COMPLIANCE WORLDWIDE INC.
TEST REPORT 100-24

In Accordance with the Requirements of
Federal Communications Commission CFR Title 47 Part 15.225, Subpart C

Innovation, Science and Economic Development Canada
RSS 210, Issue 10

Low Power License-Exempt Radio Communication Devices
Intentional Radiators

Issued to

IlluminOss Medical, Inc.
993 Waterman Avenue
East Providence, RI 02914

for the

Photodynamic LED Light Curing System
with 13.56 MHz RFID Reader
Model: SY-2100-01

FCC ID: 2BDYN-34584714

Report Issued on January 8, 2024

Tested by

Sean P. Defelice

Sean P. Defelice

Reviewed by

Larry K. Stillings

Larry K. Stillings

Table of Contents

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1. Scope

This test report certifies that the IlluminOss Medical Photodynamic LED light curing system model SY-2100-01 with 13.56 MHz RFID Reader, as tested, meets the FCC Part 15.225 Subpart C, and ISED Canada RSS 210 requirements. The scope of this test report is limited to the test samples provided by the client, only in as much as those samples represent other production units. If any significant changes are made to the units, the changes shall be evaluated, and a retest may be required.

2. Product Details

2.1. Manufacturer:	IlluminOss Medical, Inc.
2.2. Model Number:	SY-2100-01
2.3. Serial Number:	000010
2.4. Description:	The IlluminOss Lightbox Upgrade device is a tabletop medical device that uses the light output of an ultra-high-power LED to cure a polymer that stabilizes fractured bones.
2.5. Power Source:	120 VAC, 60 Hz
2.6. Hardware Revision:	Ver 104 OP#3
2.7. Software Revision:	N/A
2.8. Modulation Type:	Pulse Modulation
2.9. Operating Frequency:	13.56 MHz
2.10. EMC Modifications:	None

3. Product Configuration

3.1. Operational Characteristics & Software

The device under test is powered up normally. No additional steps are necessary to activate the RFID reader.

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
IlluminOss Medical	SY-2100-01	000010	120	60	Photodynamic LED Light curing system with 13.56 MHz RFID Reader

3.3. EUT Connected Hardware

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
None					

3.4. EUT Cables/Transducers

Cable Type	Length	Shield	From	To
Power	2 Meters	No	EUT	120 VAC, 60 Hz

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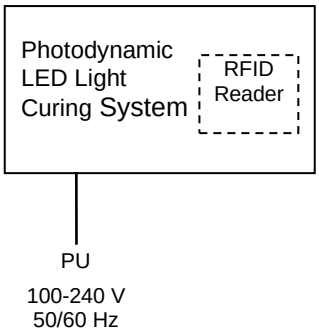
3. Product Configuration (continued)

3.5. Support Equipment

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
N/A					

3.6. Block Diagram



PU – Power Cable, Unshielded

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4. Measurements Parameters

4.1. Measurement Equipment and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Test Receiver, 9kHz - 7GHz [1]	Rohde & Schwarz	ESR7	101156	10/26/2024	3 Years
EMI Test Receiver, 10 Hz - 7GHz [1]	Rohde & Schwarz	ESR7	101770	7/23/2024	3 Years
Spectrum Analyzer, 2 Hz to 26.5 GHz[2]	Rohde & Schwarz	FSW26	102057	6/24/2024	3 Years
Spectrum Analyzer, 9 kHz to 40 GHz[3]	Rohde & Schwarz	FSV40	100899	8/12/2024	4 Years
Spectrum Analyzer 10 Hz – 40 GHz[1]	Rohde & Schwarz	FSVR40	100909	9/18/2024	4 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	7/1/2024	3 Years
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	4/14/2024	2 Years
Dbl Ridged Guide Antenna 1- 18 GHz	ETS-Lindgren	3117	00143292	5/11/2024	2 Years
Dbl Ridged Guide Antenna 1- 18 GHz	ETS-Lindgren	3117	00227631	4/21/2024	2 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B	3008A01323	11/30/2024	3 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B H02	3008A00329	1/20/2025	3 Years
Band Reject Filter (Notch), 2.4 GHz	Micro-Tronics	BRM50702	150	2/28/2024	1 Year
Digital Barometer	Control Company	4195	ID236	1/27/2024	2 Years

[1] ESR7 Firmware revision: V3.48 SP3, Date installed: 09/30/2020 Previous V3.48 SP2, installed 07/23/2020.
[2] FSW26 Firmware revision: V4.71 SP1, Date installed: 11/16/2020 Previous V4.61, installed 08/11/2020.
[3] FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016 Previous V2.30 SP1, installed 10/22/2014.
[4] FSVR40 Firmware revision: V2.23 SP1, Date installed: 08/19/2016 Previous V2.23, installed 10/22/2014.

Manufacturer	Software Description	Title or Model #	Rev.	Report Sections
Compliance Worldwide	Test Report Generation Software	Test Report Generator	1.0	Used to process conducted emissions data

4.2. Measurement & Equipment Setup

Test Dates:	1/4/2024
Test Engineer:	Sean Defelice
Normal Site Temperature (15 - 35°C):	24.0
Relative Humidity (20 - 75% RH):	33%
Frequency Range:	9 kHz to 1 GHz
Measurement Distance:	3 & 1 Meters
EMI Receiver IF Bandwidth:	200 Hz – 10 to 150 kHz 9 kHz – 150 kHz to 30 MHz 120 kHz - 30 MHz to 1 GHz
EMI Receiver Avg Bandwidth:	>= 3 * RBW
Detector Function:	Peak, QP - 30 MHz to 1 GHz Peak, Avg - Above 1 GHz Unless otherwise specified.

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4. Measurements Parameters (continued)

4.3 Measurement Procedure

The test measurements contained in this report are based on the requirements detailed in FCC Part 15, Subpart C - Intentional Radiators, notably Section 15.225, Operation within the band 13.110 – 14.010 MHz and ISED RSS-210, Issue 10 Annex B.6. The test procedures for these measurements are detailed in ANSI C63.10-2013.

5. Choice of Equipment for Test Suits

5.1. Choice of Model

This test report is based on the test samples supplied by the manufacturer and are reported by the manufacturer to be equivalent to the production units.

5.2. Presentation

The test sample was tested complete with all required ancillary equipment. Refer to Section 3 of this report for the product equipment configuration.

5.3. Choice of Operating Frequencies

The transmitter in the unit under test utilizes a single operating frequency at approximately 13.56 MHz.

6. Measurement Summary

Test Requirement	FCC Part 15 Reference	RSS Reference	Test Report Section	Result	Comment
Antenna Requirement	15.203	RSS-GEN Section 7.1.2	7.1	Compliant	
Operation within the Band 13.110 MHz – 14.010 MHz (Radiated Field Strength)	15.225 (a), (b), (c)	RSS-210 Section B6	7.2	Compliant	
Spurious Radiated Emissions	15.209		7.3	Compliant	
Operation within the Band 13.110 MHz – 14.010 MHz (Frequency Stability)	15.225 (e)	RSS-210 Section B6	7.4	Compliant	
Occupied Bandwidth/ Lower and Upper Band Edges	15.215(c) C63.10	N/A	7.5	Compliant	
99% Power Bandwidth	N/A	RSS-GEN Section 4.6.1	7.6	Compliant	
Power Line Conducted Emissions	15.207	RSS-GEN Section 7.2.4	7.7	Compliant	

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7. Measurement Data

7.1. Antenna Requirement (Section 15.203, RSS-GEN 7.1.2)

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 with the provisions of this Section.

