



# **CERTIFICATION TEST REPORT**

**Report Number. : 16U23274-E1V4**

**Applicant :** HUNTER INDUSTRIES  
1940 DIAMOND ST  
SAN MARCOS, CA 92078, U.S.A

**Model :** WFS-T

**FCC ID :** M3UWFST

**IC ID :** 2772A-WFST

**EUT Description :** Wireless Flow Sensor (Transmitter)

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
INDUSTRY CANADA RSS-247 ISSUE 1  
INDUSTRY CANADA RSS-GEN Issue 4

**Date of Issue:**

Monday, September 19, 2016

**Prepared by:**

UL Verification Services Inc.  
47173 Benicia Street  
Fremont, CA 94538, U.S.A.  
TEL: (510) 771-1000  
FAX: (510) 661-0888



NVLAP LAB CODE 200065-0

## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	7/14/2016	Initial Issue	D. CORONIA
V2	7/26/2016	Updated Section 2.6 and 4.6	D. CORONIA
V3	8/10/2016	Updated Section 3.2 and added below 30MHz data	D. CORONIA
V4	9/19/2016	Updated Section 3.4 and 5.1	D. CORONIA

## TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>3</b>
<b>1. ATTESTATION OF TEST RESULTS.....</b>	<b>4</b>
<b>2. SUMMARY OF TESTING.....</b>	<b>5</b>
2.1. FACILITIES AND ACCREDITATION .....	5
2.2. SUMMARY TABLE.....	5
2.3. TEST METHODOLOGY.....	5
2.4. CALIBRATION AND UNCERTAINTY.....	6
2.5. MEASUREMENT METHOD.....	7
2.6. TEST AND MEASUREMENT EQUIPMENT.....	8
<b>3. EQUIPMENT UNDER TEST .....</b>	<b>9</b>
3.1. EUT DESCRIPTION.....	9
3.2. MAXIMUM OUTPUT POWER.....	9
3.3. DESCRIPTION OF AVAILABLE ANTENNAS.....	9
3.4. WORST-CASE CONFIGURATION AND MODE.....	9
3.5. DESCRIPTION OF TEST SETUP.....	10
<b>4. ANTENNA PORT TEST RESULTS .....</b>	<b>12</b>
4.1. ON TIME, DUTY CYCLE.....	12
4.2. 6 dB BANDWIDTH.....	13
4.3. 99% BANDWIDTH.....	15
4.4. OUTPUT POWER.....	17
4.5. POWER SPECTRAL DENSITY.....	19
4.6. CONDUCTED SPURIOUS EMISSIONS.....	21
<b>5. RADIATED TEST RESULTS .....</b>	<b>24</b>
5.1. LIMITS AND PROCEDURE.....	24
5.2. TRANSMITTER ABOVE 1 GHz.....	25
5.3. TRANSMITTER BELOW 1 GHz.....	31
5.4. WORST-CASE BELOW 30 MHz.....	37
<b>6. SETUP PHOTOS.....</b>	<b>38</b>

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** HUNTER INDUSTRIES  
**EUT DESCRIPTION:** Wireless Flow Sensor (Transmitter)  
**MODEL:** WFS-T  
**SERIAL NUMBER:** 001  
**DATE TESTED:** MAY 04, 10 & AUGUST 10, 2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 ISSUE 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	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:

Prepared By:



---

DAN CORONIA  
CONSUMER TECHNOLOGY DIVISION  
WiSE PROJECT LEAD  
UL VERIFICATION SERVICES INC

---

KIYA KEDIDA  
CONSUMER TECHNOLOGY DIVISION  
WiSE LAB ENGINEER  
UL VERIFICATION SERVICES INC

## 2. SUMMARY OF TESTING

### 2.1. 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(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> Chamber H(IC: 2324B-8)

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>.

### 2.2. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass
N/A	RSS-Gen 6.6	Emission Bandwidth (99%)	N/A		N/A
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

### 2.3. 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-247 Issue 1.

## 2.4. CALIBRATION AND UNCERTAINTY

### 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.

### SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 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
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

## 2.5. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v03r05, Section 6.

6 dB Emission BW: KDB 558074 D01 v03r05, Section 8.1.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Conducted Output Power: KDB 558074 D01 v03r05, Section 9.1.2 (Method PKPM1).

Power Spectral Density: KDB 558074 D01 v03r05, Section 10.2 (Method PKPSD).

Unwanted emissions in restricted bands: KDB 558074 D01 v03r05, Section 12.0, 12.2.

Unwanted emissions in non-restricted bands: KDB 558074 D01 v03r05, Section 11.1, 11.2, and 11.3.

## 2.6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	T Number	Cal Due
Spectrum Analyzer, 44 GHz	Agilent	E4440A	189	05/06/17
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	906	02/03/17
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	130	9/1/2017
Antenna, Horn, 18GHz	ETS Lindgren	3117	119	2/4/2017
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	447	5/12/2017
Loop Antenna	ETS Lindgren	6502	757	5/21/2017
RF Preamplifier, 1GHz - 18GHz	Miteq	00101800-25-S-42	T931	4/29/2017
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	404	6/29/2017
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	160	CNR
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	417	04/29/17
High Pass Filter 3GHz	Micro-Tronics	HPS17543	897	04/29/17
High Pass Filter 6GHz	Micro-Tronics	HPS17542	484	04/29/17
Peak / Average Power Sensor	Keysight	8481A	224	01/05/17
Peak Power Meter	Agilent / HP	N1914A	254	06/08/17

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
Antenna Port Software	UL	UL RF	Ver 3.7, Nov 12, 2015



### 3. EQUIPMENT UNDER TEST

#### 3.1. EUT DESCRIPTION

The EUT is a Wireless Flow Sensor (Transmitter).

#### 3.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
903-927	0.85	1.22

#### 3.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a normal mode helical antenna, with a maximum gain of 0 dBi.

#### 3.4. WORST-CASE CONFIGURATION AND MODE

Above 1GHz Low/Middle/High channel were tested for radiated emissions and the below 1GHz, above 18GHz the channel with the highest output power was tested.

All final radiated testing was performed with the EUT in the Y orientation, which is the normal operating position.

The EUT is a transmitter unit and it's operated by batteries; therefore the AC power line conducted emissions is not applicable.

### 3.5. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Internal battery	N/A	N/A	N/A	N/A

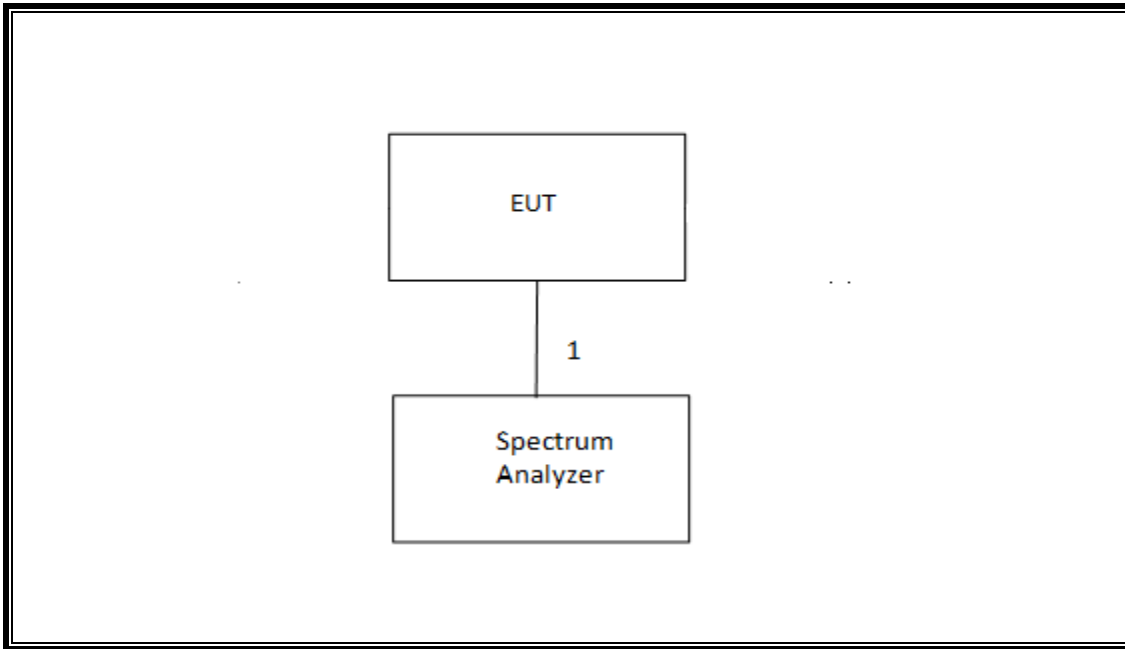
#### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Sensor	1	Hardwired	Unshielded	1	N/A

