

# Ossia, Inc.

## EMC TEST REPORT FOR

**Cota WPT Source  
Model: Cota Tx203**

### Tested to The Following Standards:

**FCC Part 15 Subpart B Section 15.107 & 15.109**

**Report No.: 103895-2**

**Date of issue: July 8, 2020**



**Test Certificate # 803.01**

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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## ADMINISTRATIVE INFORMATION

### Test Report Information

**REPORT PREPARED FOR:**

Ossia, Inc.  
1100 112th Ave NE Suite 301  
Bellevue, WA 98004

Representative: Bob McDonald  
Customer Reference Number: 13172

**DATE OF EQUIPMENT RECEIPT:**

**DATE(S) OF TESTING:**

**REPORT PREPARED BY:**

Kim Romero  
CKC Laboratories, Inc.  
5046 Sierra Pines Drive  
Mariposa, CA 95338

Project Number: 103895

June 26, 2020

June 26 and 29, 2020

### Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



**Steve Behm**  
*Director of Quality Assurance & Engineering Services*  
*CKC Laboratories, Inc.*

## Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):  
CKC Laboratories, Inc.  
Canyon Park  
22116 23rd Drive S.E., Suite A  
Bothell, WA 98021

## Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.12
EMITest Immunity	5.03.10

## Site Registration & Accreditation Information

Location	*NIST CB #	FCC	Japan
Canyon Park, Bothell, WA	US0081	US1022	A-0136
Brea, CA	US0060	US1025	A-0136
Fremont, CA	US0082	US1023	A-0136
Mariposa, CA	US0103	US1024	A-0136

\*CKC's list of NIST designated countries can be found at: <https://standards.gov/cabs/designations.html>

## SUMMARY OF RESULTS

### Standard / Specification: FCC Part 15 Subpart B

Test Procedure	Description	Modifications	Results
15.107 Class B	Conducted Emissions	NA	PASS
15.109 Class B	Radiated Emissions	Mod. #1	PASS

NA = Not Applicable

#### ISO/IEC 17025 Decision Rule

The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

### Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

#### Summary of Conditions

Mod #1 =

- 1) Register settings updated on clock generator chip Si5341.
- 2) Series termination resistors added to outputs of clock generator chip Si5341.
- 3) Absorber material added to clock buffer chip CDCLVD1216.

**Modifications listed above must be incorporated into all production units.**

### Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

#### Summary of Conditions

None

## EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

### Configuration 1

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Cota WPT Source	Ossia, Inc.	Cota Tx203	OR-001

**Support Equipment:**

Device	Manufacturer	Model #	S/N
USB 2.0 Extension Cable	Blue Rigger	32 ft (10m)	NA
AC Adapter (for PoE Injector)	GlobTek, Inc.	GTM961808P18054-T3	NA
PoE Injector	Ossia, Inc.	OL-10282	NA
Laptop	Apple	MacBook Pro A1398	NA
USB Hub	AmazonBasics	B00DQFGJR4	NA
Thunderbolt to Ethernet adapter	Apple	A1433	NA

### Configuration 2

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Cota WPT Source	Ossia, Inc.	Cota Tx203	OR-001

**Support Equipment:**

Device	Manufacturer	Model #	S/N
USB 2.0 Extension Cable	Blue Rigger	32 ft (10m)	NA
AC/DC Switching Adapter	Mean Well	GST220A12	NA
Laptop	Apple	MacBook Pro A1398	NA
USB Hub	AmazonBasics	B00DQFGJR4	NA
Thunderbolt to Ethernet adapter	Apple	A1433	NA

# FCC PART 15 SUBPART B

## 15.107 AC Conducted Emissions

Test Notes: Conducted Disturbances at Mains Terminals, LISN method.

### Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	<b>Ossia, Inc.</b>		
Specification:	<b>15.107 AC Mains Class B - Average</b>		
Work Order #:	<b>102119</b>	Date:	6/26/2020
Test Type:	<b>Conducted Emissions</b>	Time:	10:26:28
Tested By:	Michael Atkinson	Sequence#:	65
Software:	EMITest 5.03.12		115VAC 60Hz

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 23°C  
 Humidity: 34%  
 Pressure: 101.6kPa

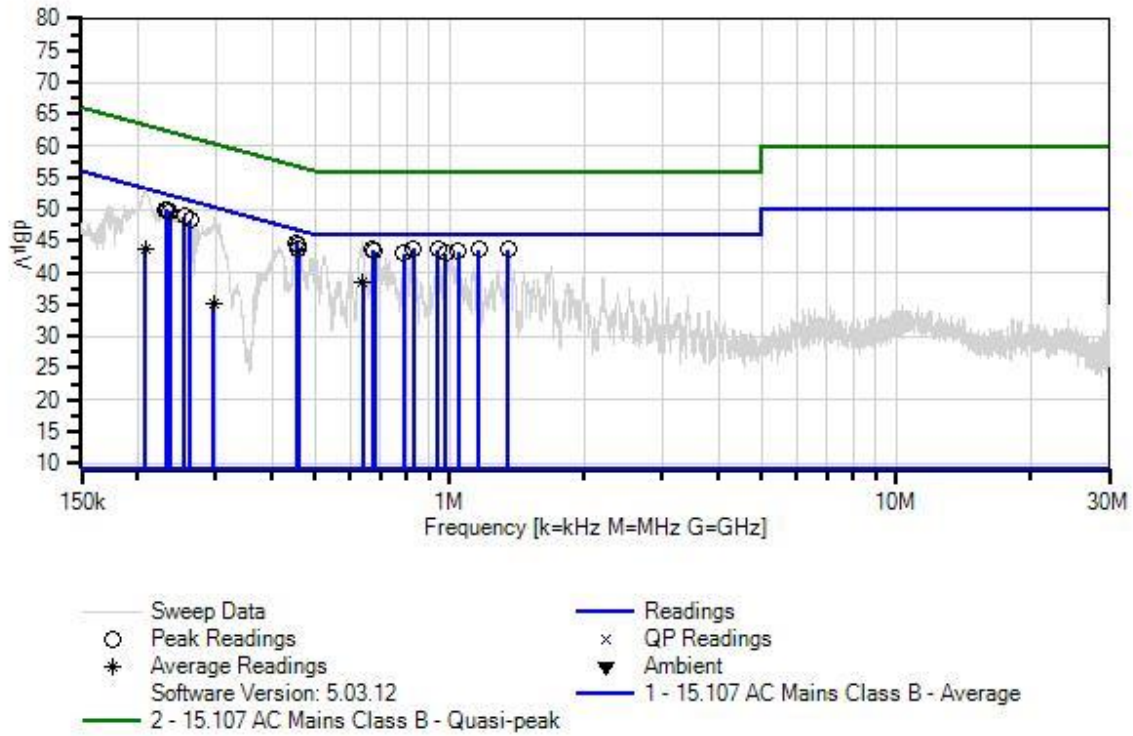
Method: ANSI C63.4 (2014)

Frequency: 0.15-30MHz

EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.

EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Ossia, Inc. WO#: 102119 Sequence#: 65 Date: 6/26/2020  
 15.107 AC Mains Class B - Average Test Lead: 115VAC 60Hz Line



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T5	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022



**Measurement Data:**

Reading listed by margin.

Test Lead: Line

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	453.371k	35.8	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	44.7	46.8	-2.1	Line
2	832.268k	34.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Line
3	941.674k	34.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.7	46.0	-2.3	Line
4	672.296k	34.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.6	46.0	-2.4	Line
5	1.162M	34.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.6	46.0	-2.4	Line
6	1.356M	34.5	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.6	46.0	-2.4	Line
7	232.790k	41.5	+0.2 -1.0	+0.0	+0.0	+9.1	+0.0	49.8	52.3	-2.5	Line
8	456.395k	35.4	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	44.3	46.8	-2.5	Line
9	232.161k	41.6	+0.2 -1.0	+0.0	+0.0	+9.1	+0.0	49.9	52.4	-2.5	Line
10	236.143k	41.3	+0.2 -1.0	+0.0	+0.0	+9.1	+0.0	49.6	52.2	-2.6	Line
11	254.588k	40.5	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.9	51.6	-2.7	Line
12	678.948k	34.3	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Line
13	1.049M	34.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Line
14	459.117k	34.9	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	43.8	46.7	-2.9	Line
15	979.170k	34.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.1	46.0	-2.9	Line
16	263.163k	39.8	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	48.3	51.3	-3.0	Line
17	789.123k	34.0	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.0	46.0	-3.0	Line
18	639.942k	29.4	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	38.4	46.0	-7.6	Line
^	639.941k	36.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	45.2	46.0	-0.8	Line
20	208.896k	35.6	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	43.8	53.2	-9.4	Line
^	208.896k	44.6	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	52.8	53.2	-0.4	Line
22	297.164k	26.5	+0.1 -0.7	+0.0	+0.0	+9.1	+0.0	35.0	50.3	-15.3	Line
^	297.164k	40.1	+0.1 -0.7	+0.0	+0.0	+9.1	+0.0	48.6	50.3	-1.7	Line

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.107 AC Mains Class B - Average**  
 Work Order #: **102119** Date: 6/26/2020  
 Test Type: **Conducted Emissions** Time: 10:31:26  
 Tested By: Michael Atkinson Sequence#: 66  
 Software: EMITest 5.03.12 115VAC 60Hz

