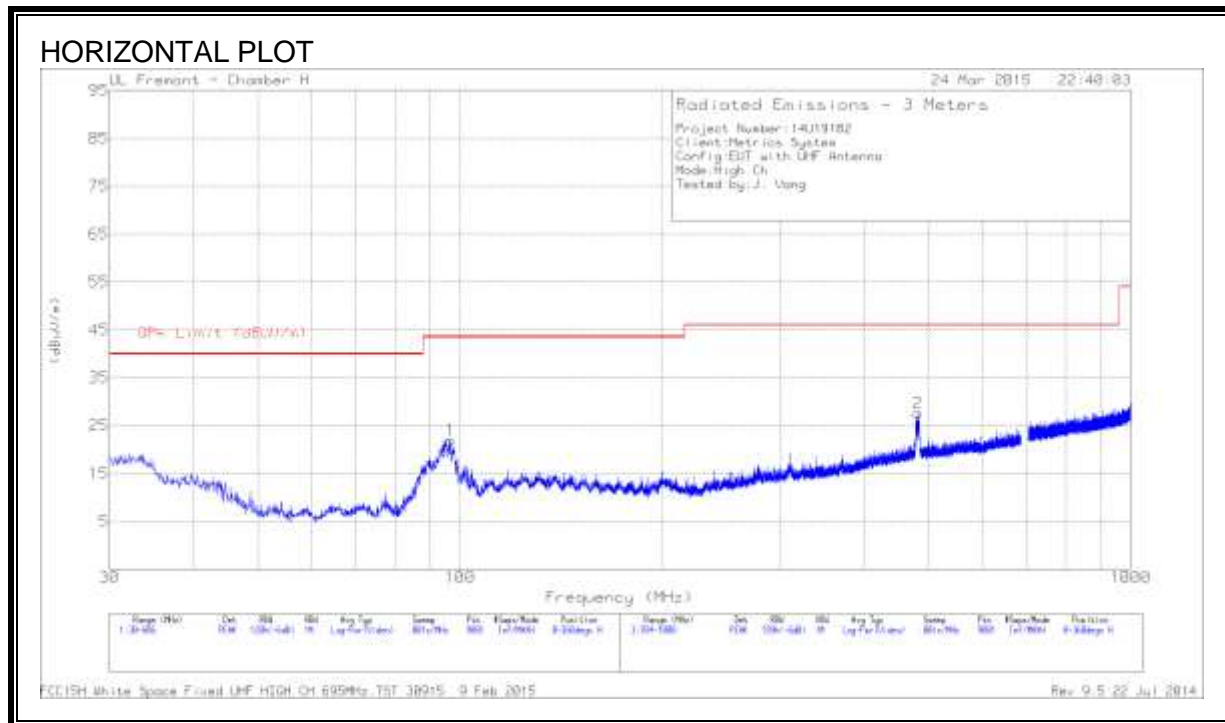
HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	* 999.9758	36.21	PK	26.4	-25.3	.3	37.61	54	-16.39	0-360	100	V
1	48.1449	43.83	PK	11.6	-31	.1	24.53	40	-15.47	0-360	99	V
2	159.0238	42.33	PK	15.3	-30	.1	27.73	43.5	-15.77	0-360	99	V
3	505.1778	46.97	PK	20.6	-28.3	.1	39.37	46	-6.63	0-360	99	V
4	600.7601	45.44	PK	21.4	-27.9	.1	39.04	46	-6.96	0-360	100	V
5	754.1703	37.09	PK	23.7	-27.5	.1	33.39	46	-12.61	0-360	202	V
6	959.9984	31.29	PK	25.8	-25.8	.2	31.49	46	-14.51	0-360	100	V

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

PK - Peak detector

9.2.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)



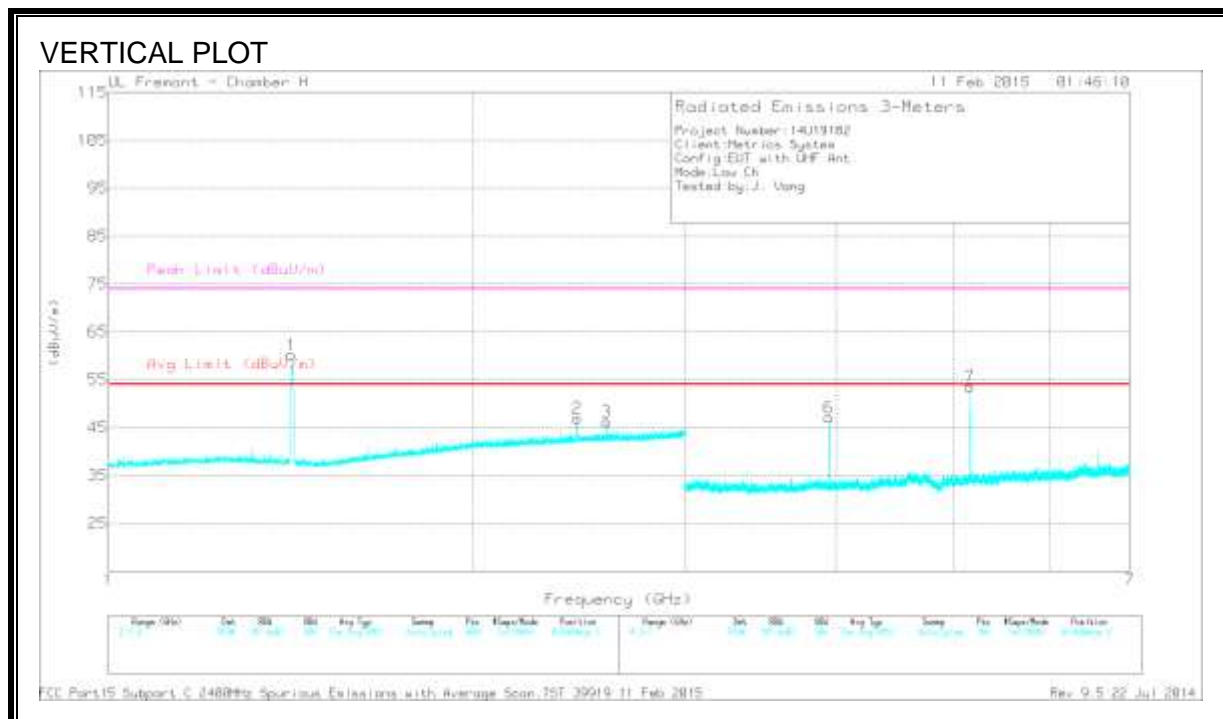
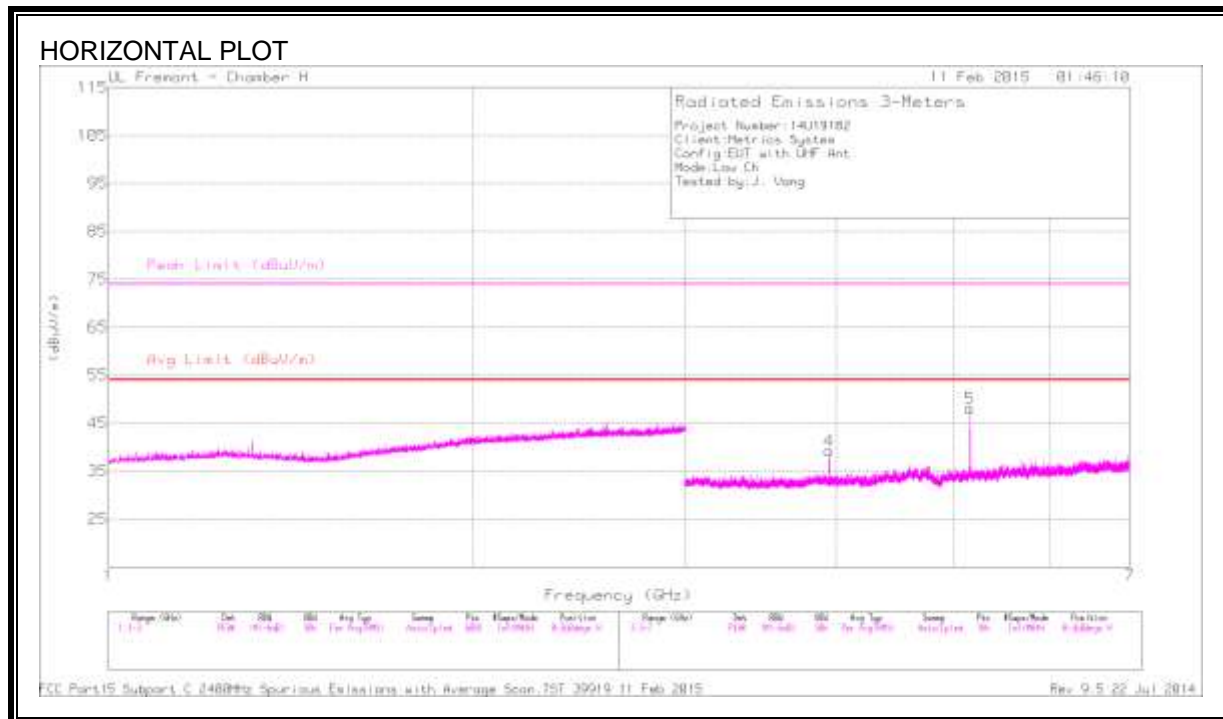
HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	42.3182	41.63	PK	15.5	-31.2	0	25.93	40	-14.07	0-360	99	V
4	94.7983	47.01	PK	11.6	-30.6	0	28.01	43.5	-15.49	0-360	99	V
1	96.6205	40.68	PK	11.9	-30.6	0	21.98	43.5	-21.52	0-360	301	H
5	480.4514	50.51	QP	20.5	-28.3	0	42.71	46	-3.29	305	120	V
2	481.3287	35.44	PK	20.5	-28.3	0	27.64	46	-18.36	0-360	99	H
6	555.0195	43.66	PK	21.4	-28.1	0	36.96	46	-9.04	0-360	99	V
7	711.0382	35.07	PK	23.3	-27.7	.8	31.47	46	-14.53	0-360	201	V

PK - Peak detector

QP - Quasi-Peak detector

9.2.4. TX SPURIOUS EMISSIONS ABOVE 1 GHz (LOW CH)



HORIZONTAL & VERTICAL DATA

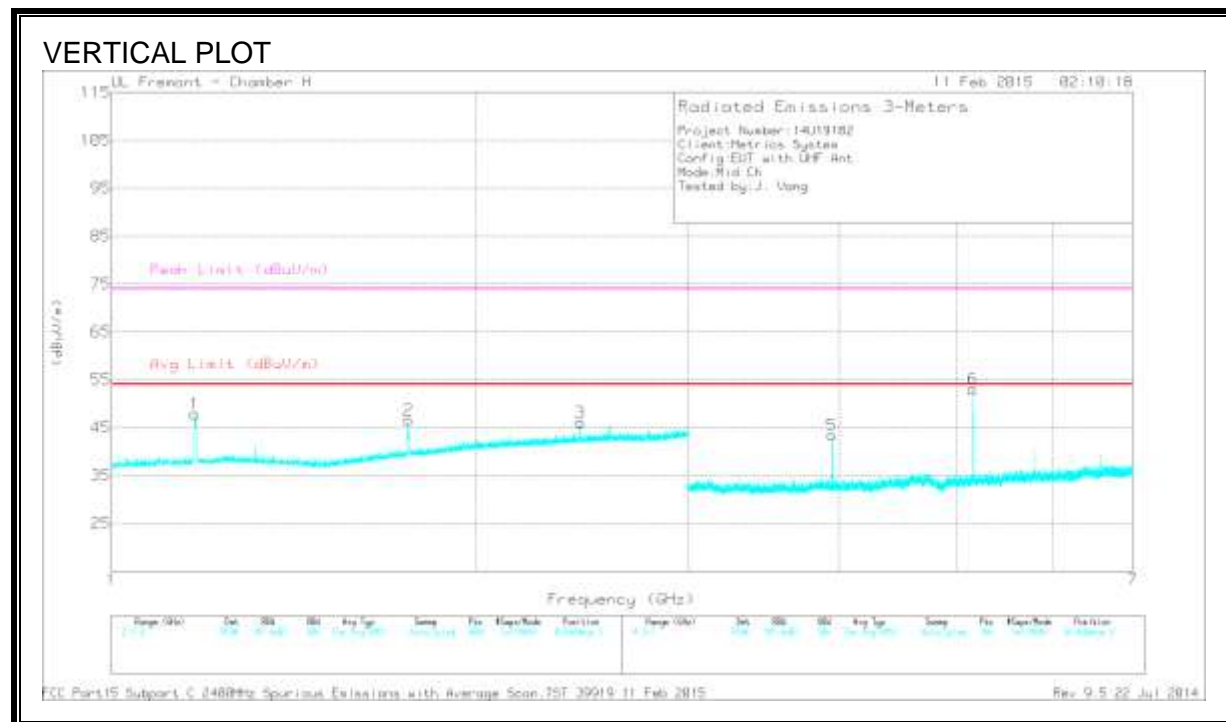
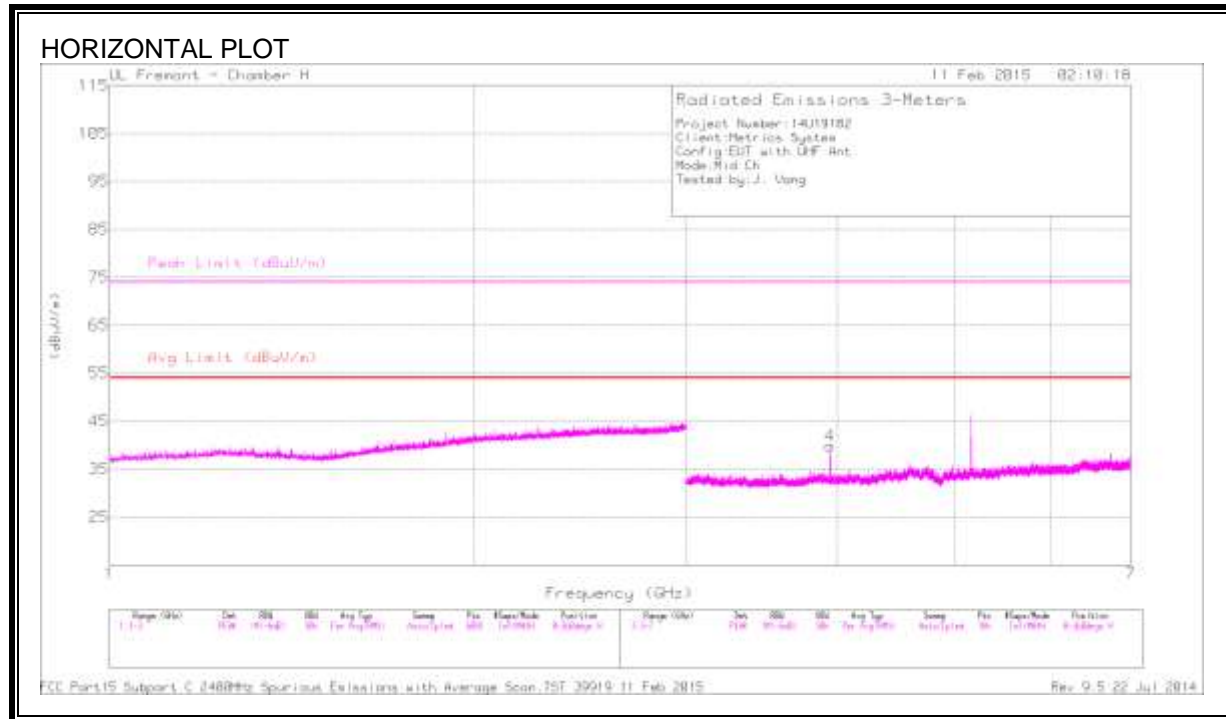
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.42	69.15	PK2	28.1	-25.5	71.75	-	-	74	-2.25	27	102	V
* 1.418	48.79	MAv1	28.1	-25.5	51.39	54	-2.61	-	-	27	102	V
* 3.948	46.66	PK2	33.4	-33.2	46.86	-	-	74	-27.14	87	280	H
* 3.948	40.86	MAv1	33.4	-33.2	41.06	54	-12.94	-	-	87	280	H
* 3.948	48.8	PK2	33.4	-33.2	49	-	-	74	-25	354	158	V
* 3.948	45.58	MAv1	33.4	-33.2	45.78	54	-8.22	-	-	354	158	V
2.441	46.79	PK2	32.1	-24.5	54.39	-	-	-	-	354	100	V
2.582	44.17	PK2	32.2	-24.3	52.07	-	-	-	-	354	100	V
5.164	49.06	PK2	34.6	-32.1	51.56	-	-	-	-	58	114	H
5.164	54.03	PK2	34.6	-32.1	56.53	-	-	-	-	17	170	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2.5. TX SPURIOUS EMISSIONS ABOVE 1 GHz (MID CH)



