

**COMPLIANCE WORLDWIDE INC.
TEST REPORT 472-17**

**In Accordance with the Requirements of
Federal Communications Commission 47 CFR Part 15.250, Subpart C
Wideband Systems within the band 5925 to 7250 MHz**

Issued to

**IsoLynx, LLC.
179 Ward Hill Avenue
Haverhill, MA 01835
978-556-9780**

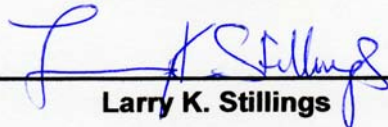
For the

**IsoLynx II UWB Tracking Tag
Model: IL0302**

FCC ID: 2AHCQ-IL0302

Report Issued on September 10, 2018

Tested By


Larry K. Stillings

Reviewed By


Brian F. Breault

This test report shall not be reproduced, except in full, without written permission from Compliance Worldwide, Inc.

Table of Contents

1. Scope.....	3
2. Product Details	3
2.1. Manufacturer	3
2.2. Model Number.....	3
2.3. Serial Number	3
2.4. Description	3
2.5. Power Source.....	3
2.6. Hardware Revision.....	3
2.7. Software Revision	3
2.8. Modulation Type.....	3
2.9. Operating Frequency	3
2.10. EMC Modifications	3
3. Product Configuration.....	3
3.1. Operational Characteristics & Software	3
3.2. Cables	3
3.3. EUT Hardware	4
3.4. Support Equipment	4
3.5. Test Setup.....	4
4. Measurements Parameters	5
4.1. Measurement Equipment Used to Perform Test	5
4.2. Measurement & Equipment Setup	6
4.3. Measurement Procedure	6
4.4. Measurement Uncertainty.....	6
5. Measurement Summary	7
6. Measurement Data	8
6.1. Antenna Requirement	8
6.2. Operational Requirements	8
6.3. UWB Bandwidth.....	9
6.4. Spurious Radiated Emissions	13
6.5. Radiated Emissions in GPS Bands.....	33
6.6. RMS Power in a 1 MHz Bandwidth.....	36
6.7. Peak Emissions in a 50 MHz Bandwidth	40
6.8. Conducted Emissions Test Setup.....	44
6.9. Conducted Emissions Test Data.....	45
7. Test Site Description	49
8. Test Images	50
8.1. Spurious and Harmonic Emissions - 10 kHz to 1 GHz Front.....	50
8.2. Spurious and Harmonic Emissions - 10 kHz to 30 MHz Rear	51
8.3. Spurious and Harmonic Emissions - 30 MHz to 1 GHz Rear	52
8.4. Spurious and Harmonic Emissions - 1 to 18 GHz Front.....	53
8.5. Spurious and Harmonic Emissions - 1 to 18 GHz Rear.....	54
8.6. Spurious and Harmonic Emissions - 18 to 40 GHz Side	55
8.7. Conducted Emissions Front.....	56
8.8. Conducted Emissions Rear	57
8.9. Frequency Stability Setup	58

1. Scope

This test report certifies that the IsoLynx II UWB Tracking Tag as tested, meets the FCC Part 15.250, Subpart C requirements. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

- 2.1. Manufacturer:** IsoLynx, LLC
2.2. Model Number: IL0302
2.3. Serial Number: 02:04:13A8
2.4. Description: The IsoLynx Tracking Tag (IL0302) is a small, battery-powered RFID device that produces ultrawideband pulses that are used to generate real-time location and movement data.
2.5. Power Source: DC 3.7 Volts
2.6. Hardware Revision: 2.1.1
2.7. Software Revision: N/A
2.8. Modulation Type: Pulse Modulation, Frequency Hopping
2.9. Operating Frequency: 6489.6 GHz Center Frequency Nominal (Channel 5 – 500 MHz BW)
2.10. EMC Modifications: None

3. Product Configuration

3.1 Operational Characteristics & Software

Hardware Setup:

Connect a USB dongle to the laptop. Using a special software application, configure packet size, and PRFs for the EUT. The IL0302 was tested in a total of four modes consisting of long and short packet types, and 16M and 64M PRFs at a 6.8 Mbps data rate

During the measurement testing, the product was mounted on a polystyrene form to facilitate rotating the product through three orthogonal axes as required by ANSI C63.10-2013, section 5.10.1, for a hand held or body worn device. The three axes were defined as follows:

- X-Axis Arrow on the unit is facing the antenna at 0°
Y-Axis Arrow on the unit is facing the antenna at 90°
Z-Axis Arrow on the unit is facing the antenna at 0°

3.2. Cables

Cable Type	Length	Shield	From	To
None				

3. Product Configuration (cont.)

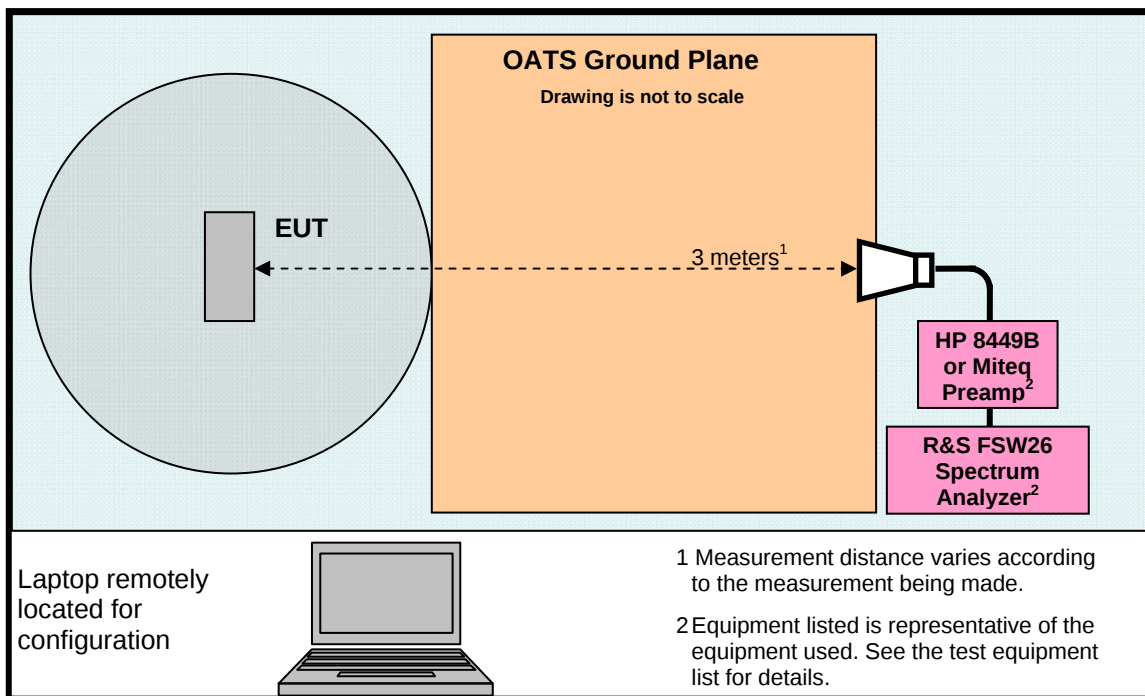
3.3. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Input Volts	Freq (Hz)	Description/Function
IsoLynx	IL0302	02:04:13A8	3.7	DC	UWB Tag

3.4. Support Equipment

Manufacturer	Model/Part #	Serial Number	Description
Lenovo	ThinkPad T440p	PB-031DX9	Laptop for configuration
Ciholas	DWUWB-SMA	01:00:06C8	Wireless dongle for configuration

3.5. Test Setup Diagram



4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Receiver 9 kHz to 7 GHz	Rohde & Schwarz	ESR7	101156	7/23/2018	3 Years
Spectrum Analyzer 9 kHz to 40 GHz	Rohde & Schwarz	FSV40	100899	7/23/2018	3 Years
Spectrum Analyzer 10 Hz to 40 GHz	Rohde & Schwarz	FSVR40	100909	5/3/2019	2 Years
Spectrum Analyzer 3 Hz to 26.5 GHz	Rohde & Schwarz	FSW26	102044	12/7/2018	2 Years
Biconilog Antenna 30 MHz to 2 GHz	Sunol Sciences	JB1	A050913	6/3/2019	3 Years
Loop Antenna 9 kHz to 30 MHz	EMCO	6512	9309-1139	10/26/2018	2 Years
Preamplifier 100 MHz to 7 GHz	Miteq	AFS3-00100200-10-15P-4	988773	6/2/2018	2 Years
Preamplifier 100 MHz to 18 GHz	Miteq	AMF-7D-00101800-30-10P	1953081	6/1/2018	1 Year
Preamplifier 2 to 12 GHz	JCA	JCA48-4111B1	7087S	6/2/2018	1 Year
Preamplifier 1 to 26.5 GHz	Hewlett Packard	8449B	3008A01323	7/22/2018	3 Years
Preamplifier 18 to 40 GHz	Avantek	AWT-40039	FM22038832	6/2/2018	1 Year
Horn Antenna 1 to 18 GHz	ETS-Lindgren	3117	00143292	2/22/2019	3 Years
Horn Antenna 18-40 GHz	Com Power	AH-840	3075	10/11/2018	2 Years
High Pass Filter 8 to 18 GHz	Micro-Tronics	HPM50107	G036	5/15/2018	1 Year
2.4 GHz Band Pass Filter	Micro-Tronics	BRM50702	150	6/12/2018	1 Year
Barometer	Control Company	4195	Cal ID# 236	10/8/2018	2 Years

¹ ESR7 Firmware revision: V3.36, SP2 Date installed: 11/02/2017 Previous V3.36, installed 05/16/2017.
² FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016 Previous V2.30 SP1, installed 10/22/2014.
³ FSVR40 Firmware revision: V2.23 SP1, Date installed: 08/19/2016 Previous V2.23, installed 10/20/2014.
⁴ FSW26 Firmware revision: V2.80, Date installed: 10/28/2017 Previous V2.61, installed 04/04/2017.

4. Measurements Parameters (continued)**4.2. Measurement & Equipment Setup**

Test Dates:	12/13/2017, 12/27/2017, 4/13/2018
Test Engineers:	Brian Breault, Larry Stillings
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 -75%RH):	35
Frequency Range:	10 kHz to 40 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	200 Hz – 10 kHz to 150 kHz
	9 kHz – 10 to 30 MHz
	120 kHz - 30 MHz to 1 GHz
EMI Receiver Avg Bandwidth:	1 MHz - Above 1 GHz
	300 Hz – 10 kHz to 150 kHz
	30 kHz – 10 to 30 MHz
Detector Function:	300 kHz - 30 MHz to 1 GHz
	3 MHz - Above 1 GHz
	Peak, Quasi-Peak & Average

4.3. Measurement Procedure

Test measurements were made in accordance FCC Parts 15.209, 15.250 Subpart C.

The test methods used to generate the data in this test report is in accordance with ANSI C63.10:2013, American National Standard for Testing Unlicensed Wireless Devices.

4.4. Measurement Uncertainty

The following uncertainties are expressed for an expansion/coverage factor of K=2.

RF Frequency (out of band)	$\pm 1 \times 10^{-8}$
Radiated Emission of Transmitter to 100 GHz	± 4.55 dB
Radiated Emission of Receiver	± 4.55 dB
Temperature	$\pm 0.91^{\circ}$ C
Humidity	$\pm 5\%$

5. Measurements Summary

Test Requirement	FCC Rule Requirement	Test Report Section	Result	Comment
Antenna Requirement	15.203	6.1	Compliant	The antenna is a surface mount PCB type antenna.
Operational Requirements	15.250 (a)	6.2	Compliant	
Wideband Bandwidth	15.250 (b)	6.3	Compliant	
Spurious Radiated Emissions	15.250 (d) (1) 15.209	6.4	Compliant	
Radiated Emissions in GPS Bands	15.250 (d) (2)	6.5	Compliant	
RMS Power in a 1 MHz Bandwidth	15.250 (d) (1)	6.6	Compliant	
Peak Emissions in a 50 MHz Bandwidth	15.250 (d) (3)	6.7	Compliant	
Conducted Emissions	15.207	6.8 6.9	Compliant	
Radio Frequency Exposure	FCC OET Bulletin 65 1.1307 (b) (1)	6.10	Compliant	

6. Measurement Data

6.1. Antenna Requirement (15.203)

Requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply

Result: The antenna utilized by the device under test is a surface mount PCB Type, non user replaceable unit.

6.2. Operational Requirements of the Device under Test (15.250 (a))

Requirement: The -10 dB bandwidth of a device operating under the provisions of this section must be contained within the 5925 to 7250 MHz band under all conditions of operation including the effects from stepped frequency, frequency hopping or other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

Result: Compliant

6.2.1 Frequency Stability over Temperature

Marker	Temp °C	Measured Frequency	-10 dB Band Edges		15.250 Frequency Band		Result
		(MHz)	Lower	Upper	F _{MIN} (MHz)	F _{MAX} (MHz)	
-	OATS	6439.1	6194.3	6754.7	5925	7250	Compliant
-	Ambient	6500.3	6176.2	6844.0	5925	7250	Compliant
1	-20	6500.8	6166.1	6888.7	5925	7250	Compliant
2	-10	6500.8	6166.3	6887.1	5925	7250	Compliant
3	0	6500.8	6166.5	6857.1	5925	7250	Compliant
4	+10	6500.8	6166.9	6843.1	5925	7250	Compliant
5	+20	6501.6	6166.9	6826.7	5925	7250	Compliant
6	+30	6499.8	6167.1	6826.1	5925	7250	Compliant
7	+40	6498.0	6211.9	6818.0	5925	7250	Compliant
8	+50	6500.0	6198.5	6804.7	5925	7250	Compliant

Test Number: 472-17

Issue Date: 9/10/2018

6. Measurement Data (continued)

6.3. Wideband Bandwidth (15.250 (b))

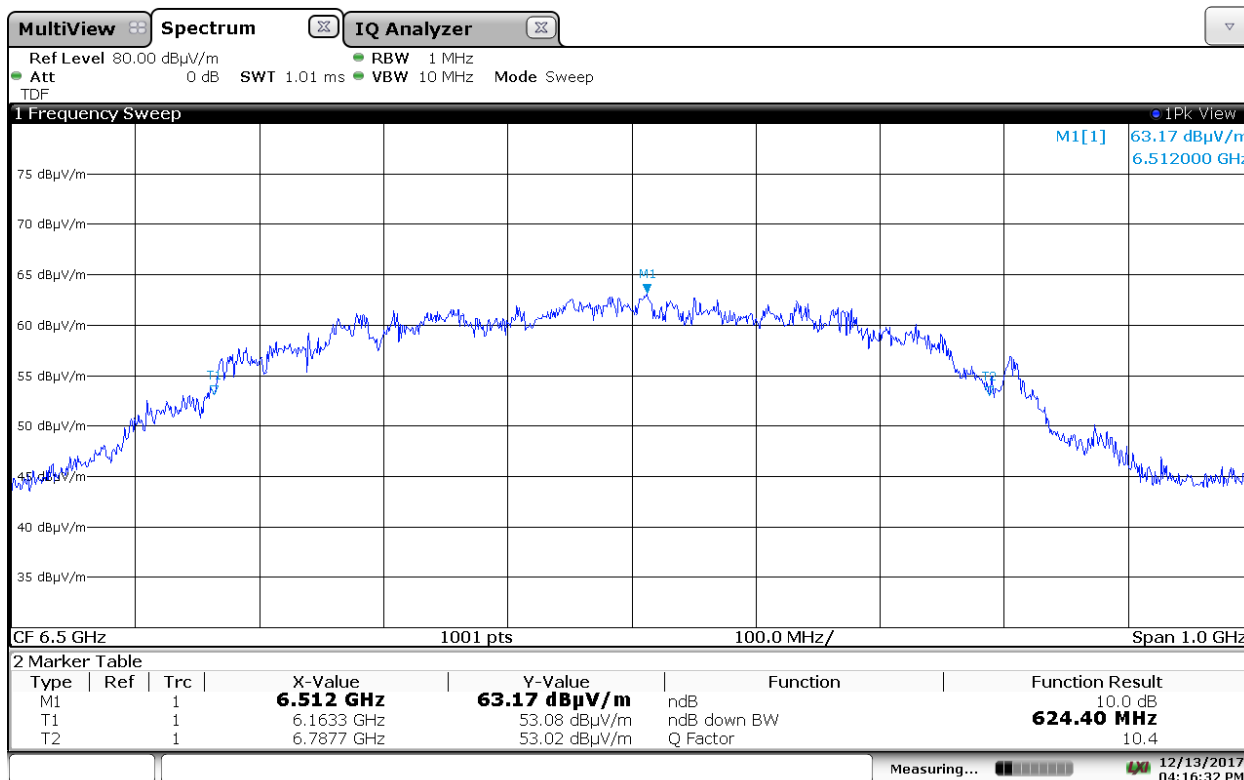
Requirement: The -10 dB bandwidth of the fundamental emission shall be at least 50 MHz.