Status: The RFID antenna utilized by the device under test is a PCB antenna contained inside a non-user accessible enclosure.

Result: Compliant

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7. Measurement Data (continued)

7.2. Operation within the Band 13.110 MHz – 14.010 MHz (15.225 (a), (b) and (c))

Radiated Field Strength of Fundamental (15.225 (a), (b) and (c))

Requirement: (a) The field strength of any emissions within the band 13.553 - 13.567 MHz shall not exceed 15,848 microvolts/meter (84 dBµV/m) at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (50.5 dBµV/m) at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (40.5 dBµV/m) at 30 meters.

Test Note: Reference ANSI C63.10-2013 sections 5.3.2 and 6.4.4.2. The following formula was used to extrapolate the measurement distance to the limit distance:

$$FS_{limit} = FS_{max} - 40\log\left(\frac{d_{near\ field}}{d_{measure}}\right) - 20\log\left(\frac{d_{limit}}{d_{near\ field}}\right)$$ Equation 1

FS_{limit} is the calculation of field strength at the limit distance (dBµV/m)	**48.97**
FS_{max} is the measured field strength, expressed in (dBµV/m QP @ 3M)	70.36
$d_{near\ field}$ is the λ / 2π distance (Meters)	3.52
$d_{measure}$ is the distance of the measurement point from the EUT (Meters)	3.00
d_{limit} is the reference limit distance (Meters)	30.00

The screen captures on the following pages display the value measured at a distance of 3 meters. This distance value was adjusted to the limit distance using the formula detailed in Equation 1.

Result: Compliant - The fundamental frequency radiated field strength of the device under test complies with the requirements detailed in FCC Part 15.225, Section (a).

The peak field strength of the device under test met the average requirement. For this reason, the quasi-peak field strength was not factored using a duty cycle correction factor.

Freq. (MHz)	Ampl.[1] (dBµV/m) Peak	Corr. Ampl.[2] (dBµV/m) (3M) QP	Corr. Ampl.[2] (dBµV/m) (30M) QP	FCC 15.225 Limit (dBµV/m) QP 30M	Margin (dB)	Ant Pos. Par/Per Gnd Par	Ant Height (cm)	Turntable Azimuth (Deg)	Result
13.56	70.75	70.36	48.97	84.00	-13.64	Parallel	100	354	Compliant

[1] Measurement has been extrapolated from 3 meters to 30 meters using Equation 1 on this page.

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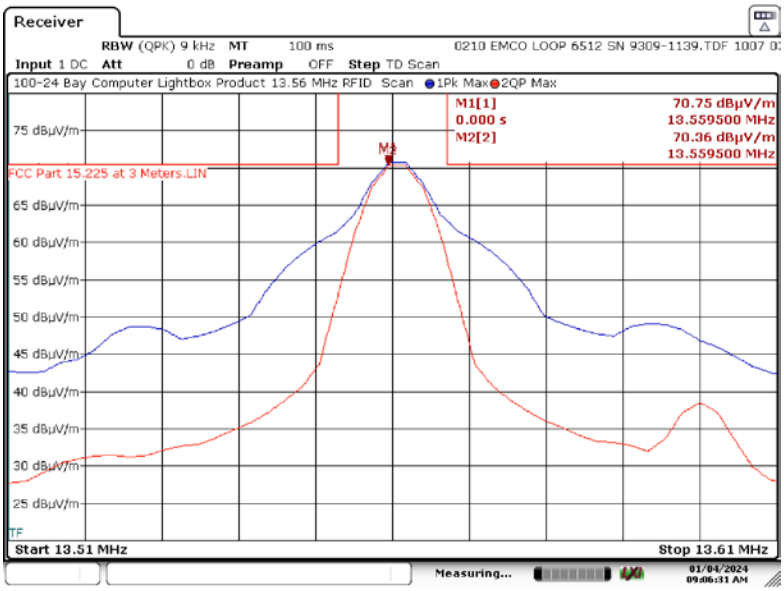
7. Measurement Data (continued)

7.2. Operation within the Band 13.110 MHz – 14.010 MHz (15.225 (a), (b) and (c))

Radiated Field Strength of Fundamental (15.225 (a), (b) and (c)) (continued)

7.2.1. Worst Case Field Strength of the Fundamental – Parallel Antenna



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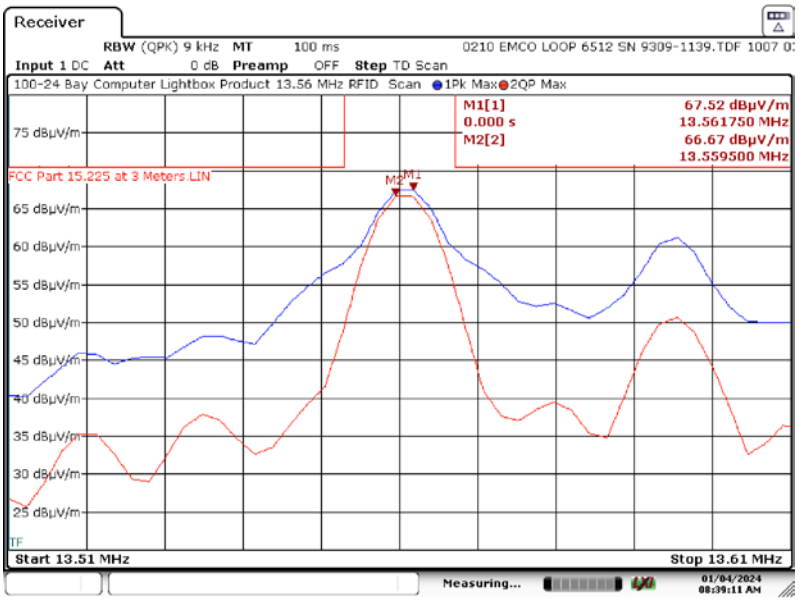
7.2.2. Worst Case Field Strength of the Fundamental – Perpendicular Antenna



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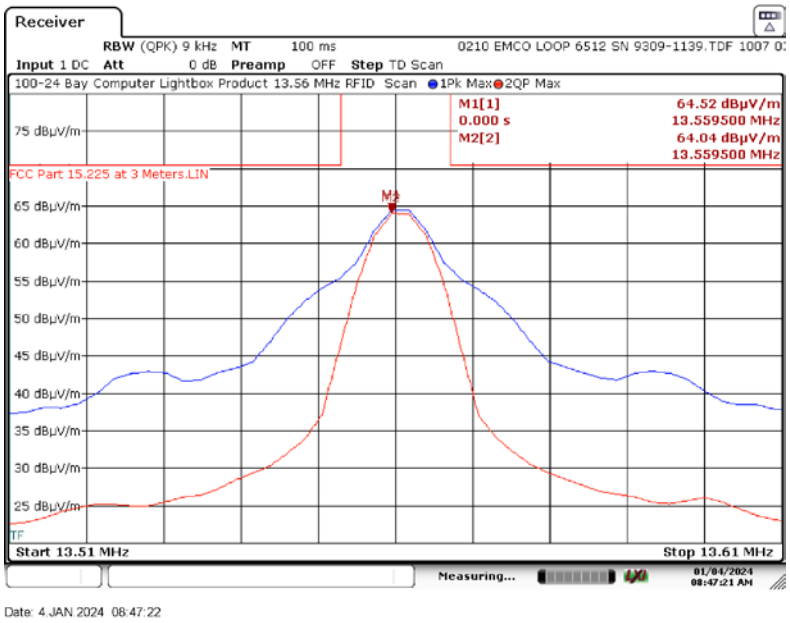
7. Measurement Data (continued)

