

COMPLIANCE WORLDWIDE INC. TEST REPORT 327-19

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

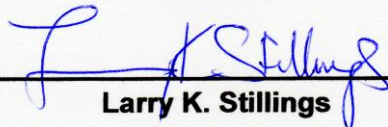
Issued to
Thermo Fisher Scientific, Inc.
Life Sciences Division
246 Goose Lane, Suite 100
Guildford, CT 06437

for the
13.56 MHz RFID Reader Module
Installed in ION Torrent Genexus System

FCC ID: 2AD9Z-INS1011976


Report Issued on September 19, 2019

Tested By



Larry K. Stillings

Reviewed By



Brian F. Breault

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1. Scope

This test report certifies that the Thermo Fisher Scientific ION Torrent 13.56 MHz RFID Reader, as tested, meets the FCC Part 15.225 Subpart C 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:** Thermo Fisher Scientific, Inc
- 2.2. Model Number:** 6191
- 2.3. Serial Numbers:** 261911812VB03
- 2.4. Description:** A 13.56 MHz RFID Reader for collecting tag data on reagents used in the Ion Torrent Next Generation sequencing system.
- 2.5. Power Source:** 120 VAC, 60 Hz
- 2.6. Hardware Revision:** N/A
- 2.7. Software Revision:** N/A
- 2.8. Modulation Type:** Pulse Modulation
- 2.9. Operating Frequencies:** 13.56 MHz
- 2.10. EMC Modifications:** None

3. Product Configuration

3.1. Operational Characteristics & Software

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
Thermo Fischer Scientific, Inc.	6191	261911812VB03	120	60	13.56 MHz RFID Reader in next generation sequencing system

3.3. EUT Connected Hardware

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

3.4. EUT Cables/Transducers

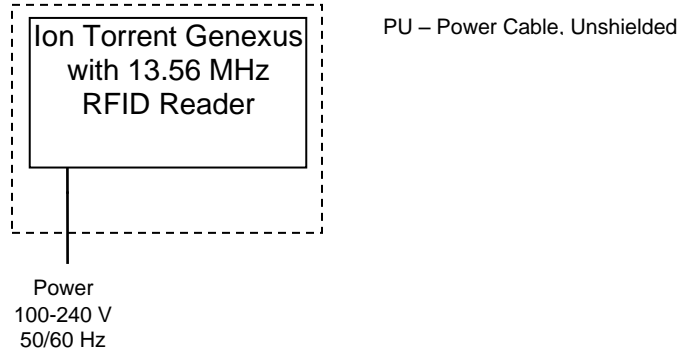
Cable Type	Length	Shield	From	To
Power	2M	No	EUT	120 VAC, 60 Hz

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



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	9/10/2020	2 Years
EMI Test Receiver, 10 Hz - 7GHz ¹	Rohde & Schwarz	ESR7	101770	10/3/2020	2 Years
Spectrum Analyzer, 2 Hz to 26.5 GHz ²	Rohde & Schwarz	FSW26	102057	9/13/2020	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz ³	Rohde & Schwarz	FSV40	100899	9/10/2020	2 Years
EMI Receiver 9 kHz - 1 GHz	Hewlett Packard	8546A	3650A00360	9/11/2020	2 Years
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	1/28/2022	3 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	6/5/2022	2 Years
Digital Barometer	Control Company	4195	ID236	4/3/2020	2 Years
Temperature Chamber ⁴	Associated Environmental	SD-308	10782	CNR	

¹ ESR7 Firmware revision: V3.46 SP1, Date installed: 12/22/2018

² FSW26 Firmware revision: V4.30 SP1, Date installed: 02/22/2019

³ FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016

⁴ Used with calibrated measurement equipment.

Previous V3.36 SP2, installed 12/5/2018.

Previous V3.36 SP2, installed 10/26/2018.

Previous V2.30 SP1, 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. Measurements Parameters (continued)

4.2. Measurement & Equipment Setup

Test Dates:	August 14 th , 15 th , 2019
Test Engineer:	Sean Defelice, Larry Stillings
Normal Site Temperature (15 - 35°C):	24.0
Relative Humidity (20 -75%RH):	33%
Frequency Range:	10 kHz to 1 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Avg Bandwidth:	300 kHz - 30 MHz to 1 GHz 3 MHz - Above 1 GHz
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 15.225, Operation within the band 13.110 – 14.010 MHz.

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	Test Report Section	Result	Comment
Antenna Requirement	15.203	7.1	Compliant	
Operation within the Band 13.110 MHz – 14.010 MHz (Radiated Field Strength)	15.225 (a), (b), (c)	7.2	Compliant	
Spurious Radiated Emissions	15.209	7.3	Compliant	
Power Line Conducted Emissions	15.207	7.4 7.5	Compliant	

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: Compliant - The antenna utilized by the device under test is contained inside the enclosure.

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 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 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 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:

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

FS_{limit} is the calculation of field strength at the limit distance (dB μ V/m)

36.21

FS_{max} is the measured field strength, expressed in (dB μ V/m)

57.60

$d_{\text{near field}}$ is the $\lambda / 2\pi$ 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).