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

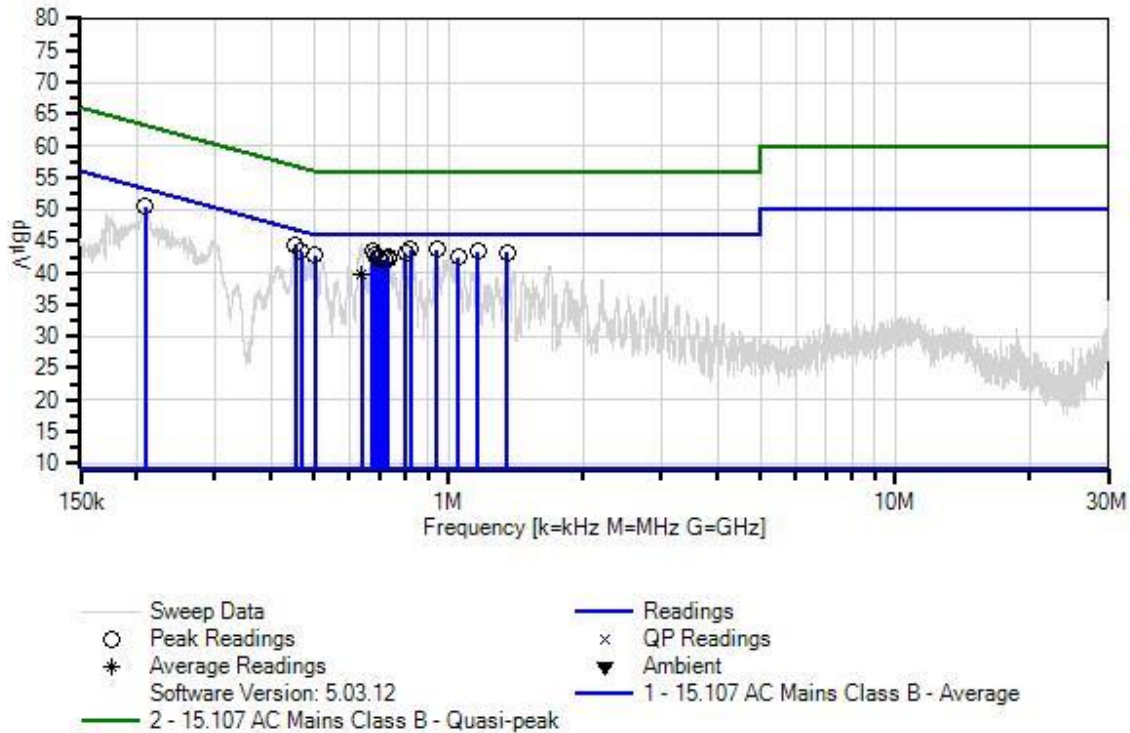
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 23°C  
 Humidity: 34%  
 Pressure: 101.6kPa  
  
 Method: ANSI C63.4 (2014)  
  
 Frequency: 0.15-30MHz  
  
 EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Ossia, Inc. WO#: 102119 Sequence#: 66 Date: 6/26/2020  
 15.107 AC Mains Class B - Average Test Lead: 115VAC 60Hz Neutral



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
T5	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022

**Measurement Data:**

Reading listed by margin.

Test Lead: Neutral

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	823.537k	34.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.7	46.0	-2.3	Neutr
2	943.728k	34.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.6	46.0	-2.4	Neutr
3	453.371k	35.4	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	44.3	46.8	-2.5	Neutr
4	678.646k	34.5	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.5	46.0	-2.5	Neutr
5	675.320k	34.3	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Neutr
6	1.163M	34.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Neutr
7	209.420k	42.2	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	50.4	53.2	-2.8	Neutr
8	1.354M	34.1	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.2	46.0	-2.8	Neutr
9	802.991k	34.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.1	46.0	-2.9	Neutr
10	467.583k	34.5	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	43.4	46.6	-3.2	Neutr
11	501.450k	33.9	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.8	46.0	-3.2	Neutr
12	686.206k	33.7	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.7	46.0	-3.3	Neutr
13	733.377k	33.7	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.6	46.0	-3.4	Neutr
14	1.050M	33.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.5	46.0	-3.5	Neutr
15	697.394k	33.4	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.4	46.0	-3.6	Neutr
16	699.813k	33.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Neutr
17	718.863k	33.0	+0.3 -0.3	+0.0	+0.0	+9.1	+0.0	42.1	46.0	-3.9	Neutr
18	730.958k	33.2	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.1	46.0	-3.9	Neutr
19	638.430k	30.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	39.6	46.0	-6.4	Neutr
Ave											
^	638.429k	35.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.6	46.0	-1.4	Neutr
^	642.965k	34.9	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.9	46.0	-2.1	Neutr

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.107 AC Mains Class B - Average**  
 Work Order #: **102119** Date: 6/26/2020  
 Test Type: **Conducted Emissions** Time: 13:54:02  
 Tested By: Michael Atkinson Sequence#: 75  
 Software: EMITest 5.03.12 115VAC 60Hz

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

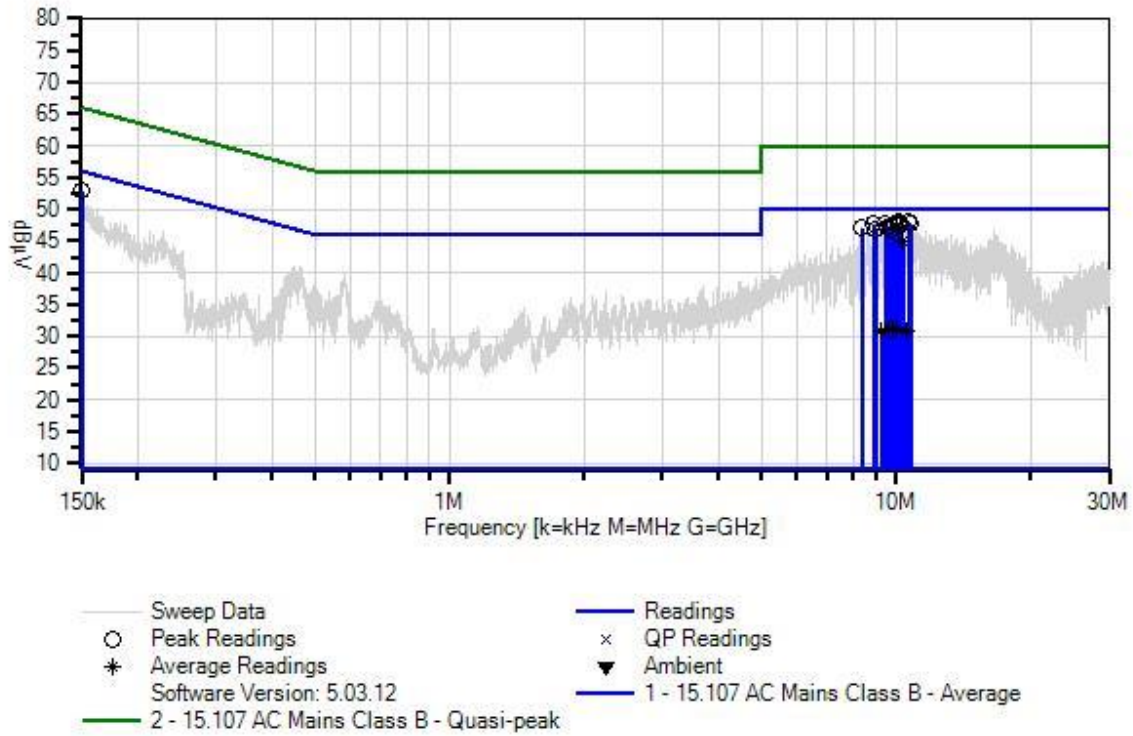
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 23°C  
 Humidity: 34%  
 Pressure: 101.6kPa  
  
 Method: ANSI C63.4 (2014)  
  
 Frequency: 0.15-30MHz  
  
 EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Ossia, Inc. WO#: 102119 Sequence#: 75 Date: 6/26/2020  
 15.107 AC Mains Class B - Average Test Lead: 115VAC 60Hz Line



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T5	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022

**Measurement Data:**

Reading listed by margin.

Test Lead: Line

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	10.179M	39.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.9	50.0	-2.1	Line
2	10.673M	39.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.9	50.0	-2.1	Line
3	9.473M	38.9	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.8	50.0	-2.2	Line
4	8.909M	38.8	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Line
5	10.248M	38.8	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Line
6	10.768M	38.8	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Line
7	9.944M	38.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.6	50.0	-2.4	Line
8	9.739M	38.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.3	50.0	-2.7	Line
9	10.098M	38.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.3	50.0	-2.7	Line
10	8.370M	38.3	+0.1 -0.5	+0.0	+0.1	+9.1	+0.0	47.1	50.0	-2.9	Line
11	9.499M	38.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.0	50.0	-3.0	Line
12	150.523k	43.7	+1.9 -1.8	+0.0	+0.0	+9.1	+0.0	52.9	56.0	-3.1	Line
13	8.999M	38.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.9	50.0	-3.1	Line
14	9.692M	37.9	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.8	50.0	-3.2	Line
15	10.367M	36.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	45.1	50.0	-4.9	Line
^	10.367M	39.5	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.4	50.0	-1.6	Line
17	9.858M	22.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	31.1	50.0	-18.9	Line
^	9.858M	39.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.5	50.0	-1.5	Line
19	10.047M	22.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	31.0	50.0	-19.0	Line
^	10.047M	39.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.0	50.0	-2.0	Line
21	9.657M	22.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	31.0	50.0	-19.0	Line
^	9.657M	39.3	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.2	50.0	-1.8	Line

23	10.557M	22.0	+0.1	+0.0	+0.2	+9.1	+0.0	30.9	50.0	-19.1	Line
	Ave		-0.5								
^	10.557M	39.4	+0.1	+0.0	+0.2	+9.1	+0.0	48.3	50.0	-1.7	Line
			-0.5								
25	9.260M	21.9	+0.1	+0.0	+0.2	+9.1	+0.0	30.8	50.0	-19.2	Line
	Ave		-0.5								
^	9.260M	39.2	+0.1	+0.0	+0.2	+9.1	+0.0	48.1	50.0	-1.9	Line
			-0.5								



Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.107 AC Mains Class B - Average**  
 Work Order #: **102119** Date: 6/26/2020  
 Test Type: **Conducted Emissions** Time: 14:01:09  
 Tested By: Michael Atkinson Sequence#: 76  
 Software: EMITest 5.03.12 115VAC 60Hz

