FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

Pressure Module with BT LE Transceiver

MODEL NUMBER: 6119

FCC ID: 2AHUPPM

REPORT NUMBER: 11162668A

ISSUE DATE: July 28, 2016

Prepared for
OSPREY MEDICAL INC
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MINNETONKA, MN 55343
USA

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	July 28, 2016	Initial Issue	BM

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Osprey Medical Inc.
5600 Rowland Road, Suite 250
Minnetonka, MN 55343

EUT DESCRIPTION: Pressure module with BTLE transceiver.

MODEL: 6119

SERIAL NUMBER: non-serilized

DATE TESTED: March 2016 – July 2016

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

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

Michael Ferrer
Program Manager
UL LLC

Tested By:

Bart Mucha
Staff Engineer
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4 and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at http://ts.nist.gov

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

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:
Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.3. MEASUREMENT UNCERTAINTY

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

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.30dB
Radiated Emissions	30-130MHz	Bicon 3m Vert	4.84dB
Radiated Emissions	130-200MHz	Bicon 3m Vert	4.94dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-6GHz	Horn	5.02dB
Radiated Emissions	6-18GHz	Horn	5.34dB
Radiated Emissions	18-26GHz	Horn	6.60dB
Conducted Ant Port	30MHz-26GHz	Spectrum Analyzer	2.94

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a BLE transceiver used in a Pressure Module.

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency Range (MHz)	Mode	Output Power Peak E-field Strength (dBuV/m)
2402-2480	BT LE (pressure)	84.79

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna is incorporated into the circuit board.

5.4. SOFTWARE AND FIRMWARE

The PC software utility was Texas Instruments (TI) HCI Tester ver 2.3.5.0 in the TI Bluetooth Tools 5.2.0 utility pack running on a Windows 10 laptop.

The firmware and BLE stack was TI ver. 1.4.0 set in “Production Test Mode” to create a worst case transmission scenario (see Section 5.5).

5.5. WORST-CASE CONFIGURATION AND MODE

For pressure module it was determined that worst case was when EUT was oriented in X-Axis for Middle and high channels and Z-Axis for Low channel.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

None

I/O CABLES

None

TEST SETUP

The EUT is standalone device powered by a single AAA battery.

SETUP DIAGRAM FOR TESTS

6. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20160102	20170131
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20151118	20161118
Bicon Antenna	Chase	VBA6106A	EMC4078	20151228	20161231
Log-P Antenna	Chase	UPA6109	EMC4313	20160122	20170131
Antenna Array	UL	BOMS	EMC4276	20151115	20161115
Spectrum Analyzer	Agilent	N9030A (PXA)	EMC4360	20160108	20170131

7. TEST RESULTS FOR PRESSURE MODULE

7.1.1. 99% BANDWIDTH and 20dB Bandwidth

LIMITS

None; for reporting purposes only.

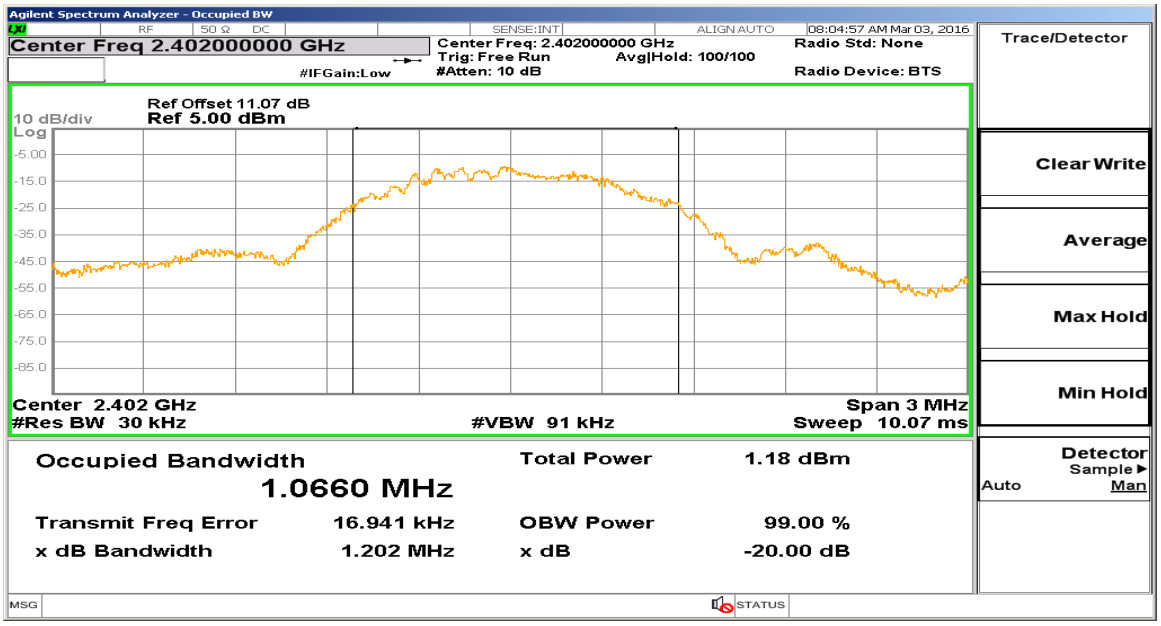
TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 5% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

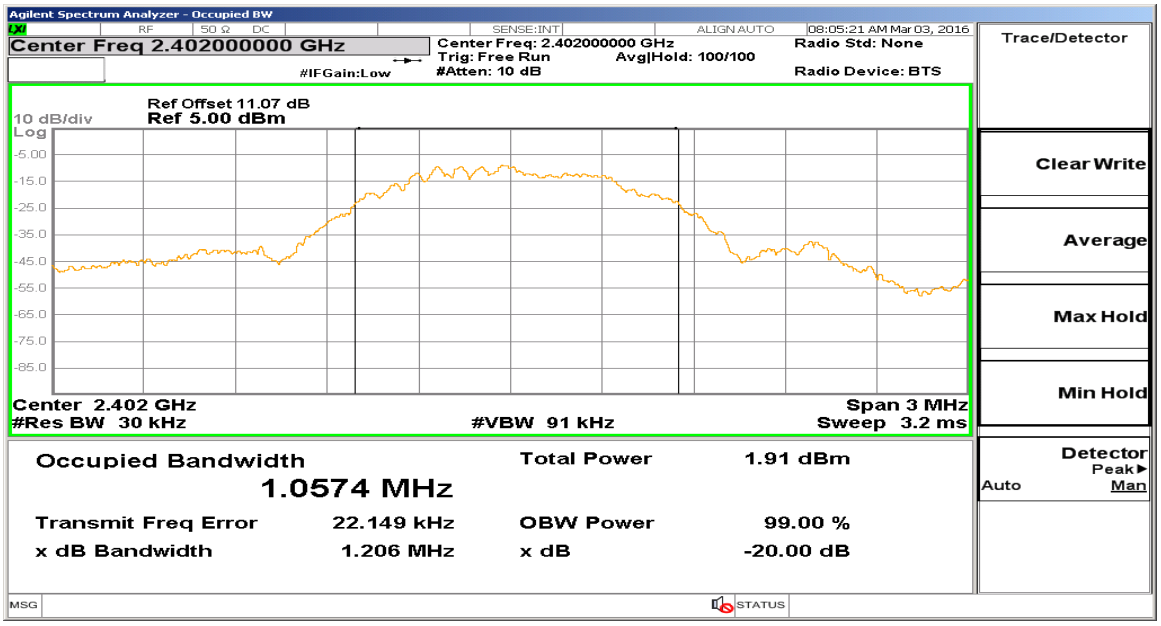
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)
Low	2402	1.066	1.206
Middle	2440	1.0587	1.201
High	2480	1.0639	1.207