Freq. (MHz)	Amplitude ¹ (dB μ V/m)		FCC 15.225 Limit (dB μ V/m) Quasi-Peak	Margin (dB)	Ant Pos.	Ant Height	Turntable Azimuth	Result
	Peak	Quasi Peak			Par/Per Gnd Par	cm	Deg	
13.56	38.56	36.21	84.00	-47.79	Per	100	0	Compliant

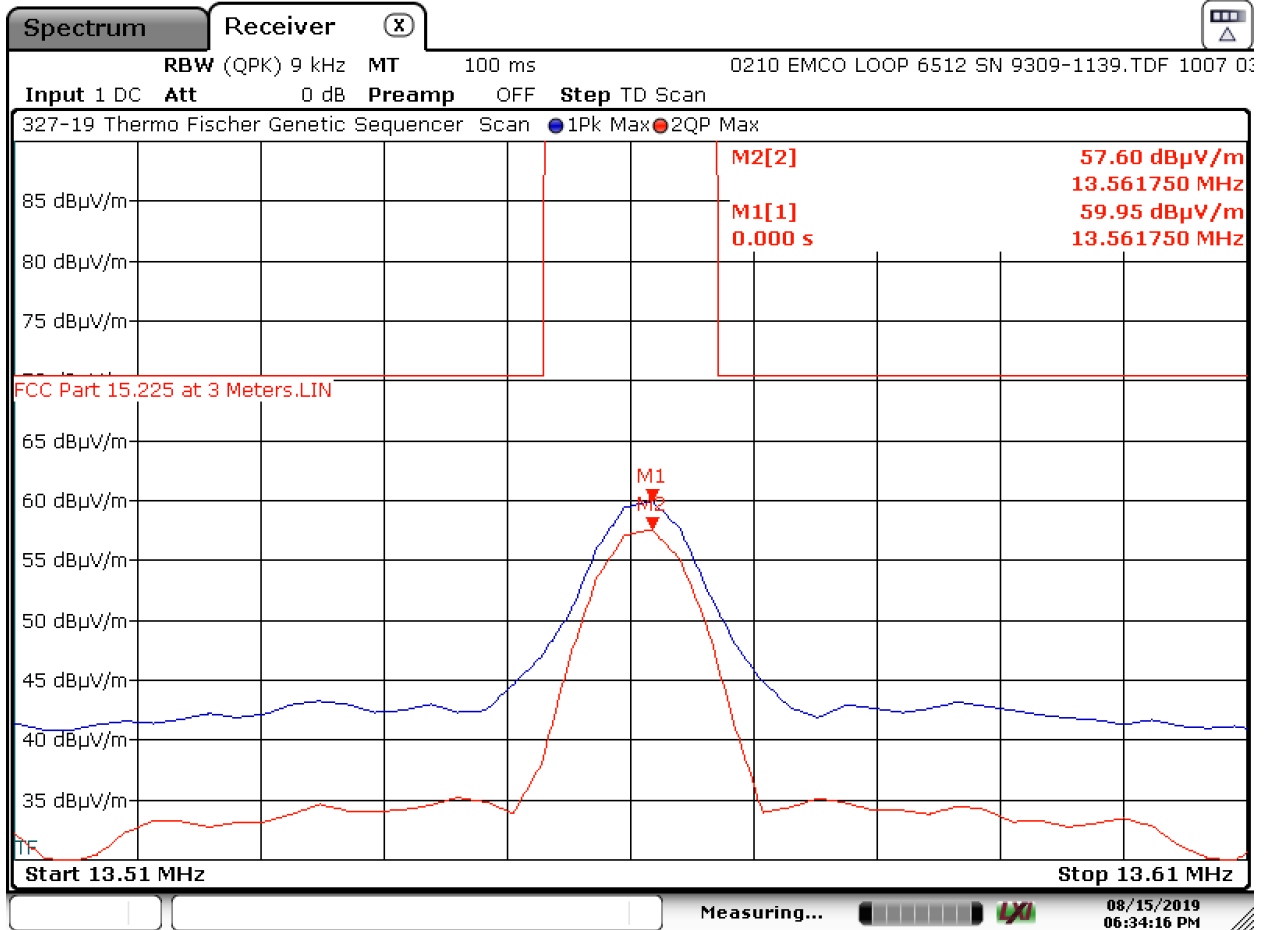
¹ Measurement has been extrapolated from 3 meters to 30 meters using Equation 1 on this page.

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))

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



Date: 15.AUG.2019 18:34:16

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 ($\mu\text{V/m}$)	Meas. Dist. (meters)	Field Strength (dB $\mu\text{V/m}$)	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.

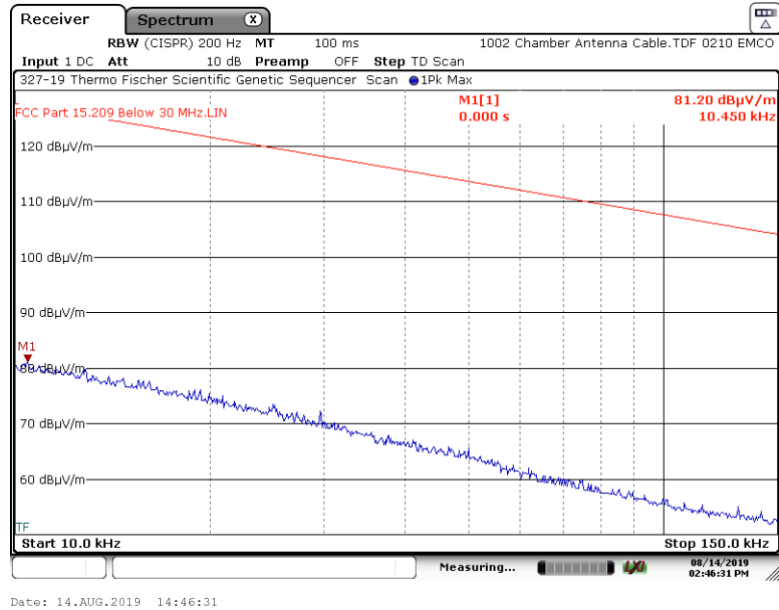
Results: Compliant - The transmitter installed in the unit under test meet the FCC Part 15.209 emissions requirements.