7.2. Operation within the Band 13.110 MHz – 14.010 MHz (15.225 (a), (b) and (c))

Radiated Field Strength of Fundamental (15.225 (a), (b) and (c)) (continued)

7.2.3. Worst Case Field Strength of the Fundamental – Ground Parallel Antenna



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7. Measurement Data (continued)

7.3. Transmitter Spurious Radiated Emissions (15.225 (d), 15.209)

Requirement: The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table (Reference FCC 15.209):

Frequency (MHz)	Field Strength (µV/m)	Meas. Dist. (meters)	Field Strength (dBµV/m)	Distance (Meters)
0.009–0.490	2400/F(kHz)	300	128.5 to 93.8	3
0.490–1.705	24000/F(kHz)	30	73.8 to 63.0	3
1.705–30.0	30	30	69.5	3
30-88	100	3	40	3
88-216	150	3	43.5	3
216-960	200	3	46	3
Above 960	500	3	54	3

[1] Measurements in the 9 to 90 kHz, 110 to 490 kHz and above 1000 MHz ranges employ an average detector. Otherwise, a quasi-peak detector is used.

[2] Extrapolation below 30 MHz is calculated at 40 dB/decade.

Procedure: Test measurements were made in accordance with ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices, Section 6.5.

Results: Compliant - The transmitter installed in the unit under test meets the FCC Part 15.209 emissions requirements.

Sample Calculation: Final Result (dBµV/m) = Measurement Value (dBµV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

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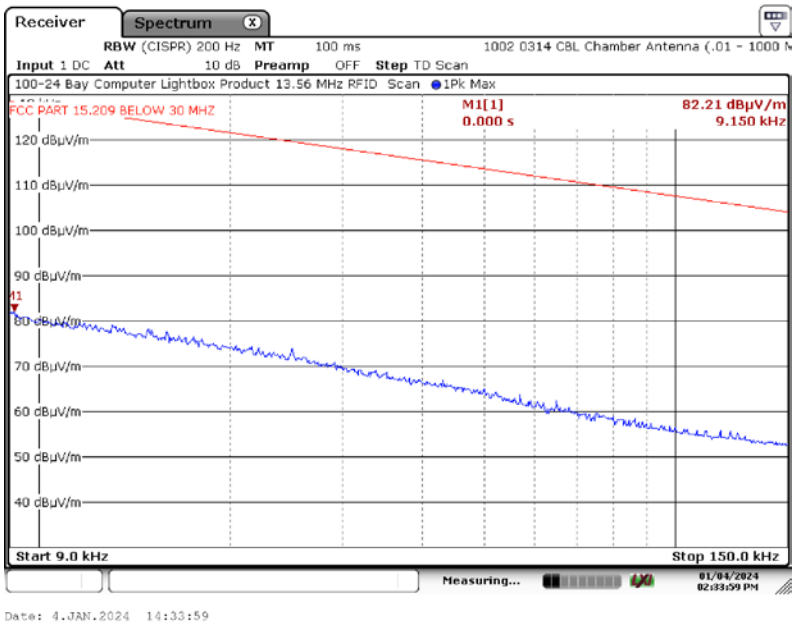
7. Measurement Data (continued)

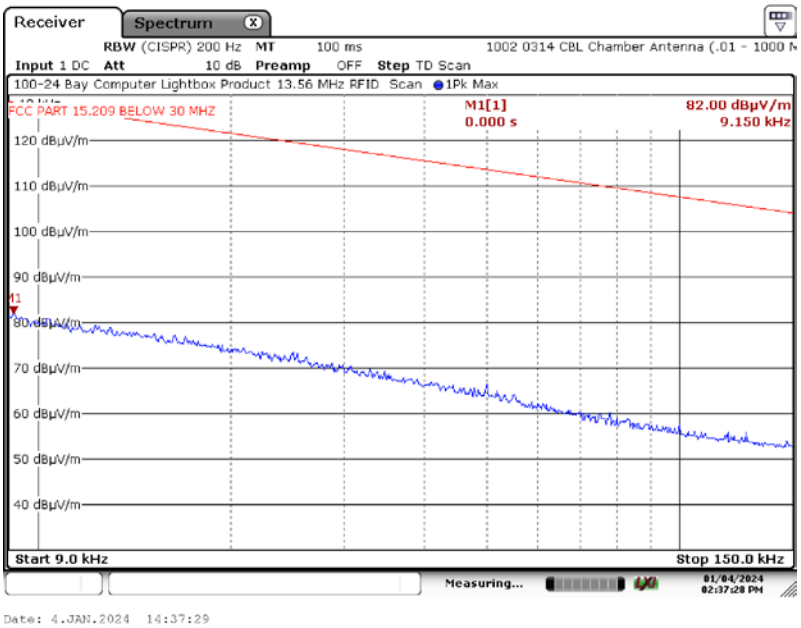
7.3. Spurious Radiated Emissions, 9 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

7.3.1. Spurious Radiated Emissions, 9 kHz to 150 kHz Test Results

7.3.1.1. Parallel Antenna



7.3.1.2. Perpendicular Antenna



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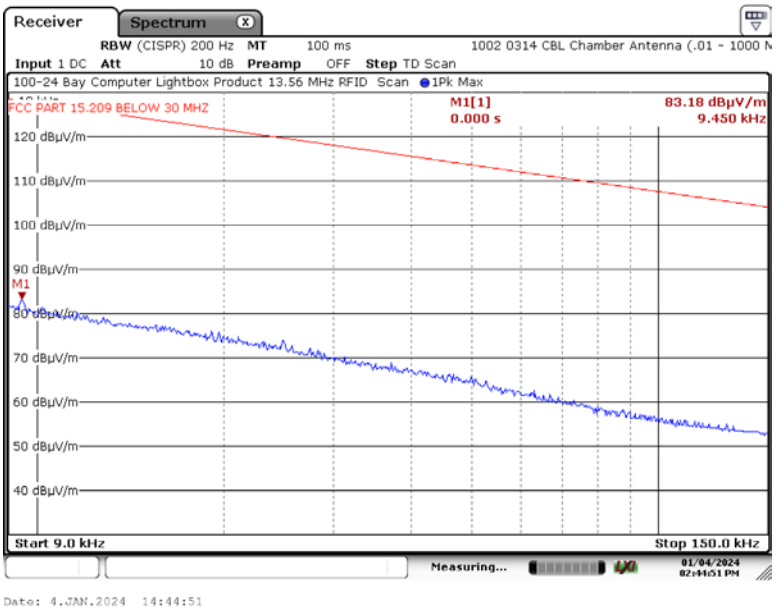
7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 9 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

