Ossia, Inc.

REVISED EMC TEST REPORT TO 102778-26

Cota Forever Tracker Source
Model: Tracker Tx

Tested to The Following Standards:

FCC Part 15 Subpart B Section 15.107 & 15.109

Report No.: 102778-26A

Date of issue: August 19, 2019

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: 13053

REPORT PREPARED BY:

Terri Rayle
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 102778

DATE OF EQUIPMENT RECEIPT: July 26, 2019
DATE(S) OF TESTING: July 26, 2019

Revision History

Original: Testing of the Cota Forever Tracker Source Model: Tracker Tx to FCC Part 15 Subpart B Section 15.107 & 15.109.
Revision A: Added clarification text to the Conditions During Test table and added a block diagram of test setup.

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.
22116 23rd Drive S.E., Suite A
Canyon Park, 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 A	Conducted Emissions	NA	Pass
15.109 Class A	Radiated Emissions	NA	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
No modifications were made during testing.

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
Per the manufacturer, the EUT consists of a IEEE 802.15.4 radio, a beacon radio, and a wireless power charging system. While the lid of the enclosure is open the radios are not active, nor is the wireless power charging system. The radios and wireless power charging are only active while the lid of the enclosure is closed. This is achieved by several safety switches which must be engaged while the lid is closed for the system to operate. The system was tested with the lid closed while charging and radios active (configuration 1) and with the lid open and radios inactive (configuration 2). The unintentional emissions of the system powered on with the lid open (configuration 2) are the worst case for FCC Part 15B and are considered for the measurements in this report. No clients are included in this setup as there is no communication to the devices in this configuration. Radio emissions and wireless power are considered in separate reports under the relevant standards.

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 2

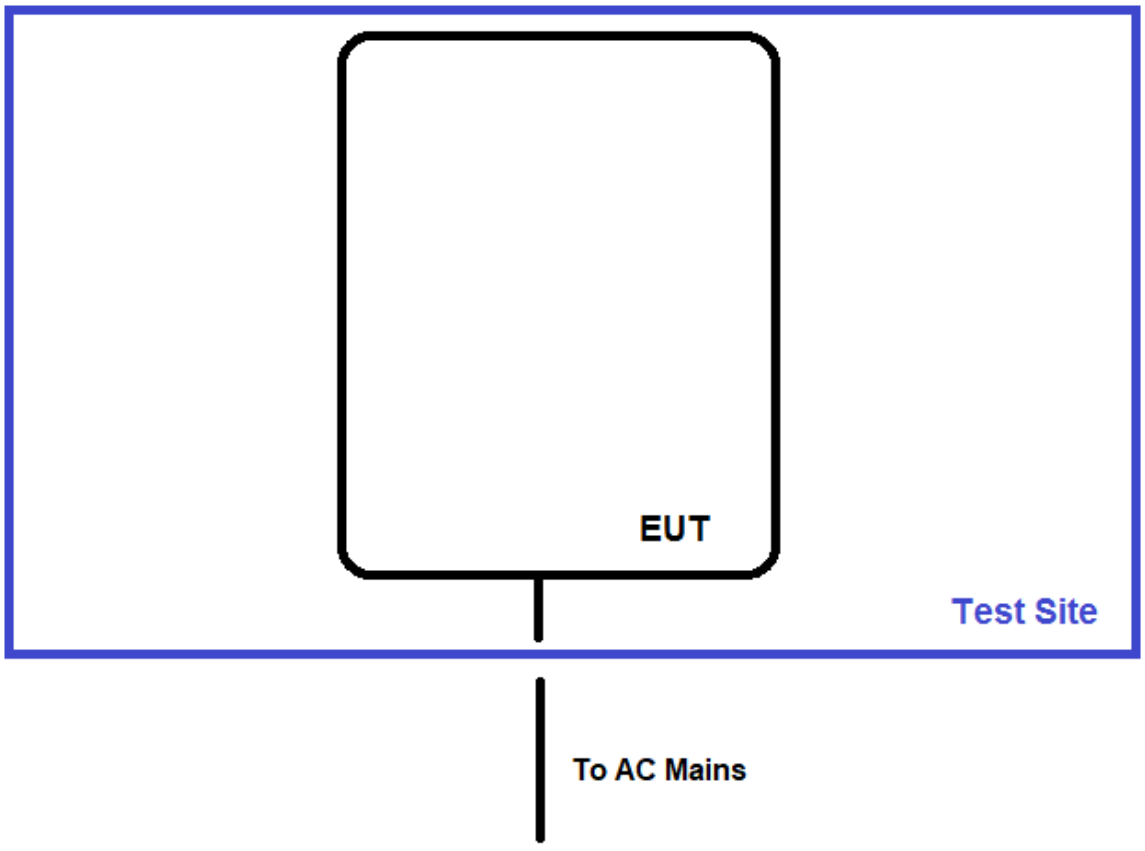
Equipment Tested:

Device	Manufacturer	Model #	S/N
Cota Forever Tracker Source	Ossia, Inc.	Tracker Tx	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
None			

Test Setup Block Diagram



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:	**Ossia, Inc.**		
Specification:	**15.107 AC Mains Class A - Average**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Conducted Emissions**	Time:	12:47:41 PM
Tested By:	Steven Pittsford	Sequence#:	23
Software:	EMITest 5.03.12		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

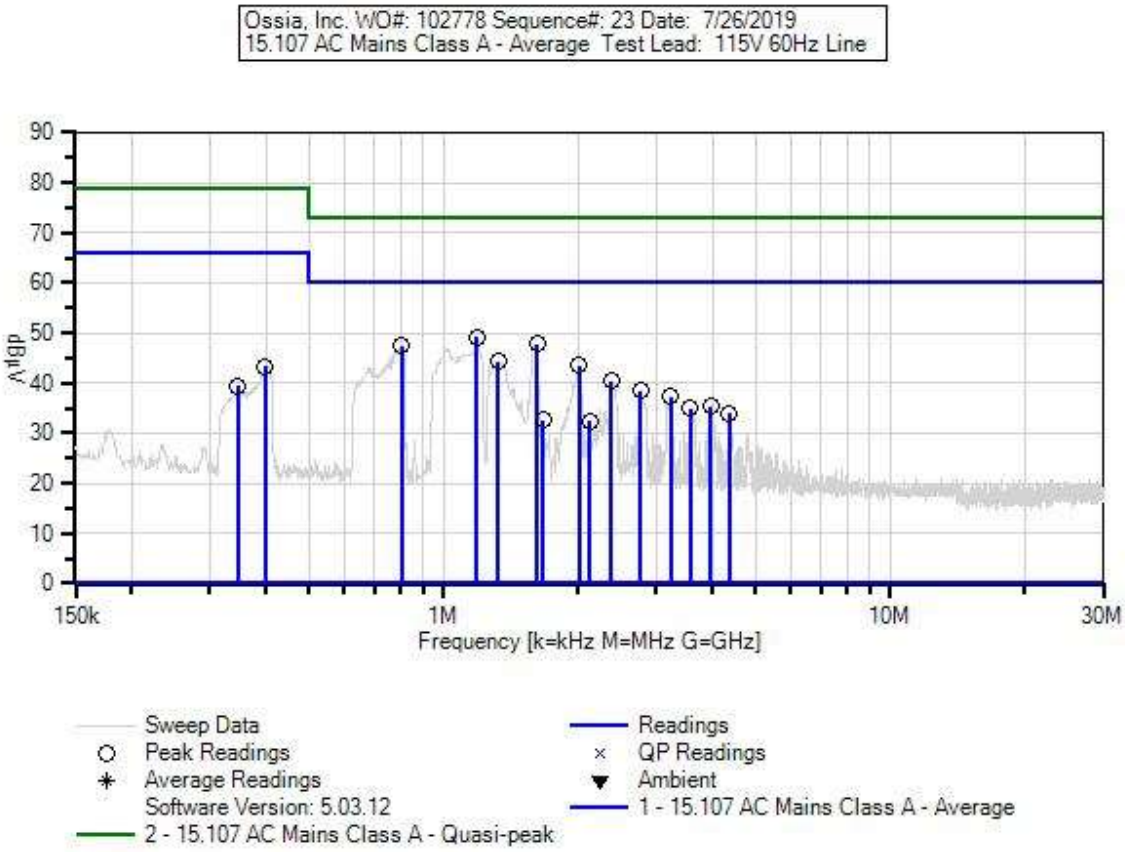
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 35-45%
Pressure: 102-103kPa

Method: ANSI 63.4 (2014)

Frequency: 0.15-30MHz

Setup: The EUT with lid open, also investigated EUT with lid closed, data recorded with lid open is representative of worst case. The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 23 Date: 7/26/2019
15.107 AC Mains Class A - Average Test Lead: 115V 60Hz Line
90
80
70
60
50
40
30
20
10
0
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Peak Readings
Average Readings
Software Version: 5.03.12
2 - 15.107 AC Mains Class A - Quasi-peak
Readings
QP Readings
Ambient
1 - 15.107 AC Mains Class A - Average