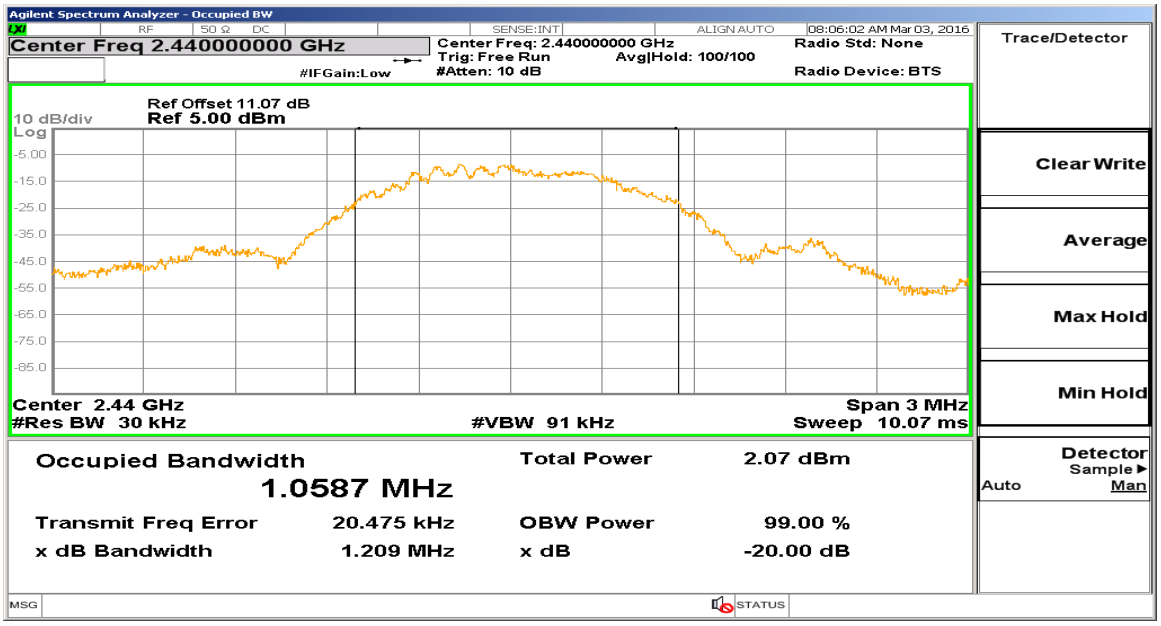
Low Channel 99% BANDWIDTH



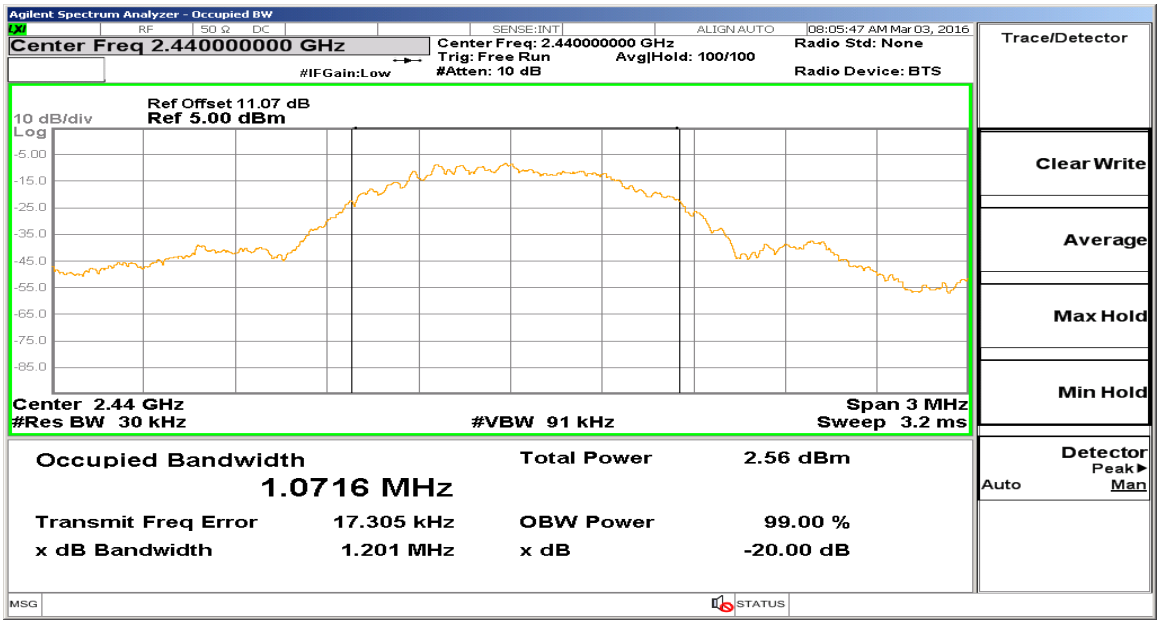
Low Channel 20dB Bandwidth



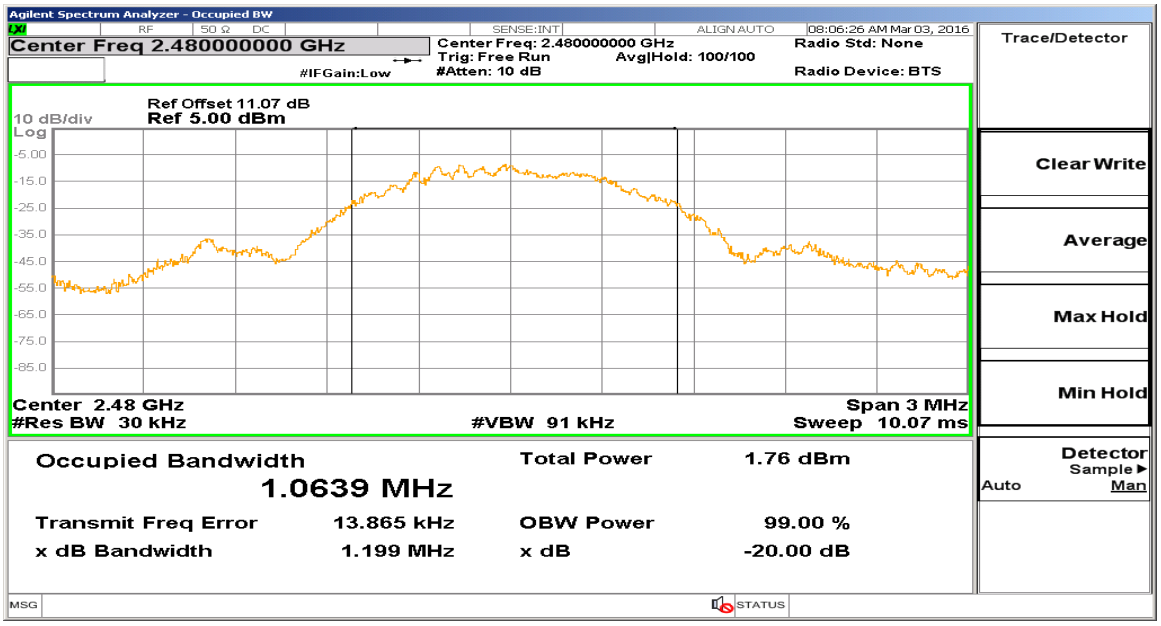
Middle Channel 99% BANDWIDTH



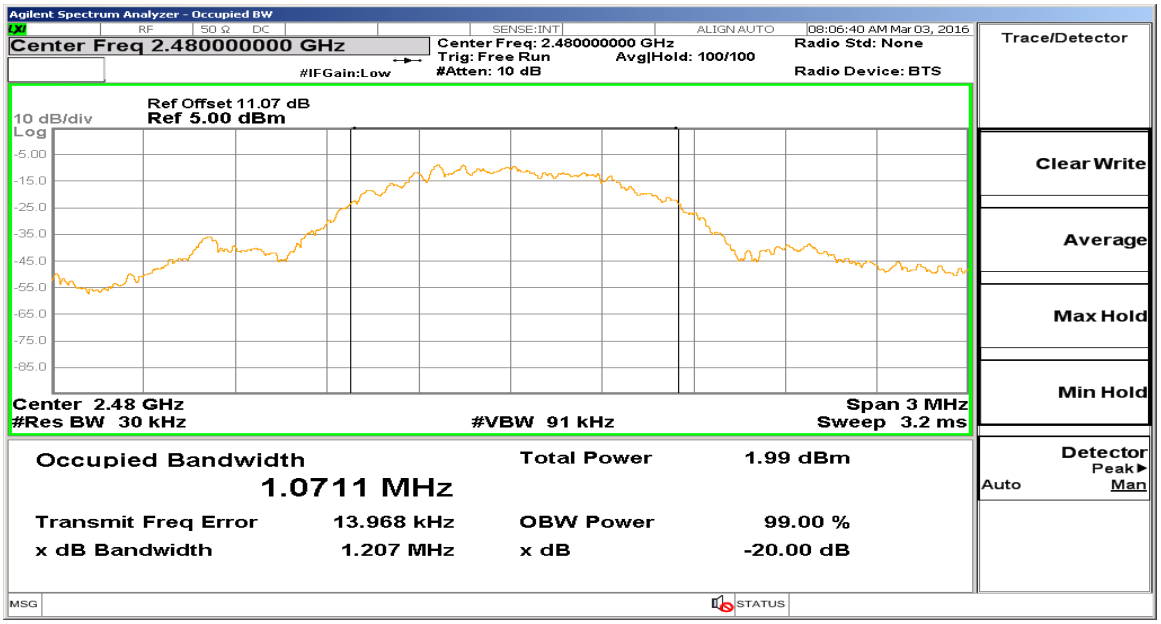
Middle Channel 20dB Bandwidth



High Channel 99% BANDWIDTH



High Channel 20dB Bandwidth



7.2. RADIATED EMISSIONS

MEASUREMENT METHODS

Since there is no specific measurement guidance defined for the below referenced standards therefore measurements were conducted per FCC KDB: 558074 D01 DTS Meas Guidance v03r04, Power RMS with trace averaging and duty cycle correction.

LIMIT

FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHZ, and 24.0–24.25 GHz.
(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

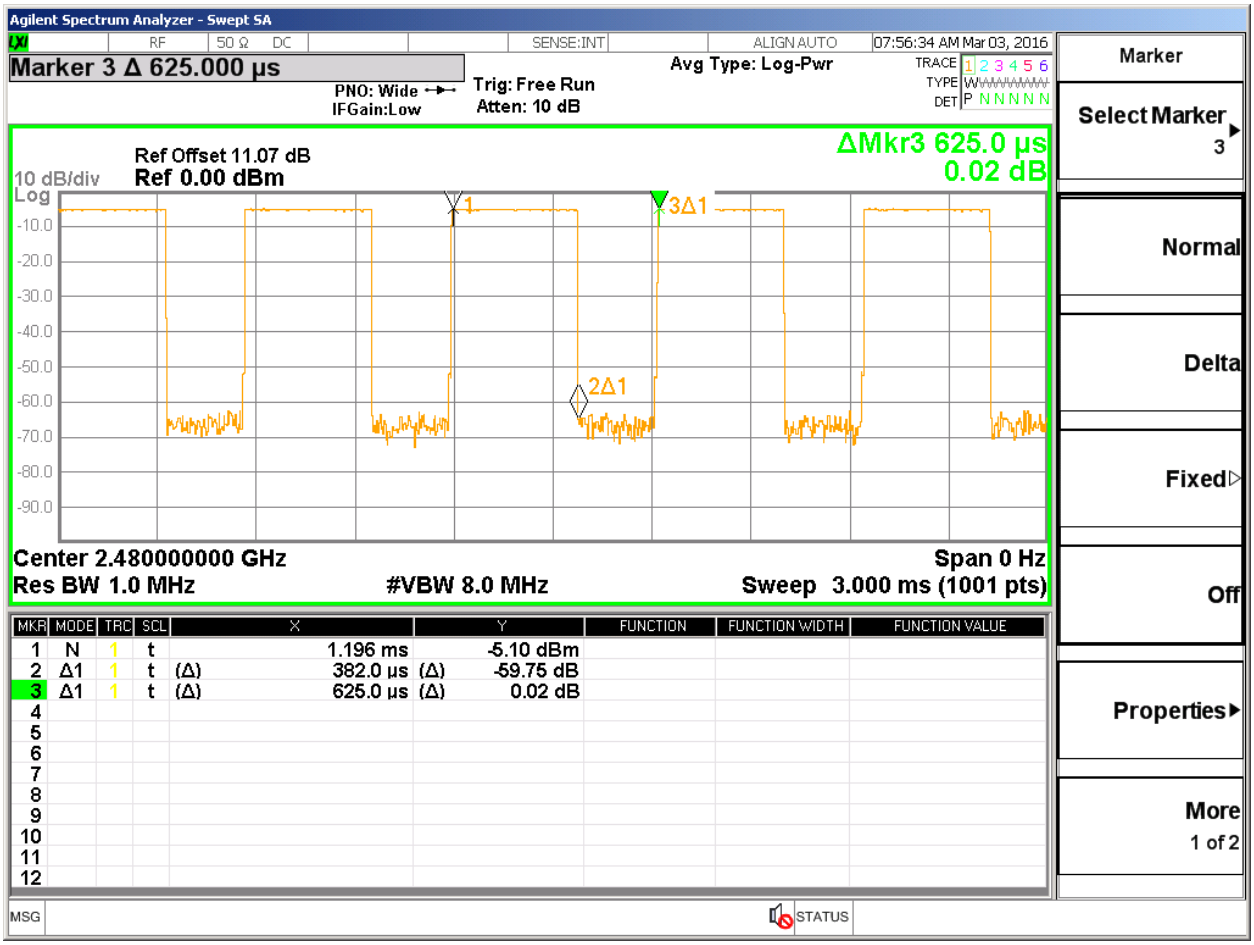
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

RESULTS

7.2.1. DUTY CYCYLE

TX OnTime and Period



TX OnTime = 382uS
TX Period = 625uS
Power RMS Factor = 10 * log (1/(382/625)) = 2.13dB
Voltage Average Factor = 20 * log (1/(382/625)) = 4.27dB

7.2.2. FUNDAMENTAL FREQUENCY RADIATED EMISSION

Worst Case Fundamental Emissions

Low Channel

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
2.4019	52.06	Pk	21.8	4.64	-	78.5	114	-35.5	222	139	H
2.4022	54.59	RMS	21.8	4.64	2.13	83.16	94	-10.84	222	139	H
2.4022	53.53	Pk	21.8	4.64	-	79.97	114	-34.03	198	100	V
2.4018	51.33	RMS	21.8	4.64	2.13	79.9	94	-14.1	198	100	V
PK - Peak Detector											
RMS - Power RMS Detector											

