COMPLIANCE WORLDWIDE INC.
TEST REPORT 249-23

In Accordance with the Requirements of

FCC PART 15.209, SUBPART C

Issued to

Nova Biomedical
200 Prospect Street
Waltham, MA 02454

for the

Nova StatStrip Hospital Meter
Wireless Charging Station
Model: 65736

FCC ID: QYY-65513

Report Issued on November 30, 2023

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 Nova Biomedical StatStrip Hospital Meter Wireless Charging Station, as tested, meets the FCC Part 15.209 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. Measurement Uncertainty will not be applied to any of the measurement / testing results in this test report to determine pass/fail criteria per the Decision Rule as defined in ISO/IEC Guide 17025-2017 Clause 3.7.

2. Product Details

2.1. Manufacturer:	Nova Biomedical
2.2. Model Number:	65736
2.3. Serial Numbers:	Pre-production
2.4. Description:	The wireless charging station recharges the StatStrip Hospital Meter battery using the WPC 1.2 specification technology.
2.5. Power Source:	12 VDC via Adapter Tech model AT-M024T-W120V, 24W
2.6. Hardware Revision:	N/A
2.7. Software Revision:	N/A
2.8. Modulation Type:	FSK
2.9. Operating Frequency:	110 to 145 kHz
2.10. EMC Modifications:	None

3. Product Configuration

3.1. Operational Characteristics & Software

Once powered is applied to the product the EUT is configured to transmit continuously.

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
Nova Biomedical	65736	Pre-production	12	DC	Wireless Charging Station

3.3. EUT Cables/Transducers

Cable Type	Length	Shield	From	To
Power	2M	No	EUT	Mains Power

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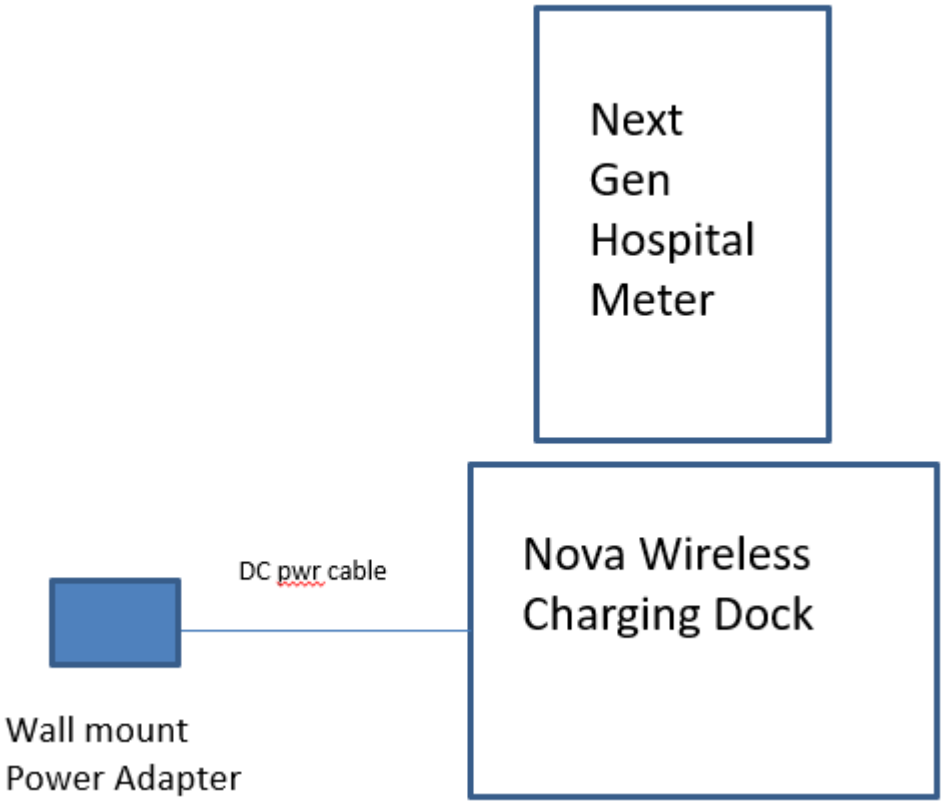
3. Product Configuration (continued)

3.4. Support Equipment

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

3.5. Block Diagram



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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
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	4/14/2024	2 Years
Passive Loop Antenna, 20 Hz - 5 MHz	EMCO	6511	00108119	3/31/2024	2 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	7/1/2024	3 Years
Digital Barometer	Control Company	4195	ID236	1/27/2025	3 Years

[1] ESR7 Firmware revision: V3.48 SP3, Date installed: 09/30/2020 Previous V3.48 SP2, installed 07/23/2020.

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:	July 5th, 7th, 24th 2023
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 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 1 MHz – Above 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.

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 15.209, Radiated emission limits; general requirements and ANSI C63.10:2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

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5. Choice of Equipment for Test Suites

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 an operating frequency at approximately 110-145 kHz.

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6. Measurements Summary

Test Requirement	FCC Rule Requirement	Report Section	Result
Antenna requirement	15.203	7.1	Compliant
Radiated Field Strength of Fundamental	15.209(a)	7.2	Compliant
Emission Bandwidth	15.209 Not Specified	7.3	Compliant
Spurious Radiated Emissions	15.209	7.4	Compliant
Power Line Conducted Emissions	15.207	7.5 7.6	Compliant

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7. Measurement Data

7.1. 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 with the provisions of this Section.

Status: The device under test utilizes an internal, coil antenna. There is no user access to this antenna.

7.2. Radiated Field Strength of Fundamental (15.209, Section (a))

Requirement: Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

For 144.5 kHz: Field Strength (µV/m) = 2400/F(kHz) at 300 meters.
Field Strength (µV/m) = 2400/144.5
Field Strength (µV/m) = 16.61
Field Strength (dBµV/m) = 20 LOG_{10}(16.61)
Field Strength (dBµV/m) = 24.41 at 300 meters.

Test Notes: From 110 kHz to 490 kHz, the field strength limit employs an average detector (FCC Part 15.209(d)).

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)	**8.61**
FS_{max} is the measured field strength, expressed in (dBµV/m) (peak)	88.61
$d_{near\ field}$ is the $\lambda/2\pi$ distance (Meters)	330.43
$d_{measure}$ is the distance of the measurement point from the EUT (Meters)	3.00
d_{limit} is the reference limit distance (Meters)	300.00

Since $d_{near\ field}$ is greater than d_{limit}, the measurement formula was simplified to:

$FS_{limit} = FS_{max} - 40\log (d_{limit}/d_{measure})$.