Result: Compliant

6.3.1. Measurement Data – Values in GHz

f_M	The highest emission peak	6.512
f_L	10 dB below the highest peak	6.1633
f_H	10 dB above the highest peak	6.7877
Bandwidth	Calculated: ($f_H - f_L$)	0.6244

6.3.2. Measurement Plot of 10 dB frequencies (Channel 5, PRF 16M, long packets)



04:16:33 PM 12/13/2017

Test Number: 472-17

Issue Date: 9/10/2018

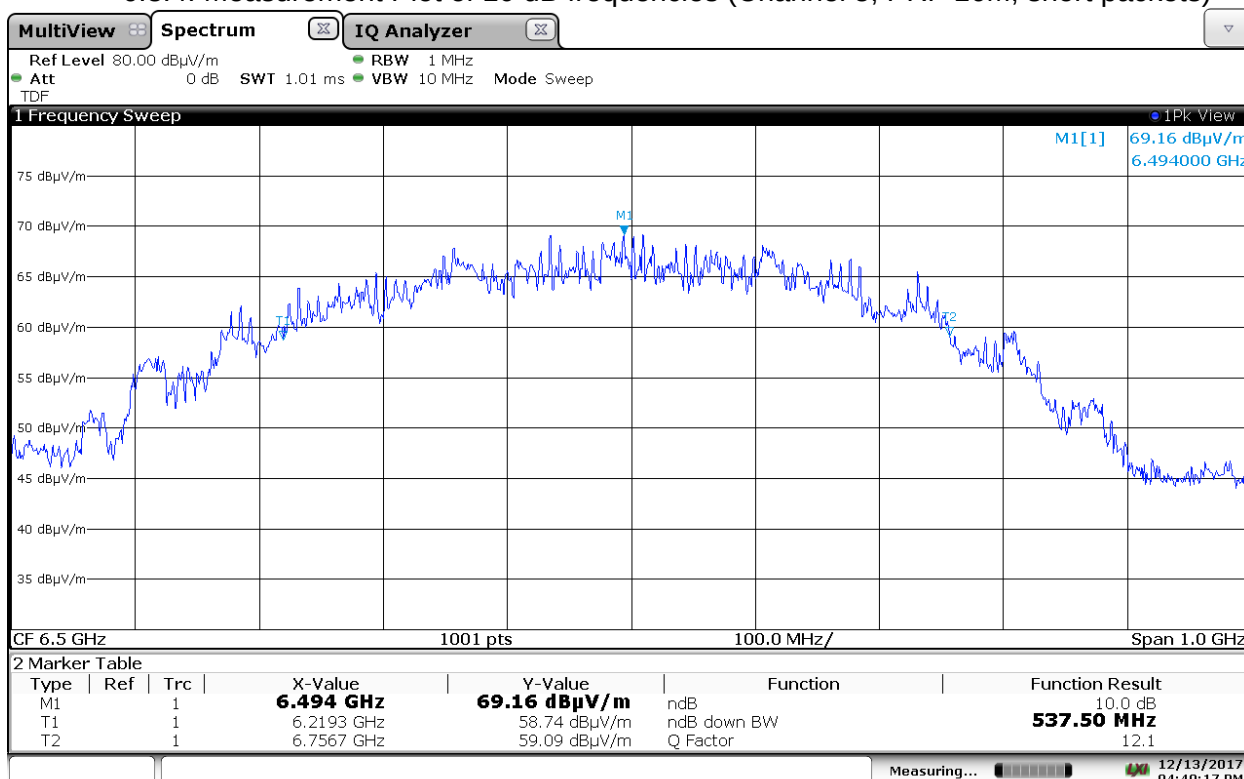
6. Measurement Data (continued)

6.3. Wideband Bandwidth (15.250 (b)) (continued)

6.3.3. Measurement Data – Values in GHz

f_M	The highest emission peak	6.494
f_L	10 dB below the highest peak	6.2193
f_H	10 dB above the highest peak	6.7567
Bandwidth	Calculated: ($f_H - f_L$)	0.5375

6.3.4. Measurement Plot of 10 dB frequencies (Channel 5, PRF 16M, short packets)



04:40:17 PM 12/13/2017

Test Number: 472-17

Issue Date: 9/10/2018

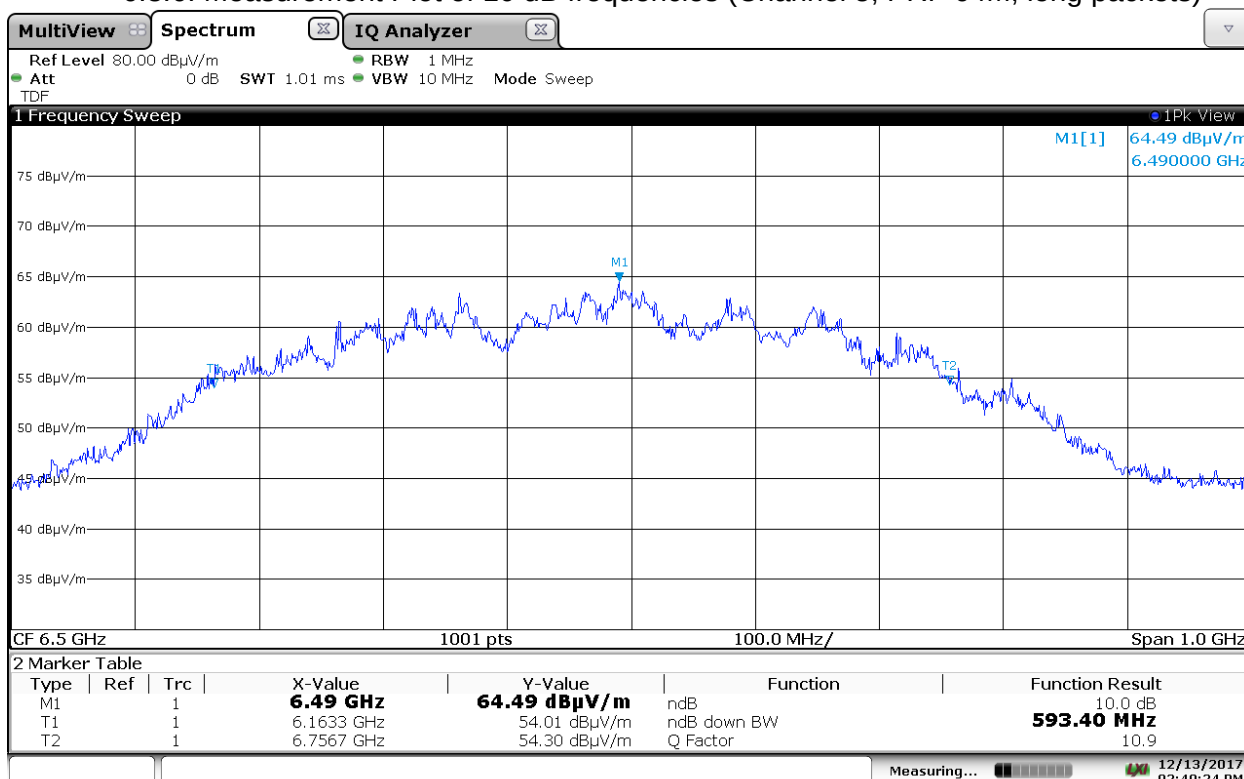
6. Measurement Data (continued)

6.3. Wideband Bandwidth (15.250 (b)) (continued)

6.3.5. Measurement Data – Values in GHz

f_M	The highest emission peak	6.490
f_L	10 dB below the highest peak	6.1633
f_H	10 dB above the highest peak	6.7567
Bandwidth	Calculated: ($f_H - f_L$)	0.5934

6.3.6. Measurement Plot of 10 dB frequencies (Channel 5, PRF 64M, long packets)



02:40:25 PM 12/13/2017

Test Number: 472-17

Issue Date: 9/10/2018

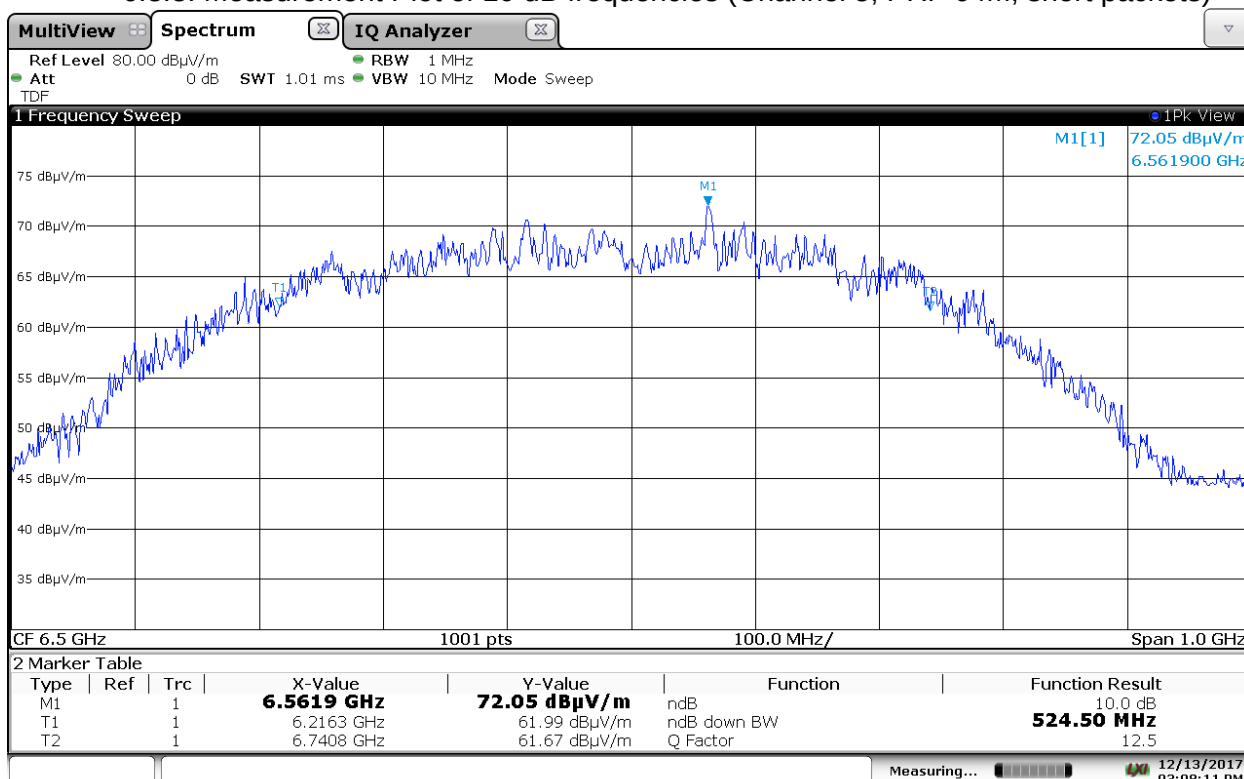
6. Measurement Data (continued)

6.3. Wideband Bandwidth (15.250 (b)) (continued)

6.3.7. Measurement Data – Values in GHz

f_M	The highest emission peak	6.5619
f_L	10 dB below the highest peak	6.2163
f_H	10 dB above the highest peak	6.7408
Bandwidth	Calculated: ($f_H - f_L$)	0.5245

6.3.8. Measurement Plot of 10 dB frequencies (Channel 5, PRF 64M, short packets)



03:08:12 PM 12/13/2017

6. Measurement Data (continued)**6.4. Spurious Radiated Emissions (15.250 (d) (1), 15.209)**

Requirement: The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall not exceed the emission levels in Section 15.209. The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
960 - 1610	-75.3	19.9
1610 - 1990	-63.3	31.9
1990 - 3100	-61.3	33.9
3100 – 5925	-51.3	43.9
5925 – 7250	-41.3	53.9
7250 – 10,600	-51.3	43.9
Above 10,600	-61.3	33.9

6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1), 15.209 continued)

Radiated Emissions Field Strength Limits at 3 Meters (Section 15.250 (d),15.209)

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)
0.009 to 0.490	2,400/F	128.5 to 93.8
0.490 to 1.705	24,000/F	73.8 to 63
1.705 - 30	30	69.5
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
960 - 40,000	500	54

Test Notes: Refer to Section 4.1 for the test equipment used.

Frequency Range:	10 kHz to 40 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	200 Hz – 10 kHz to 150 kHz 9 kHz – 150 kHz to 30 MHz 120 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Avg Bandwidth (minimum):	300 Hz – 10 kHz to 150 kHz 30 kHz – 150 kHz to 30 MHz 300 kHz - 30 MHz to 1 GHz 3 MHz - Above 1 GHz
Detector Function:	Peak, Quasi-Peak & Average

Test Number: 472-17

Issue Date: 9/10/2018

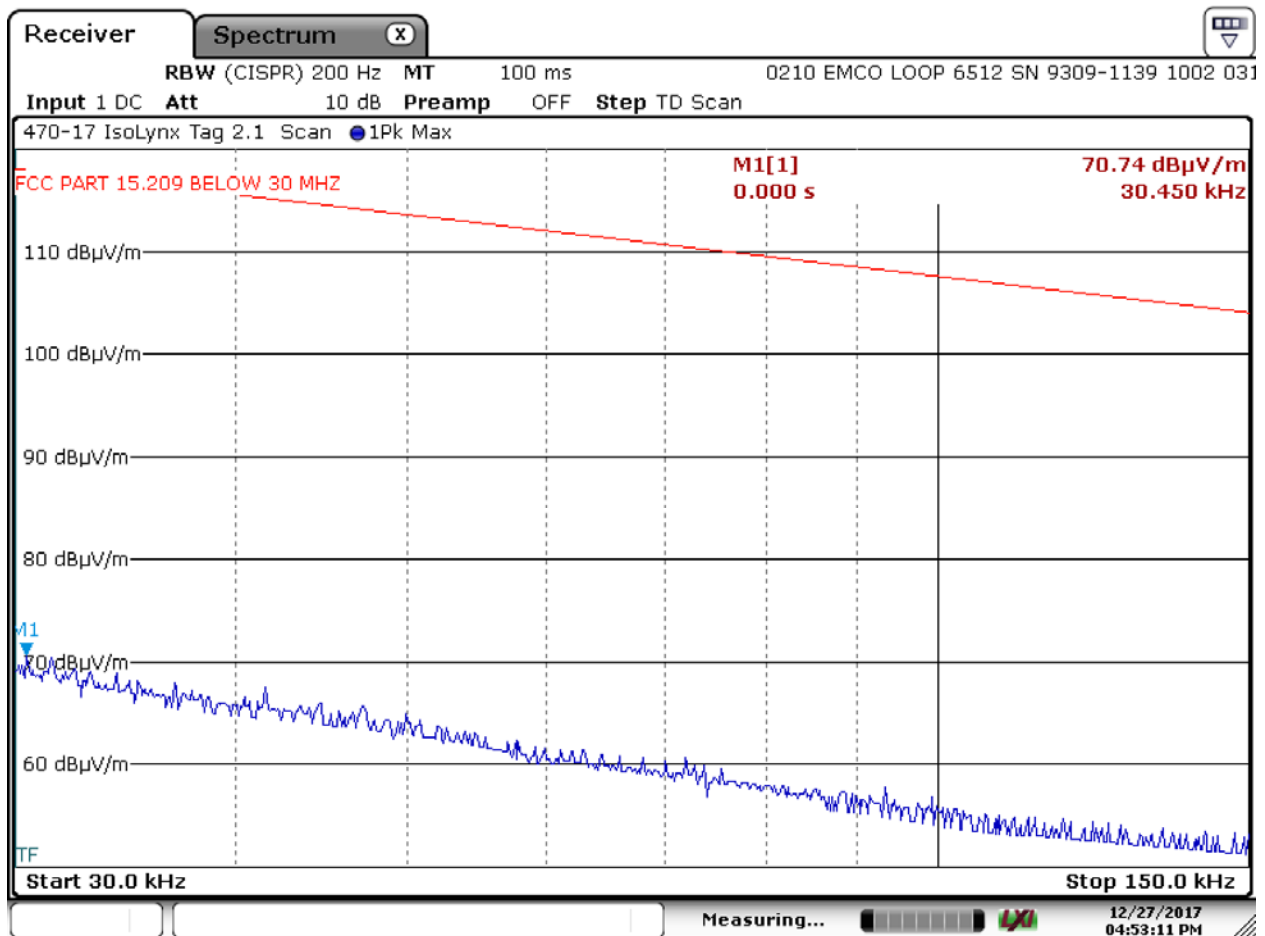
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.1 Parallel Measurement Antenna – 30 to 150 kHz



Date: 27.DEC.2017 16:53:09

Test Number: 472-17

Issue Date: 9/10/2018

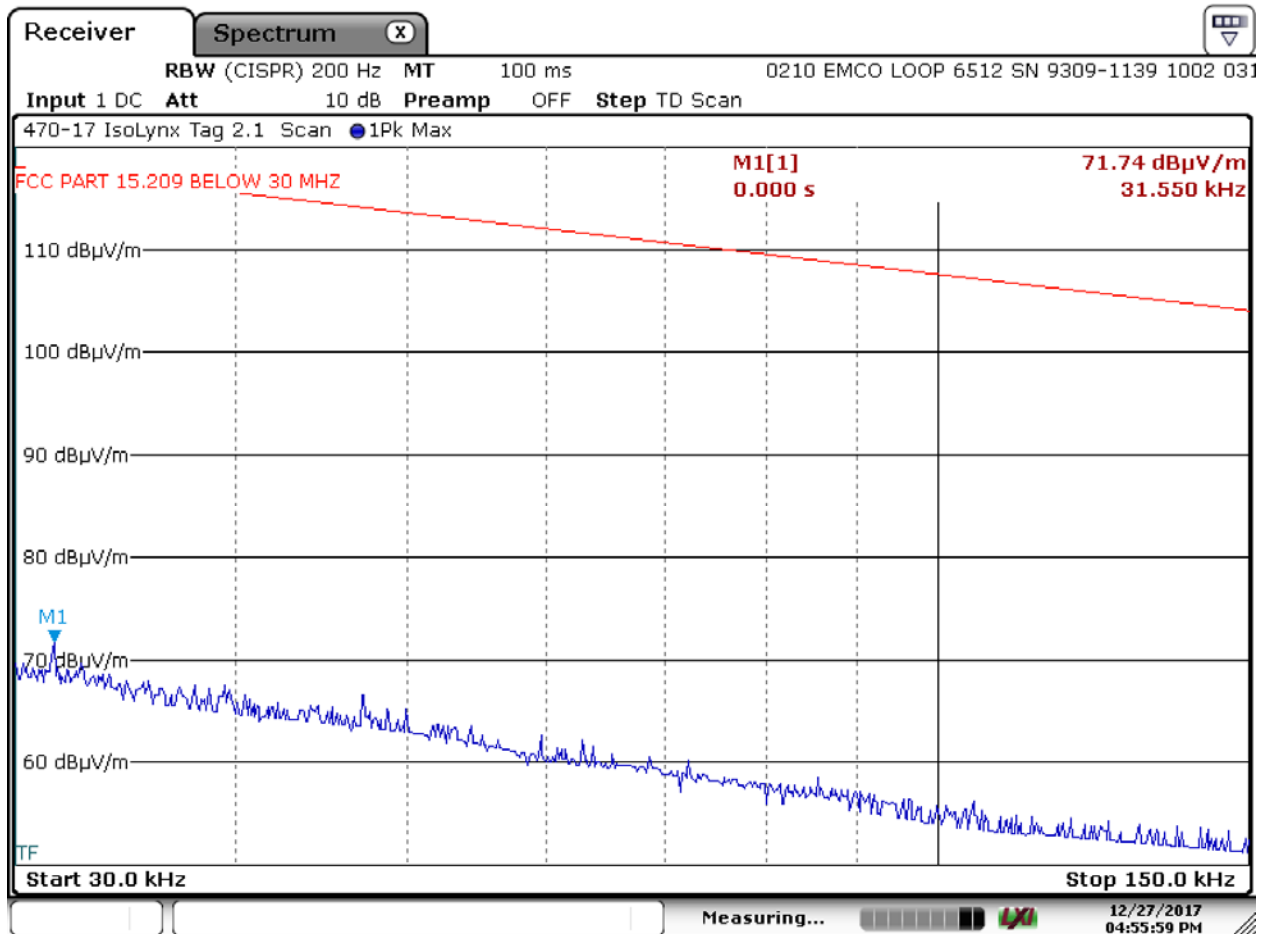
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.2 Perpendicular Measurement Antenna – 30 to 150 kHz