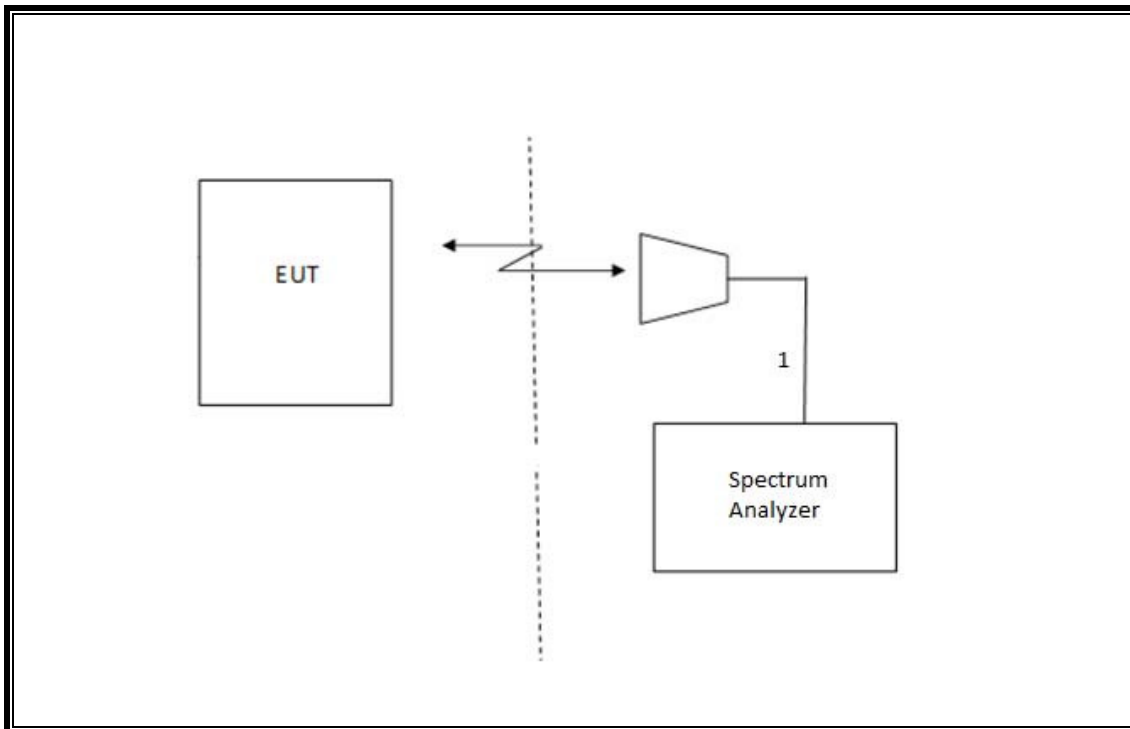
#### TEST SETUP

The EUT is a stand-alone unit during the testing.

**SETUP DIAGRAM FOR CONDUCTED TESTS**



**SETUP DIAGRAM FOR RADIATED TESTS**



## 4. ANTENNA PORT TEST RESULTS

### 4.1. ON TIME, DUTY CYCLE

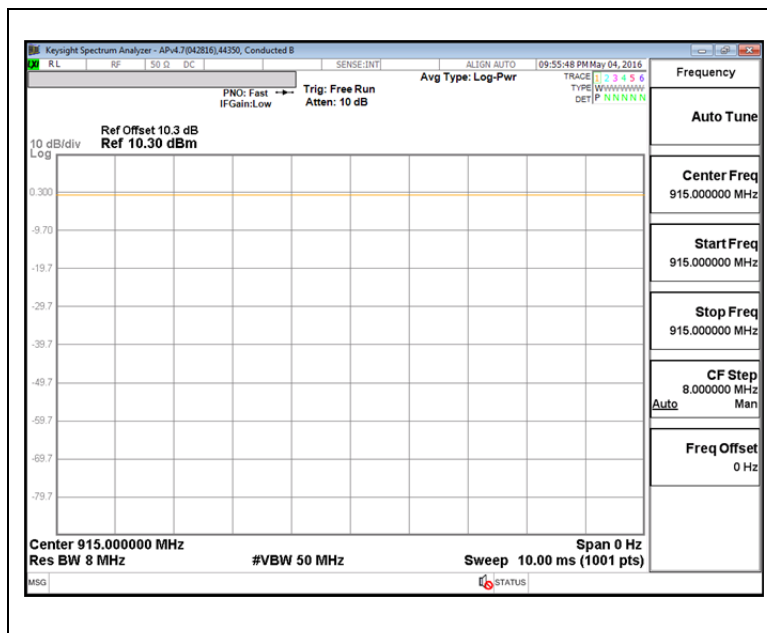
#### LIMITS

None; for reporting purposes only.

#### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
915 MHz	100.0	100.0	1.000	100.00%	0.00	0.010

#### DUTY CYCLE PLOT



## **4.2. 6 dB BANDWIDTH**

### **LIMITS**

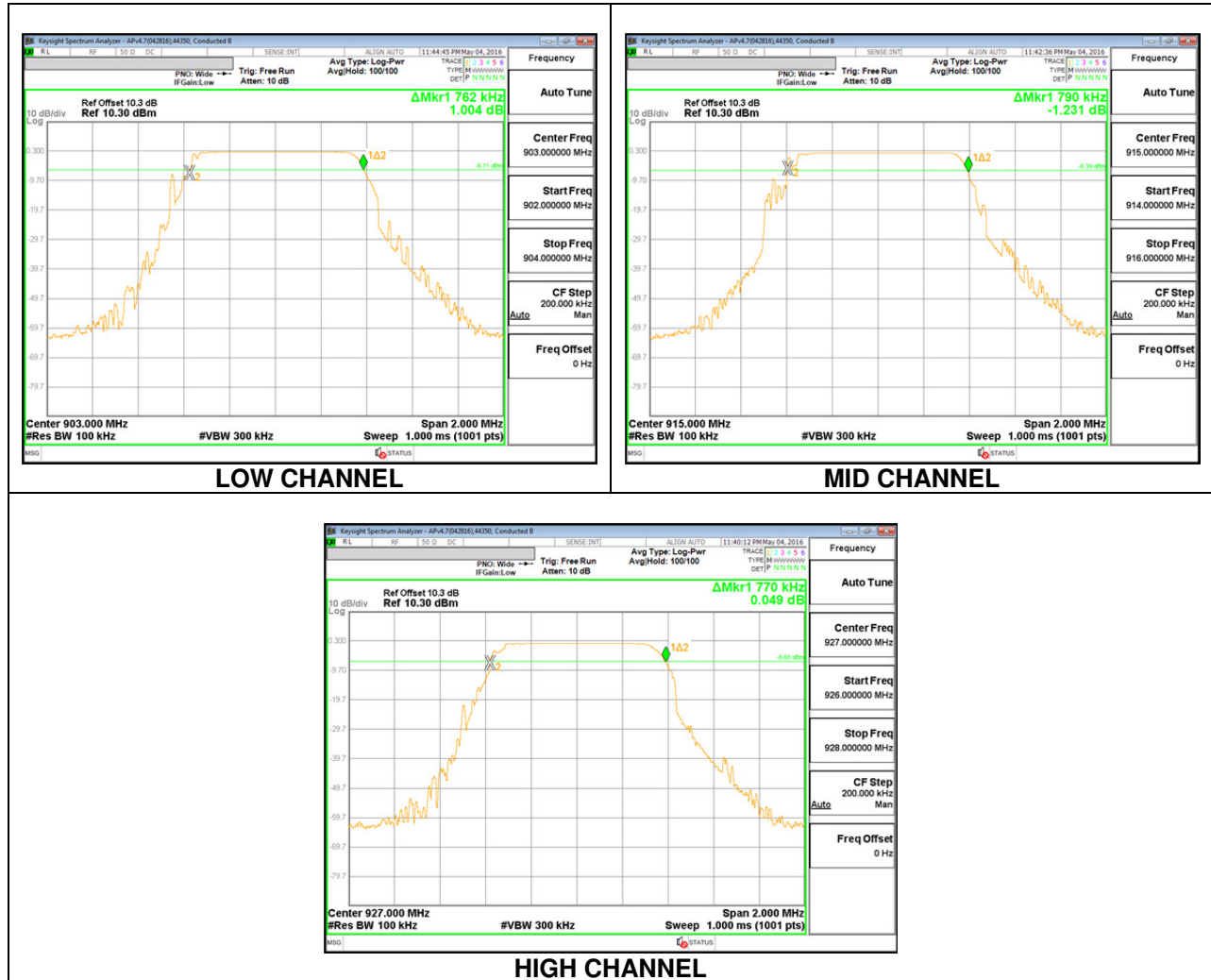
FCC §15.247 (a) (2)

IC RSS-247 5.2.1

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

### **RESULTS**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	903	0.762	0.5
Middle	915	0.790	0.5
High	927	0.770	0.5



### **4.3. 99% BANDWIDTH**

#### **LIMITS**

None; for reporting purposes only.