7. Measurement Data (continued)

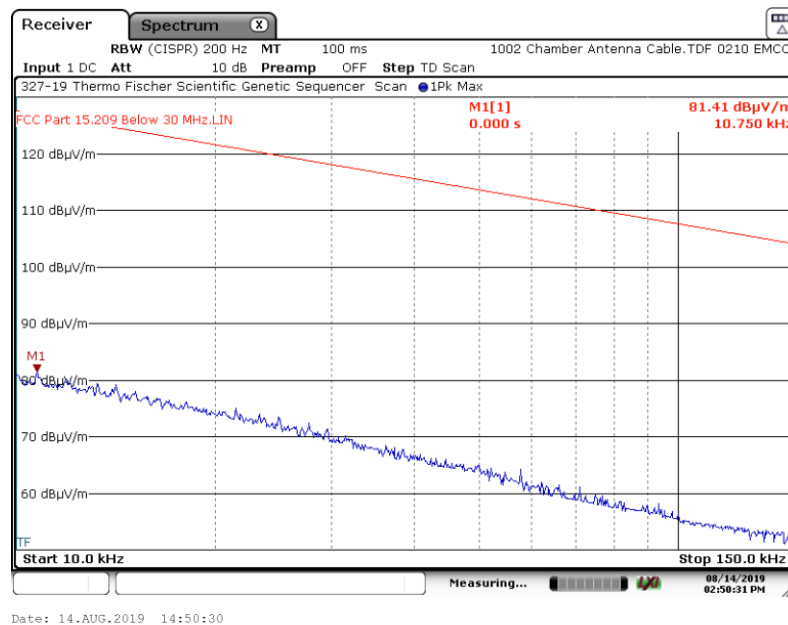
7.3. Spurious Radiated Emissions, 10 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

7.3.1. Spurious Radiated Emissions, 10 kHz to 150 kHz Test Results

7.3.1.1. Parallel Antenna



7.3.1.2. Perpendicular Antenna

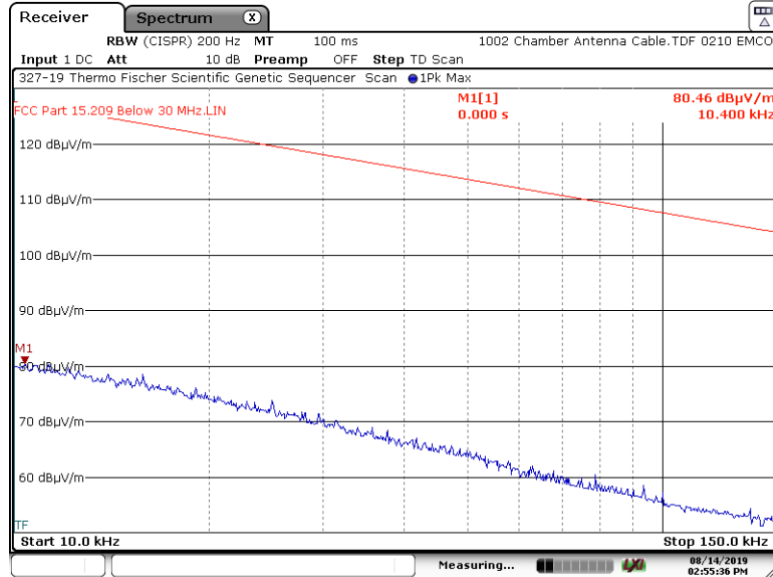


7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 10 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