Date: 27.DEC.2017 16:55:56

Test Number: 472-17

Issue Date: 9/10/2018

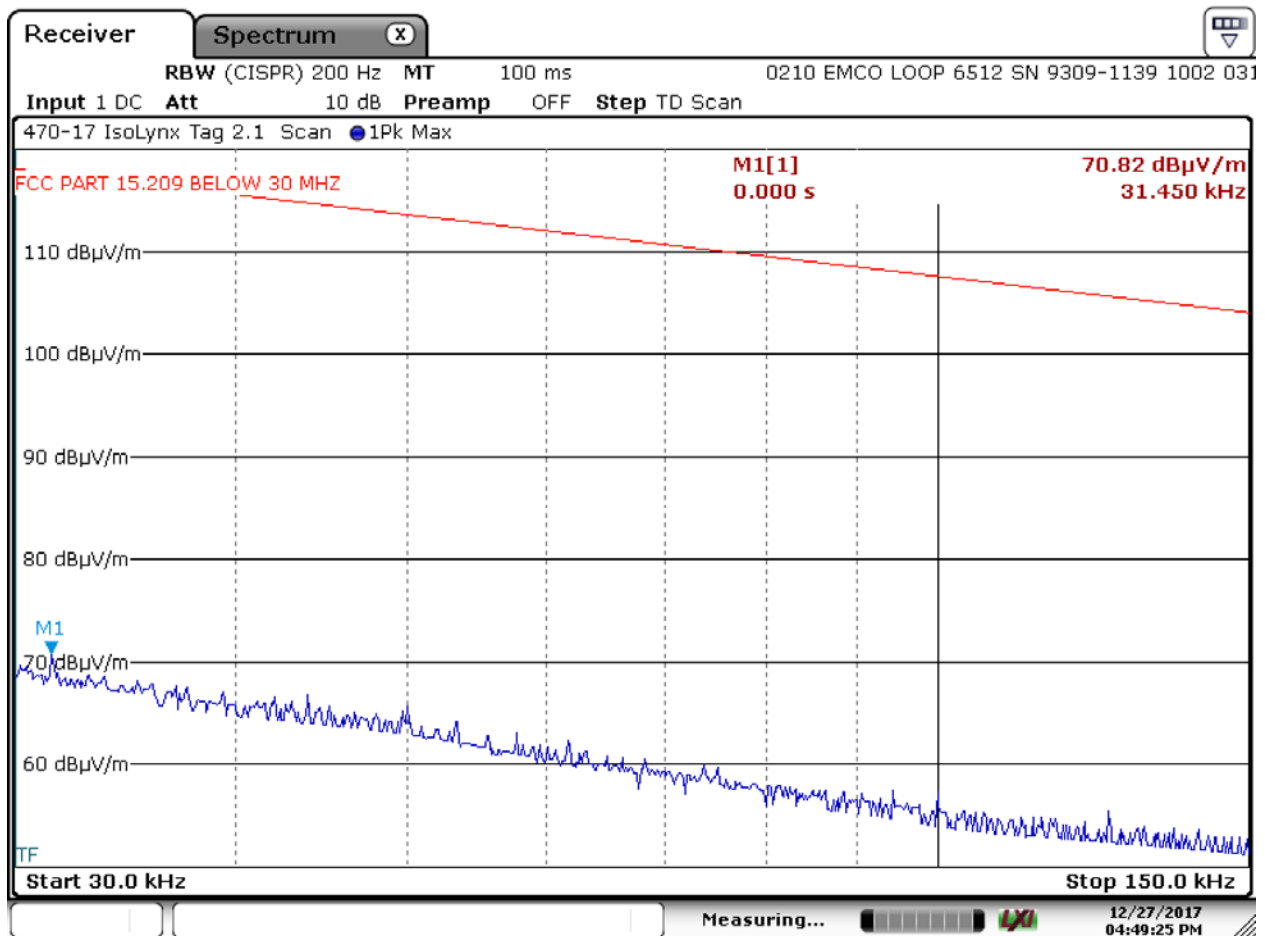
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.3 Ground Parallel Measurement Antenna – 30 to 150 kHz



Date: 27.DEC.2017 16:49:23

Test Number: 472-17

Issue Date: 9/10/2018

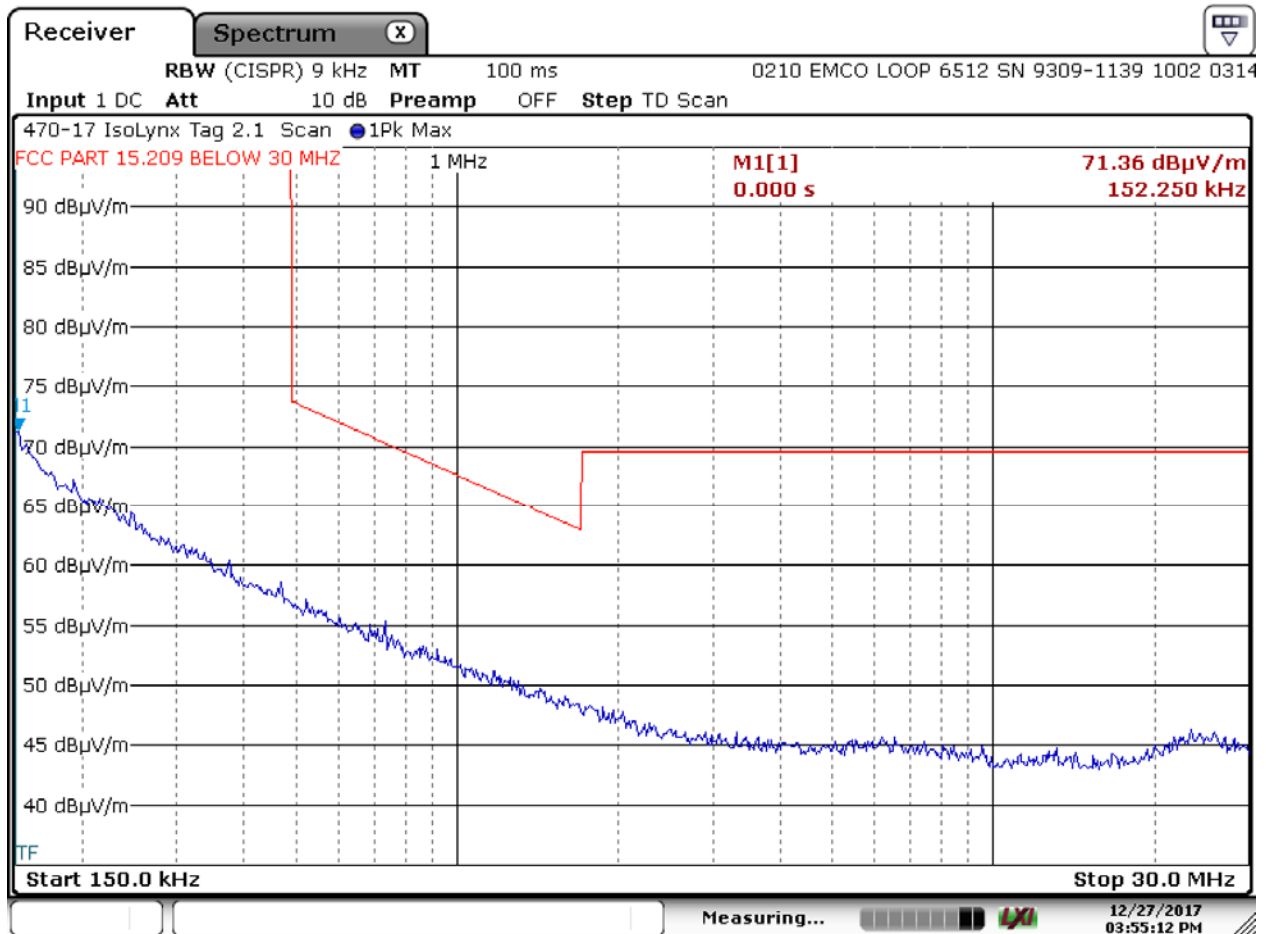
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.4 Parallel Measurement Antenna – 150 kHz to 30 MHz



Date: 27.DEC.2017 15:55:12

Test Number: 472-17

Issue Date: 9/10/2018

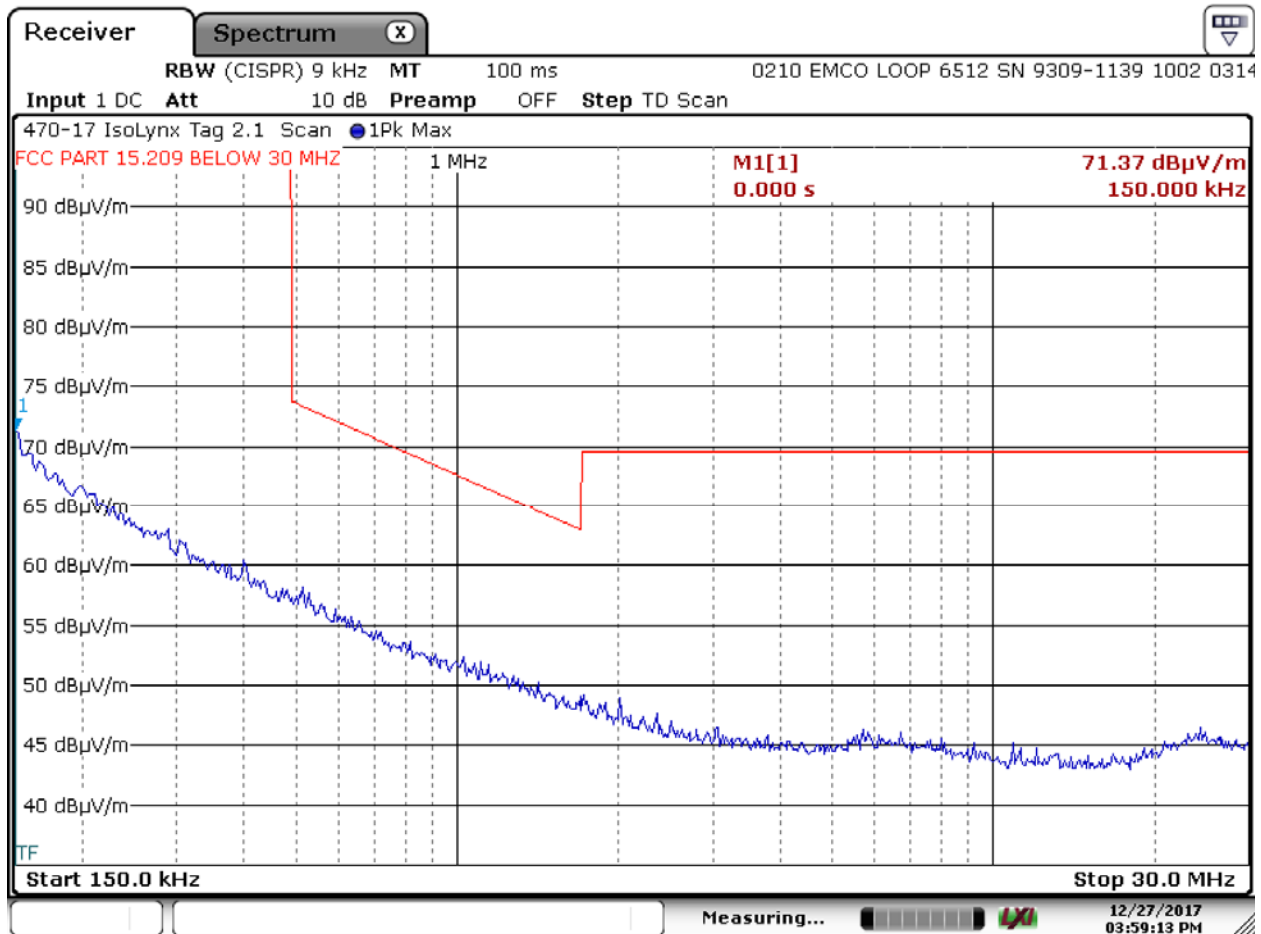
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.5 Perpendicular Measurement Antenna – 150 kHz to 30 MHz



Date: 27.DEC.2017 15:59:10

Test Number: 472-17

Issue Date: 9/10/2018

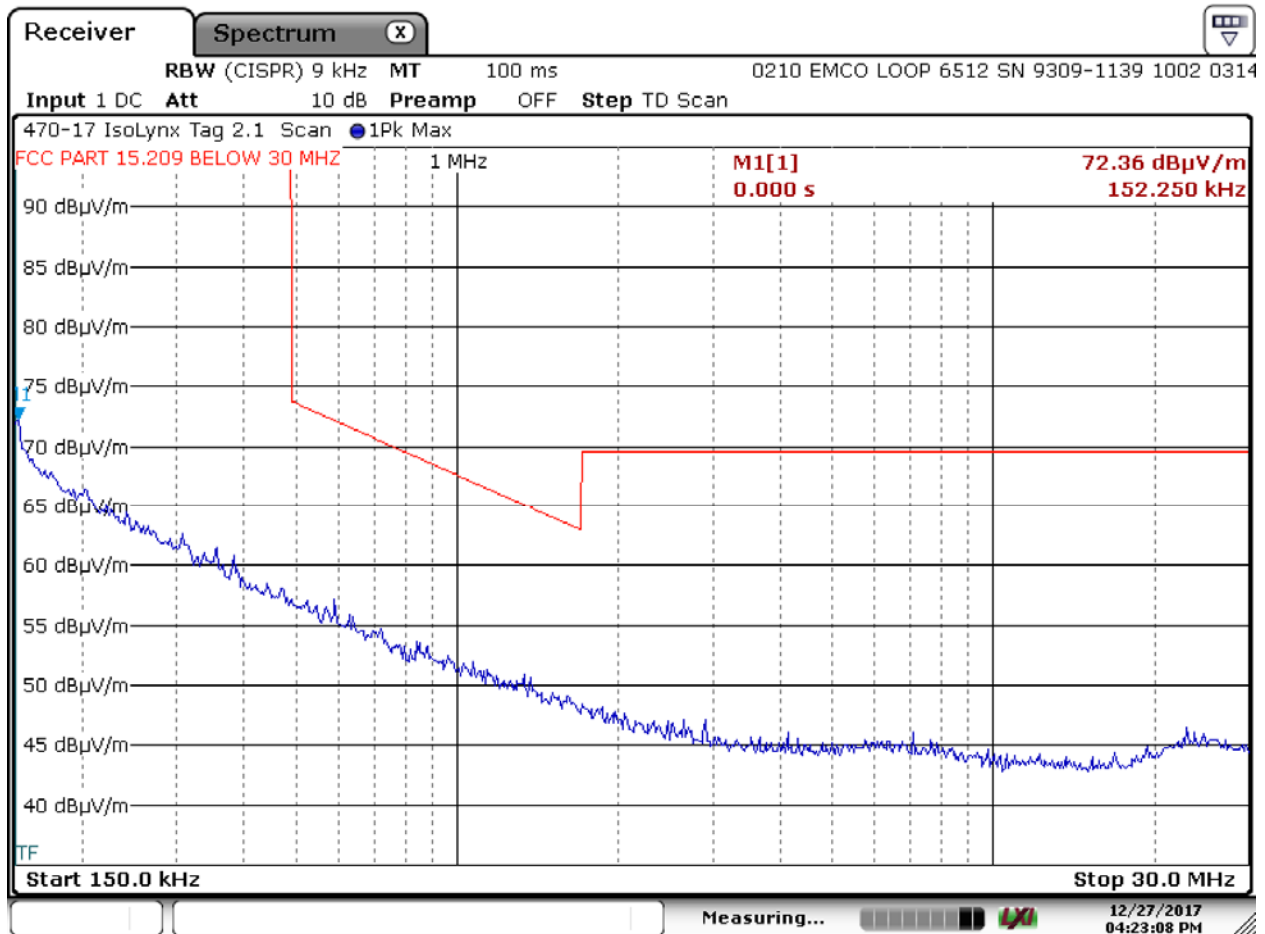
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.6 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz



Date: 27.DEC.2017 16:23:05

Test Number: 472-17

Issue Date: 9/10/2018

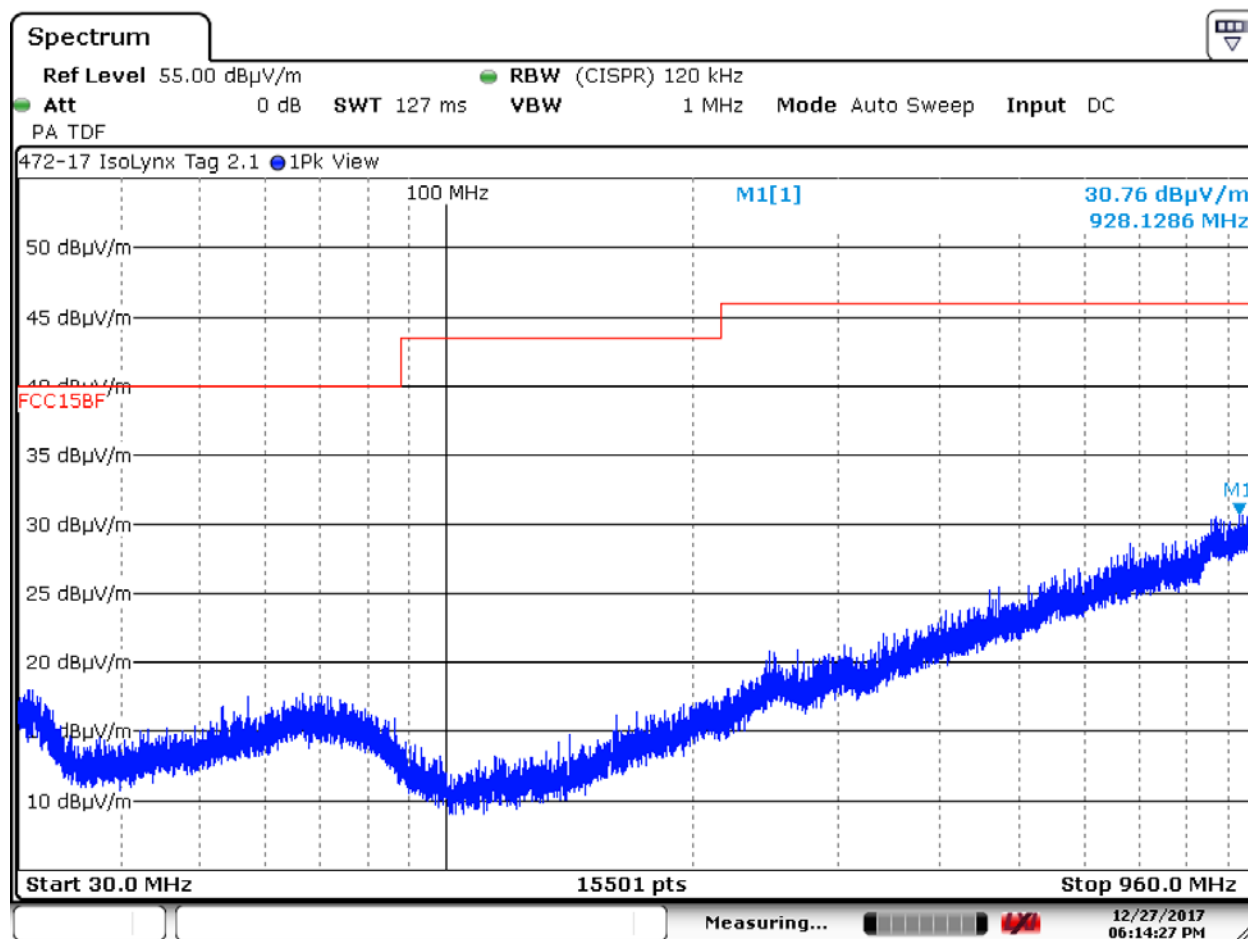
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no emissions within 6 dB of the limits below 960 MHz on our 3 Meter OATS.

6.4.1.7 Horizontal Polarity – 30 to 960 MHz



Date: 27.DEC.2017 18:14:24

Test Number: 472-17

Issue Date: 9/10/2018

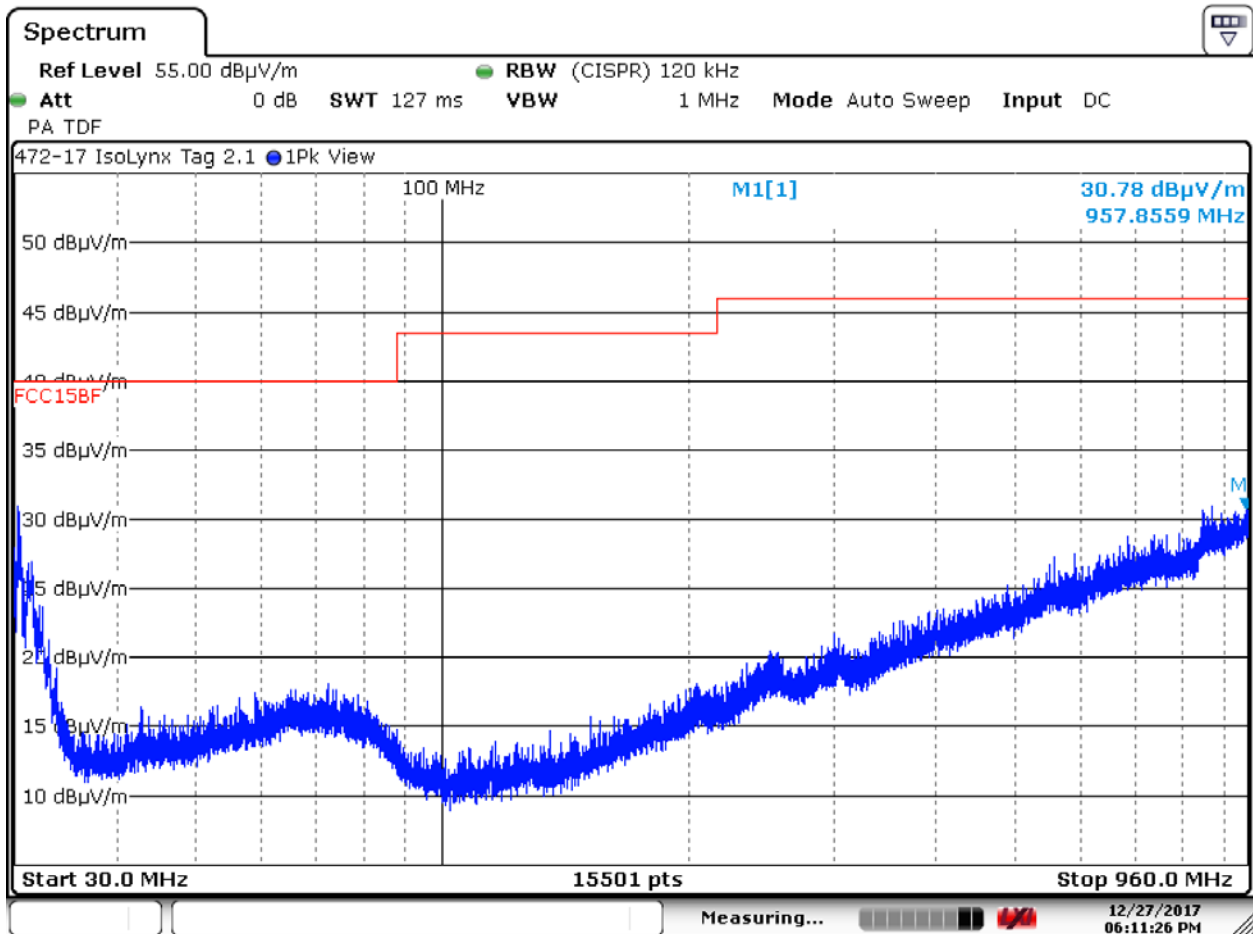
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (5), 15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.8 Vertical Polarity – 30 to 960 MHz



Date: 27.DEC.2017 18:11:23

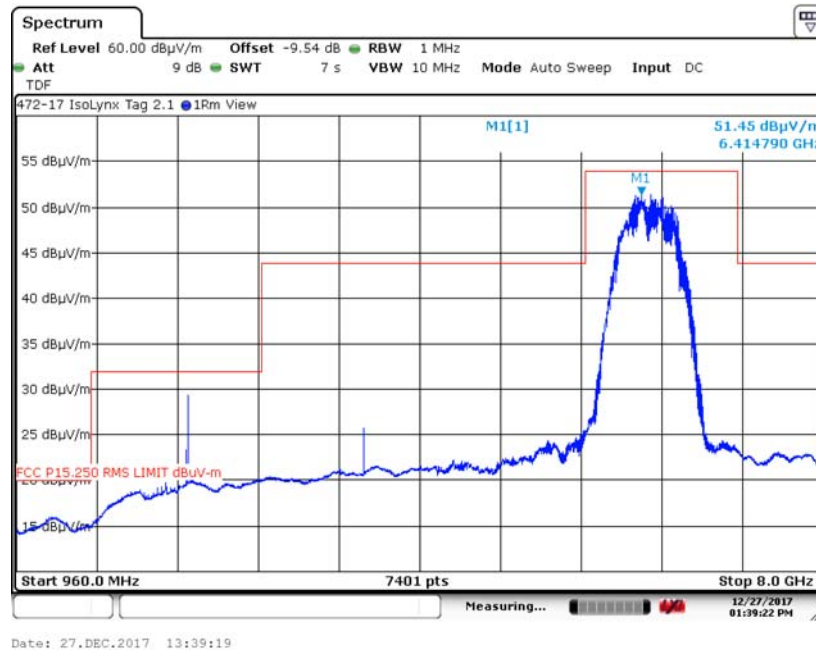
Test Number: 472-17

Issue Date: 9/10/2018

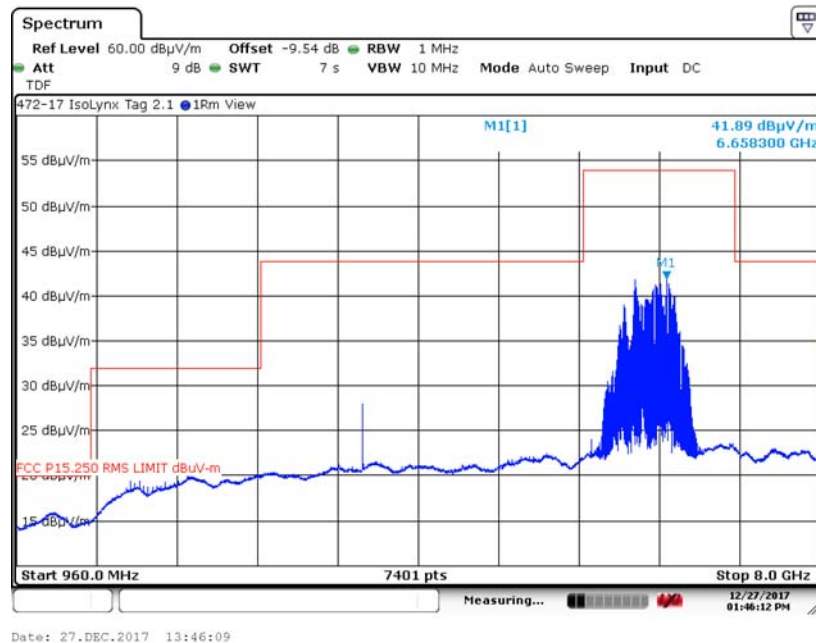
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1))

6.4.2. 960 MHz to 8 GHz Horizontal at 1 Meter (16M PRF, long packets, X-Axis)



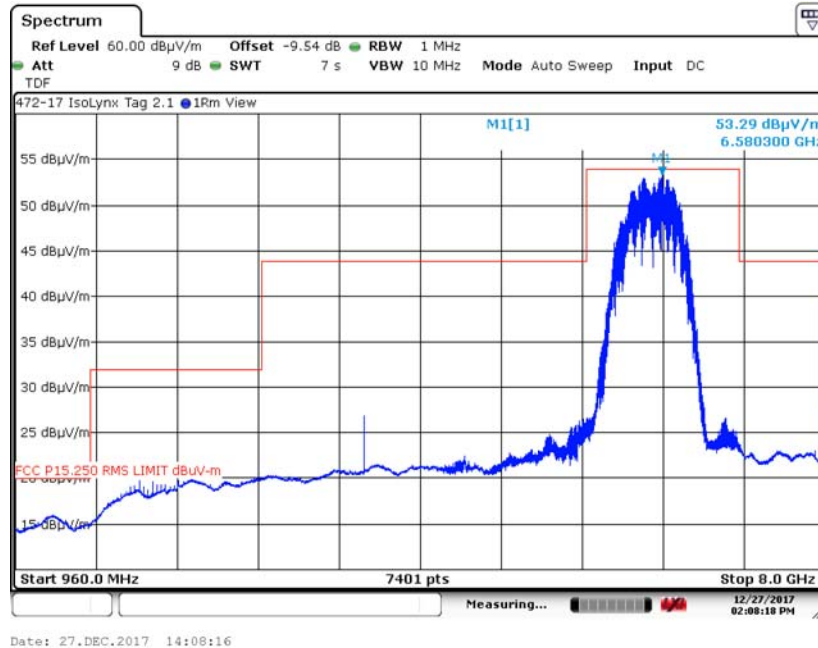
6.4.3. 960 MHz to 8 GHz Vertical at 1 Meter (16M PRF, long packets, X-Axis)



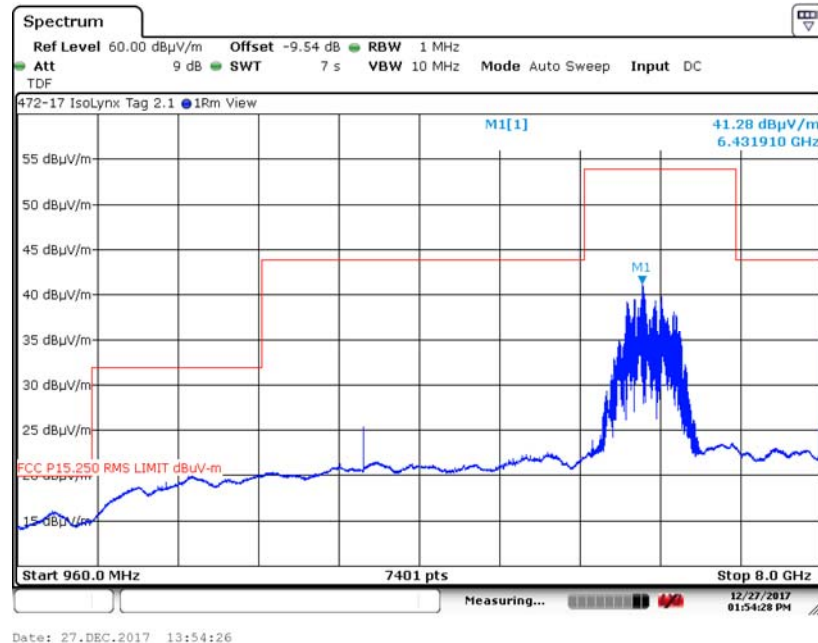
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.4. 960 MHz to 8 GHz Horizontal at 1 Meter (16M PRF, long packets, Y-Axis)



6.4.5. 960 MHz to 8 GHz Vertical at 1 Meter (16M PRF, long packets, Y-Axis)



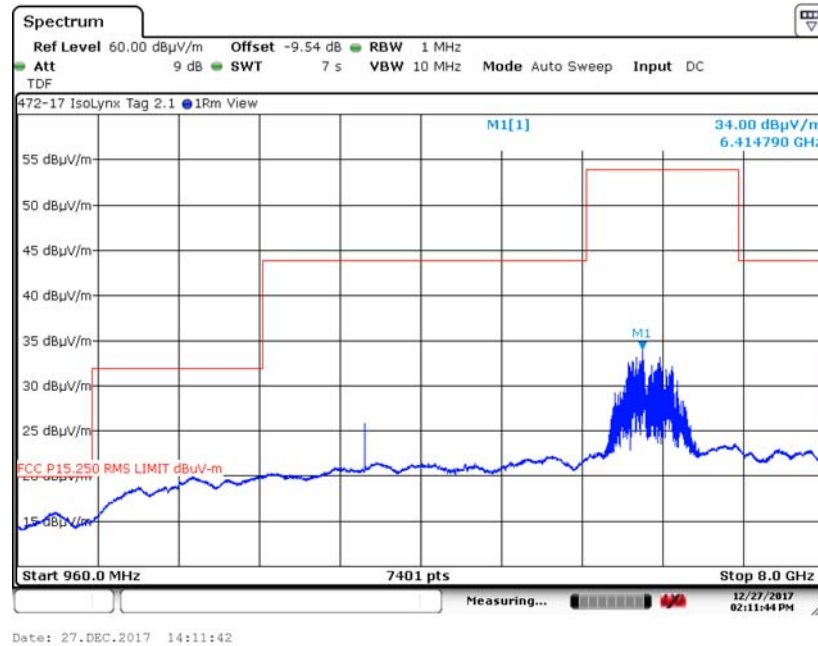
Test Number: 472-17

Issue Date: 9/10/2018

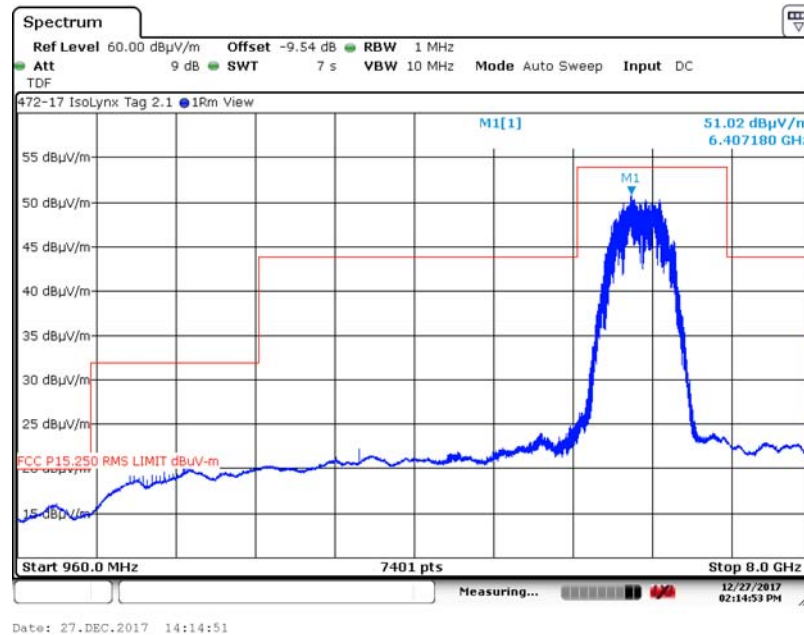
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.6. 960 MHz to 8 GHz Horizontal at 1 Meter (16M PRF, long packets, Z-Axis)