HORIZONTAL & VERTICAL DATA

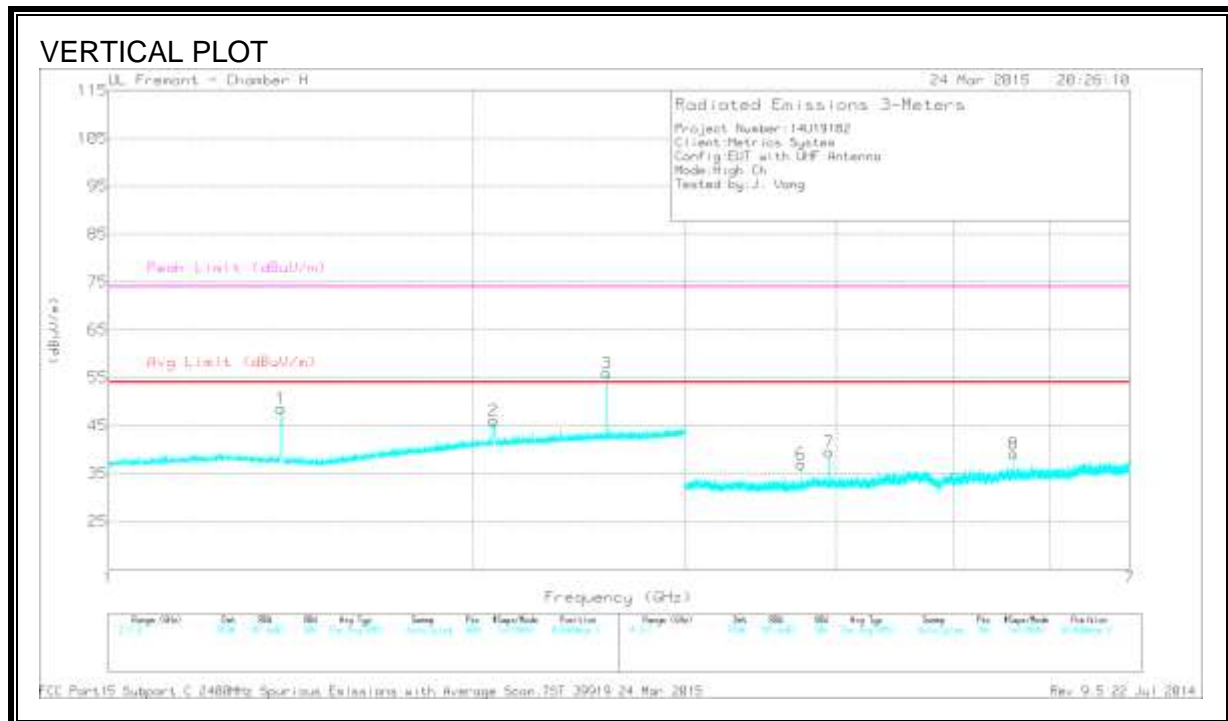
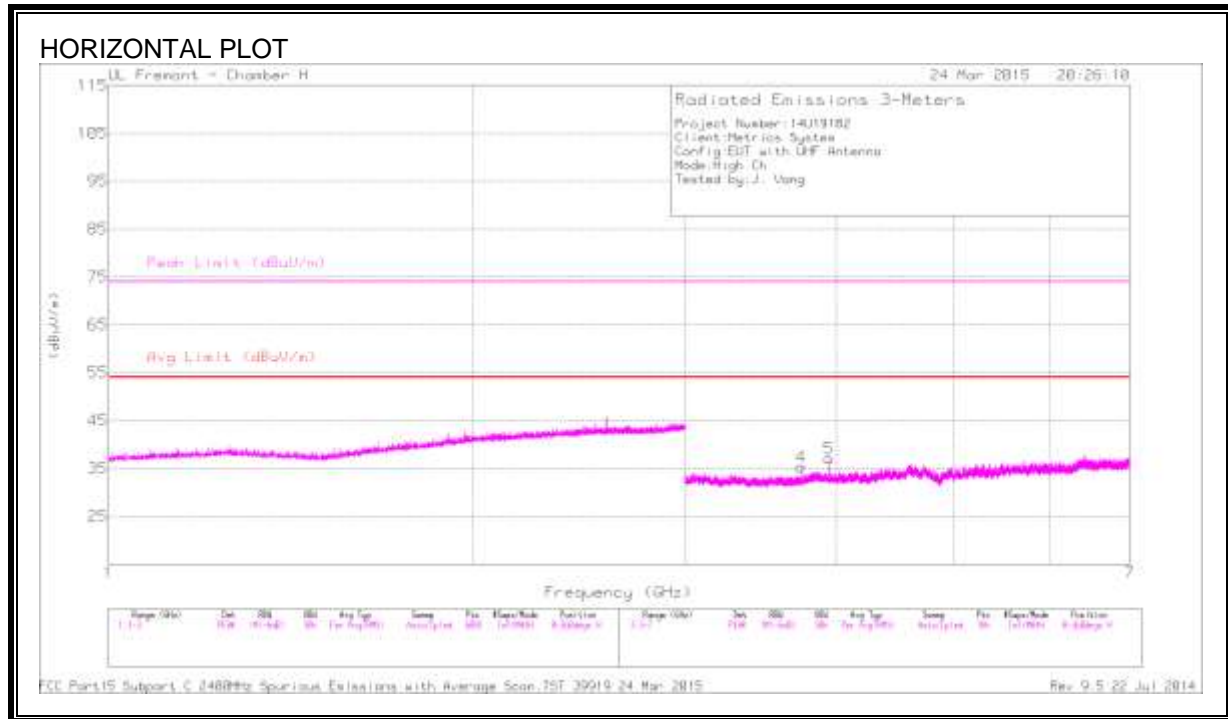
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.173	55.87	PK2	28.6	-25.9	58.57	-	-	74	-15.43	9	103	V
* 1.174	39.18	MAv1	28.6	-25.9	41.88	54	-12.12	-	-	9	103	V
* 3.948	47.05	PK2	33.4	-33.2	47.25	-	-	74	-26.75	87	278	H
* 3.948	42.29	MAv1	33.4	-33.2	42.49	54	-11.51	-	-	87	278	H
* 3.948	48.36	PK2	33.4	-33.2	48.56	-	-	74	-25.44	39	251	V
* 3.948	44.59	MAv1	33.4	-33.2	44.79	54	-9.21	-	-	39	251	V
1.762	53.87	PK2	29.8	-25.1	58.57	-	-	-	-	39	100	V
2.441	45.01	PK2	32.1	-24.5	52.61	-	-	-	-	39	100	V
5.164	52.69	PK2	34.6	-32.1	55.19	-	-	-	-	345	211	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2.6. TX SPURIOUS EMISSIONS ABOVE 1 GHz (HIGH CH)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.391	55.01	PK2	28.3	-25.6	57.71	-	-	74	-16.29	357	218	V
	* 1.39	38.67	MAv1	28.3	-25.6	41.37	54	-12.63	-	-	357	218	V
4	* 3.742	42.35	PK2	33.2	-32.7	42.85	-	-	74	-31.15	79	149	H
	* 3.742	33.36	MAv1	33.2	-32.7	33.86	54	-20.14	-	-	79	149	H
5	* 3.947	42.49	PK2	33.4	-33.2	42.69	-	-	74	-31.31	310	275	H
	* 3.948	32.93	MAv1	33.4	-33.2	33.13	54	-20.87	-	-	310	275	H
6	* 3.742	44	PK2	33.2	-32.7	44.5	-	-	74	-29.5	326	224	V
	* 3.742	36.04	MAv1	33.2	-32.7	36.54	54	-17.46	-	-	326	224	V
7	* 3.948	45.18	PK2	33.4	-33.2	45.38	-	-	74	-28.62	213	239	V
	* 3.948	39.03	MAv1	33.4	-33.2	39.23	54	-14.77	-	-	213	239	V
2	2.086	52.72	PK2	31.4	-24.9	59.22	-	-	-	-	20	100	V
3	2.582	50.67	PK2	32.2	-24.3	58.57	-	-	-	-	5	112	V
8	5.613	43.21	PK2	35.1	-32.1	46.21	-	-	-	-	32	201	V

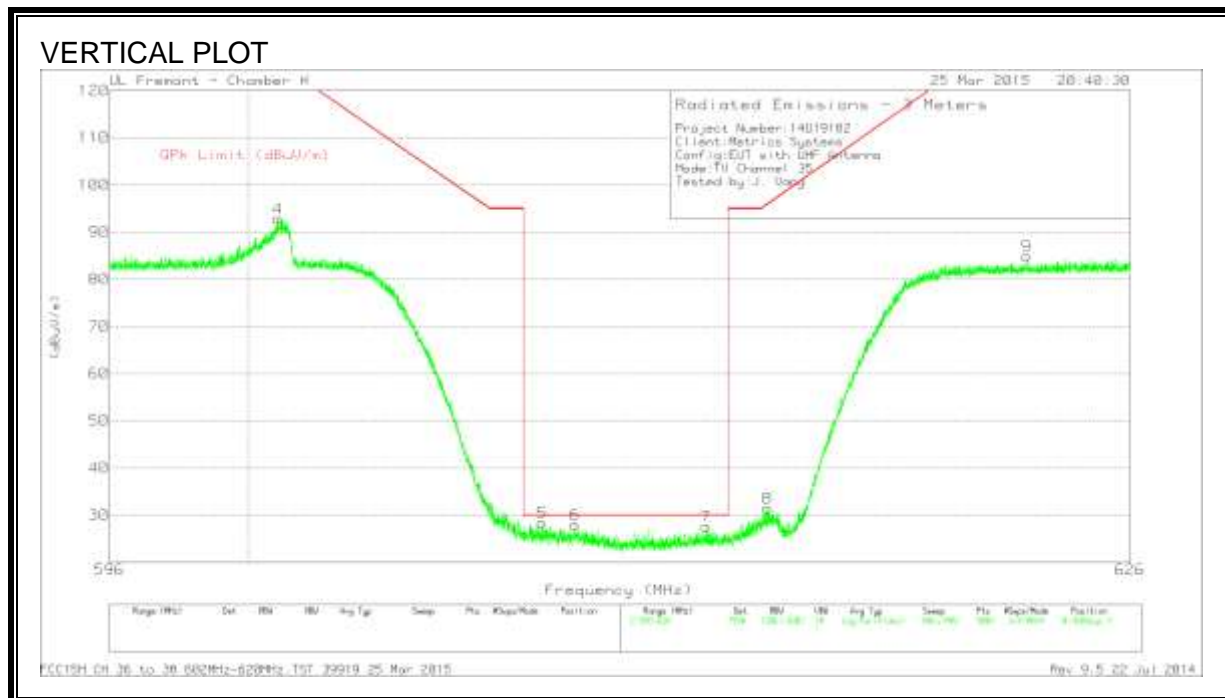
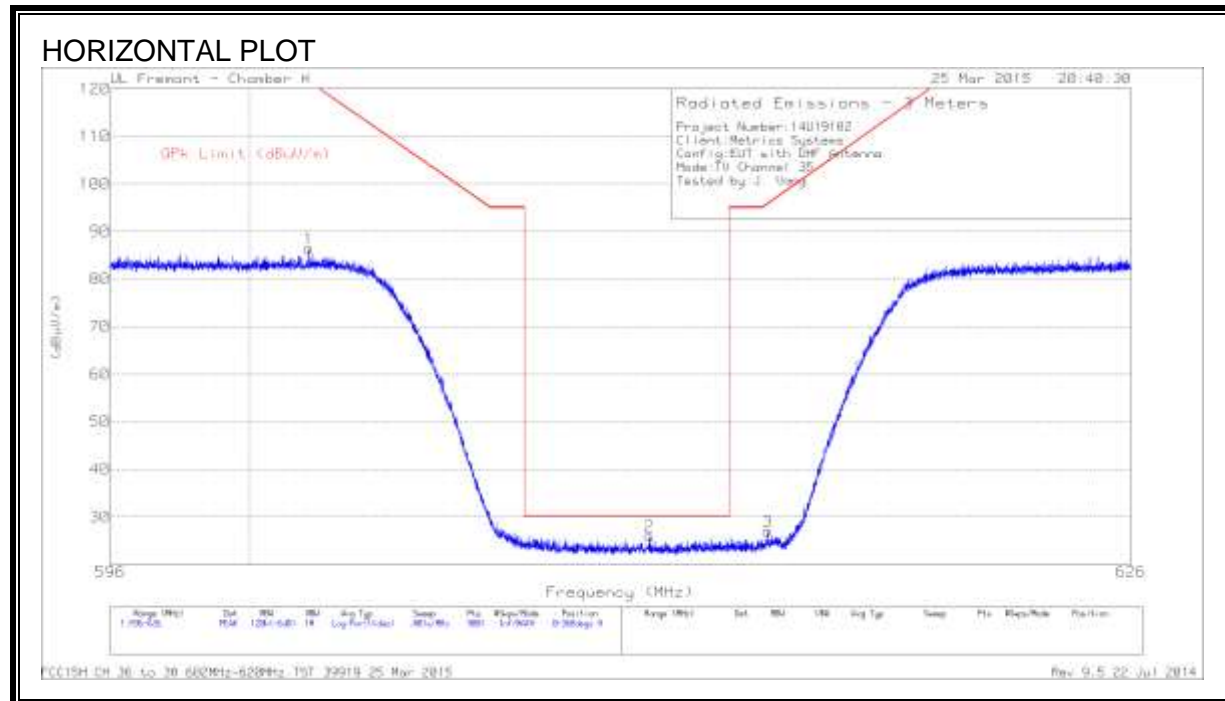
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2.7. RADIATED EMISSIONS 602 TO 620 MHz

PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 35 - 599MHz)



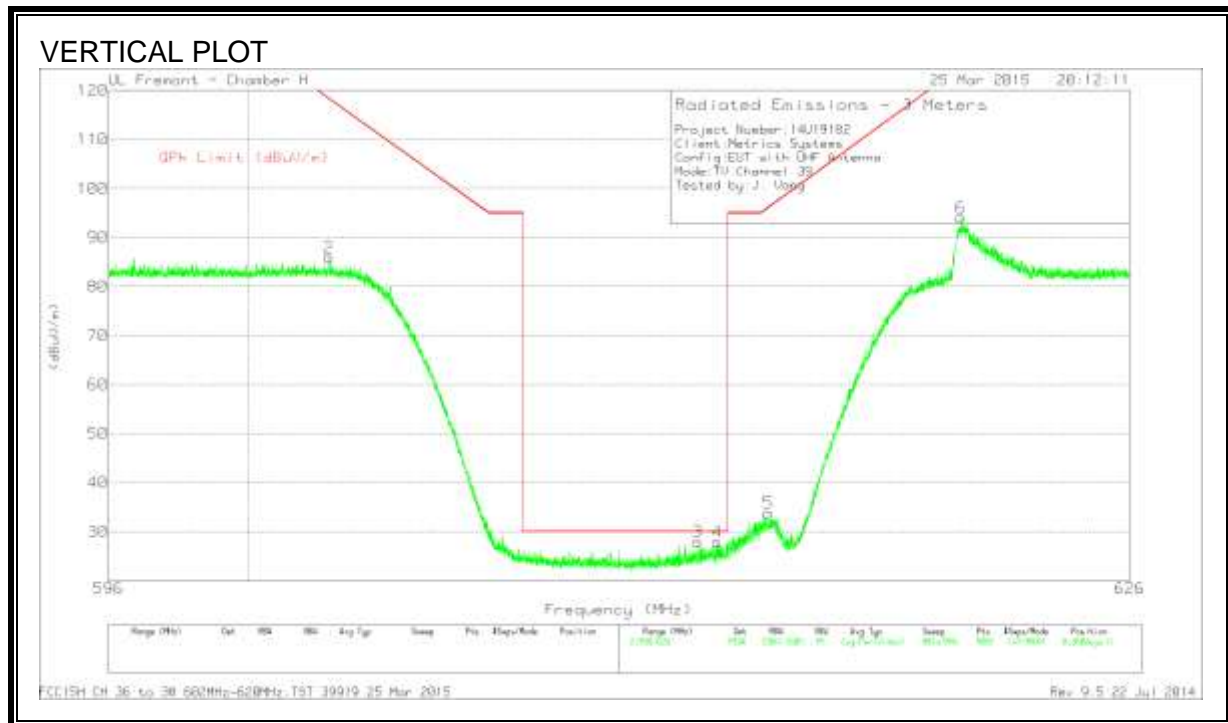
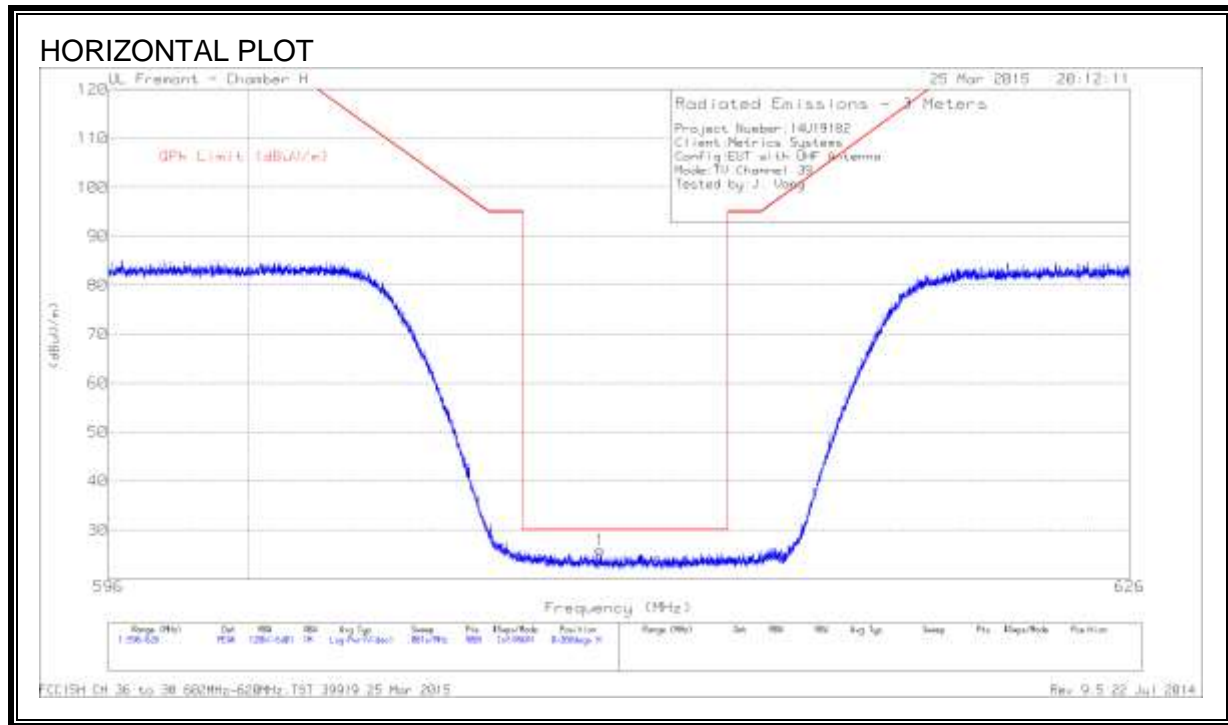
TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 35 - 599MHz)

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 611.6684	29.56	PK	21.9	-28	2.5	25.96	30	-4.04	0-360	99	H
5	* 608.5354	31.54	PK	21.8	-28.1	3.2	28.44	30	-1.56	0-360	100	V
6	* 609.5053	31.63	PK	21.8	-28.1	2.7	28.03	30	-1.97	0-360	100	V
7	* 613.3683	30.98	PK	22	-28	2.7	27.68	30	-2.32	0-360	100	V
4	600.8495	37.71	PK	21.4	-27.9	61.6	92.81	-	-	0-360	100	V
1	601.7261	31.41	PK	21.5	-27.9	61.4	86.41	-	-	0-360	400	H
3	615.1481	29.58	PK	22.1	-28	3.4	27.08	95.74	-68.66	0-360	201	H
8	615.1814	34.03	PK	22.1	-28	3.4	31.53	95.91	-64.38	0-360	100	V
9	622.8973	28.9	PK	22.3	-27.9	61.6	84.9	-	-	0-360	201	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

PLOT OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 39 - 623MHz)



TABULAR LISTING OF SPURIOUS EMISSIONS 602 TO 620 MHz (CHANNEL 39 - 623MHz)

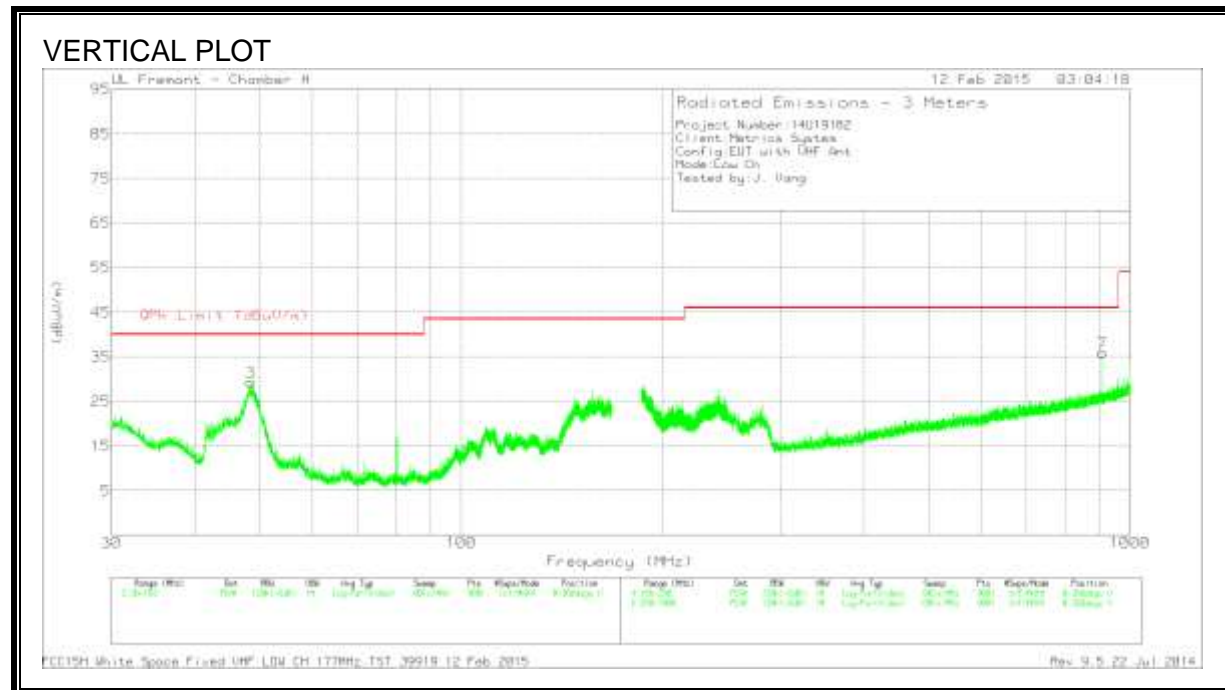
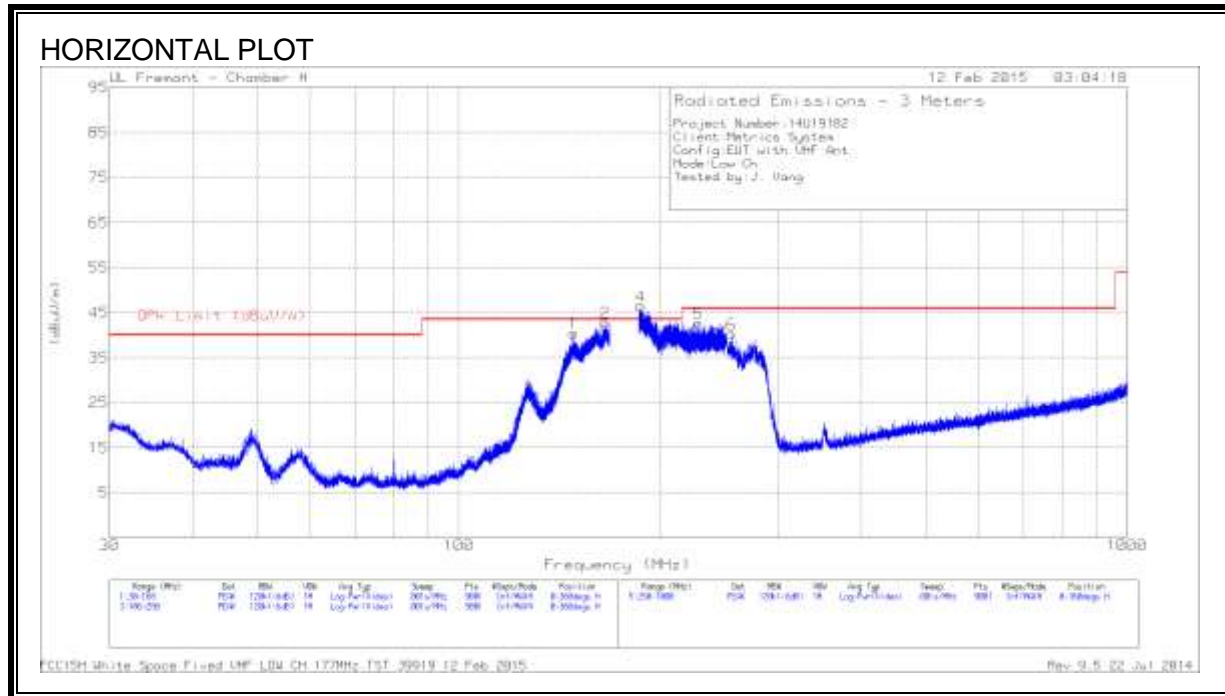
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 610.2486	29.46	PK	21.9	-28	2.6	25.96	30	-4.04	0-360	99	H
3	* 613.13	31.3	PK	22	-28	2.7	28	30	-2	0-360	100	V
4	* 613.6982	31.22	PK	22	-28	2.7	27.92	30	-2.08	0-360	100	V
2	602.3594	31.05	PK	21.5	-27.9	61.2	85.85	118.2	-32.35	0-360	301	V
5	615.2147	36.26	PK	22.1	-28	3.5	33.86	96.08	-62.22	0-360	100	V
6	620.9375	38.28	PK	22.3	-27.9	61.4	94.08	-	-	0-360	100	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

9.3. VHF ANTENNA HORIZONTAL POSITION

9.3.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 165.7277	57.67	PK	15	-30	.2	42.87	43.5	-.63	0-360	100	H
	* 165.8386	53.51	QP	15	-30	.2	38.71	43.5	-4.79	321	113	H
6	* 256.0833	53.35	PK	15.3	-29.4	1	40.25	46	-5.75	0-360	100	H
3	48.4609	48.59	PK	11.5	-31	.2	29.29	40	-10.71	0-360	99	V
1	148.5701	54.45	PK	15.8	-30	.2	40.45	43.5	-3.05	0-360	201	H
	147.9801	52.89	QP	15.9	-30	.2	38.99	43.5	-4.51	308	177	H
4	187.0291	57.59	QP	14.3	-29.8	.2	42.29	43.5	-1.21	308	141	H
5	228.2607	58.19	PK	13.9	-29.6	.2	42.69	46	-3.31	0-360	100	H
	228.3116	52.79	QP	13.9	-29.6	.2	37.29	46	-8.71	324	100	H
7	910.0807	36.96	PK	25.2	-26.4	.2	35.96	46	-10.04	0-360	301	V