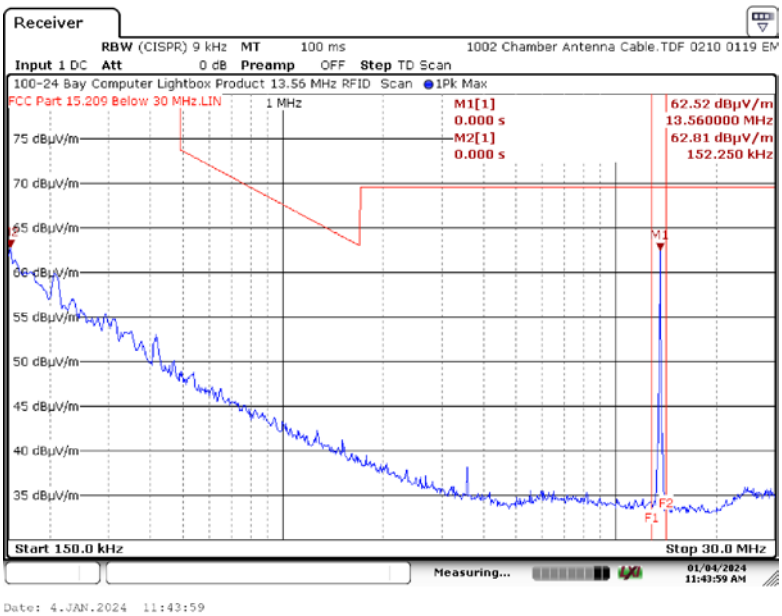
7.3.1. Spurious Radiated Emissions, 9 kHz to 150 kHz Test Results

7.3.1.3. Ground Parallel Antenna



7.3.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

7.3.2.1. Parallel Antenna



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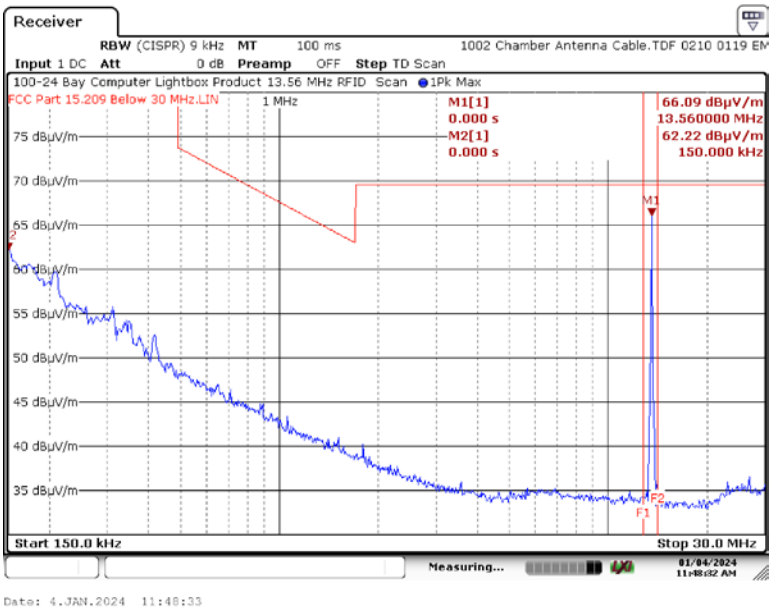
7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 9 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

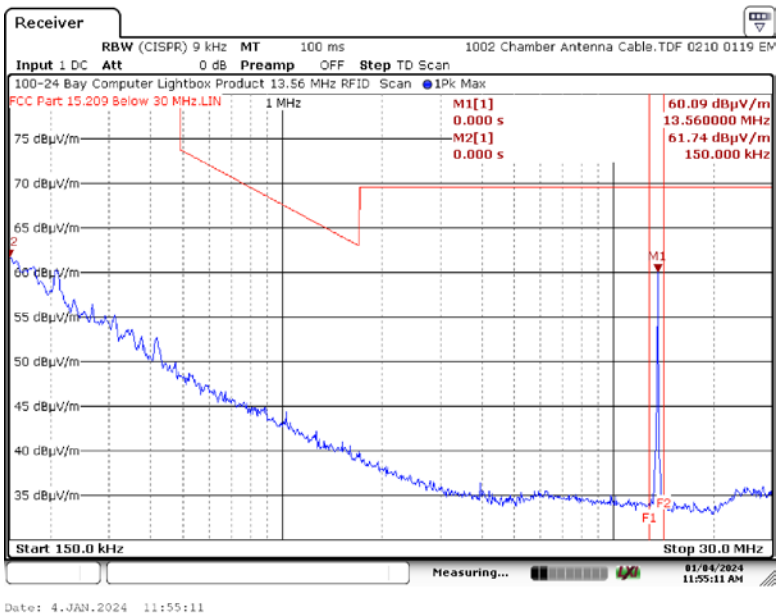
7.3.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

7.3.2.2. Perpendicular Antenna



7.3.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

7.3.2.3. Ground Parallel Antenna



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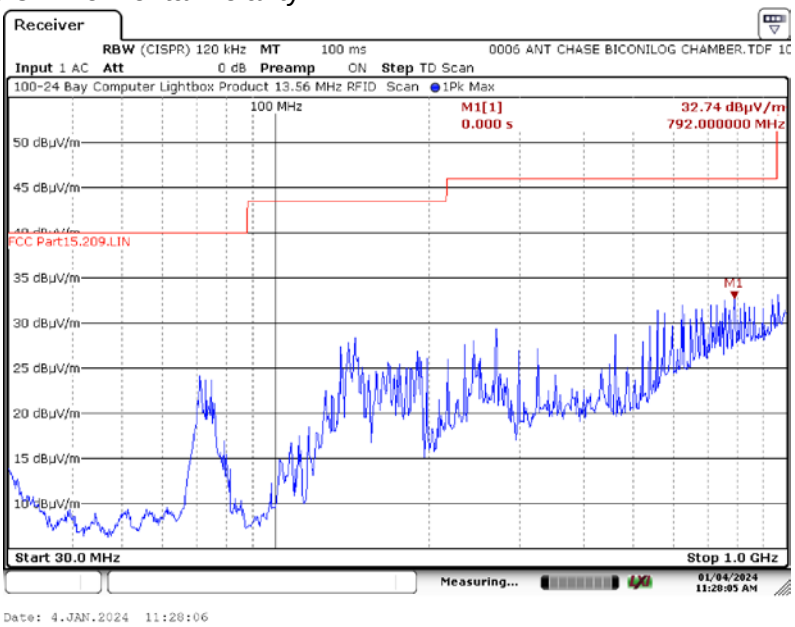
7. Measurement Data (continued)