Middle Channel

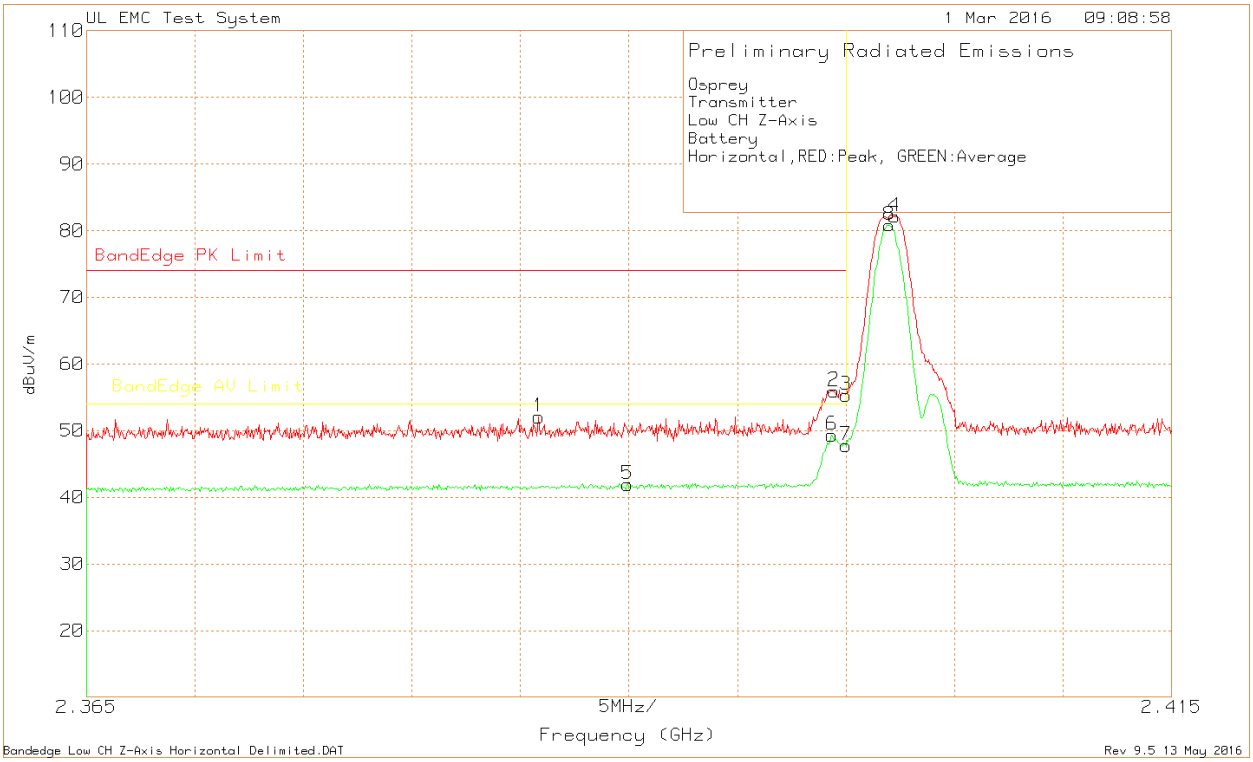
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
2.4402	55.84	Pk	21.9	4.72	-	82.46	114	-31.54	100	100	V
2.44	52.97	RMS	21.9	4.72	2.13	81.72	94	-12.28	100	100	V
2.4402	57.91	Pk	21.9	4.72	-	84.53	114	-29.47	130	134	H
2.44	55.29	RMS	21.9	4.72	2.13	84.04	94	-9.96	130	134	H
PK - Peak Detector											
RMS - Power RMS Detector											

High Channel

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
2.4797	58.05	Pk	22	4.74	-	84.79	114	-29.21	129	116	H
2.48	55.27	RMS	22	4.74	2.13	84.14	94	-9.86	129	116	H
2.4798	55.91	Pk	22	4.74	-	82.65	114	-31.35	85	100	V
2.4799	53.09	RMS	22	4.74	2.13	81.96	94	-12.04	85	100	V
PK - Peak Detector											
RMS - Power RMS Detector											

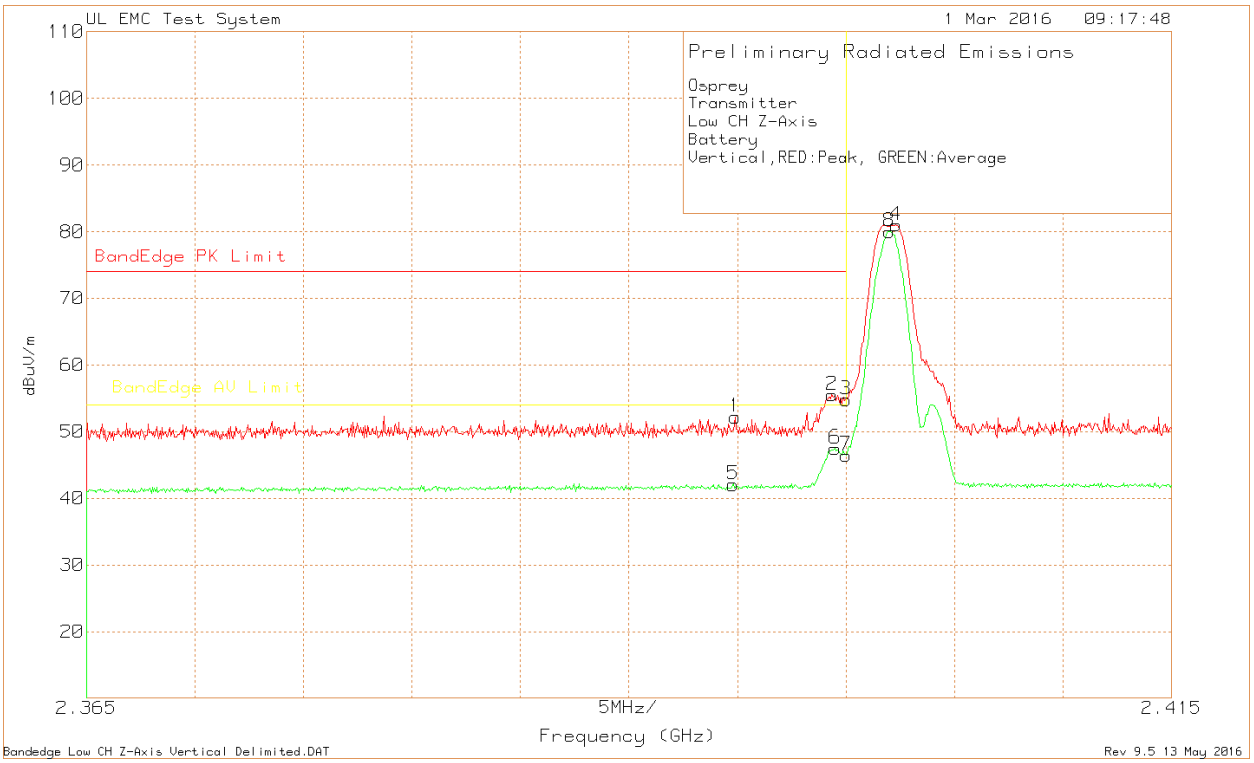
7.2.3. TRANSMITTER RESTRICTED BAND EDGES

BANDEDGE (LOW CHANNEL, HORIZONTAL)



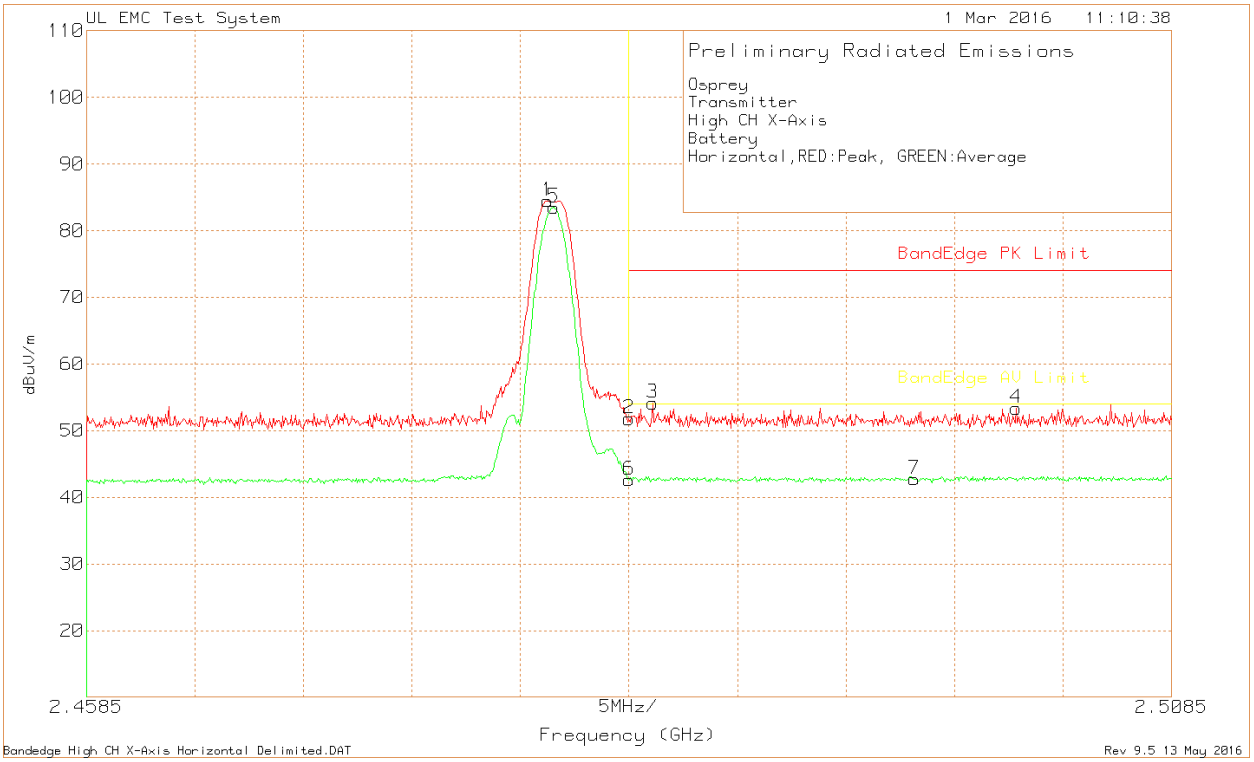
Osprey												
Transmitter												
Low CH Z-Axis												
Battery												
Horizontal,RED:Peak, GREEN:Average												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle dB	Path Factor dB	Level dBuV/m	Band Edge PK Limit	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.3859	25.6	Pk	21.8	-	4.64	52.04	74	-21.96	60	184	H
2	2.3995	29.49	Pk	21.8	-	4.64	55.93	74	-18.07	60	184	H
3	2.4	28.9	Pk	21.8	-	4.64	55.34	74	-18.66	60	184	H
4	2.4023	55.71	Pk	21.8	-	4.64	82.15	-	-	60	184	H
5	2.39	13.38	RMS	21.8	2.1	4.65	41.93	54	-12.07	60	184	H
6	2.3994	20.77	RMS	21.8	2.1	4.64	49.31	54	-4.69	60	184	H
7	2.4	19.25	RMS	21.8	2.1	4.64	47.79	54	-6.21	60	184	H
8	2.402	52.29	RMS	21.8	2.1	4.64	80.83	-	-	60	184	H
Pk - Peak detector												
RMS - Power RMS Detector												

BANDEDGE (LOW CHANNEL, VERTICAL)