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

PK - Peak detector

QP - Quasi-Peak detector

HORIZONTAL & VERTICAL DATA

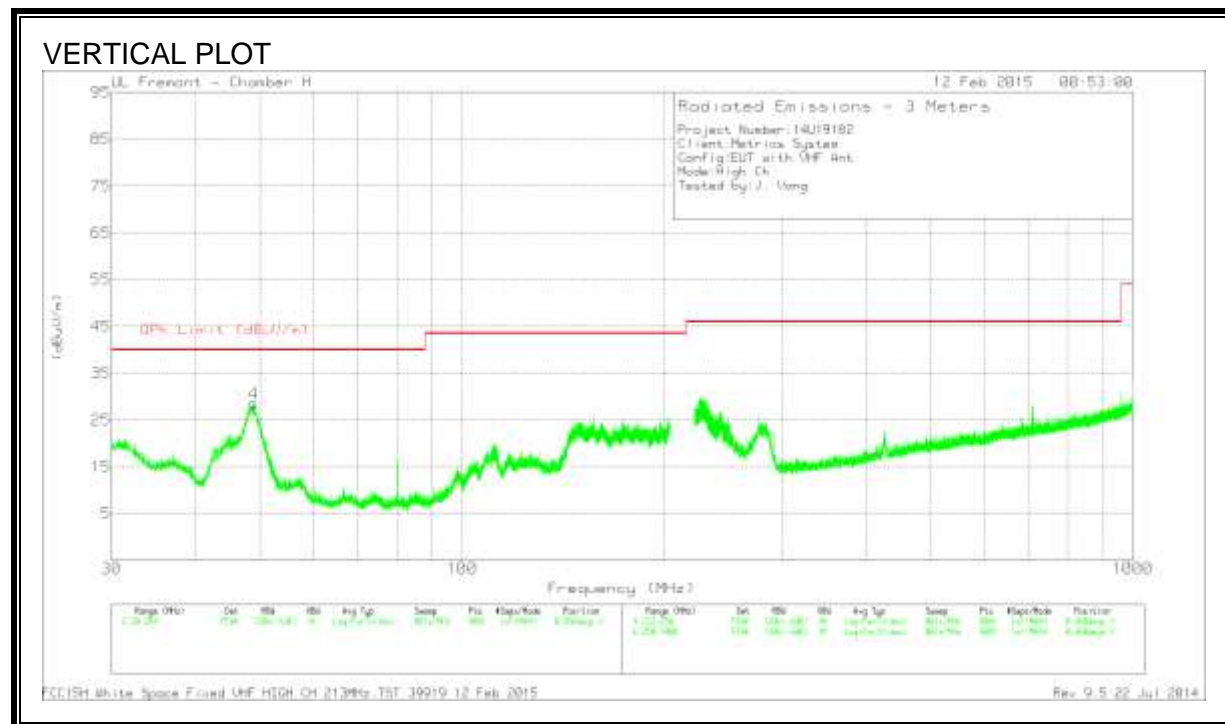
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 165.0067	57.06	PK	15	-30	.2	42.26	43.5	-1.24	0-360	201	H
	* 165.0197	55.41	QP	15	-30	.2	40.61	43.5	-2.89	307	125	H
6	* 274.1666	53.71	PK	16	-29.3	.5	40.91	46	-5.09	0-360	100	H
	* 276.0266	48.48	QP	16.1	-29.2	.5	35.88	46	-10.12	321	105	H
3	48.4596	47.89	PK	11.5	-31	.2	28.59	40	-11.41	0-360	100	V
2	184.5906	53.48	QP	14.3	-29.8	.2	38.18	43.5	-5.32	309	152	H
4	205.1964	56.15	QP	15.2	-29.7	.2	41.85	43.5	-1.65	323	108	H
5	235.5451	57.67	PK	14.2	-29.5	.2	42.57	46	-3.43	0-360	99	H
	236.4851	51.35	QP	14.3	-29.5	.2	36.35	46	-9.65	323	104	H
7	387.3328	41.55	PK	18.2	-28.7	.3	31.35	46	-14.65	0-360	100	H

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

PK - Peak detector

QP - Quasi-Peak detector

9.3.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 164.287	55.06	PK	15	-30	.2	40.26	43.5	-3.24	0-360	100	H
	* 163.847	50.92	QP	15	-30	.2	36.12	43.5	-7.38	313	170	H
7	* 279.9999	53.56	PK	16.3	-29.2	.5	41.16	46	-4.84	0-360	100	H
4	48.8883	48.21	PK	11.2	-31.1	.2	28.51	40	-11.49	0-360	100	V
2	202.744	54.4	QP	15.4	-29.7	.2	40.3	43.5	-3.2	314	168	H
3	202.9451	54.97	QP	15.4	-29.7	.2	40.87	43.5	-2.63	323	128	H
5	223.0184	60.01	QP	13.7	-29.5	.2	44.41	46	-1.59	311	113	H
6	224.5924	58.92	QP	13.8	-29.5	.2	43.42	46	-2.58	321	108	H
8	426.7493	38.92	PK	19.4	-28.5	.2	30.02	46	-15.98	0-360	100	H

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

PK - Peak detector

QP - Quasi-Peak detector

HORIZONTAL & VERTICAL DATA

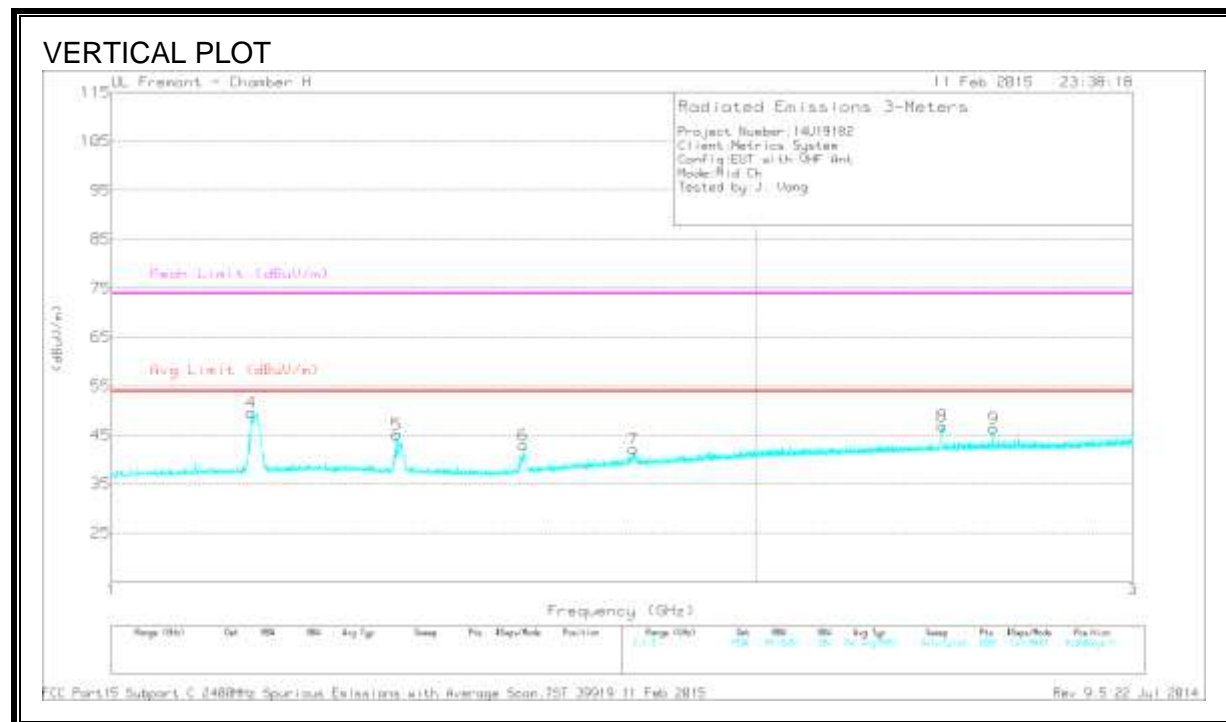
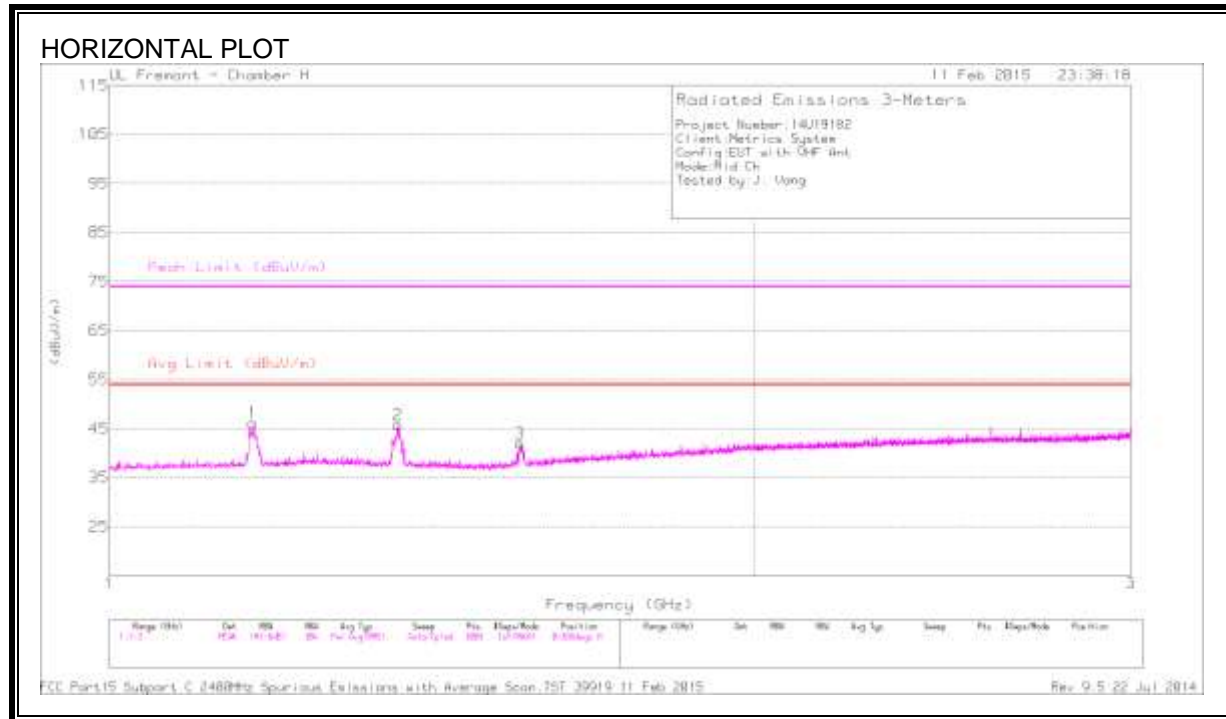
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.059	58.89	PK2	28	-25.8	61.09	-	-	74	-12.91	336	190	H
	* 1.06	44.87	MAv1	28	-25.8	47.07	54	-6.93	-	-	336	190	H
2	* 1.234	57.2	PK2	28.9	-25.9	60.2	-	-	74	-13.8	351	119	H
	* 1.237	41.16	MAv1	28.9	-25.9	44.16	54	-9.84	-	-	351	119	H
3	* 1.414	53.02	PK2	28.1	-25.5	55.62	-	-	74	-18.38	350	199	H
	* 1.414	37.91	MAv1	28.1	-25.5	40.51	54	-13.49	-	-	350	199	H
4	* 1.059	63.37	PK2	28	-25.8	65.57	-	-	74	-8.43	284	332	V
	* 1.06	48.62	MAv1	28	-25.8	50.82	54	-3.18	-	-	284	332	V
5	* 1.23	64.54	PK2	28.9	-25.9	67.54	-	-	74	-6.46	316	356	V
	* 1.232	46.13	MAv1	28.9	-25.9	49.13	54	-4.87	-	-	316	356	V
6	* 1.353	46.89	PK2	28.5	-25.7	49.69	-	-	74	-24.31	30	102	V
	* 1.353	39.18	MAv1	28.5	-25.7	41.98	54	-12.02	-	-	30	102	V
7	* 1.414	57.47	PK2	28.1	-25.5	60.07	-	-	74	-13.93	312	383	V
	* 1.414	42.14	MAv1	28.1	-25.5	44.74	54	-9.26	-	-	312	383	V
	2.442	43.77	PK2	32.1	-24.5	51.37	-	-	-	-	312	100	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.3.5. TX SPURIOUS EMISSIONS ABOVE 1 GHz (MID CH)