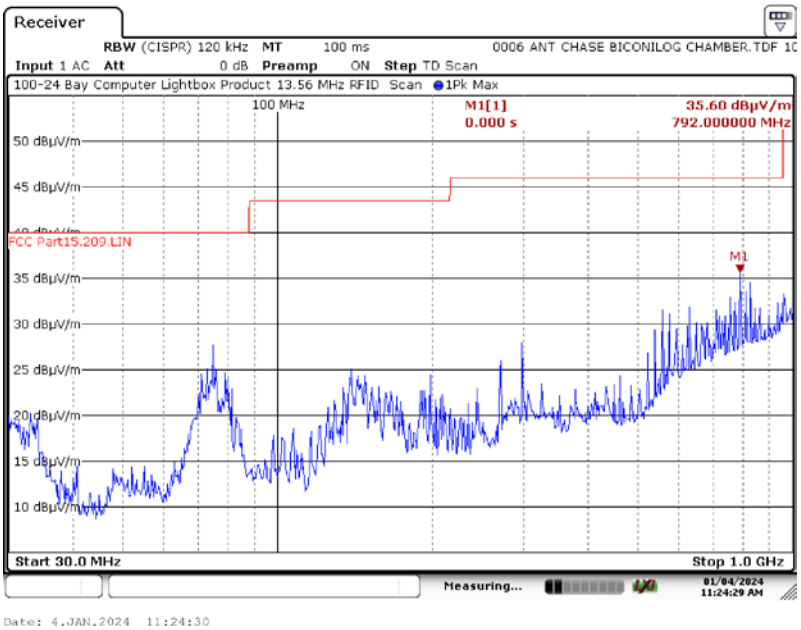
7.3. Spurious Radiated Emissions,9 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

7.3.3. Spurious Radiated Emissions, 30 MHz to 1 GHz Test Results

7.3.3.1 Horizontal Polarity



7.3.3.2 Vertical Polarity



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7. Measurement Data (continued)

7.4. Frequency Stability (§ 15.225 (e))

Requirement: The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Notes: The size of the host device that houses the device under test exceeds the volume of the site environmental chamber. In order to test the RFID transmitter and antenna assembly, it was necessary to remove the assembly from the host device and test it in the environmental chamber. In order to do this, a custom cable capable of carrying all power and signal lines to the DUT was constructed. By doing so, the DUT was subjected to the required temperature variations while maintaining operational communications with the host device.

Result: Compliant - The unit under test complies with the requirements detailed in FCC Part 15.225 (e).

7.4.1. Temperature and Voltage Variation

Temp °C	Supply Voltage	Meas Freq.	Limit			Offset	Result
		(MHz)	F_{MIN} (MHz)	F_{MAX} (MHz)	%	(%)	
Ambient	120 VAC	13.5602800	N/A			N/A	
-20		13.5602795	13.558924	13.561636	±0.01	0.00000369	Compliant
-10		13.5603095	13.558924	13.561636	±0.01	0.00021755	Compliant
0		13.5603195	13.558924	13.561636	±0.01	0.00029129	Compliant
+10		13.5601595	13.558924	13.561636	±0.01	0.00088862	Compliant
+20		13.5602695	13.558924	13.561636	±0.01	0.00007743	Compliant
+30		13.5602195	13.558924	13.561636	±0.01	0.00044616	Compliant
+40		13.5601695	13.558924	13.561636	±0.01	0.00081488	Compliant
+50		13.5601295	13.558924	13.561636	±0.01	0.00110986	Compliant
+20	102 VAC	13.5602895	13.558924	13.561636	±0.01	0.00007006	Compliant
	138 VAC	13.5601295	13.558924	13.561636	±0.01	0.00110986	Compliant

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7. Measurement Data (continued)

7.5. Occupied Bandwidth (Section 15.215 (c) and ANSI C63.10, Section 6.9)

Requirement: Intentional radiators operating under the alternative provisions to the general emission limits, as contained in Sections 15.217 through 15.255 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW

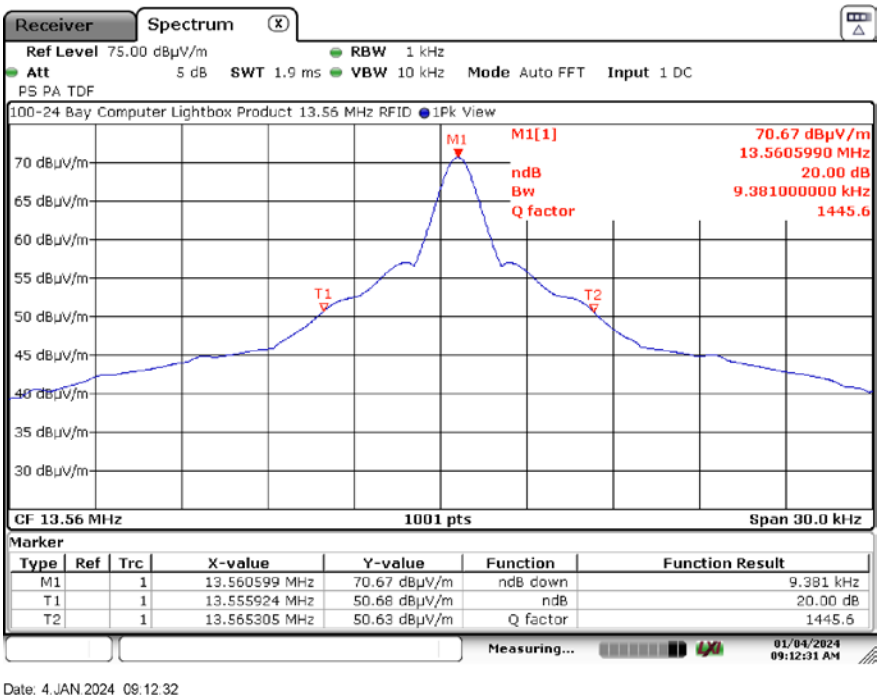
Frequency Band: F_{MIN} = 13.110 MHz

F_{MAX} = 14.010 MHz

Result: Compliant.

-20 dB Frequency Measured		Lower & Upper Band Edge		Result
(F_{LO} & F_{HI})		(F_{MIN} & F_{Max})		
MHz		MHz		
F_{LO}	13.555924	F_{MIN}	13.11	Compliant (F_{LO} > F_{MIN})
F_{HI}	13.565305	F_{MAX}	14.01	Compliant (F_{HI} < F_{Max})

7.5.1. Plot of 20 dB Bandwidth vs. Frequency Band



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7. Measurement Data (continued)