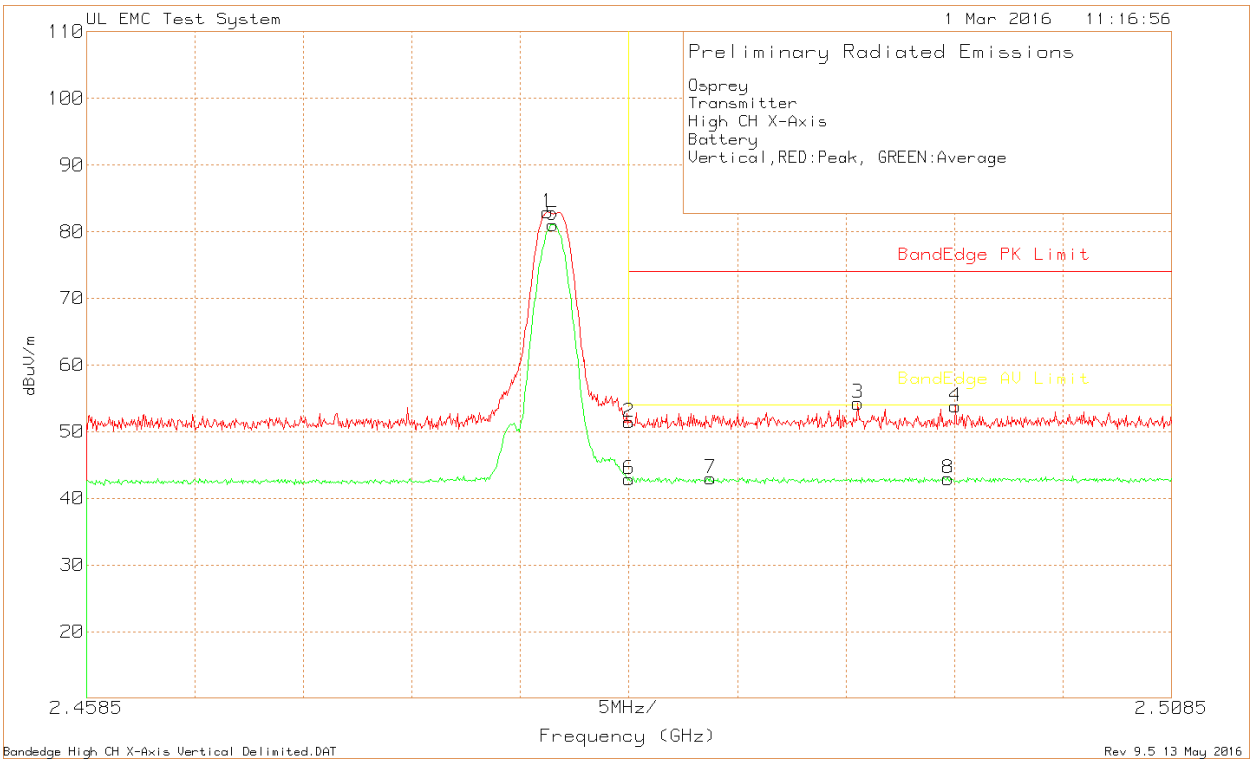
Osprey												
Transmitter												
Low CH Z-Axis												
Battery												
Vertical,RED:Peak, GREEN:Average												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle dB	Path Factor dB	Level dBuV/m	Band Edge PK Limit	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.3949	25.76	Pk	21.8		4.65	52.21	74	-21.79	36	103	V
2	2.3994	29.07	Pk	21.8		4.64	55.51	74	-18.49	36	103	V
3	2.4	28.33	Pk	21.8		4.64	54.77	74	-19.23	36	103	V
4	2.4023	54.56	Pk	21.8		4.64	81	-	-	36	103	V
5	2.3948	13.52	RMS	21.8	2.1	4.65	42.07	54	-11.93	36	103	V
6	2.3995	18.93	RMS	21.8	2.1	4.64	47.47	54	-6.53	36	103	V
7	2.4	17.89	RMS	21.8	2.1	4.64	46.43	54	-7.57	36	103	V
8	2.402	51.45	RMS	21.8	2.1	4.64	79.99	-	-	36	103	V
Pk - Peak detector												
RMS - Power RMS Detector												

BANDEDGE (HIGH CHANNEL, HORIZONTAL)



Osprey												
Transmitter												
High CH X-Axis												
Battery												
Horizontal,RED:Peak, GREEN:Average												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle dB	Path Factor dB	Level dBuV/m	Band Edge PK Limit	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4798	57.76	Pk	22	-	4.74	84.5	-	-	224	189	H
2	2.4835	24.94	Pk	22.1	-	4.76	51.8	74	-22.2	224	189	H
3	2.4846	27.26	Pk	22.1	-	4.76	54.12	74	-19.88	224	189	H
4	2.5014	26.43	Pk	22.1	-	4.82	53.35	74	-20.65	224	189	H
5	2.4801	54.65	RMS	22	2.1	4.74	83.49	-	-	224	189	H
6	2.4835	13.66	RMS	22.1	2.1	4.76	42.62	54	-11.38	224	189	H
7	2.4967	13.75	RMS	22.1	2.1	4.8	42.75	54	-11.25	224	189	H
Pk - Peak detector												
RMS - Power RMS Detector												

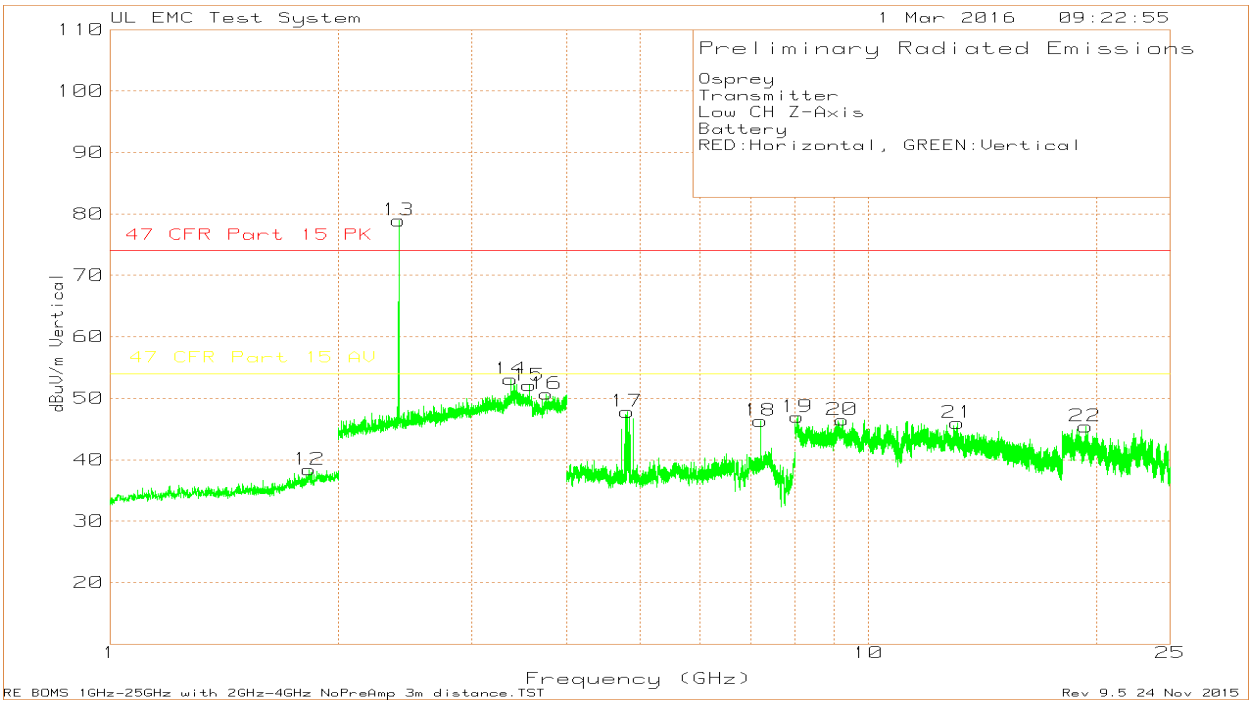
BANDEDGE (HIGH CHANNEL, VERTICAL)

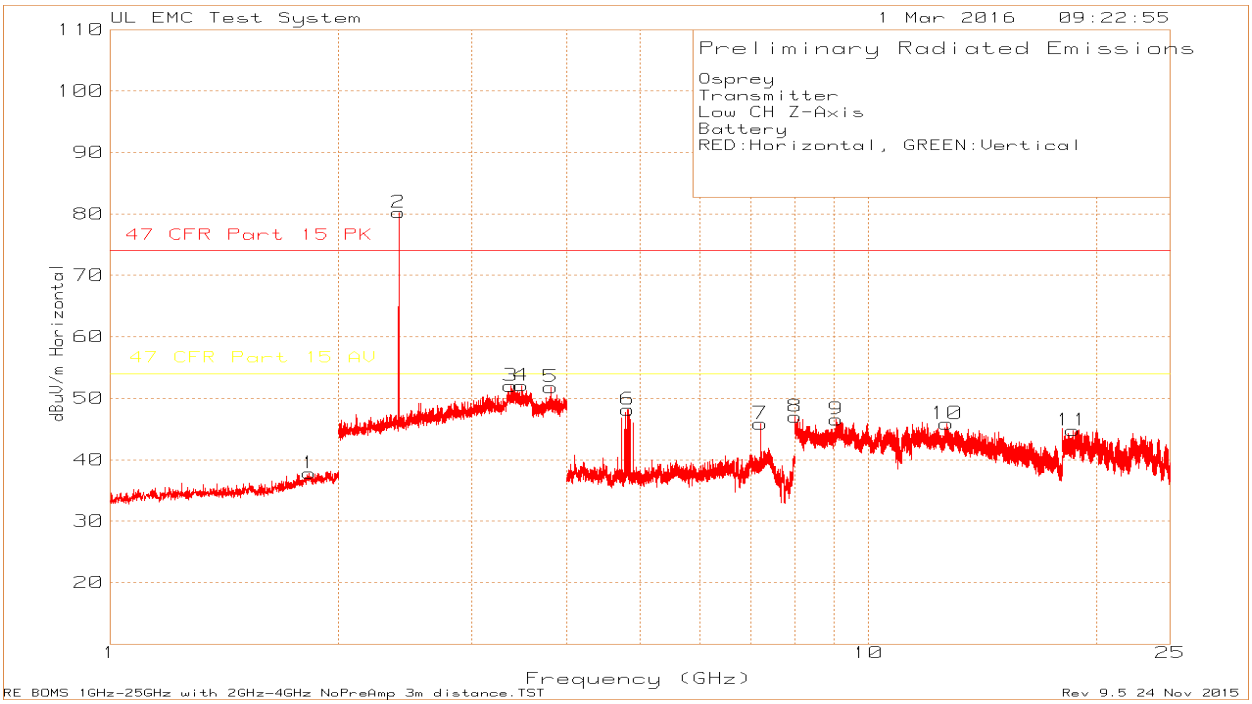


Osprey												
Transmitter												
High CH X-Axis												
Battery												
Vertical,RED:Peak, GREEN:Average												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle dB	Path Factor dB	Level dBuV/m	Band Edge PK Limit	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4798	56.21	Pk	22	-	4.74	82.95	-	-	204	108	V
2	2.4835	24.59	Pk	22.1	-	4.76	51.45	74	-22.55	204	108	V
3	2.4941	27.4	Pk	22.1	-	4.77	54.27	74	-19.73	204	108	V
4	2.4986	26.91	Pk	22.1	-	4.81	53.82	74	-20.18	204	108	V
5	2.48	52.17	RMS	22	2.1	4.74	81.01	-	-	204	108	V
6	2.4835	13.91	RMS	22.1	2.1	4.76	42.87	54	-11.13	204	108	V
7	2.4873	14.03	RMS	22.1	2.1	4.76	42.99	54	-11.01	204	108	V
8	2.4982	13.96	RMS	22.1	2.1	4.81	42.97	54	-11.03	204	108	V
Pk - Peak detector												
RMS - Power RMS Detector												