7.3.1. Spurious Radiated Emissions, 10 kHz to 150 kHz Test Results

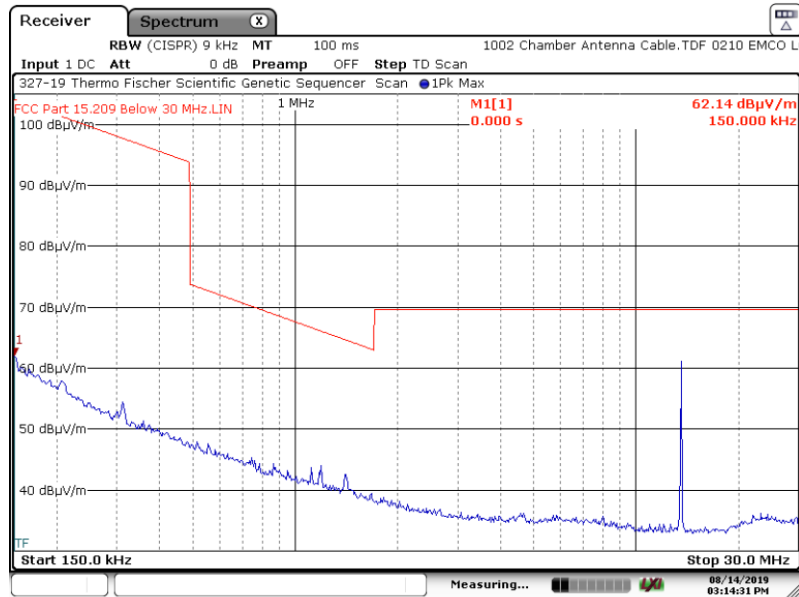
7.3.1.3. Ground Parallel Antenna



Date: 14.AUG.2019 14:55:35

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

7.3.2.1. Parallel Antenna



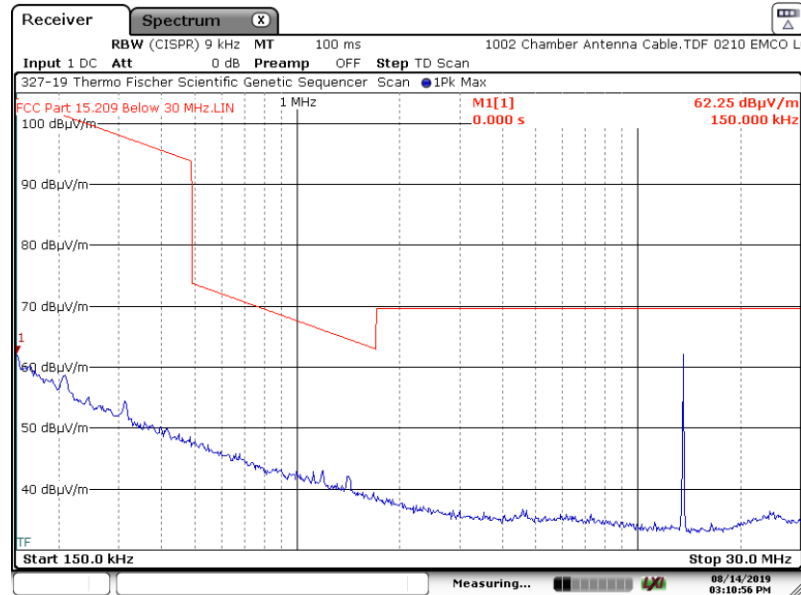
Date: 14.AUG.2019 15:14:30

7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 10 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

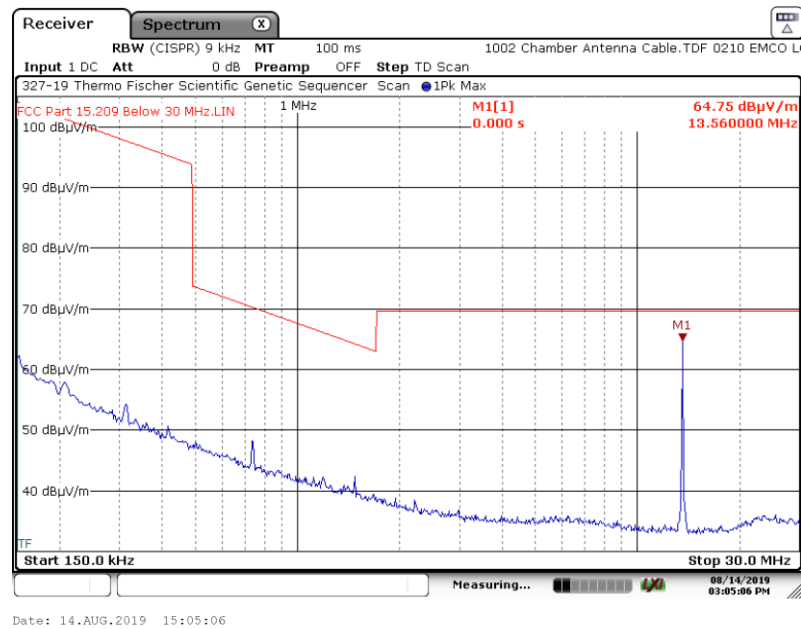
7.3.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

