



## TEST REPORT

Report Number: 102966461MIN-008

Project Number: G102966461

Testing performed on the:  
1122 PIR

to

47 CFR Part 15.247:2017

RSS-247, Issue 2, 2017

RSS-Gen, Issue 4, 2014

47 CFR, Part 15:2017, §15.107 and §15.109, Class B / ICES-003, Issue 6:2016

For

Digital Monitoring Products Inc.

Test Performed by:  
Intertek Testing Services NA, Inc.  
7250 Hudson Blvd., Suite 100  
Oakdale, MN 55128 USA

Test Authorized by:  
Digital Monitoring Products Inc.  
2500 North Partnership Blvd  
Springfield, MO 65803 USA

Prepared by: Richard Blonigen  
Richard Blonigen

Reviewed by: Norman Shpilsher  
Norman Shpilsher

Date of issue: June 21, 2017

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## TABLE OF CONTENTS

<b>1.0</b>	<b>GENERAL DESCRIPTION</b> .....	<b>3</b>
1.1	Product Description; Test Facility.....	4
1.2	EUT Configuration.....	5
1.3	Environmental conditions .....	5
1.4	Measurement uncertainty.....	6
1.5	Field Strength Calculation .....	6
<b>2.0</b>	<b>TEST SUMMARY</b> .....	<b>7</b>
<b>3.0</b>	<b>TEST CONDITIONS AND RESULTS</b> .....	<b>8</b>
3.1	Maximum peak output power .....	8
3.2	Hopping channel carrier frequencies separation.....	10
3.3	20dB Bandwidth of the hopping channel.....	12
3.4	Number of hopping frequencies .....	16
3.5	Average time of occupancy of hopping frequency .....	18
3.6	Antenna conducted spurious emissions.....	21
3.7	Radiated spurious emissions .....	22
3.8	RF Exposure Compliance .....	32
3.9	Transmitter power line conducted emissions .....	33
3.10	Receiver/digital device radiated emissions .....	34
3.11	Digital device conducted emissions .....	42
<b>4.0</b>	<b>TEST EQUIPMENT</b> .....	<b>43</b>
<b>5.0</b>	<b>REVISION HISTORY</b> .....	<b>44</b>



## 1.0 GENERAL DESCRIPTION

<b>Model:</b>	1122 PIR
<b>Type of EUT:</b>	Universal transmitter
<b>Intertek Sample ID:</b>	MIN1703300943-001
<b>Related Submittal(s) Grants:</b>	None
<b>Company:</b>	Digital Monitoring Products Inc.
<b>Customer:</b>	Leanna Bremenkamp
<b>Address:</b>	2500 North Partnership Blvd Springfield, MO 65803 USA
<b>Phone:</b>	417-447-9697
<b>e-mail:</b>	<a href="mailto:lbremenkamp@dmp.com">lbremenkamp@dmp.com</a>
<b>Test Standards:</b>	<input checked="" type="checkbox"/> 47 CFR, Part 15:2017, §15.247 <input checked="" type="checkbox"/> RSS-247, Issue 2, 2017 <input checked="" type="checkbox"/> RSS-Gen, Issue 4, 2014 <input checked="" type="checkbox"/> 47 CFR, Part 15:2017, §15.107 and §15.109, Class B, test method: ANSI C63.4-2014 <input checked="" type="checkbox"/> ICES-003, Issue 6:2016
<b>Type of radio:</b>	<input checked="" type="checkbox"/> Stand-alone <input type="checkbox"/> Module <input type="checkbox"/> Hybrid
<b>Date Sample Submitted:</b>	April 10, 2017
<b>Test Work Started:</b>	April 10, 2017
<b>Test Work Completed:</b>	June 21, 2017
<b>Test Sample Conditions:</b>	<input type="checkbox"/> Damaged <input type="checkbox"/> Poor (Usable) <input checked="" type="checkbox"/> Good



### 1.1 Product Description; Test Facility

<b>Product Description:</b>	Universal transmitter
<b>Transmitter Type:</b>	<input checked="" type="checkbox"/> FHSS <input type="checkbox"/> Digital Modulation <input type="checkbox"/> WiFi <input type="checkbox"/> Blue Tooth
<b>Permitted Range of Operation:</b>	902 – 928MHz
<b>Range of Operation:</b>	905.6 – 924.4MHz
<b>Number of Channels:</b>	53
<b>Modulation:</b>	FSK
<b>Emission Designator:</b>	F1D
<b>Antenna(s) Info:</b>	Type: Internal; Gain: 1.0dBi; Connector Type: Soldered to PCB
<b>Antenna Installation:</b>	<input type="checkbox"/> User <input type="checkbox"/> Professional <input checked="" type="checkbox"/> Factory
<b>Transmitter power configuration:</b>	<input checked="" type="checkbox"/> 3VDC from Internal battery <input type="checkbox"/> External power source
<b>Special Test Arrangement:</b>	None
<b>Test Facility Accreditation:</b>	A2LA (Certificate No. 1427.01)
<b>Test Methodology:</b>	Measurements performed according to the procedures in ANSI C63.10-2013 and FCC Public Notice DA 00-705

### 1.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

- Standby
- Continuous transmissions with hopping function enabled
- Continuous transmissions with hopping function disabled (modulated signal)
- Continuous transmissions with hopping function disabled (un-modulated signal)
- Continuous receiving
- Test program (customer specific)
- [REDACTED]

#### Operating modes of the EUT:

No.	Description
1	Test was performed at low channel, middle channel, and upper channel

#### Cables:

No.	Type	Length	Designation	Note
	None			

#### Support equipment/Services:

No.	Item	Description
1	SMT03 Signal Generator	RF Source

### 1.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

**Normal**

<b>Temperature:</b>	+15 to +35 ° C
<b>Humidity:</b>	20-75 %
<b>Atmospheric pressure:</b>	86-106 kPa

**Extreme**

<input type="checkbox"/> <b>Temperature:</b>	-20 to +50 ° C
<input type="checkbox"/> <b>Supply voltage:</b>	85% to +115%

## 1.4 Measurement uncertainty

The expanded uncertainty ( $k = 2$ ) for radiated emissions from 30 to 1000 MHz has been determined to be:  $\pm 4$  dB at 10m and  $\pm 5.4$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for radiated emissions above 1GHz has been determined to be:  $\pm 6.4$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for conducted emissions from 150 kHz to 30 MHz has been determined to be:  $\pm 2.6$  dB

## 1.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured emissions reading on the EMI Receiver.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where: FS = Field Strength in dB( $\mu$ V/m)

RA = Receiver Amplitude in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB( $m^{-1}$ )

AG = Amplifier Gain in dB

Assume a receiver reading of 48.1 dB( $\mu$ V) is obtained. The antenna factor of 7.4 dB( $m^{-1}$ ) and cable factor of 1.6 dB is added and amplifier gain of 16.0 dB is subtracted giving field strength of 41.1 dB( $\mu$ V/m).

$$RA = 48.1 \text{ dB}(\mu\text{V})$$

$$AF = 7.4 \text{ dB}(m^{-1})$$

$$CF = 1.6 \text{ dB}$$

$$AG = 16.0 \text{ dB}$$

$$FS = RA + AF + CF - AG$$

$$FS = 48.1 + 7.4 + 1.6 - 16.0$$

$$FS = 41.1 \text{ dB}(\mu\text{V}/\text{m})$$



## 2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST SPECIFICATION	TEST PARAMETERS	RESULT
15.247(b), (c) / RSS-247 5.4	Maximum peak output power	Pass
15.247/(e) / RSS-247 5.1	Hopping channel carrier frequencies separation	Pass
15.247(a) / RSS-247 5.1	20dB bandwidth of the hopping channel	Pass
15.247/(e) / RSS-247 5.1	Number of hopping frequencies	Pass
15.247/(e) / RSS-247 5.1	Average time of occupancy of hopping frequency	Pass
15.247(d) / RSS-247 5.5	Antenna conducted spurious emissions	N/A
15.247(d) / RSS-247 5.5	Radiated spurious emissions	Pass
15.247(i) / RSS- Gen 5.5	RF Exposure Compliance	Pass
15.207 / RSS-Gen 7.2.2	Transmitter Power Line conducted emissions	N/A
15.109 / ICES-003	Receiver/digital device radiated emissions	Pass
15.107 / ICES-003	Digital device conducted emissions	N/A



### 3.0 TEST CONDITIONS AND RESULTS

#### 3.1 Maximum peak output power

Test location:  OATS  Anechoic Chamber  Other

Test result: **Pass**

Margin of max emission: 19.5 dB below the limits

<b>Power Output: Distance:</b>	<b>Radiated</b> <input checked="" type="checkbox"/> 3m <input type="checkbox"/> 10m				
<b>Frequency Range:</b>	<input checked="" type="checkbox"/> 902-928MHz <input type="checkbox"/> 2400-2483.5MHz <input type="checkbox"/> 5725-5850MHz				
<b>Low Frequency 905.60MHz</b>	<b>Measured field dBµV/m</b>	<b>Tx Peak Power W</b>	<b>Tx Peak Power dBm</b>	<b>Limit dBm</b>	<b>Margin dB</b>
Vertical Antenna	82.4	0.011128	10.5	30.0	-19.5
Horizontal Antenna	68.7	0.000480	-3.2	30.0	-33.2
<b>Middle Frequency 915.02MHz</b>					
Vertical Antenna	82.2	0.010835	10.4	30.0	-19.6
Horizontal Antenna	68.1	0.000427	-3.7	30.0	-33.7
<b>Upper Frequency 924.39MHz</b>					
Vertical Antenna	82.2	0.011019	10.4	30.0	-19.6
Horizontal Antenna	68.7	0.000495	-3.1	30.0	-33.1
<b>RBW:</b>	<input checked="" type="checkbox"/> 100kHz <input type="checkbox"/> 3MHz <input type="checkbox"/> 10MHz				
<b>VBW:</b>	<input checked="" type="checkbox"/> 300kHz <input type="checkbox"/> 3MHz <input type="checkbox"/> 10MHz				
<b>Antenna Gain:</b>	<input checked="" type="checkbox"/> < 6dBi and = 1.0dBi <input type="checkbox"/> >6dBi and = <input type="text"/> dBi, Output power reduction = <input type="text"/> dB				

**Notes:** The Maximum Peak Output Power was calculated from measured field strength at fundamentals (see Tables 3.1.1 and 3.1.2) using equation  $P=(E \times d)^2/30G$





<b>Date:</b>	June 21, 2017	<b>Result: Pass</b>
<b>Tested by:</b>	Richard Blonigen	
<b>Standard:</b>	FCC Part 15.247	
<b>Test Point:</b>	Emissions at Fundamental	
<b>Operation mode:</b>	See page 5	
<b>Environmental Conditions:</b>	22°C; 35%(RH); 98kPa	
<b>Equipment Verification:</b>	<input checked="" type="checkbox"/>	
<b>Note:</b>	None	

**Table 3.1.1**

Frequency MHz	Antenna		Ant. CF dB1/m	Cable loss dB	Pre-amp Gain (dB)	Peak Reading dBμV	Total @ 3m dBμV/m	Total @ 3m V/m	Comments
	Polarity	Hts(cm)							
<b>Low Channel</b>									
905.60	V	117	21.7	2.6	0.0	82.4	106.8	0.217613	
905.60	H	144	21.7	2.6	0.0	68.7	93.0	0.044894	
<b>Middle Channel</b>									
915.02	V	115	21.8	2.6	0.0	82.2	106.6	0.213235	
915.02	H	187	21.8	2.6	0.0	68.1	92.5	0.042350	
<b>Upper Channel</b>									
924.39	V	115	21.8	2.6	0.0	82.2	106.7	0.215036	
924.39	H	184	21.8	2.6	0.0	68.7	93.2	0.045605	

The Maximum Peak Output Power was calculated from equation:  $P = \frac{(E*d)^2}{30G}$

Where: E is the measured maximum fundamental field strength in V/m,  
 G=1.26 is the numeric gain (from logarithmic Gain of 1dBi) of the transmitting antenna with reference to an isotropic radiator,  
 D=3 is the distance in meters from which the field strength was measured.

**Table 3.1.2**

Frequency MHz	Antenna Polarity	Field strength at 3m (V/m)	Peak Power W	Peak Power dBm	Comments
<b>Low Channel</b>					
905.61	V	0.217613	0.01128464	10.52	
905.61	H	0.044894	0.00048027	-3.19	
<b>Middle Channel</b>					
915.02	V	0.21323466	0.01083516	10.35	
915.02	H	0.04235043	0.00042740	-3.69	
<b>Upper Channel</b>					
924.39	V	0.21503646	0.01101904	10.42	
924.39	H	0.04560496	0.00049561	-3.05	