Results: Compliant

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7. Measurement Data (continued)

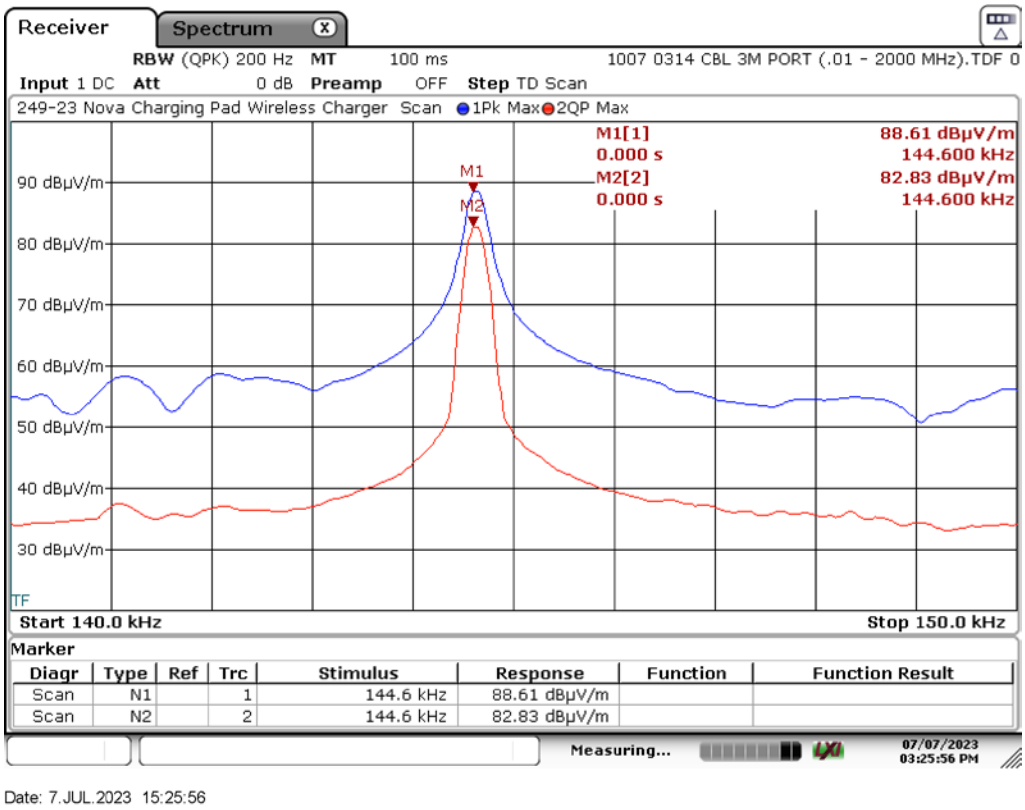
7.2. Radiated Field Strength of Fundamental (15.209, Section (a)

7.2.1. Worst Case Radiated Field Strength of Fundamental

Freq. (MHz)	Amplitude[1] (dBµV/m)	Duty Cycle Correction[2]	Corr. Ampl.[2] (dBµV/m)	FCC 15.209 Limit (dBµV/m) (Average)	Margin (dB)	Ant Position	Ant Height	Turntable Azimuth	Result
	Peak	dB	Peak			Par/Per	cm	Deg	
0.144500	8.61	0.00	8.61	24.41	-15.80	Par	100	185	Compliant

[1] Measurement has been extrapolated from 3 meters to 300 meters using Equation 1 on the previous page.
[2] The test signal was transmitting at close to a 100% duty cycle. Therefore, a correction factor to the peak field strength as not necessary.

7.2.2. Worst Case Radiated Field Strength of Fundamental



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7. Measurement Data (continued)

7.3. Emission Bandwidth (FCC Sections 15.209)

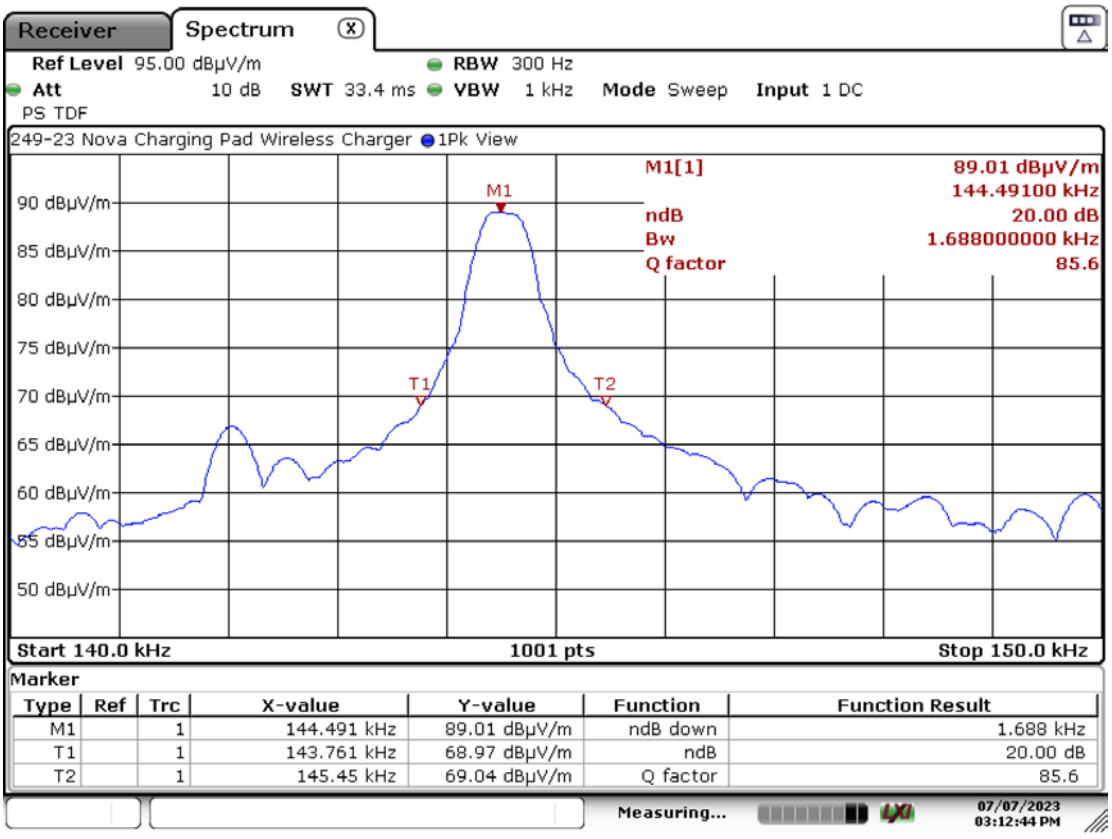
Requirement: For FCC Part 15.209, the bandwidth requirement is not specified. The 20 dB bandwidth has been included as part of this test report.

Test Note: Reference ANSI C63.10-2013, Section 6.9.1. for the bandwidth measurement method.