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

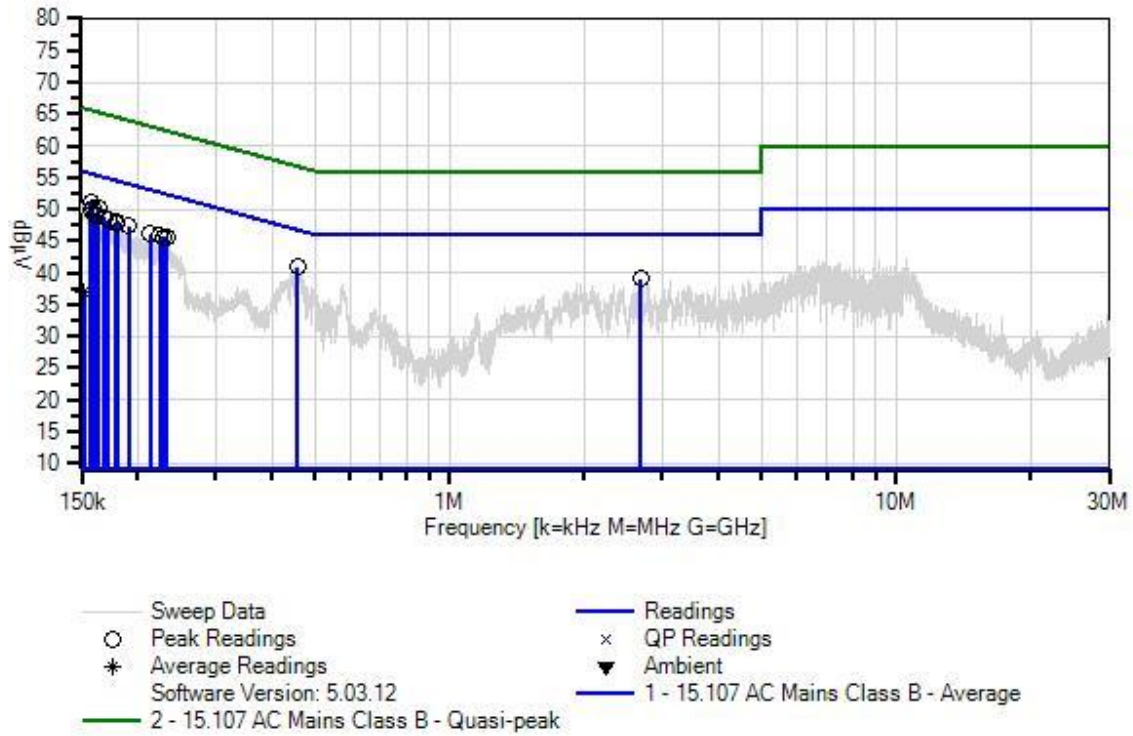
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 23°C  
 Humidity: 34%  
 Pressure: 101.6kPa  
  
 Method: ANSI C63.4 (2014)  
  
 Frequency: 0.15-30MHz  
  
 EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Ossia, Inc. WO#: 102119 Sequence#: 76 Date: 6/26/2020  
 15.107 AC Mains Class B - Average Test Lead: 115VAC 60Hz Neutral



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
T5	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022

**Measurement Data:** Reading listed by margin. Test Lead: Neutral

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	157.230k	42.9	+0.7 -1.6	+0.0	+0.0	+9.1	+0.0	51.1	55.6	-4.5	Neutr
2	163.517k	42.1	+0.5 -1.6	+0.0	+0.0	+9.1	+0.0	50.1	55.3	-5.2	Neutr
3	159.326k	41.9	+0.7 -1.6	+0.0	+0.0	+9.1	+0.0	50.1	55.5	-5.4	Neutr
4	157.754k	41.8	+0.7 -1.6	+0.0	+0.0	+9.1	+0.0	50.0	55.6	-5.6	Neutr
5	457.302k	32.0	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	40.9	46.7	-5.8	Neutr
6	160.793k	41.3	+0.6 -1.6	+0.0	+0.0	+9.1	+0.0	49.4	55.4	-6.0	Neutr
7	169.177k	40.8	+0.4 -1.5	+0.0	+0.0	+9.1	+0.0	48.8	55.0	-6.2	Neutr
8	161.736k	41.0	+0.6 -1.6	+0.0	+0.0	+9.1	+0.0	49.1	55.4	-6.3	Neutr
9	179.971k	39.9	+0.4 -1.3	+0.0	+0.0	+9.1	+0.0	48.1	54.5	-6.4	Neutr
10	172.530k	40.1	+0.4 -1.4	+0.0	+0.0	+9.1	+0.0	48.2	54.8	-6.6	Neutr
11	190.975k	39.3	+0.3 -1.3	+0.0	+0.0	+9.1	+0.0	47.4	54.0	-6.6	Neutr
12	232.789k	37.3	+0.2 -1.0	+0.0	+0.0	+9.1	+0.0	45.6	52.3	-6.7	Neutr
13	225.243k	37.4	+0.3 -1.0	+0.0	+0.0	+9.1	+0.0	45.8	52.6	-6.8	Neutr
14	179.447k	39.5	+0.4 -1.4	+0.0	+0.0	+9.1	+0.0	47.6	54.5	-6.9	Neutr
15	214.030k	37.8	+0.3 -1.1	+0.0	+0.0	+9.1	+0.0	46.1	53.0	-6.9	Neutr
16	227.759k	37.2	+0.3 -1.0	+0.0	+0.0	+9.1	+0.0	45.6	52.5	-6.9	Neutr
17	2.677M	30.0	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.0	46.0	-7.0	Neutr
18	151.571k	28.5	+1.2 -1.7	+0.0	+0.0	+9.1	+0.0	37.1	55.9	-18.8	Neutr
^	151.570k	43.3	+1.2 -1.7	+0.0	+0.0	+9.1	+0.0	51.9	55.9	-4.0	Neutr
^	155.238k	42.7	+0.8 -1.7	+0.0	+0.0	+9.1	+0.0	50.9	55.7	-4.8	Neutr
^	150.103k	41.3	+2.4 -1.8	+0.0	+0.0	+9.1	+0.0	51.0	56.0	-5.0	Neutr

**Test Setup Photo(s)**



Configuration 1



Configuration 2

**15.109 Radiated Emissions**

Test Notes: Radiated disturbances emanating from enclosure.

**Test Setup / Conditions / Data**

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 13:37:09  
 Tested By: M. Harrison/M. Atkinson Sequence#: 74  
 Software: EMITest 5.03.12

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Configuration 1			

**Support Equipment:**

Device	Manufacturer	Model #	S/N
Configuration 1			

**Test Conditions / Notes:**

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa

Method: ANSI C63.4: 2014

Frequency Range: 30-1000MHz

EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.

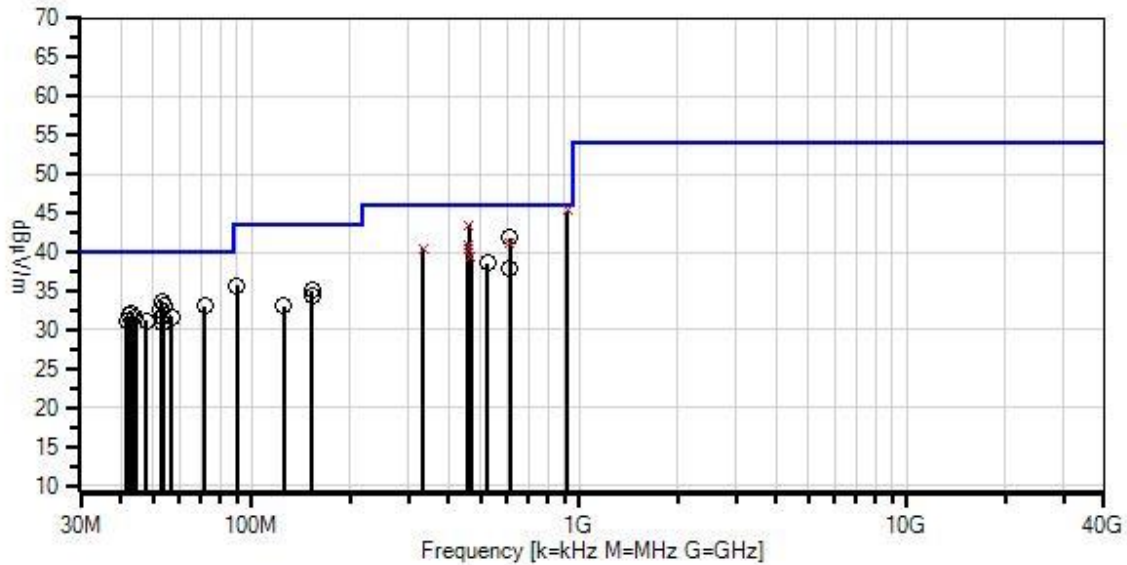
EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

31 material ferrite on active USB extension cable outside of test volume, NOT a modification to the EUT.

Modification 1 was in place during testing.

XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WD#: 103895 Sequence#: 74 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Vert



— Readings  
 × QP Readings  
 ▼ Ambient  
 ○ Peak Readings  
 \* Average Readings  
 — 1 - 15.109 Radiated Emissions Class B  
 Software Version: 5.03.12

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T4	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T5	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T6	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T7	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	918.756M QP	38.7	+0.0 +2.1	+0.4 +5.8	+1.5 +24.1	-27.3	+0.0	45.3	46.0	-0.7	Vert
^	918.849M	39.2	+0.0 +2.1	+0.4 +5.8	+1.5 +24.1	-27.3	+0.0	45.8	46.0	-0.2	Vert
^	918.752M	36.0	+0.0 +2.1	+0.4 +5.8	+1.5 +24.1	-27.3	+0.0	42.6	46.0	-3.4	Vert
4	459.369M QP	44.8	+0.0 +1.4	+0.2 +5.8	+1.0 +18.1	-27.9	+0.0	43.4	46.0	-2.6	Vert
^	459.369M	48.3	+0.0 +1.4	+0.2 +5.8	+1.0 +18.1	-27.9	+0.0	46.9	46.0	+0.9	Vert
6	612.000M	40.0	+0.0 +1.6	+0.3 +5.8	+1.2 +21.1	-28.2	+0.0	41.8	46.0	-4.2	Vert
7	612.509M QP	39.3	+0.0 +1.6	+0.3 +5.8	+1.2 +21.1	-28.2	+0.0	41.1	46.0	-4.9	Vert
8	457.947M QP	42.4	+0.0 +1.4	+0.2 +5.8	+1.0 +18.1	-27.9	+0.0	41.0	46.0	-5.0	Vert
9	457.630M QP	41.9	+0.0 +1.4	+0.2 +5.8	+1.0 +18.1	-27.9	+0.0	40.5	46.0	-5.5	Vert
^	457.630M	46.9	+0.0 +1.4	+0.2 +5.8	+1.0 +18.1	-27.9	+0.0	45.5	46.0	-0.5	Vert
11	333.347M QP	44.8	+0.0 +1.2	+0.2 +5.8	+0.9 +14.7	-27.1	+0.0	40.5	46.0	-5.5	Vert
^	333.347M	47.1	+0.0 +1.2	+0.2 +5.8	+0.9 +14.7	-27.1	+0.0	42.8	46.0	-3.2	Vert
13	53.315M	47.4	+0.0 +0.4	+0.1 +5.8	+0.4 +7.4	-27.9	+0.0	33.6	40.0	-6.4	Vert
14	465.220M QP	40.7	+0.0 +1.4	+0.3 +5.8	+1.1 +18.2	-28.0	+0.0	39.5	46.0	-6.5	Vert
15	465.220M QP	40.7	+0.0 +1.4	+0.3 +5.8	+1.1 +18.2	-28.0	+0.0	39.5	46.0	-6.5	Vert
^	465.220M	46.6	+0.0 +1.4	+0.3 +5.8	+1.1 +18.2	-28.0	+0.0	45.4	46.0	-0.6	Vert
17	72.084M	46.8	+0.0 +0.5	+0.1 +5.8	+0.4 +7.2	-27.8	+0.0	33.0	40.0	-7.0	Vert
18	53.778M	46.7	+0.0 +0.4	+0.1 +5.8	+0.4 +7.5	-27.9	+0.0	33.0	40.0	-7.0	Vert
19	52.810M	46.4	+0.0 +0.4	+0.1 +5.8	+0.4 +7.4	-27.9	+0.0	32.6	40.0	-7.4	Vert
20	524.186M	38.9	+0.0 +1.5	+0.3 +5.8	+1.1 +19.1	-28.2	+0.0	38.5	46.0	-7.5	Vert
21	43.130M	43.1	+0.0 +0.3	+0.1 +5.8	+0.3 +10.6	-28.0	+0.0	32.2	40.0	-7.8	Vert
22	90.286M	49.6	+0.0 +0.5	+0.1 +5.8	+0.4 +7.1	-27.8	+0.0	35.7	43.5	-7.8	Vert
23	612.343M	36.1	+0.0 +1.6	+0.3 +5.8	+1.2 +21.1	-28.2	+0.0	37.9	46.0	-8.1	Vert
24	42.331M	42.3	+0.0 +0.3	+0.1 +5.8	+0.3 +11.0	-28.0	+0.0	31.8	40.0	-8.2	Vert