7.2.4. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

Low Channel – Z Axis as worst case





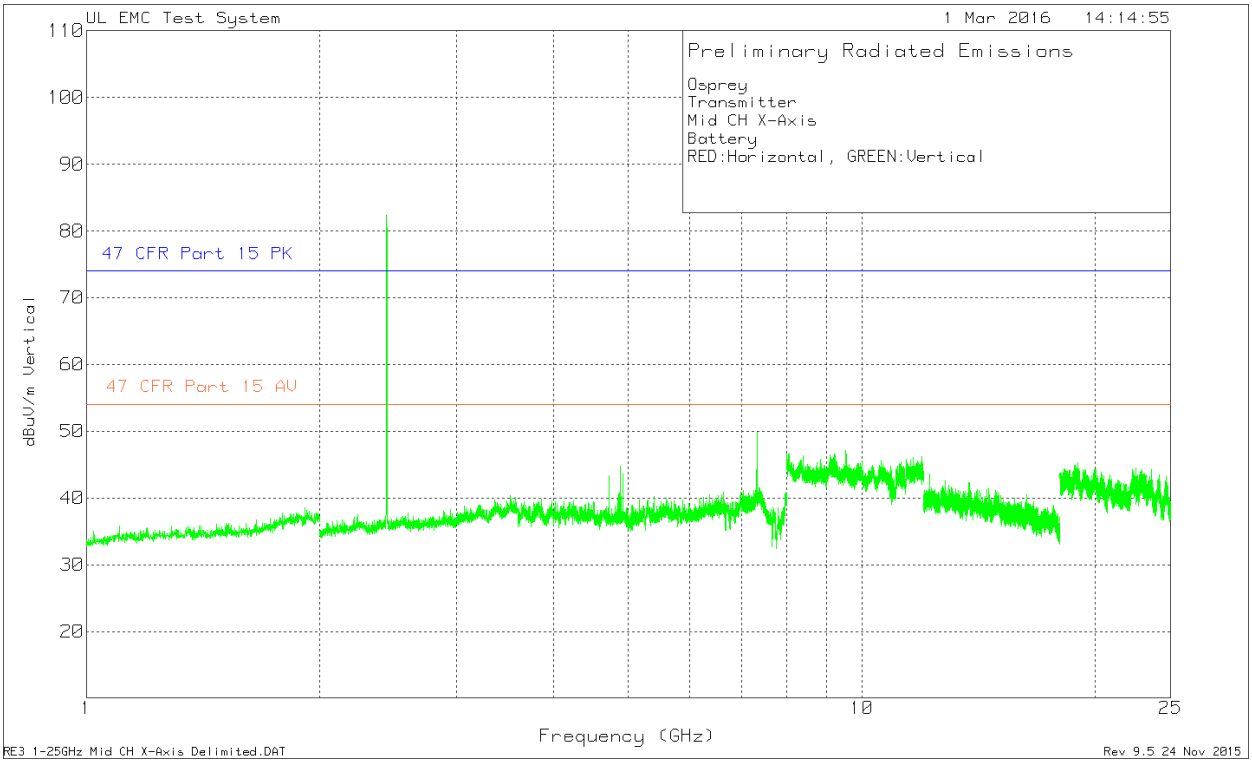
Low Channel - Marker Data

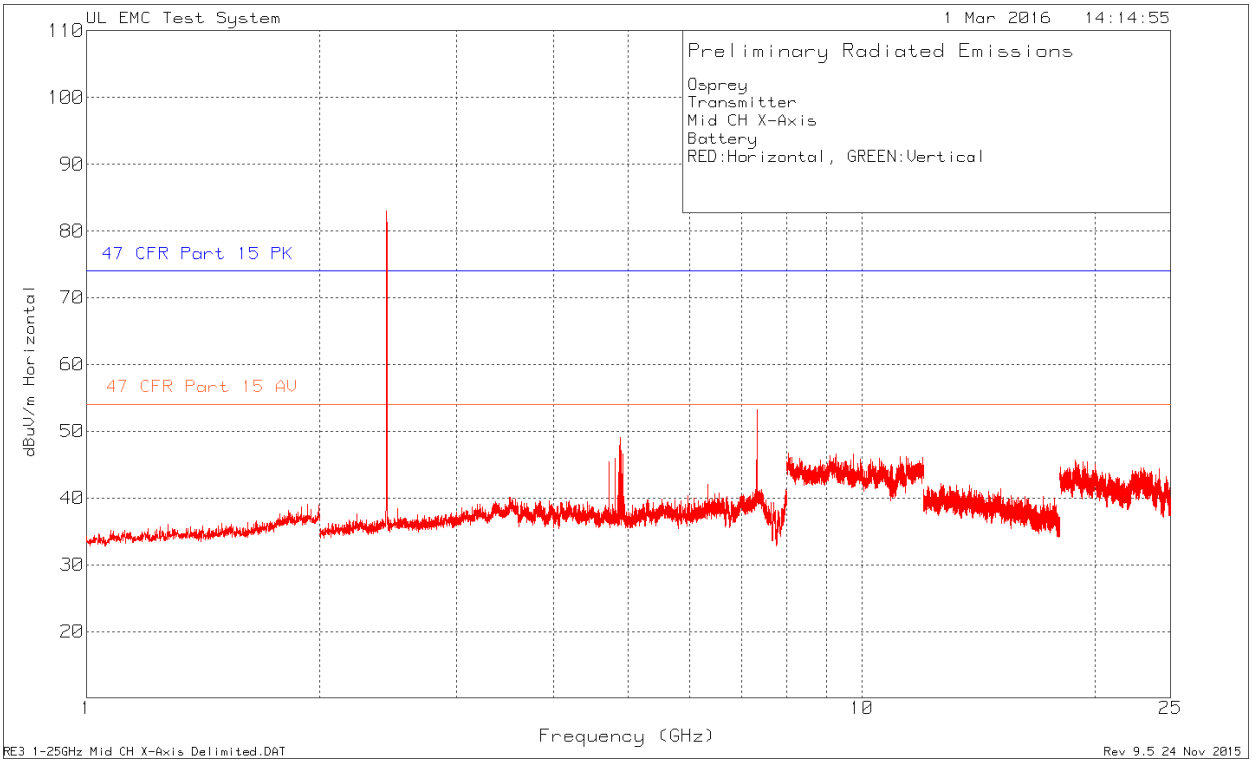
Osprey													
Transmitter													
Low CH Z-Axis													
Battery													
RED:Horizontal, GREEN:Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Peak Limit dBuV/m	Margin dB	Average Limit dBuV/m	Margin dB	Azimuth [Degs]	Height [cm]	Polarity
1	1.831	65.39	Pk	27.1	-54.66	37.83	74	-36.17	54	-16.17	0-360	150	H
2	2.402	53.82	Pk	21.8	4.64	80.26	-	-	-	-	0-360	150	H
3	3.373	22.97	Pk	23.3	5.76	52.03	74	-21.97	54	-1.97	0-360	150	H
4	3.487	22.87	Pk	23.5	5.72	52.09	74	-21.91	54	-1.91	0-360	150	H
5	3.81	21.51	Pk	24.1	6.21	51.82	74	-22.18	54	-2.18	0-360	150	H
6	4.818	71.87	Pk	27.7	-51.4	48.17	74	-25.83	54	-5.83	0-360	149	H
7	7.207	62.35	Pk	29.8	-46.3	45.85	74	-28.15	54	-8.15	0-360	149	H
8	8.006	57.95	Pk	36.1	-47.04	47.01	74	-26.99	54	-6.99	0-360	99	H
9	9.071	59.39	Pk	36.2	-49.04	46.55	74	-27.45	54	-7.45	0-360	150	H
10	12.684	52.06	Pk	39.5	-45.71	45.85	74	-28.15	54	-8.15	0-360	100	H
11	18.594	55.43	Pk	40.1	-50.75	44.78	74	-29.22	54	-9.22	0-360	100	H
12	1.83	65.97	Pk	27.1	-54.66	38.41	74	-35.59	54	-15.59	0-360	100	V
13	2.402	52.52	Pk	21.8	4.64	78.96	-	-	-	-	0-360	99	V
14	3.375	23.99	Pk	23.3	5.8	53.09	74	-20.91	54	-0.91	0-360	99	V
15	3.569	23.13	Pk	23.3	5.67	52.1	74	-21.9	54	-1.9	0-360	99	V
16	3.76	20.65	Pk	23.9	6.17	50.72	74	-23.28	54	-3.28	0-360	150	V
17	4.806	71.6	Pk	27.7	-51.48	47.82	74	-26.18	54	-6.18	0-360	100	V
18	7.207	62.84	Pk	29.8	-46.3	46.34	74	-27.66	54	-7.66	0-360	100	V
19	8.059	57.24	Pk	36.2	-46.47	46.97	74	-27.03	54	-7.03	0-360	150	V
20	9.238	58	Pk	36.4	-47.92	46.48	74	-27.52	54	-7.52	0-360	150	V
21	13.108	50.58	Pk	39.8	-44.4	45.98	74	-28.02	54	-8.02	0-360	150	V
22	19.328	55.13	Pk	40.3	-50.02	45.41	74	-28.59	54	-8.59	0-360	100	V

Low Channel Power RMS Measurements

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
4.806	73.74	Pk	27.7	-51.48	-	49.96	74	-24.04	221	101	H
4.806	70.42	RMS	27.7	-51.48	2.13	48.77	54	-5.23	221	101	H
4.806	73.01	Pk	27.7	-51.48	-	49.23	74	-24.77	20	104	V
4.806	69.15	RMS	27.7	-51.48	2.13	47.5	54	-6.5	20	104	V
PK - Peak Detector											
RMS - Power RMS Detector											