7.3.1. -20 dB Bandwidth of the Fundamental Frequency

Fundamental Frequency	-20 dB Bandwidth	Required Bandwidth	Result
(MHz)	(kHz)	(kHz)	
0.1445	1.688	Not Specified	N/A

7.3.2. Emission Bandwidth Measurement Results



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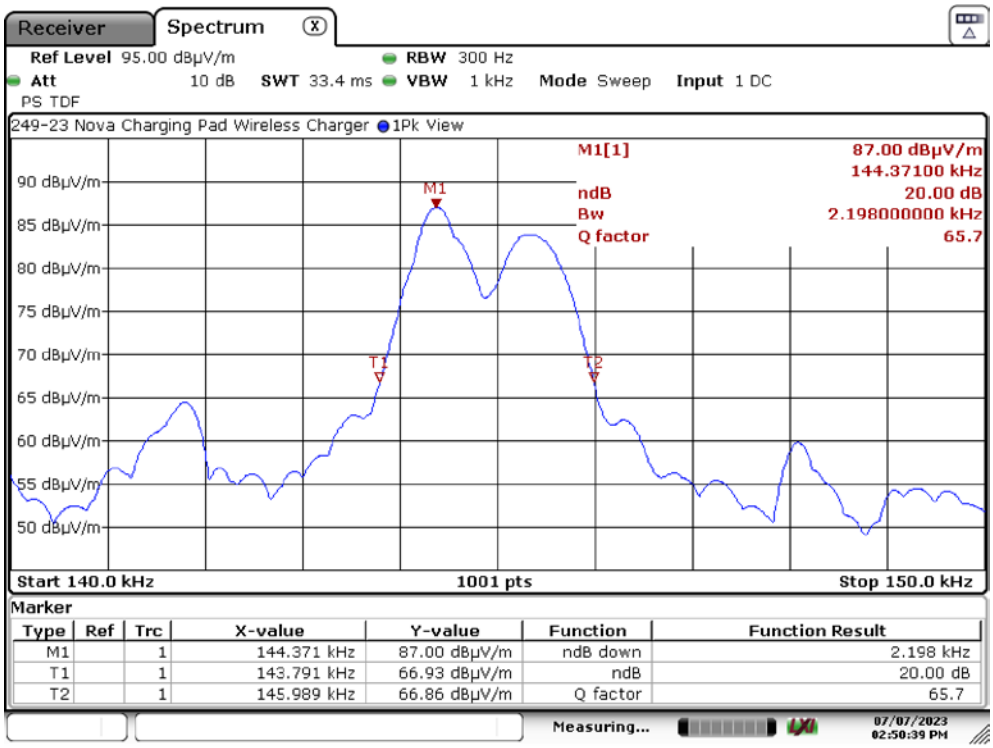
7. Measurement Data (continued)

7.3. Emission Bandwidth (FCC Sections 15.209, RSS-210 Section A2.3)

7.3.3. -20 dB Bandwidth of the Fundamental Frequency

Fundamental Frequency	-20 dB Bandwidth	Required Bandwidth	Result
(MHz)	(kHz)	(kHz)	
0.1444	2.198	Not Specified	N/A

7.3.4. Emission Bandwidth Measurement Results (with Meter in Station)



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7. Measurement Data (continued)

7.4. Spurious Radiated Emissions (15.209)

Requirement: Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Regulatory Limits: FCC Part 15.209

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)[1]
0.009 to 0.490	3	128.5 to 93.8
0.490 to 1.705	3	73.8 to 63.0
1.705 to 30	3	69.5
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
>960	3	54.0

[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.

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

Results: Compliant. The device under test met the spurious radiated emissions requirements.

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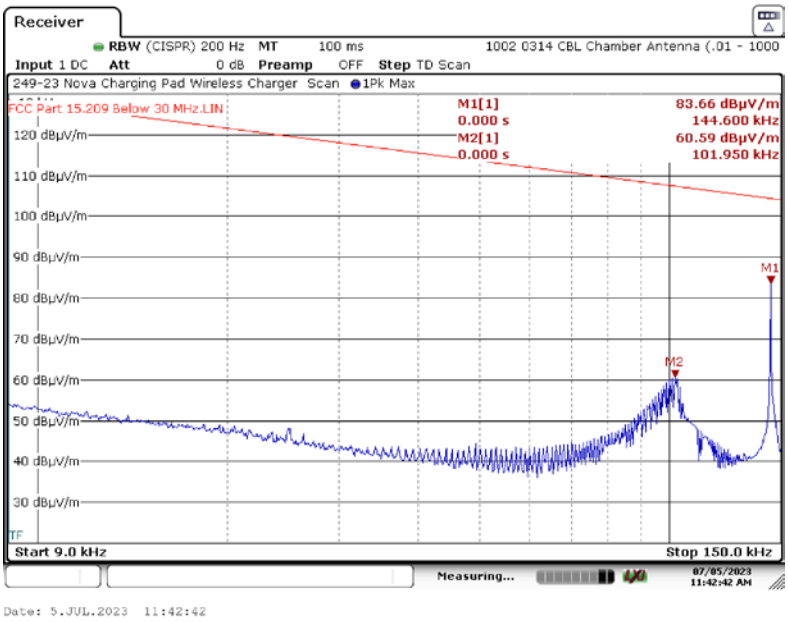
7. Measurement Data (continued)

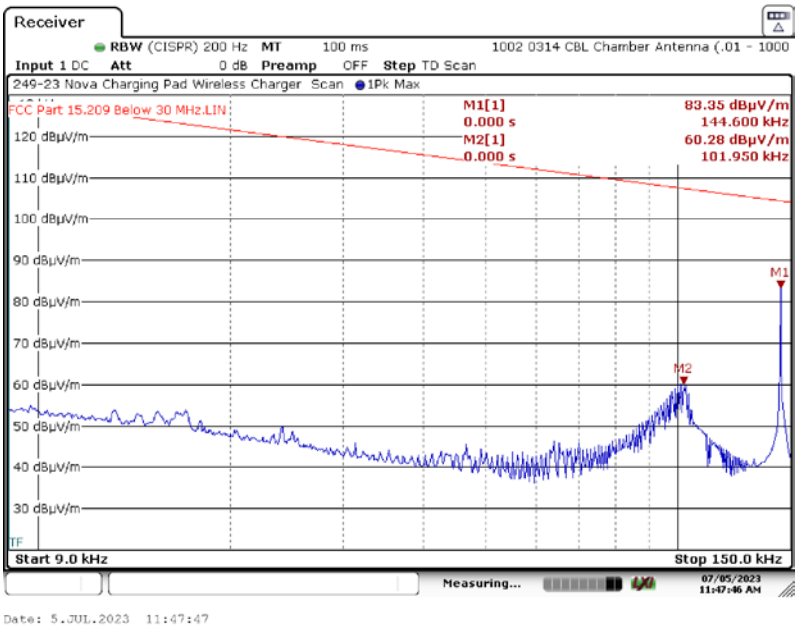
7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.1. 9 kHz to 150 kHz