25	53.104M	45.5	+0.0 +0.4	+0.1 +5.8	+0.4 +7.4	-27.9	+0.0	31.7	40.0	-8.3	Vert
26	56.976M	45.3	+0.0 +0.4	+0.1 +5.8	+0.4 +7.6	-27.9	+0.0	31.7	40.0	-8.3	Vert
27	153.145M	45.9	+0.0 +0.7	+0.2 +5.8	+0.6 +9.4	-27.5	+0.0	35.1	43.5	-8.4	Vert
28	44.140M	42.9	+0.0 +0.4	+0.1 +5.8	+0.3 +10.1	-28.0	+0.0	31.6	40.0	-8.4	Vert
29	41.447M	41.3	+0.0 +0.3	+0.1 +5.8	+0.3 +11.4	-28.0	+0.0	31.2	40.0	-8.8	Vert
30	47.760M	44.0	+0.0 +0.4	+0.1 +5.8	+0.4 +8.3	-27.9	+0.0	31.1	40.0	-8.9	Vert
31	153.112M	45.2	+0.0 +0.7	+0.2 +5.8	+0.6 +9.4	-27.5	+0.0	34.4	43.5	-9.1	Vert
32	53.300M	44.6	+0.0 +0.4	+0.1 +5.8	+0.4 +7.4	-27.9	+0.0	30.8	40.0	-9.2	Vert
33	125.100M	45.7	+0.0 +0.7	+0.1 +5.8	+0.5 +7.8	-27.6	+0.0	33.0	43.5	-10.5	Vert



Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 13:40:22  
 Tested By: M. Harrison/M. Atkinson Sequence#: 73  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

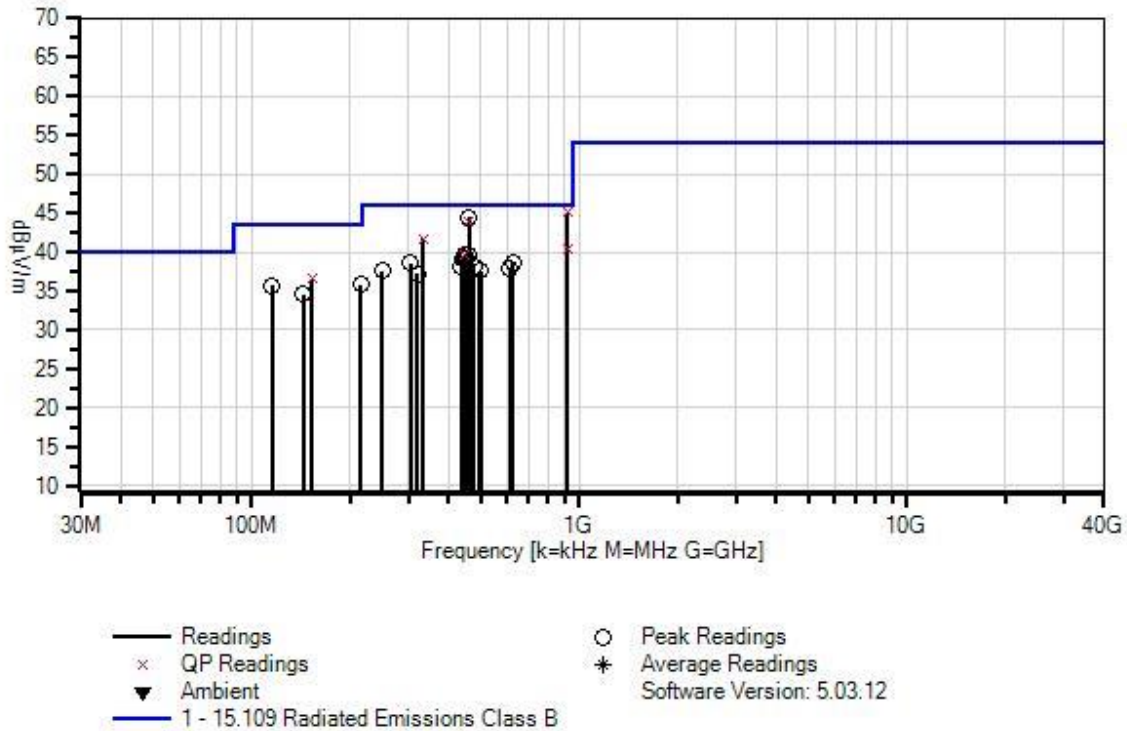
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 30-1000MHz  
  
 EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 31 material ferrite on active USB extension cable outside of test volume, NOT a modification to the EUT.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WO#: 103895 Sequence#: 73 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Horiz



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP06540	Cable	Heliacx	8/23/2019	8/23/2021
T2	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T3	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T6	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	918.757M QP	38.5	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	45.1	46.0	-0.9	Horiz
^	918.849M	33.6	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	40.2	46.0	-5.8	Horiz
3	459.700M	45.8	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	44.4	46.0	-1.6	Horiz
4	459.386M QP	45.3	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	43.9	46.0	-2.1	Horiz
5	333.356M QP	46.0	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	41.7	46.0	-4.3	Horiz
^	333.356M	48.8	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	44.5	46.0	-1.5	Horiz
^	333.325M	44.8	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	40.5	46.0	-5.5	Horiz
8	918.749M QP	33.9	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	40.5	46.0	-5.5	Horiz
^	918.760M	39.7	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	46.3	46.0	+0.3	Horiz
^	918.749M	34.7	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	41.3	46.0	-4.7	Horiz
11	458.214M	41.1	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	39.7	46.0	-6.3	Horiz
12	449.000M QP	41.1	+0.2 +5.8	+1.0 +18.0	-27.9	+1.4	+0.0	39.6	46.0	-6.4	Horiz
^	449.000M	45.2	+0.2 +5.8	+1.0 +18.0	-27.9	+1.4	+0.0	43.7	46.0	-2.3	Horiz
14	448.289M	41.1	+0.2 +5.8	+1.0 +18.0	-27.9	+1.4	+0.0	39.6	46.0	-6.4	Horiz
15	453.544M	40.6	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	39.2	46.0	-6.8	Horiz
16	444.203M	40.7	+0.2 +5.8	+1.0 +18.0	-27.9	+1.4	+0.0	39.2	46.0	-6.8	Horiz
17	441.867M	40.6	+0.2 +5.8	+1.0 +17.9	-27.8	+1.4	+0.0	39.1	46.0	-6.9	Horiz
18	153.119M QP	47.3	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	36.5	43.5	-7.0	Horiz
^	153.122M	49.2	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	38.4	43.5	-5.1	Horiz
^	153.082M	48.1	+0.2 +5.8	+0.6 +9.3	-27.5	+0.7	+0.0	37.2	43.5	-6.3	Horiz
21	625.187M	36.5	+0.3 +5.8	+1.2 +21.4	-28.2	+1.7	+0.0	38.7	46.0	-7.3	Horiz
22	306.112M	44.2	+0.2 +5.8	+0.9 +13.4	-27.1	+1.1	+0.0	38.5	46.0	-7.5	Horiz
23	214.754M	44.8	+0.2 +5.8	+0.7 +10.6	-27.2	+0.9	+0.0	35.8	43.5	-7.7	Horiz

24	476.897M	39.3	+0.3 +5.8	+1.1 +18.3	-28.0	+1.4	+0.0	38.2	46.0	-7.8	Horiz
25	114.960M	48.4	+0.1 +5.8	+0.5 +8.0	-27.7	+0.6	+0.0	35.7	43.5	-7.8	Horiz
26	434.861M	39.6	+0.2 +5.8	+1.0 +17.9	-27.8	+1.4	+0.0	38.1	46.0	-7.9	Horiz
27	612.343M	36.0	+0.3 +5.8	+1.2 +21.1	-28.2	+1.6	+0.0	37.8	46.0	-8.2	Horiz
28	499.666M	38.5	+0.3 +5.8	+1.1 +18.5	-28.1	+1.5	+0.0	37.6	46.0	-8.4	Horiz
29	495.579M	38.5	+0.3 +5.8	+1.1 +18.5	-28.1	+1.5	+0.0	37.6	46.0	-8.4	Horiz
30	249.985M	44.5	+0.2 +5.8	+0.8 +12.2	-27.0	+1.0	+0.0	37.5	46.0	-8.5	Horiz
31	319.718M	42.2	+0.2 +5.8	+0.9 +14.1	-27.1	+1.1	+0.0	37.2	46.0	-8.8	Horiz
32	143.779M	46.3	+0.1 +5.8	+0.5 +8.7	-27.5	+0.7	+0.0	34.6	43.5	-8.9	Horiz

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 12:35:20  
 Tested By: M. Harrison/M. Atkinson Sequence#: 55  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