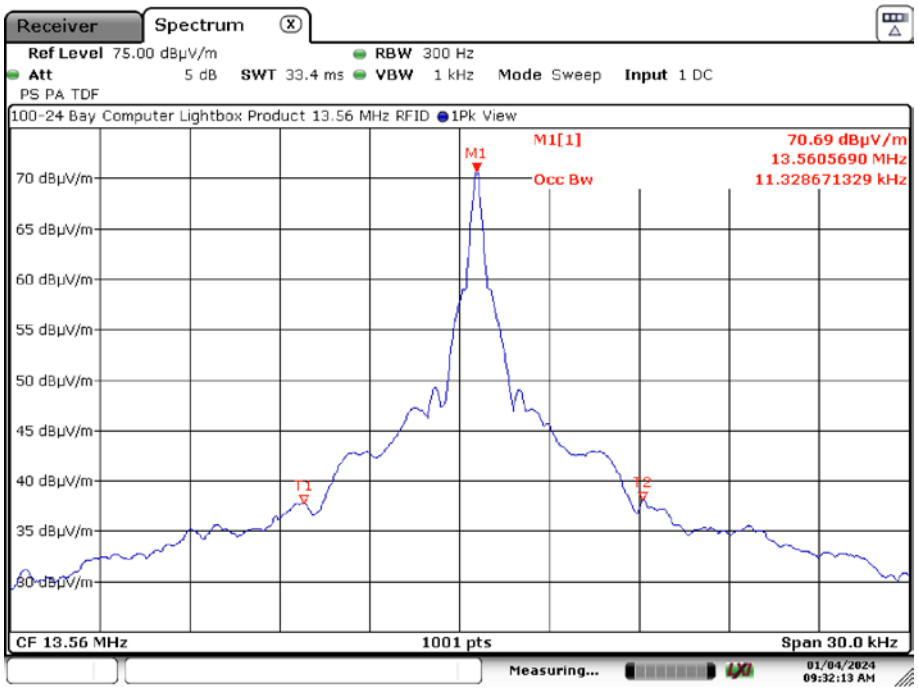
7.6. 99% Power Bandwidth (RSS-GEN Section 4.6.1)

Requirement: When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than the actual.

Procedure: This test was performed utilizing the automated 99% bandwidth function of the spectrum analyzer.

Frequency (MHz)	99% Power Bandwidth (kHz)
13.560	11.329

7.6.1. Plot of 99% Power Bandwidth



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7. Measurement Data (continued)

7.7. Power Line Conducted Emissions (FCC Part 15.207)

Requirement: For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

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.		

Procedure: Test measurements were made in accordance with ANSI C63.10-2013, Section 6.2: Standard test method for ac powerline conducted emissions from unlicensed wireless devices.

Results: The device under test meets the FCC Part 15.207 conducted emissions requirements.

Notes: A dummy load was used in place of the EUT antenna for the measurement at the fundamental frequency of 13.56 MHz per FCC KDB 174176 Line Conducted FAQs v01r01 Q5, dated June 3, 2015.

Sample Calculation: Final Result (dBµV) = Measurement Value (dBµV) + LISN Insertion Loss (dB) + Cable Loss (dB).

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

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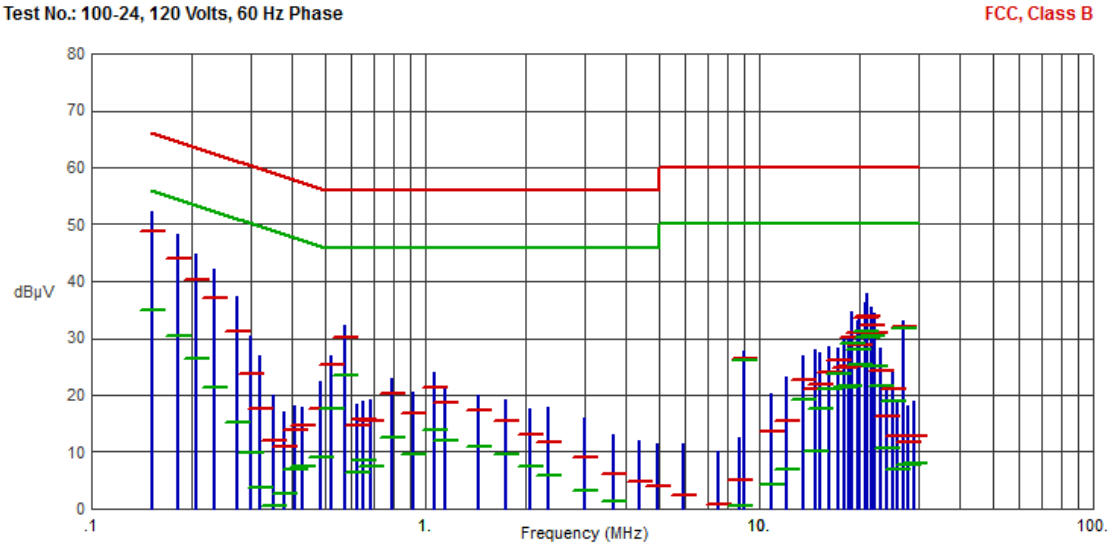
7. Conducted Emissions Test Results

7.7. Power Line Conducted Emissions (15.207)

7.7.1. 120 Volts, 60 Hz Phase



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1523	52.21	48.74	65.87	-17.13	34.87	55.87	-21.00	
.1815	48.17	43.95	64.42	-20.47	30.28	54.42	-24.14	
.2063	44.69	40.14	63.35	-23.21	26.51	53.35	-26.84	
.2333	42.15	37.06	62.33	-25.27	21.30	52.33	-31.03	
.2738	37.39	31.24	61.00	-29.76	15.19	51.00	-35.81	
.3008	30.35	23.79	60.22	-36.43	9.96	50.22	-40.26	
.3210	27.04	17.60	59.68	-42.08	3.75	49.68	-45.93	
.3503	20.13	11.94	58.96	-47.02	.47	48.96	-48.49	
.3795	17.02	11.01	58.29	-47.28	2.78	48.29	-45.51	
.4065	18.06	13.83	57.72	-43.89	6.81	47.72	-40.91	
.4290	17.78	14.54	57.27	-42.73	7.34	47.27	-39.93	
.4853	22.38	17.65	56.25	-38.60	8.97	46.25	-37.28	
.5213	26.89	25.24	56.00	-30.76	17.54	46.00	-28.46	
.5753	32.25	30.20	56.00	-25.80	23.46	46.00	-22.54	
.6225	18.45	14.57	56.00	-41.43	6.42	46.00	-39.58	
.6518	19.03	15.74	56.00	-40.26	8.63	46.00	-37.37	
.6833	19.15	15.37	56.00	-40.63	7.41	46.00	-38.59	
.7958	22.84	20.15	56.00	-35.85	12.60	46.00	-33.40	
.9218	20.53	16.85	56.00	-39.15	9.70	46.00	-36.30	
1.0703	23.96	21.20	56.00	-34.80	13.93	46.00	-32.07	
1.1468	21.54	18.68	56.00	-37.32	12.09	46.00	-33.91	
1.4483	20.08	17.24	56.00	-38.76	10.84	46.00	-35.16	
1.7475	19.18	15.42	56.00	-40.58	9.51	46.00	-36.49	
2.0693	17.61	13.19	56.00	-42.81	7.45	46.00	-38.55	
2.3325	17.89	11.78	56.00	-44.22	5.83	46.00	-40.17	
2.9918	16.05	9.11	56.00	-46.89	3.18	46.00	-42.82	
3.6780	13.08	6.03	56.00	-49.97	1.25	46.00	-44.75	
4.3620	12.00	4.76	56.00	-51.24	-.30	46.00	-46.30	
4.9583	11.43	3.93	56.00	-52.07	-1.17	46.00	-47.17	

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7. Conducted Emissions Test Results