7.4.1.1. Parallel Receive Antenna Orientation



7.4.1.2. Perpendicular Receive Antenna Orientation



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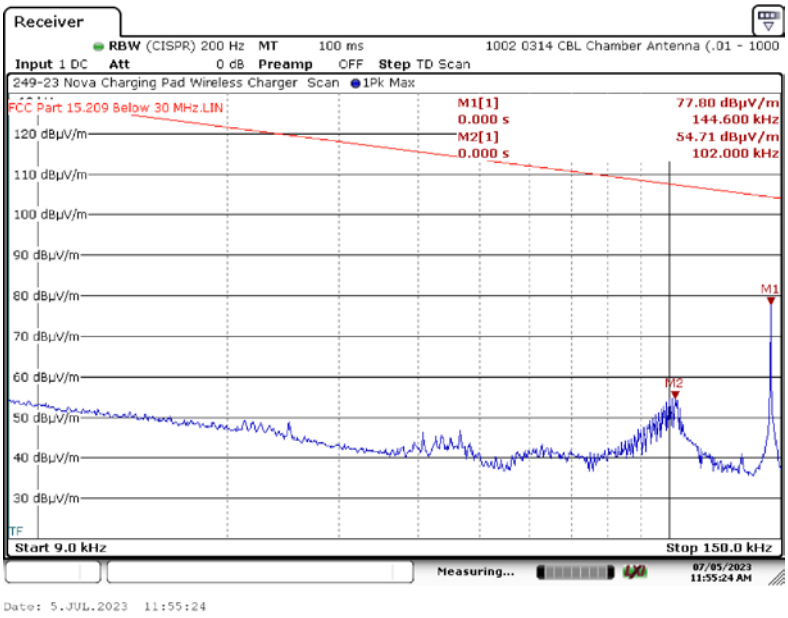
7. Measurement Data (continued)

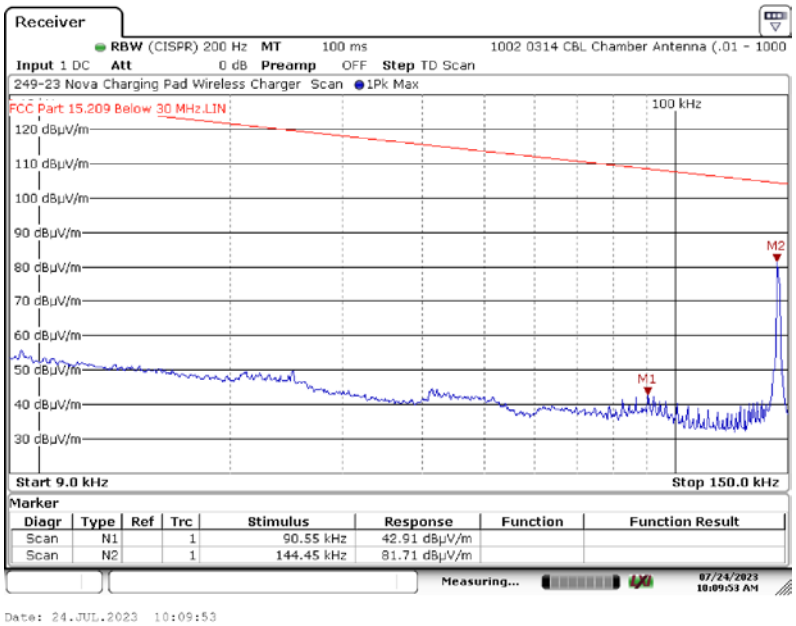
7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.1. 9 kHz to 150 kHz

7.4.1.3. Ground Parallel Receive Antenna Orientation



7.4.1.4. Parallel Receive Antenna Orientation (with Meter in Station)



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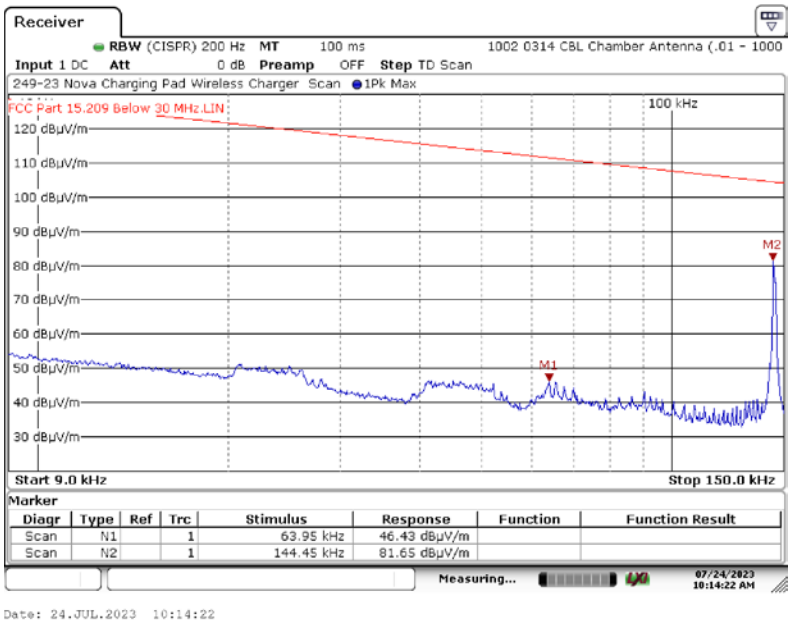
7. Measurement Data (continued)

7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.1. 9 kHz to 150 kHz

7.4.1.5. Perpendicular Receive Antenna Orientation (with Meter in Station)



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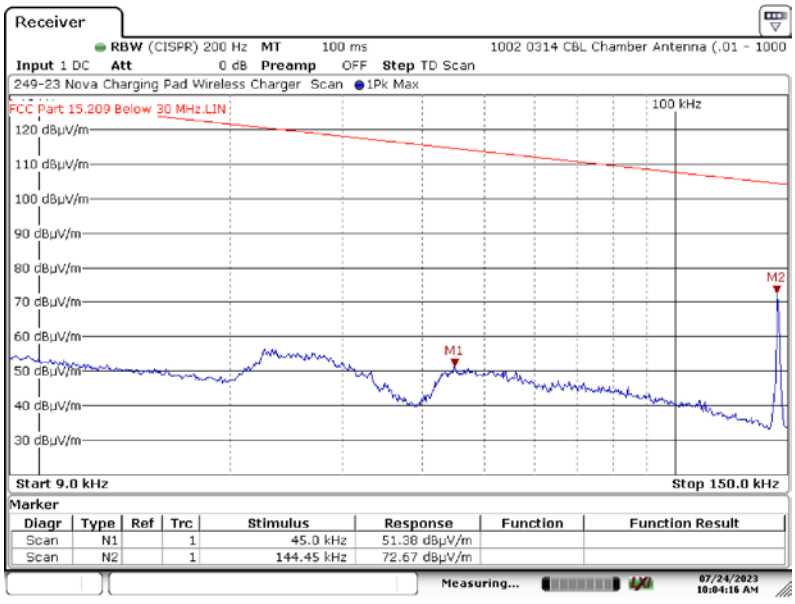
7.4.1.6. Ground Parallel Receive Antenna Orientation (with Meter in Station)