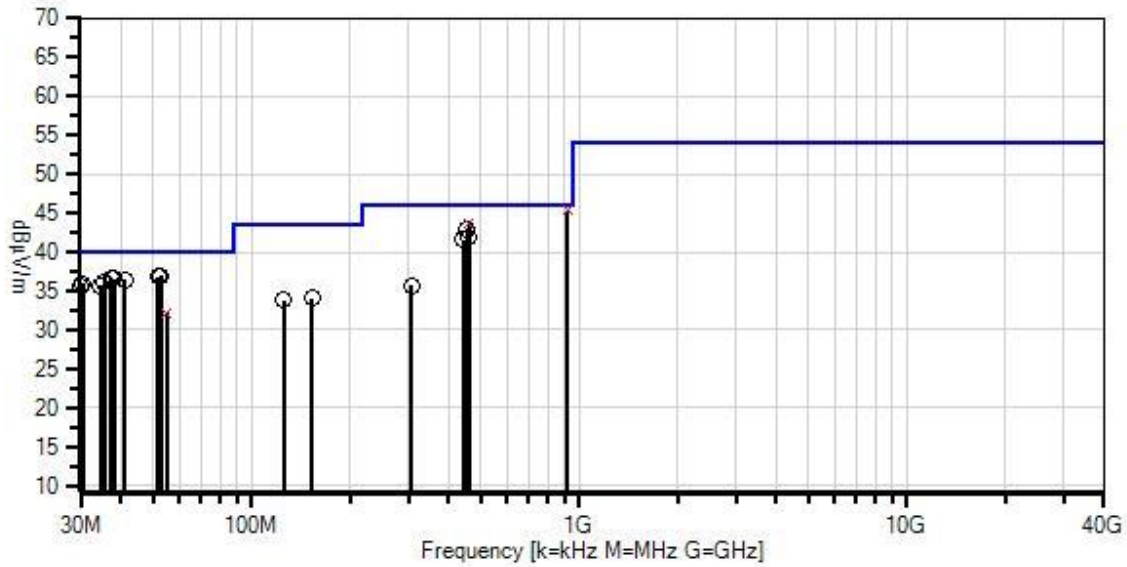
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 30-1000MHz  
  
 EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WD#: 103895 Sequence#: 55 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Vert



— Readings  
 × QP Readings  
 ▼ Ambient  
 ○ Peak Readings  
 \* Average Readings  
 — 1 - 15.109 Radiated Emissions Class B  
 Software Version: 5.03.12

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T2	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T3	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T6	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

**Measurement Data:**

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	918.754M QP	38.7	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	45.3	46.0	-0.7	Vert
^	918.754M	39.8	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	46.4	46.0	+0.4	Vert
3	459.358M QP	45.0	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	43.6	46.0	-2.4	Vert
^	459.358M	48.3	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	46.9	46.0	+0.9	Vert
5	52.760M	50.7	+0.1 +5.8	+0.4 +7.4	-27.9	+0.4	+0.0	36.9	40.0	-3.1	Vert
6	454.266M	44.2	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	42.8	46.0	-3.2	Vert
7	51.828M	50.6	+0.1 +5.8	+0.4 +7.4	-27.9	+0.4	+0.0	36.8	40.0	-3.2	Vert
8	37.254M	44.9	+0.1 +5.8	+0.3 +13.3	-28.0	+0.3	+0.0	36.7	40.0	-3.3	Vert
9	37.986M	45.0	+0.1 +5.8	+0.3 +13.0	-28.0	+0.3	+0.0	36.5	40.0	-3.5	Vert
10	41.047M	46.2	+0.1 +5.8	+0.3 +11.7	-28.0	+0.3	+0.0	36.4	40.0	-3.6	Vert
11	35.390M	43.5	+0.1 +5.8	+0.3 +14.1	-27.9	+0.3	+0.0	36.2	40.0	-3.8	Vert
12	30.532M	40.9	+0.1 +5.8	+0.3 +16.4	-27.9	+0.3	+0.0	35.9	40.0	-4.1	Vert
13	457.870M	43.2	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	41.8	46.0	-4.2	Vert
14	30.067M	40.4	+0.1 +5.8	+0.3 +16.7	-27.9	+0.3	+0.0	35.7	40.0	-4.3	Vert
15	34.459M	42.6	+0.1 +5.8	+0.3 +14.5	-27.9	+0.3	+0.0	35.7	40.0	-4.3	Vert
16	441.293M	43.1	+0.2 +5.8	+1.0 +17.9	-27.8	+1.4	+0.0	41.6	46.0	-4.4	Vert
17	55.062M QP	45.9	+0.1 +5.8	+0.4 +7.5	-27.9	+0.4	+0.0	32.2	40.0	-7.8	Vert
^	55.062M	52.8	+0.1 +5.8	+0.4 +7.5	-27.9	+0.4	+0.0	39.1	40.0	-0.9	Vert
19	153.137M	44.9	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	34.1	43.5	-9.4	Vert
20	125.100M	46.5	+0.1 +5.8	+0.5 +7.8	-27.6	+0.7	+0.0	33.8	43.5	-9.7	Vert
21	306.241M	41.4	+0.2 +5.8	+0.9 +13.4	-27.1	+1.1	+0.0	35.7	46.0	-10.3	Vert

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 12:39:23  
 Tested By: M. Harrison/M. Atkinson Sequence#: 56  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa

Method: ANSI C63.4: 2014

Frequency Range: 30-1000MHz

EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.

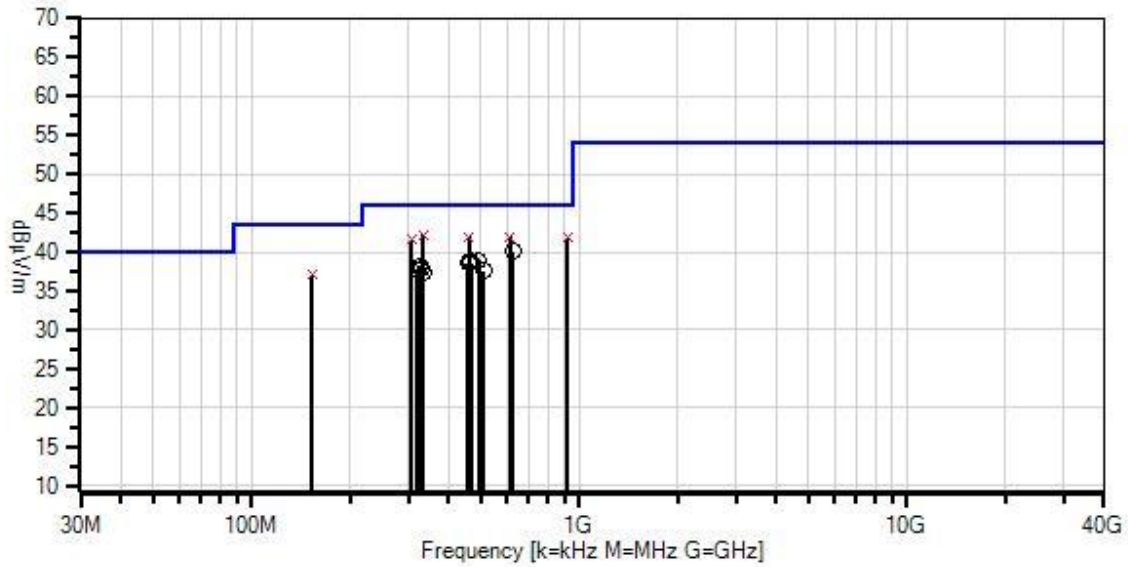
EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Modification 1 was in place during testing.

XYZ EUT orientations investigated, worst case reported.



Ossia, Inc. WO#: 103895 Sequence#: 56 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Horiz



— Readings  
 × QP Readings  
 ▼ Ambient  
 ○ Peak Readings  
 \* Average Readings  
 — 1 - 15.109 Radiated Emissions Class B  
 Software Version: 5.03.12

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP06540	Cable	Heliacx	8/23/2019	8/23/2021
T2	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T3	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T6	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	333.337M QP	46.5	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	42.2	46.0	-3.8	Horiz
^	333.337M	49.1	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	44.8	46.0	-1.2	Horiz
3	612.494M QP	40.2	+0.3 +5.8	+1.2 +21.1	-28.2	+1.6	+0.0	42.0	46.0	-4.0	Horiz
^	612.494M	41.5	+0.3 +5.8	+1.2 +21.1	-28.2	+1.6	+0.0	43.3	46.0	-2.7	Horiz
5	459.378M QP	43.3	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	41.9	46.0	-4.1	Horiz
^	459.378M	45.8	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	44.4	46.0	-1.6	Horiz
7	918.752M QP	35.2	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	41.8	46.0	-4.2	Horiz
^	918.752M	37.7	+0.4 +5.8	+1.5 +24.1	-27.3	+2.1	+0.0	44.3	46.0	-1.7	Horiz
9	306.242M QP	47.3	+0.2 +5.8	+0.9 +13.4	-27.1	+1.1	+0.0	41.6	46.0	-4.4	Horiz
^	306.242M	50.2	+0.2 +5.8	+0.9 +13.4	-27.1	+1.1	+0.0	44.5	46.0	-1.5	Horiz
11	624.957M	37.9	+0.3 +5.8	+1.2 +21.4	-28.2	+1.7	+0.0	40.1	46.0	-5.9	Horiz
12	153.128M QP	47.8	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	37.0	43.5	-6.5	Horiz
^	153.128M	49.9	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	39.1	43.5	-4.4	Horiz
^	153.200M	46.2	+0.2 +5.8	+0.6 +9.4	-27.5	+0.7	+0.0	35.4	43.5	-8.1	Horiz
15	463.756M	40.1	+0.3 +5.8	+1.1 +18.2	-28.0	+1.4	+0.0	38.9	46.0	-7.1	Horiz
16	493.305M	39.9	+0.3 +5.8	+1.1 +18.4	-28.1	+1.5	+0.0	38.9	46.0	-7.1	Horiz
17	468.320M	39.8	+0.3 +5.8	+1.1 +18.2	-28.0	+1.4	+0.0	38.6	46.0	-7.4	Horiz
18	457.990M	39.9	+0.2 +5.8	+1.0 +18.1	-27.9	+1.4	+0.0	38.5	46.0	-7.5	Horiz
19	325.017M	43.0	+0.2 +5.8	+0.9 +14.3	-27.1	+1.1	+0.0	38.2	46.0	-7.8	Horiz
20	328.260M	42.4	+0.2 +5.8	+0.9 +14.5	-27.1	+1.2	+0.0	37.9	46.0	-8.1	Horiz
21	509.521M	38.4	+0.3 +5.8	+1.1 +18.7	-28.2	+1.5	+0.0	37.6	46.0	-8.4	Horiz
22	320.933M	42.6	+0.2 +5.8	+0.9 +14.1	-27.1	+1.1	+0.0	37.6	46.0	-8.4	Horiz
23	333.666M	41.7	+0.2 +5.8	+0.9 +14.7	-27.1	+1.2	+0.0	37.4	46.0	-8.6	Horiz