Middle Channel – X Axis as worst case





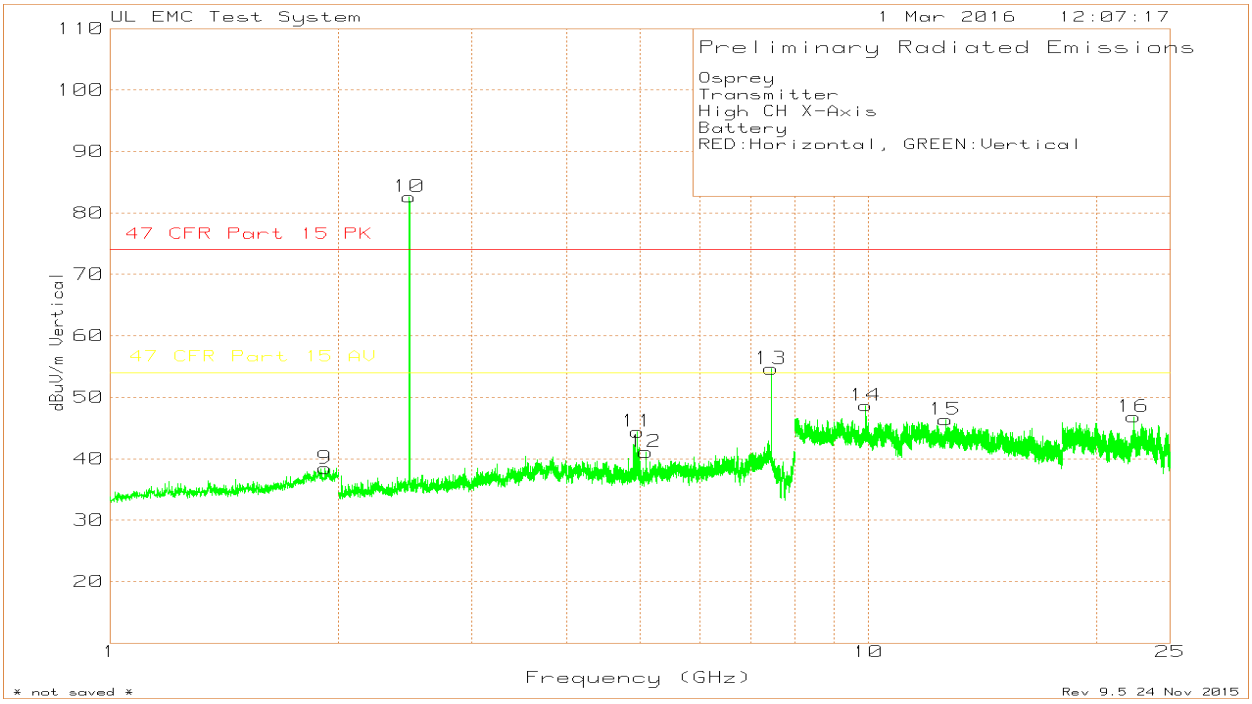
Middle Channel Marker Data

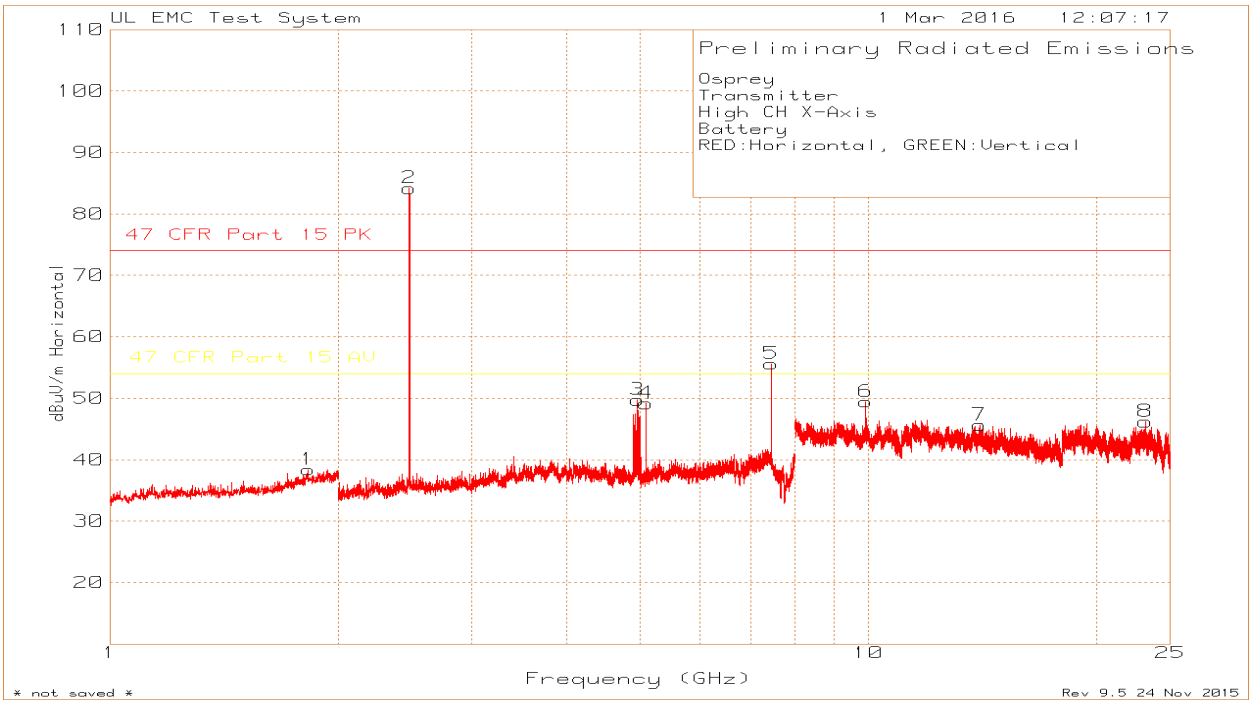
Osprey													
Transmitter													
Mid CH X-Axis													
Battery													
RED:Horizontal, GREEN:Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Peak Limit dBuV/m	Margin dB	Average Limit dBuV/m	Margin dB	Azimuth [Degs]	Height [cm]	Polarity
1	1.929	66.16	Pk	27.4	-54.52	39.04	74	-34.96	54	-14.96	0-360	100	H
2	2.439	109.31	Pk	21.9	-48.32	82.89	74	8.89	54	28.89	0-360	150	H
3	3.513	63.49	Pk	23.5	-46.93	40.06	74	-33.94	54	-13.94	0-360	150	H
4	4.882	72.15	Pk	27.7	-50.77	49.08	74	-24.92	54	-4.92	0-360	101	H
5	6.33	60.56	Pk	29.2	-47.65	42.11	74	-31.89	54	-11.89	0-360	101	H
6	7.322	68.63	Pk	30.6	-46.01	53.22	74	-20.78	54	-0.78	0-360	149	H
7	8.041	57.29	Pk	36.1	-46.71	46.68	74	-27.32	54	-7.32	0-360	100	H
8	9.25	58.32	Pk	36.4	-48.08	46.64	74	-27.36	54	-7.36	0-360	150	H
9	11.201	56.04	Pk	36.7	-46.55	46.19	74	-27.81	54	-7.81	0-360	100	H
10	12.629	48.06	Pk	39.5	-45.4	42.16	74	-31.84	54	-11.84	0-360	150	H
11	18.896	55.69	Pk	40.2	-50.62	45.27	74	-28.73	54	-8.73	0-360	100	H
12	1.913	65.82	Pk	27.4	-54.69	38.53	74	-35.47	54	-15.47	0-360	150	V
13	2.439	108.78	Pk	21.9	-48.32	82.36	74	8.36	54	28.36	0-360	100	V
14	3.571	64.28	Pk	23.3	-47.48	40.1	74	-33.9	54	-13.9	0-360	100	V
15	4.882	67.85	Pk	27.7	-50.77	44.78	74	-29.22	54	-9.22	0-360	100	V
16	7.322	65.23	Pk	30.6	-46.01	49.82	74	-24.18	54	-4.18	0-360	100	V
17	8.054	56.91	Pk	36.2	-46.46	46.65	74	-27.35	54	-7.35	0-360	100	V
18	9.535	59.06	Pk	36.4	-48.39	47.07	74	-26.93	54	-6.93	0-360	100	V
19	12.228	50.16	Pk	39.4	-45.98	43.58	74	-30.42	54	-10.42	0-360	100	V
20	18.99	55.74	Pk	40.2	-50.64	45.3	74	-28.7	54	-8.7	0-360	100	V
Pk - Peak detector													

Middle Channel Power RMS Measurements

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
4.8819	74.29	Pk	27.7	-50.77	-	51.22	74	-22.78	70	110	H
4.882	71.51	RMS	27.7	-50.77	2.13	50.57	54	-3.43	70	110	H
4.882	67.99	Pk	27.7	-50.77	-	44.92	74	-29.08	285	212	V
4.882	63.17	RMS	27.7	-50.77	2.13	42.23	54	-11.77	285	212	V
7.3206	68.71	Pk	30.6	-46.01	-	53.3	74	-20.7	20	148	H
7.3194	61.98	RMS	30.6	-46.01	2.13	48.7	54	-5.3	20	148	H
7.3193	67.19	Pk	30.6	-46.01	-	51.78	74	-22.22	68	148	V
7.3194	59.57	RMS	30.6	-46.01	2.13	46.29	54	-7.71	68	148	V
PK - Peak Detector											
RMS - Power RMS Detector											

High Channel – X Axis as worst case





High Channel Marker Data

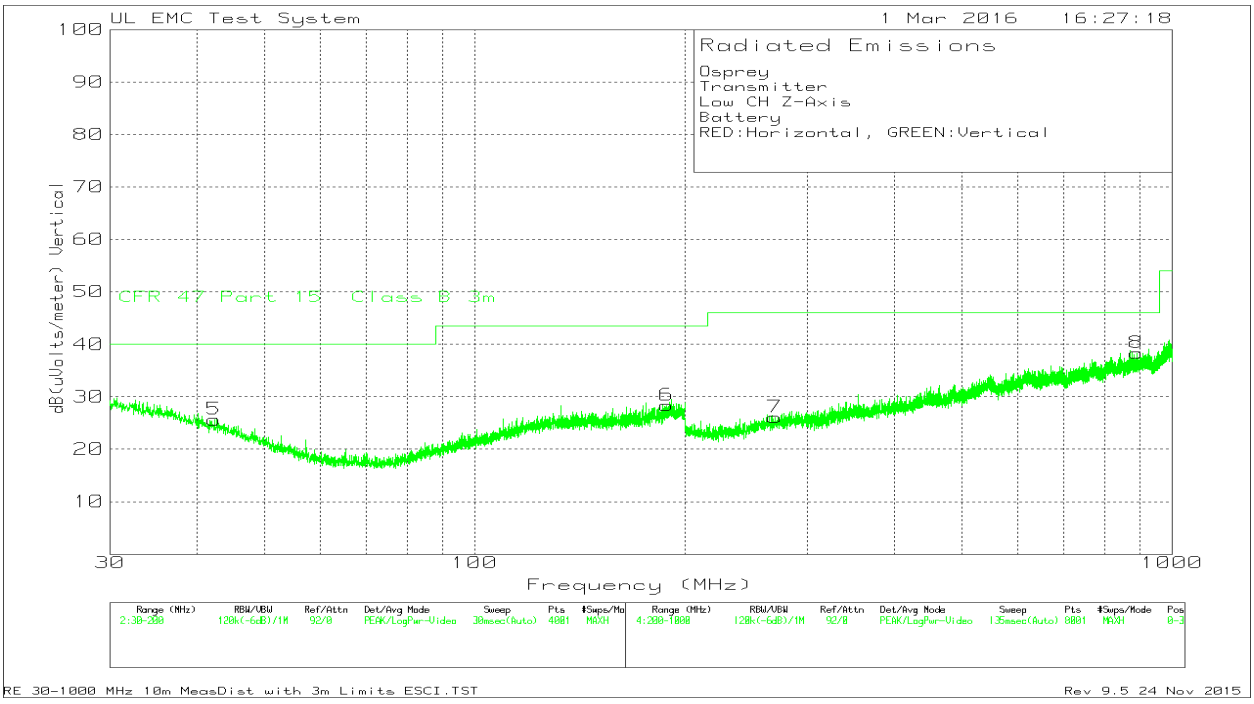
Osprey													
Transmitter													
High CH X-Axis													
Battery													
RED:Horizontal, GREEN:Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Peak Limit dBuV/m	Margin dB	Average Limit dBuV/m	Margin dB	Azimuth [Degs]	Height [cm]	Polarity
1	1.825	65.98	Pk	27.1	-54.68	38.4	74	-35.6	54	-15.6	0-360	150	H
2	2.48	110.53	Pk	22	-48.34	84.19	74	10.19	54	30.19	0-360	150	H
3	4.958	71.93	Pk	27.8	-49.98	49.75	74	-24.25	54	-4.25	0-360	101	H
4	5.088	71.75	Pk	28	-50.58	49.17	74	-24.83	54	-4.83	0-360	101	H
5	7.44	72.29	Pk	30.6	-47.27	55.62	74	-18.38	54	1.62	0-360	101	H
6	9.92	61.31	Pk	36.4	-48.25	49.46	74	-24.54	54	-4.54	0-360	100	H
7	14.015	48.69	Pk	39.9	-42.97	45.62	74	-28.38	54	-8.38	0-360	100	H
8	23.2	50.5	Pk	40.3	-44.6	46.2	74	-27.8	54	-7.8	0-360	150	H
9	1.92	65.66	Pk	27.4	-54.63	38.43	74	-35.57	54	-15.57	0-360	100	V
10	2.48	108.96	Pk	22	-48.34	82.62	74	8.62	54	28.62	0-360	100	V
11	4.958	66.57	Pk	27.8	-49.98	44.39	74	-29.61	54	-9.61	0-360	150	V
12	5.088	63.66	Pk	28	-50.58	41.08	74	-32.92	54	-12.92	0-360	150	V
13	7.44	71.29	Pk	30.6	-47.27	54.62	74	-19.38	54	0.62	0-360	100	V
14	9.921	60.52	Pk	36.4	-48.26	48.66	74	-25.34	54	-5.34	0-360	100	V
15	12.631	52.25	Pk	39.5	-45.39	46.36	74	-27.64	54	-7.64	0-360	150	V
16	22.363	52.21	Pk	40.5	-45.87	46.84	74	-27.16	54	-7.16	0-360	150	V
Pk - Peak detector													