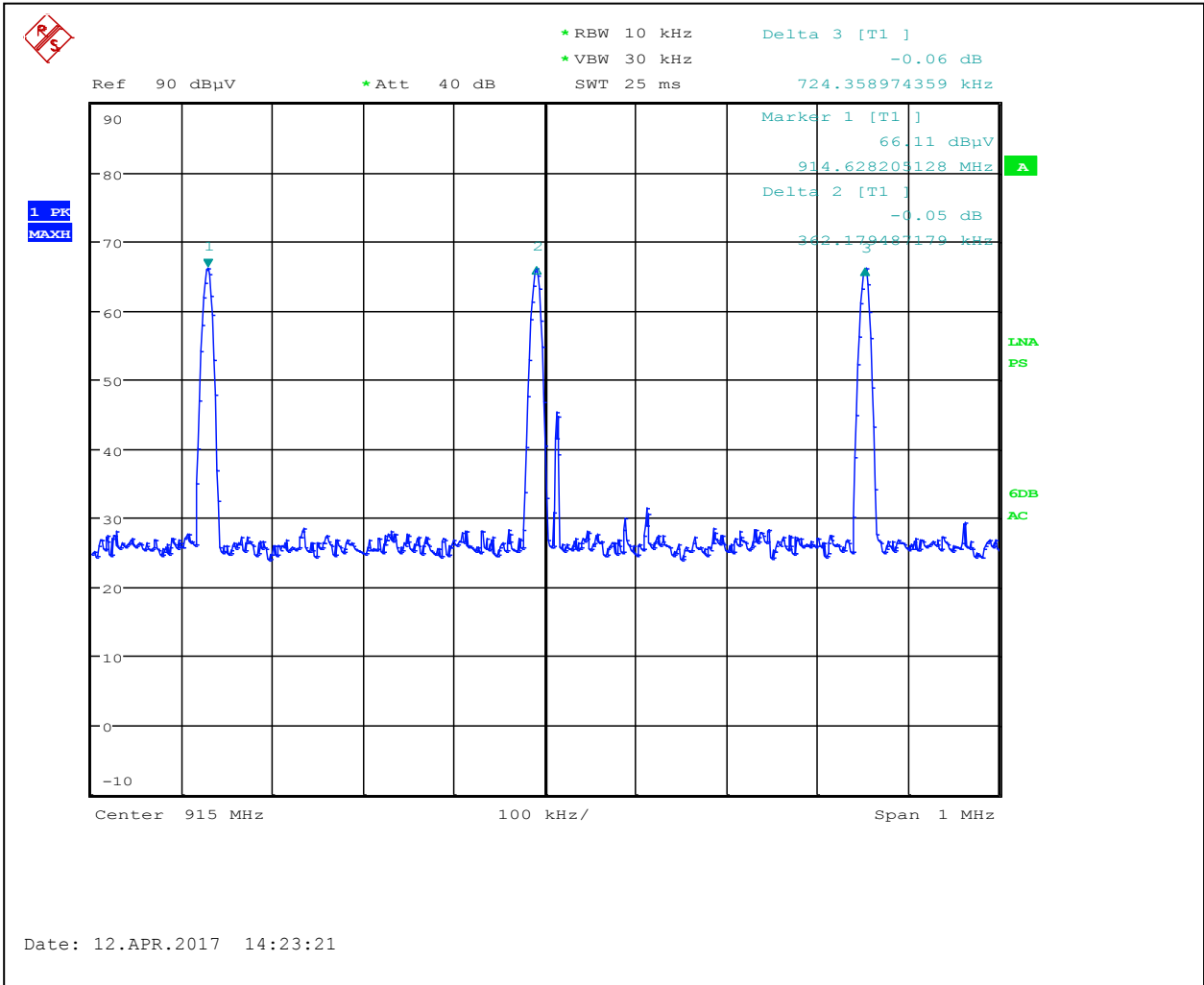


### 3.2 Hopping channel carrier frequencies separation

<b>Frequency Range:</b>	<input checked="" type="checkbox"/> 902-928MHz	<input type="checkbox"/> 2400-2483.5MHz	<input type="checkbox"/> 5725-5850MHz
<b>Measured Separation (kHz)</b>	<b>Limit (kHz)</b>		<b>Result</b>
362.18	74.1		<b>Pass</b>
<b>Limit:</b>	<input checked="" type="checkbox"/> 25kHz <input type="checkbox"/> 20dB channel bandwidth <input type="checkbox"/> 2/3 of 20dB channel bandwidth		
<b>Span:</b>	1 MHz		
<b>RBW:</b>	<input type="checkbox"/> 3kHz	<input checked="" type="checkbox"/> 10kHz	<input type="checkbox"/> 100kHz <input type="checkbox"/> other <input type="checkbox"/> kHz
<b>VBW:</b>	<input type="checkbox"/> 3kHz	<input checked="" type="checkbox"/> 30kHz	<input type="checkbox"/> 100kHz <input type="checkbox"/> other <input type="checkbox"/> kHz

**Notes:** None

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**Graph 3.2.1**

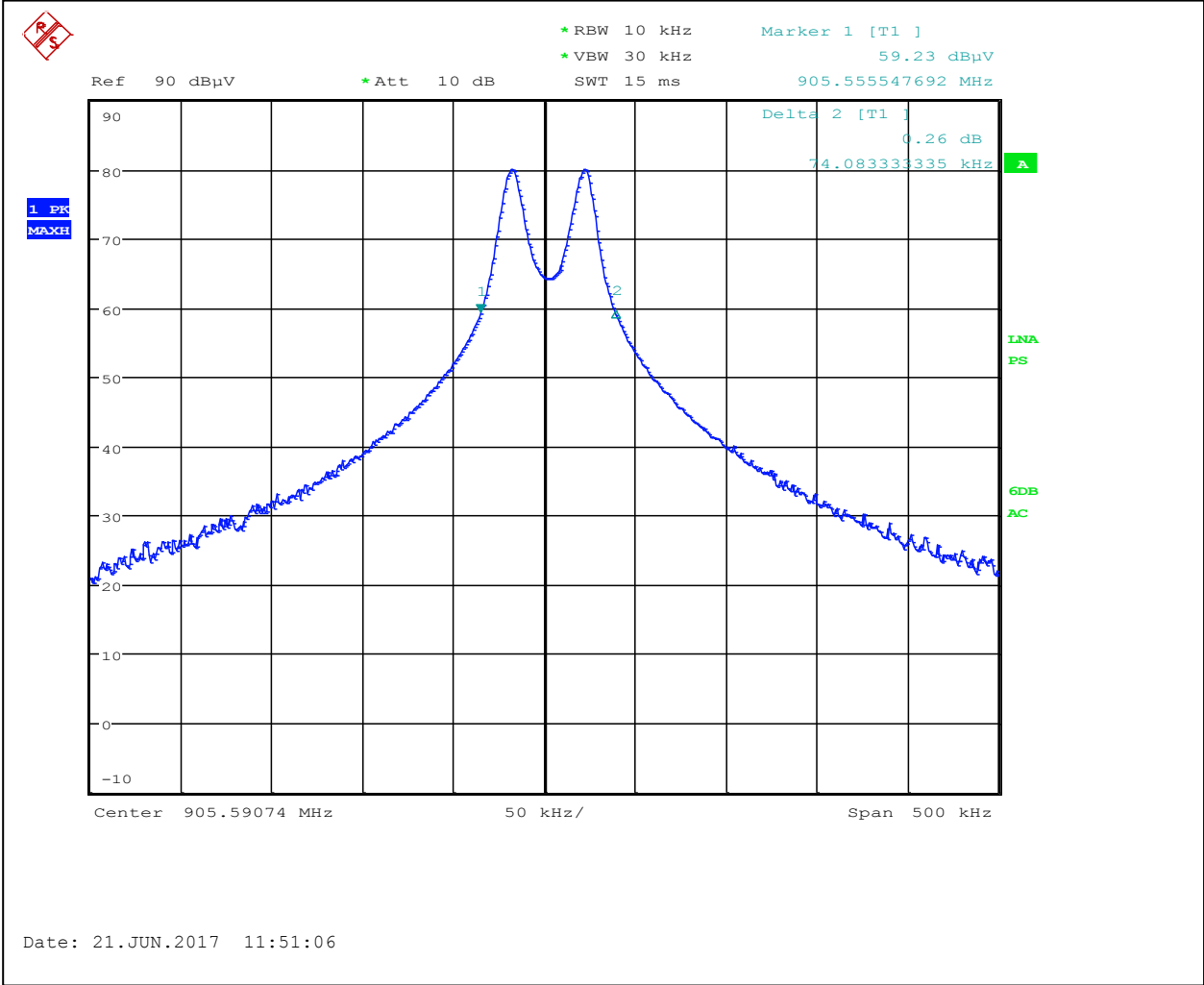


### 3.3 20dB Bandwidth of the hopping channel

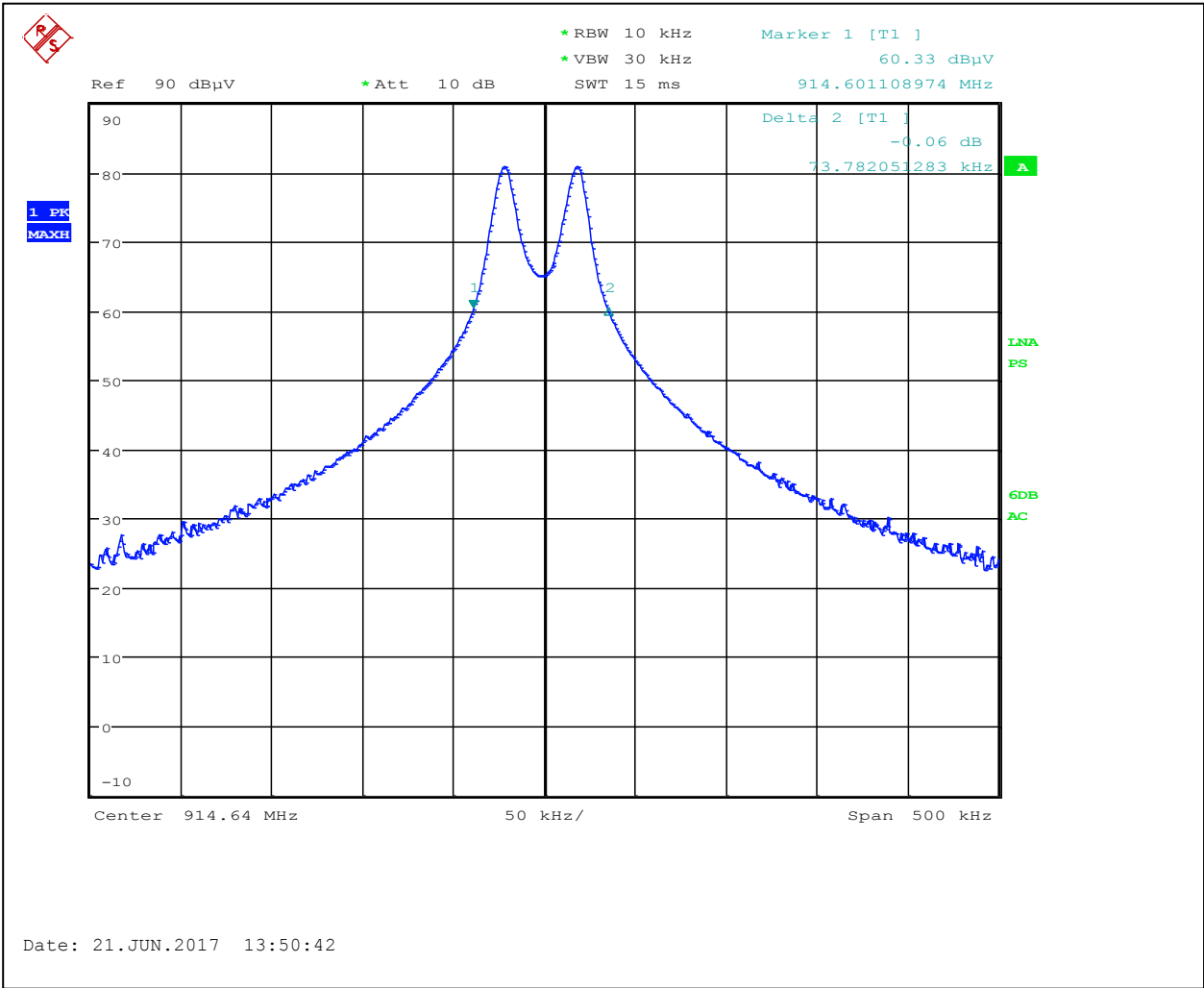
<b>Frequency Range:</b>	<input checked="" type="checkbox"/> 902-928MHz <input type="checkbox"/> 2400-2483.5MHz <input type="checkbox"/> 5725-5850MHz			
<b>Low Frequency Channel (kHz)</b>	<b>Middle Frequency Channel (kHz)</b>	<b>Upper Frequency Channel (kHz)</b>	<b>Limit (kHz)</b>	<b>Result</b>
74.08	73.78	73.78	250	<b>Pass</b>
<b>Span:</b>	500kHz			
<b>RBW:</b>	<input checked="" type="checkbox"/> 10kHz <input type="checkbox"/> 10kHz <input type="checkbox"/> 100kHz <input type="checkbox"/> other	kHz		
<b>VBW:</b>	<input checked="" type="checkbox"/> 30kHz <input type="checkbox"/> 10kHz <input type="checkbox"/> 100kHz <input type="checkbox"/> other	kHz		

**Notes:** Tests performed on June 21, 2017

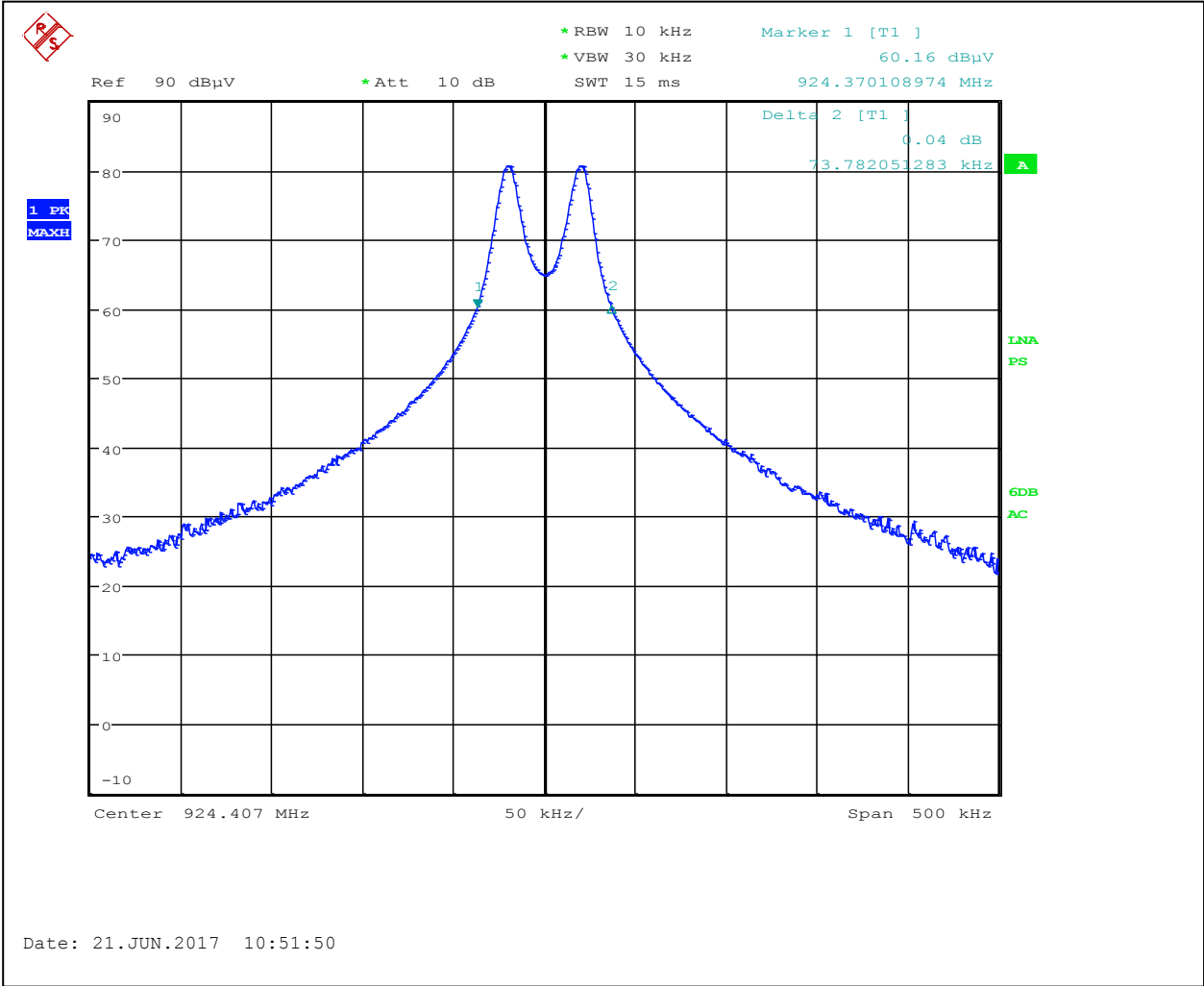
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Graph 3.3.1