RSS-Gen 6.6

#### **TEST PROCEDURE**

ANSI C63.10: 2013 Section 6.9.3

#### **RESULTS**

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	903	0.5168
Middle	915	0.5715
High	927	0.5230





## **4.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247

IC RSS-247 5.4 4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

### **RESULTS**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	903	0.00	30.00	30	36	30.00
Mid	915	0.00	30.00	30	36	30.00
High	927	0.00	30.00	30	36	30.00

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd Power</b>
---------------------------	------	---

**Results**

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	903	0.14	0.14	30.00	-29.86
Mid	915	0.85	0.85	30.00	-29.15
High	927	0.35	0.35	30.00	-29.65

Measured by peak power meter

## **4.5. POWER SPECTRAL DENSITY**

### **LIMITS**

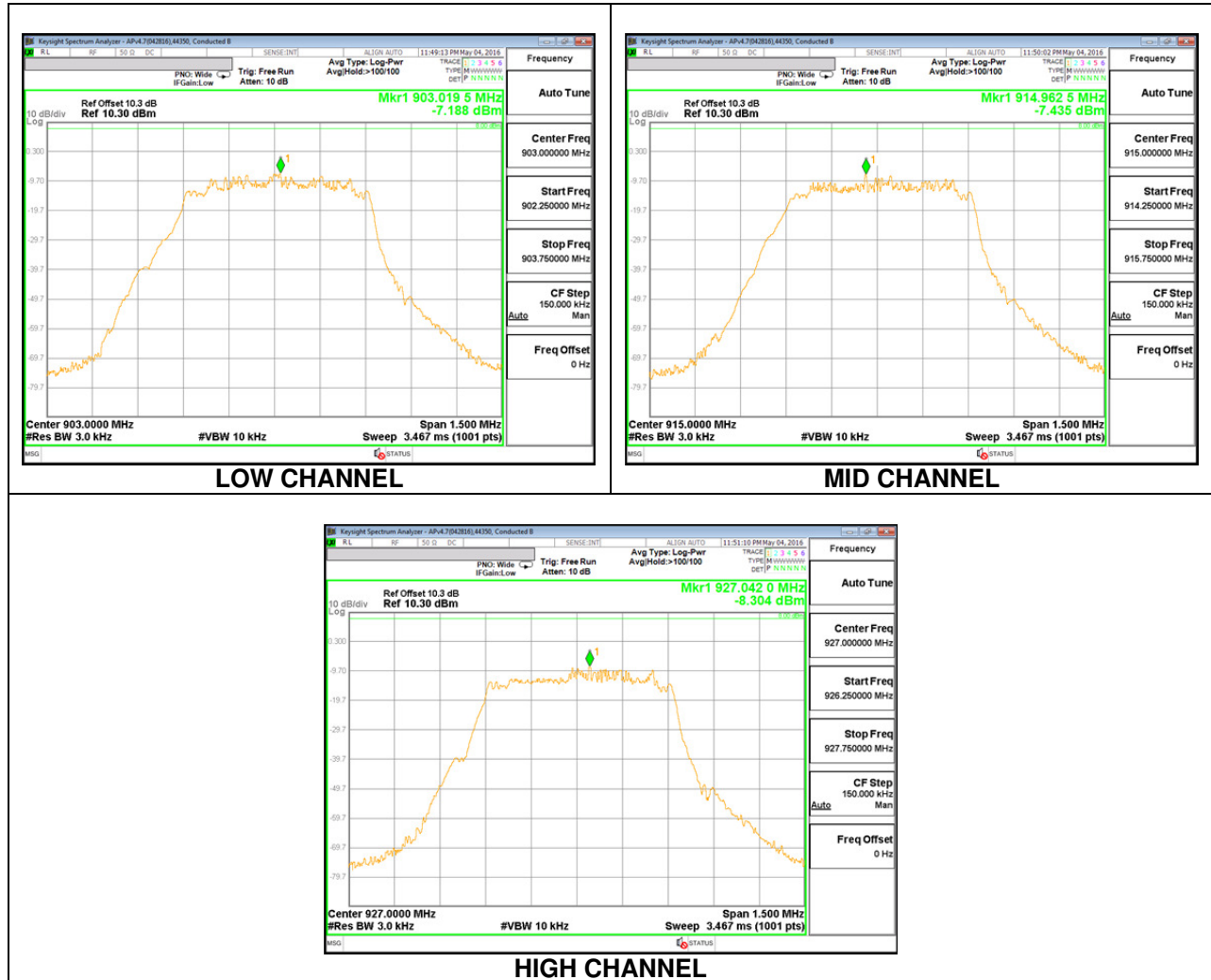
FCC §15.247

IC RSS-247 5.2 2

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

### **RESULTS**

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	903	-7.19	8	-15.19
Middle	915	-7.44	8	-15.44
High	927	-8.30	8	-16.30



## **4.6. CONDUCTED SPURIOUS EMISSIONS**

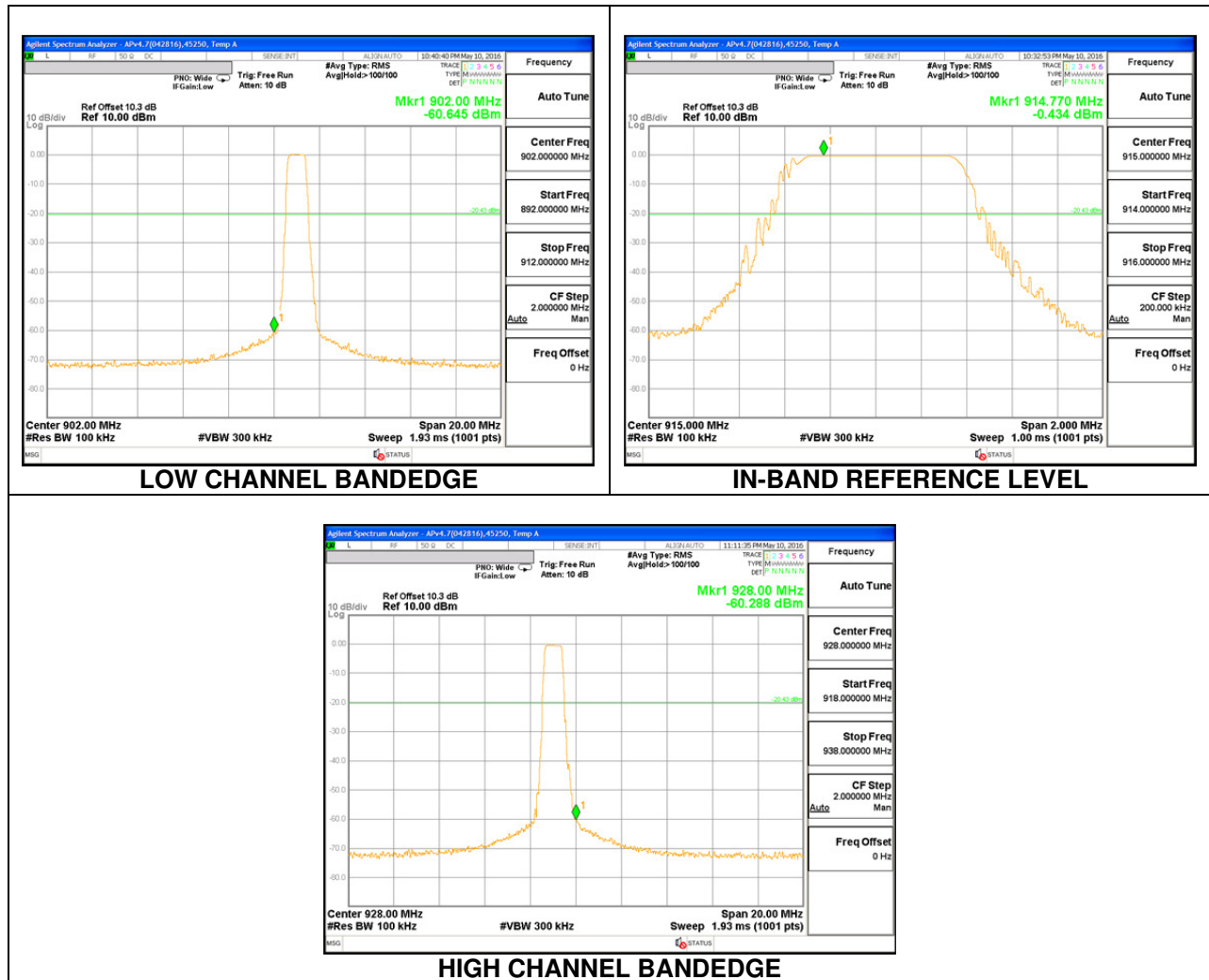
### **LIMITS**

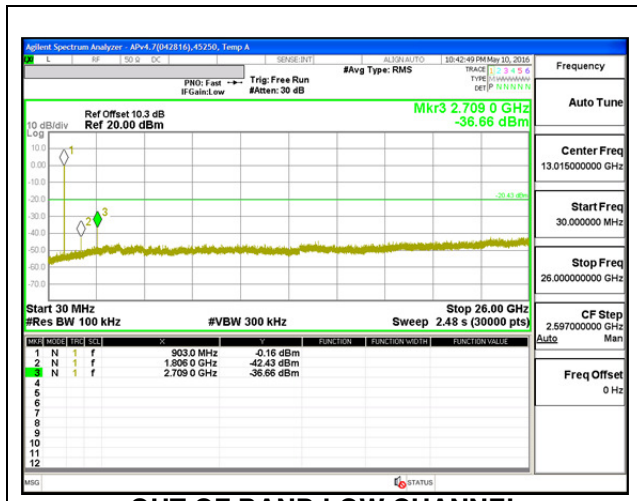
FCC §15.247 (d)

IC RSS-247 5.5

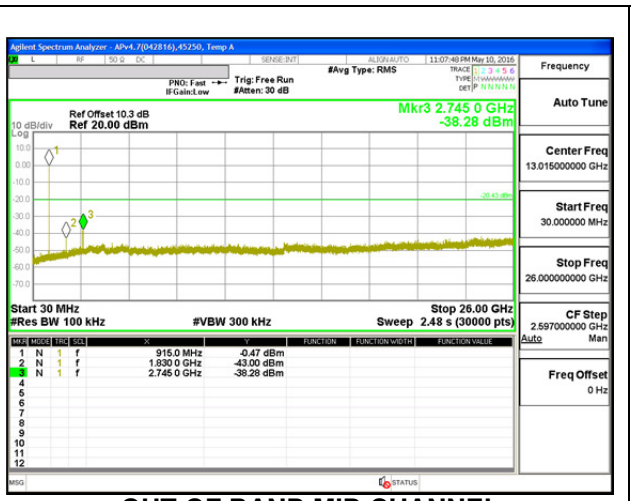
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

### **RESULTS**

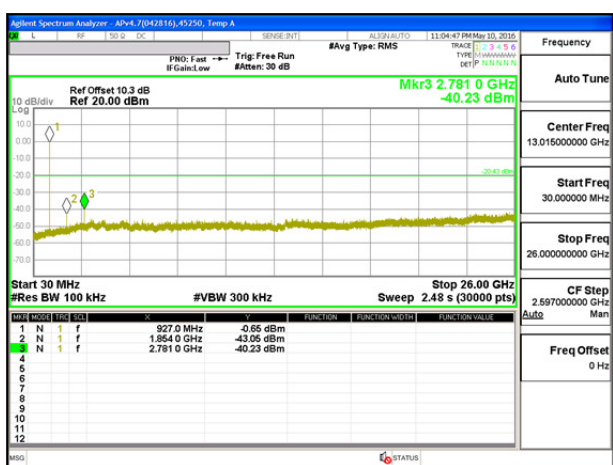




OUT OF BAND LOW CHANNEL



OUT OF BAND MID CHANNEL



OUT OF BAND HIGH CHANNEL

## 5. RADIATED TEST RESULTS

### 5.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300m	2400/F(kHz) @ 300m
0.490-1.705	24000/F(kHz) @ 30m	24000/F(kHz) @ 30m
1.705-30.0	30 @ 30m	30 @ 30m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

**NOTE: KDB 937606 OATS and Chamber Correlation Justification**

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements.