HORIZONTAL & VERTICAL DATA

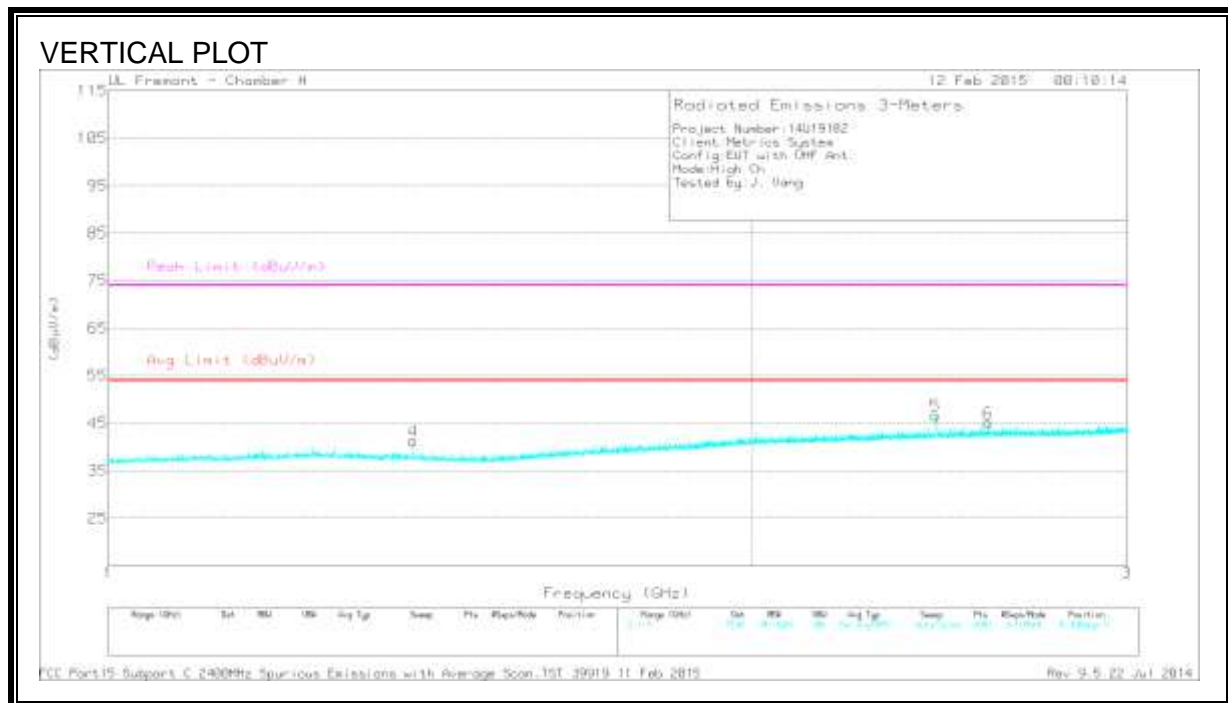
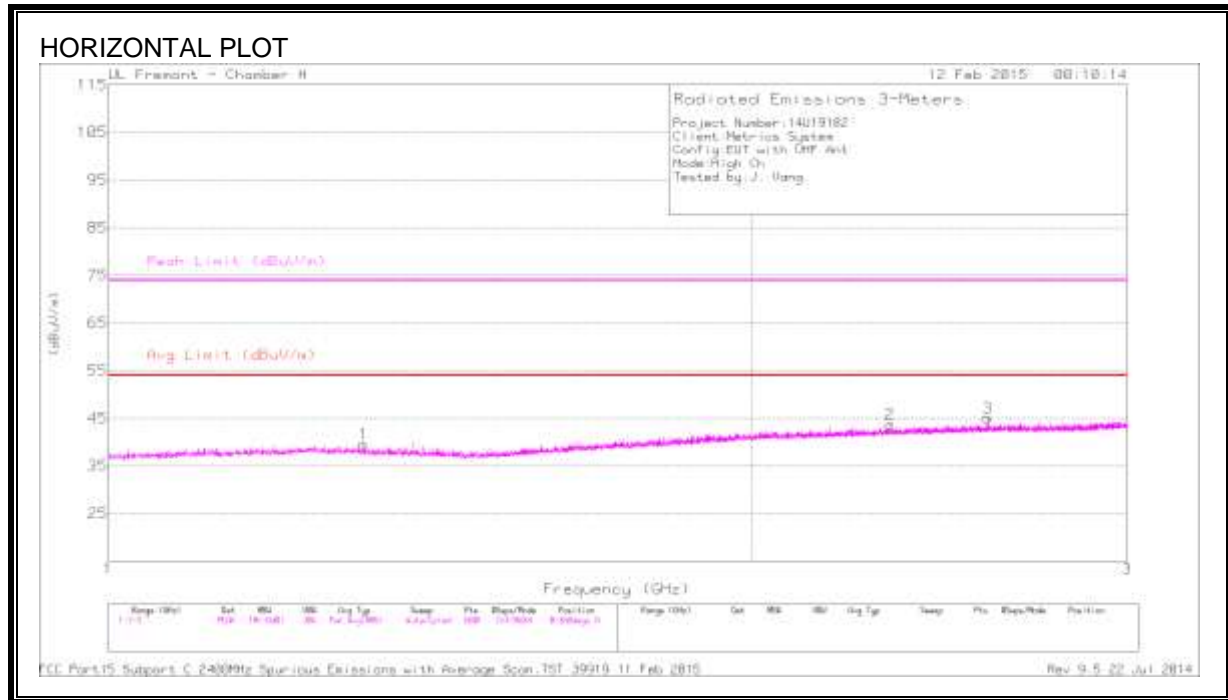
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.167	54.88	PK2	28.6	-25.9	57.58	-	-	74	-16.42	322	117	H
	* 1.168	40.66	MAv1	28.6	-25.9	43.36	54	-10.64	-	-	322	117	H
2	* 1.366	55.1	PK2	28.4	-25.6	57.9	-	-	74	-16.1	346	170	H
	* 1.364	39.58	MAv1	28.4	-25.6	42.38	54	-11.62	-	-	346	170	H
3	* 1.556	52.3	PK2	28.1	-25.3	55.1	-	-	74	-18.9	341	204	H
	* 1.557	36.42	MAv1	28.2	-25.3	39.32	54	-14.68	-	-	341	204	H
4	* 1.161	59.83	PK2	28.5	-25.9	62.43	-	-	74	-11.57	291	293	V
	* 1.164	42.14	MAv1	28.6	-25.9	44.84	54	-9.16	-	-	291	293	V
5	* 1.358	59.68	PK2	28.4	-25.6	62.48	-	-	74	-11.52	327	296	V
	* 1.361	43.32	MAv1	28.4	-25.6	46.12	54	-7.88	-	-	327	296	V
6	* 1.555	53.08	PK2	28.1	-25.3	55.88	-	-	74	-18.12	300	312	V
	* 1.558	38	MAv1	28.2	-25.3	40.9	54	-13.1	-	-	300	312	V
7	1.755	46.38	PK2	29.7	-25.1	50.98	-	-	-	-	300	201	V
8	2.442	44.19	PK2	32.1	-24.5	51.79	-	-	-	-	300	100	V
9	2.582	43.55	PK2	32.2	-24.3	51.45	-	-	-	-	300	100	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.3.6. TX SPURIOUS EMISSIONS ABOVE 1 GHz (HIGH CH)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.315	43.85	PK2	28.7	-25.8	46.75	-	-	74	-27.25	197	354	H
	* 1.316	31.97	MAv1	28.7	-25.8	34.87	54	-19.13	-	-	197	354	H
2	* 2.322	43.19	PK2	31.8	-24.6	50.39	-	-	74	-23.61	151	100	H
	* 2.325	31.43	MAv1	31.8	-24.6	38.63	54	-15.37	-	-	151	100	H
4	* 1.389	43.82	PK2	28.3	-25.6	46.52	-	-	74	-27.48	71	100	V
	* 1.389	32.6	MAv1	28.3	-25.6	35.3	54	-18.7	-	-	71	100	V
5	2.44	44.37	PK2	32.1	-24.5	51.97	-	-	-	-	71	100	V
3	2.58	43.8	PK2	32.2	-24.3	51.7	-	-	-	-	71	202	H
6	2.582	43.36	PK2	32.2	-24.3	51.26	-	-	-	-	71	202	V

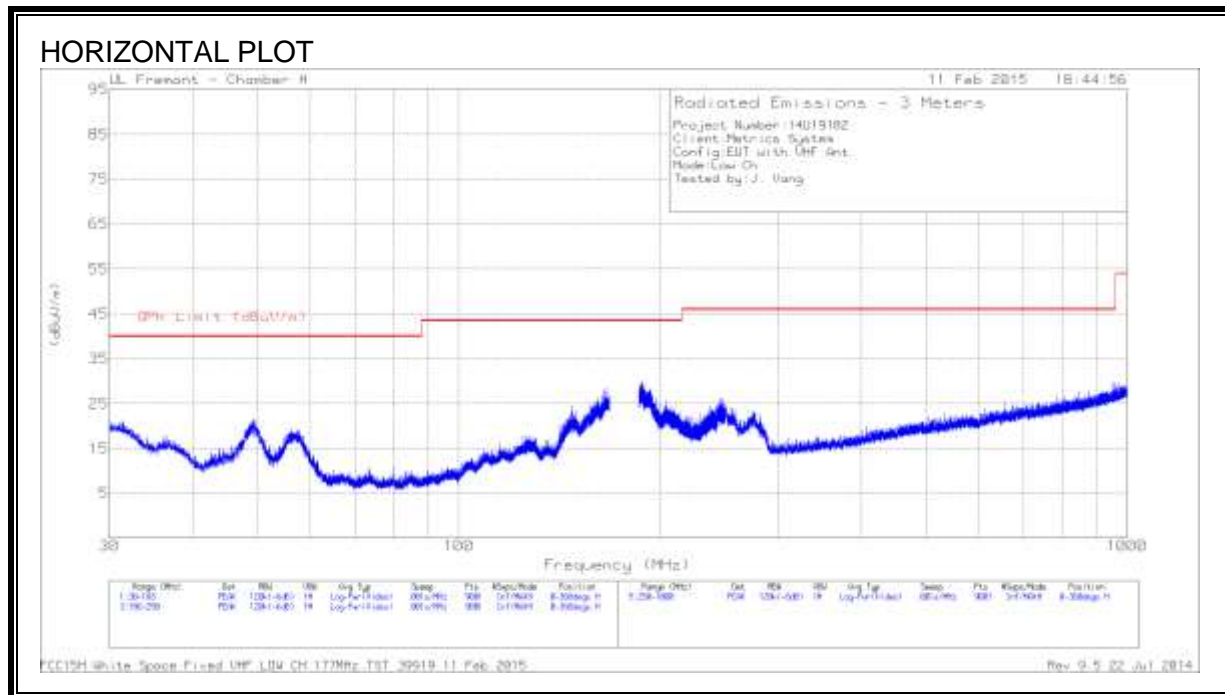
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.4. VHF ANTENNA VERITCAL POSITION

9.4.1. RADIATED EMISSIONS BELOW 1 GHz (LOW CHANNEL)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 164.8844	55.54	PK	15	-30	.2	40.74	43.5	-2.76	0-360	301	V
	* 166.174	51.18	QP	14.9	-29.9	.2	36.38	43.5	-7.12	326	265	V
6	* 245.4551	57.18	PK	14.7	-29.4	.2	42.68	46	-3.32	0-360	201	V
	* 246.9552	52.3	QP	14.8	-29.4	.2	37.9	46	-8.1	314	189	V
1	48.5989	50.04	PK	11.4	-31	.2	30.64	40	-9.36	0-360	99	V
2	148.0028	50.73	PK	15.9	-30	.2	36.83	43.5	-6.67	0-360	301	V
4	186.9908	57.23	QP	14.3	-29.8	.2	41.93	43.5	-1.57	319	223	V
5	197.0221	56.09	PK	15.2	-29.7	.2	41.79	43.5	-1.71	0-360	201	V
	196.9891	54	QP	15.1	-29.7	.2	39.6	43.5	-3.9	312	185	V

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

PK - Peak detector

QP - Quasi-Peak detector

9.4.2. RADIATED EMISSIONS BELOW 1 GHz (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

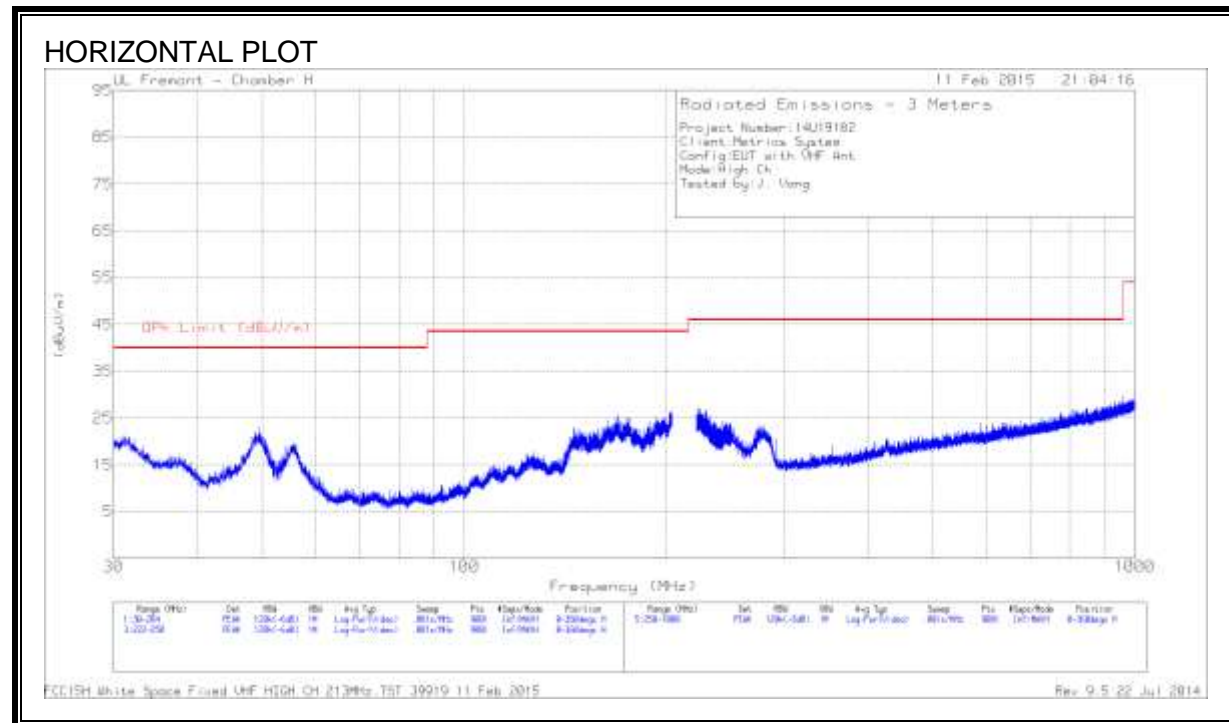
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 164.9894	52.69	PK	15	-30	.2	37.89	43.5	-5.61	0-360	301	V
	* 165.0074	51.11	QP	15	-30	.2	36.31	43.5	-7.19	304	280	V
6	* 274.9999	53.86	PK	16.1	-29.3	.5	41.16	46	-4.84	0-360	201	V
	* 275.0109	55.06	QP	16.1	-29.3	.5	42.36	46	-3.64	306	168	V
1	48.4423	49.79	PK	11.5	-31	.2	30.49	40	-9.51	0-360	100	V
3	184.4197	57.12	PK	14.3	-29.8	.2	41.82	43.5	-1.68	0-360	201	V
	185.8947	52.98	QP	14.3	-29.8	.2	37.68	43.5	-5.82	318	240	V
4	209.1099	55.95	QP	14.7	-29.7	.2	41.15	43.5	-2.35	320	226	V
5	215.0085	56.63	QP	14.1	-29.6	.2	41.33	43.5	-2.17	316	176	V

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

PK - Peak detector

QP - Quasi-Peak detector

9.4.3. RADIATED EMISSIONS BELOW 1 GHz (HIGH CHANNEL)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Filtr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 242.4268	56.53	PK	14.5	-29.4	.2	41.83	46	-4.17	0-360	201	V
	235.1968	52.76	QP	14.2	-29.5	.2	37.66	46	-8.34	312	206	V
6	* 278.6666	52.35	PK	16.2	-29.2	.5	39.85	46	-6.15	0-360	201	V
1	48.8303	51.53	PK	11.2	-31.1	.2	31.83	40	-8.17	0-360	100	V
2	194.8138	56.04	PK	14.8	-29.7	.2	41.34	43.5	-2.16	0-360	201	V
	194.2538	50.99	QP	14.7	-29.7	.2	36.19	43.5	-7.31	309	238	V
3	223.7229	57.19	QP	13.7	-29.5	.2	41.59	46	-4.41	326	202	V
4	227.2277	56.83	QP	13.9	-29.6	.2	41.33	46	-4.67	319	213	V
7	426.166	37.31	PK	19.3	-28.5	.2	28.31	46	-17.69	0-360	201	V