Graph 3.3.2



Graph 3.3.3

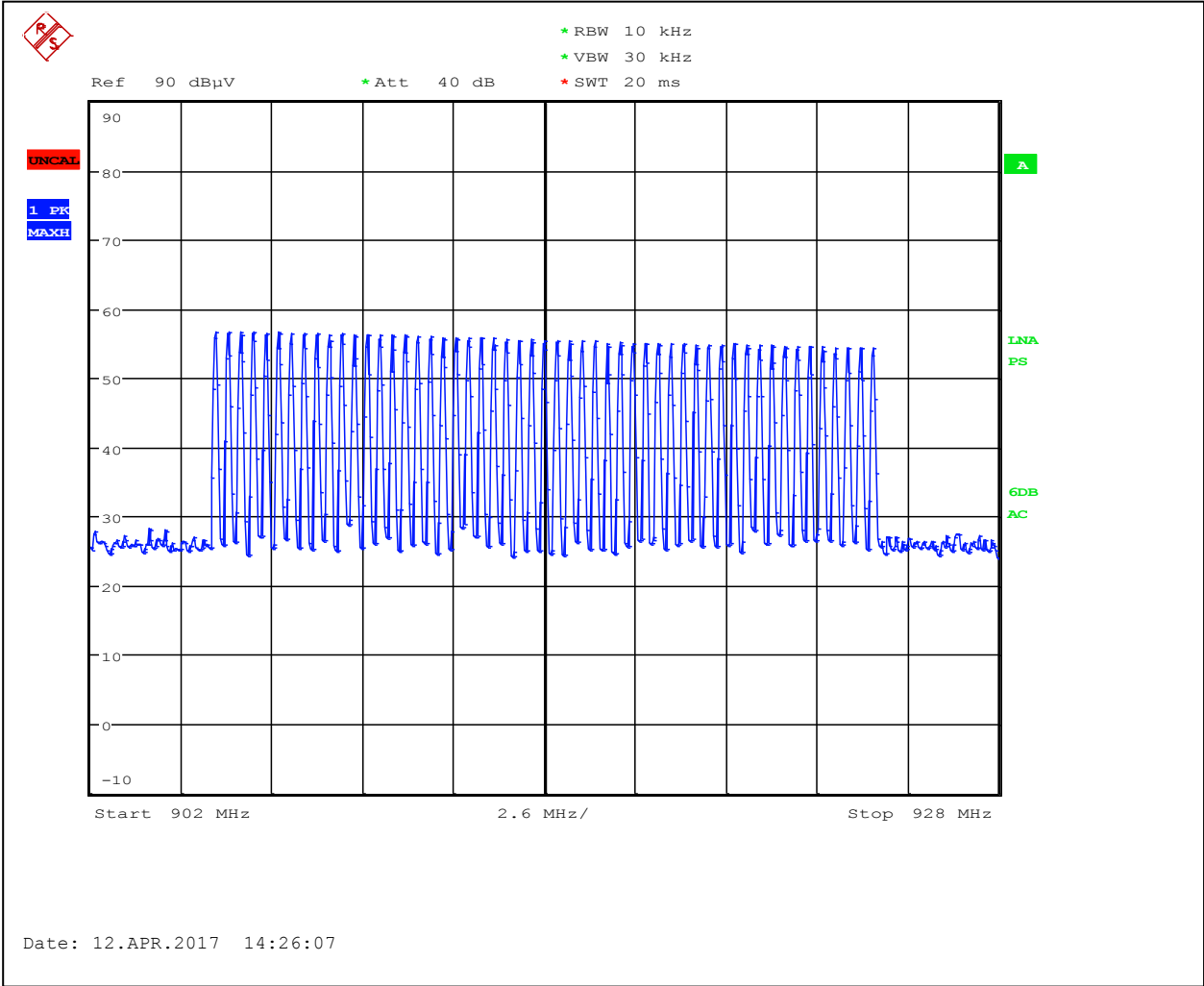
**3.4 Number of hopping frequencies**

<b>Frequency Range:</b>	<input checked="" type="checkbox"/> 902-928MHz <input type="checkbox"/> 2400-2483.5MHz <input type="checkbox"/> 5725-5850MHz	
<b>Measured Number</b>	<b>Requirements</b>	<b>Result</b>
53	50	<b>Pass</b>
<b>Channel 20dB Bandwidth:</b>	<input checked="" type="checkbox"/> <250kHz <input type="checkbox"/> ≥250kHz	

**Notes:**        None

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Graph 3.4.1

### 3.5 Average time of occupancy of hopping frequency

<b>Frequency Range:</b>	<input checked="" type="checkbox"/> 902-928MHz <input type="checkbox"/> 2400-2483.5MHz <input type="checkbox"/> 5725-5850MHz		
<b>Measured / Calculated Time sec</b>	<b>Period sec</b>	<b>Limit sec</b>	<b>Result</b>
0.3	20	0.4	<b>Pass</b>
<b>Period:</b>	<input type="checkbox"/> 10s <input checked="" type="checkbox"/> 20s <input type="checkbox"/> 30s <input checked="" type="checkbox"/> 0.4s multiplied by the channel number		
<b>Channel 20dB Bandwidth:</b>	<input checked="" type="checkbox"/> <250kHz <input type="checkbox"/> ≥250kHz		

Time of occupancy calculation:

Single occupancy duration (single duration) = 30.7ms (See graph 3.5.1)

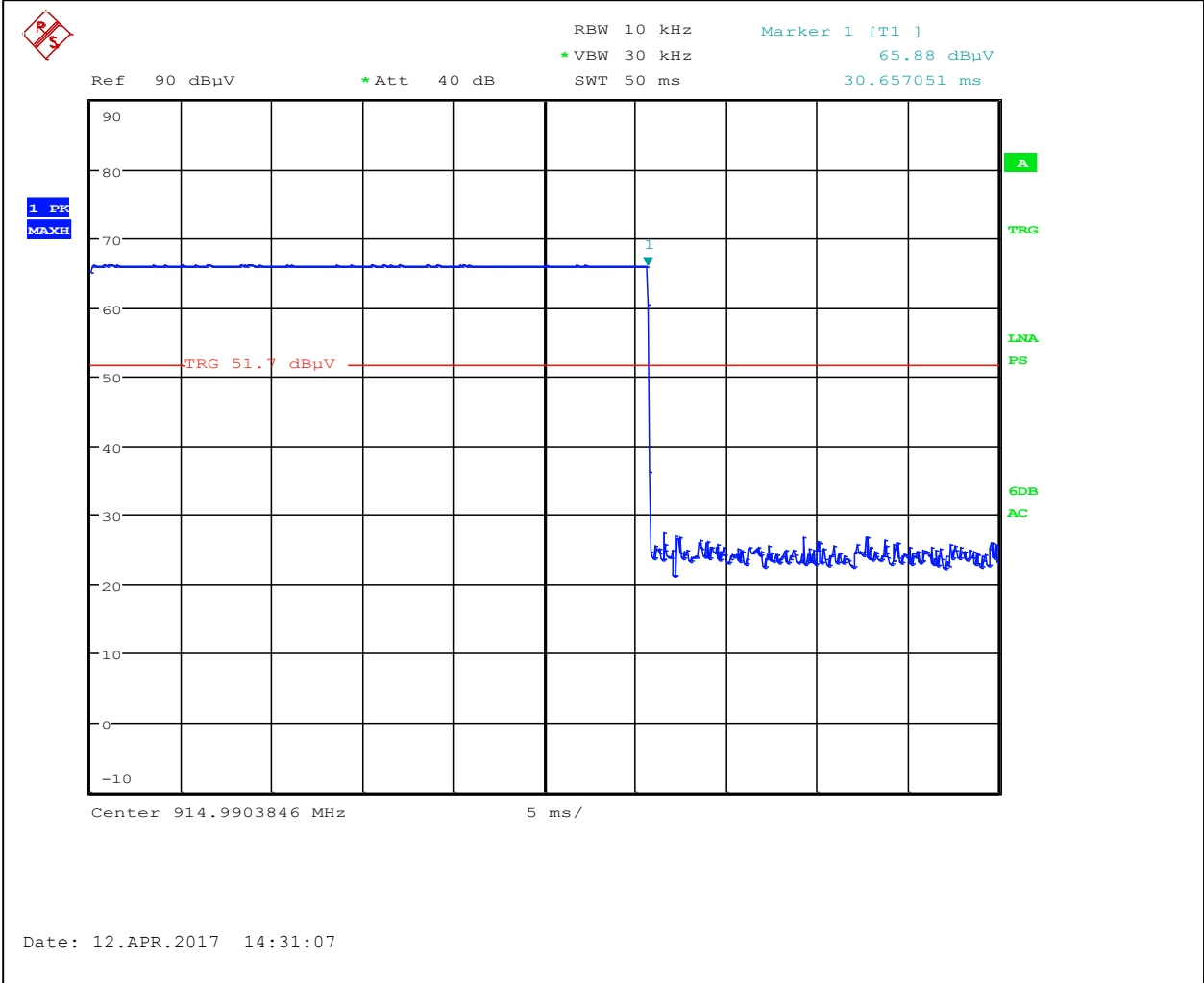
The minimum measured repetition of the channel occupancy (repetition) = 10 (See graph 3.5.2)

Period = 20

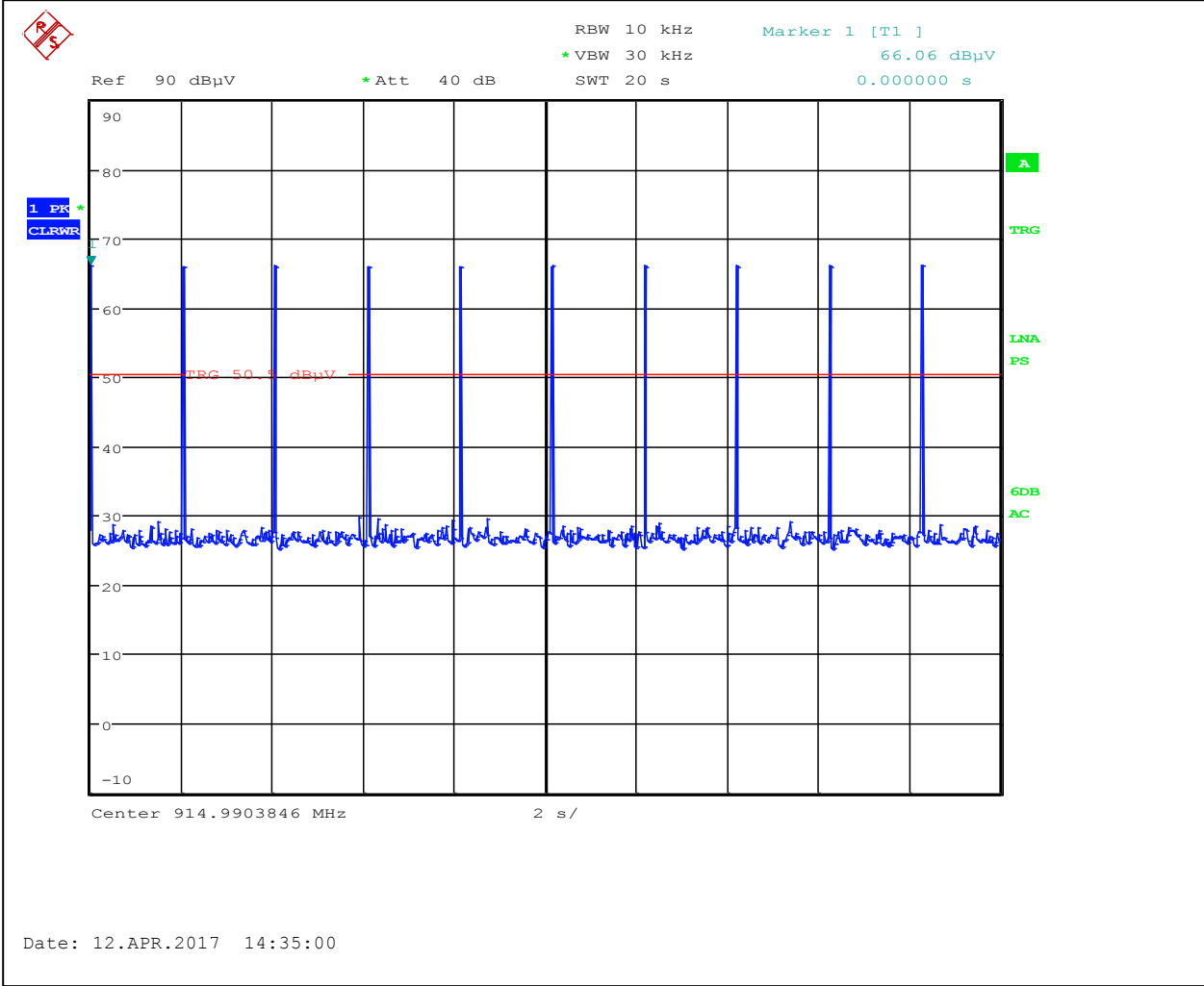
Time of occupancy = (single duration) x (repetition) = 30.7 x 10 = 307ms=0.3s

**Notes:**        None

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Graph 3.5.1



Graph 3.5.2



### 3.6 Antenna conducted spurious emissions

Frequency Range:	<input type="checkbox"/> 902-928MHz <input type="checkbox"/> 2400-2483.5MHz <input type="checkbox"/> 5725-5850MHz		
	Minimum Measured Attenuation dB	Minimum Allowed Attenuation dB	Margin dB
Low Frequency Channel			
Middle Frequency Channel			
Upper Frequency Channel			
<b>Analyzer Settings:</b>	<input type="checkbox"/> RBW=100KHz		
<b>Minimum Allowed Attenuation:</b>	<input type="checkbox"/> 20dB <input type="checkbox"/> 30dB (for digital systems with conducted power measured using RMS averaging over a time interval)		

**Notes:**        Test was not performed as EUT does not contain antenna port.

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### 3.7 Radiated spurious emissions

**Test location:**  OATS  Anechoic Chamber  Other

**Test distance:**  10 meters  3 meters

**Test result:** **Pass**

**Max. Margin:** 2.6 dB below the limits

**Notes:**

1. Emissions at fundamentals are excluded from the Tables;
2. Peak readings of spurious emissions are below the 15.209 Quasi-peak and average limits; therefore no quasi-peak readings below 1Ghz were taken.