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 16:08:30  
 Tested By: Michael Atkinson Sequence#: 83  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa

Method: ANSI C63.4: 2014

Frequency Range: 1-10GHz

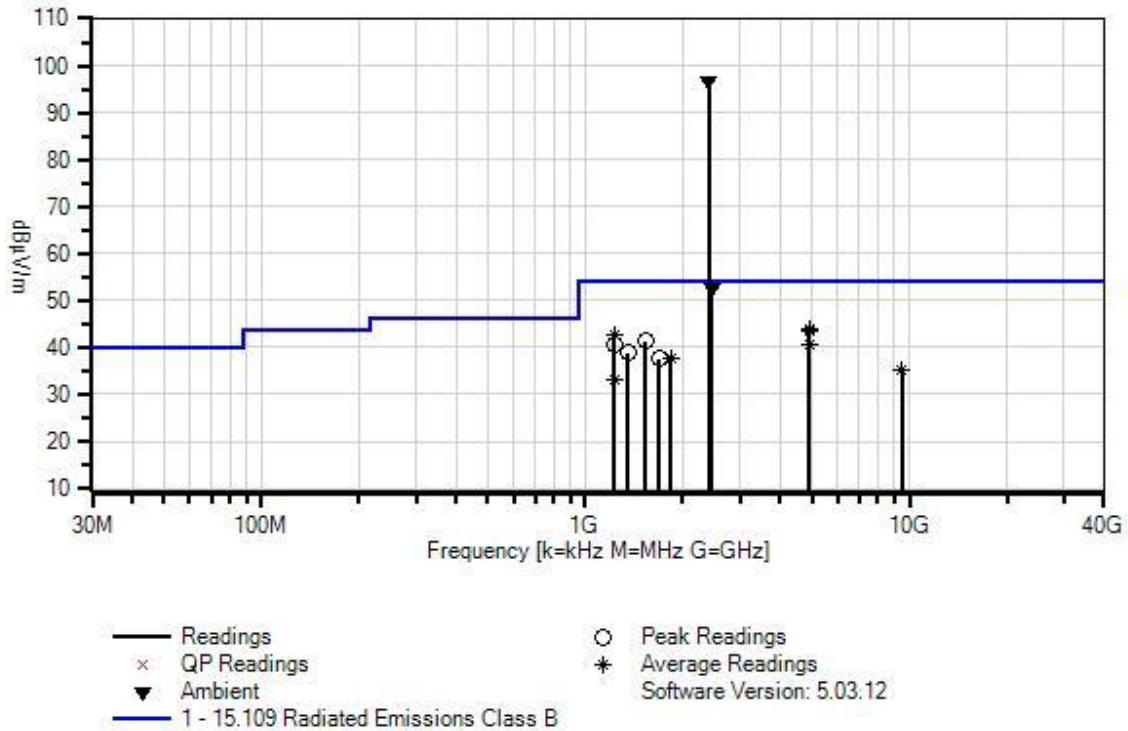
EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.

EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Modification 1 was in place during testing.

XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WD#: 103895 Sequence#: 83 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Vert



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2410.612M Ambient	99.7	+0.0 +0.3	+0.6 +27.6	+2.6	-34.3	+0.0	96.5	54.0	+42.5	Vert
2	2457.867M Ambient	55.6	+0.0 +0.3	+0.6 +27.6	+2.7	-34.3	+0.0	52.5	54.0	-1.5	Vert
3	4900.046M Ave	39.4	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	43.9	54.0	-10.1	Vert
4	4900.046M Ave	39.2	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	43.7	54.0	-10.3	Vert
5	1225.077M Ave	51.5	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	42.8	54.0	-11.2	Vert
6	1530.400M	48.5	+0.0 +0.2	+0.5 +25.2	+2.2	-35.3	+0.0	41.3	54.0	-12.7	Vert
7	1225.600M	49.4	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	40.7	54.0	-13.3	Vert
8	4900.046M Ave	36.1	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	40.6	54.0	-13.4	Vert
^	4900.011M	42.2	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	46.7	54.0	-7.3	Vert
10	1350.400M	46.8	+0.0 +0.1	+0.4 +25.2	+2.0	-35.7	+0.0	38.8	54.0	-15.2	Vert
11	1837.530M Ave	43.2	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	37.8	54.0	-16.2	Vert
^	1837.600M	47.3	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	41.9	54.0	-12.1	Vert
13	1684.000M	44.2	+0.0 +0.2	+0.5 +25.4	+2.2	-35.0	+0.0	37.5	54.0	-16.5	Vert
14	9496.309M Ave	23.2	+0.0 +0.6	+1.4 +37.6	+6.2	-33.9	+0.0	35.1	54.0	-18.9	Vert
^	9496.309M	39.2	+0.0 +0.6	+1.4 +37.6	+6.2	-33.9	+0.0	51.1	54.0	-2.9	Vert
16	1225.025M Ave	42.0	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	33.3	54.0	-20.7	Vert
^	1225.000M	50.9	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	42.2	54.0	-11.8	Vert
^	1225.000M	50.7	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	42.0	54.0	-12.0	Vert

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 16:03:49  
 Tested By: Michael Atkinson Sequence#: 84  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

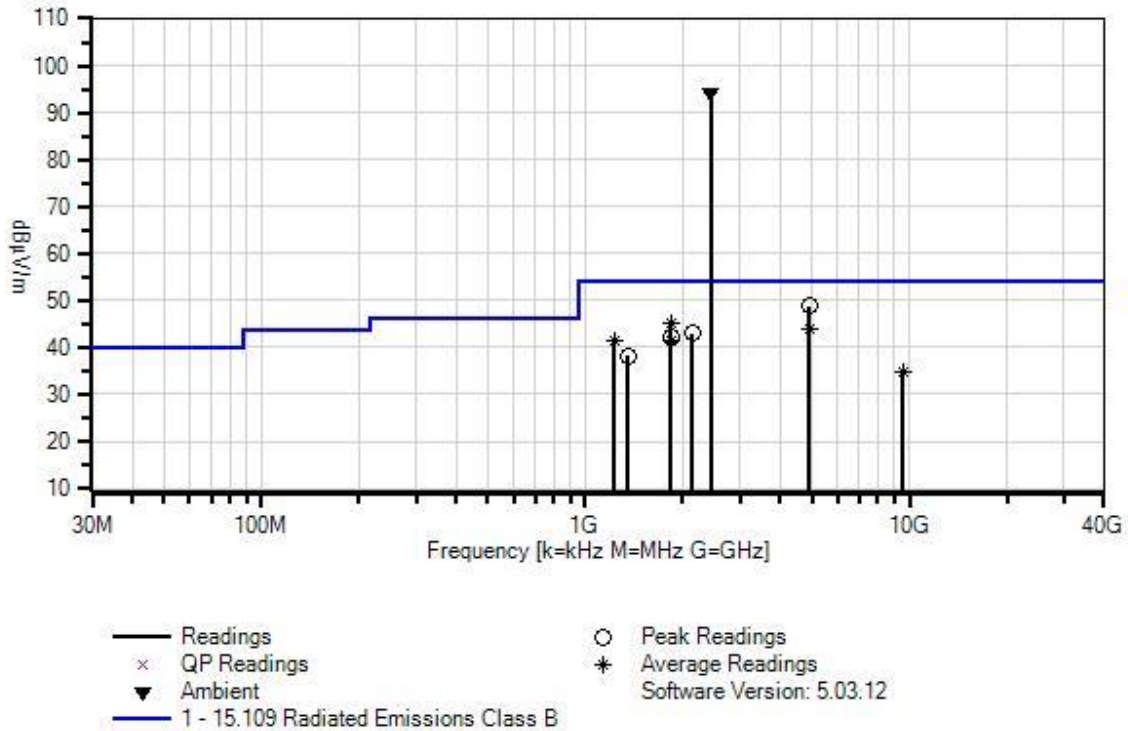
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 1-10GHz  
  
 EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WO#: 103895 Sequence#: 84 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Horiz



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2437.000M Ambient	97.5	+0.0 +0.3	+0.6 +27.6	+2.6	-34.3	+0.0	94.3	54.0	+40.3	Horiz
2	4900.000M	44.2	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	48.7	54.0	-5.3	Horiz
3	1837.556M Ave	50.7	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	45.3	54.0	-8.7	Horiz
4	4900.142M Ave	39.5	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	44.0	54.0	-10.0	Horiz
5	4900.142M Ave	39.3	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	43.8	54.0	-10.2	Horiz
6	2143.000M	46.3	+0.0 +0.2	+0.6 +27.8	+2.4	-34.4	+0.0	42.9	54.0	-11.1	Horiz
7	1838.500M	47.8	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	42.4	54.0	-11.6	Horiz
8	1837.556M Ave	47.0	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	41.6	54.0	-12.4	Horiz
9	1225.070M Ave	50.2	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	41.5	54.0	-12.5	Horiz
^	1225.000M	52.5	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	43.8	54.0	-10.2	Horiz
11	1351.000M	46.1	+0.0 +0.1	+0.4 +25.2	+2.0	-35.7	+0.0	38.1	54.0	-15.9	Horiz
12	9528.460M Ave	22.9	+0.0 +0.6	+1.4 +37.6	+6.2	-33.9	+0.0	34.8	54.0	-19.2	Horiz
^	9528.460M	38.6	+0.0 +0.6	+1.4 +37.6	+6.2	-33.9	+0.0	50.5	54.0	-3.5	Horiz



Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 15:25:27  
 Tested By: Michael Atkinson Sequence#: 82  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