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T4	AN01311	50uH LISN-Line1 (L)	3816/2	3/16/2018	3/16/2020
	AN01311	50uH LISN-Line2 (N)	3816/2	3/16/2018	3/16/2020
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/15/2018	1/15/2020

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	1.188M	39.5	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	49.1	60.0	-10.9	Line
2	1.617M	38.2	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	47.8	60.0	-12.2	Line
3	807.394k	37.9	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	47.5	60.0	-12.5	Line
4	1.324M	34.8	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	44.4	60.0	-15.6	Line
5	2.017M	33.9	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	43.5	60.0	-16.5	Line
6	2.378M	30.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	40.4	60.0	-19.6	Line
7	2.765M	28.9	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	38.5	60.0	-21.5	Line
8	3.220M	27.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	37.4	60.0	-22.6	Line
9	399.431k	33.7	+9.1 +0.1	+0.0	+0.0	+0.5	+0.0	43.4	66.0	-22.6	Line
10	3.965M	25.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	35.4	60.0	-24.6	Line
11	3.578M	25.3	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	34.9	60.0	-25.1	Line
12	4.373M	24.3	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	33.9	60.0	-26.1	Line
13	345.618k	29.6	+9.1 +0.1	+0.0	+0.0	+0.6	+0.0	39.4	66.0	-26.6	Line
14	1.668M	23.1	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	32.7	60.0	-27.3	Line
15	2.128M	22.9	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	32.5	60.0	-27.5	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 A - Average**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Conducted Emissions**	Time:	12:52:15 PM
Tested By:	Steven Pittsford	Sequence#:	24
Software:	EMITest 5.03.12		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

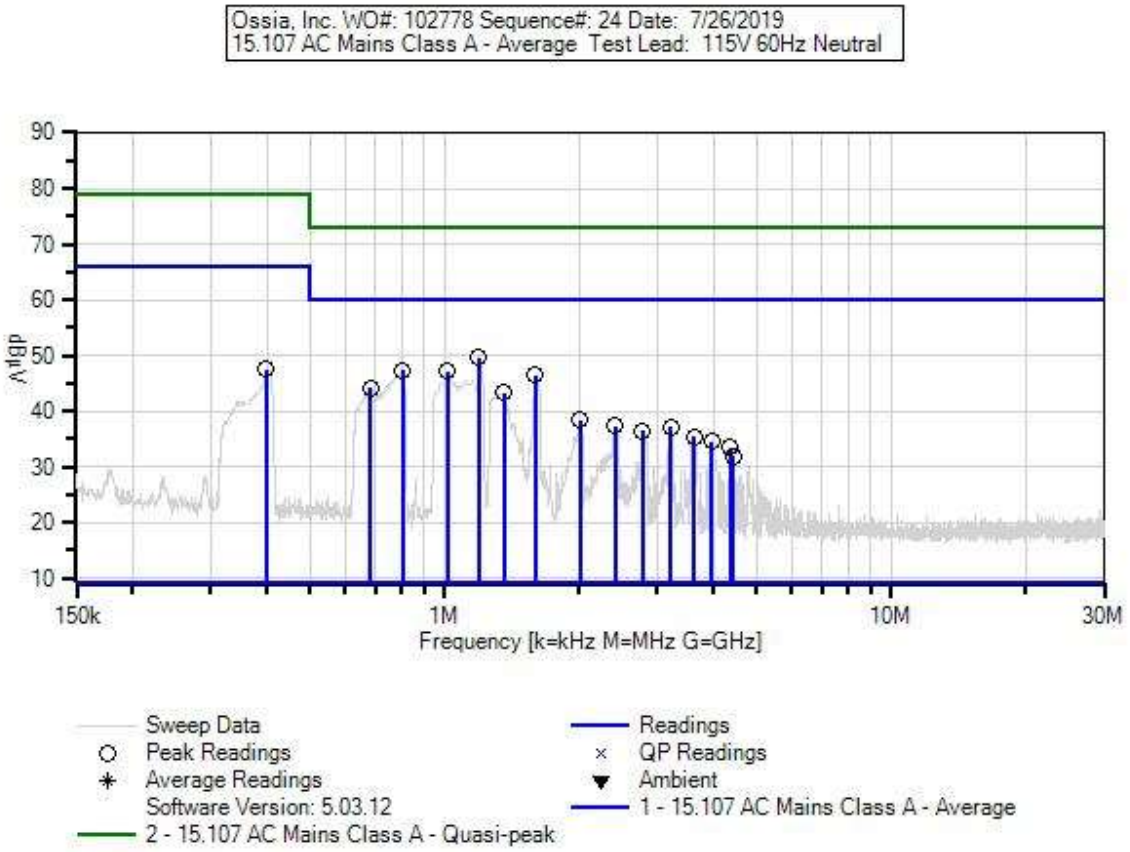
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 35-45%
Pressure: 102-103kPa

Method: ANSI 63.4 (2014)

Frequency: 0.15-30MHz

Setup: The EUT with lid open, also investigated EUT with lid closed, data recorded with lid open is representative of worst case. EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 24 Date: 7/26/2019
15.107 AC Mains Class A - Average Test Lead: 115V 60Hz Neutral
90
80
70
60
50
40
30
20
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Peak Readings
Average Readings
Software Version: 5.03.12
2 - 15.107 AC Mains Class A - Quasi-peak
Readings
QP Readings
Ambient
1 - 15.107 AC Mains Class A - Average

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
	AN01311	50uH LISN-Line1 (L)	3816/2	3/16/2018	3/16/2020
T4	AN01311	50uH LISN-Line2 (N)	3816/2	3/16/2018	3/16/2020
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/15/2018	1/15/2020

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	1.192M	40.0	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	49.6	60.0	-10.4	Neutr
2	805.939k	37.7	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	47.3	60.0	-12.7	Neutr
3	1.018M	37.5	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	47.1	60.0	-12.9	Neutr
4	1.600M	36.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	46.4	60.0	-13.6	Neutr
5	683.769k	34.5	+9.1 +0.2	+0.0	+0.0	+0.3	+0.0	44.1	60.0	-15.9	Neutr
6	1.358M	33.6	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	43.2	60.0	-16.8	Neutr
7	399.431k	37.7	+9.1 +0.1	+0.0	+0.0	+0.5	+0.0	47.4	66.0	-18.6	Neutr
8	2.017M	28.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	38.4	60.0	-21.6	Neutr
9	2.412M	27.7	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	37.3	60.0	-22.7	Neutr
10	3.216M	27.5	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	37.1	60.0	-22.9	Neutr
11	2.774M	26.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	36.4	60.0	-23.6	Neutr
12	3.624M	25.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	35.4	60.0	-24.6	Neutr
13	3.973M	24.9	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	34.5	60.0	-25.5	Neutr
14	4.373M	23.8	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	33.4	60.0	-26.6	Neutr
15	4.432M	22.2	+9.1 +0.1	+0.1	+0.0	+0.3	+0.0	31.8	60.0	-28.2	Neutr

Test Setup Photo(s)

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 A**		
Work Order #:	**102778**	Date:	7/29/2019
Test Type:	**Maximized Emissions**	Time:	13:19:12
Tested By:	Michael Atkinson	Sequence#:	30
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:

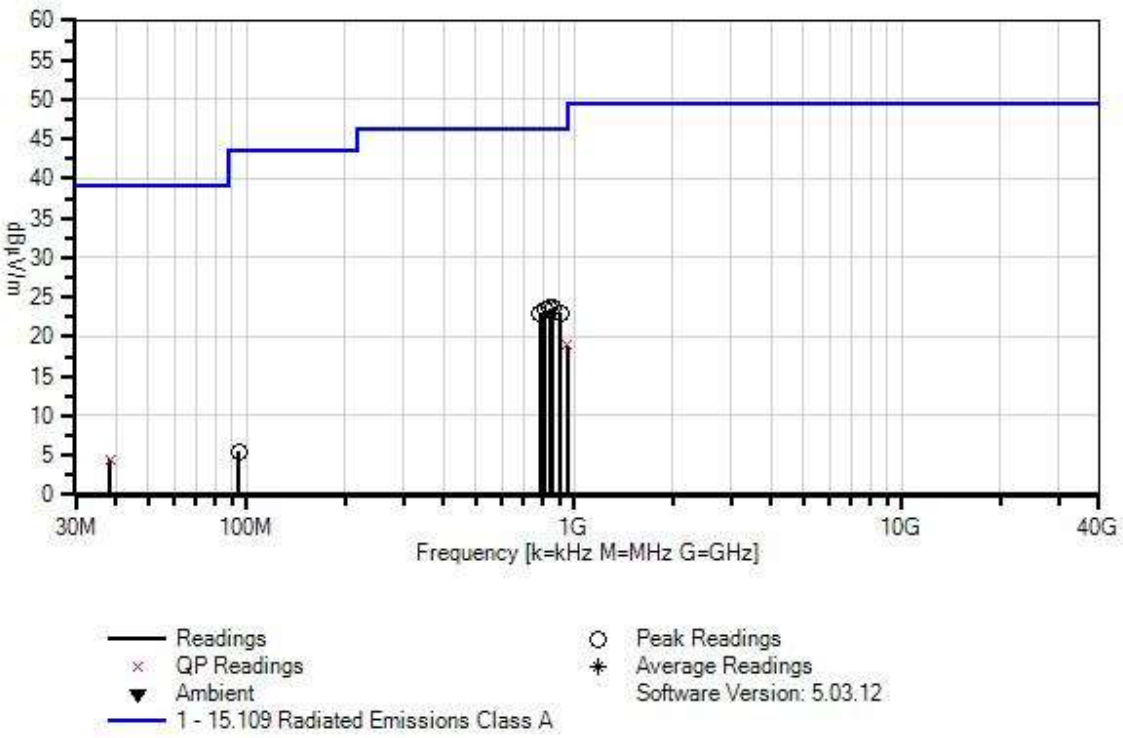
Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 30-1000MHz

Setup: EUT with lid closed.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.