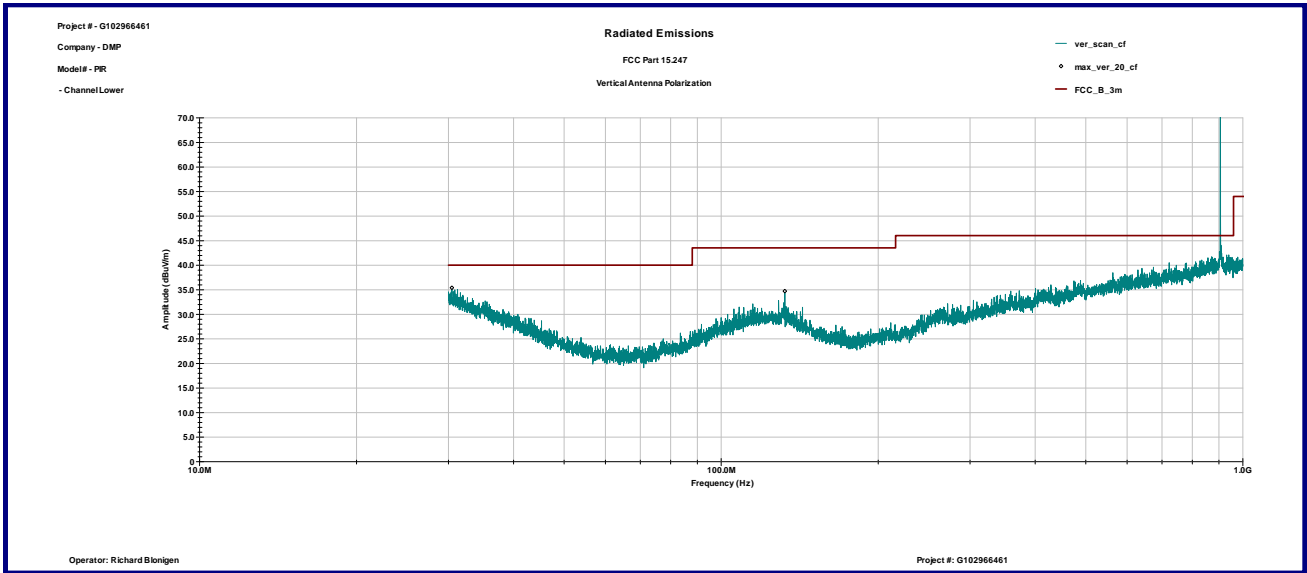
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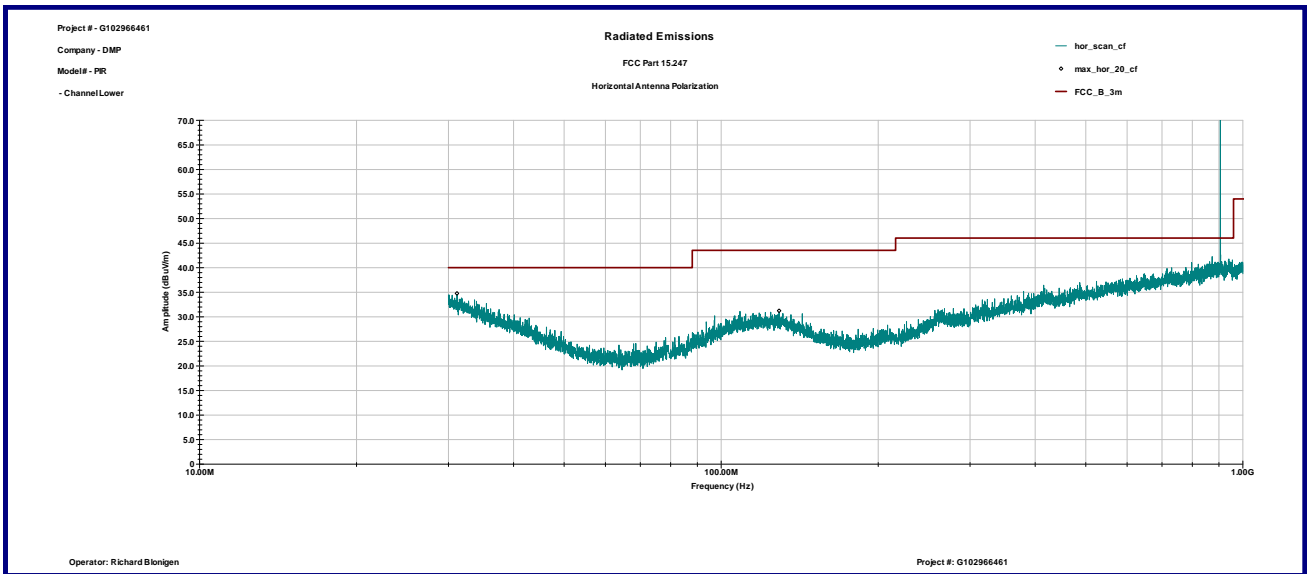
<b>Date:</b>	June 7-21, 2017	<b>Result: Pass</b>
<b>Tested by:</b>	Richard Blonigen	
<b>Standard:</b>	FCC Part 15.247(d)	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Environmental Conditions:</b>	24°C; 44%(RH); 98kPa	
<b>Equipment Verification:</b>	<input checked="" type="checkbox"/>	
<b>Note:</b>	Frequency Range 30-1000MHz RBW 100kHz / VBW 300kHz	

**Table 3.7.1**

Frequency MHz	Antenna Polarity	Peak Reading dB $\mu$ V	Total C.F. dB1/m	Total at 3m dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB
<b>Lower Channel</b>						
30.456 MHz	V	11.2	24.2	35.4	40.0	-4.6
132.43 MHz	V	17.1	17.6	34.7	43.5	-8.8
905.62 MHz	V	80.8	28.8	109.7	46.0	63.6
31.158 MHz	H	11.0	23.8	34.8	40.0	-5.2
129.14 MHz	H	13.7	17.5	31.2	43.5	-12.3
905.62 MHz	H	68.2	28.8	97.0	46.0	51.0
<b>Middle Channel</b>						
31.281 MHz	V	11.4	23.7	35.1	40.0	-4.9
132.5 MHz	V	17.1	17.6	34.6	43.5	-8.9
914.73 MHz	V	81.3	29.0	110.3	46.0	64.3
31.544 MHz	H	12.0	23.7	35.7	40.0	-4.3
120.97 MHz	H	13.5	17.8	31.3	43.5	-12.2
914.73 MHz	H	67.5	29.0	96.5	46.0	50.5
<b>Upper Channel</b>						
30.649 MHz	V	11.0	24.0	35.0	40.0	-5.0
132.43 MHz	V	17.0	17.6	34.6	43.5	-8.9
924.34 MHz	V	81.0	28.1	109.1	46.0	63.1
30.211 MHz	H	10.7	24.3	35.0	40.0	-5.0
118.15 MHz	H	13.7	17.9	31.6	43.5	-11.9
924.34 MHz	H	67.7	28.1	95.8	46.0	49.8