Note: The pre-scan measurements above 1GHz the VBW is set to 30 kHz.

The spectrum from 9 kHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 900 MHz band.

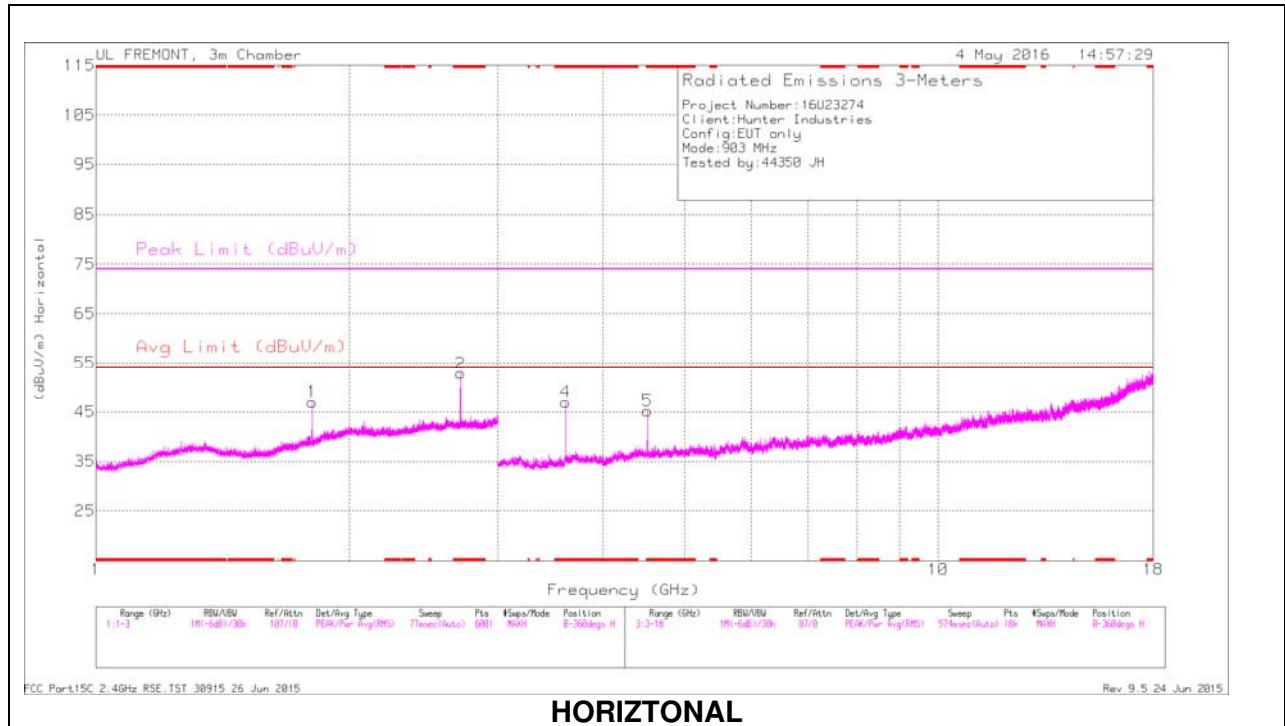
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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