Ossia, Inc. WO#: 102778 Sequence#: 30 Date: 7/29/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Horiz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T3	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T4	ANP05360	Cable	RG214	1/31/2018	1/31/2020
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	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	838.865M	28.6	+0.3 +5.8	+1.5 +23.7	-27.6	+1.8	-10.5	23.6	46.4	-22.8	Horiz
2	861.051M	28.3	+0.3 +5.8	+1.5 +23.8	-27.5	+1.9	-10.5	23.6	46.4	-22.8	Horiz
3	811.426M	28.5	+0.3 +5.8	+1.5 +23.7	-27.7	+1.8	-10.5	23.4	46.4	-23.0	Horiz
4	906.589M	27.4	+0.3 +5.8	+1.5 +23.9	-27.4	+2.0	-10.5	23.0	46.4	-23.4	Horiz
5	785.154M	28.3	+0.3 +5.8	+1.5 +23.6	-27.8	+1.8	-10.5	23.0	46.4	-23.4	Horiz
6	953.878M QP	22.3	+0.4 +5.8	+1.6 +24.5	-27.2	+2.1	-10.5	19.0	46.4	-27.4	Horiz
^	953.878M	27.0	+0.4 +5.8	+1.6 +24.5	-27.2	+2.1	-10.5	23.7	46.4	-22.7	Horiz
8	38.330M QP	23.5	+0.1 +5.8	+0.3 +12.9	-27.9	+0.3	-10.5	4.5	39.1	-34.6	Horiz
^	38.330M	28.4	+0.1 +5.8	+0.3 +12.9	-27.9	+0.3	-10.5	9.4	39.1	-29.7	Horiz
10	94.260M	29.3	+0.1 +5.8	+0.5 +7.5	-27.7	+0.5	-10.5	5.5	43.5	-38.0	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 A**		
Work Order #:	**102778**	Date:	7/29/2019
Test Type:	**Maximized Emissions**	Time:	13:36:56
Tested By:	Michael Atkinson	Sequence#:	31
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

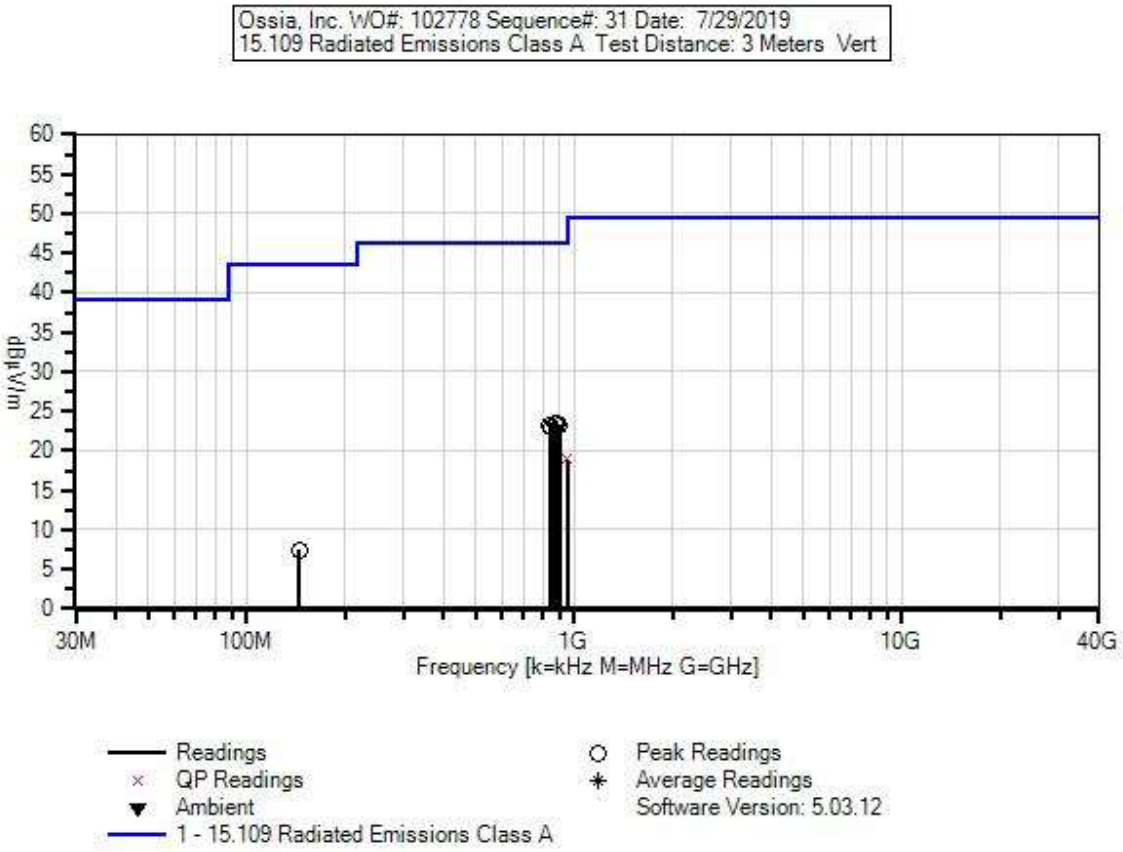
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 30-1000MHz

Setup: EUT with lid closed.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 31 Date: 7/29/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert
60
55
50
45
40
35
30
25
20
15
10
5
0
dBµV/m
30M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.109 Radiated Emissions Class A
Peak Readings
Average Readings
Software Version: 5.03.12

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T4	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T5	ANP05360	Cable	RG214	1/31/2018	1/31/2020
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	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	870.976M	28.2	+0.0 +1.9	+0.3 +5.8	+1.5 +23.8	-27.5	-10.5	23.5	46.4	-22.9	Vert
2	890.826M	28.0	+0.0 +1.9	+0.3 +5.8	+1.5 +23.8	-27.4	-10.5	23.4	46.4	-23.0	Vert
3	838.865M	28.3	+0.0 +1.8	+0.3 +5.8	+1.5 +23.7	-27.6	-10.5	23.3	46.4	-23.1	Vert
4	898.999M	27.8	+0.0 +2.0	+0.3 +5.8	+1.5 +23.8	-27.4	-10.5	23.3	46.4	-23.1	Vert
5	845.871M	27.8	+0.0 +1.9	+0.3 +5.8	+1.5 +23.7	-27.6	-10.5	22.9	46.4	-23.5	Vert
6	951.543M QP	22.3	+0.0 +2.0	+0.4 +5.8	+1.6 +24.5	-27.2	-10.5	18.9	46.4	-27.5	Vert
^	951.543M	27.5	+0.0 +2.0	+0.4 +5.8	+1.6 +24.5	-27.2	-10.5	24.1	46.4	-22.3	Vert
8	145.030M	29.5	+0.0 +0.7	+0.2 +5.8	+0.6 +8.8	-27.6	-10.5	7.5	43.5	-36.0	Vert
9	60.600M QP	23.3	+0.0 +0.4	+0.1 +5.8	+0.4 +7.7	-27.9	-10.5	-0.7	39.1	-39.8	Vert
^	60.600M	29.0	+0.0 +0.4	+0.1 +5.8	+0.4 +7.7	-27.9	-10.5	5.0	39.1	-34.1	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 A**		
Work Order #:	**102778**	Date:	7/29/2019
Test Type:	**Maximized Emissions**	Time:	12:31:36
Tested By:	Michael Atkinson	Sequence#:	28
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:

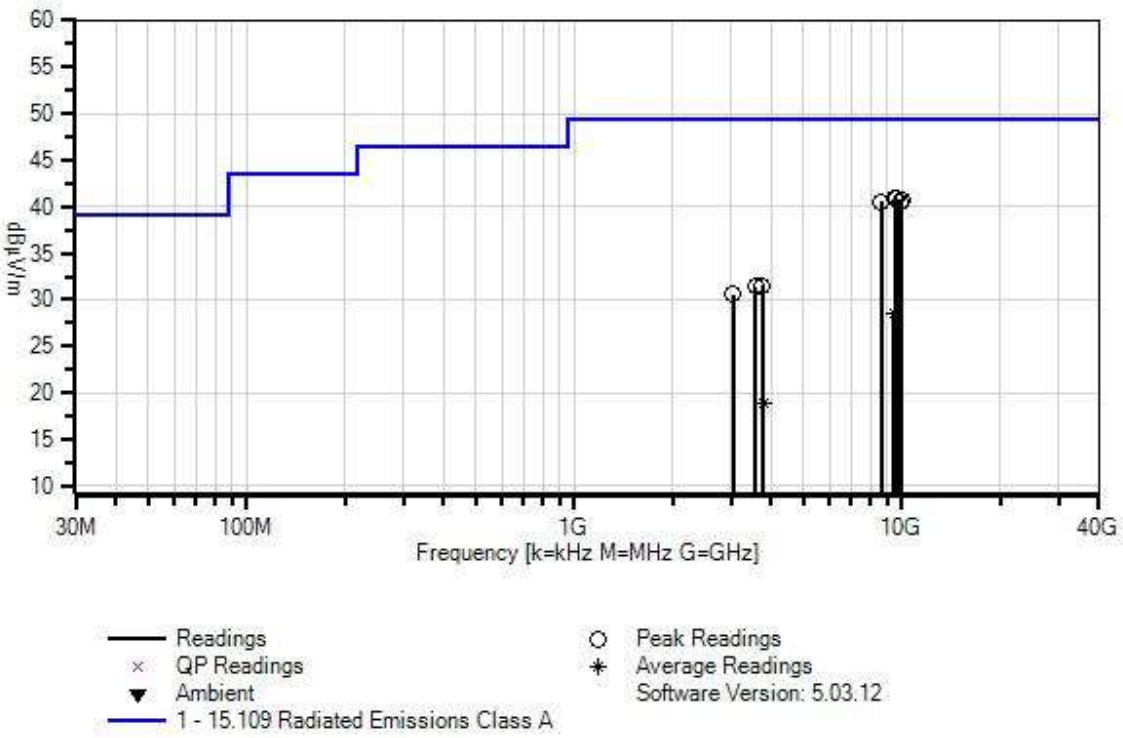
Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 1-10GHz

Setup: EUT with lid closed.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.

Ossia, Inc. WO#: 102778 Sequence#: 28 Date: 7/29/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Horiz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
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	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9540.458M	38.2	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5	41.0	49.5	-8.5	Horiz
2	9627.990M	38.2	+0.0 +2.6	+0.7 +37.6	+6.2	-33.9	-10.5	40.9	49.5	-8.6	Horiz
3	9978.117M	38.4	+0.0 +2.6	+0.3 +37.5	+6.3	-33.9	-10.5	40.7	49.5	-8.8	Horiz
4	8634.505M	39.4	+0.0 +2.3	+0.9 +37.1	+5.9	-34.6	-10.5	40.5	49.5	-9.0	Horiz
5	9833.690M	38.1	+0.0 +2.6	+0.4 +37.5	+6.3	-33.9	-10.5	40.5	49.5	-9.0	Horiz
6	3759.000M	39.3	+0.0 +1.3	+0.4 +30.7	+3.9	-33.6	-10.5	31.5	49.5	-18.0	Horiz
7	3565.000M	40.3	+0.0 +1.3	+0.4 +30.2	+3.5	-33.8	-10.5	31.4	49.5	-18.1	Horiz
8	3053.000M	41.2	+0.0 +1.1	+0.6 +29.2	+3.0	-34.0	-10.5	30.6	49.5	-18.9	Horiz
9	9474.810M Ave	25.6	+0.0 +2.6	+0.9 +37.6	+6.2	-33.9	-10.5	28.5	49.5	-21.0	Horiz
^	9474.810M	38.4	+0.0 +2.6	+0.9 +37.6	+6.2	-33.9	-10.5	41.3	49.5	-8.2	Horiz
11	3775.000M Ave	26.5	+0.0 +1.3	+0.4 +30.8	+3.9	-33.6	-10.5	18.8	49.5	-30.7	Horiz
^	3775.000M	41.3	+0.0 +1.3	+0.4 +30.8	+3.9	-33.6	-10.5	33.6	49.5	-15.9	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 A**		
Work Order #:	**102778**	Date:	7/29/2019
Test Type:	**Maximized Emissions**	Time:	12:14:49
Tested By:	Michael Atkinson	Sequence#:	27
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

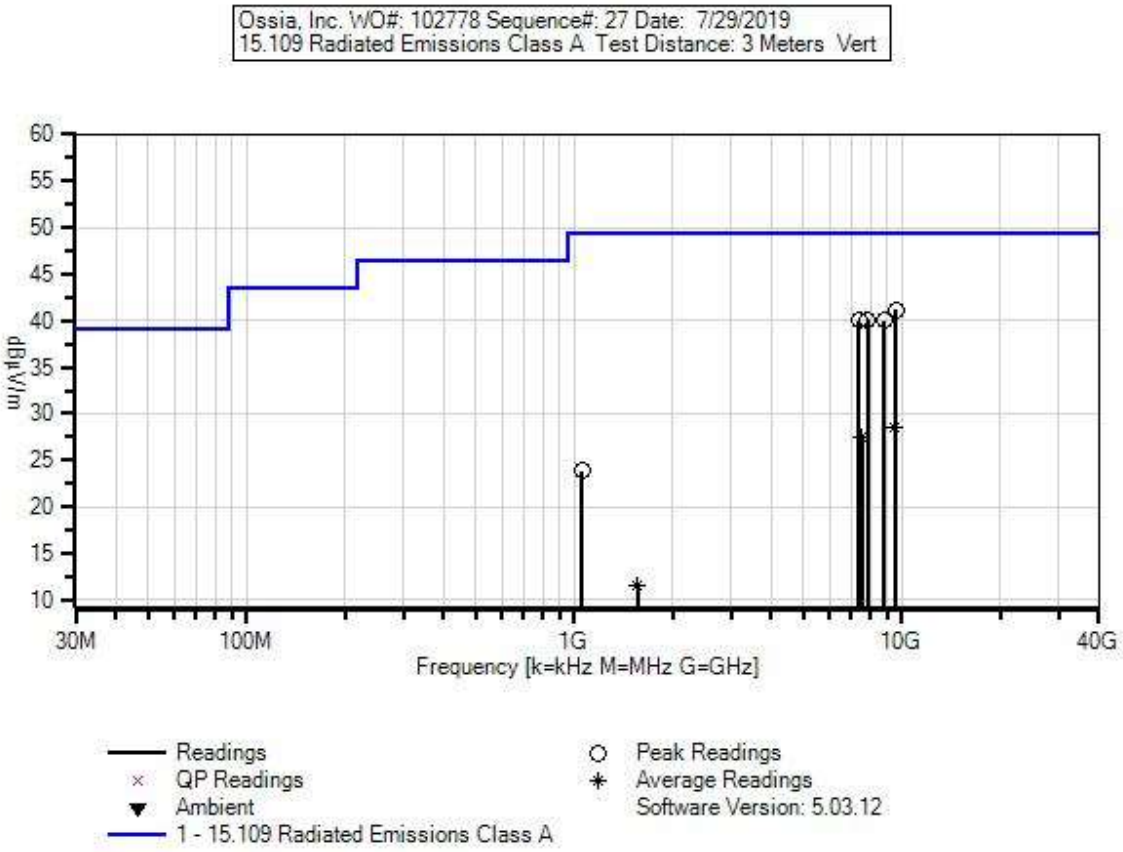
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 1-10GHz

Setup: EUT with lid closed.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 27 Date: 7/29/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert
60
55
50
45
40
35
30
25
20
15
10
dBµV/m
30M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.109 Radiated Emissions Class A
Peak Readings
Average Readings
Software Version: 5.03.12