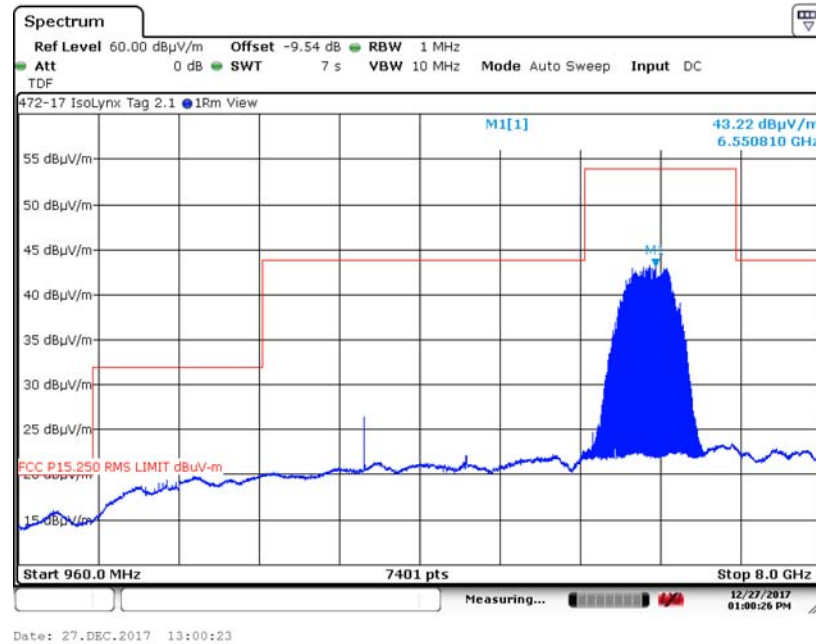
6.4.7. 960 MHz to 8 GHz Vertical at 1 Meter (16M PRF, long packets, Z-Axis)



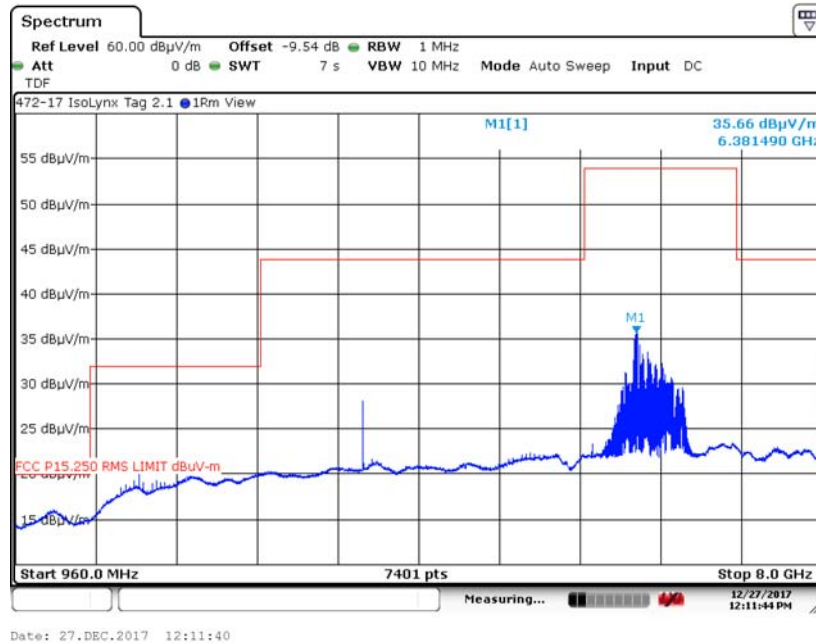
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.8. 960 MHz to 8 GHz Horizontal at 1 Meter (64M PRF, short packets, X-Axis)



6.4.9. 960 MHz to 8 GHz Vertical at 1 Meter (64M PRF, short packets, X-Axis)



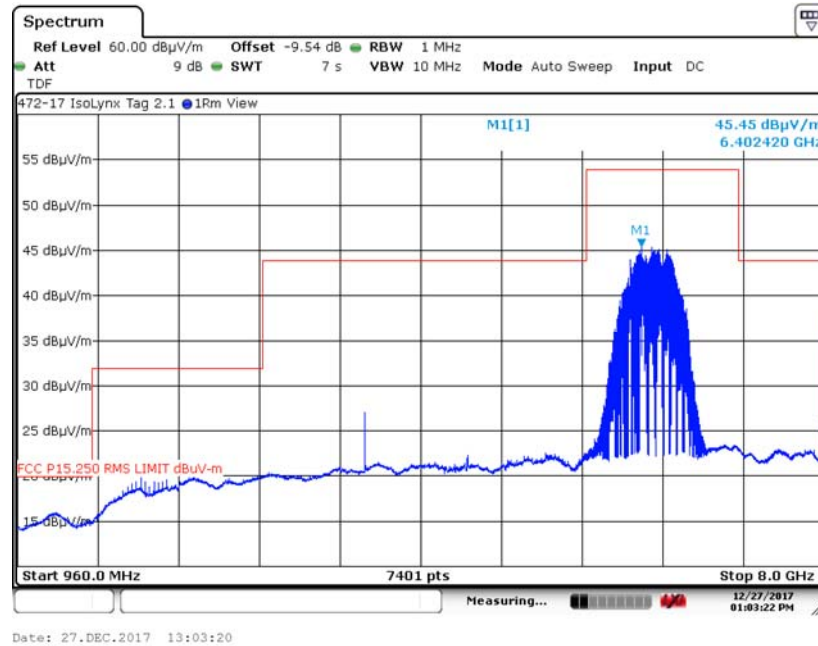
Test Number: 472-17

Issue Date: 9/10/2018

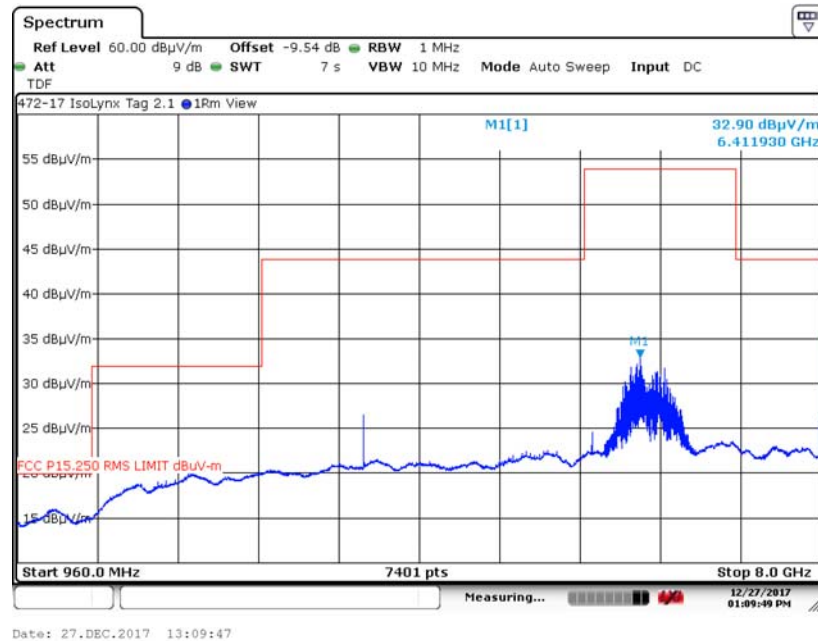
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.10. 960 MHz to 8 GHz Horizontal at 1 Meter (64M PRF, short packets, Y-Axis)



6.4.11. 960 MHz to 8 GHz Vertical at 1 Meter (64M PRF, short packets, X-Axis)



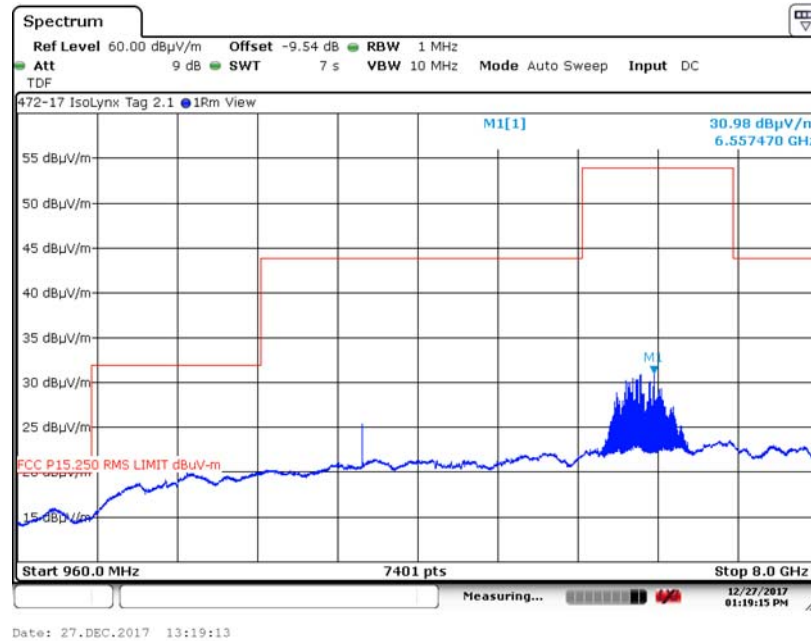
Test Number: 472-17

Issue Date: 9/10/2018

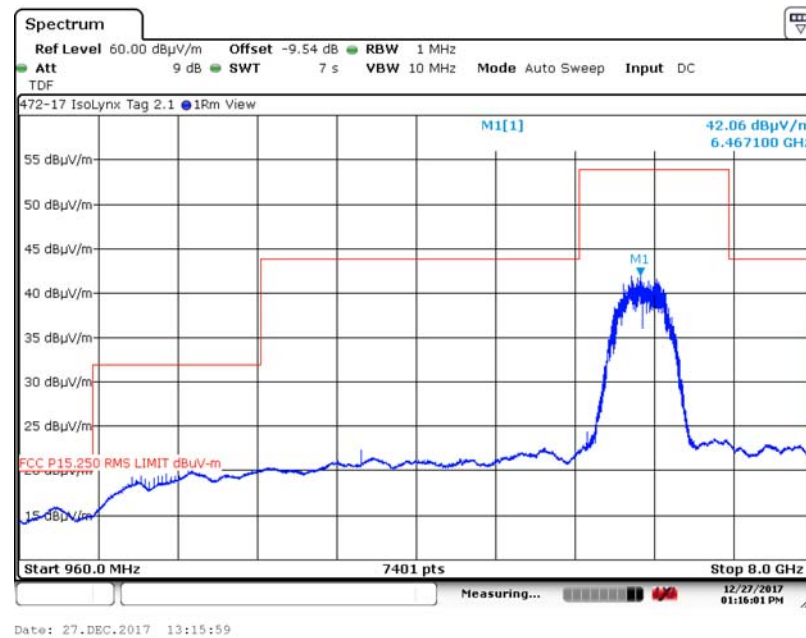
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.12. 960 MHz to 8 GHz Horizontal at 1 Meter (64M PRF, short packets, Z-Axis)



6.4.13. 960 MHz to 8 GHz Vertical at 1 Meter (64M PRF, short packets, Z-Axis)



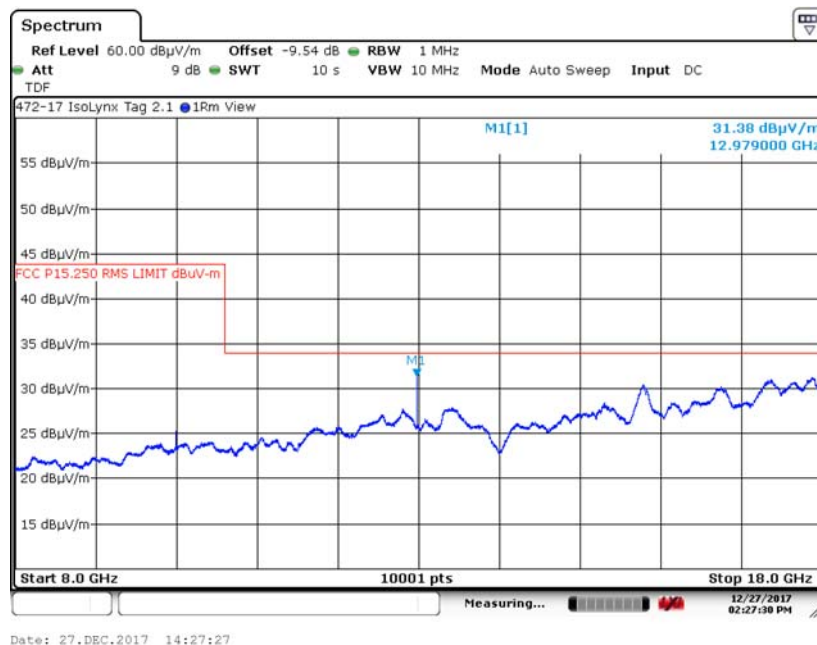
Test Number: 472-17

Issue Date: 9/10/2018

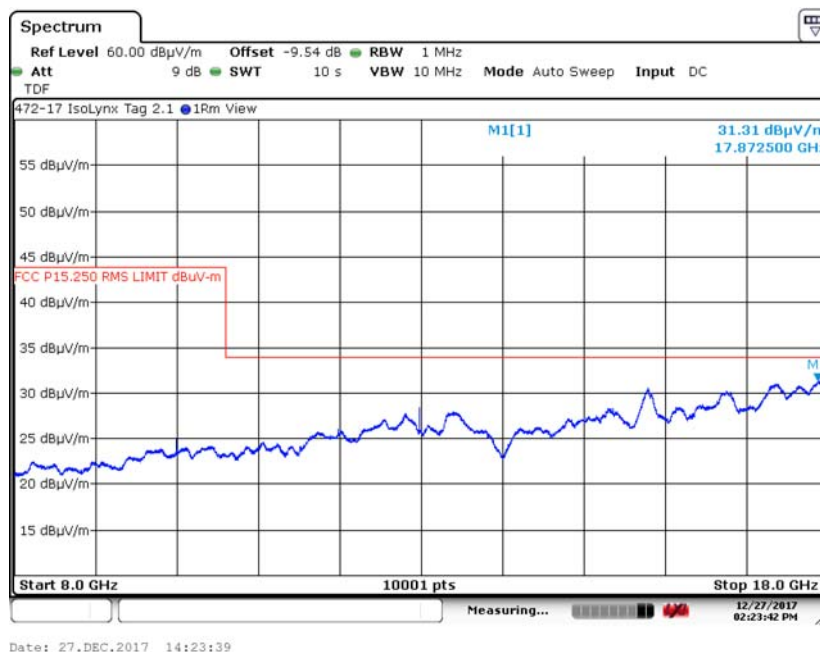
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.14. 8 to 18 GHz Horizontal at 1 Meter (16M PRF, long packets, X-Axis)



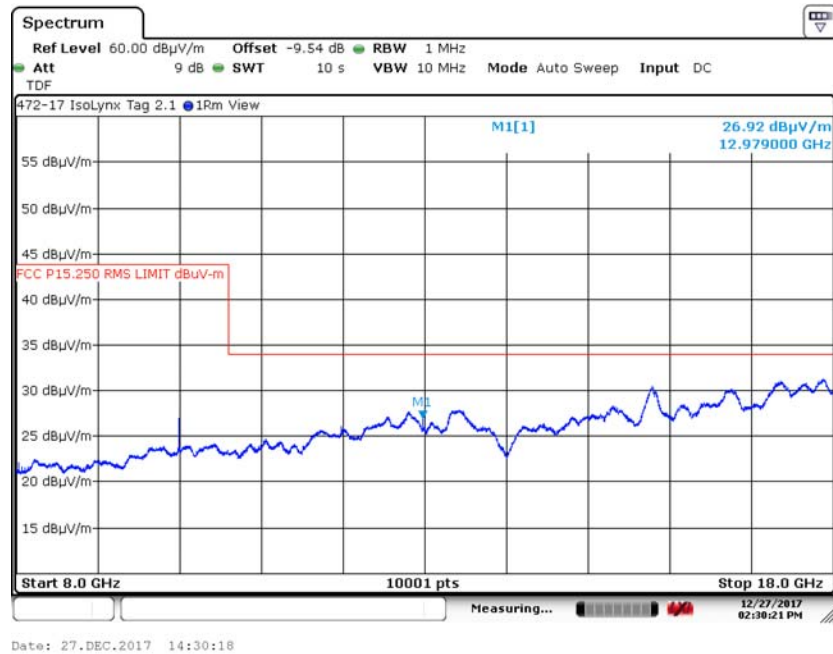
6.4.15. 8 to 18 GHz Vertical at 1 Meter (16M PRF, long packets, X-Axis)



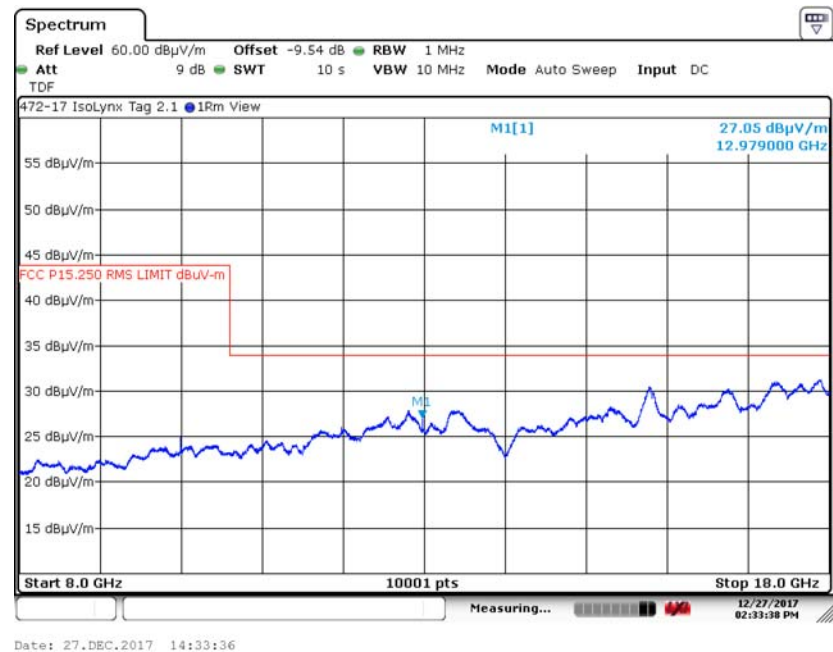
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.16. 8 to 18 GHz Horizontal at 1 Meter (16M PRF, long packets, Y-Axis)