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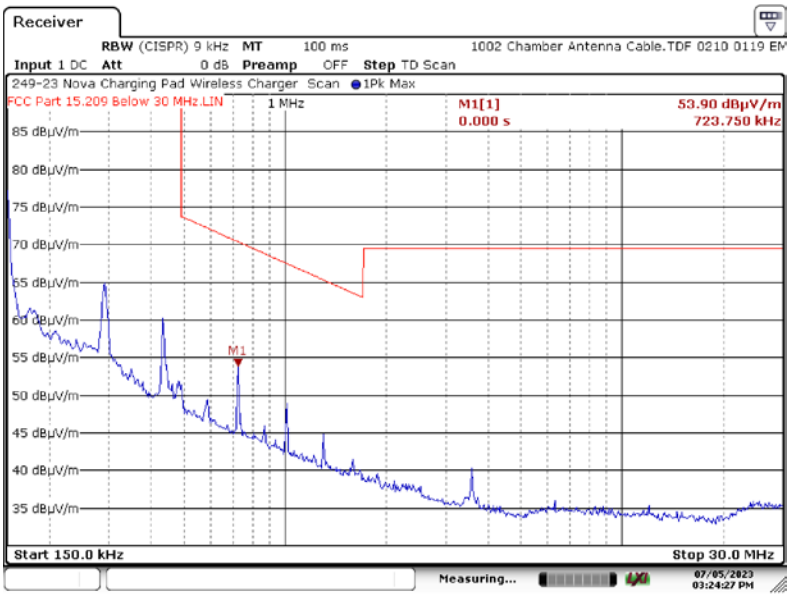
7. Measurement Data (continued)

7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.2. 150 kHz to 30 MHz

7.4.2.1. Parallel Receive Antenna Orientation



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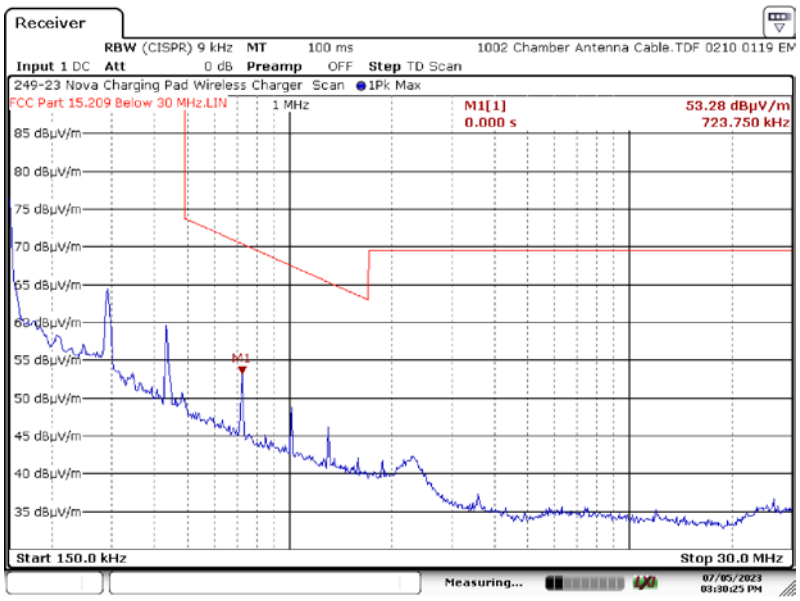
7.4.2.2. Perpendicular Receive Antenna Orientation



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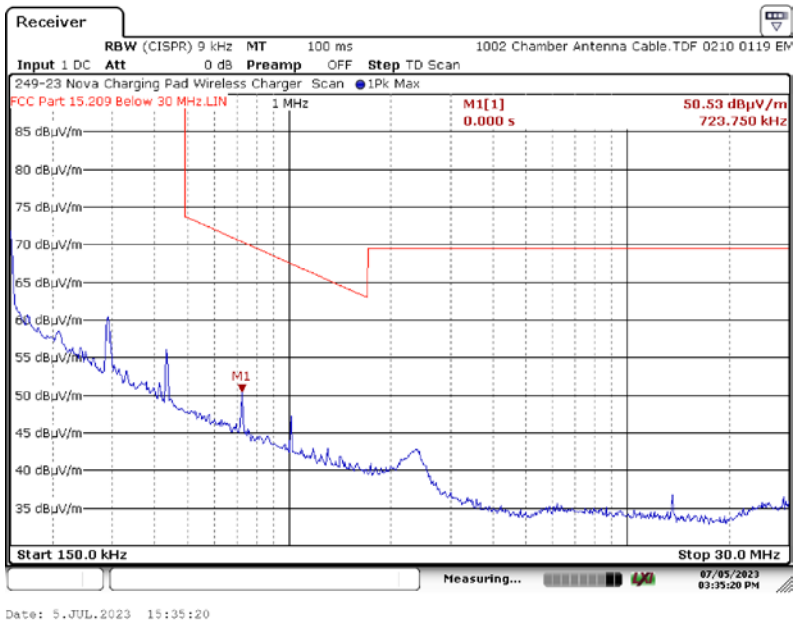
7. Measurement Data (continued)