7.7. Power Line Conducted Emissions (15.207)

7.7.2. 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
5.9483	11.59	2.44	60.00	-57.56	-3.02	50.00	-53.02	
7.5143	10.15	.69	60.00	-59.31	-4.88	50.00	-54.88	
8.7630	12.45	5.09	60.00	-54.91	.46	50.00	-49.54	
8.9993	27.81	26.53	60.00	-33.47	26.18	50.00	-23.82	
10.8645	20.32	13.60	60.00	-46.40	4.30	50.00	-45.70	
12.1358	23.08	15.42	60.00	-44.58	7.01	50.00	-42.99	
13.5600	26.96	22.68	60.00	-37.32	19.25	50.00	-30.75	
14.7120	28.05	21.02	60.00	-38.98	10.16	50.00	-39.84	
15.1868	27.40	21.98	60.00	-38.02	17.59	50.00	-32.41	
16.2195	28.49	23.90	60.00	-36.10	20.99	50.00	-29.01	
17.2545	28.35	26.00	60.00	-34.00	23.79	50.00	-26.21	
17.9993	30.19	24.79	60.00	-35.21	21.39	50.00	-28.61	
18.6315	29.82	25.14	60.00	-34.86	21.73	50.00	-28.27	
19.0005	34.58	30.24	60.00	-29.76	29.00	50.00	-21.00	
19.6688	33.14	30.80	60.00	-29.20	27.88	50.00	-22.12	
20.0153	34.07	28.79	60.00	-31.21	25.43	50.00	-24.57	
20.7060	36.23	33.55	60.00	-26.45	31.20	50.00	-18.80	
21.0503	37.92	33.96	60.00	-26.04	30.03	50.00	-19.97	
21.7433	35.52	32.15	60.00	-27.85	30.38	50.00	-19.62	
22.0853	34.46	30.92	60.00	-29.08	25.10	50.00	-24.90	
23.1203	28.19	24.19	60.00	-35.81	21.57	50.00	-28.43	
24.1553	21.54	16.37	60.00	-43.63	10.68	50.00	-39.32	
24.9990	24.42	21.19	60.00	-38.81	19.04	50.00	-30.96	
25.8788	19.03	12.82	60.00	-47.18	6.84	50.00	-43.16	
26.9993	33.07	32.09	60.00	-27.91	31.73	50.00	-18.27	
27.9510	18.10	11.61	60.00	-48.39	7.67	50.00	-42.33	
28.9860	18.87	12.84	60.00	-47.16	7.94	50.00	-42.06	

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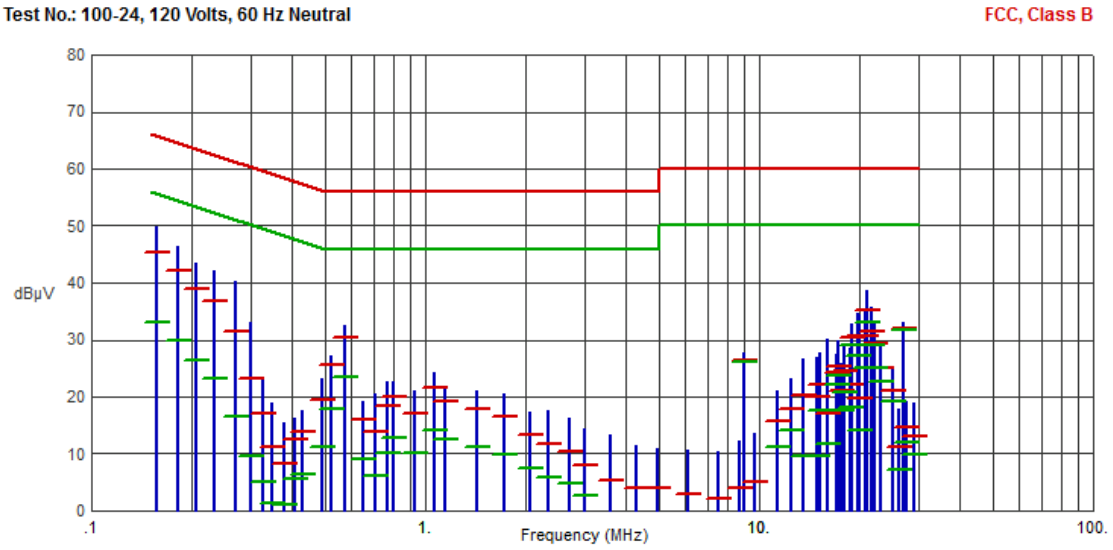
7. Conducted Emissions Test Results

7.7. Power Line Conducted Emissions (15.207)

7.7.2. 120 Volts, 60 Hz Neutral



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1568	49.92	45.41	65.63	-20.22	32.96	55.63	-22.67	
.1815	46.45	42.01	64.42	-22.41	29.79	54.42	-24.63	
.2063	43.43	38.82	63.35	-24.53	26.47	53.35	-26.88	
.2333	42.05	36.93	62.33	-25.40	23.20	52.33	-29.13	
.2715	40.24	31.46	61.07	-29.61	16.58	51.07	-34.49	
.3008	33.06	23.15	60.22	-37.07	9.73	50.22	-40.49	
.3255	23.18	17.16	59.57	-42.41	4.98	49.57	-44.59	
.3458	18.89	11.27	59.06	-47.79	1.28	49.06	-47.78	
.3795	15.52	8.31	58.29	-49.98	1.02	48.29	-47.27	
.4065	16.38	12.65	57.72	-45.07	5.50	47.72	-42.22	
.4290	17.63	13.82	57.27	-43.45	6.44	47.27	-40.83	
.4898	23.07	19.36	56.17	-36.81	11.07	46.17	-35.10	
.5213	27.27	25.59	56.00	-30.41	17.84	46.00	-28.16	
.5730	32.57	30.31	56.00	-25.69	23.48	46.00	-22.52	
.6495	19.19	16.12	56.00	-39.88	8.98	46.00	-37.02	
.7080	20.64	13.84	56.00	-42.16	6.07	46.00	-39.93	
.7665	22.65	18.51	56.00	-37.49	10.22	46.00	-35.78	
.8003	22.64	20.09	56.00	-35.91	12.70	46.00	-33.30	
.9263	20.99	17.18	56.00	-38.82	10.17	46.00	-35.83	
1.0703	24.35	21.61	56.00	-34.39	14.24	46.00	-31.76	
1.1490	21.75	19.14	56.00	-36.86	12.58	46.00	-33.42	
1.4258	21.10	17.89	56.00	-38.11	11.32	46.00	-34.68	
1.7295	20.62	16.41	56.00	-39.59	9.75	46.00	-36.25	
2.0693	17.46	13.30	56.00	-42.70	7.58	46.00	-38.42	
2.3348	17.50	11.80	56.00	-44.20	5.80	46.00	-40.20	
2.6903	16.37	10.50	56.00	-45.50	4.77	46.00	-41.23	

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7. Conducted Emissions Test Results