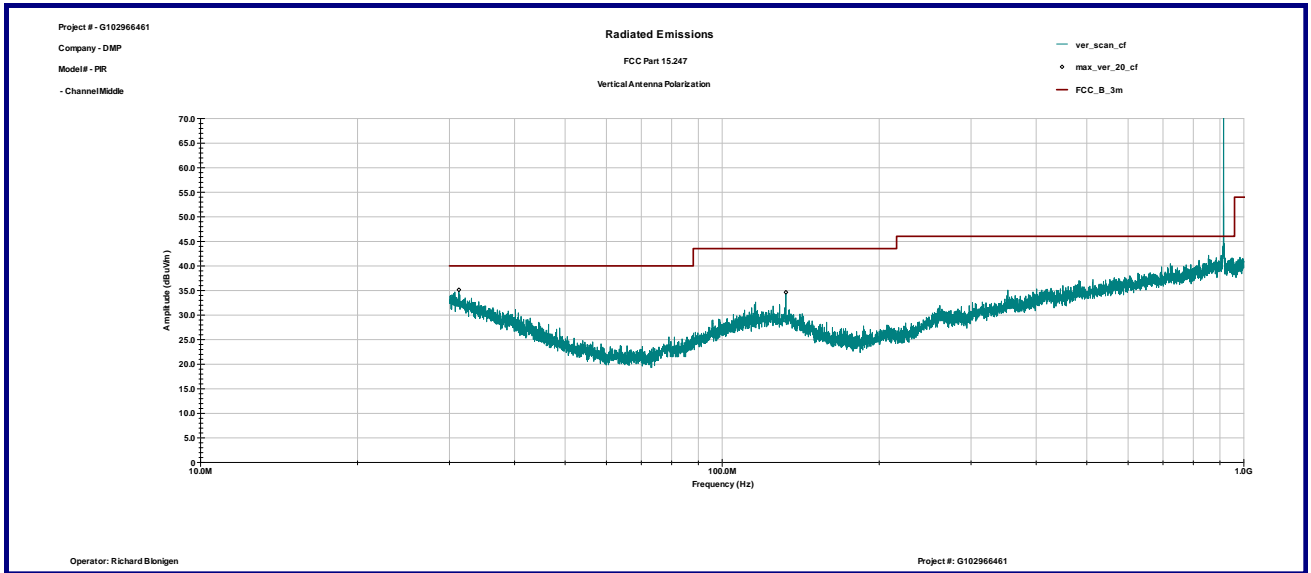


Graph 3.7.1

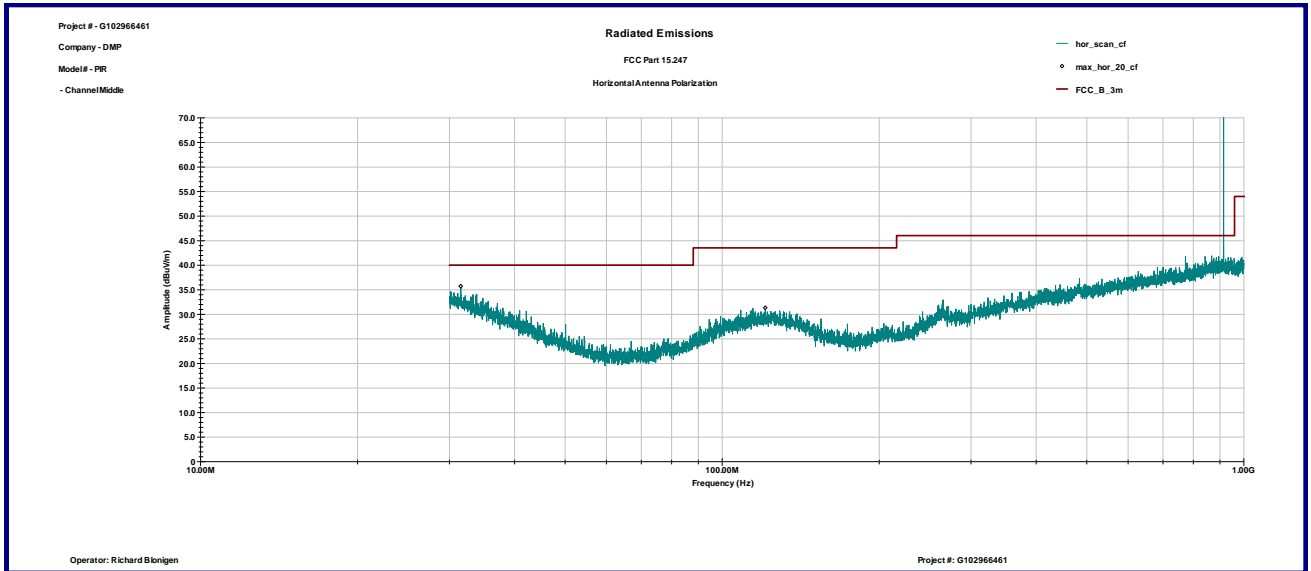


Graph 3.7.2

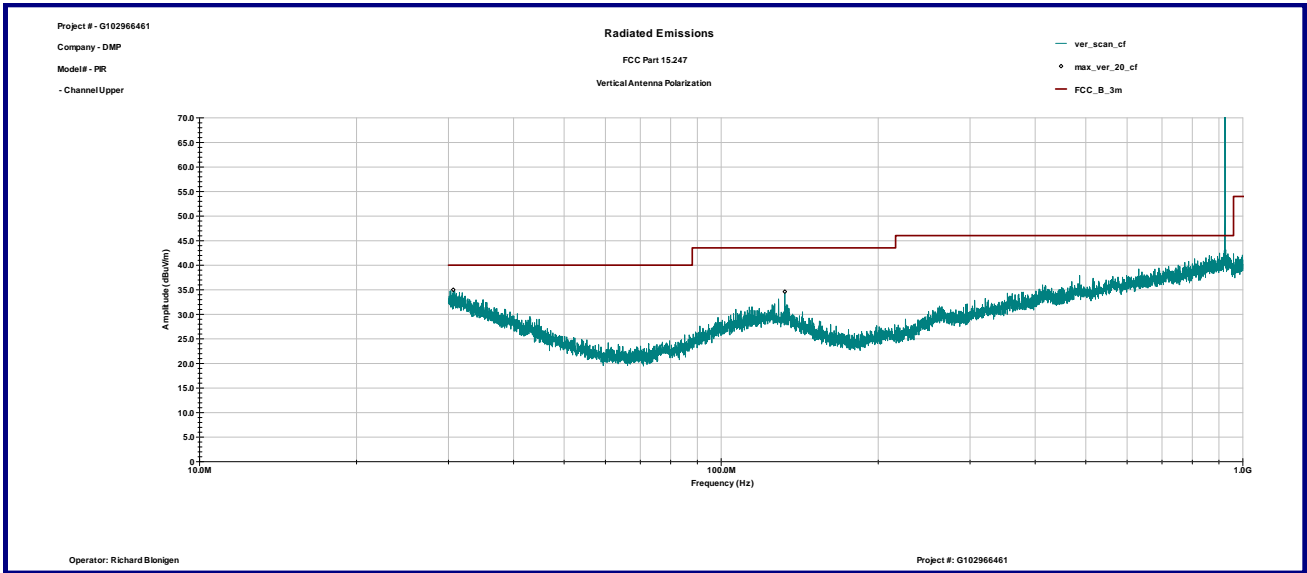




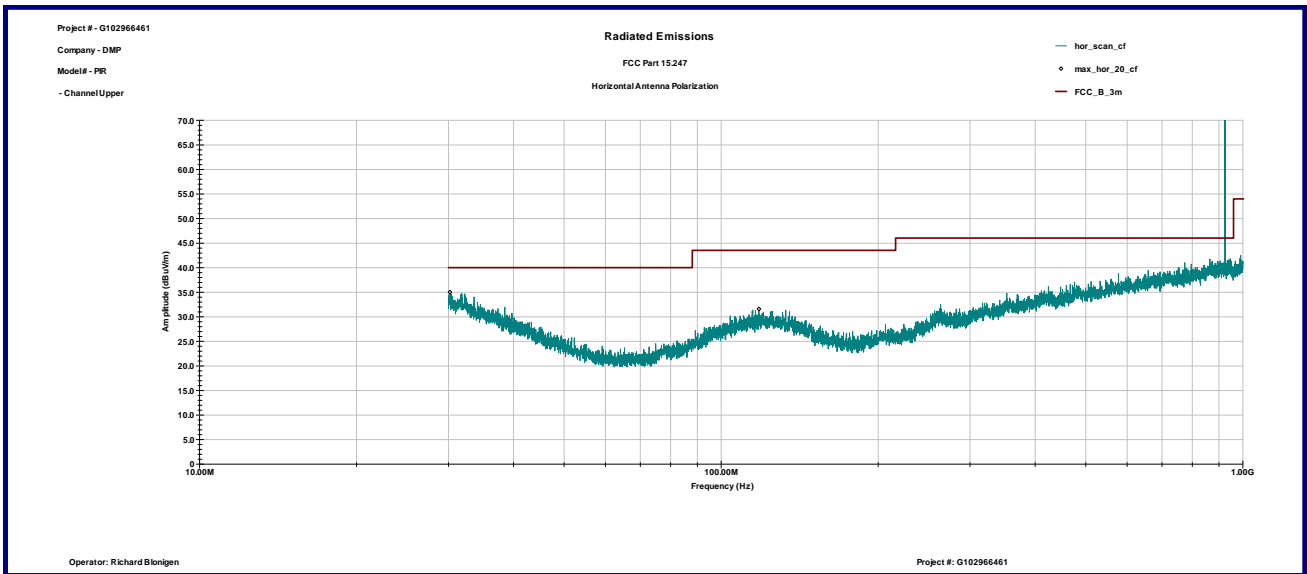
Graph 3.7.3



Graph 3.7.4



Graph 3.7.5



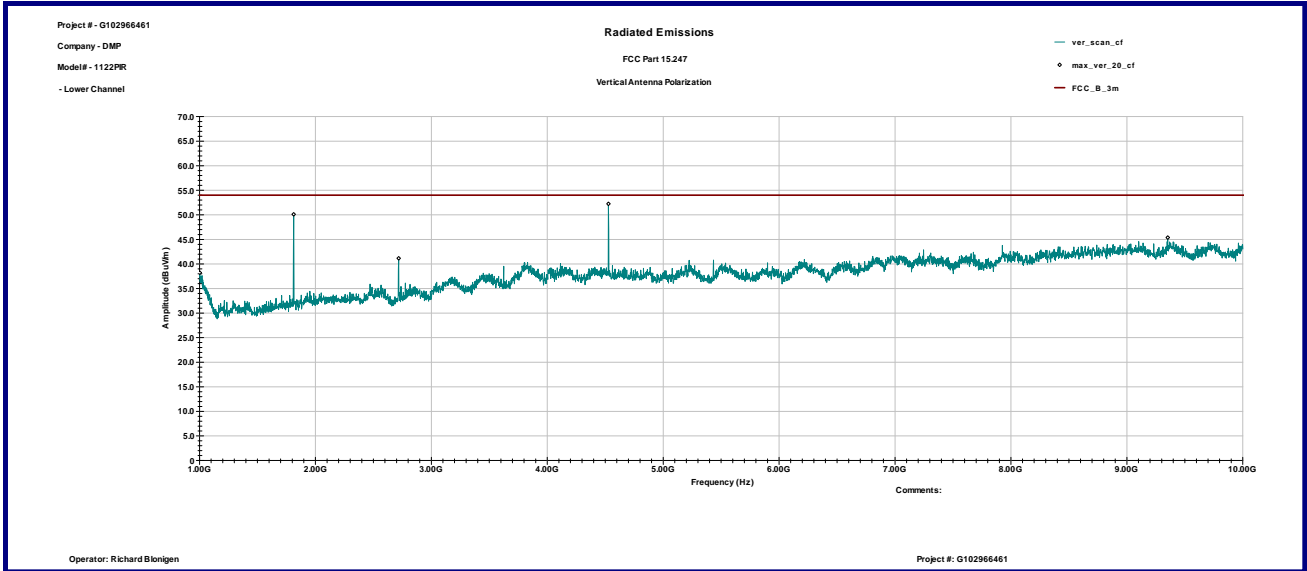
Graph 3.7.6



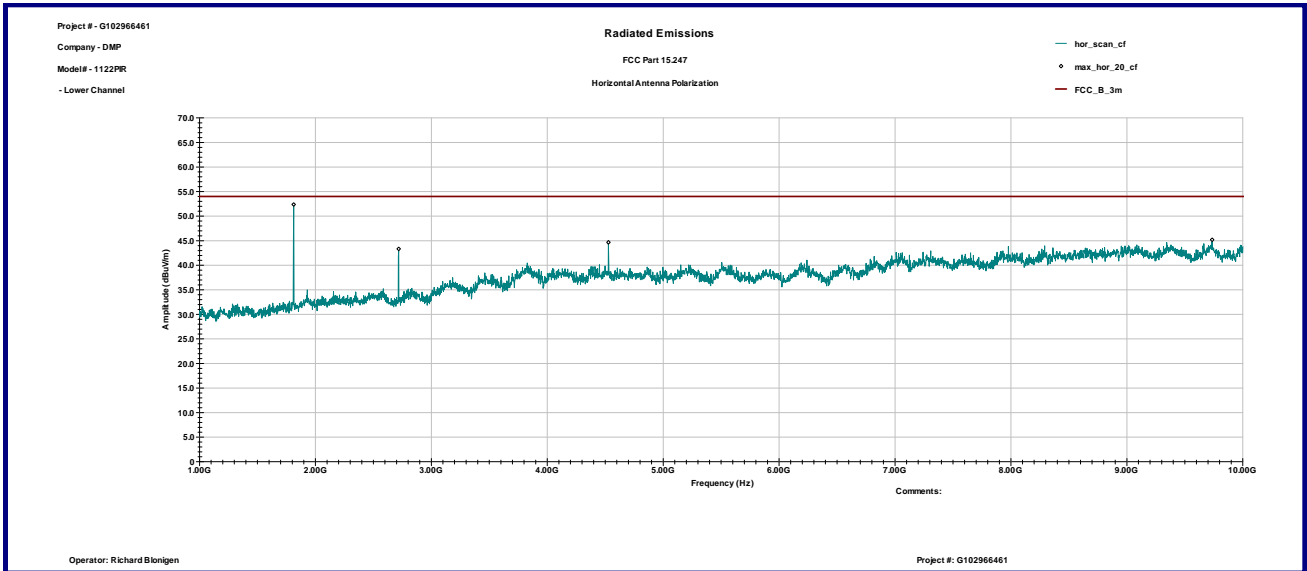
<b>Date:</b>	June 7-21, 2017	<b>Result: Pass</b>
<b>Tested by:</b>	Richard Blonigen	
<b>Standard:</b>	FCC Part 15.247(d)	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Environmental Conditions:</b>	24°C; 45%(RH); 96.3kPa	
<b>Equipment Verification:</b>	<input checked="" type="checkbox"/>	
<b>Note:</b>	Frequency Range 1-10GHz; RBW 1MHz / vBW 1MHz	

**Table 3.7.2**

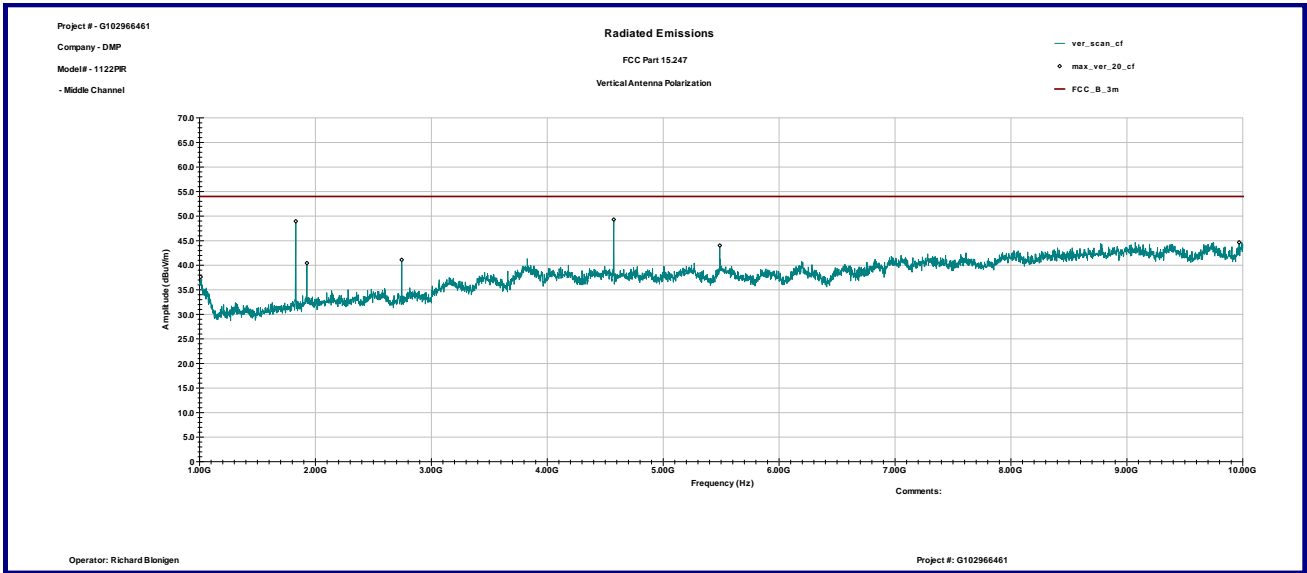
Frequency MHz	Antenna		Ant. CF dB1/m	Cable loss dB	Pre-amp Gain (dB)	Reading dBµV	Total @ 3m dBµV/m	Limit dBµV/m	Margin dB	Comments
	Polarity	Hts(cm)								
<b>Lower Channel</b>										
1812.00	V	126	26.4	2.5	41.1	61.5	49.3	54.0	-4.7	
2717.00	V	156	29.1	3.1	40.4	46.2	38.0	54.0	-16.0	
4528.00	V	129	32.5	4.1	39.5	54.0	51.1	54.0	-2.9	
1812.00	H	113	26.4	2.5	41.1	62.8	50.7	54.0	-3.3	
2717.00	H	100	29.1	3.1	40.4	51.3	43.1	54.0	-10.8	
4528.00	H	135	32.5	4.1	39.5	38.6	35.7	54.0	-18.2	
<b>Middle Channel</b>										
1830.00	V	117	26.5	2.5	41.1	62.2	50.1	54.0	-3.8	
2744.00	V	110	29.2	3.1	40.4	49.1	41.0	54.0	-13.0	
4574.00	V	137	32.5	4.1	39.4	50.8	48.0	54.0	-5.9	
5488.00	V	120	34.0	4.4	38.8	34.5	34.1	54.0	-19.9	
1830.00	H	171	26.5	2.5	41.1	58.9	46.8	54.0	-7.1	
2744.00	H	114	29.2	3.1	40.4	50.8	42.6	54.0	-11.3	
4574.00	H	125	32.5	4.1	39.4	47.3	44.5	54.0	-9.5	
5488.00	H	121	34.0	4.4	38.8	32.1	31.7	54.0	-22.3	
<b>Upper Channel</b>										
1848.00	V	117	26.6	2.5	41.1	63.4	51.4	54.0	-2.6	
2773.00	V	113	29.3	3.1	40.4	54.4	46.4	54.0	-7.6	
4622.00	V	127	32.6	4.1	39.4	49.0	46.3	54.0	-7.7	
1848.00	H	162	26.6	2.5	41.1	58.1	46.1	54.0	-7.9	
2773.00	H	138	29.3	3.1	40.4	48.4	40.4	54.0	-13.6	
4622.00	H	149	32.6	4.1	39.4	35.9	33.3	54.0	-20.7	