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

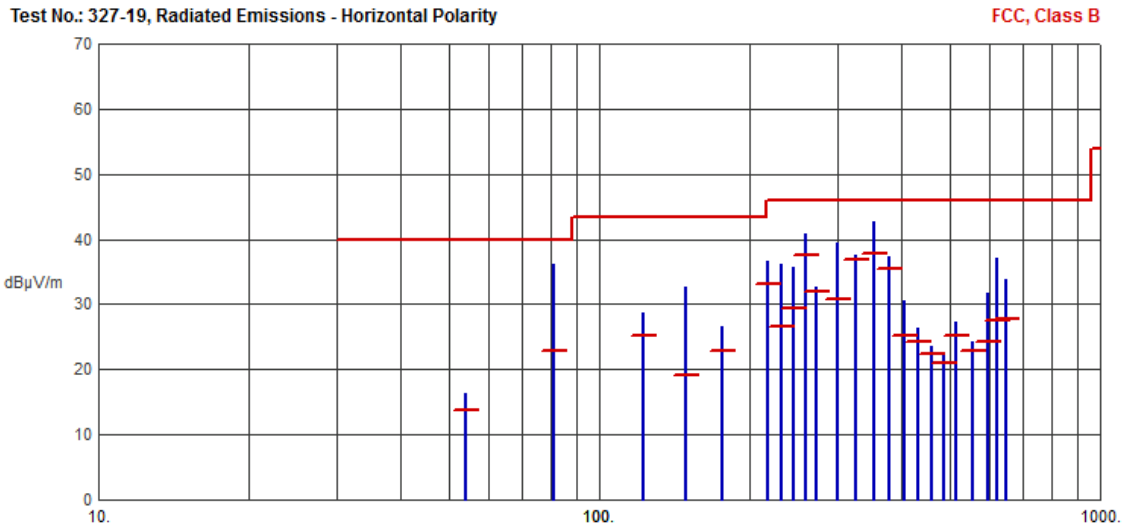


7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 10 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



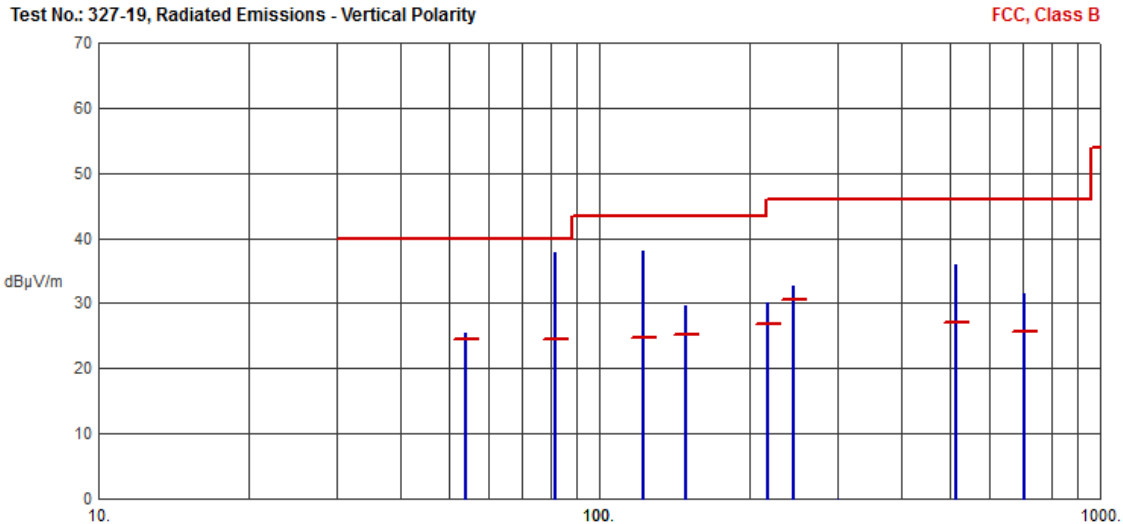
Frequency (MHz)	Pk Amp (dBµV/m)	QP Amp (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)	Ant Ht (cm)	Table (Deg)	Comments
54.2400	16.27	13.76	40.00	-26.24	N/A	N/A	
81.3600	36.14	22.81	40.00	-17.19	N/A	N/A	
122.0400	28.77	25.13	43.50	-18.37	N/A	N/A	
149.1600	32.69	19.12	43.50	-24.38	N/A	N/A	
176.2800	26.62	22.76	43.50	-20.74	N/A	N/A	
216.9600	36.66	33.12	46.00	-12.88	N/A	N/A	
230.5200	36.07	26.55	46.00	-19.45	N/A	N/A	
244.0800	35.81	29.50	46.00	-16.50	N/A	N/A	
257.6400	40.93	37.53	46.00	-8.47	N/A	N/A	
271.2000	32.65	32.08	46.00	-13.92	N/A	N/A	
298.3200	39.54	30.87	46.00	-15.13	N/A	N/A	
325.4400	37.63	36.98	46.00	-9.02	N/A	N/A	
352.5600	42.63	37.79	46.00	-8.21	N/A	N/A	
379.6800	37.28	35.49	46.00	-10.51	N/A	N/A	
406.8000	30.46	25.23	46.00	-20.77	N/A	N/A	
433.9200	26.33	24.24	46.00	-21.76	N/A	N/A	
461.0400	23.47	22.38	46.00	-23.62	N/A	N/A	
488.1600	22.26	21.04	46.00	-24.96	N/A	N/A	
515.2800	27.40	25.13	46.00	-20.87	N/A	N/A	
555.9600	24.27	22.96	46.00	-23.04	N/A	N/A	
596.6400	31.67	24.18	46.00	-21.82	N/A	N/A	
623.7600	37.00	27.59	46.00	-18.41	N/A	N/A	
650.8800	33.86	27.88	46.00	-18.12	N/A	N/A	

7. Measurement Data (continued)

7.3. Spurious Radiated Emissions, 10 kHz to 1 GHz (15.225, § (d), 15.209) (cont'd)

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

7.3.3.2. Vertical Polarity



Frequency (MHz)	Pk Amp (dBµV/m)	QP Amp (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)	Ant Ht (cm)	Table (Deg)	Comments
54.2400	25.46	24.43	40.00	-15.57	N/A	N/A	
81.4700	37.74	24.54	40.00	-15.46	N/A	N/A	
122.0500	37.95	24.72	43.50	-18.78	N/A	N/A	
149.1700	29.70	25.18	43.50	-18.32	N/A	N/A	
216.9400	30.05	26.79	46.00	-19.21	N/A	N/A	
244.1000	32.71	30.51	46.00	-15.49	N/A	N/A	
515.3300	36.02	27.05	46.00	-18.95	N/A	N/A	
705.1700	31.56	25.66	46.00	-20.34	N/A	N/A	

7. Measurement Data (continued)

7.4. 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 μ H/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 (dB μ V)	
	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 power-line conducted emissions from unlicensed wireless devices.