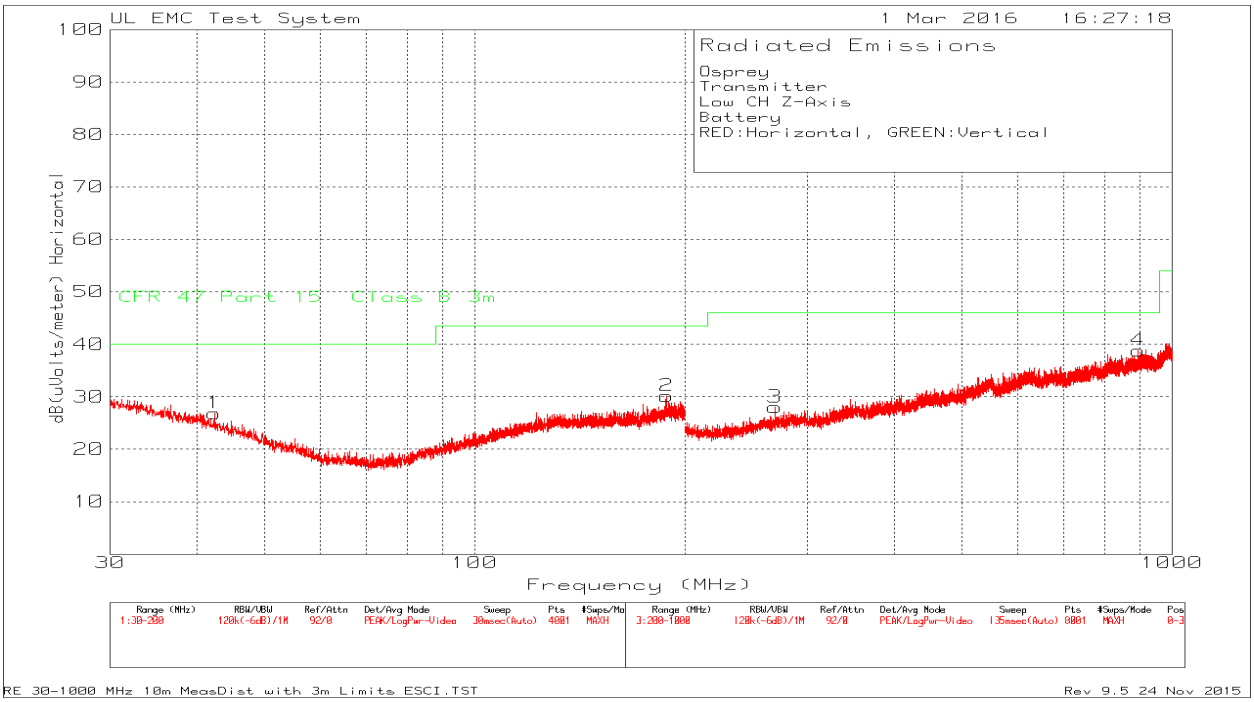
High Channel Power RMS Measurements

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Level dBuV/m	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
4.958	72.37	Pk	27.8	-49.98	-	50.19	74	-23.81	14	162	H
4.958	69.11	RMS	27.8	-49.98	2.13	49.06	54	-4.94	14	162	H
4.958	67.68	Pk	27.8	-49.98	-	45.5	74	-28.5	207	106	V
4.958	63.45	RMS	27.8	-49.98	2.13	43.4	54	-10.6	207	106	V
7.4392	72.63	Pk	30.6	-47.28	-	55.95	74	-18.05	19	131	H
7.4394	66.27	RMS	30.6	-47.28	2.13	51.72	54	-2.28	19	131	H
7.4392	72	Pk	30.6	-47.28	-	55.32	74	-18.68	66	124	V
7.4394	65.63	RMS	30.6	-47.28	2.13	51.08	54	-2.92	66	124	V
9.9191	65.09	Pk	36.4	-48.25	-	53.24	74	-20.76	10	102	H
9.9191	55.2	RMS	36.4	-48.25	2.13	45.48	54	-8.52	10	102	H
9.919	63.41	Pk	36.4	-48.25	-	51.56	74	-22.44	232	132	V
9.9191	53.46	RMS	36.4	-48.25	2.13	43.74	54	-10.26	232	132	V
PK - Peak Detector											
RMS - Power RMS Detector											

7.2.5. WORST-CASE BELOW 1 GHz

Radiated Emissions 30MHz – 1GHz Low Channel





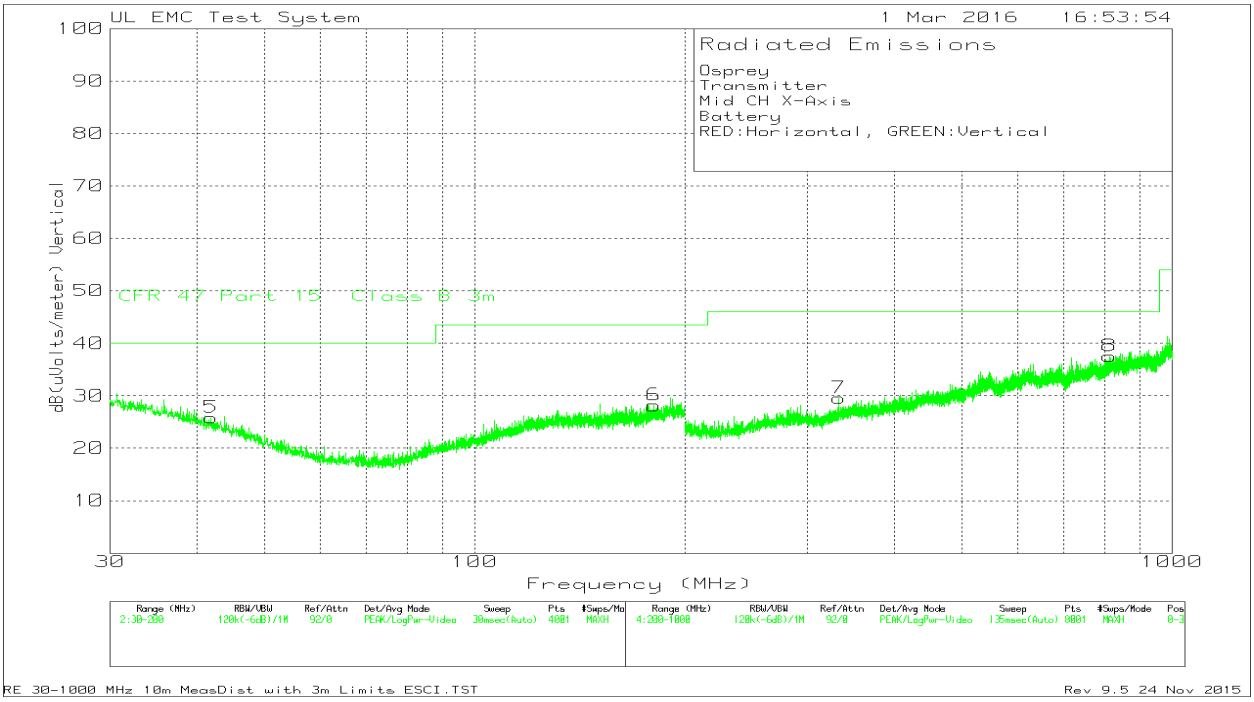
Osprey
Transmitter
Low CH Z-Axis
Battery
RED:Horizontal, GREEN:Vertical

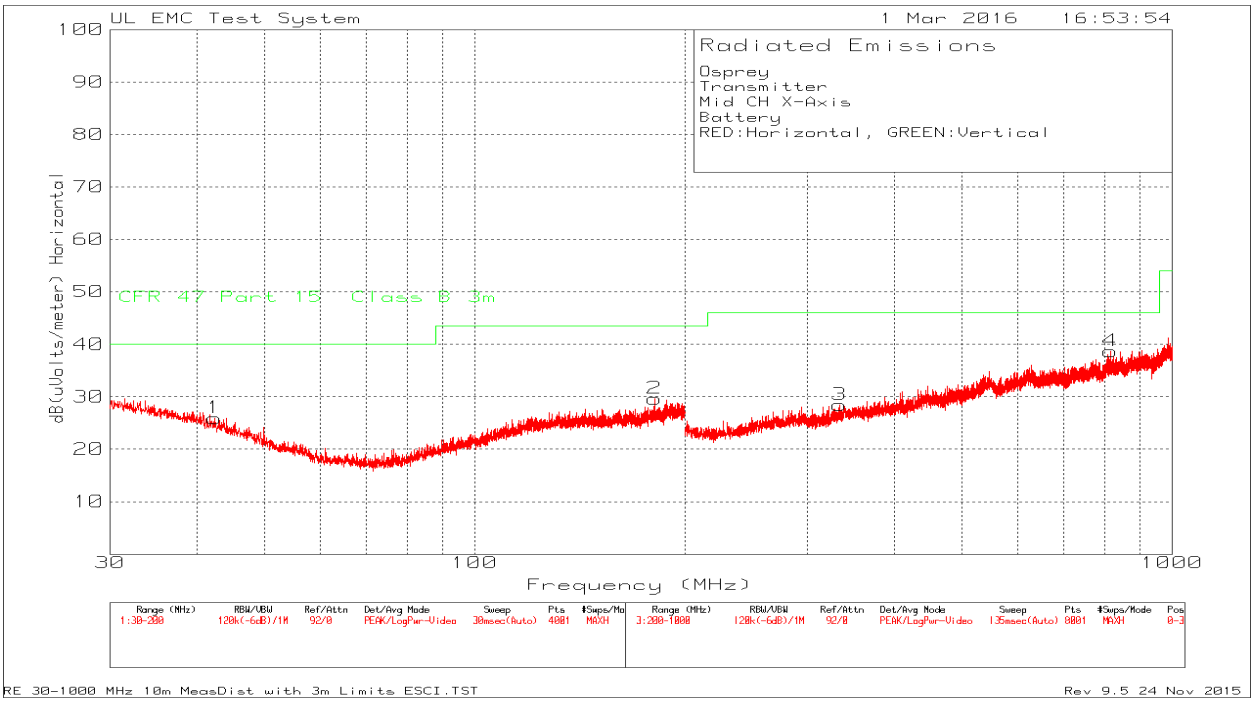
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit:1	2	3	4
1	42.325	32.86dBuV Pk	13.5	-19.5	26.86	40	-	-	-
		Azimuth:0-360	Height:101	Horz	Margin (dB)	-13.14	-	-	-
2	188.525	32.7dBuV Pk	16	-18.5	30.2	43.52	-	-	-
		Azimuth:0-360	Height:398	Horz	Margin (dB)	-13.32	-	-	-
5	42.325	31.67dBuV Pk	13.5	-19.5	25.67	40	-	-	-
		Azimuth:0-360	Height:398	Vert	Margin (dB)	-14.33	-	-	-
6	188.4825	30.98dBuV Pk	15.9	-18.5	28.38	43.52	-	-	-
		Azimuth:0-360	Height:398	Vert	Margin (dB)	-15.14	-	-	-
3	269.7	33.41dBuV Pk	12.6	-18	28.01	46.02	-	-	-
		Azimuth:0-360	Height:399	Horz	Margin (dB)	-18.01	-	-	-
4	894.4	32.24dBuV Pk	22.9	-16.3	38.84	46.02	-	-	-
		Azimuth:0-360	Height:199	Horz	Margin (dB)	-7.18	-	-	-
7	269.6	31.48dBuV Pk	12.6	-18	26.08	46.02	-	-	-
		Azimuth:0-360	Height:199	Vert	Margin (dB)	-19.94	-	-	-
8	889.4	32.27dBuV Pk	22.6	-16.5	38.37	46.02	-	-	-
		Azimuth:0-360	Height:199	Vert	Margin (dB)	-7.65	-	-	-