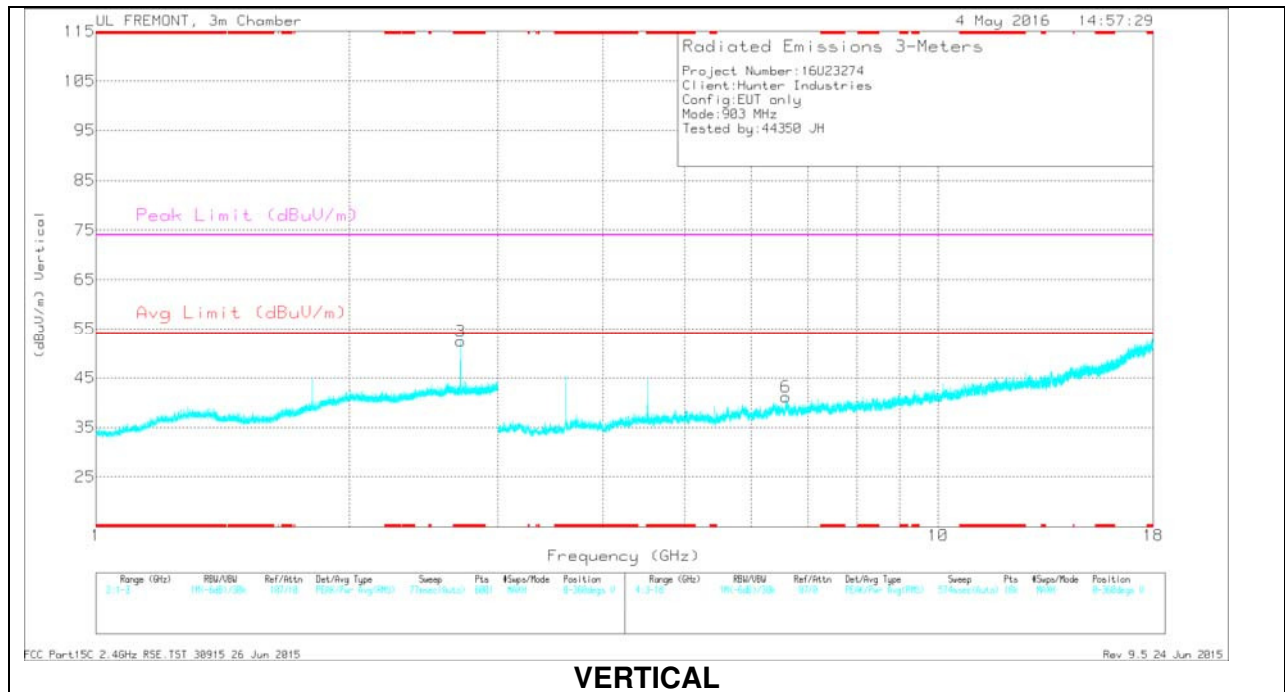
## 5.2. TRANSMITTER ABOVE 1 GHz

### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

**LOW CHANNEL DATA**

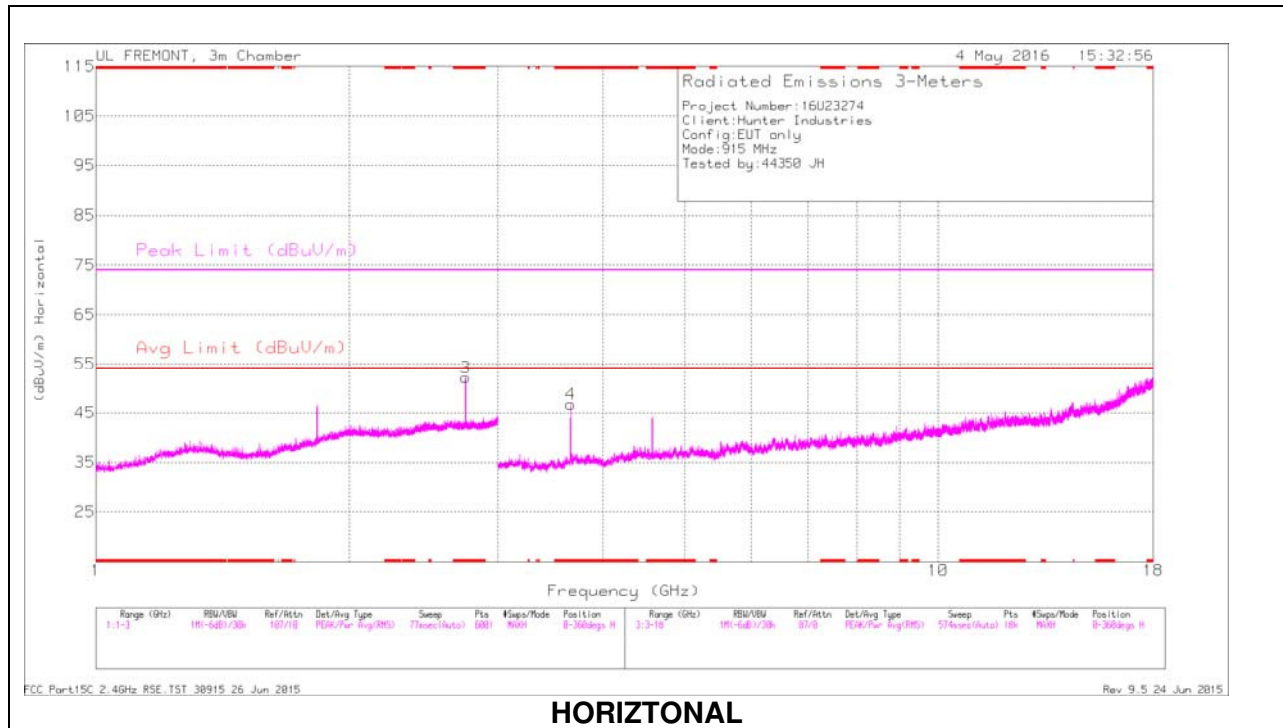
**TRACE MARKERS**

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.709	46.75	PK2	32.6	-21.4	0	57.95	-	-	74	-16.05	79	249	H
* 2.709	41.56	MAV1	32.6	-21.3	0	52.86	54	-1.14	-	-	79	249	H
* 2.709	45.11	PK2	32.6	-21.3	0	56.41	-	-	74	-17.59	152	400	V
* 2.709	39.35	MAV1	32.6	-21.3	0	50.65	54	-3.35	-	-	152	400	V
* 3.612	47.25	PK2	32.9	-28.6	0	51.55	-	-	74	-22.45	113	316	H
* 3.612	41.43	MAV1	32.9	-28.6	0	45.73	54	-8.27	-	-	113	316	H
* 4.514	44.82	PK2	34.2	-28.2	0	50.82	-	-	74	-23.18	114	367	H
* 4.515	36.14	MAV1	34.2	-28.2	0	42.14	54	-11.86	-	-	114	367	H
1.806	41.39	PK2	30.3	-20.1	0	51.59	-	-	-	-	60	201	H
1.806	34.43	MAV1	30.3	-20.1	0	44.63	-	-	-	-	60	201	H
6.592	37.9	PK2	35.5	-24.9	0	48.5	-	-	-	-	114	367	V
6.592	26.59	MAV1	35.5	-24.9	0	37.19	-	-	-	-	114	367	V

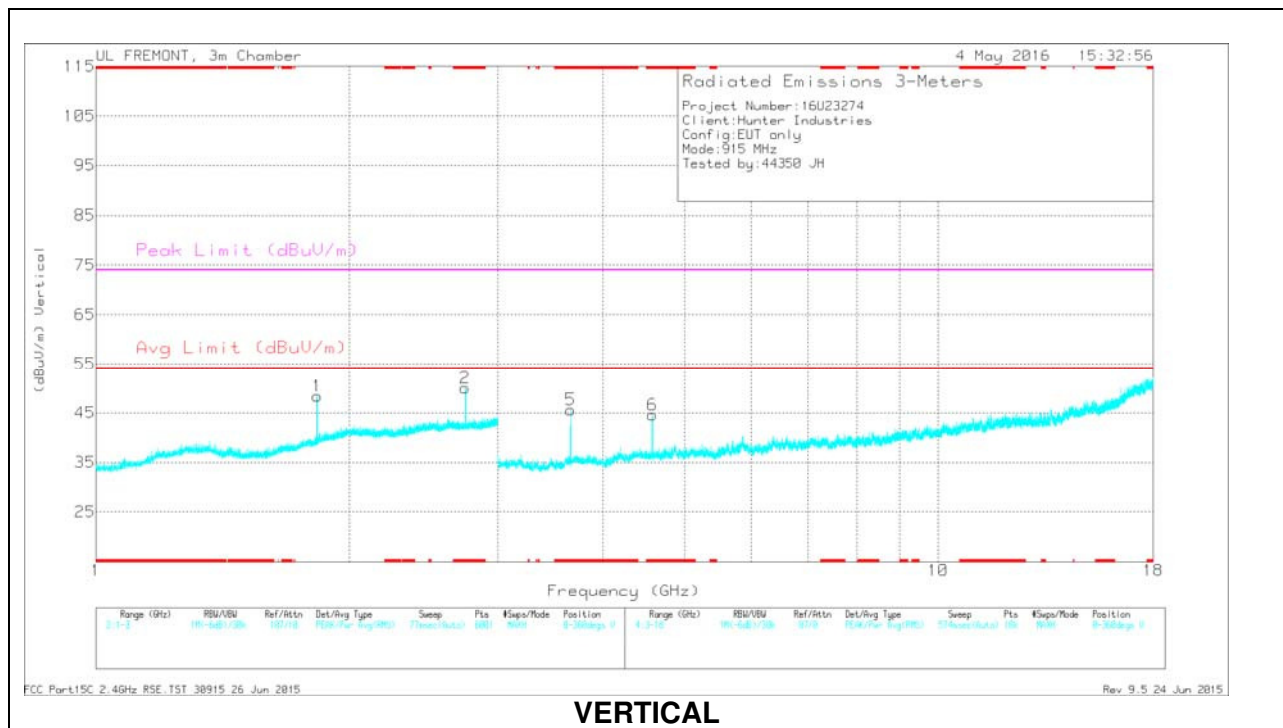
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band  
 - Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Pk - Peak detector  
 RMS - RMS detection

### MID CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**MID CHANNEL DATA**

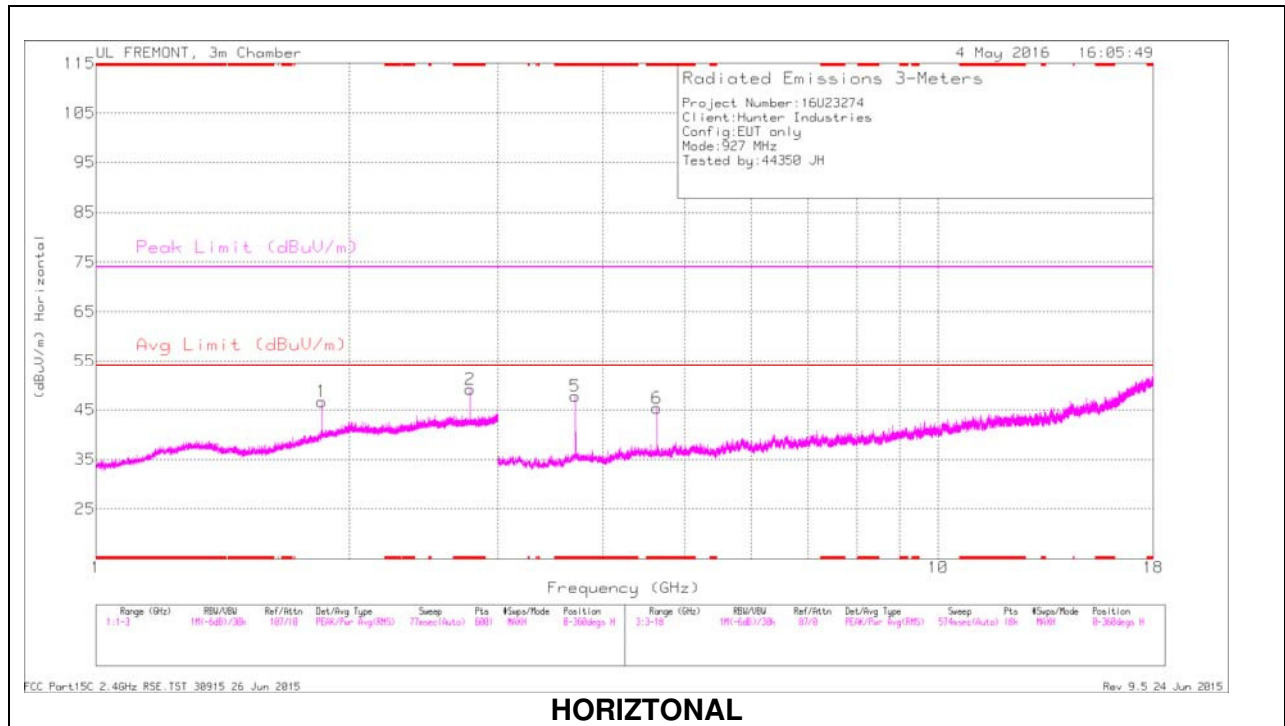
**TRACE MARKERS**

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.745	45.19	PK2	32.6	-21.3	0	56.49	-	-	74	-17.51	304	276	H
* 2.745	39.43	MAV1	32.6	-21.3	0	50.73	54	-3.27	-	-	304	276	H
* 2.746	43.5	PK2	32.6	-21.3	0	54.8	-	-	74	-19.2	148	382	V
* 2.745	36.81	MAV1	32.6	-21.3	0	48.11	54	-5.89	-	-	148	382	V
* 3.66	47.17	PK2	33.1	-28.2	0	52.07	-	-	74	-21.93	115	306	H
* 3.66	41.61	MAV1	33.1	-28.2	0	46.51	54	-7.49	-	-	115	306	H
* 3.661	45.8	PK2	33.1	-28.2	0	50.7	-	-	74	-23.3	208	313	V
* 3.66	38.97	MAV1	33.1	-28.2	0	43.87	54	-10.13	-	-	208	313	V
* 4.574	43.62	PK2	34.3	-28	0	49.92	-	-	74	-24.08	0	235	V
* 4.575	34.54	MAV1	34.3	-28	0	40.84	54	-13.16	-	-	0	235	V
1.83	42.06	PK2	30.6	-20.3	0	52.36	-	-	-	-	171	395	V
1.83	36.24	MAV1	30.6	-20.2	0	46.64	-	-	-	-	171	395	V