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
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	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9606.107M	38.5	+0.0 +2.6	+0.7 +37.6	+6.2	-33.9	-10.5	41.2	49.5	-8.3	Vert
2	7855.472M	39.5	+0.0 +2.3	+0.9 +37.1	+5.6	-34.8	-10.5	40.1	49.5	-9.4	Vert
3	8809.568M	38.4	+0.0 +2.3	+0.8 +37.3	+6.1	-34.4	-10.5	40.0	49.5	-9.5	Vert
4	7365.295M	39.7	+0.0 +2.1	+1.0 +36.9	+5.4	-34.6	-10.5	40.0	49.5	-9.5	Vert
5	9522.952M Ave	25.7	+0.0 +2.6	+0.9 +37.6	+6.2	-33.9	-10.5	28.6	49.5	-20.9	Vert
^	9522.952M	39.0	+0.0 +2.6	+0.9 +37.6	+6.2	-33.9	-10.5	41.9	49.5	-7.6	Vert
7	7544.735M Ave	26.5	+0.0 +2.2	+1.2 +37.3	+5.5	-34.7	-10.5	27.5	49.5	-22.0	Vert
^	7544.735M	40.1	+0.0 +2.2	+1.2 +37.3	+5.5	-34.7	-10.5	41.1	49.5	-8.4	Vert
9	1056.000M	44.0	+0.0 +0.5	+0.4 +24.5	+1.8	-36.9	-10.5	23.8	49.5	-25.7	Vert
10	1555.000M Ave	28.9	+0.0 +0.6	+0.4 +25.2	+2.2	-35.2	-10.5	11.6	49.5	-37.9	Vert
^	1555.000M	44.0	+0.0 +0.6	+0.4 +25.2	+2.2	-35.2	-10.5	26.7	49.5	-22.8	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 A**		
Work Order #:	**102778**	Date:	7/29/2019
Test Type:	**Maximized Emissions**	Time:	12:50:50
Tested By:	Michael Atkinson	Sequence#:	29
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:

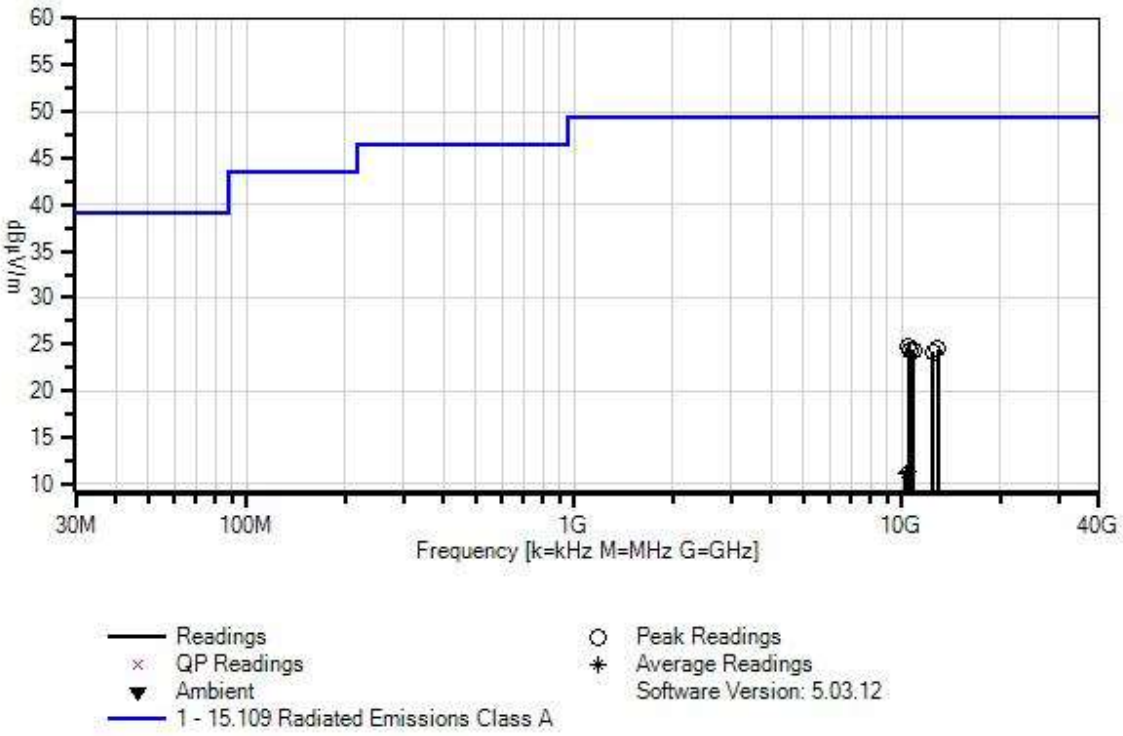
Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 10-13GHz

Setup: EUT with lid closed.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.

Ossia, Inc. WO#: 102778 Sequence#: 29 Date: 7/29/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert & Horz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP06515	Cable	Heliax	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 dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	10458.374 M	40.4	+0.7	+6.2	-12.0		-10.5	24.8	49.5	-24.7	Horiz
2	12852.961 M	40.5	+1.1	+7.2	-13.8		-10.5	24.5	49.5	-25.0	Horiz
3	10849.463 M	40.3	+0.7	+6.2	-12.3		-10.5	24.4	49.5	-25.1	Horiz
4	10608.361 M	39.9	+0.7	+6.2	-11.9		-10.5	24.4	49.5	-25.1	Horiz
5	12456.596 M	39.6	+1.2	+7.0	-13.1		-10.5	24.2	49.5	-25.3	Horiz
6	10385.482 M Ave	27.2	+0.6	+6.2	-12.1		-10.5	11.4	49.5	-38.1	Horiz
^	10385.482 M	40.7	+0.6	+6.2	-12.1		-10.5	24.9	49.5	-24.6	Horiz
8	10273.000 M Ave	27.1	+0.5	+6.2	-12.1		-10.5	11.2	49.5	-38.3	Vert
^	10273.000 M	40.8	+0.5	+6.2	-12.1		-10.5	24.9	49.5	-24.6	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 A**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Maximized Emissions**	Time:	12:27:32
Tested By:	Steven Pittsford	Sequence#:	21
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:

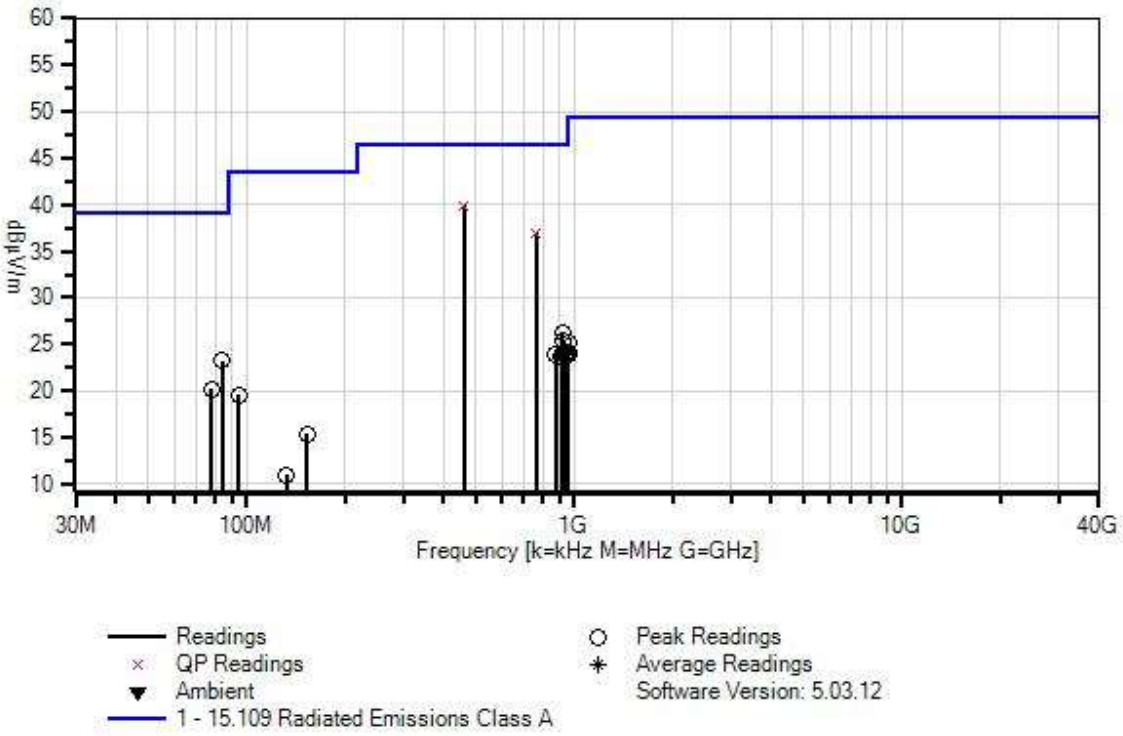
Temperature: 23-24°C
Humidity: 35-45%
Pressure: 102-103kPa

Method: ANSI 63.4 (2014)

Frequency: 30-1000MHz

Setup: EUT with lid open.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.