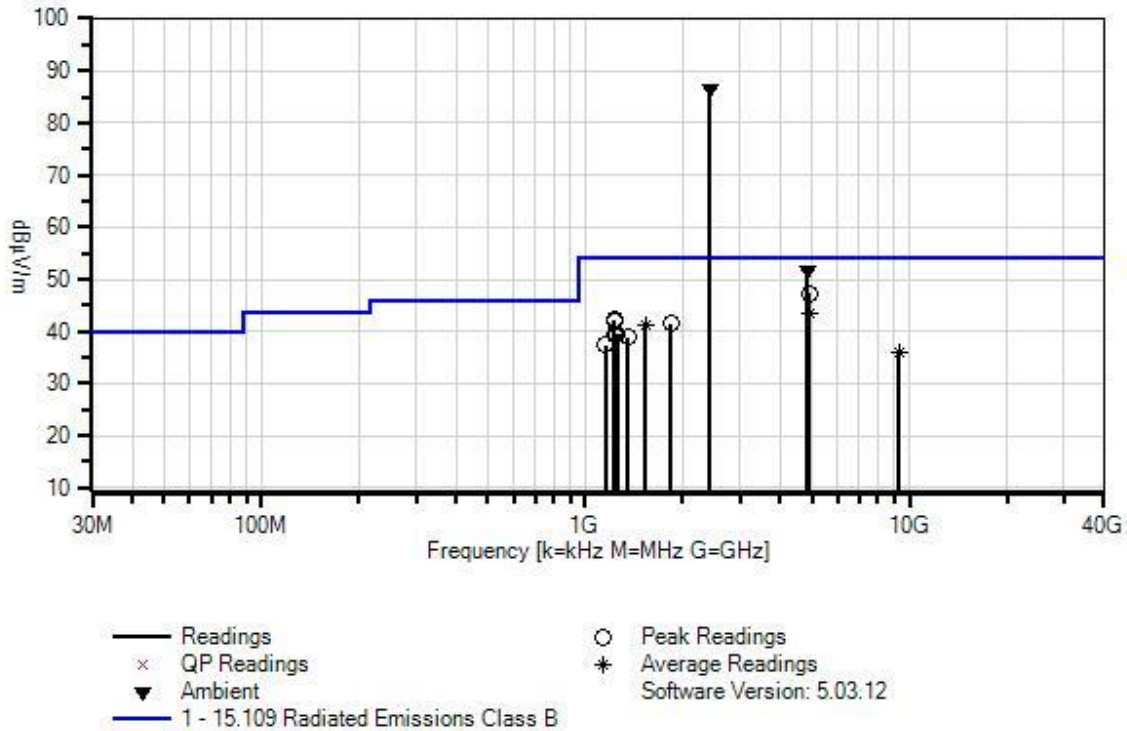
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 1-10GHz  
  
 EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WD#: 103895 Sequence#: 82 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Vert



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T2	ANP06540	Cable	Heliacx	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliacx	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2423.500M Ambient	89.9	+0.0 +0.3	+0.6 +27.6	+2.6	-34.3	+0.0	86.7	54.0	+32.7	Vert
2	4852.000M Ambient	47.4	+0.0 +0.5	+0.9 +32.4	+4.1	-33.6	+0.0	51.7	54.0	-2.3	Vert
3	4899.913M	42.8	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	47.3	54.0	-6.7	Vert
4	4900.041M Ave	39.1	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	43.6	54.0	-10.4	Vert
5	1225.000M	51.0	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	42.3	54.0	-11.7	Vert
6	1225.000M	50.6	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	41.9	54.0	-12.1	Vert
7	1837.000M	46.9	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	41.5	54.0	-12.5	Vert
8	1531.313M Ave	48.4	+0.0 +0.2	+0.5 +25.2	+2.2	-35.3	+0.0	41.2	54.0	-12.8	Vert
^	1531.313M	50.9	+0.0 +0.2	+0.5 +25.2	+2.2	-35.3	+0.0	43.7	54.0	-10.3	Vert
10	1250.500M	48.0	+0.0 +0.1	+0.4 +25.2	+1.8	-36.0	+0.0	39.5	54.0	-14.5	Vert
11	1225.000M	48.0	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	39.3	54.0	-14.7	Vert
12	1349.500M	46.9	+0.0 +0.1	+0.4 +25.2	+2.0	-35.7	+0.0	38.9	54.0	-15.1	Vert
13	1150.000M	46.7	+0.0 +0.1	+0.4 +24.9	+1.8	-36.5	+0.0	37.4	54.0	-16.6	Vert
14	9298.048M Ave	24.3	+0.0 +0.4	+1.5 +37.6	+6.2	-34.1	+0.0	35.9	54.0	-18.1	Vert
^	9298.048M	39.0	+0.0 +0.4	+1.5 +37.6	+6.2	-34.1	+0.0	50.6	54.0	-3.4	Vert

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 15:20:46  
 Tested By: Michael Atkinson Sequence#: 81  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 2			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa

Method: ANSI C63.4: 2014

Frequency Range: 1-10GHz

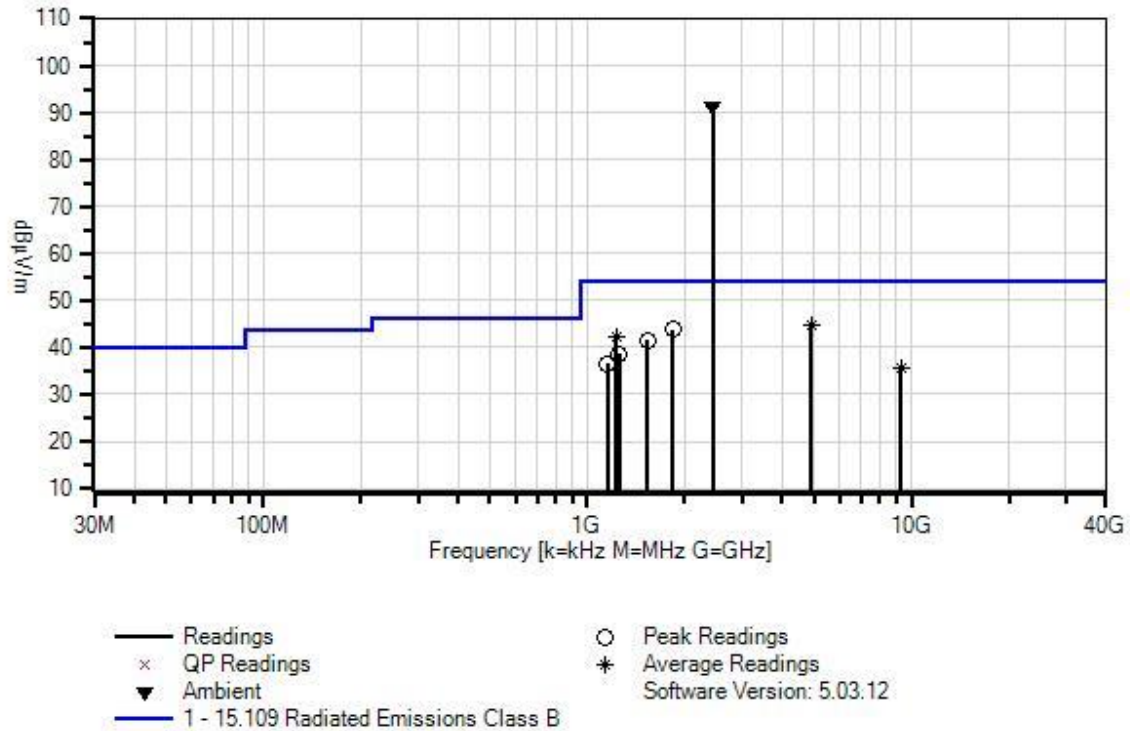
EUT connected to support laptop via USB cable. EUT connected to AC adapter for power. EUT connected to support Laptop via Ethernet cable. Laptop is located remotely.

EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.

Modification 1 was in place during testing.

XYZ EUT orientations investigated, worst case reported.

Ossia, Inc. WO#: 103895 Sequence#: 81 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Horiz



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T2	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	2438.500M Ambient	94.3	+0.0 +0.3	+0.6 +27.6	+2.6	-34.3	+0.0	91.1	54.0	+37.1	Horiz
2	4900.059M Ave	40.2	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	44.7	54.0	-9.3	Horiz
^	4900.000M	43.5	+0.0 +0.5	+0.9 +32.5	+4.2	-33.6	+0.0	48.0	54.0	-6.0	Horiz
4	1837.500M	49.2	+0.0 +0.2	+0.5 +26.4	+2.3	-34.8	+0.0	43.8	54.0	-10.2	Horiz
5	1225.006M Ave	50.8	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	42.1	54.0	-11.9	Horiz
^	1225.000M	52.8	+0.0 +0.1	+0.4 +25.1	+1.8	-36.1	+0.0	44.1	54.0	-9.9	Horiz
7	1531.000M	48.8	+0.0 +0.2	+0.5 +25.2	+2.2	-35.3	+0.0	41.6	54.0	-12.4	Horiz
8	1250.500M	47.2	+0.0 +0.1	+0.4 +25.2	+1.8	-36.0	+0.0	38.7	54.0	-15.3	Horiz
9	1151.500M	45.8	+0.0 +0.1	+0.4 +24.9	+1.8	-36.5	+0.0	36.5	54.0	-17.5	Horiz
10	9303.407M Ave	24.2	+0.0 +0.4	+1.5 +37.6	+6.2	-34.1	+0.0	35.8	54.0	-18.2	Horiz
^	9303.407M	39.3	+0.0 +0.4	+1.5 +37.6	+6.2	-34.1	+0.0	50.9	54.0	-3.1	Horiz

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/26/2020  
 Test Type: **Maximized Emissions** Time: 16:18:24  
 Tested By: Michael Atkinson Sequence#: 85  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

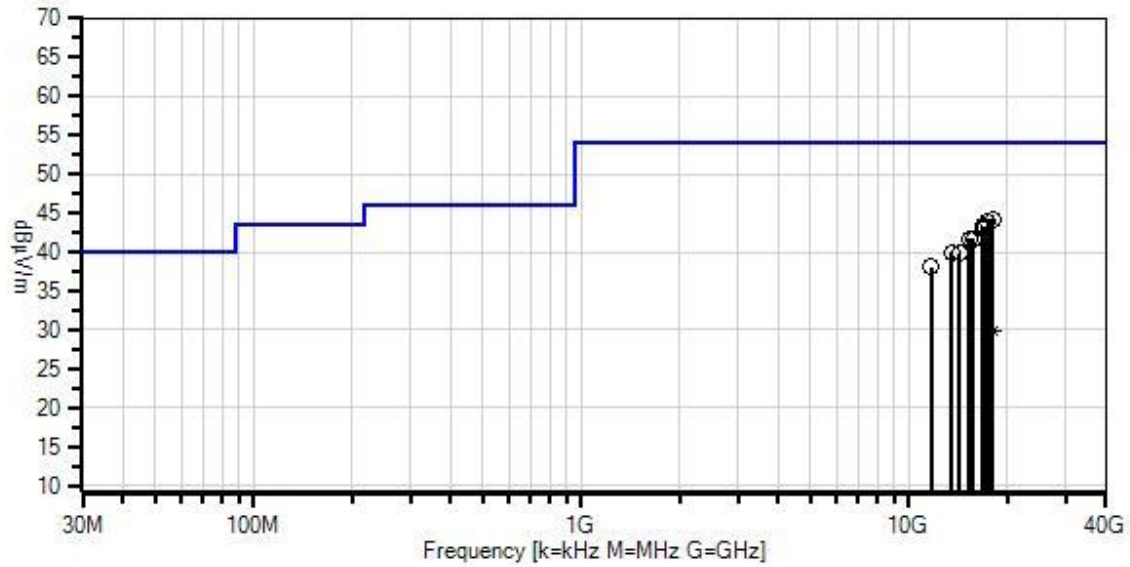
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 10-18GHz  
  
 EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.  
  