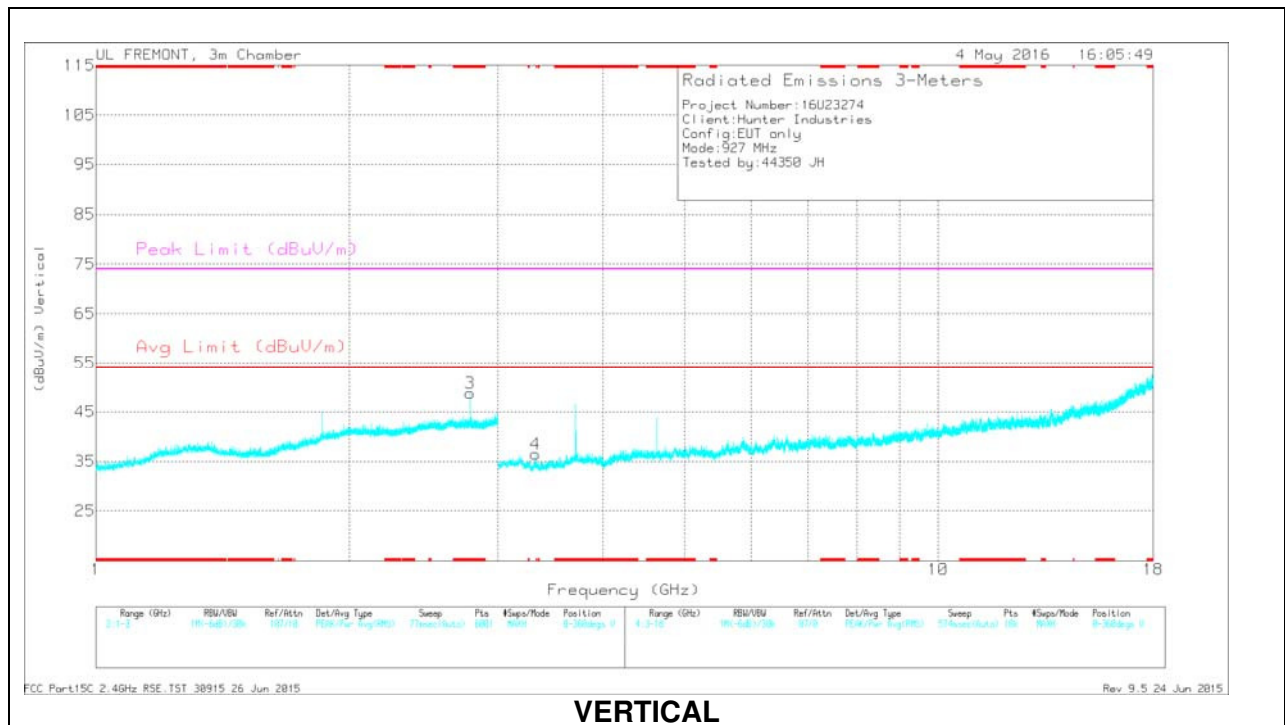
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band  
 - Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Pk - Peak detector  
 RMS - RMS detection

### HIGH CHANNEL RESULTS



### HORIZONTAL



### VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**HIGH CHANNEL DATA**

**TRACE MARKERS**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.781	43.35	PK2	32.6	-21.4	0	54.55	-	-	74	-19.45	306	174	H
* 2.781	36.2	MAv1	32.6	-21.4	0	47.4	54	-6.6	-	-	306	174	H
* 2.78	43.61	PK2	32.6	-21.4	0	54.81	-	-	74	-19.19	2	364	V
* 2.781	35.83	MAv1	32.6	-21.4	0	47.03	54	-6.97	-	-	2	364	V
* 3.708	47.89	PK2	33.2	-27.3	0	53.79	-	-	74	-20.21	110	370	H
* 3.708	42.34	MAv1	33.2	-27.3	0	48.24	54	-5.76	-	-	110	370	H
* 4.634	43.69	PK2	34.4	-27.7	0	50.39	-	-	74	-23.61	100	329	H
* 4.635	35.5	MAv1	34.4	-27.7	0	42.2	54	-11.8	-	-	100	329	H
1.854	42.38	PK2	30.8	-20.1	0	53.08	-	-	-	-	212	400	H
1.854	36.15	MAv1	30.8	-20.1	0	46.85	-	-	-	-	212	400	H
3.327	39.34	PK2	32.5	-28.3	0	43.54	-	-	-	-	100	329	V
3.327	27.86	MAv1	32.5	-28.3	0	32.06	-	-	-	-	100	329	V

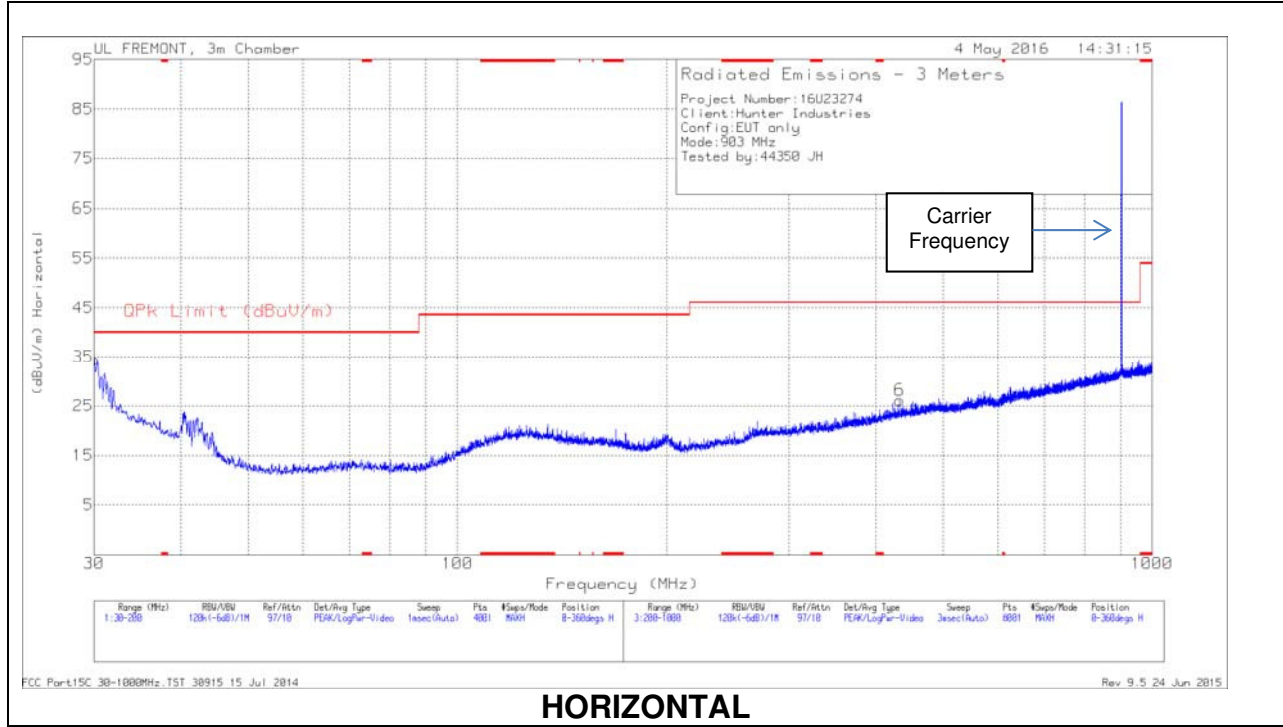
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band  
 - Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Pk - Peak detector  
 RMS - RMS detection