Ossia, Inc. WO#: 102778 Sequence#: 21 Date: 7/26/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Horiz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T2	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T3	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T4	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T5	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T6	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T7	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	459.371M	51.8	-27.9	+18.1	+5.8	+1.1	-10.5	39.9	46.4	-6.5	Horiz
	QP		+1.3	+0.2	+0.0		72				190
^	459.371M	52.2	-27.9	+18.1	+5.8	+1.1	-10.5	40.3	46.4	-6.1	Horiz
			+1.3	+0.2	+0.0		27				178
3	765.617M	42.7	-27.9	+23.4	+5.8	+1.4	-10.5	36.9	46.4	-9.5	Horiz
	QP		+1.7	+0.3	+0.0		17				128
^	765.617M	43.6	-27.9	+23.4	+5.8	+1.4	-10.5	37.8	46.4	-8.6	Horiz
			+1.7	+0.3	+0.0		36				128
5	84.400M	47.7	-27.8	+6.9	+5.8	+0.5	-10.5	23.2	39.1	-15.9	Horiz
			+0.5	+0.1	+0.0		360				128
6	78.110M	44.8	-27.8	+6.8	+5.8	+0.5	-10.5	20.2	39.1	-18.9	Horiz
			+0.5	+0.1	+0.0		360				128
7	918.770M	30.1	-27.3	+24.1	+5.8	+1.6	-10.5	26.2	46.4	-20.2	Horiz
			+2.0	+0.4	+0.0		360				130
8	926.458M	29.1	-27.3	+24.2	+5.8	+1.6	-10.5	25.3	46.4	-21.1	Horiz
			+2.0	+0.4	+0.0		360				130
9	956.235M	28.4	-27.2	+24.5	+5.8	+1.6	-10.5	25.1	46.4	-21.3	Horiz
			+2.1	+0.4	+0.0		360				130
10	919.611M	28.1	-27.3	+24.1	+5.8	+1.6	-10.5	24.2	46.4	-22.2	Horiz
			+2.0	+0.4	+0.0		360				130
11	949.160M	27.5	-27.2	+24.5	+5.8	+1.6	-10.5	24.1	46.4	-22.3	Horiz
			+2.0	+0.4	+0.0		360				130
12	957.049M	27.3	-27.2	+24.6	+5.8	+1.6	-10.5	24.1	46.4	-22.3	Horiz
			+2.1	+0.4	+0.0		360				130
13	875.167M	28.7	-27.5	+23.8	+5.8	+1.5	-10.5	24.0	46.4	-22.4	Horiz
			+1.9	+0.3	+0.0		360				130
14	940.582M	27.6	-27.2	+24.3	+5.8	+1.6	-10.5	24.0	46.4	-22.4	Horiz
			+2.0	+0.4	+0.0		360				130
15	959.303M	27.1	-27.2	+24.6	+5.8	+1.6	-10.5	23.9	46.4	-22.5	Horiz
			+2.1	+0.4	+0.0		360				130
16	948.471M	27.3	-27.2	+24.4	+5.8	+1.6	-10.5	23.8	46.4	-22.6	Horiz
			+2.0	+0.4	+0.0		360				130
17	953.856M	27.1	-27.2	+24.5	+5.8	+1.6	-10.5	23.8	46.4	-22.6	Horiz
			+2.1	+0.4	+0.0		360				130
18	955.233M	27.1	-27.2	+24.5	+5.8	+1.6	-10.5	23.8	46.4	-22.6	Horiz
			+2.1	+0.4	+0.0		360				130

19	912.044M	27.7	-27.3 +2.0	+24.0 +0.4	+5.8 +0.0	+1.6	-10.5 360	23.7	46.4	-22.7	Horiz 130
20	94.600M	43.2	-27.7 +0.5	+7.6 +0.1	+5.8 +0.0	+0.5	-10.5 360	19.5	43.5	-24.0	Horiz 128
21	153.080M	36.7	-27.5 +0.7	+9.3 +0.2	+5.8 +0.0	+0.6	-10.5 360	15.3	43.5	-28.2	Horiz 128
22	132.680M	33.6	-27.6 +0.6	+8.2 +0.2	+5.8 +0.0	+0.6	-10.5 360	10.9	43.5	-32.6	Horiz 128

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 A**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Maximized Emissions**	Time:	12:37:45
Tested By:	Steven Pittsford	Sequence#:	22
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

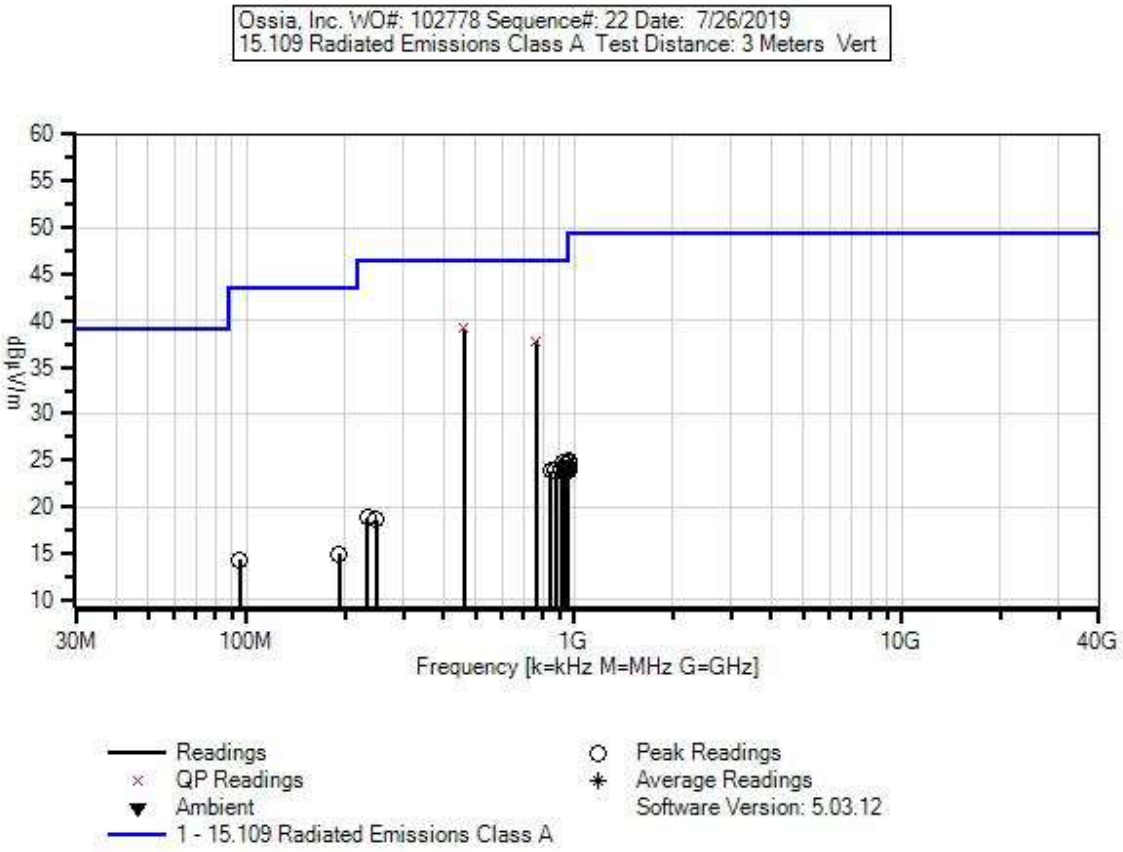
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 35-45%
Pressure: 102-103kPa

Method: ANSI 63.4 (2014)

Frequency: 30-1000MHz

Setup: EUT with lid open.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 22 Date: 7/26/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert
60
55
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35
30
25
20
15
10
dBµV/m
30M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.109 Radiated Emissions Class A
Peak Readings
Average Readings
Software Version: 5.03.12

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T2	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T3	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T4	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T5	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T6	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	459.372M	51.0	-27.9	+18.1	+5.8	+1.1	-10.5	39.1	46.4	-7.3	Vert
	QP		+1.3	+0.2			356				99
^	459.372M	51.3	-27.9	+18.1	+5.8	+1.1	-10.5	39.4	46.4	-7.0	Vert
			+1.3	+0.2			356				99
3	765.623M	43.6	-27.9	+23.4	+5.8	+1.4	-10.5	37.8	46.4	-8.6	Vert
	QP		+1.7	+0.3			344				107
^	765.623M	44.4	-27.9	+23.4	+5.8	+1.4	-10.5	38.6	46.4	-7.8	Vert
			+1.7	+0.3			355				107
5	958.677M	28.1	-27.2	+24.6	+5.8	+1.6	-10.5	24.9	46.4	-21.5	Vert
			+2.1	+0.4			360				130
6	918.770M	28.7	-27.3	+24.1	+5.8	+1.6	-10.5	24.8	46.4	-21.6	Vert
			+2.0	+0.4			360				130
7	959.428M	27.9	-27.2	+24.6	+5.8	+1.6	-10.5	24.7	46.4	-21.7	Vert
			+2.1	+0.4			360				130
8	945.466M	28.1	-27.2	+24.4	+5.8	+1.6	-10.5	24.6	46.4	-21.8	Vert
			+2.0	+0.4			360				130
9	936.548M	27.8	-27.2	+24.3	+5.8	+1.6	-10.5	24.2	46.4	-22.2	Vert
			+2.0	+0.4			360				130
10	959.616M	27.4	-27.2	+24.6	+5.8	+1.6	-10.5	24.2	46.4	-22.2	Vert
			+2.1	+0.4			360				130
11	912.764M	28.2	-27.3	+24.0	+5.8	+1.6	-10.5	24.2	46.4	-22.2	Vert
			+2.0	+0.4			360				130
12	956.423M	27.2	-27.2	+24.6	+5.8	+1.6	-10.5	24.0	46.4	-22.4	Vert
			+2.1	+0.4			360				130
13	938.641M	27.6	-27.2	+24.3	+5.8	+1.6	-10.5	24.0	46.4	-22.4	Vert
			+2.0	+0.4			360				130
14	915.407M	28.0	-27.3	+24.0	+5.8	+1.6	-10.5	24.0	46.4	-22.4	Vert
			+2.0	+0.4			360				130
15	875.167M	28.6	-27.5	+23.8	+5.8	+1.5	-10.5	23.9	46.4	-22.5	Vert
			+1.9	+0.3			360				130
16	849.341M	28.7	-27.6	+23.8	+5.8	+1.5	-10.5	23.9	46.4	-22.5	Vert
			+1.9	+0.3			360				130
17	950.662M	27.3	-27.2	+24.5	+5.8	+1.6	-10.5	23.9	46.4	-22.5	Vert
			+2.0	+0.4			360				130
18	233.500M	37.3	-27.1	+11.5	+5.8	+0.8	-10.5	18.9	46.4	-27.5	Vert
			+0.9	+0.2							130