 Data collected in configuration 1 is representative of worst case.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported. Horizontal and Vertical antenna polarities investigated, worst case reported.

Ossia, Inc. WD#: 103895 Sequence#: 85 Date: 6/26/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters H+V



— Readings  
 × QP Readings  
 ▼ Ambient  
 — 1 - 15.109 Radiated Emissions Class B  
 ○ Peak Readings  
 \* Average Readings  
 Software Version: 5.03.12

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T2	ANP06515	Cable	Heliac	6/29/2018	6/29/2020
T3	AN02741	Active Horn Antenna	AMFW-5F- 12001800-20- 10P	4/26/2019	4/26/2021



**Measurement Data:**

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	17993.595 M	42.7	+1.7	+9.0	-9.2		+0.0	44.2	54.0	-9.8	Horiz
2	17359.454 M	44.8	+1.8	+8.6	-11.3		+0.0	43.9	54.0	-10.1	Horiz
3	16901.464 M	42.9	+1.9	+9.0	-10.5		+0.0	43.3	54.0	-10.7	Horiz
4	16959.114 M	43.0	+2.0	+9.1	-10.9		+0.0	43.2	54.0	-10.8	Horiz
5	16795.774 M	43.7	+1.8	+9.0	-11.4		+0.0	43.1	54.0	-10.9	Horiz
6	17064.804 M	43.6	+2.0	+9.0	-11.5		+0.0	43.1	54.0	-10.9	Horiz
7	16766.950 M	43.8	+1.7	+9.0	-11.5		+0.0	43.0	54.0	-11.0	Horiz
8	16971.924 M	42.7	+2.1	+9.1	-11.0		+0.0	42.9	54.0	-11.1	Horiz
9	15287.290 M	45.1	+1.7	+8.4	-13.5		+0.0	41.7	54.0	-12.3	Horiz
10	15722.861 M	44.4	+1.8	+8.1	-12.6		+0.0	41.7	54.0	-12.3	Horiz
11	13472.000 M	45.6	+1.3	+7.5	-14.5		+0.0	39.9	54.0	-14.1	Vert
12	14264.000 M	45.0	+1.6	+7.9	-14.7		+0.0	39.8	54.0	-14.2	Vert
13	11728.000 M	42.9	+1.7	+6.7	-13.3		+0.0	38.0	54.0	-16.0	Vert
14	17993.595 M Ave	28.4	+1.7	+9.0	-9.2		+0.0	29.9	54.0	-24.1	Vert

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)  
 Customer: **Ossia, Inc.**  
 Specification: **15.109 Radiated Emissions Class B**  
 Work Order #: **103895** Date: 6/29/2020  
 Test Type: **Maximized Emissions** Time: 10:13:40  
 Tested By: Michael Atkinson Sequence#: 86  
 Software: EMITest 5.03.12

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

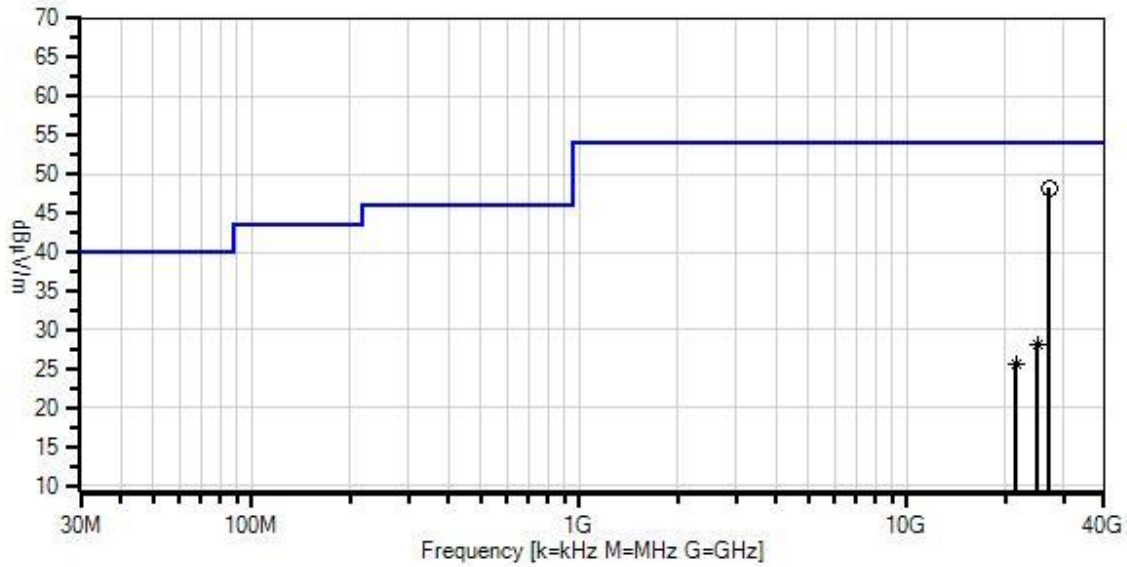
***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Temperature: 19-21°C  
 Humidity: 29-32%  
 Pressure: 102-103kPa  
  
 Method: ANSI C63.4: 2014  
  
 Frequency Range: 18-26.5 and 26.5 to 30GHz (Max EUT frequency is less than 6GHz)  
  
 EUT connected to support laptop via USB cable. EUT connected to support PoE box with 2 x Ethernet cables for power. Support laptop connected to PoE box with 1 x Ethernet cable. Support Laptop is located remotely.  
  
 Data collected in configuration 1 is representative of worst case.  
  
 EUT is in standby mode with all digital circuitry active. Ethernet scripts are running to fully exercise the system at representative traffic 10Mbps. Internal radios are powered by not transmitting.  
  
 Modification 1 was in place during testing.  
  
 XYZ EUT orientations investigated, worst case reported. Horizontal and Vertical antenna polarities investigated, worst case reported.

Ossia, Inc. WO#: 103895 Sequence#: 86 Date: 6/29/2020  
 15.109 Radiated Emissions Class B Test Distance: 3 Meters Horiz



— Readings  
 × QP Readings  
 ▼ Ambient  
 — 1 - 15.109 Radiated Emissions Class B  
 ○ Peak Readings  
 \* Average Readings  
 Software Version: 5.03.12

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T2	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T3	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
T4	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T5	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T6	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
T7	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dB $\mu$ V	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	27175.000 M	29.8	+1.3 +0.0	+1.2 +4.4	+0.0 +1.1	+10.4	+0.0	48.2	54.0	-5.8	Horiz
2	24983.214 M Ave	26.3	+1.2 -11.9	+0.7 +0.0	+1.7 +0.0	+10.0	+0.0	28.0	54.0	-26.0	Vert
^	24983.214 M	39.8	+1.2 -11.9	+0.7 +0.0	+1.7 +0.0	+10.0	+0.0	41.5	54.0	-12.5	Vert
4	21448.000 M Ave	27.5	+1.3 -15.2	+0.8 +0.0	+2.0 +0.0	+9.2	+0.0	25.6	54.0	-28.4	Horiz
^	21448.000 M	41.4	+1.3 -15.2	+0.8 +0.0	+2.0 +0.0	+9.2	+0.0	39.5	54.0	-14.5	Horiz

**Test Setup Photo(s)**



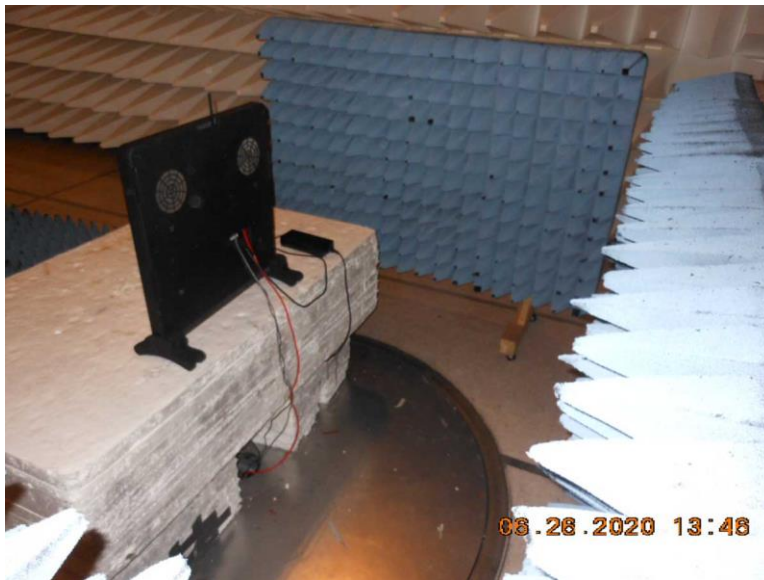
Configuration 1, Below 1GHz



Configuration 1, Above 1GHz



Configuration 2, Below 1GHz



Configuration 2, Above 1GHz





X-Axis



Y-Axis



Z-Axis



# SUPPLEMENTAL INFORMATION

## Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories’ sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2.

## Emissions Test Details

**TESTING PARAMETERS**

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

**CORRECTION FACTORS**

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

**TEST INSTRUMENTATION AND ANALYZER SETTINGS**

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

**SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS**

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

**Peak**

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

**Quasi-Peak**

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

**Average**

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.