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

PK - Peak detector

QP - Quasi-Peak detector

HORIZONTAL & VERTICAL DATA

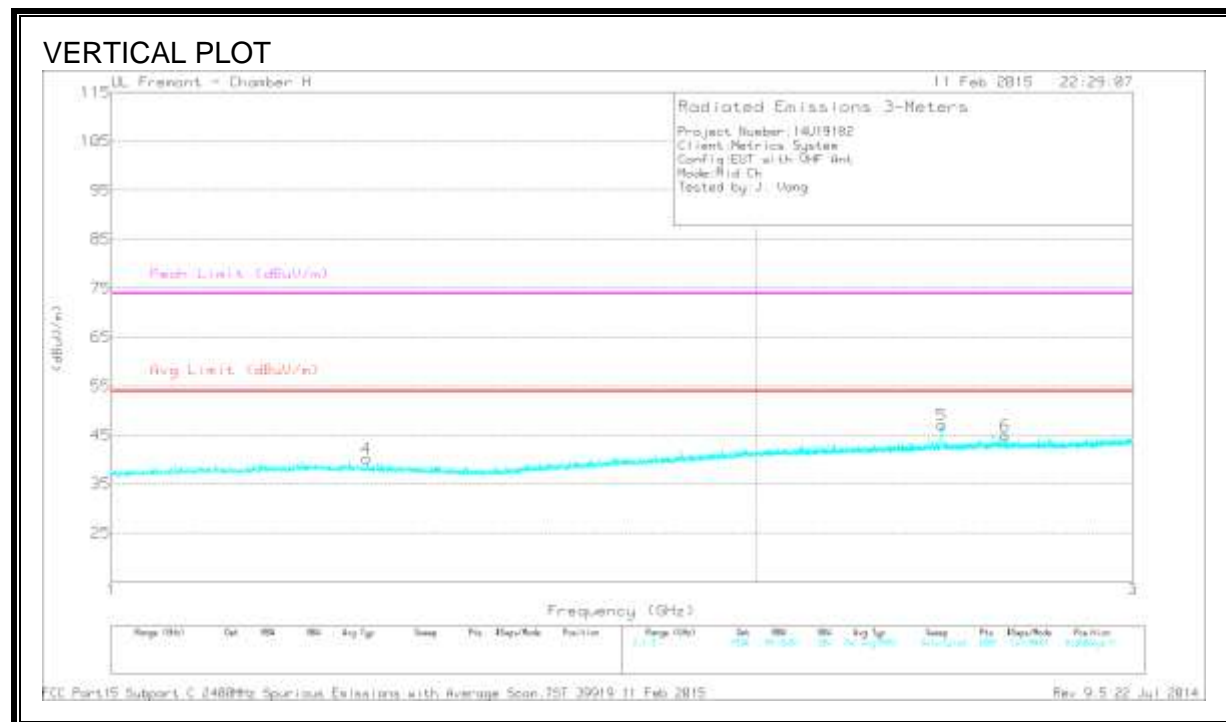
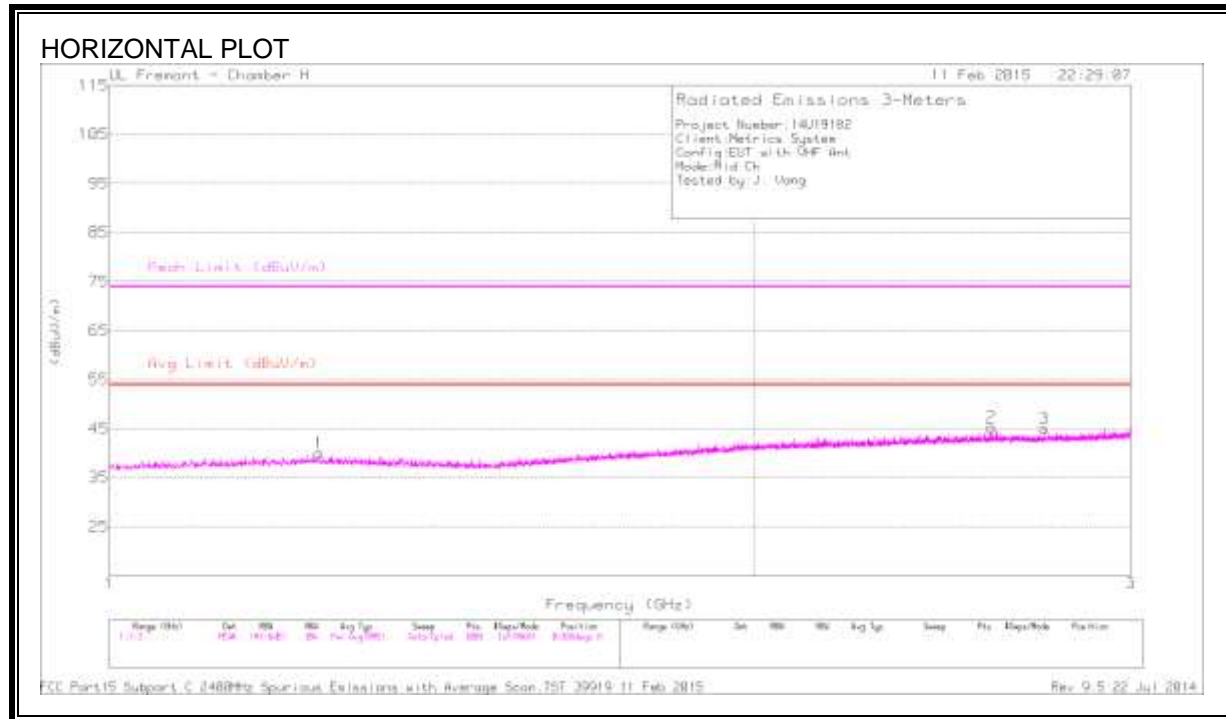
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.318	43.93	PK2	28.6	-25.8	46.73	-	-	74	-27.27	2	100	H
	* 1.316	32.6	MAv1	28.7	-25.8	35.5	54	-18.5	-	-	2	100	H
2	* 1.707	43.49	PK2	29.4	-24.9	47.99	-	-	74	-26.01	23	100	H
	* 1.708	31.62	MAv1	29.4	-25	36.02	54	-17.98	-	-	23	100	H
3	* 1.353	47.46	PK2	28.5	-25.7	50.26	-	-	74	-23.74	37	104	V
	* 1.353	41.03	MAv1	28.5	-25.7	43.83	54	-10.17	-	-	37	104	V
5	* 2.706	43.98	PK2	32.3	-24.3	51.98	-	-	74	-22.02	222	101	V
	* 2.706	34.44	MAv1	32.3	-24.3	42.44	54	-11.56	-	-	222	101	V
6	* 2.726	43.54	PK2	32.3	-24.3	51.54	-	-	74	-22.46	222	202	V
	* 2.728	31.94	MAv1	32.3	-24.3	39.94	54	-14.06	-	-	222	202	V
4	2.441	44.74	PK2	32.1	-24.5	52.34	-	-	-	-	222	100	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.4.5. TX SPURIOUS EMISSIONS ABOVE 1 GHz (MID CH)



HORIZONTAL & VERTICAL DATA

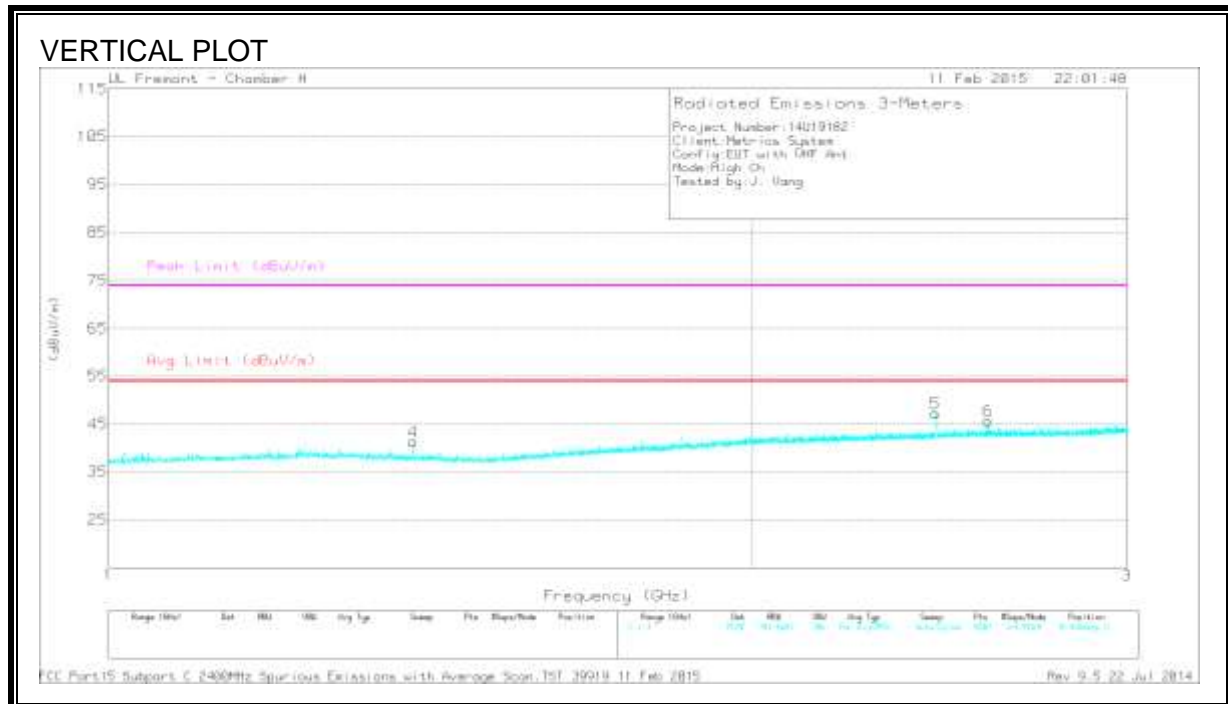
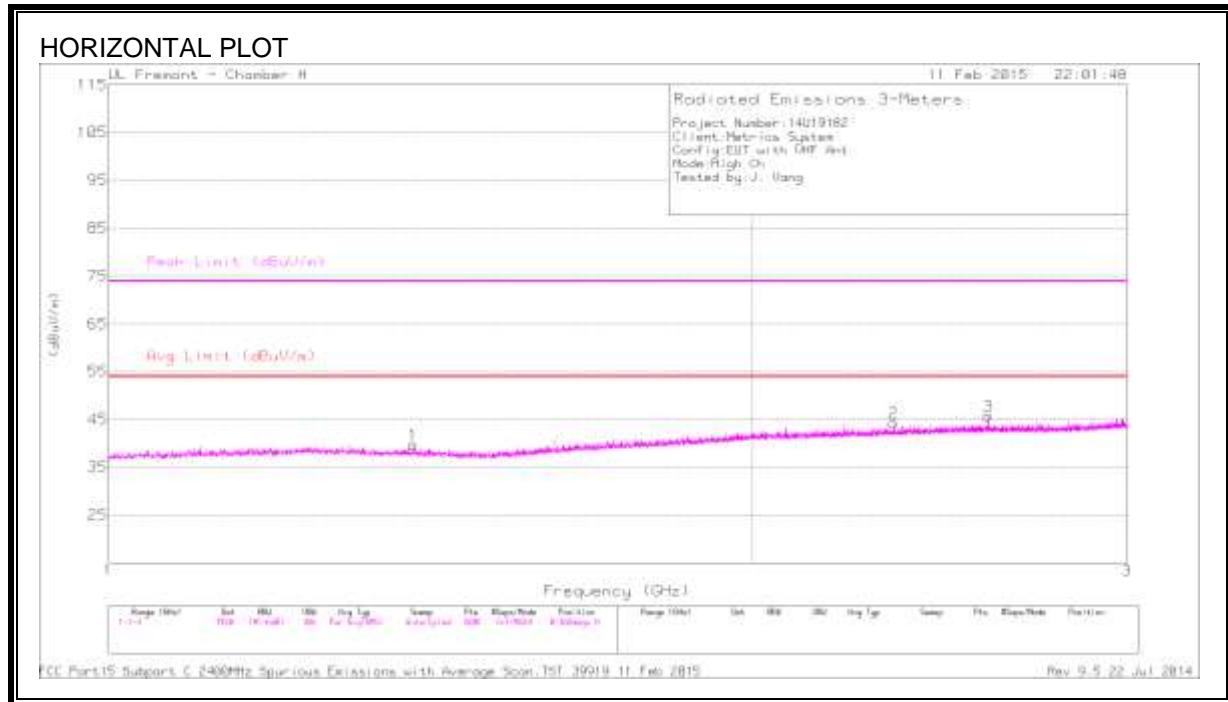
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.251	44.09	PK2	29	-25.9	47.19	-	-	74	-26.81	0	100	H
	* 1.254	32.7	MAv1	29	-25.9	35.8	54	-18.2	-	-	0	100	H
3	* 2.735	43.54	PK2	32.3	-24.3	51.54	-	-	74	-22.46	53	202	H
	* 2.733	31.55	MAv1	32.3	-24.3	39.55	54	-14.45	-	-	53	202	H
4	* 1.316	44.34	PK2	28.7	-25.8	47.24	-	-	74	-26.76	53	100	V
	* 1.316	32.64	MAv1	28.7	-25.8	35.54	54	-18.46	-	-	53	100	V
5	2.443	47.98	PK2	32.1	-24.5	55.58	-	-	-	-	14	100	V
2	2.581	43.25	PK2	32.2	-24.3	51.15	-	-	-	-	53	202	H
6	2.615	43.16	PK2	32.2	-24.2	51.16	-	-	-	-	14	100	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.4.6. TX SPURIOUS EMISSIONS ABOVE 1 GHz (HIGH CH)



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.387	44.26	PK2	28.3	-25.6	46.96	-	-	74	-27.04	271	258	H
	* 1.389	33.4	MAv1	28.3	-25.6	36.1	54	-17.9	-	-	271	258	H
2	* 2.334	43.96	PK2	31.9	-24.6	51.26	-	-	74	-22.74	73	121	H
	* 2.332	31.58	MAv1	31.9	-24.6	38.88	54	-15.12	-	-	73	121	H
4	* 1.389	45.63	PK2	28.3	-25.6	48.33	-	-	74	-25.67	14	118	V
	* 1.389	36.74	MAv1	28.3	-25.6	39.44	54	-14.56	-	-	14	118	V
5	2.443	48.47	PK2	32.1	-24.5	56.07	-	-	-	-	4	143	V
3	2.582	43.93	PK2	32.2	-24.3	51.83	-	-	-	-	4	100	V
6	2.583	43.57	PK2	32.2	-24.3	51.47	-	-	-	-	14	202	H