19	248.500M	36.3	-27.0 +0.9	+12.1 +0.2	+5.8	+0.8	-10.5	18.6	46.4	-27.8	Vert 130
20	192.000M	35.3	-27.3 +0.8	+9.9 +0.2	+5.8	+0.7	-10.5	14.9	43.5	-28.6	Vert 130
21	95.000M	38.0	-27.7 +0.5	+7.6 +0.1	+5.8	+0.5	-10.5	14.3	43.5	-29.2	Vert 130

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 A**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Maximized Emissions**	Time:	09:39:13
Tested By:	Steven Pittsford	Sequence#:	12
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

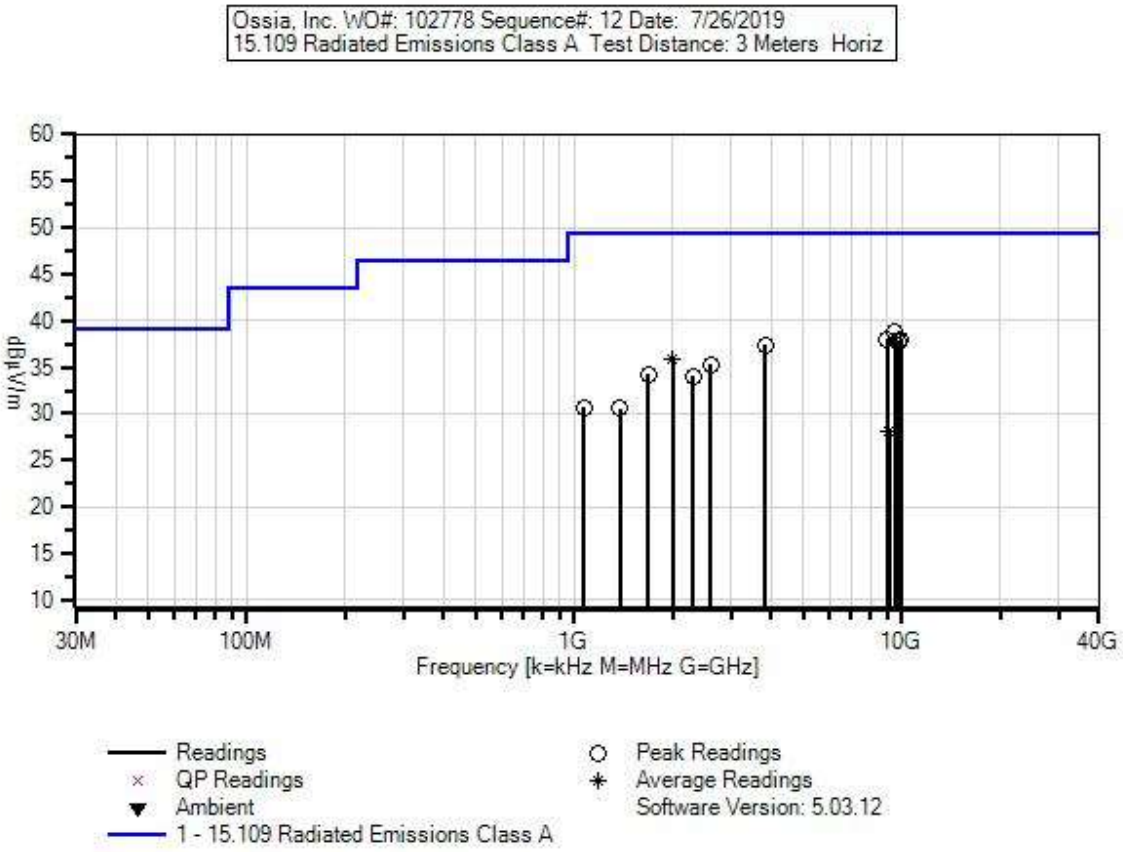
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 1-10GHz

Setup: EUT with lid open.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 12 Date: 7/26/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Horiz
60
55
50
45
40
35
30
25
20
15
10
dBµV/m
30M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.109 Radiated Emissions Class A
Peak Readings
Average Readings
Software Version: 5.03.12

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
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	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9538.720M	35.9	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5 360	38.7	49.5	-10.8	Horiz 129
2	9941.472M	35.7	+0.0 +2.6	+0.3 +37.5	+6.3	-33.9	-10.5 360	38.0	49.5	-11.5	Horiz 129
3	9025.856M	36.1	+0.0 +2.3	+0.6 +37.5	+6.2	-34.2	-10.5 360	38.0	49.5	-11.5	Horiz 129
4	9782.752M	35.3	+0.0 +2.6	+0.5 +37.5	+6.3	-33.9	-10.5 360	37.8	49.5	-11.7	Horiz 129
5	9737.120M	35.3	+0.0 +2.6	+0.5 +37.6	+6.2	-33.9	-10.5 360	37.8	49.5	-11.7	Horiz 129
6	3827.900M	45.1	+0.0 +1.3	+0.4 +30.9	+3.8	-33.6	-10.5	37.4	49.5	-12.1	Horiz 129
7	1990.990M Ave	49.5	+0.0 +0.8	+0.3 +27.8	+2.4	-34.5	-10.5 360	35.8	49.5	-13.7	Horiz 211
^	1990.990M	52.6	+0.0 +0.8	+0.3 +27.8	+2.4	-34.5	-10.5 360	38.9	49.5	-10.6	Horiz 129
9	2603.100M	48.0	+0.0 +1.0	+0.4 +27.9	+2.7	-34.2	-10.5	35.3	49.5	-14.2	Horiz 129
10	1684.200M	50.9	+0.0 +0.7	+0.5 +25.4	+2.2	-35.0	-10.5	34.2	49.5	-15.3	Horiz 129
11	2296.900M	47.3	+0.0 +0.9	+0.4 +27.7	+2.5	-34.3	-10.5	34.0	49.5	-15.5	Horiz 129
12	1071.800M	50.8	+0.0 +0.5	+0.4 +24.6	+1.8	-36.9	-10.5	30.7	49.5	-18.8	Horiz 129
13	1378.000M	48.6	+0.0 +0.6	+0.4 +25.1	+2.0	-35.6	-10.5	30.6	49.5	-18.9	Horiz 129
14	9140.928M Ave	25.9	+0.0 +2.4	+0.8 +37.5	+6.2	-34.2	-10.5 212	28.1	49.5	-21.4	Horiz 211
^	9140.928M	36.6	+0.0 +2.4	+0.8 +37.5	+6.2	-34.2	-10.5 360	38.8	49.5	-10.7	Horiz 129

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 A**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Maximized Emissions**	Time:	09:27:53
Tested By:	Steven Pittsford	Sequence#:	11
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