6.4.17. 8 to 18 GHz Vertical at 1 Meter (16M PRF, long packets, Y-Axis)



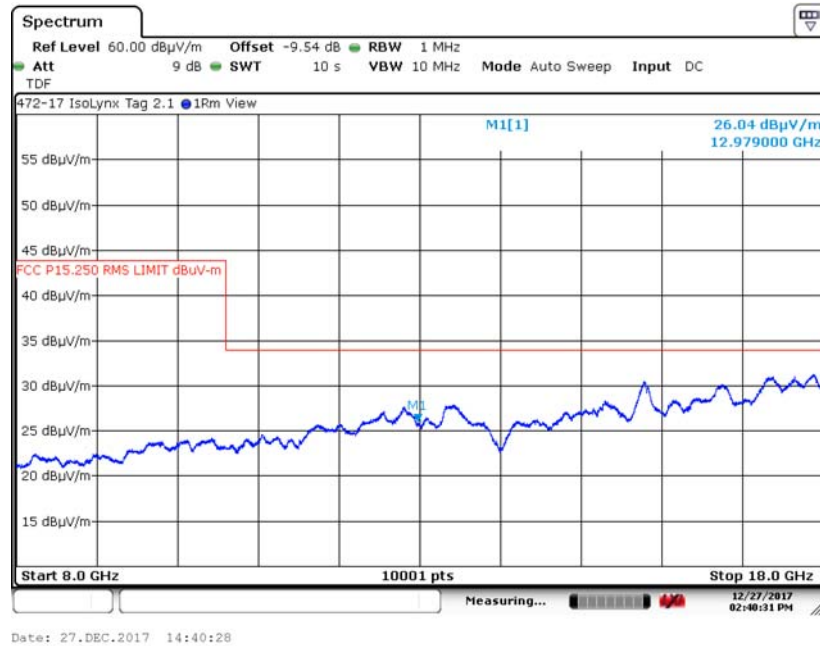
Test Number: 472-17

Issue Date: 9/10/2018

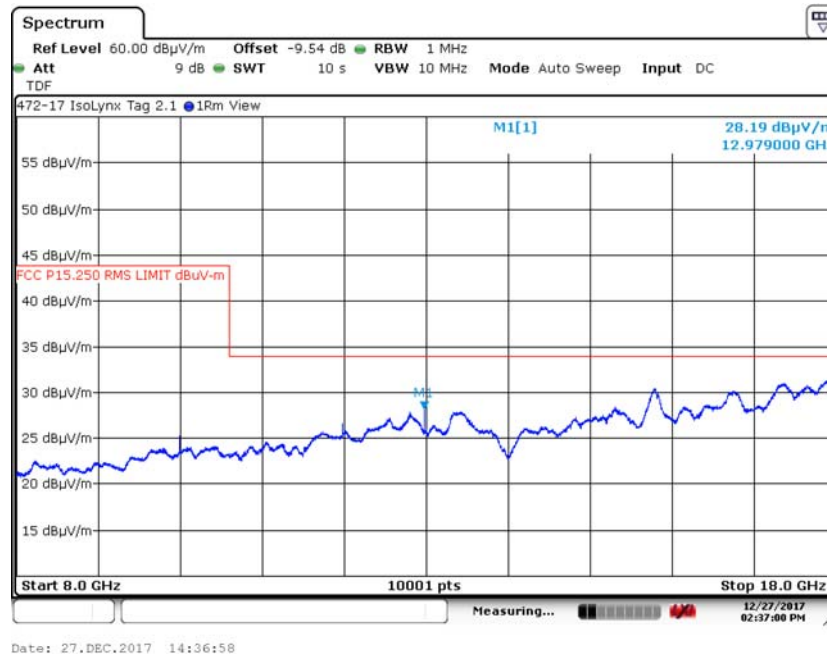
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.18. 8 to 18 GHz Horizontal at 1 Meter (16M PRF, long packets, Z-Axis)



6.4.19. 8 to 18 GHz Vertical at 1 Meter (16M PRF, long packets, Z-Axis)



Test Number: 472-17

Issue Date: 9/10/2018

6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.250 (d) (1) continued)

6.4.20. 18 to 40 GHz Horizontal at 0.3 Meter (16m PRF, long packets, X-Axis)



6.4.21. 18 to 40 GHz Vertical at 0.3 Meter (16m PRF, long packets, X-Axis)



6. Measurement Data (continued)**6.5. Spurious Radiated Emissions in GPS Bands (15.250 (d) (2))**

Requirement: In addition to the radiated emission limits specified in the table in paragraph (d) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
1164 - 1240	-85.3	9.9
1559 - 1610	-85.3	9.9

6.5.1. Measurement & Equipment Setup

EMI Receiver IF Bandwidth: 1 kHz
EMI Receiver Avg Bandwidth: 10 kHz
Detector Function: RMS

6.5.2. Test Procedure

Test measurements were made in accordance with ANSI C63.10:2013, American National Standard for Testing Unlicensed Wireless Devices.

6.5.3. 1164 to 1240 MHz & 1559 to 1610 MHz

There were no broadband emissions related to the UWB transmitter. Measured signals were narrowband and related to the microprocessor / clocks and do not fall under the requirements of this section. Measurements were made at 3 Meters and the -85.3 dBm limit was converted to a field strength limit of 9.9 dB μ V/m using a distance correction factor of 95.2.

Test Number: 472-17

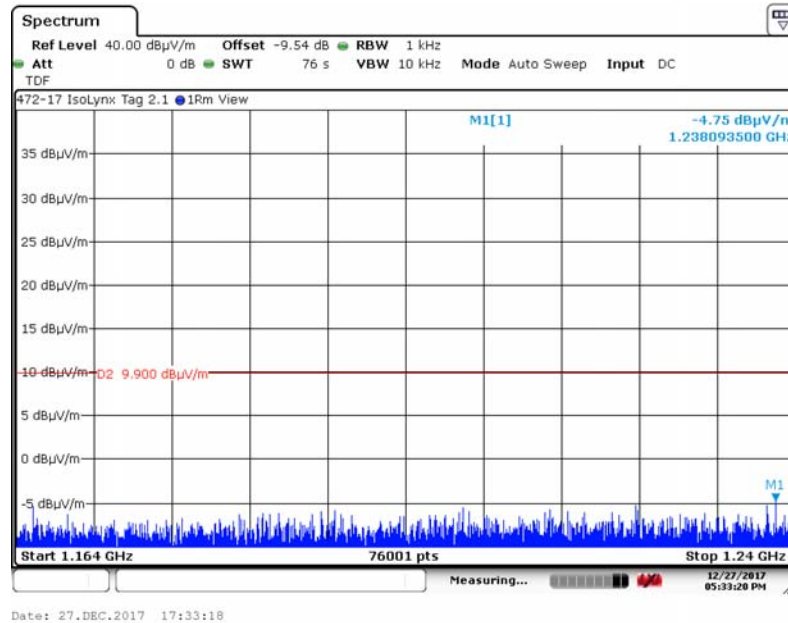
Issue Date: 9/10/2018

6. Measurement Data (continued)

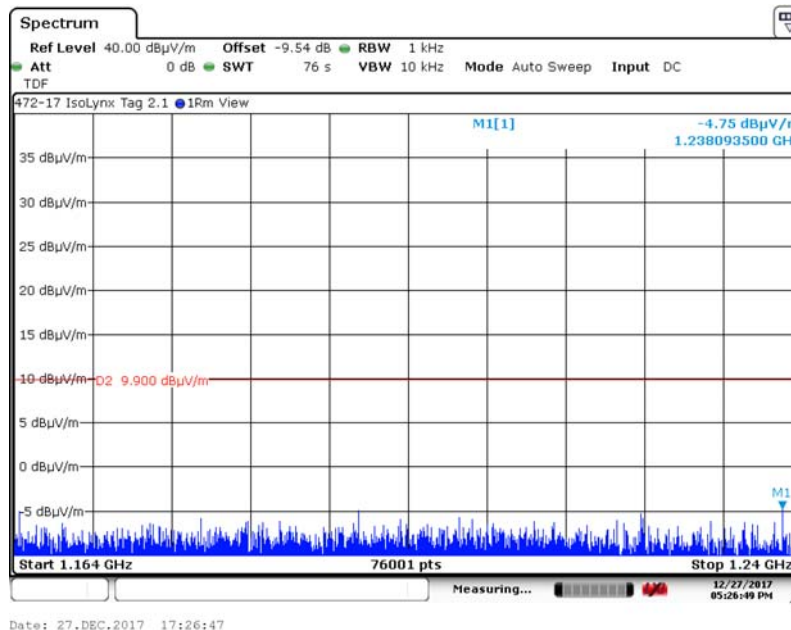
6.5. Spurious Radiated Emissions in GPS Bands (15.250 (d) (2) continued)

6.5.2 1164 to 1240 MHz Band

6.5.2.1 Horizontal Measurement Polarity 1164 to 1240 MHz



6.5.2.2 Vertical Measurement Polarity 1164 to 1240 MHz

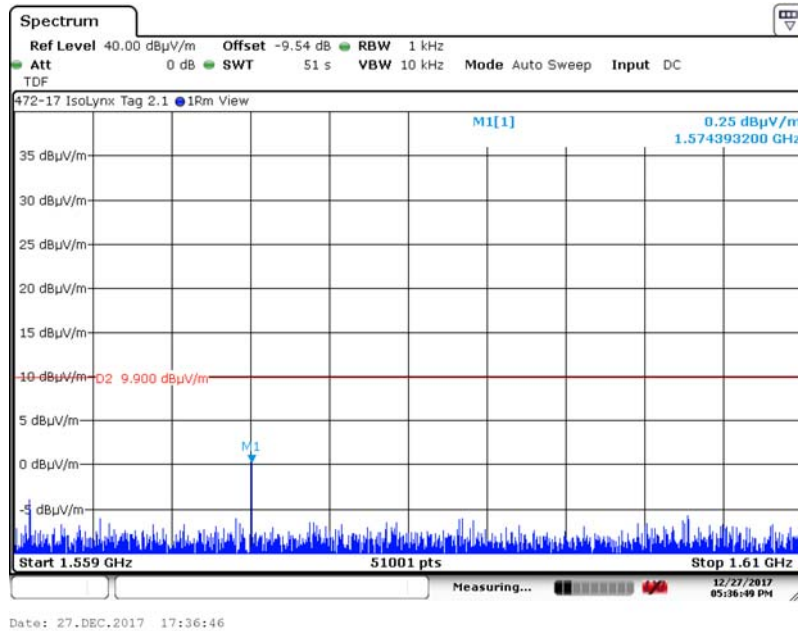


6. Measurement Data (continued)

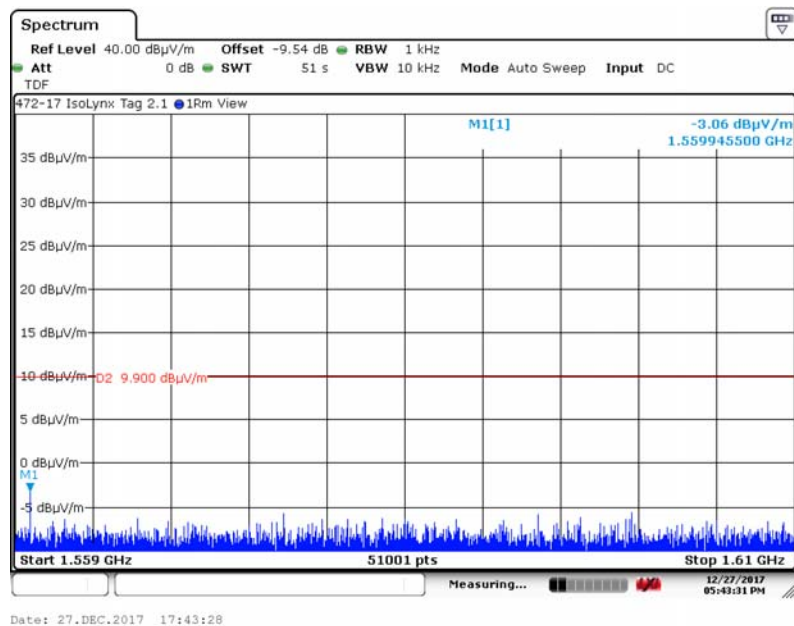
6.5. Spurious Radiated Emissions in GPS Bands (15.250 (d) (2) continued)

6.5.3 1559 to 1610 MHz Band

6.5.3.1 Horizontal Measurement Polarity 1559 to 1610 MHz



6.5.3.2 Vertical Measurement Polarity 1559 to 1610 MHz



6. Measurement Data (continued)

6.6. RMS Power in a 1 MHz Bandwidth (15.250 (d) (1))

Requirement: The limit for operation in the 5925 to 7250 MHz band is -41.3 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.508	53.63	53.90	-0.27	H	117	232	Compliant

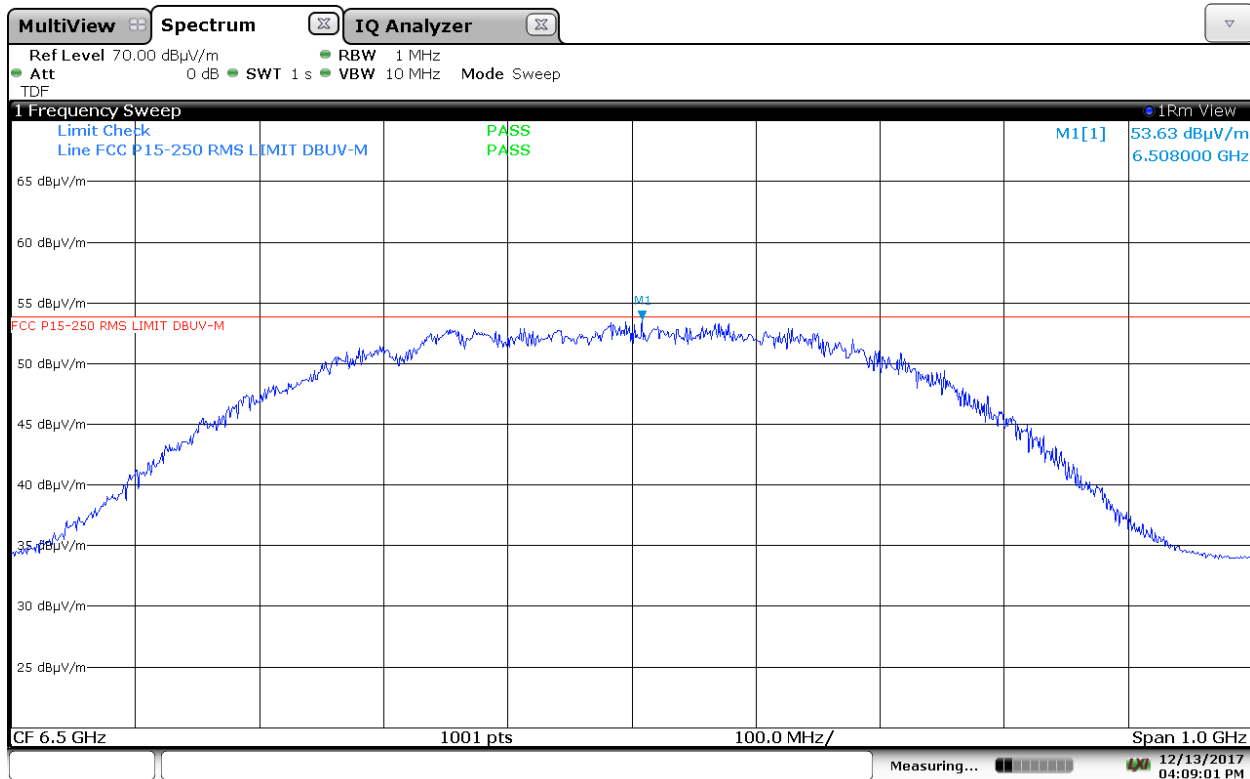
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.508	-41.57	-41.30	-0.27	H	117	232	Compliant

6.6.1. Plot of RMS Power at 3 Meters (16M PRF, long packets)



04:09:01 PM 12/13/2017

6. Measurement Data (continued)

6.6. RMS Power in a 1 MHz Bandwidth (15.250 (d) (1) continued)

Requirement: The limit for operation in the 5925 to 7250 MHz band is -41.3 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.4900	50.67	53.90	-3.23	H	117	232	Compliant

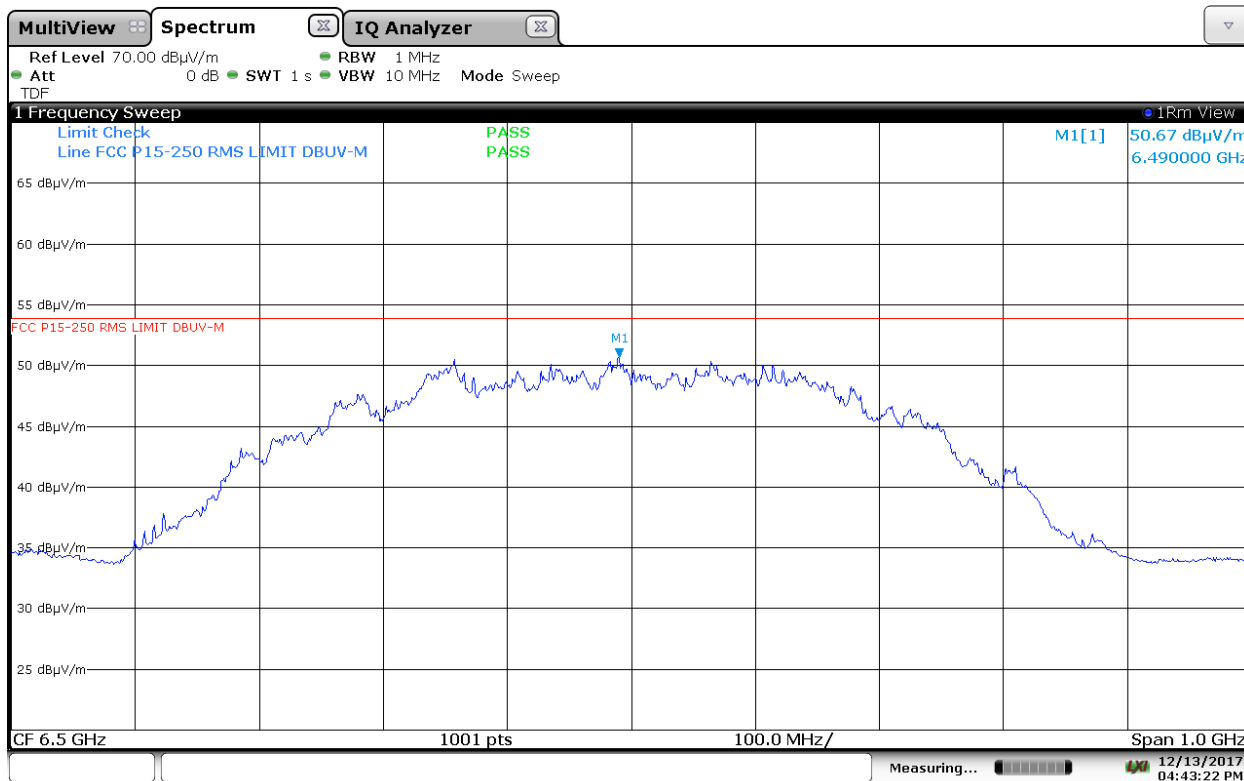
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.4900	-44.53	-41.30	-3.23	H	117	232	Compliant