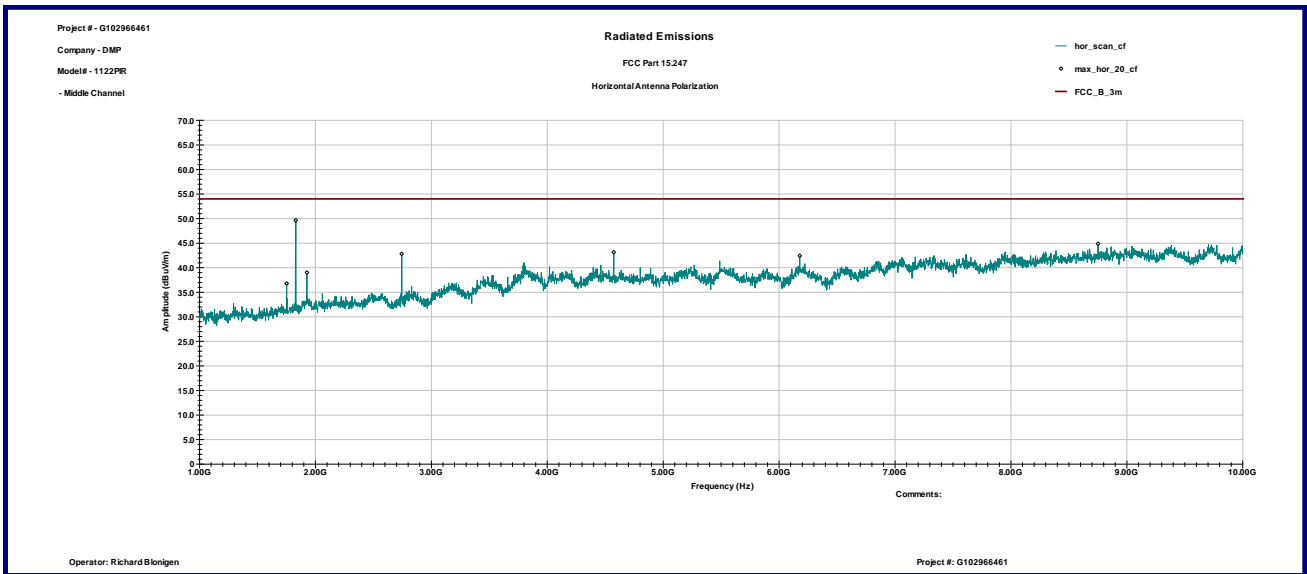
Graph 3.7.7



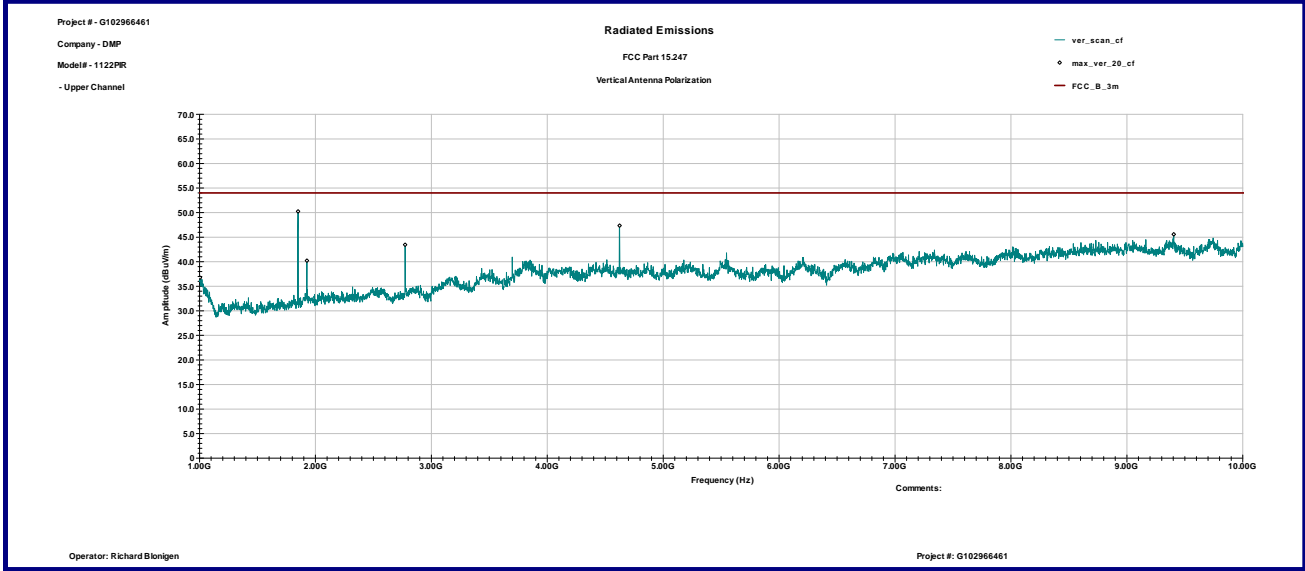
Graph 3.7.8



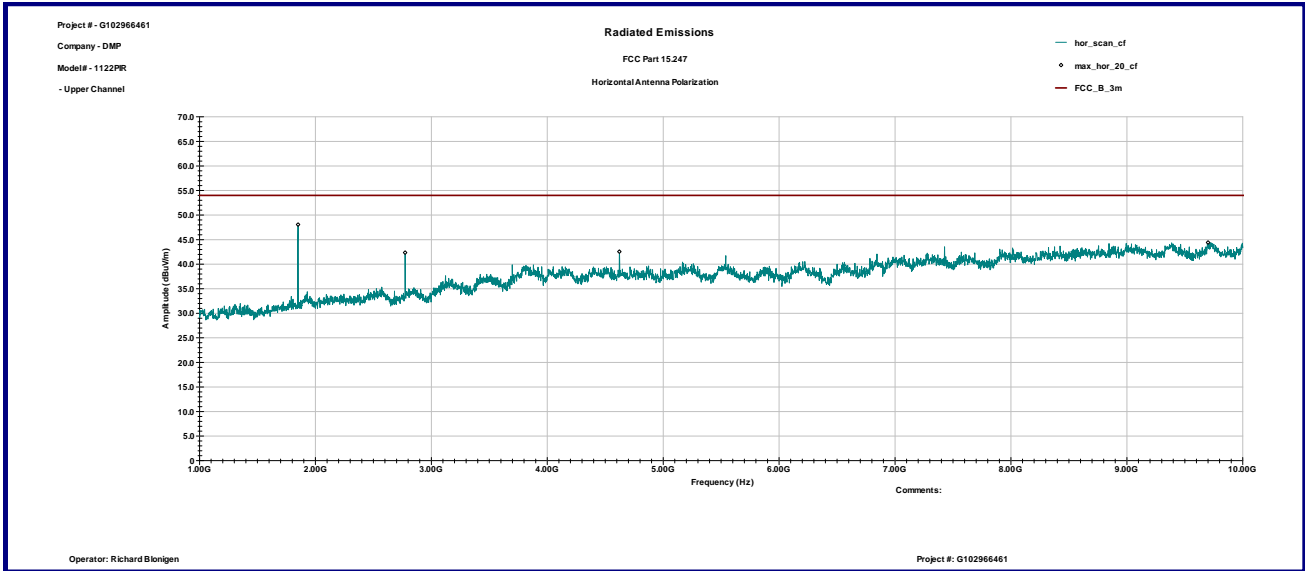
Graph 3.7.9



Graph 3.7.10



Graph 3.7.11



Graph 3.7.12



<b>Date:</b>	June 21, 2017	<b>Result: Pass</b>
<b>Tested by:</b>	Richard Blonigen	
<b>Standard:</b>	FCC Part 15.247(d)	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Environmental Conditions:</b>	24°C; 45%(RH); 96.3kPa	
<b>Equipment Verification:</b>	<input checked="" type="checkbox"/>	
<b>Note:</b>	Bandedge Compliance The readings are identical with hopping function enabled and disabled, so the table reflects both conditions	

**Table 3.7.3**

Frequency MHz	Antenna		Ant. CF dB1/m	Cable loss dB	Pre-amp Gain (dB)	Peak Reading dBµV	Total @ 3m dBµV/m	Limit dBµV/m	Margin dB	Comments
	Polarity	Hts(cm)								
<b>Bandedge Compliance</b>										
902.00	V	119	21.7	2.6	0.0	7.3	31.6	46.0	-14.4	
902.00	H	155	21.7	2.6	0.0	6.2	30.5	46.0	-15.5	
928.00	V	112	21.9	2.6	0.0	7.8	32.3	46.0	-13.7	
928.00	H	174	21.9	2.6	0.0	6.8	31.3	46.0	-14.7	

### 3.8 RF Exposure Compliance

The maximum measured antenna radiated power, P is -2.92 dBm

The antenna gain, G is 1.0dBi

The maximum EIRP power = P + G

ERP = -2.92 + 1.0 = -1.92 dBm, or 0.00064W

The limits for Maximum Permissible Exposure (MPE) for transmitter operating at 902-928MHz, MPE is 928/1500 = 0.619mW/cm<sup>2</sup>, or 6.2W/m<sup>2</sup>

The Power Density, S is related to EIRP with the equation:

$S = \text{EIRP} / 4\pi D^2$ , where D is the safe separation distance and = 0.2m, or 20cm

$S = 0.00064 / 4\pi * 0.2^2$ ,

S = 0.00127W/m<sup>2</sup>, or below the Maximum Permissible Exposure (MPE) of 6.2W/m<sup>2</sup>





### 3.9 Transmitter power line conducted emissions

**Test location:**  OATS  Anechoic Chamber  Other

**Test result:** N/A

**Frequency range:** 0.15MHz-30MHz

**Max. Emissions margin:** dB below the limits

Notes: Test was not performed as EUT is battery operated.

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**3.10 Receiver/digital device radiated emissions**

**Test location:**  OATS  Anechoic Chamber

**Test distance:**  10 meters  3 meters

**Test result:** **Pass**

**Frequency range:** 30MHz-5000MHz

**Max. Emissions margin:** dB below the limits

**Notes:** Emissions from a Signal Generator at fundamentals were excluded from the Tables.

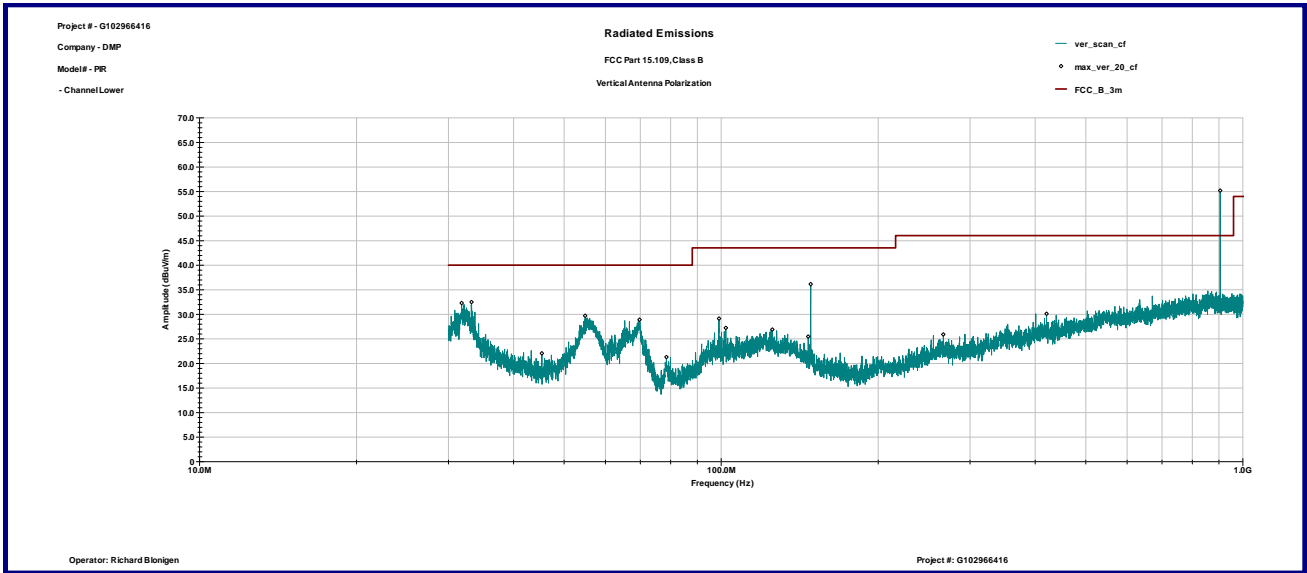
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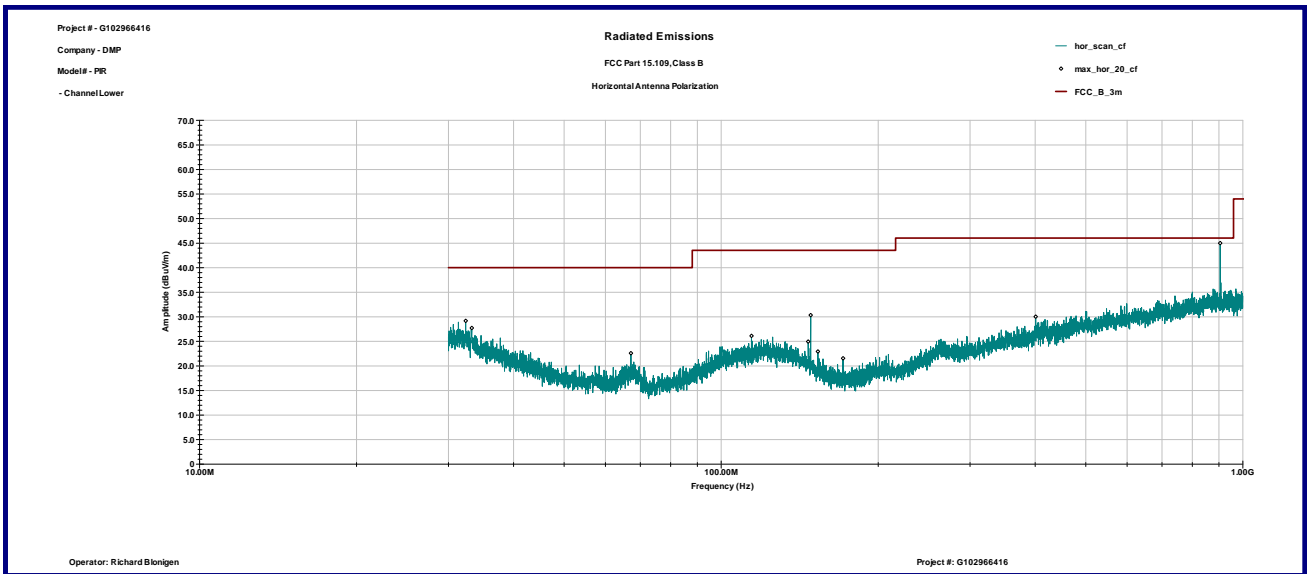
<b>Date:</b>	April 11-12, 2017	<b>Result: Pass</b>
<b>Tested by:</b>	Richard Blonigen	
<b>Standard:</b>	FCC Part 15.209	
<b>Test Point:</b>	Enclosure	
<b>Operation mode:</b>	See page 5	
<b>Environmental Conditions:</b>	24°C; 54%(RH); 96.3kPa	
<b>Equipment Verification:</b>	<input checked="" type="checkbox"/>	
<b>Note:</b>	None	