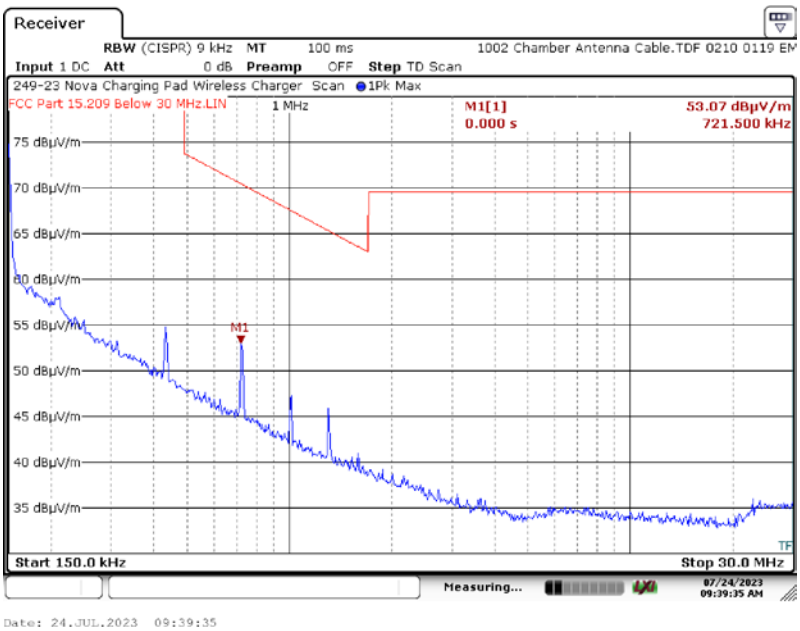
7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.2. 150 kHz to 30 MHz

7.4.2.3. Ground Parallel Receive Antenna Orientation



7.4.2.4. Parallel Receive Antenna Orientation (with Meter in Station)



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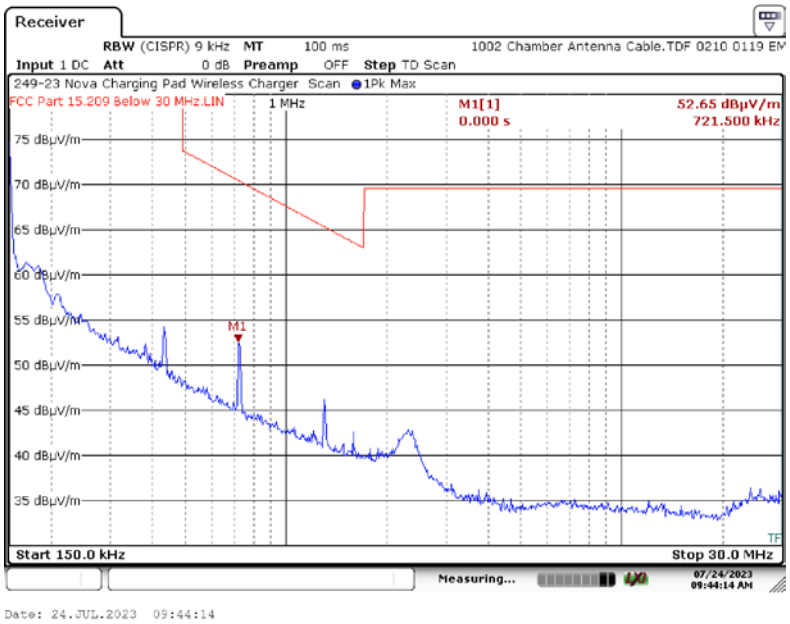
7. Measurement Data (continued)

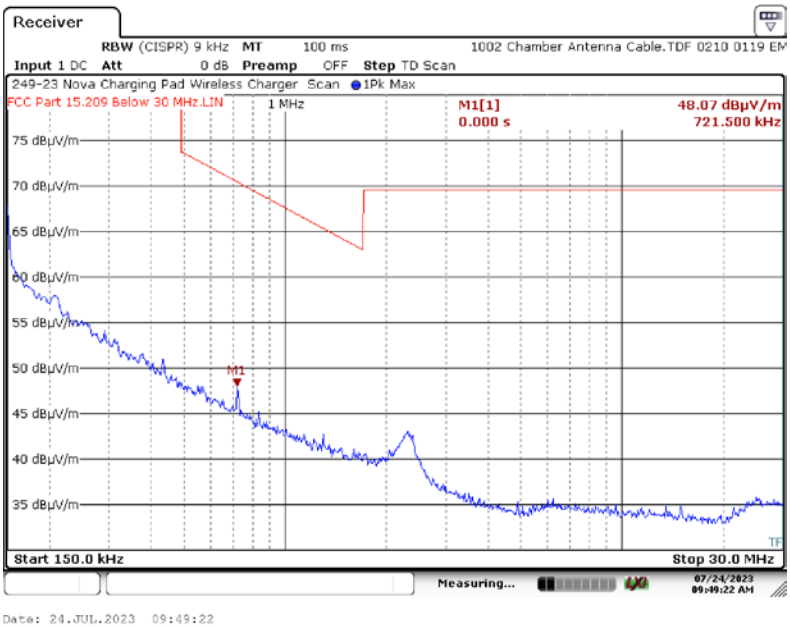
7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.2. 150 kHz to 30 MHz

7.4.2.5. Perpendicular Receive Antenna Orientation (with Meter in Station)



7.4.2.6. Ground Parallel Receive Antenna Orientation (with Meter in Station)



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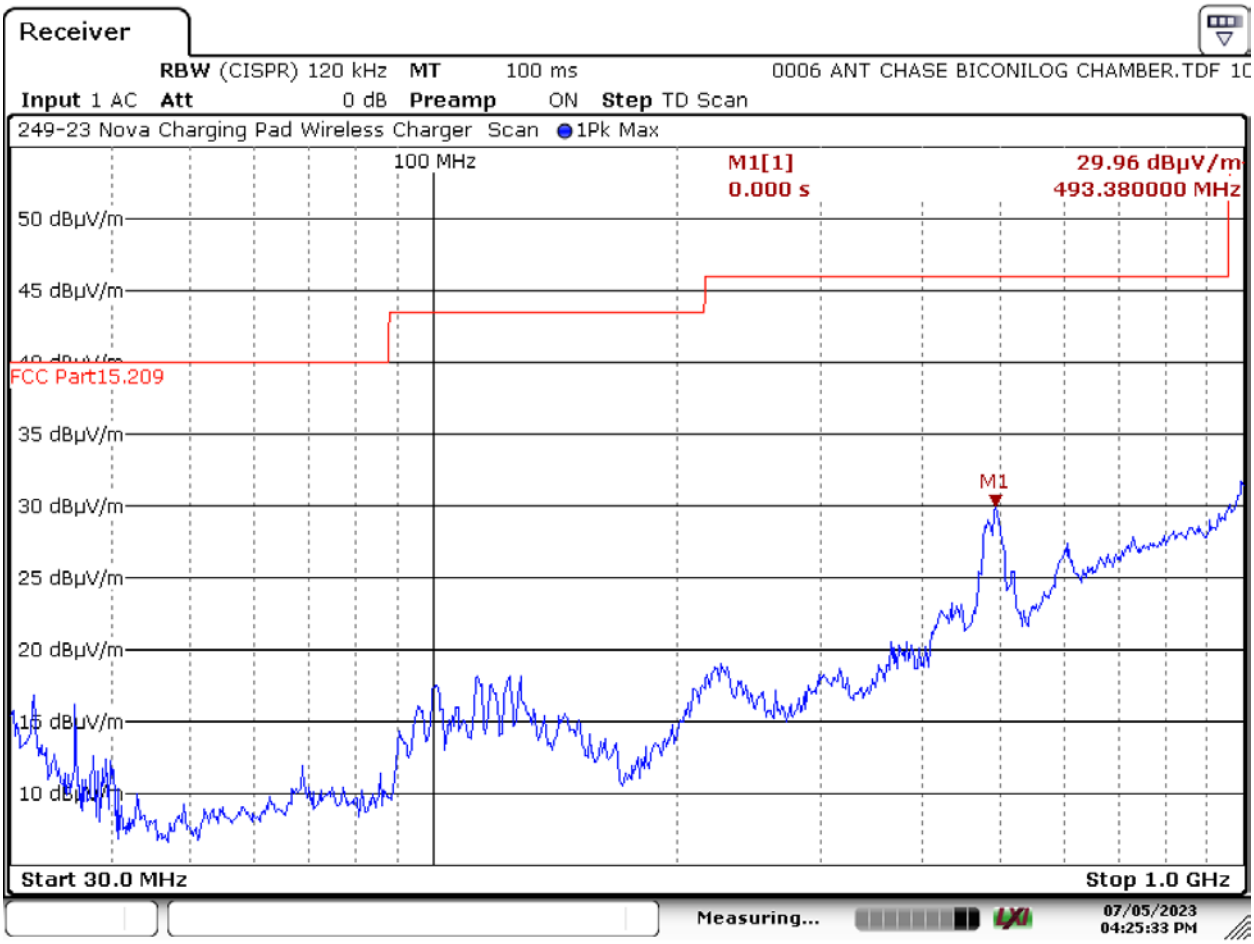
7. Measurement Data (continued)