6.6.2. Plot of RMS Power at 3 Meters (16M PRF, short packets)



04:43:22 PM 12/13/2017

6. Measurement Data (continued)

6.6. RMS Power in a 1 MHz Bandwidth (15.250 (d) (1) continued)

Requirement: The limit for operation in the 5925 to 7250 MHz band is -41.3 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.484	53.46	53.90	-0.44	H	117	232	Compliant

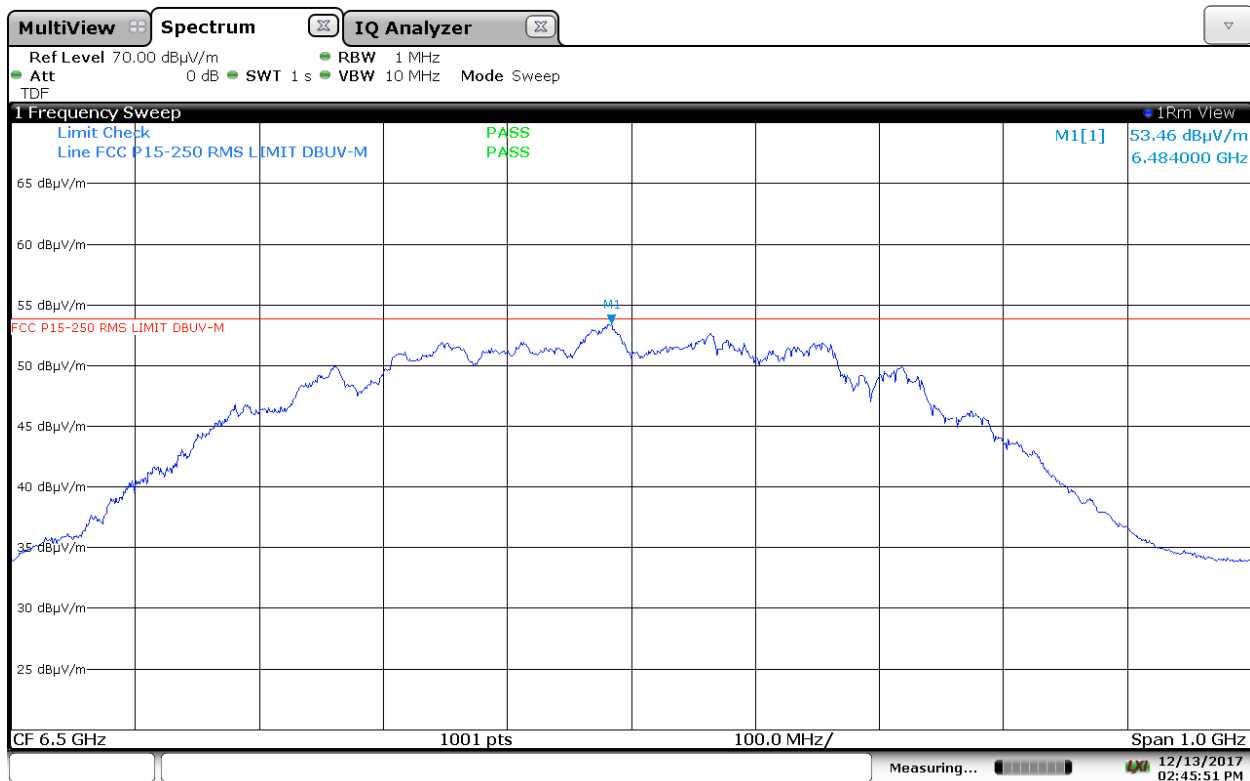
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.484	-41.74	-41.30	-0.44	H	117	232	Compliant

6.6.3. Plot of RMS Power at 3 Meters (64M PRF, long packets)



02:45:51 PM 12/13/2017

6. Measurement Data (continued)

6.6. RMS Power in a 1 MHz Bandwidth (15.250 (d) (1) continued)

Requirement: The limit for operation in the 5925 to 7250 MHz band is -41.3 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.4900	53.14	53.90	-0.76	H	117	232	Compliant

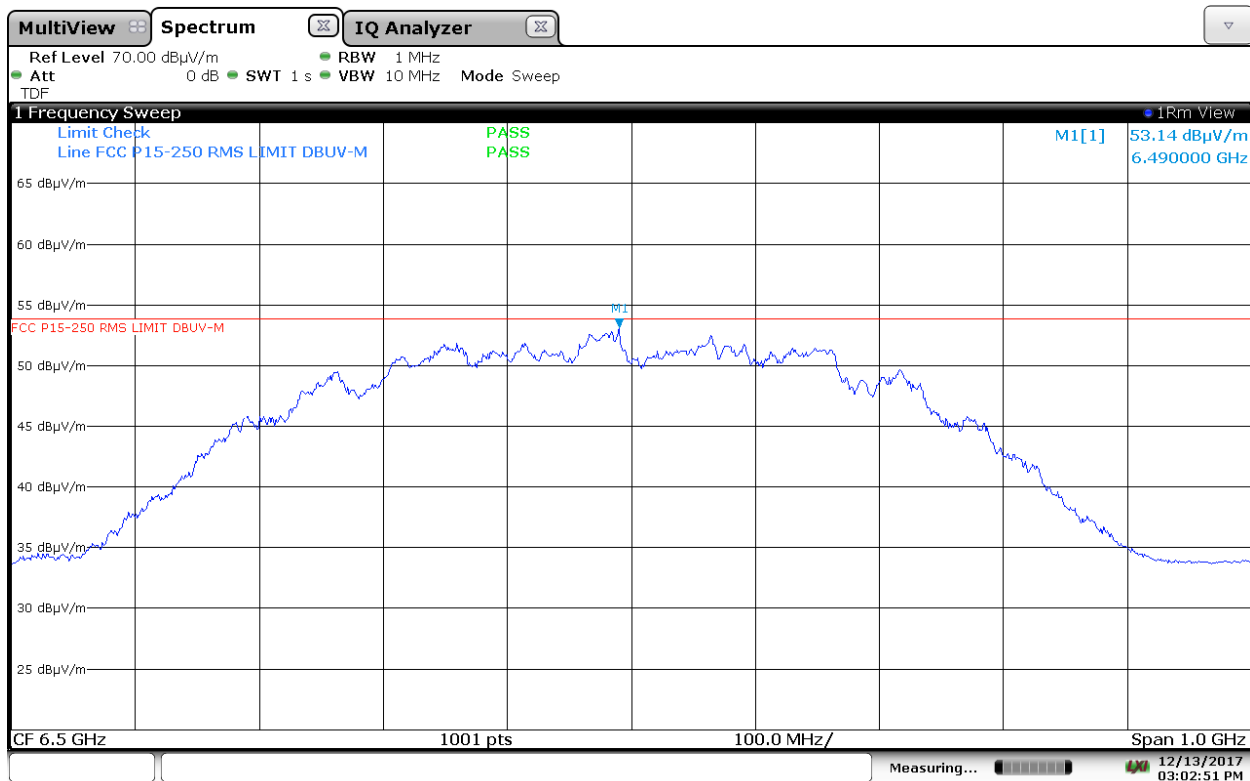
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.4900	-42.06	-41.30	-0.76	H	117	232	Compliant

6.6.4. Plot of RMS Power at 3 Meters (64M PRF, short packets)



03:02:51 PM 12/13/2017

6. Measurement Data (continued)

6.7. Peak Emissions in a 50 MHz Bandwidth (15.250 (d) (3))

Requirement: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.487	91.63	95.20	-3.57	H	117	232	Compliant

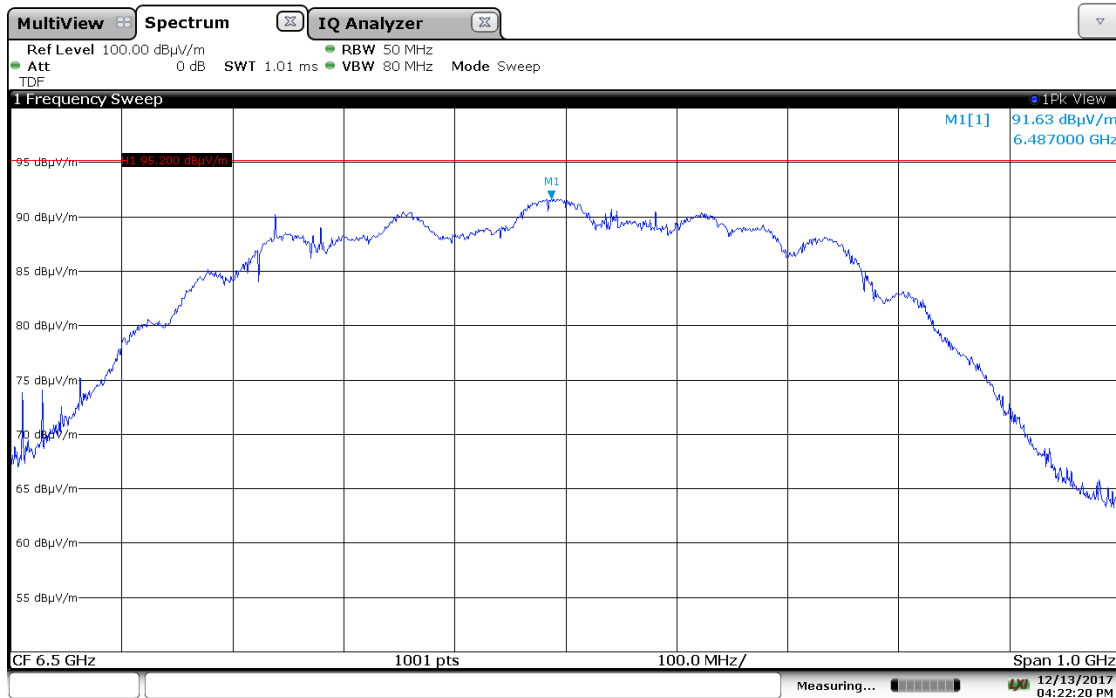
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.487	-3.57	0.00	-3.57	H	117	232	Compliant

6.7.1 Plot of Peak Power at 3 Meters (16M PRF, long packets)



04:22:20 PM 12/13/2017

6. Measurement Data (continued)

6.7. Peak Emissions in a 50 MHz Bandwidth (15.250 (d) (3) continued)

Requirement: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.5889	94.76	95.20	-0.44	H	117	232	Compliant

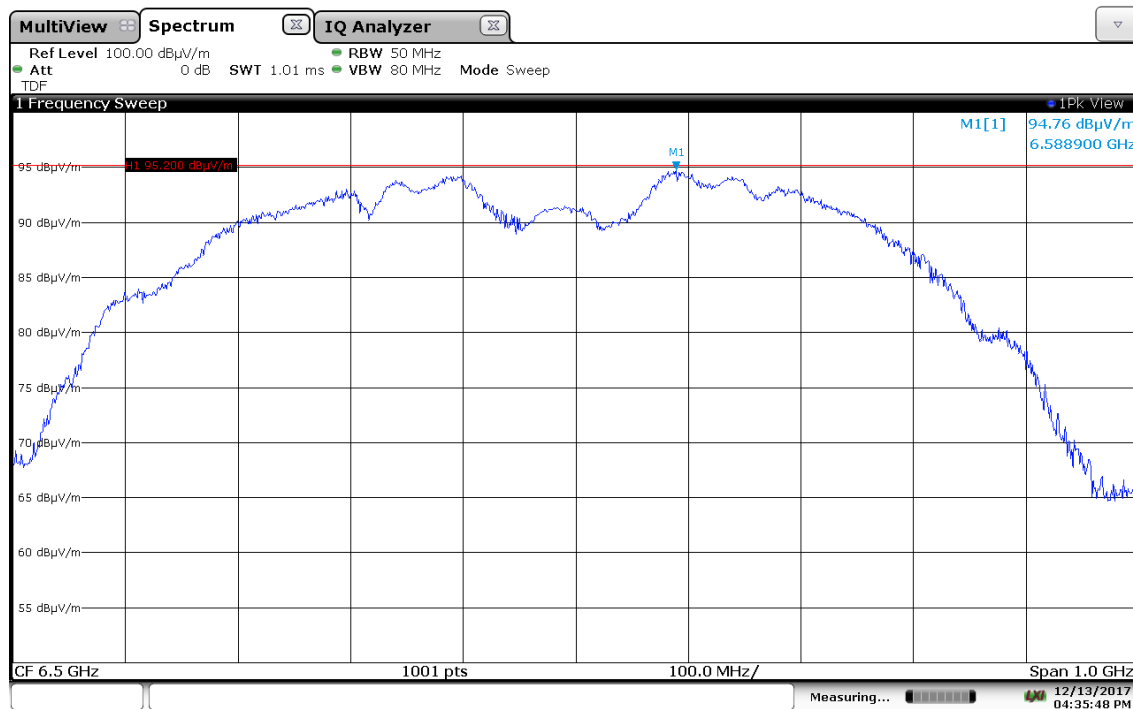
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.5889	-0.44	0.00	-0.44	H	117	232	Compliant

6.7.2 Plot of Peak Power at 3 Meters (16M PRF, short packets)



04:35:49 PM 12/13/2017

6. Measurement Data (continued)

6.7. Peak Emissions in a 50 MHz Bandwidth (15.250 (d) (3) continued)

Requirement: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.5040	86.09	95.20	-9.11	H	117	232	Compliant

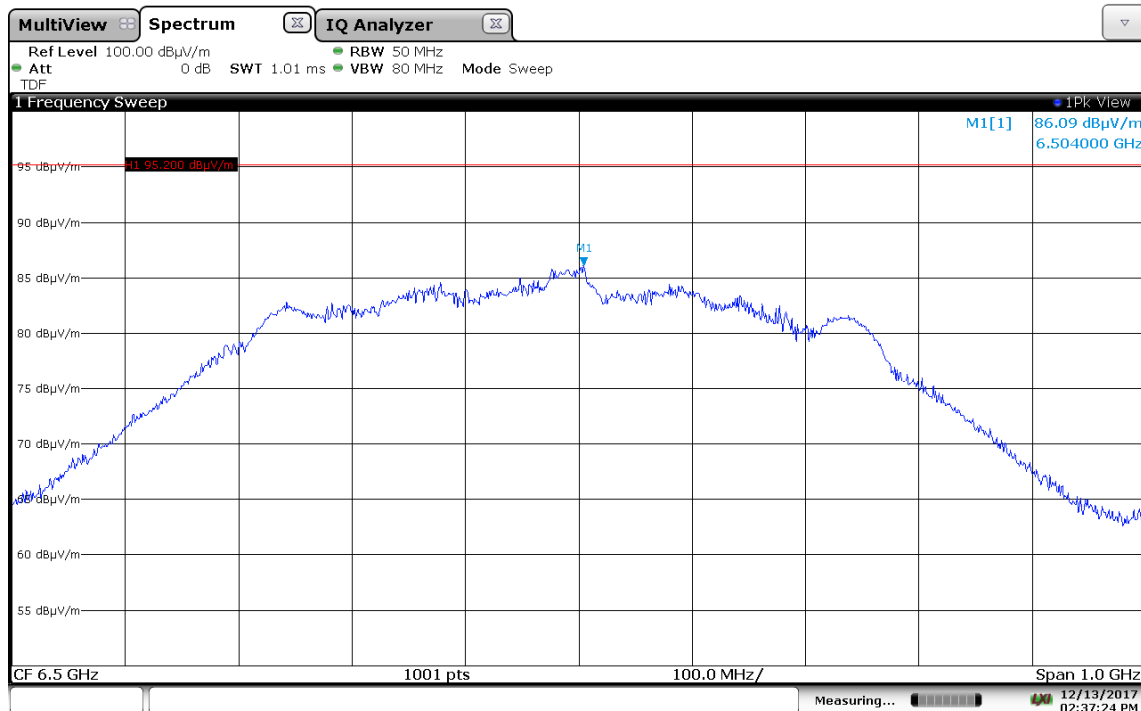
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.5040	-9.11	0.00	-9.11	H	117	232	Compliant

6.7.3 Plot of Peak Power at 3 Meters (64M PRF, long packets)



02:37:24 PM 12/13/2017

6. Measurement Data (continued)

6.7. Peak Emissions in a 50 MHz Bandwidth (15.250 (d) (3) continued)

Requirement: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm EIRP.