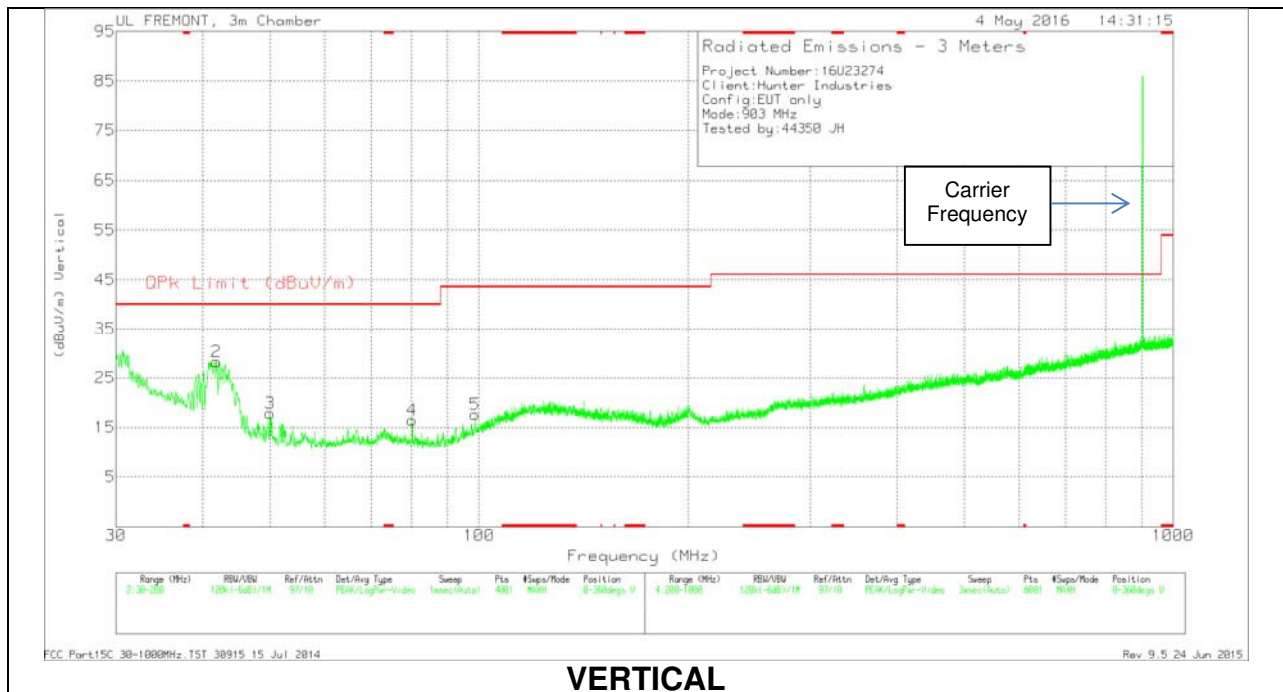
### 5.3. TRANSMITTER BELOW 1 GHz

#### SPURIOUS EMISSIONS 30 TO 1000 MHz

#### LOW CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

*LOW CHANNEL DATA*

**TRACE MARKERS**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.0425	36.49	Pk	25.3	-27.3	34.49	40	-5.51	0-360	100	H
2	41.8575	39.02	Pk	16.4	-27.1	28.32	40	-11.68	0-360	100	V
3	49.975	32.7	Pk	12	-26.9	17.8	40	-22.2	0-360	100	V
4	80.1925	31.41	Pk	11.6	-26.6	16.41	40	-23.59	0-360	100	V
5	98.68	30.22	Pk	13.7	-26.3	17.62	43.52	-25.9	0-360	100	V
6	432.9	30.57	Pk	20.5	-24.9	26.17	46.02	-19.85	0-360	300	H

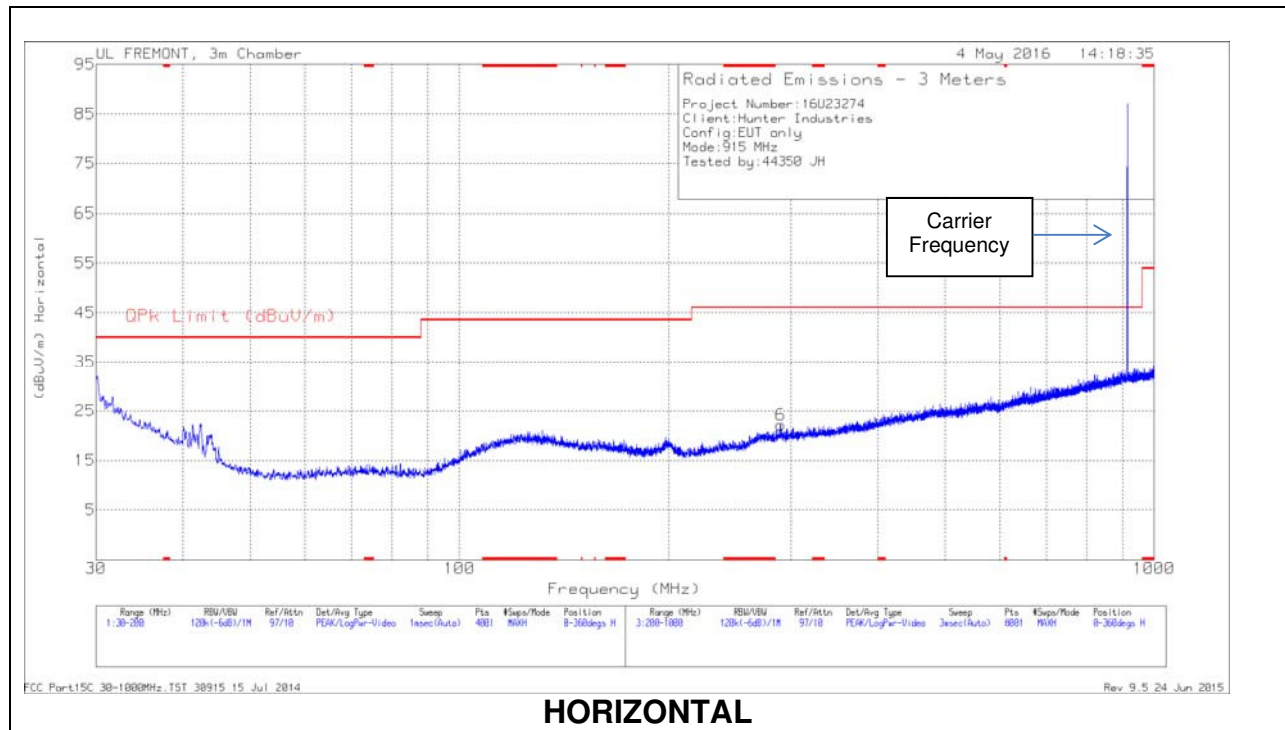
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