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

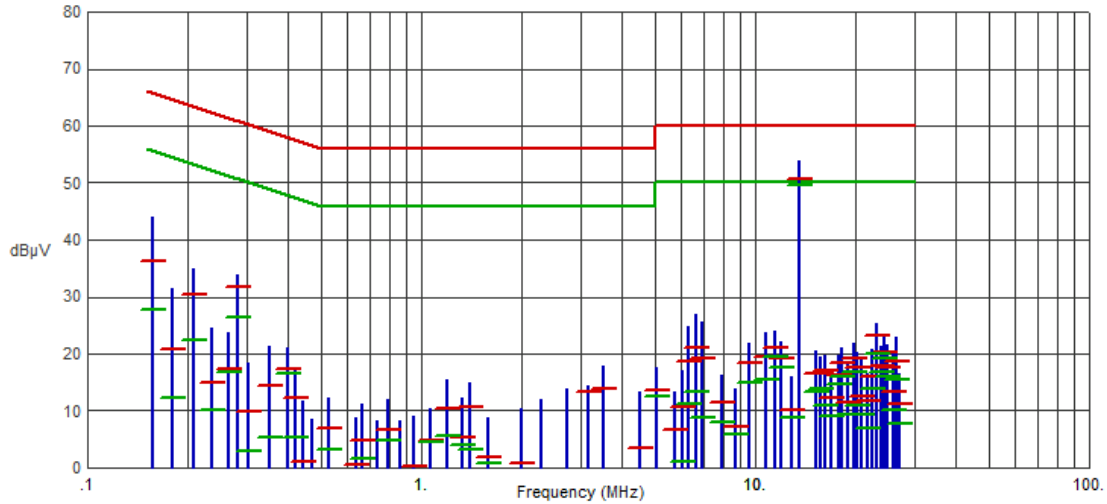
7. Conducted Emissions Test Results

7.5. Power Line Conducted Emissions (15.207)

7.5.1. 120 Volts, 60 Hz Phase

Test No.: 327-19, 120 Volts, 60 Hz Phase

FCC, Class B



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	44.07	36.35	65.63	-29.28	27.80	55.63	-27.83	
.1793	31.38	20.81	64.52	-43.71	12.26	54.52	-42.26	
.2085	34.93	30.31	63.26	-32.95	22.50	53.26	-30.76	
.2355	24.61	15.05	62.25	-47.20	10.05	52.25	-42.20	
.2648	23.78	17.26	61.28	-44.02	16.89	51.28	-34.39	
.2805	33.90	31.79	60.80	-29.01	26.47	50.80	-24.33	
.3030	18.31	9.84	60.16	-50.32	2.93	50.16	-47.23	
.3503	21.27	14.37	58.96	-44.59	5.26	48.96	-43.70	
.3975	21.03	17.42	57.91	-40.49	16.53	47.91	-31.38	
.4178	17.73	12.18	57.49	-45.31	5.44	47.49	-42.05	
.4403	11.77	1.19	57.06	-55.87	-4.70	47.06	-51.76	
.4695	8.58	-2.91	56.52	-59.43	-4.81	46.52	-51.33	
.5303	12.40	6.84	56.00	-49.16	3.23	46.00	-42.77	
.6383	8.83	.66	56.00	-55.34	-4.54	46.00	-50.54	
.6653	11.08	4.83	56.00	-51.17	1.67	46.00	-44.33	
.7350	8.37	-9.7	56.00	-56.97	-3.51	46.00	-49.51	
.7958	12.11	6.54	56.00	-49.46	4.69	46.00	-41.31	
.8633	8.19	-1.02	56.00	-57.02	-5.02	46.00	-51.02	
.9488	9.04	.36	56.00	-55.64	-2.93	46.00	-48.93	
1.0613	10.29	4.80	56.00	-51.20	4.59	46.00	-41.41	
1.1940	15.58	10.52	56.00	-45.48	5.62	46.00	-40.38	
1.3268	12.18	5.24	56.00	-50.76	3.88	46.00	-42.12	
1.4033	14.82	10.61	56.00	-45.39	3.07	46.00	-42.93	
1.5900	8.83	1.78	56.00	-54.22	0.85	46.00	-45.15	
1.9905	10.38	0.70	56.00	-55.30	-0.11	46.00	-46.11	
2.2853	12.03	-4.43	56.00	-60.43	-5.82	46.00	-51.82	
2.7398	13.75	-3.07	56.00	-59.07	-4.83	46.00	-50.83	
3.1673	14.36	13.27	56.00	-42.73	-4.86	46.00	-50.86	
3.5295	17.74	13.85	56.00	-42.15	-4.16	46.00	-50.16	