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.490	94.95	95.20	-0.25	H	117	232	Compliant

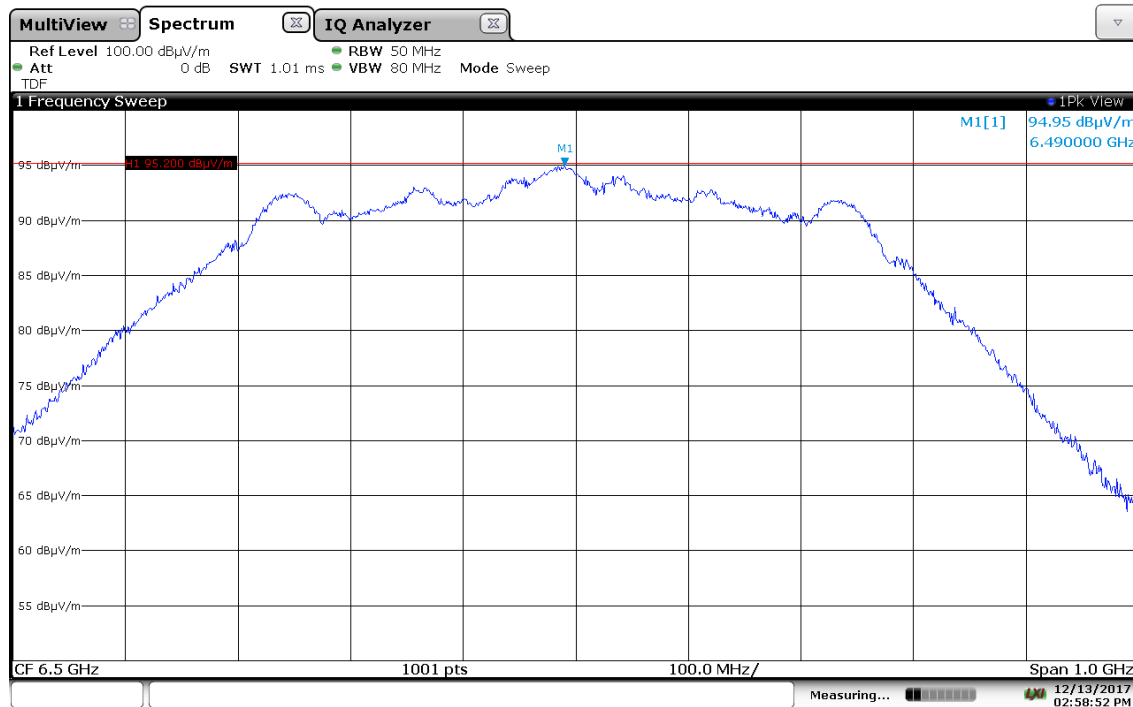
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.490	-0.25	0.00	-0.25	H	117	232	Compliant

6.7.4 Plot of Peak Power at 3 Meters (64M PRF, short packets)



02:58:53 PM 12/13/2017

6. Measurement Data (continued)

6.8 Conducted Emissions Test Setup

6.8.1. Regulatory Limit: FCC Part 15.207

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50
* Decreases with the logarithm of the frequency.		

6.8.2 Measurement Equipment and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	3330A00115	12/4/2018
RF Filter Section	Hewlett Packard	85460A	3325A00121	12/4/2018
LISN	EMCO	3825/2	9109-1860	11/17/2018
Manufacturer	Software Description		Title/Model #	Rev.
Compliance Worldwide	Test Report Generation Software		Test Report Generator	1.0

6.8.3. Measurement & Equipment Setup

Test Date:	3/15/2017
Test Engineer:	Brian Breault
Site Temperature (°C):	22.2
Relative Humidity (%RH):	45.3
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	30 kHz
Detector Functions:	Peak, Quasi-Peak. & Average

6.8.4. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2014, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Test Number: 472-17

Issue Date: 9/10/2018

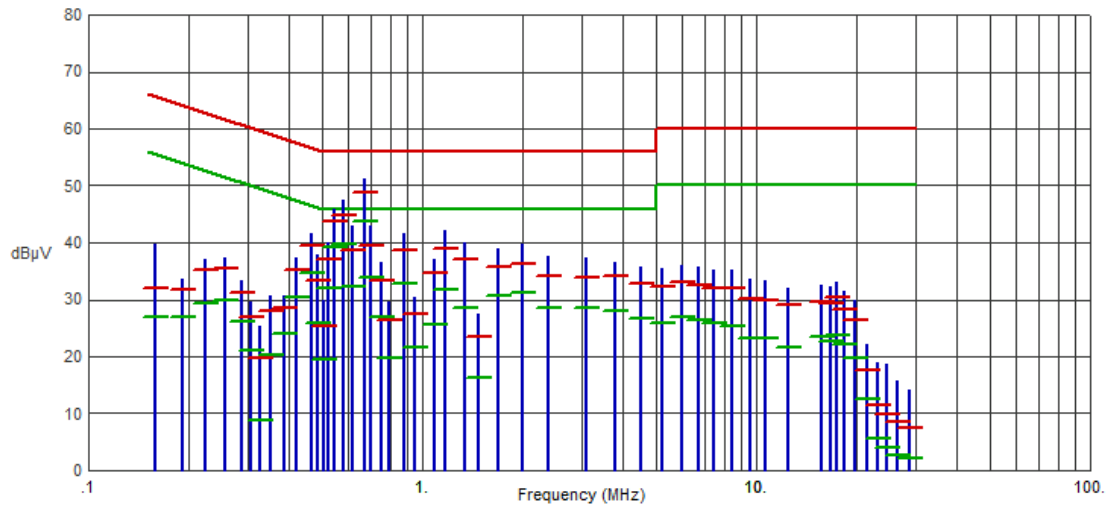
6. Measurement Data (continued)

6.9 Conducted Emissions Test Results

6.9.1 120 Volts, 60 Hz Phase

Test No.: 470-17, 120 Volts, 60 Hz Phase

FCC, Class B



6. Measurement Data (continued)

6.9 Conducted Emissions Test Results

6.9.1 120 Volts, 60 Hz Phase (continued)

Frequency (MHz)	Pk Amp (dBμV)	QP Amp (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg Amp (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Comments
.1590	39.81	32.02	65.52	-33.50	26.95	55.52	-28.57	
.1905	33.57	31.78	64.01	-32.23	26.92	54.01	-27.09	
.2243	36.95	35.07	62.66	-27.59	29.26	52.66	-23.40	
.2558	37.44	35.52	61.57	-26.05	29.76	51.57	-21.81	
.2873	33.26	31.31	60.60	-29.29	26.25	50.60	-24.35	
.3053	29.64	26.87	60.10	-33.23	21.06	50.10	-29.04	
.3278	25.25	19.71	59.51	-39.80	8.89	49.51	-40.62	
.3525	30.55	28.00	58.90	-30.90	20.28	48.90	-28.62	
.3840	30.63	28.42	58.19	-29.77	24.09	48.19	-24.10	
.4178	37.34	35.12	57.49	-22.37	30.40	47.49	-17.09	
.4650	41.55	39.51	56.60	-17.09	34.61	46.60	-11.99	
.4875	37.91	33.37	56.21	-22.84	25.98	46.21	-20.23	
.5055	29.97	25.25	56.00	-30.75	19.56	46.00	-26.44	
.5235	39.93	37.10	56.00	-18.90	31.93	46.00	-14.07	
.5438	45.88	43.79	56.00	-12.21	39.19	46.00	-6.81	
.5775	47.53	44.86	56.00	-11.14	39.86	46.00	-6.14	
.6158	42.83	38.78	56.00	-17.22	32.19	46.00	-13.81	
.6720	51.23	48.83	56.00	-7.17	43.64	46.00	-2.36	
.6990	42.91	39.55	56.00	-16.45	33.92	46.00	-12.08	
.7553	36.50	33.26	56.00	-22.74	26.93	46.00	-19.07	
.7958	29.54	26.31	56.00	-29.69	19.75	46.00	-26.25	
.8835	41.57	38.66	56.00	-17.34	32.68	46.00	-13.32	
.9488	30.51	27.53	56.00	-28.47	21.64	46.00	-24.36	
1.0883	37.18	34.63	56.00	-21.37	25.73	46.00	-20.27	
1.1738	42.22	39.04	56.00	-16.96	31.82	46.00	-14.18	
1.3380	39.99	37.07	56.00	-18.93	28.57	46.00	-17.43	
1.4663	27.42	23.44	56.00	-32.56	16.35	46.00	-29.65	
1.6845	38.91	35.71	56.00	-20.29	30.55	46.00	-15.45	
1.9950	39.64	36.37	56.00	-19.63	31.09	46.00	-14.91	
2.3865	37.53	34.11	56.00	-21.89	28.63	46.00	-17.37	
3.1043	37.27	33.75	56.00	-22.25	28.41	46.00	-17.59	
3.7793	36.57	34.05	56.00	-21.95	27.96	46.00	-18.04	
4.5105	35.77	32.92	56.00	-23.08	26.71	46.00	-19.29	
5.2283	35.51	32.39	60.00	-27.61	25.96	50.00	-24.04	
5.9685	35.89	33.13	60.00	-26.87	26.87	50.00	-23.13	
6.7065	35.72	32.49	60.00	-27.51	26.53	50.00	-23.47	
7.4333	35.26	31.99	60.00	-28.01	25.82	50.00	-24.18	
8.4818	35.08	31.94	60.00	-28.06	25.29	50.00	-24.71	
9.5910	33.50	30.10	60.00	-29.90	23.22	50.00	-26.78	
10.6845	33.31	29.81	60.00	-30.19	23.09	50.00	-26.91	
12.4530	32.12	29.00	60.00	-31.00	21.67	50.00	-28.33	
15.6818	32.53	29.47	60.00	-30.53	23.36	50.00	-26.64	
16.7033	32.38	29.31	60.00	-30.69	22.72	50.00	-27.28	
17.3985	33.19	30.51	60.00	-29.49	23.66	50.00	-26.34	
18.3323	31.44	28.20	60.00	-31.80	22.24	50.00	-27.76	
19.7678	29.98	26.27	60.00	-33.73	19.80	50.00	-30.20	
21.4800	22.09	17.72	60.00	-42.28	12.59	50.00	-37.41	
23.0865	19.06	11.37	60.00	-48.63	5.59	50.00	-44.41	
24.7178	18.60	9.92	60.00	-50.08	3.99	50.00	-46.01	
26.4615	15.75	8.65	60.00	-51.35	2.66	50.00	-47.34	
28.7048	14.20	7.37	60.00	-52.63	2.09	50.00	-47.91	

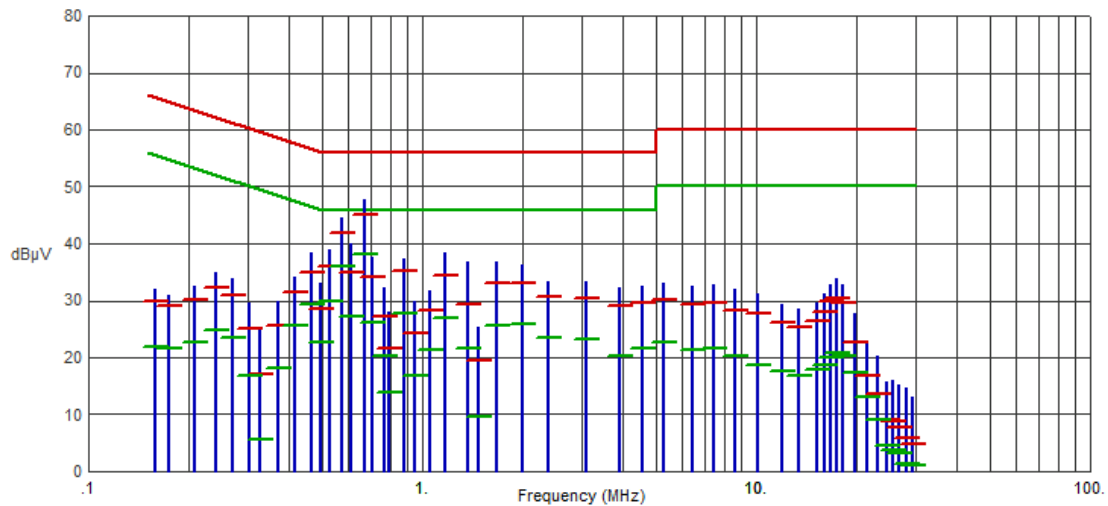
6. Measurement Data (continued)

6.9. Conducted Emissions Test Results (continued)

6.9.2. 120 Volts, 60 Hz Neutral

Test No.: 470-17, 120 Volts, 60 Hz Neutral

FCC, Class B



6. Measurement Data (continued)

6.9. Conducted Emissions Test Results (continued)

6.9.2. 120 Volts, 60 Hz Neutral (continued)

Frequency (MHz)	Pk Amp (dBμV)	QP Amp (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg Amp (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Comments
.1590	32.00	29.78	65.52	-35.74	21.91	55.52	-33.61	
.1748	31.04	29.00	64.73	-35.73	21.62	54.73	-33.11	
.2085	32.57	30.10	63.26	-33.16	22.76	53.26	-30.50	
.2400	35.04	32.15	62.10	-29.95	24.72	52.10	-27.38	
.2715	33.76	30.92	61.07	-30.15	23.52	51.07	-27.55	
.3030	29.57	25.03	60.16	-35.13	16.83	50.16	-33.33	
.3255	25.06	17.03	59.57	-42.54	5.57	49.57	-44.00	
.3683	29.90	25.72	58.54	-32.82	18.24	48.54	-30.30	
.4155	34.20	31.58	57.54	-25.96	25.61	47.54	-21.93	
.4650	38.35	35.05	56.60	-21.55	29.26	46.60	-17.34	
.4943	33.09	28.42	56.10	-27.68	22.54	46.10	-23.56	
.5280	38.90	36.13	56.00	-19.87	29.95	46.00	-16.05	
.5753	44.60	41.86	56.00	-14.14	36.01	46.00	-9.99	
.6135	39.94	34.93	56.00	-21.07	27.25	46.00	-18.75	
.6720	47.68	45.08	56.00	-10.92	38.17	46.00	-7.83	
.7103	37.56	34.21	56.00	-21.79	26.10	46.00	-19.90	
.7665	32.31	27.07	56.00	-28.93	20.31	46.00	-25.69	
.7980	28.01	21.60	56.00	-34.40	13.92	46.00	-32.08	
.8790	37.44	35.17	56.00	-20.83	27.77	46.00	-18.23	
.9465	29.79	24.23	56.00	-31.77	16.85	46.00	-29.15	
1.0523	31.78	28.35	56.00	-27.65	21.35	46.00	-24.65	
1.1715	38.41	34.36	56.00	-21.64	26.92	46.00	-19.08	
1.3650	36.83	29.31	56.00	-26.69	21.58	46.00	-24.42	
1.4775	25.23	19.51	56.00	-36.49	9.64	46.00	-36.36	
1.6688	36.73	33.07	56.00	-22.93	25.70	46.00	-20.30	
1.9950	36.20	32.99	56.00	-23.01	25.99	46.00	-20.01	
2.3843	33.40	30.73	56.00	-25.27	23.58	46.00	-22.42	
3.1043	33.25	30.47	56.00	-25.53	23.25	46.00	-22.75	
3.9098	32.28	28.95	56.00	-27.05	20.26	46.00	-25.74	
4.5758	32.50	29.71	56.00	-26.29	21.71	46.00	-24.29	
5.2958	33.09	30.24	60.00	-29.76	22.58	50.00	-27.42	
6.4118	32.44	29.40	60.00	-30.60	21.25	50.00	-28.75	
7.4985	32.84	29.56	60.00	-30.44	21.64	50.00	-28.36	
8.5988	31.88	28.37	60.00	-31.63	20.15	50.00	-29.85	
10.1040	31.14	27.85	60.00	-32.15	18.78	50.00	-31.22	
11.8905	29.38	26.11	60.00	-33.89	17.72	50.00	-32.28	
13.3823	28.52	25.28	60.00	-34.72	16.80	50.00	-33.20	
15.1553	29.72	26.30	60.00	-33.70	17.77	50.00	-32.23	
15.9383	31.28	28.07	60.00	-31.93	18.76	50.00	-31.24	
16.6650	32.70	29.76	60.00	-30.24	19.94	50.00	-30.06	
17.3940	33.80	30.43	60.00	-29.57	20.71	50.00	-29.29	
18.1838	32.67	29.50	60.00	-30.50	20.38	50.00	-29.62	
19.7453	27.73	22.69	60.00	-37.31	17.40	50.00	-32.60	
21.4935	22.39	16.83	60.00	-43.17	12.95	50.00	-37.05	
23.1315	20.34	13.61	60.00	-46.39	9.14	50.00	-40.86	
24.6863	15.74	9.18	60.00	-50.82	4.51	50.00	-45.49	
25.5998	15.98	8.71	60.00	-51.29	3.81	50.00	-46.19	
26.6078	15.16	7.71	60.00	-52.29	3.15	50.00	-46.85	
28.1715	14.79	5.87	60.00	-54.13	1.39	50.00	-48.61	
29.5373	13.11	4.73	60.00	-55.27	1.11	50.00	-48.89	

7. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with the Federal Communications Commission (FCC) and Industry Canada standards. Through our American Association for Laboratory Accreditation (A2LA) ISO Guide 17025:2005 Accreditation our test sites are designated with the FCC (designation number **US1091**), Industry Canada (file number **IC 3023A-1**) and VCCI (Member number 3168) under registration number A-0274.

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 22, Chinese-Taipei (Taiwan) BSMI CNS 13438 and Korea (RRA) KN 11, KN 13, KN 14-1, KN 22, KN 32, KN 61000-6-3, KN 61000-6-4.

The radiated emissions test site is a 3 and 10 meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane. A second conducted emissions site is also located in the basement of the OATS site with a 2.3 x 2.5 meter ground plane and a 2.4 x 2.4 meter vertical wall.

Both sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or table top.

8. Test Images

8.1. Spurious and Harmonic Emissions – 10 kHz to 1 GHz Front



8. Test Images

8.2. Spurious and Harmonic Emissions – 10 kHz to 30 MHz Rear



8. Test Images

8.3. Spurious and Harmonic Emissions – 30 MHz to 1 GHz Rear



Test Number: 472-17

Issue Date: 9/10/2018

8. Test Images

8.4. Spurious and Harmonic Emissions – 1 to 18 GHz Front



8. Test Images

8.5. Spurious and Harmonic Emissions – 1 to 18 GHz Rear



8. Test Images

8.5. Spurious and Harmonic Emissions – 18 to 40 GHz Side



8. Test Images

8.7. Conducted Emissions (Front)



Test Number: 472-17

Issue Date: 9/10/2018

8. Test Images

8.8. Conducted Emissions (Rear)



8. Test Images

8.9. Frequency Stability (Setup)



8. Test Images

8.10. Frequency Stability (Setup)