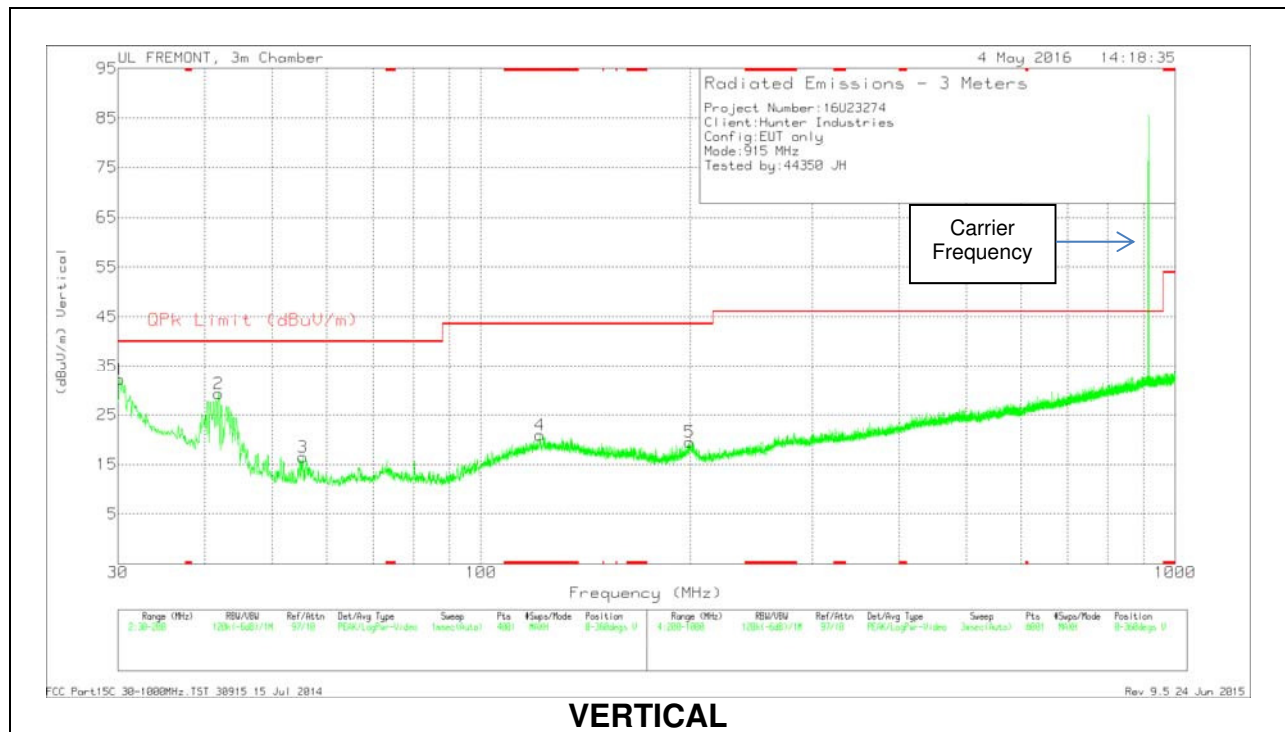
RMS - RMS detection



### MID CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

*MID CHANNEL DATA*

**TRACE MARKERS**

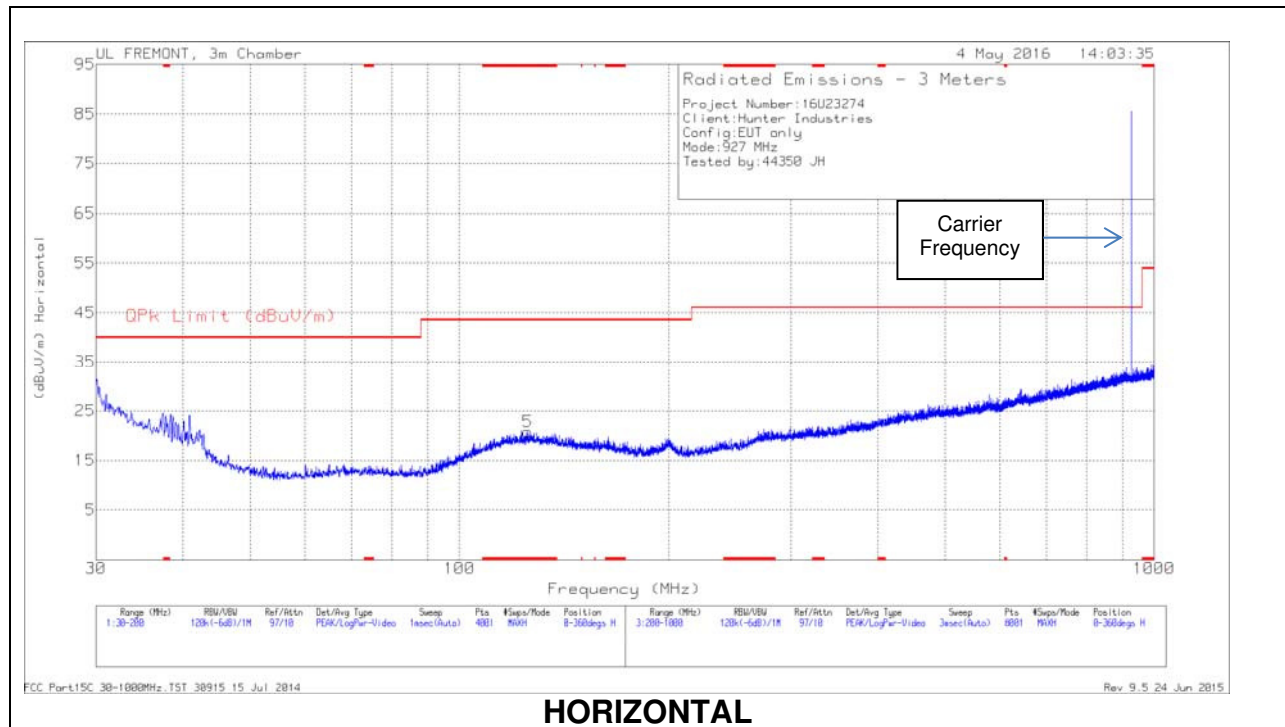
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 121.63	29.07	Pk	17.9	-26.1	20.87	43.52	-22.65	0-360	100	V
1	30.17	34.23	Pk	25.2	-27.2	32.23	40	-7.77	0-360	100	V
2	41.9	39.96	Pk	16.4	-27.1	29.26	40	-10.74	0-360	100	V
3	55.3725	32.12	Pk	11.2	-26.9	16.42	40	-23.58	0-360	100	V
5	199.6175	28.19	Pk	16.5	-25.2	19.49	43.52	-24.03	0-360	100	V
6	289.9	29.33	Pk	17.3	-24.4	22.23	46.02	-23.79	0-360	300	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

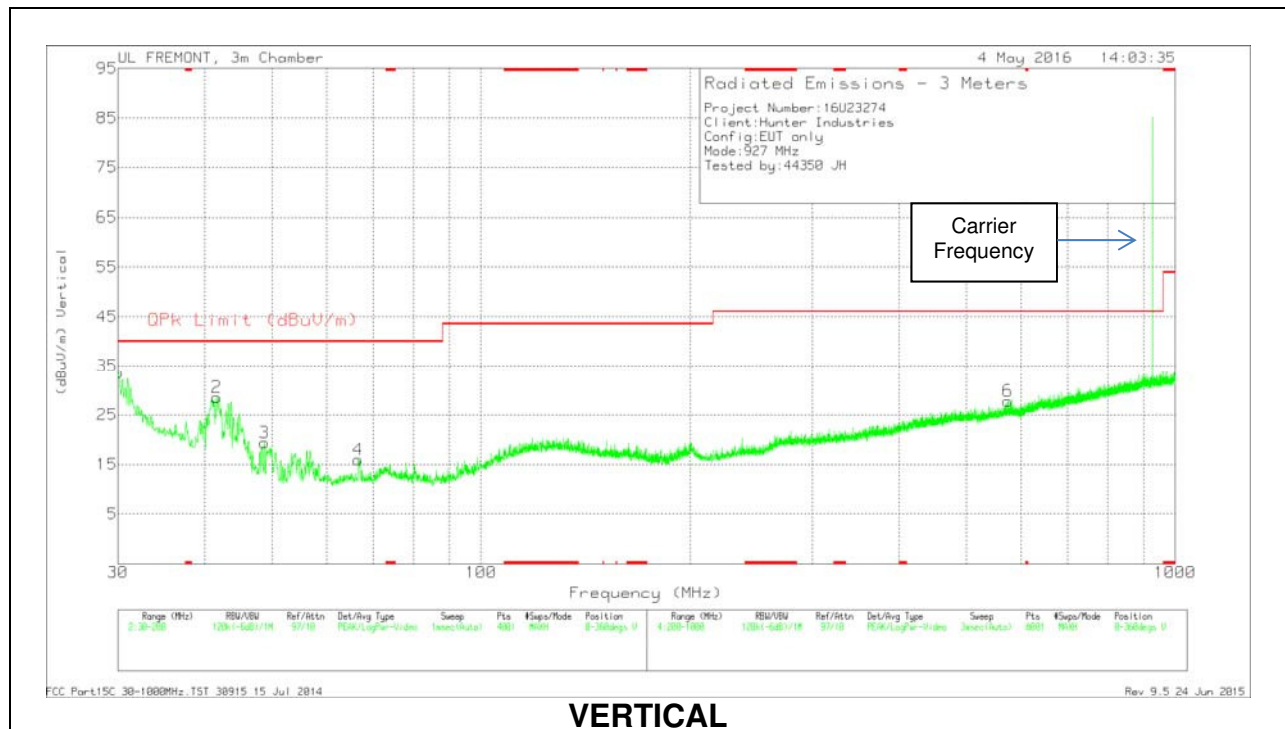
Pk - Peak detector

RMS - RMS detection

### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

*HIGH CHANNEL DATA*

**TRACE MARKERS**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 125.4125	28.73	Pk	18	-26	20.73	43.52	-22.79	0-360	300	H
1	30.0425	35.66	Pk	25.3	-27.3	33.66	40	-6.34	0-360	100	V
2	41.6025	39.08	Pk	16.6	-27.1	28.58	40	-11.42	0-360	100	V
3	48.7425	33.85	Pk	12.4	-26.9	19.35	40	-20.65	0-360	100	V
4	66.5925	30.73	Pk	11.9	-26.7	15.93	40	-24.07	0-360	100	V
6	574.5	29.92	Pk	22.7	-24.8	27.82	46.02	-18.2	0-360	300	V

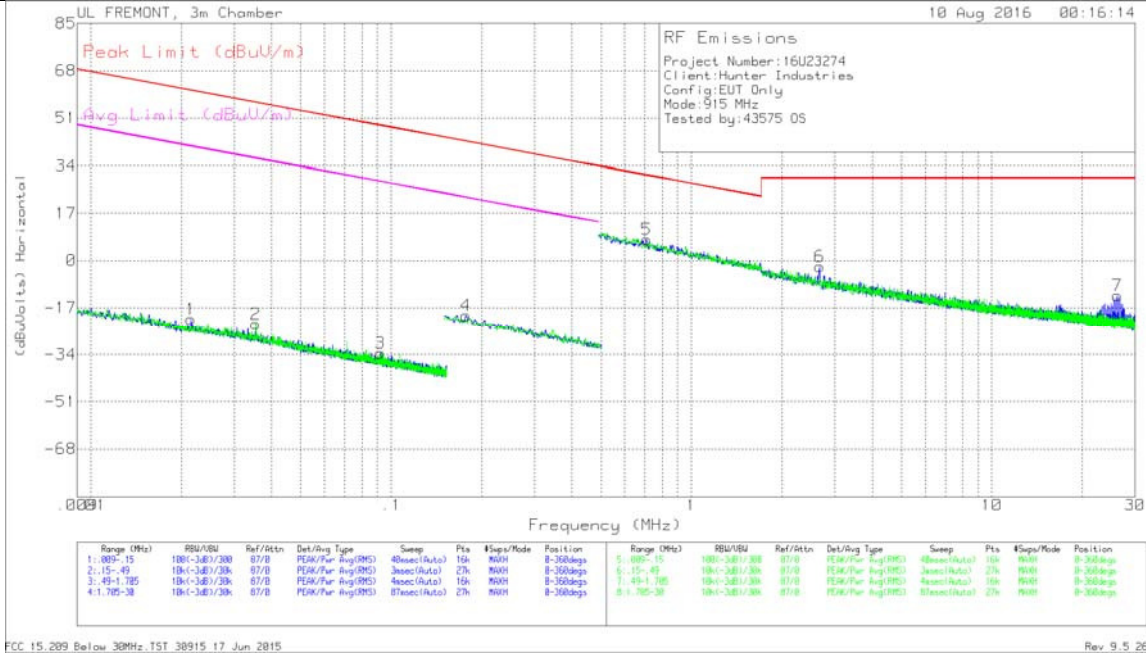
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

### 5.4. WORST-CASE BELOW 30 MHz

#### RESULTS



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.02156	43.77	Pk	13.7	1.4	-80	-21.13	60.93	-82.06	40.93	-62.06	0-360
2	.03549	43.27	Pk	12.5	1.4	-80	-22.83	56.6	-79.43	36.6	-59.43	0-360
3	.0922	34.25	Pk	10.9	1.4	-80	-33.45	48.31	-81.76	28.31	-61.76	0-360
4	.17759	47.86	Pk	10.8	1.5	-80	-19.84	42.62	-62.46	22.62	-42.46	0-360

#### Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.70823	35.49	Pk	10.6	1.5	-40	7.59	30.6	-23.01	-	-	0-360
6	2.67021	25.55	Pk	10.8	1.5	-40	-2.15	29.54	-31.69	-	-	0-360
7	26.20148	16.93	Pk	8.9	1.7	-40	-12.47	29.54	-42.01	-	-	0-360

#### Pk - Peak detector

FCC 15.209 Below 30MHz.TST

**Note:** The anechoic chamber has been properly calibrated so that the measurement results correspond to what would be obtained from an open field sites.