7. Conducted Emissions Test Results

7.5. Power Line Conducted Emissions (15.207)

7.5.1. 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
4.5263	13.39	3.40	56.00	-52.60	-2.63	46.00	-48.63	
5.0393	17.60	13.58	60.00	-46.42	12.44	50.00	-37.56	
5.7233	13.44	6.79	60.00	-53.21	-1.71	50.00	-51.71	
6.0540	17.08	10.58	60.00	-49.42	1.03	50.00	-48.97	
6.3375	24.82	18.69	60.00	-41.31	11.07	50.00	-38.93	
6.6548	27.02	20.97	60.00	-39.03	13.45	50.00	-36.55	
6.9113	25.69	19.32	60.00	-40.68	8.86	50.00	-41.14	
7.9215	16.24	11.47	60.00	-48.53	8.11	50.00	-41.89	
8.7180	13.77	7.22	60.00	-52.78	5.74	50.00	-44.26	
9.5708	21.87	18.30	60.00	-41.70	14.87	50.00	-35.13	
10.7925	23.85	19.43	60.00	-40.57	15.41	50.00	-34.59	
11.4653	24.01	21.08	60.00	-38.92	19.39	50.00	-30.61	
11.8928	22.24	19.18	60.00	-40.82	17.70	50.00	-32.30	
12.8085	15.90	10.09	60.00	-49.91	8.72	50.00	-41.28	
13.5600	53.74	50.73	60.00	-9.27	49.56	50.00	-0.44	Fundamental
15.2520	20.51	16.60	60.00	-43.40	13.22	50.00	-36.78	
15.6188	19.51	16.56	60.00	-43.44	13.74	50.00	-36.26	
16.2285	19.80	17.04	60.00	-42.96	10.93	50.00	-39.07	
16.8383	16.98	12.40	60.00	-47.60	9.07	50.00	-40.93	
17.6933	19.86	16.23	60.00	-43.77	14.55	50.00	-35.45	
18.2423	21.13	18.30	60.00	-41.70	15.97	50.00	-34.03	
18.9150	18.18	11.48	60.00	-48.52	9.21	50.00	-40.79	
19.7093	21.84	19.17	60.00	-40.83	16.80	50.00	-33.20	
20.2583	20.22	17.56	60.00	-42.44	10.81	50.00	-39.19	
20.8073	19.19	12.66	60.00	-47.34	9.26	50.00	-40.74	
21.6623	16.44	11.60	60.00	-48.40	7.02	50.00	-42.98	
22.4565	20.73	15.96	60.00	-44.04	13.81	50.00	-36.19	
23.1293	25.28	23.20	60.00	-36.80	20.12	50.00	-29.88	
23.7390	21.30	17.85	60.00	-42.15	16.76	50.00	-33.24	
24.3488	23.54	20.35	60.00	-39.65	19.12	50.00	-30.88	
24.9000	21.73	17.53	60.00	-42.47	16.02	50.00	-33.98	
25.8765	20.01	13.43	60.00	-46.57	10.15	50.00	-39.85	
26.4863	22.94	18.66	60.00	-41.34	15.46	50.00	-34.54	
27.1590	16.44	11.09	60.00	-48.91	7.85	50.00	-42.15	