**Table 3.10.1**

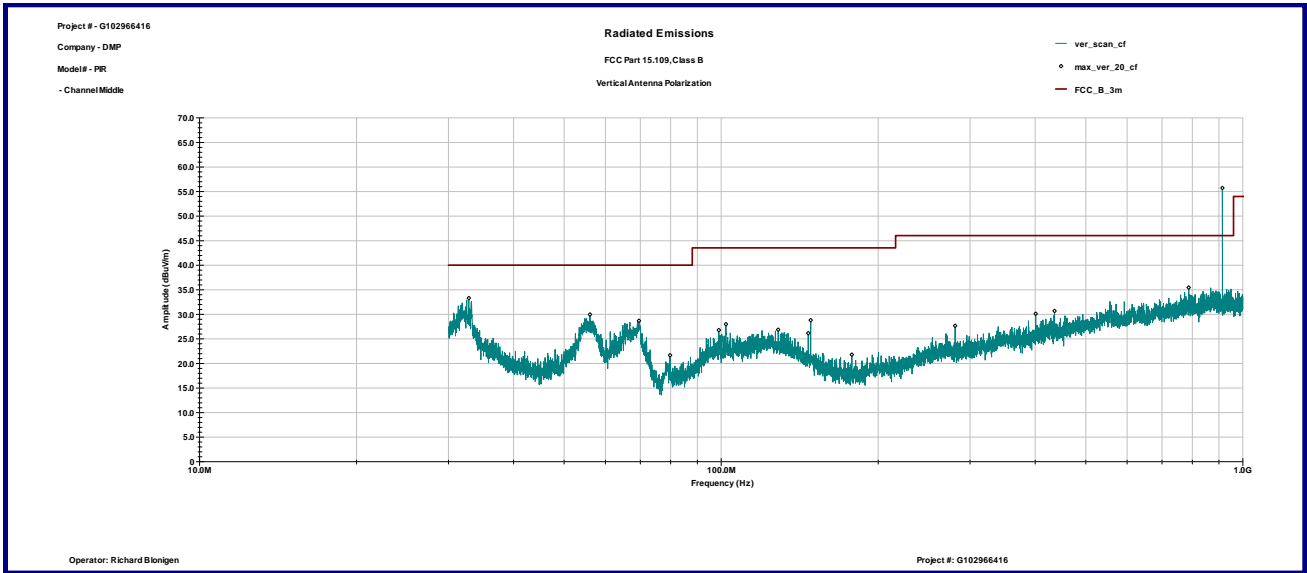
Frequency MHz	Antenna Polarity	Peak Reading dBµV	Total C.F. dB1/m	Total at 3m dBµV/m	Limit dBµV/m	Margin dB
<b>Lower Channel</b>						
33.229 MHz	V	16.3	16.2	32.5	40.0	-7.5
54.861 MHz	V	21.6	8.2	29.7	40.0	-10.3
148.49 MHz	V	23.4	12.8	36.1	43.5	-7.4
32.386 MHz	H	10.2	19.0	29.2	40.0	-10.8
33.264 MHz	H	9.3	18.5	27.7	40.0	-12.3
148.49 MHz	H	17.9	12.4	30.3	43.5	-13.2
400.89 MHz	H	11.7	18.4	30.0	46.0	-16.0
<b>Middle Channel</b>						
32.825 MHz	V	16.8	16.5	33.3	40.0	-6.7
56.057 MHz	V	21.9	8.1	30.0	40.0	-10.0
69.572 MHz	V	21.9	6.7	28.7	40.0	-11.3
148.49 MHz	V	16.0	12.8	28.8	43.5	-14.7
74.856 MHz	H	13.3	7.8	21.1	40.0	-18.9
115.07 MHz	H	12.5	13.5	26.0	43.5	-17.5
148.56 MHz	H	15.5	12.4	27.9	43.5	-15.6
<b>Upper Channel</b>						
33.194 MHz	V	16.1	16.2	32.4	40.0	-7.6
56.001 MHz	V	19.7	8.1	27.8	40.0	-12.2
69.989 MHz	V	20.7	6.7	27.4	40.0	-12.6
148.49 MHz	V	16.7	12.8	29.5	43.5	-14.0
31.72 MHz	H	9.8	19.4	29.1	40.0	-10.9
148.49 MHz	H	15.1	12.4	27.5	43.5	-16.1
432.3 MHz	H	11.3	18.9	30.3	46.0	-15.8