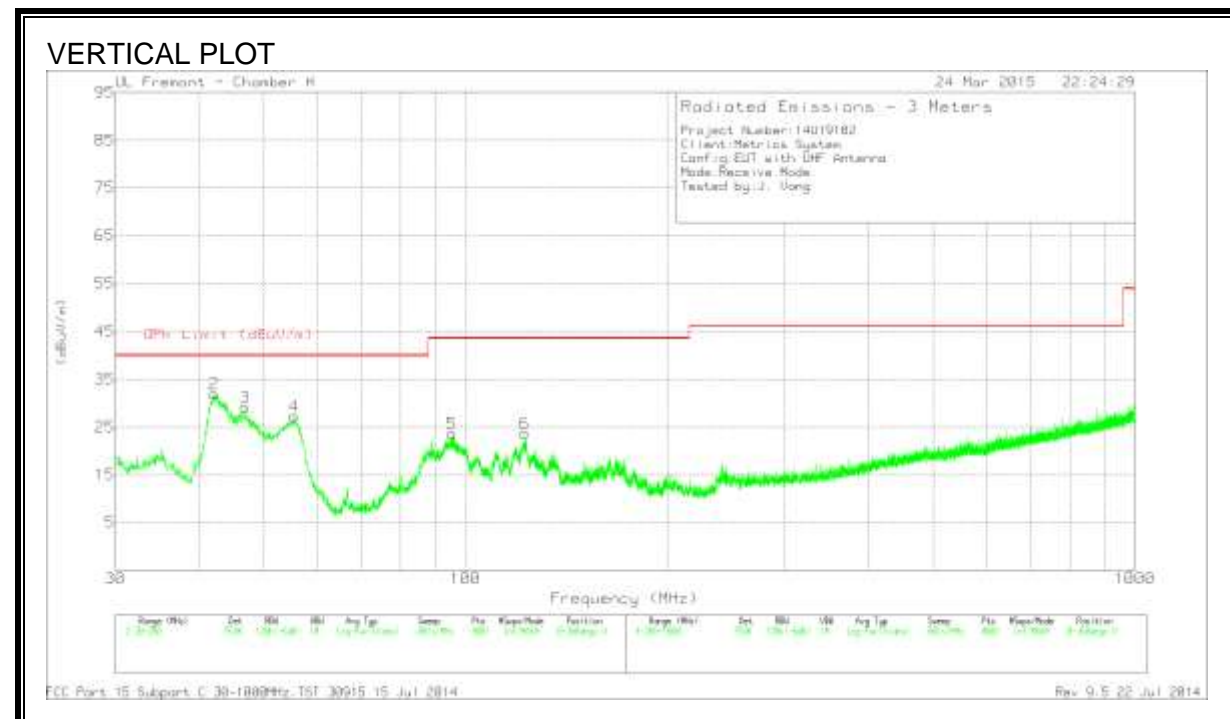
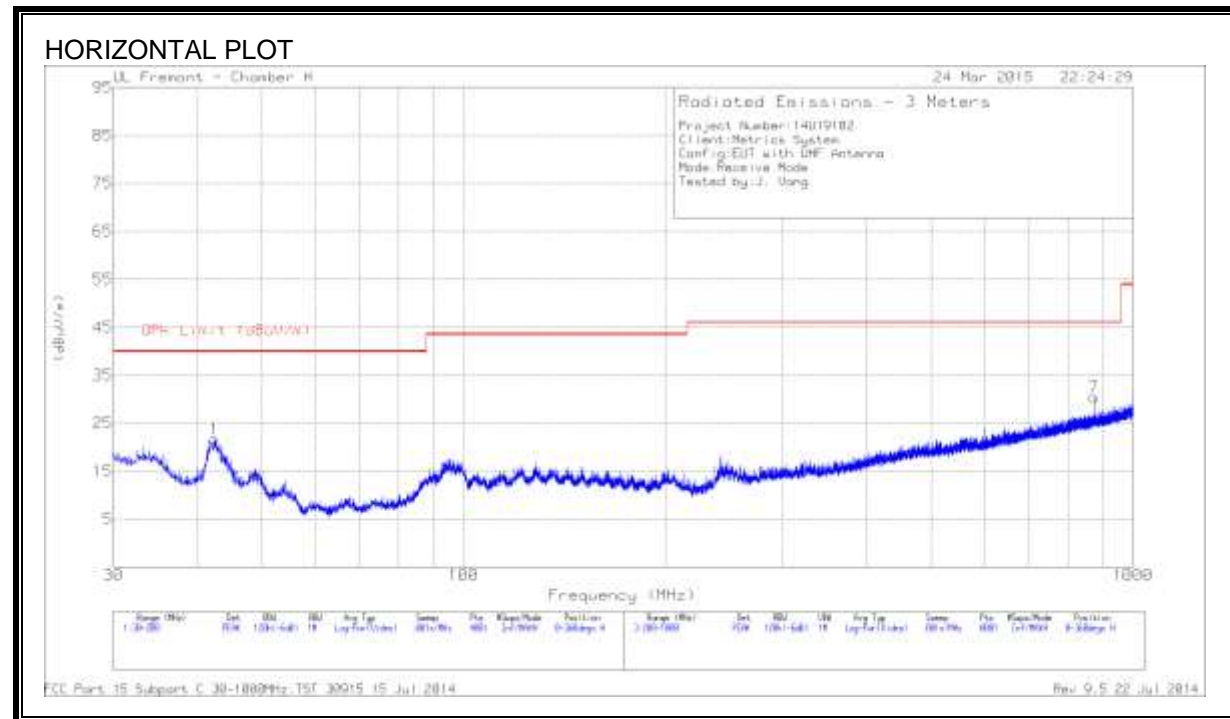
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10. RADIATED SPURIOUS TESTS OF RECEIVER

10.1.1. RX SPURIOUS EMISSIONS BELOW 1 GHz



HORIZONTAL & VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 122.6925	37.29	PK	16.7	-30.3	23.69	43.52	-19.83	0-360	100	V
2	42.155	47.52	PK	15.6	-31.2	31.92	40	-8.08	0-360	100	V
1	42.4525	37.43	PK	15.4	-31.2	21.63	40	-18.37	0-360	400	H
3	46.915	47.8	PK	12.3	-31	29.1	40	-10.9	0-360	100	V
4	55.4575	48.16	PK	10	-30.9	27.26	40	-12.74	0-360	100	V
5	95.4075	42.54	PK	11.7	-30.5	23.74	43.52	-19.78	0-360	100	V
7	875.1	32.17	PK	24.9	-26.7	30.37	46.02	-15.65	0-360	99	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.273	43.68	PK2	28.9	-25.9	46.68	-	-	74	-27.32	288	202	V
	* 1.273	31.97	MAv1	28.9	-25.9	34.97	54	-19.03	-	-	288	202	V
3	* 3.742	44.66	PK2	33.2	-32.7	45.16	-	-	74	-28.84	207	244	V
	* 3.742	37.6	MAv1	33.2	-32.7	38.1	54	-15.9	-	-	207	244	V
4	* 3.948	44.92	PK2	33.4	-33.2	45.12	-	-	74	-28.88	213	247	V
	* 3.948	39.04	MAv1	33.4	-33.2	39.24	54	-14.76	-	-	213	247	V
2	2.582	50.89	PK2	32.2	-24.3	58.79	-	-	-	-	360	109	V
5	5.164	42.74	PK2	34.6	-32.1	45.24	-	-	-	-	43	200	V
6	5.613	42.85	PK2	35.1	-32.1	45.85	-	-	-	-	45	155	V
7	6.68	40.08	PK2	35.7	-29.7	46.08	-	-	-	-	40	202	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.2. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

^{*} Decreases with the logarithm of the frequency.

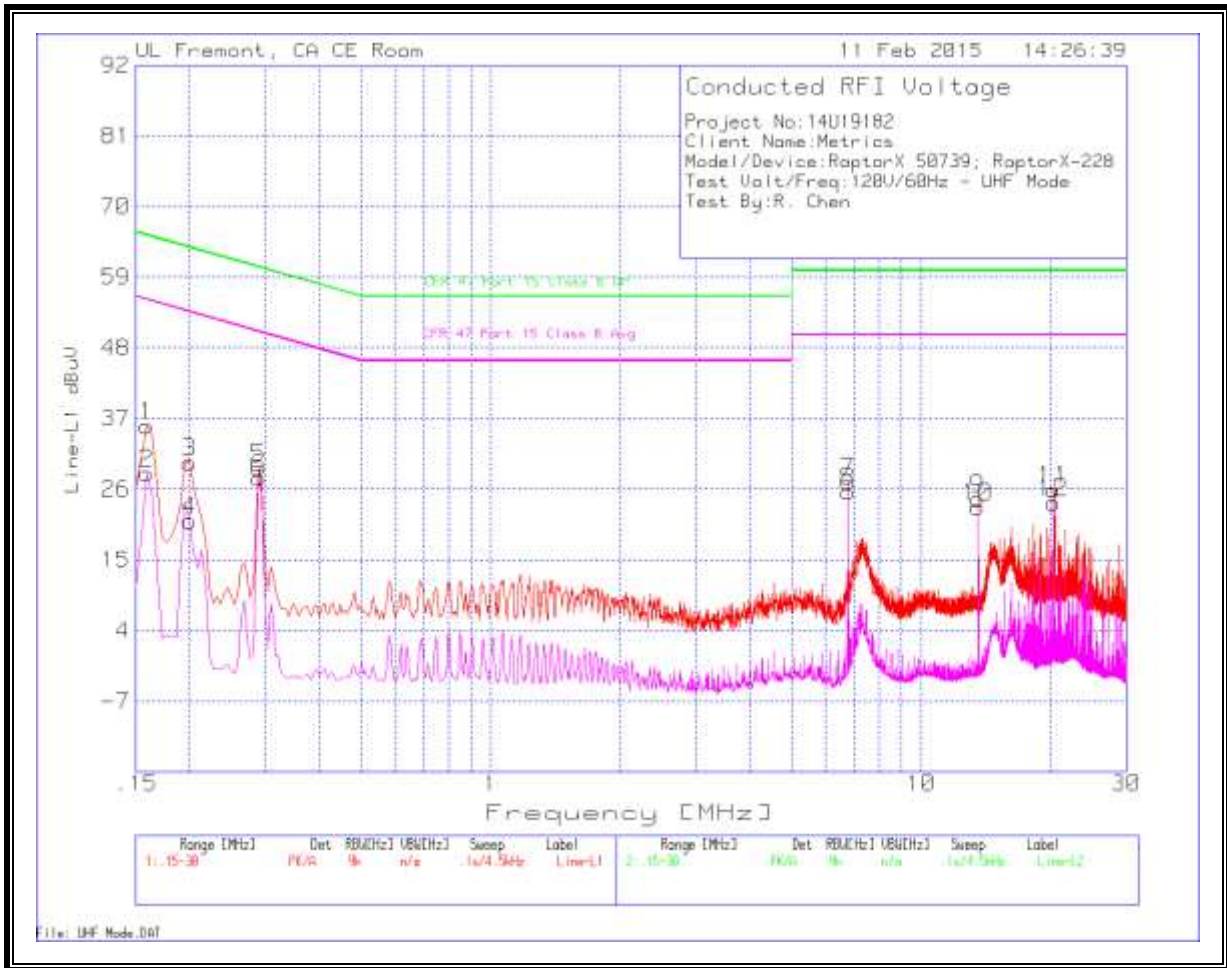
TEST PROCEDURE

ANSI C63.4-2009.

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

10.2.1. WORST EMISSIONS FOR UHF MODE

LINE 1



RESULTS

Line-L1 .15 - 30MHz

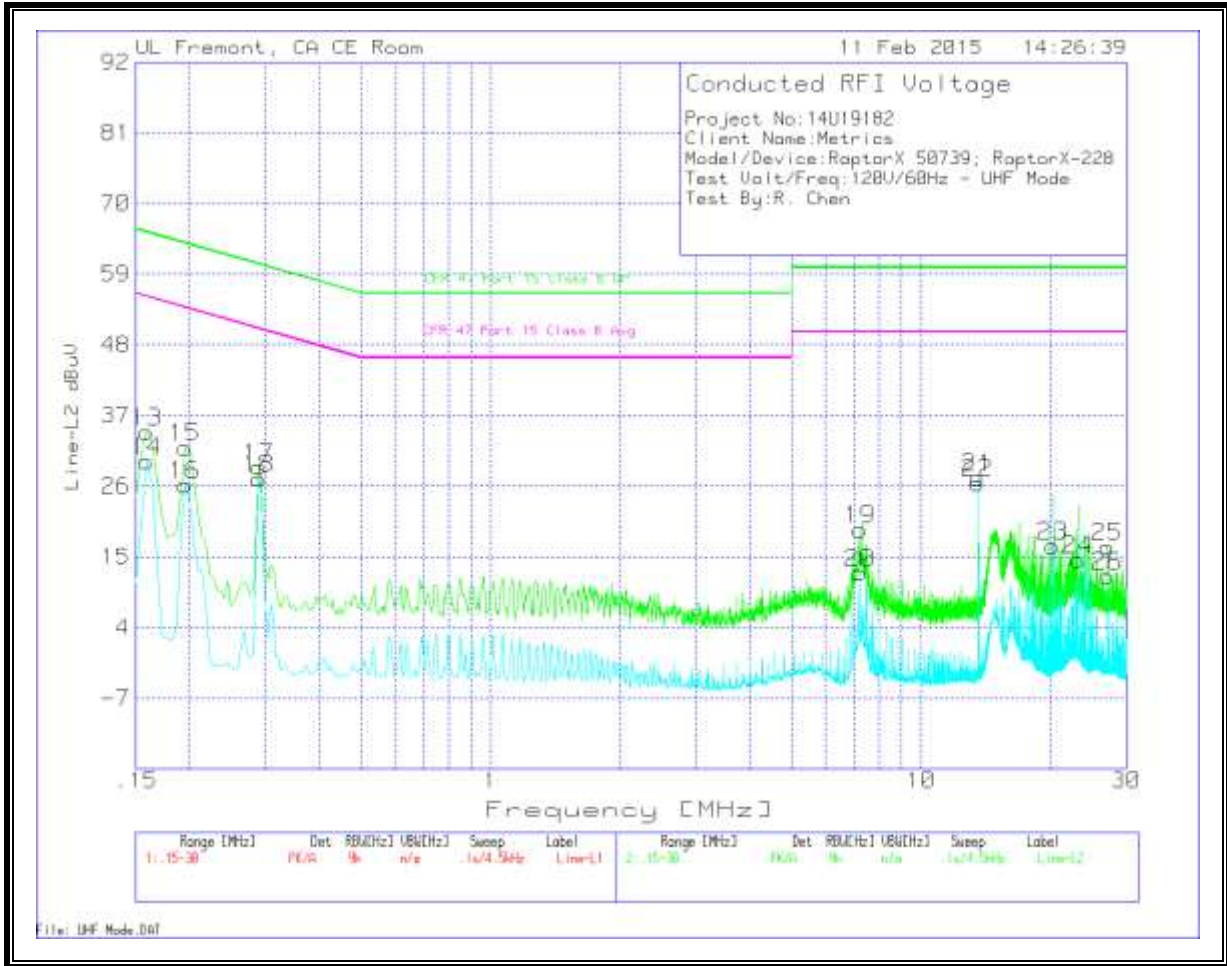
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
1	.159	34.54	PK	1.3	0	35.84	65.5	-29.66	---	---
2	.159	27.13	Av	1.3	0	28.43	---	---	55.5	-27.07
3	.1995	29.27	PK	.9	0	30.17	63.6	-33.43	---	---
4	.1995	20.17	Av	.9	0	21.07	---	---	53.6	-32.53
5	.2895	28.74	PK	.6	0	29.34	60.5	-31.16	---	---
6	.2895	27.17	Av	.6	0	27.77	---	---	50.5	-22.73
7	6.7785	26.92	PK	.2	.1	27.22	60	-32.78	---	---
8	6.7785	25.32	Av	.2	.1	25.62	---	---	50	-24.38
9	13.56	24.11	PK	.2	.2	24.51	60	-35.49	---	---
10	13.56	22.77	Av	.2	.2	23.17	---	---	50	-26.83
11	20.3415	25.37	PK	.3	.2	25.87	60	-34.13	---	---
12	20.3415	23.39	Av	.3	.2	23.89	---	---	50	-26.11