7.4. Spurious Radiated Emissions Test Results (15.209 (continued)

7.4.3. 30 MHz to 1 GHz

7.4.3.1. Horizontal Polarity



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7. Measurement Data (continued)

7.4. Spurious Radiated Emissions Test Results (15.209) (continued)

7.4.3. 30 MHz to 1 GHz

7.4.3.2. Vertical Polarity

Date: 5.JUL.2023 16:21:59

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7. Measurement Data (continued)

7.5. Power Line Conducted Emissions (15.207)

Requirement: 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. The lower limit applies at the boundary between the frequency ranges. (FCC Part 15.207(a).

Regulatory Limits: 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.		

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

Results: Compliant

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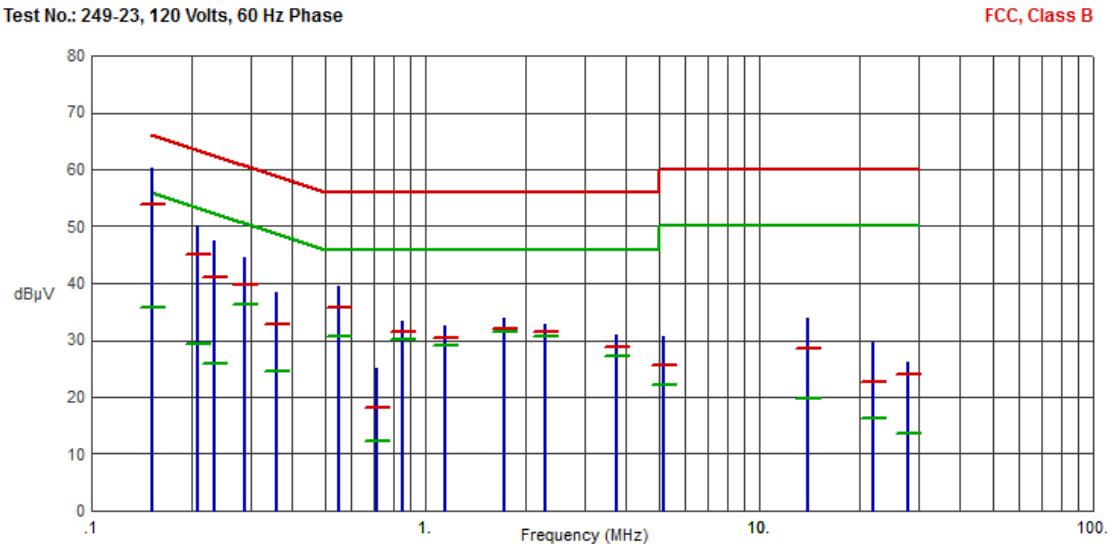
7. Conducted Emissions Test Results

7.6.1. 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	60.25	53.79	65.87	-12.08	35.71	55.87	-20.16	
.2085	50.06	44.99	63.26	-18.27	29.28	53.26	-23.98	
.2333	47.48	41.06	62.33	-21.27	25.76	52.33	-26.57	
.2873	44.63	39.63	60.60	-20.97	36.14	50.60	-14.46	
.3593	38.49	32.68	58.74	-26.06	24.55	48.74	-24.19	
.5528	39.43	35.64	56.00	-20.36	30.55	46.00	-15.45	
.7125	25.18	18.15	56.00	-37.85	12.17	46.00	-33.83	
.8588	33.44	31.43	56.00	-24.57	30.24	46.00	-15.76	
1.1468	32.44	30.47	56.00	-25.53	28.97	46.00	-17.03	
1.7183	33.77	32.03	56.00	-23.97	31.43	46.00	-14.57	
2.2920	32.81	31.44	56.00	-24.56	30.77	46.00	-15.23	
3.7230	30.99	28.79	56.00	-27.21	27.17	46.00	-18.83	
5.1563	30.79	25.59	60.00	-34.41	22.03	50.00	-27.97	
13.9223	33.97	28.47	60.00	-31.53	19.77	50.00	-30.23	
21.9458	29.73	22.63	60.00	-37.37	16.21	50.00	-33.79	
27.9938	26.04	24.04	60.00	-35.96	13.67	50.00	-36.33	