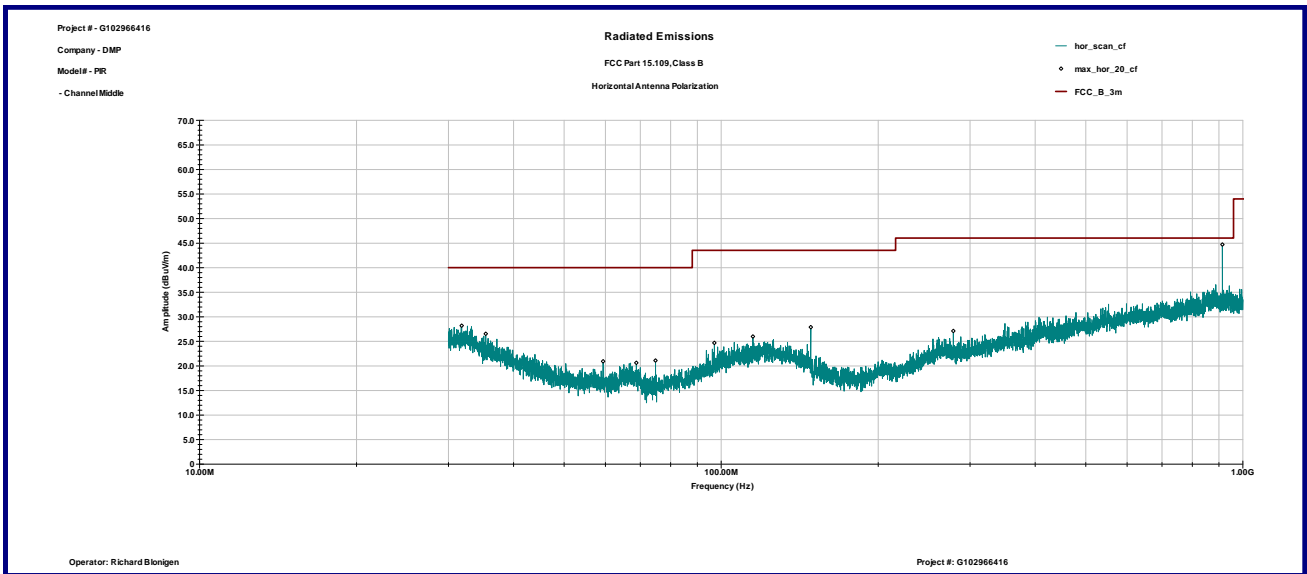
Graph 3.10.1



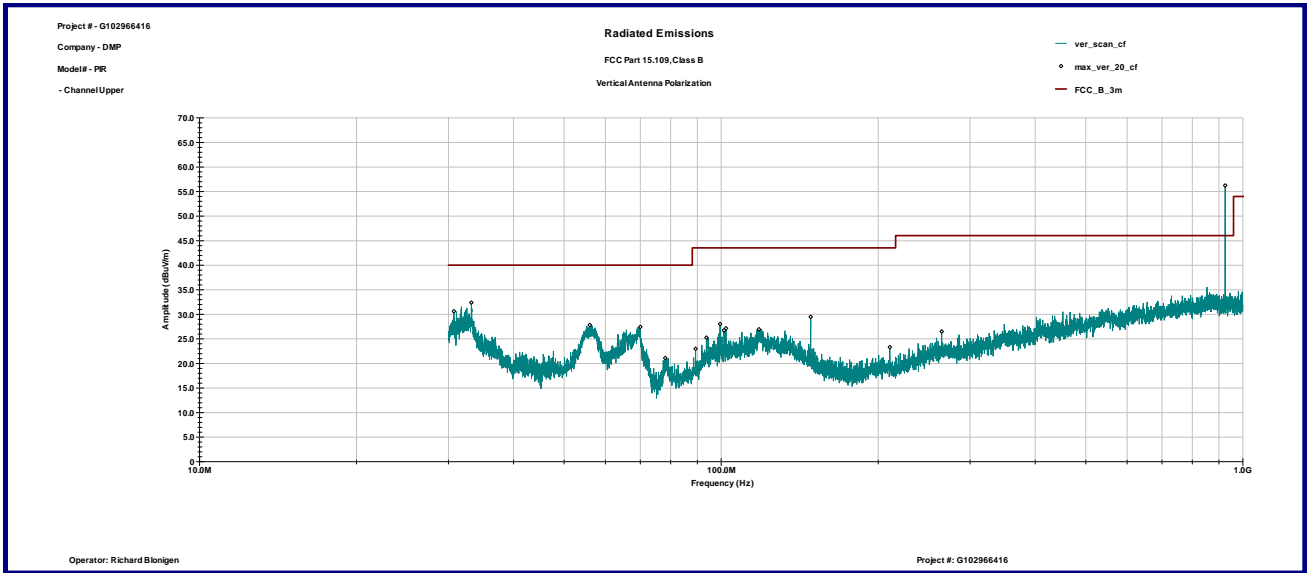
Graph 3.10.2



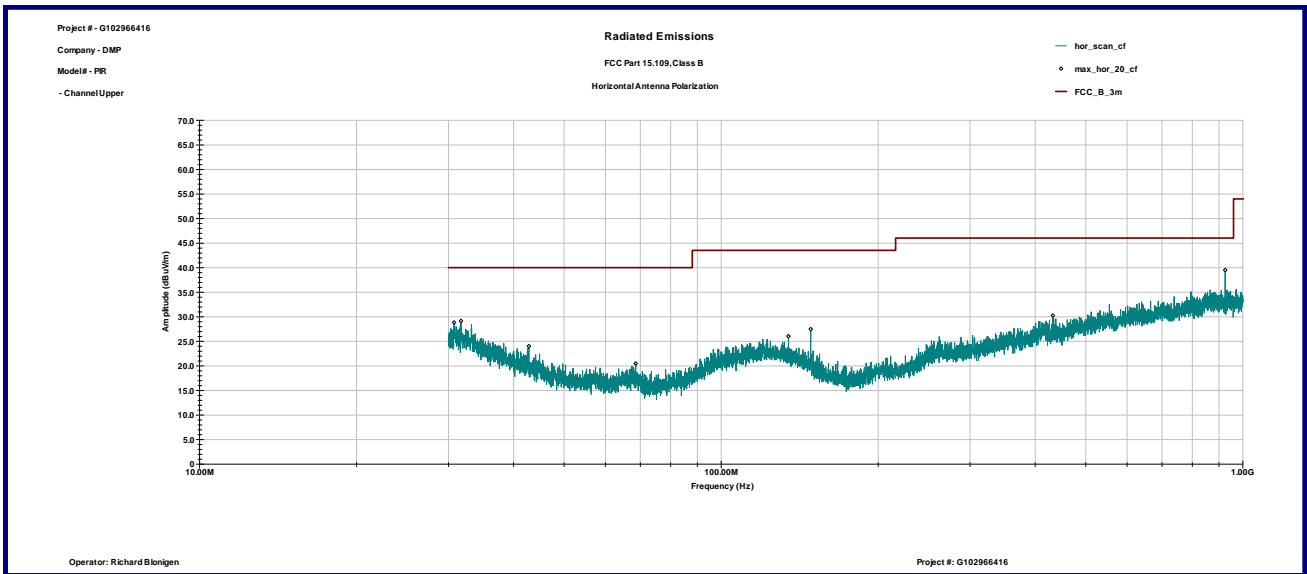
Graph 3.10.3



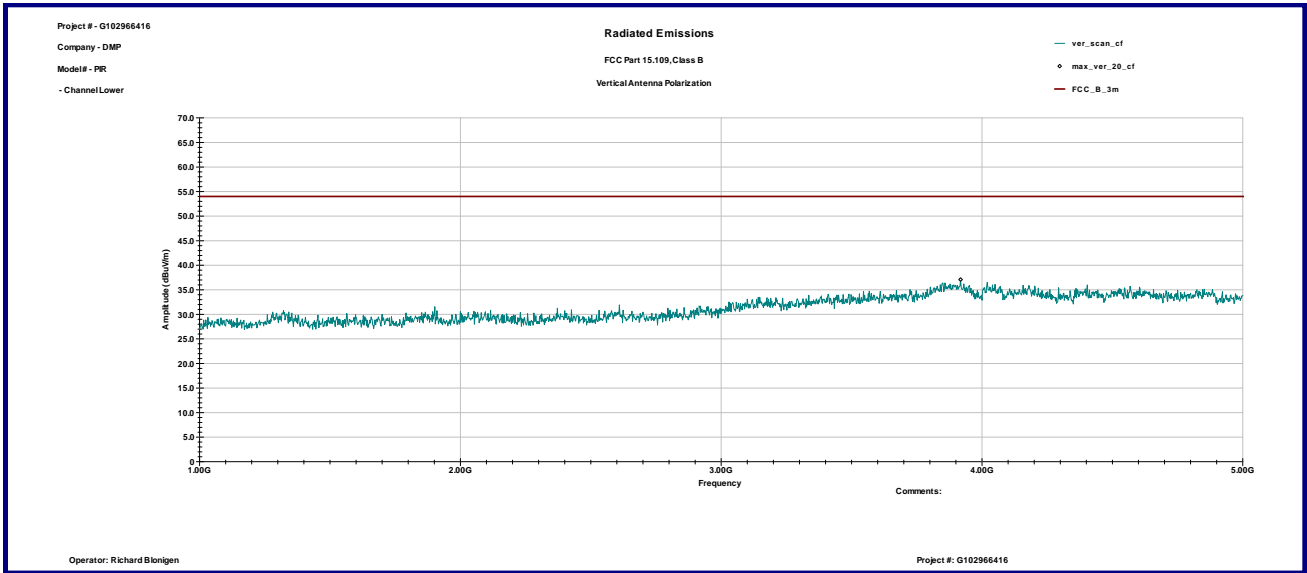
Graph 3.10.4



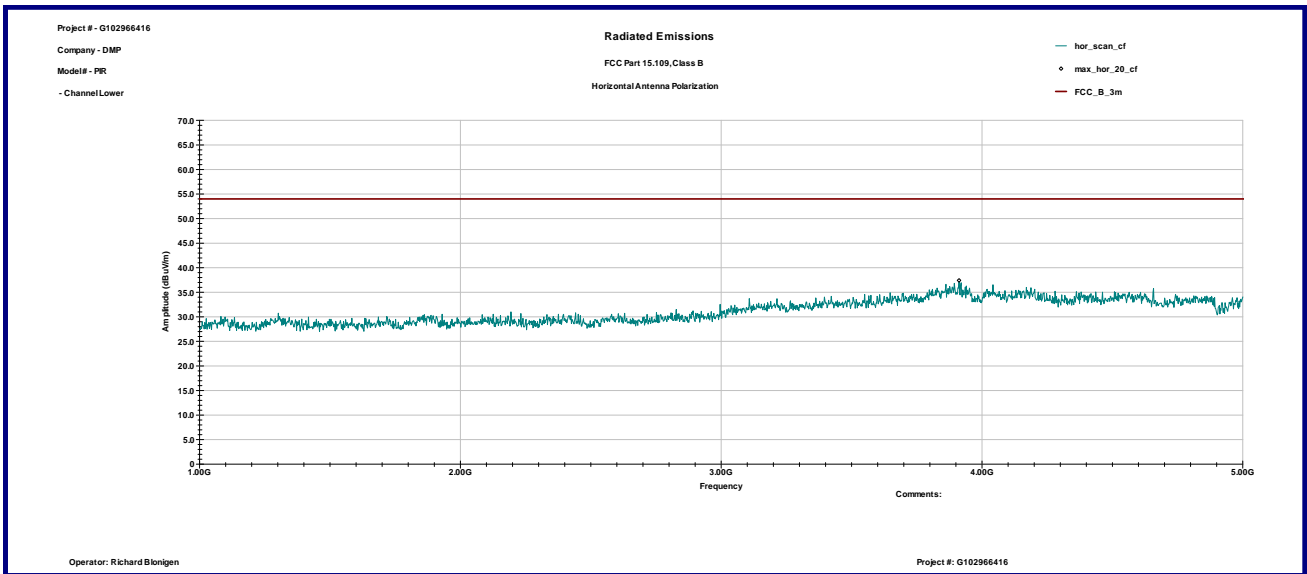
Graph 3.10.5



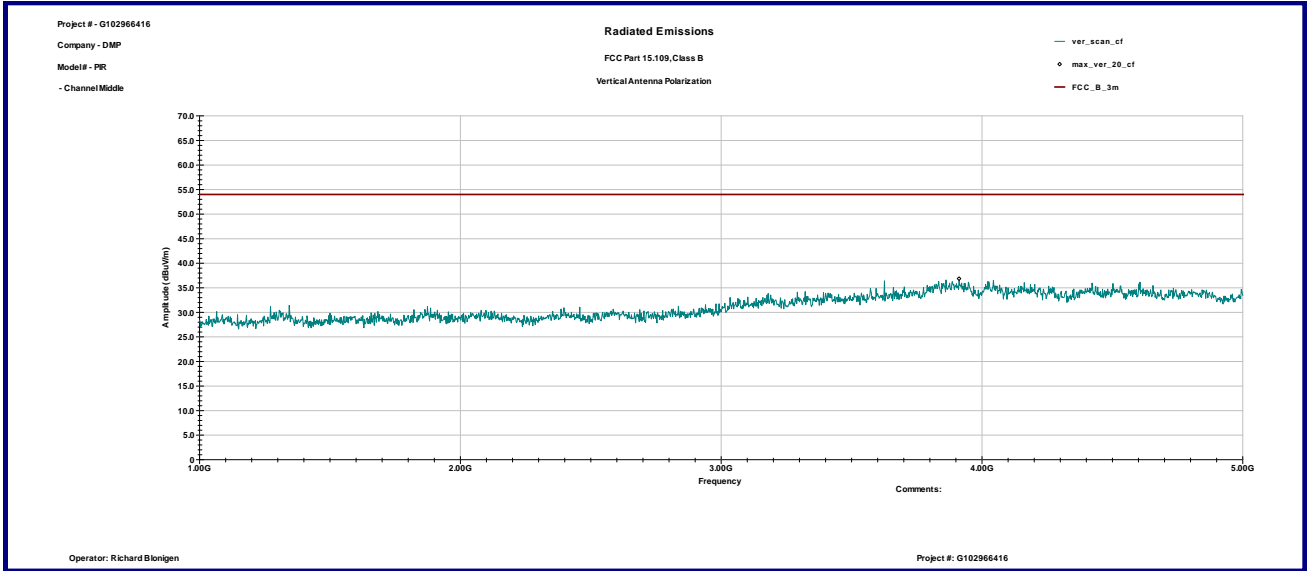
Graph 3.10.6



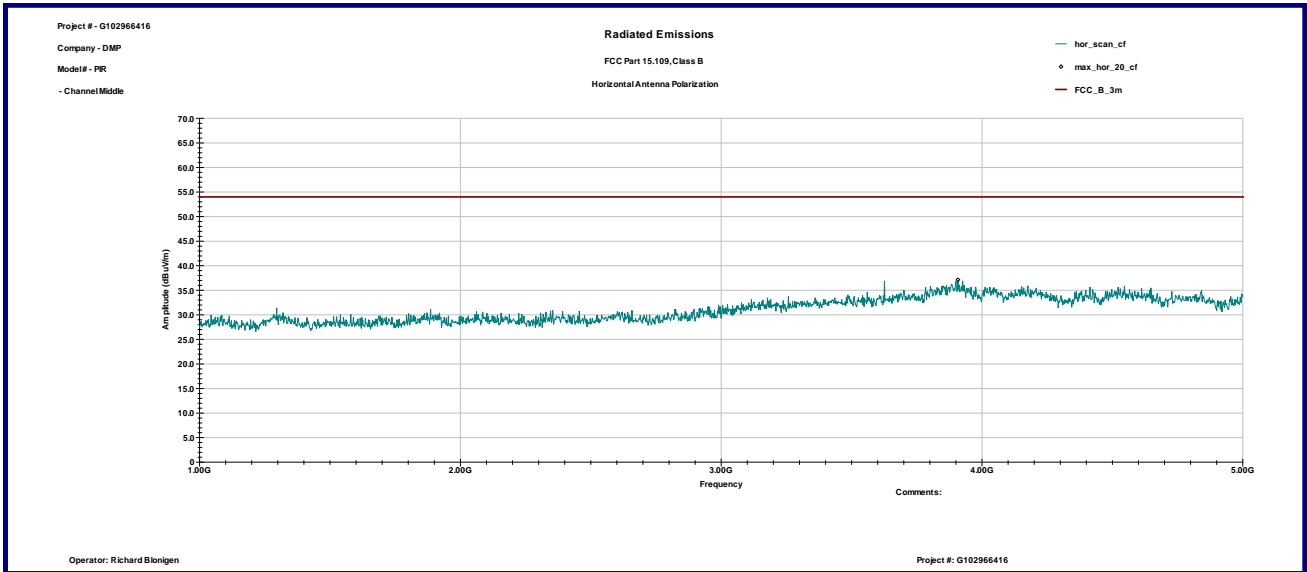
Graph 3.10.7



Graph 3.10.8

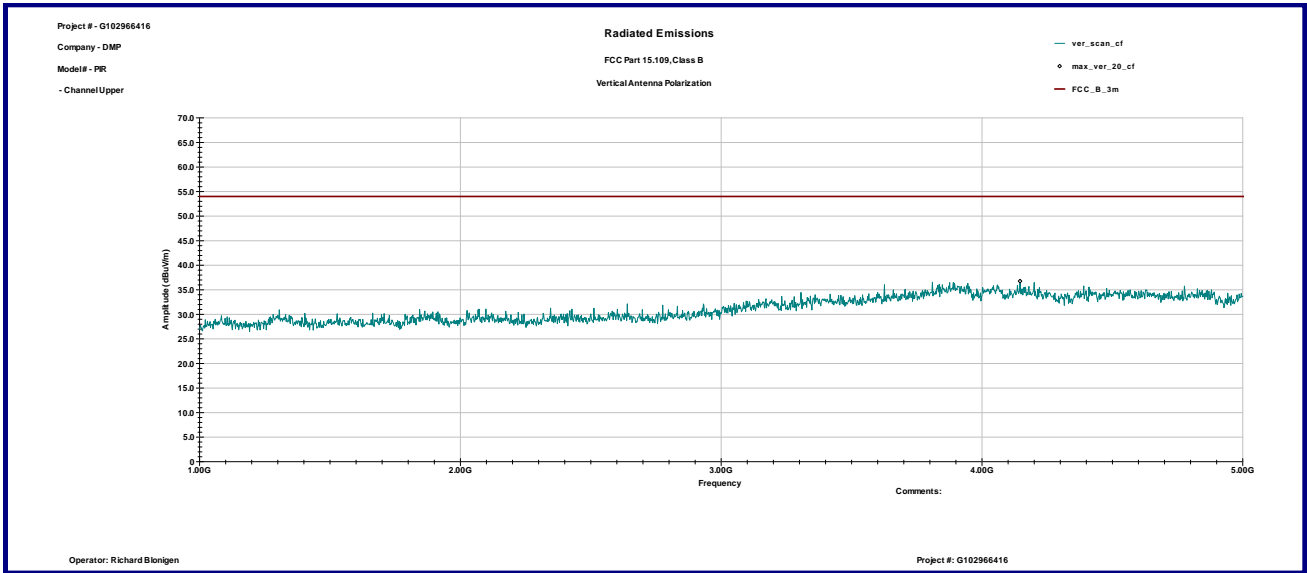


Graph 3.10.9

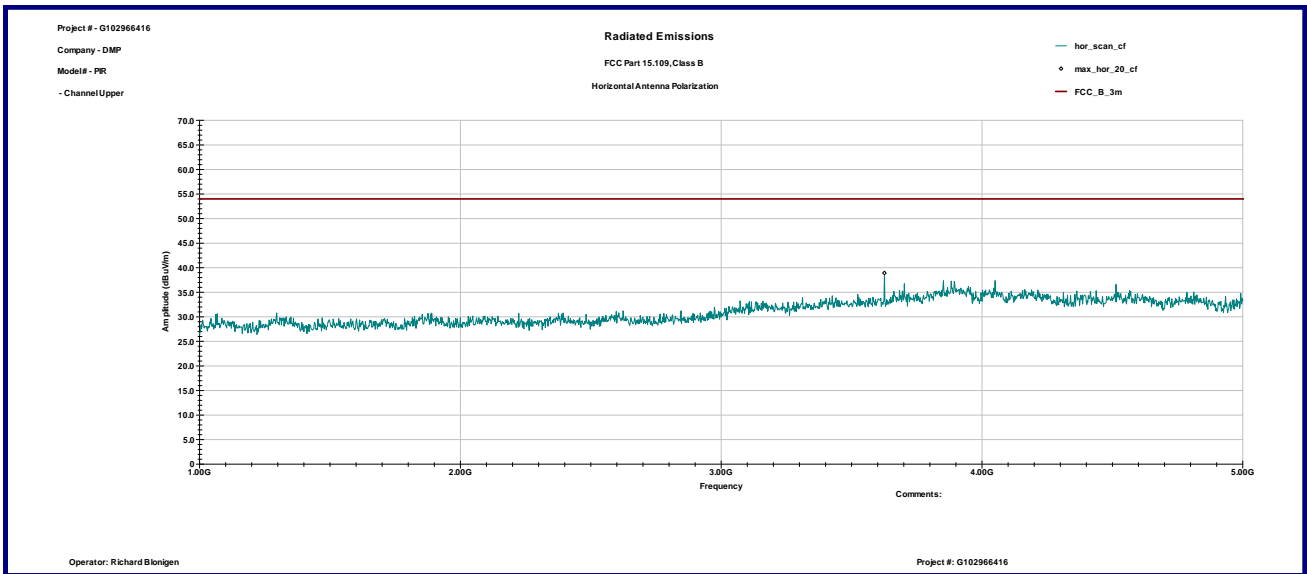


Graph 3.10.10





Graph 3.10.11



Graph 3.10.12



### 3.11 Digital device conducted emissions

**Test location:**  OATS  Anechoic Chamber  Other

**Test result:** N/A

**Frequency range:** 0.15MHz-30MHz

**Max. Emissions margin:** dB below the limits

Notes: Test was not performed as EUT is battery operated equipment.

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#### 4.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	LAST CAL DATE	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	12559	01/26/2017	01/26/2018	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESU	100398	25283	03/21/2017	03/21/2018	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Teseq	CBL6112D	32859	25289	10/03/2016	10/03/2017	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	9936	07/12/2016	07/12/2017	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	13475	12/01/2016	12/01/2017	<input checked="" type="checkbox"/>
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	VBU	<input checked="" type="checkbox"/>



## 5.0 Revision History

REVISION LEVEL	DATE	REPORT NUMBER	PREPARED	REVIEWED	NOTES
0	6-21-2017	102966461MIN-008	RB	NS	Original Issue
1	07-27-2017	102966461MIN-008	US <i>U. Specker</i>	NS <i>W. Heister</i>	Table in the Section 3.2 correcedt. Table 3.7.5 renamed to Table 3.7.3; notes to Tables 3.7.1, 3.7.2, and 3.7.3 updated