7.7. Power Line Conducted Emissions (15.207)

7.7.2. 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
3.0053	14.52	7.98	56.00	-48.02	2.61	46.00	-43.39	
3.5993	13.31	5.28	56.00	-50.72	-1.13	46.00	-47.13	
4.2720	11.36	4.04	56.00	-51.96	-.99	46.00	-46.99	
4.9425	10.81	3.92	56.00	-52.08	-1.37	46.00	-47.37	
6.1350	10.74	2.93	60.00	-57.07	-2.84	50.00	-52.84	
7.5435	10.39	2.16	60.00	-57.84	-3.38	50.00	-53.38	
8.7630	12.18	4.02	60.00	-55.98	-.76	50.00	-50.76	
8.9993	27.62	26.45	60.00	-33.55	26.11	50.00	-23.89	
9.7125	13.65	5.08	60.00	-54.92	-.25	50.00	-50.25	
11.3910	21.02	15.74	60.00	-44.26	11.31	50.00	-38.69	
12.4260	23.11	17.99	60.00	-42.01	14.10	50.00	-35.90	
13.5263	26.54	20.34	60.00	-39.66	9.64	50.00	-40.36	
14.8470	26.96	19.93	60.00	-40.07	9.67	50.00	-40.33	
15.1868	27.76	22.05	60.00	-37.95	17.63	50.00	-32.37	
16.0148	30.24	17.07	60.00	-42.93	11.78	50.00	-38.22	
17.0003	27.49	24.21	60.00	-35.79	22.05	50.00	-27.95	
17.2568	29.92	25.29	60.00	-34.71	23.73	50.00	-26.27	
17.6055	25.91	21.19	60.00	-38.81	17.50	50.00	-32.50	
18.0015	29.01	24.64	60.00	-35.36	20.87	50.00	-29.13	
18.6428	28.42	22.09	60.00	-37.91	18.21	50.00	-31.79	
19.0005	32.75	30.42	60.00	-29.58	29.01	50.00	-20.99	
19.6755	34.62	30.56	60.00	-29.44	27.11	50.00	-22.89	
19.9838	34.49	19.68	60.00	-40.32	14.01	50.00	-35.99	
20.7128	35.01	30.59	60.00	-29.41	25.16	50.00	-24.84	
21.0525	38.69	35.16	60.00	-24.84	33.03	50.00	-16.97	
21.7455	35.85	31.60	60.00	-28.40	28.96	50.00	-21.04	
22.0920	33.34	29.35	60.00	-30.65	25.15	50.00	-24.85	
23.1270	29.60	25.06	60.00	-34.94	22.72	50.00	-27.28	
24.9990	25.11	21.18	60.00	-38.82	19.12	50.00	-30.88	
26.2343	17.84	11.15	60.00	-48.85	7.30	50.00	-42.70	
26.9993	33.03	32.09	60.00	-27.91	31.72	50.00	-18.28	
27.6113	19.12	14.57	60.00	-45.43	12.12	50.00	-37.88	
28.9995	18.81	13.05	60.00	-46.95	9.95	50.00	-40.05	

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8. 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 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 32, 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.

The radiated emissions test site for measurements above 1GHz is a 3 Meter open area test site (OATS) with a 3.6 by 3.6 meter anechoic absorber floor patch to achieve a quasi-free space measurement environment per ANSI C63.4/C63.10 and CISPR 16-1-4 standards.

The 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.

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9. Test Setup Photographs

9.1. Radiated Emissions Front View Below 30 MHz

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9. Test Setup Photographs

9.2. Radiated Emissions Rear View – Fundamental & Spurious Emissions < 30 MHz

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9. Test Setup Photographs

9.3. Radiated Emissions Rear View Emissions 30 MHz to 1 GHz

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9. Test Setup Photographs

9.4. Power Line Conducted Emissions - Front

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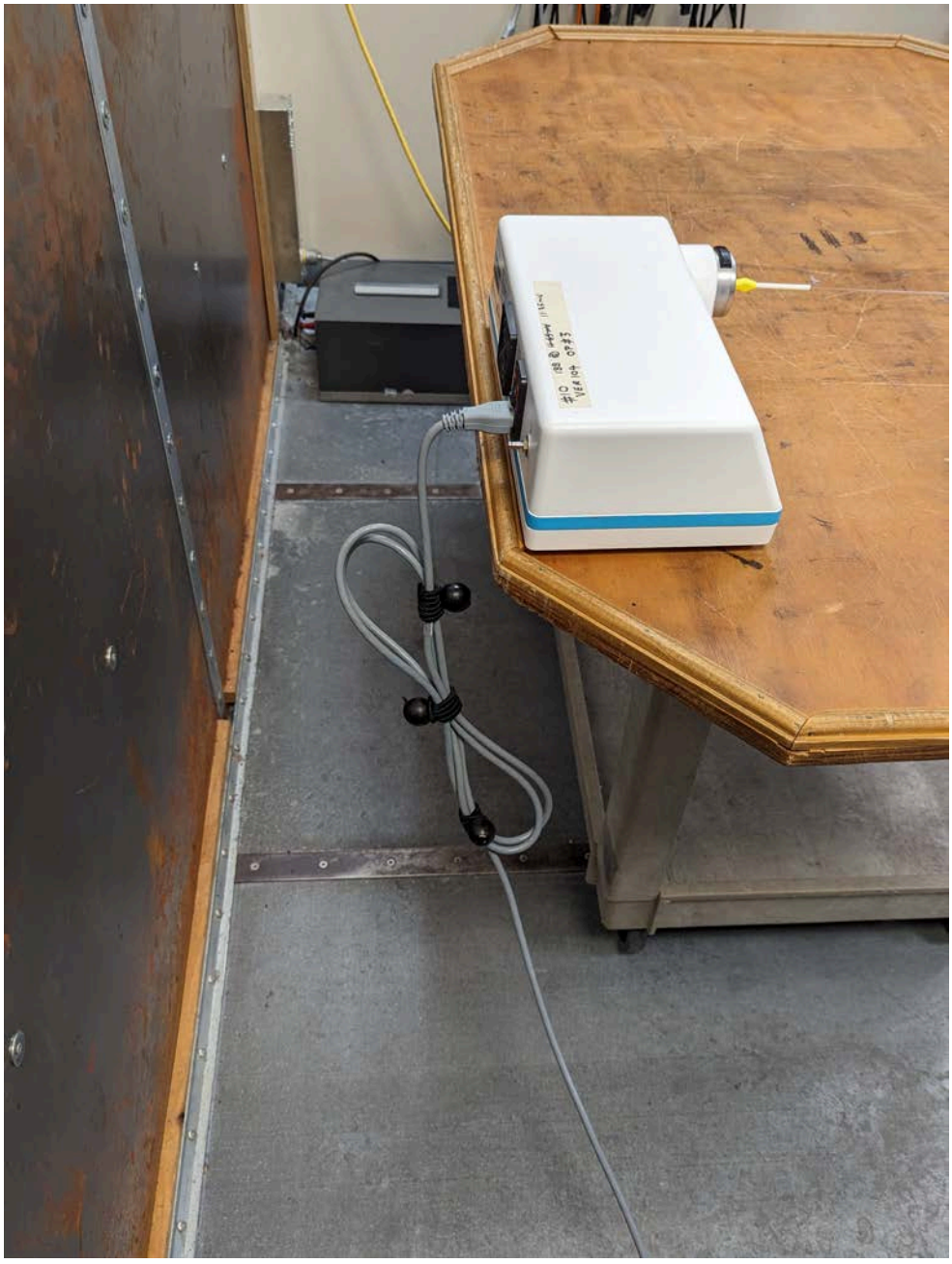
9. Test Setup Photographs

9.5. Power Line Conducted Emissions – Back



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