PK - Peak detector

Av - average detection

LINE 2



RESULTS

Line-L2 .15 - 30MHz

Trace Markers

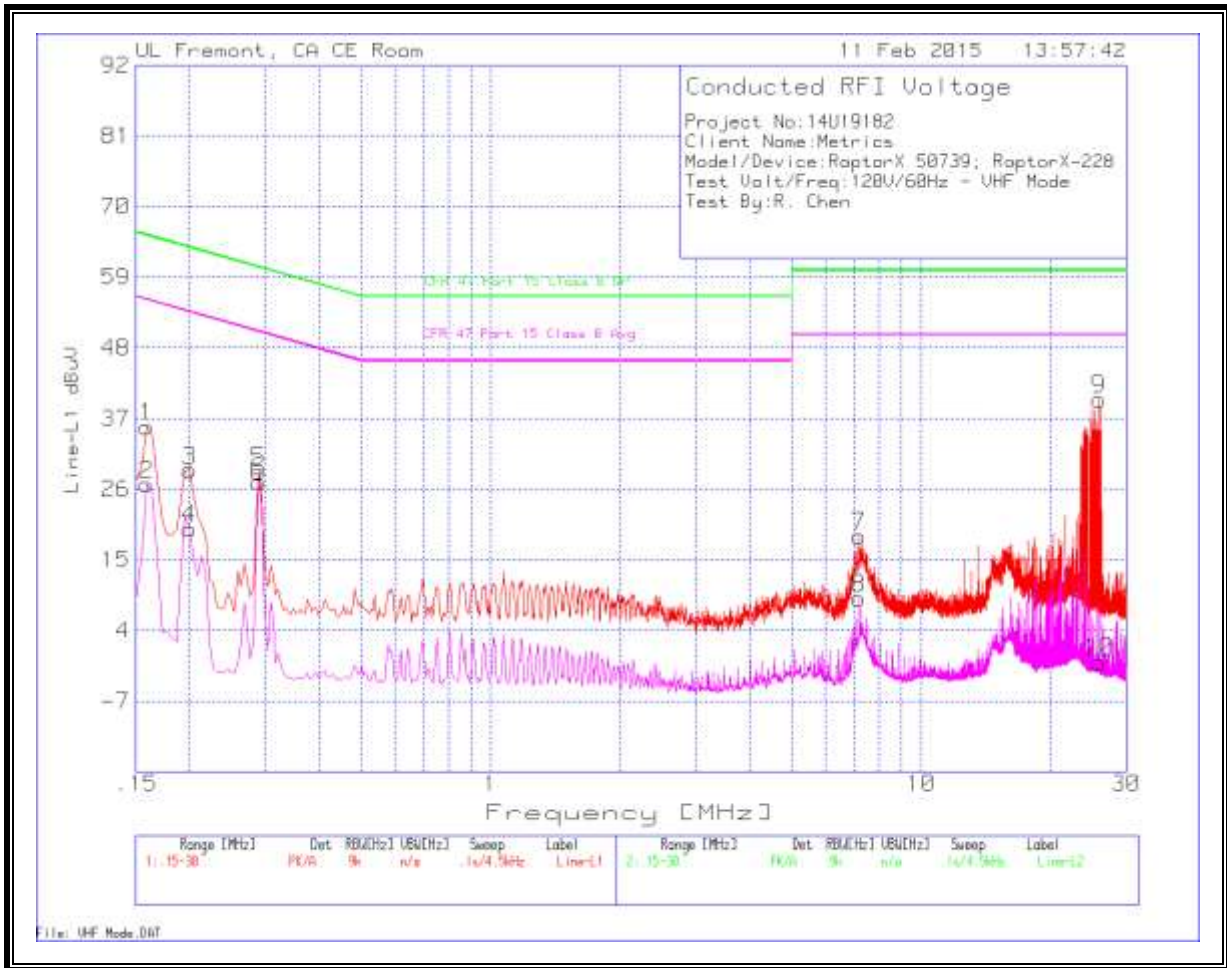
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
13	.159	33.05	PK	1.4	0	34.45	65.5	-31.05	---	---
14	.159	28.54	Av	1.4	0	29.94	---	---	55.5	-25.56
15	.195	30.96	PK	1	0	31.96	63.8	-31.84	---	---
16	.195	25.17	Av	1	0	26.17	---	---	53.8	-27.63
17	.2895	28.36	PK	.6	0	28.96	60.5	-31.54	---	---
18	.2895	26.63	Av	.6	0	27.23	---	---	50.5	-23.27
19	7.206	18.96	PK	.2	.1	19.26	60	-40.74	---	---
20	7.206	12.18	Av	.2	.1	12.48	---	---	50	-37.52
21	13.56	26.96	PK	.2	.2	27.36	60	-32.64	---	---
22	13.56	26.09	Av	.2	.2	26.49	---	---	50	-23.51
23	20.202	16.13	PK	.3	.2	16.63	60	-43.37	---	---
24	23.1945	13.99	PK	.3	.2	14.49	---	---	50	-35.51
25	27.1185	15.91	PK	.3	.3	16.51	60	-43.49	---	---
26	27.1185	11.44	Av	.3	.3	12.04	---	---	50	-37.96

PK - Peak detector

Av - average detection

10.2.2. WORST EMISSIONS FOR VHF MODE

LINE 1



RESULTS

Line-L1 .15 - 30MHz

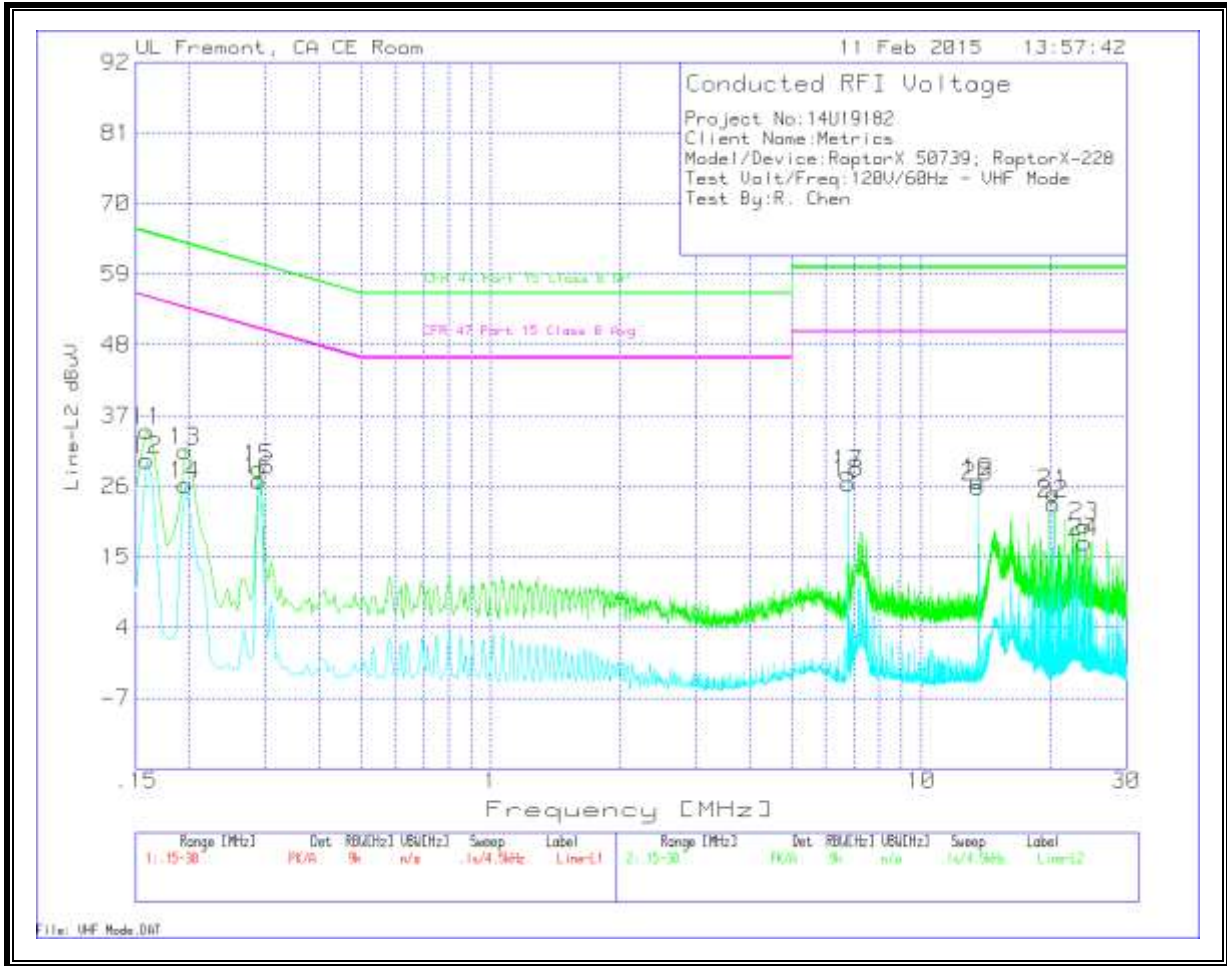
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
1	.159	34.43	PK	1.3	0	35.73	65.5	-29.77	---	---
2	.159	25.39	Av	1.3	0	26.69	---	---	55.5	-28.81
3	.1995	28.06	PK	.9	0	28.96	63.6	-34.64	---	---
4	.1995	18.88	Av	.9	0	19.78	---	---	53.6	-33.82
5	.2895	28.12	PK	.6	0	28.72	60.5	-31.78	---	---
6	.2895	26.53	Av	.6	0	27.13	---	---	50.5	-23.37
7	7.1925	18.33	PK	.2	.1	18.63	60	-41.37	---	---
8	7.1925	8.7	Av	.2	.1	9	---	---	50	-41
9	25.9665	39.43	PK	.3	.3	40.03	60	-19.97	---	---
10	25.9665	-1.53	Av	.3	.3	-.93	---	---	50	-50.93

PK - Peak detector

Av - average detection

LINE 2



RESULTS

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
11	.159	33.22	PK	1.4	0	34.62	65.5	-30.88	---	---
12	.159	28.57	Av	1.4	0	29.97	---	---	55.5	-25.53
13	.195	30.5	PK	1	0	31.5	63.8	-32.3	---	---
14	.195	25.17	Av	1	0	26.17	---	---	53.8	-27.63
15	.2895	28.1	PK	.6	0	28.7	60.5	-31.8	---	---
16	.2895	26.34	Av	.6	0	26.94	---	---	50.5	-23.56
17	6.7785	27.62	PK	.2	.1	27.92	60	-32.08	---	---
18	6.7785	26.18	Av	.2	.1	26.48	---	---	50	-23.52
19	13.56	26.29	PK	.2	.2	26.69	60	-33.31	---	---
20	13.56	25.5	Av	.2	.2	25.9	---	---	50	-24.1
21	20.3415	24.37	PK	.3	.2	24.87	60	-35.13	---	---
22	20.3415	22.71	Av	.3	.2	23.21	---	---	50	-26.79
23	23.919	19.36	PK	.3	.2	19.86	60	-40.14	---	---
24	23.919	16.75	Av	.3	.2	17.25	---	---	50	-32.75

PK - Peak detector

Av - average detection

11. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

EQUATIONS

Power density is given by:

$$S = \text{EIRP} / (4 * \text{Pi} * D^2)$$

where

S = Power density in mW/cm²

EIRP = Equivalent Isotropic Radiated Power in mW

D = Separation distance in cm

Distance is given by:

$$D = \text{SQRT} (\text{EIRP} / (4 * \text{Pi} * S))$$

where

D = Separation distance in cm

EIRP = Equivalent Isotropic Radiated Power in mW

S = Power density in mW/cm²

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

LIMITS

From FCC §1.1310 Table 1 (B), the maximum value of $S = f/1500$ mW/cm², where f is the operating frequency in MHz.

MEASUREMENT NOTES

The conducted output power was measured with the device operating at the only source-based TDD duty cycle, therefore no duty cycle correction is applied to the RF Exposure calculations.

RESULTS FOR FIXED OPERATION

In accordance with §15.709 (d), the minimum separation distance for a Fixed TVBD is 40 cm.

RF Exposure for Maximum Output Power and highest antenna assembly gain (DB2E,11.8).

Frequency (MHz)	Band	Separation Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (mW)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)	Fraction of Limit %
473.0	UHF	40	14.91	8.00	100	195	0.010	1.000	0.973
587.0	UHF	40	14.82	8.00	100	191	0.010	1.000	0.953
695.0	UHF	40	2.84	8.00	100	12	0.001	1.000	0.060
177.0	VHF	40	16.86	9.00	100	385	0.019	1.000	1.918
195.0	VHF	40	11.97	9.00	100	125	0.006	1.000	0.622
213.0	VHF	40	16.96	9.00	100	394	0.020	1.000	1.963

Note: worst case is for VHF channel 7, 177MHz.