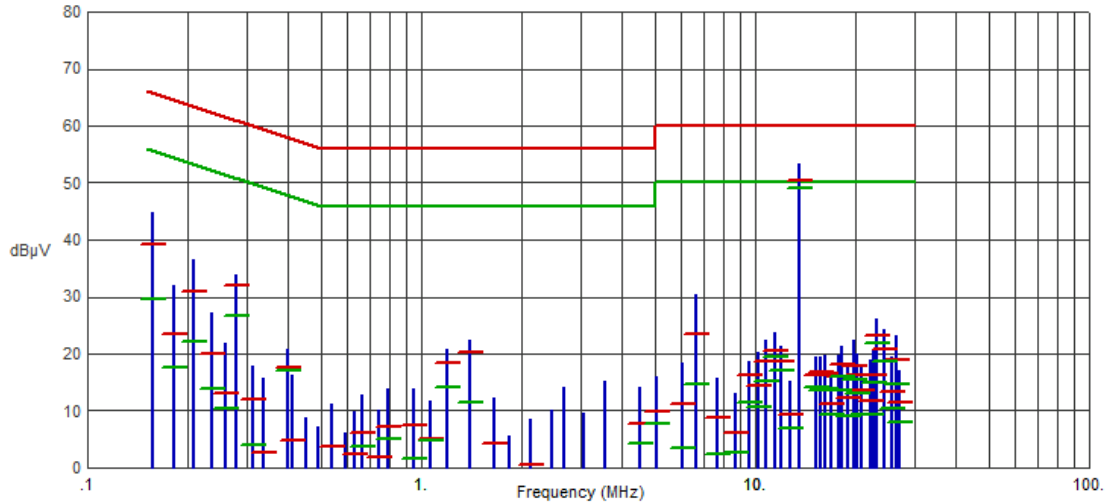
7. Conducted Emissions Test Results

7.5. Power Line Conducted Emissions (15.207)

7.5.2. 120 Volts, 60 Hz Neutral

Test No.: 327-19, 120 Volts, 60 Hz Neutral

FCC, Class B



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	44.90	39.14	65.63	-26.49	29.51	55.63	-26.12	
.1815	31.90	23.44	64.42	-40.98	17.51	54.42	-36.91	
.2085	36.52	30.81	63.26	-32.45	22.15	53.26	-31.11	
.2355	27.22	19.87	62.25	-42.38	13.92	52.25	-38.33	
.2603	21.87	13.19	61.42	-48.23	10.50	51.42	-40.92	
.2783	33.80	31.92	60.87	-28.95	26.56	50.87	-24.31	
.3120	17.91	12.07	59.92	-47.85	3.89	49.92	-46.03	
.3368	15.79	2.56	59.28	-56.72	-4.88	49.28	-54.16	
.3975	20.86	17.47	57.91	-40.44	16.96	47.91	-30.95	
.4088	16.18	4.79	57.67	-52.88	-1.25	47.67	-48.92	
.4515	8.90	-2.10	56.85	-58.95	-4.18	46.85	-51.03	
.4920	7.10	-3.11	56.13	-59.24	-4.70	46.13	-50.83	
.5393	11.32	3.75	56.00	-52.25	-3.15	46.00	-49.15	
.5910	6.09	-4.66	56.00	-60.66	-5.70	46.00	-51.70	
.6293	9.80	2.45	56.00	-53.55	-2.86	46.00	-48.86	
.6630	12.72	6.17	56.00	-49.83	3.70	46.00	-42.30	
.7463	10.00	1.96	56.00	-54.04	-2.51	46.00	-48.51	
.7958	13.80	7.25	56.00	-48.75	5.05	46.00	-40.95	
.9465	13.78	7.34	56.00	-48.66	1.49	46.00	-44.51	
1.0613	11.69	4.99	56.00	-51.01	4.68	46.00	-41.32	
1.1918	20.86	18.46	56.00	-37.54	14.13	46.00	-31.87	
1.4033	22.51	20.21	56.00	-35.79	11.55	46.00	-34.45	
1.6575	12.25	4.23	56.00	-51.77	-0.61	46.00	-46.61	
1.8443	5.66	-5.58	56.00	-61.58	-6.31	46.00	-52.31	
2.1210	8.50	0.60	56.00	-55.40	-0.77	46.00	-46.77	
2.4585	10.11	-4.80	56.00	-60.80	-5.44	46.00	-51.44	
2.6723	14.20	-4.05	56.00	-60.05	-5.35	46.00	-51.35	
3.0548	9.54	-1.41	56.00	-57.41	-3.14	46.00	-49.14	
3.5430	15.15	-4.00	56.00	-60.00	-4.74	46.00	-50.74	
4.5083	14.05	7.77	56.00	-48.23	4.30	46.00	-41.70	

7. Conducted Emissions Test Results

7.5. Power Line Conducted Emissions (15.207)

7.5.2. 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
5.0393	15.91	9.97	60.00	-50.03	7.83	50.00	-42.17	
6.0540	18.38	11.13	60.00	-48.87	3.55	50.00	-46.45	
6.6255	30.51	23.40	60.00	-36.60	14.65	50.00	-35.35	
7.7370	15.63	8.85	60.00	-51.15	2.49	50.00	-47.51	
8.7203	13.06	6.04	60.00	-53.96	2.62	50.00	-47.38	
9.5708	18.79	16.28	60.00	-43.72	11.51	50.00	-38.49	
10.2435	20.15	14.35	60.00	-45.65	10.69	50.00	-39.31	
10.7948	22.49	18.54	60.00	-41.46	15.26	50.00	-34.74	
11.4653	23.80	20.50	60.00	-39.50	19.58	50.00	-30.42	
11.8928	21.32	18.75	60.00	-41.25	17.12	50.00	-32.88	
12.7478	15.07	9.39	60.00	-50.61	6.97	50.00	-43.03	
13.5600	53.31	50.30	60.00	-9.70	49.14	50.00	-0.86	
15.2520	19.50	16.17	60.00	-43.83	14.26	50.00	-35.74	
15.6165	19.57	16.78	60.00	-43.22	13.48	50.00	-36.52	
16.2285	19.78	16.49	60.00	-43.51	13.90	50.00	-36.10	
16.8990	16.37	11.27	60.00	-48.73	9.40	50.00	-40.60	
17.6933	19.75	16.04	60.00	-43.96	13.55	50.00	-36.45	
18.2423	21.30	18.00	60.00	-42.00	16.01	50.00	-33.99	
18.9150	18.47	12.16	60.00	-47.84	9.06	50.00	-40.94	
19.7093	22.44	17.87	60.00	-42.13	15.38	50.00	-34.62	
20.2583	19.97	16.38	60.00	-43.62	13.11	50.00	-36.89	
20.8073	17.87	13.70	60.00	-46.30	9.43	50.00	-40.57	
22.2135	19.05	11.80	60.00	-48.20	9.40	50.00	-40.60	
22.5803	20.85	16.31	60.00	-43.69	14.80	50.00	-35.20	
23.1293	26.25	23.14	60.00	-36.86	21.82	50.00	-28.18	
24.3488	24.27	20.68	60.00	-39.32	18.71	50.00	-31.29	
25.6943	19.44	13.39	60.00	-46.61	10.38	50.00	-39.62	
26.4863	23.28	18.96	60.00	-41.04	14.68	50.00	-35.32	
27.1590	17.14	11.46	60.00	-48.54	7.96	50.00	-42.04	

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 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.