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

Radiated Emissions 30MHz – 1GHz Middle Channel





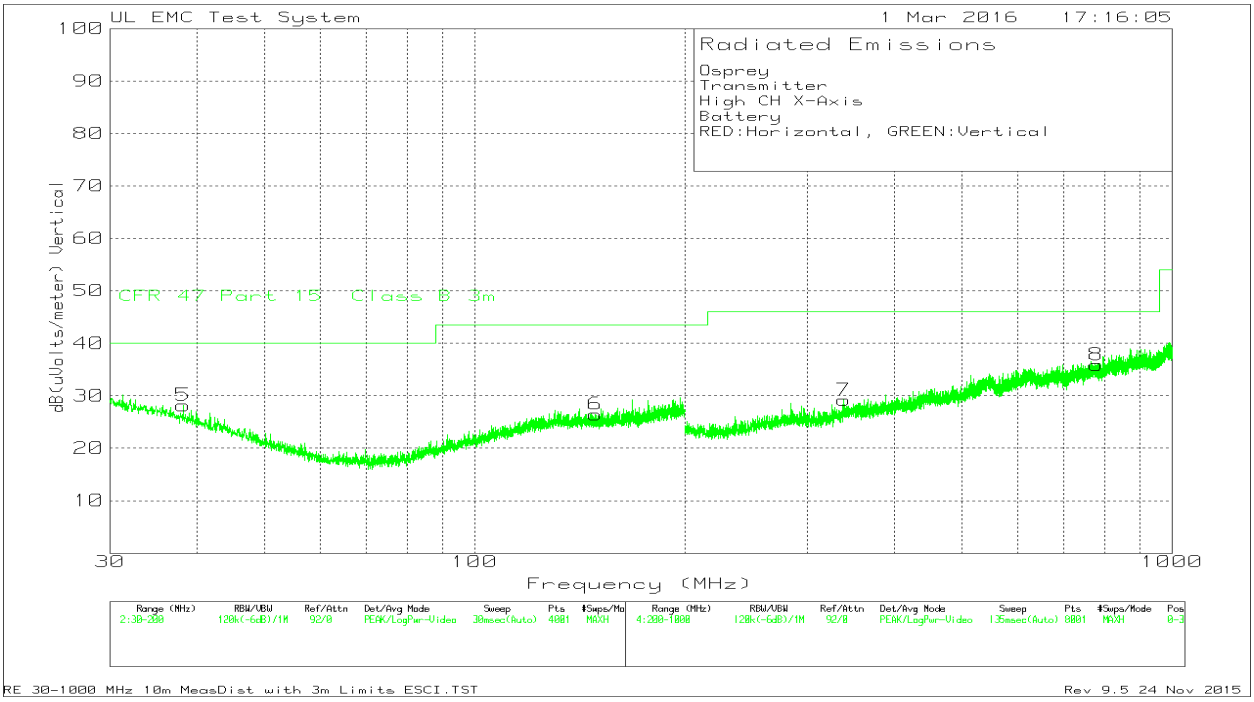
Osprey
Transmitter
Mid CH X-Axis
Battery
RED:Horizontal, GREEN:Vertical

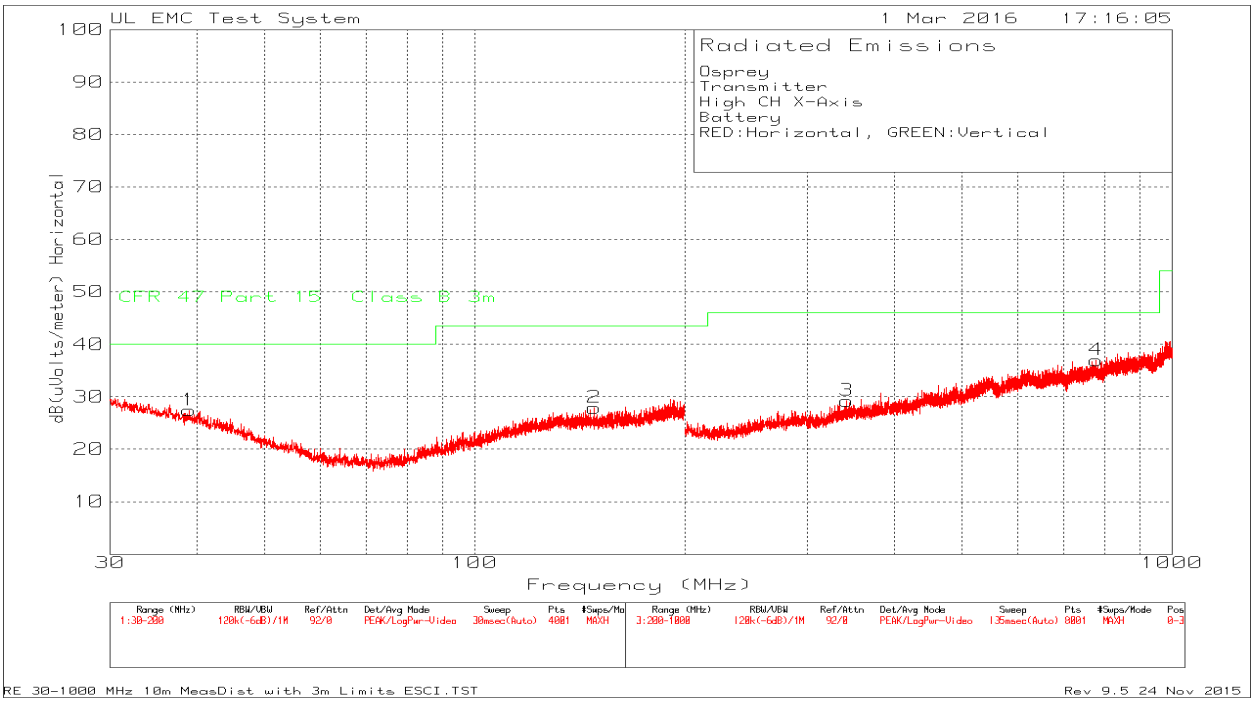
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit:1	2	3	4
1	42.3675	31.94dBuV Pk	13.5	-19.5	25.94	40	-	-	-
		Azimuth:0-360	Height:251	Horz	Margin (dB)	-14.06	-	-	-
2	181.3	32.83dBuV Pk	15.5	-18.7	29.63	43.52	-	-	-
		Azimuth:0-360	Height:398	Horz	Margin (dB)	-13.89	-	-	-
5	41.9	31.75dBuV Pk	13.6	-19.5	25.85	40	-	-	-
		Azimuth:0-360	Height:102	Vert	Margin (dB)	-14.15	-	-	-
6	180.7475	31.37dBuV Pk	15.5	-18.7	28.17	43.52	-	-	-
		Azimuth:0-360	Height:398	Vert	Margin (dB)	-15.35	-	-	-
3	333.5	31.94dBuV Pk	14.1	-17.6	28.44	46.02	-	-	-
		Azimuth:0-360	Height:102	Horz	Margin (dB)	-17.58	-	-	-
4	815.9	32.7dBuV Pk	22.4	-16.4	38.7	46.02	-	-	-
		Azimuth:0-360	Height:102	Horz	Margin (dB)	-7.32	-	-	-
7	332.9	33.06dBuV Pk	14.1	-17.6	29.56	46.02	-	-	-
		Azimuth:0-360	Height:199	Vert	Margin (dB)	-16.46	-	-	-
8	813.1	31.66dBuV Pk	22.3	-16.4	37.56	46.02	-	-	-
		Azimuth:0-360	Height:199	Vert	Margin (dB)	-8.46	-	-	-

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

Radiated Emissions 30MHz – 1GHz High Channel





Osprey
Transmitter
High CH X-Axis
Battery
RED:Horizontal, GREEN:Vertical

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit:1	2	3	4
1	38.925	32.22dBuV Pk	14.7	-19.5	27.42	40	-	-	-
		Azimuth:0-360	Height:250	Horz	Margin (dB)	-12.58	-	-	-
2	148.4475	32.82dBuV Pk	14.2	-19.1	27.92	43.52	-	-	-
		Azimuth:0-360	Height:250	Horz	Margin (dB)	-15.6	-	-	-
5	38.2025	32.63dBuV Pk	15	-19.5	28.13	40	-	-	-
		Azimuth:0-360	Height:398	Vert	Margin (dB)	-11.87	-	-	-
6	149.0425	31.34dBuV Pk	14.2	-19.1	26.44	43.52	-	-	-
		Azimuth:0-360	Height:102	Vert	Margin (dB)	-17.08	-	-	-
3	341.6	32.06dBuV Pk	14.6	-17.4	29.26	46.02	-	-	-
		Azimuth:0-360	Height:399	Horz	Margin (dB)	-16.76	-	-	-
4	778.6	31.59dBuV Pk	21.6	-16.2	36.99	46.02	-	-	-
		Azimuth:0-360	Height:399	Horz	Margin (dB)	-9.03	-	-	-
7	338.3	32.29dBuV Pk	14.4	-17.5	29.19	46.02	-	-	-
		Azimuth:0-360	Height:399	Vert	Margin (dB)	-16.83	-	-	-
8	779	30.47dBuV Pk	21.6	-16.2	35.87	46.02	-	-	-
		Azimuth:0-360	Height:103	Vert	Margin (dB)	-10.15	-	-	-

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