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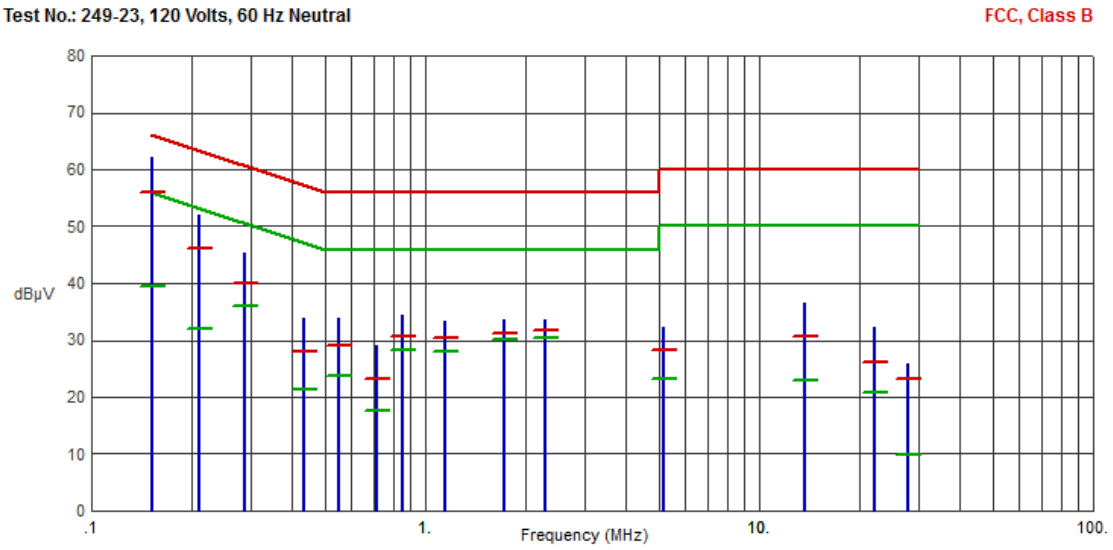
7. Conducted Emissions Test Results (continued)

7.6.2. 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
.1523	62.13	55.90	65.87	-9.97	39.40	55.87	-16.47	
.2108	51.96	46.19	63.17	-16.98	32.09	53.17	-21.08	
.2873	45.24	40.12	60.60	-20.48	35.88	50.60	-14.72	
.4335	33.87	28.03	57.19	-29.16	21.27	47.19	-25.92	
.5505	33.97	29.16	56.00	-26.84	23.85	46.00	-22.15	
.7148	28.99	23.07	56.00	-32.93	17.66	46.00	-28.34	
.8565	34.45	30.79	56.00	-25.21	28.19	46.00	-17.81	
1.1445	33.25	30.43	56.00	-25.57	28.05	46.00	-17.95	
1.7183	33.63	31.18	56.00	-24.82	30.14	46.00	-15.86	
2.2920	33.49	31.61	56.00	-24.39	30.28	46.00	-15.72	
5.1563	32.29	28.18	60.00	-31.82	23.14	50.00	-26.86	
13.6905	36.46	30.58	60.00	-29.42	22.87	50.00	-27.13	
22.0538	32.21	26.18	60.00	-33.82	20.82	50.00	-29.18	
27.9893	25.82	23.26	60.00	-36.74	9.85	50.00	-40.15	

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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 Images

9.1. Radiated Emissions – Front View

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9. Test Setup Images

9.2. Radiated Emissions – Rear View Below 30 MHz

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9. Test Setup Images

9.3. Radiated Emissions – Front View 30 MHz to 1 GHz

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9. Test Setup Images

9.4. Radiated Emissions – Rear View 30 MHz to 1 GHz

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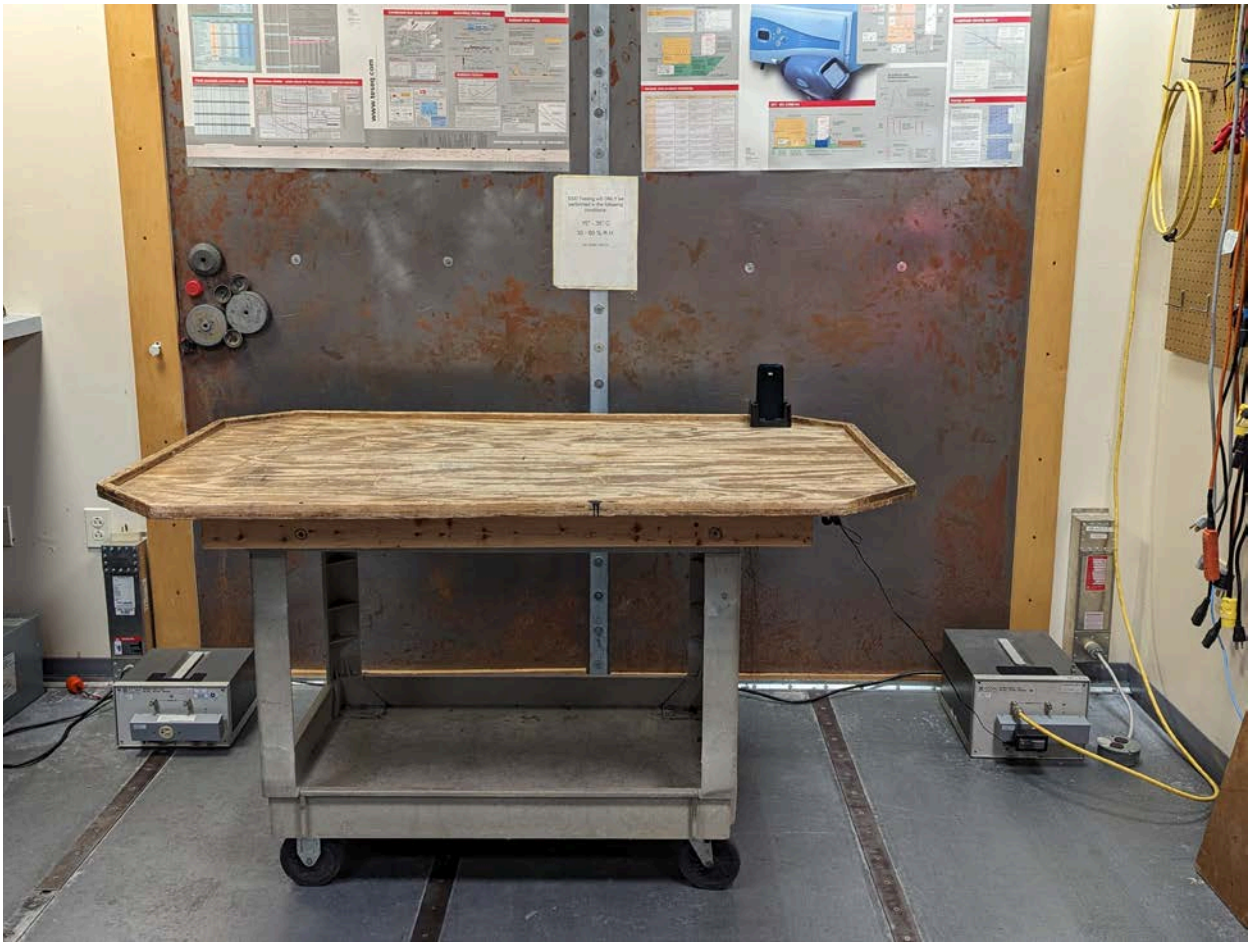
9. Test Setup Images

9.5. Conducted Emissions – Front View



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9. Test Setup Images

9.6. Conducted Emissions – Rear View

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