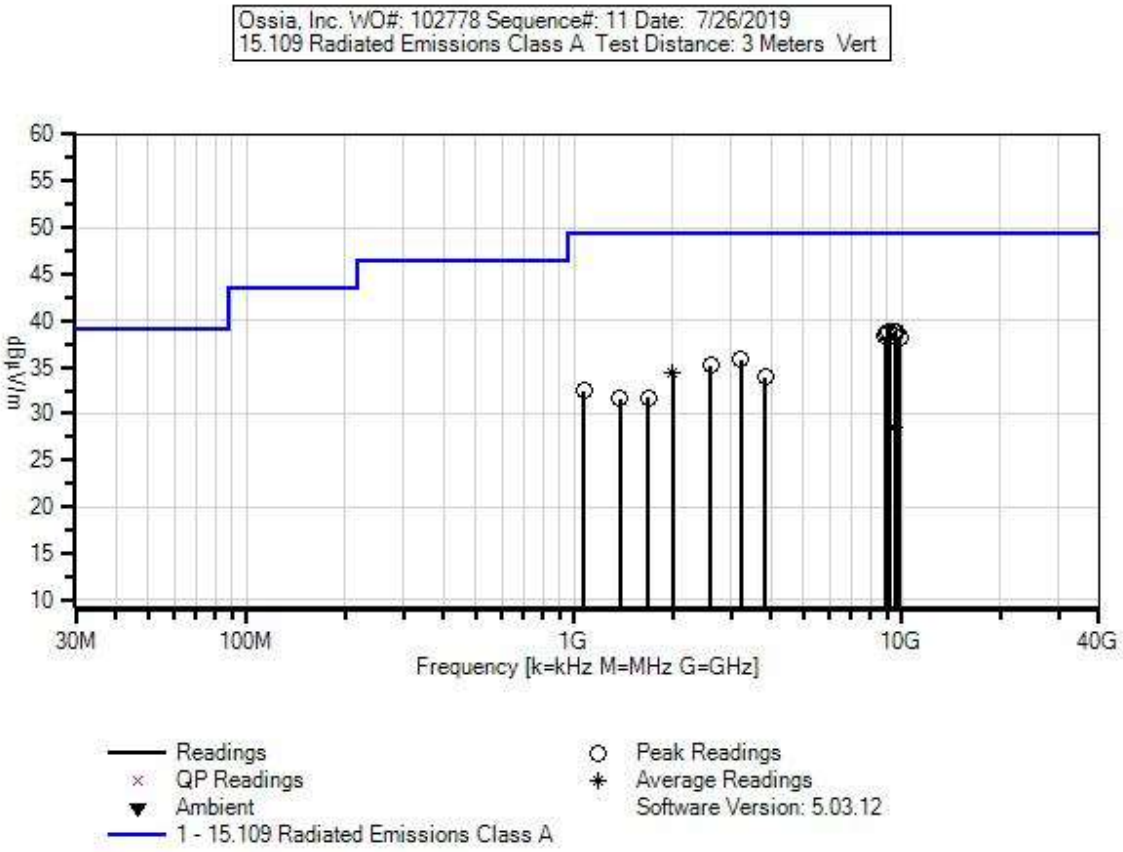
Test Conditions / Notes:

Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 1-10GHz

Setup: EUT with lid open.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.


Ossia, Inc. WO#: 102778 Sequence#: 11 Date: 7/26/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert
60
55
50
45
40
35
30
25
20
15
10
dBµV/m
30M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.109 Radiated Emissions Class A
Peak Readings
Average Readings
Software Version: 5.03.12

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
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	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9157.792M	36.5	+0.0 +2.4	+0.8 +37.5	+6.2	-34.2	-10.5 360	38.7	49.5	-10.8	Vert 114
2	9535.744M	35.9	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5 360	38.7	49.5	-10.8	Vert 114
3	9571.456M	35.9	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5 360	38.7	49.5	-10.8	Vert 114
4	8982.975M	36.6	+0.0 +2.3	+0.6 +37.5	+6.2	-34.2	-10.5 360	38.5	49.5	-11.0	Vert 114
5	9002.995M	36.6	+0.0 +2.3	+0.6 +37.5	+6.2	-34.2	-10.5 360	38.5	49.5	-11.0	Vert 114
6	9493.088M	35.5	+0.0 +2.6	+0.9 +37.6	+6.2	-33.9	-10.5 360	38.4	49.5	-11.1	Vert 114
7	8863.856M	36.7	+0.0 +2.3	+0.7 +37.4	+6.1	-34.4	-10.5 360	38.3	49.5	-11.2	Vert 114
8	9872.032M	35.7	+0.0 +2.6	+0.4 +37.5	+6.3	-33.9	-10.5 360	38.1	49.5	-11.4	Vert 114
9	3215.500M	46.0	+0.0 +1.2	+0.4 +29.5	+3.2	-34.0	-10.5 360	35.8	49.5	-13.7	Vert 114
10	2603.100M	47.9	+0.0 +1.0	+0.4 +27.9	+2.7	-34.2	-10.5 360	35.2	49.5	-14.3	Vert 114
11	1990.700M Ave	48.2	+0.0 +0.8	+0.3 +27.8	+2.4	-34.5	-10.5 360	34.5	49.5	-15.0	Vert 129
^	1990.700M	50.4	+0.0 +0.8	+0.3 +27.8	+2.4	-34.5	-10.5 25	36.7	49.5	-12.8	Vert 129
13	3828.200M	41.6	+0.0 +1.3	+0.4 +30.9	+3.8	-33.6	-10.5 360	33.9	49.5	-15.6	Vert 114
14	1071.800M	52.6	+0.0 +0.5	+0.4 +24.6	+1.8	-36.9	-10.5 360	32.5	49.5	-17.0	Vert 114
15	1684.200M	48.4	+0.0 +0.7	+0.5 +25.4	+2.2	-35.0	-10.5 360	31.7	49.5	-17.8	Vert 114
16	1378.000M	49.6	+0.0 +0.6	+0.4 +25.1	+2.0	-35.6	-10.5 360	31.6	49.5	-17.9	Vert 114
17	9533.760M Ave	25.7	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5 182	28.5	49.5	-21.0	Vert 114
^	9533.760M	36.5	+0.0 +2.6	+0.8 +37.6	+6.2	-33.9	-10.5 360	39.3	49.5	-10.2	Vert 114

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 A**		
Work Order #:	**102778**	Date:	7/26/2019
Test Type:	**Maximized Emissions**	Time:	09:55:53
Tested By:	Steven Pittsford	Sequence#:	13
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:

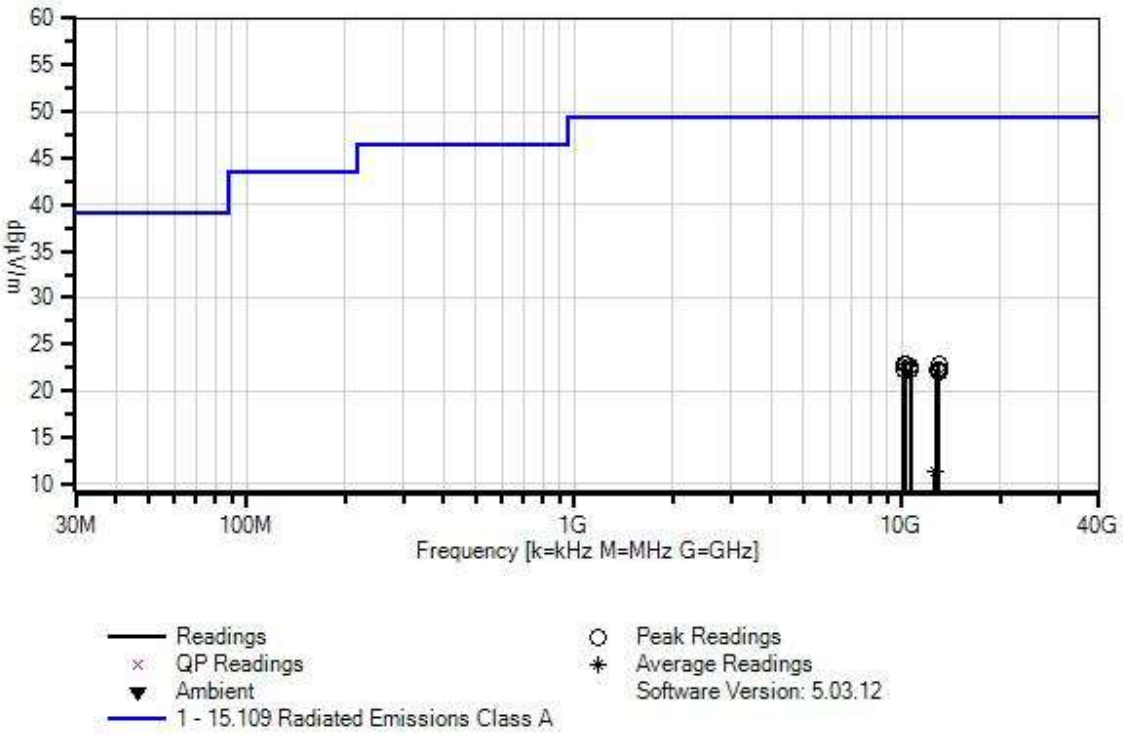
Temperature: 23-24°C
Humidity: 40-45%
Pressure: 102-103kPa

Method: ANSI C63.4 (2014)

Frequency: 10-13GHz (highest operating freq <2.5GHz)

Setup: EUT with lid open.
The EUT is not charging any support devices. Max EUT frequency is less than 2.5GHz. Manufacturer declares RJ45 port is for maintenance/service only.

Ossia, Inc. WO#: 102778 Sequence#: 13 Date: 7/26/2019
15.109 Radiated Emissions Class A Test Distance: 3 Meters Vert & Horz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/3/2017	11/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021

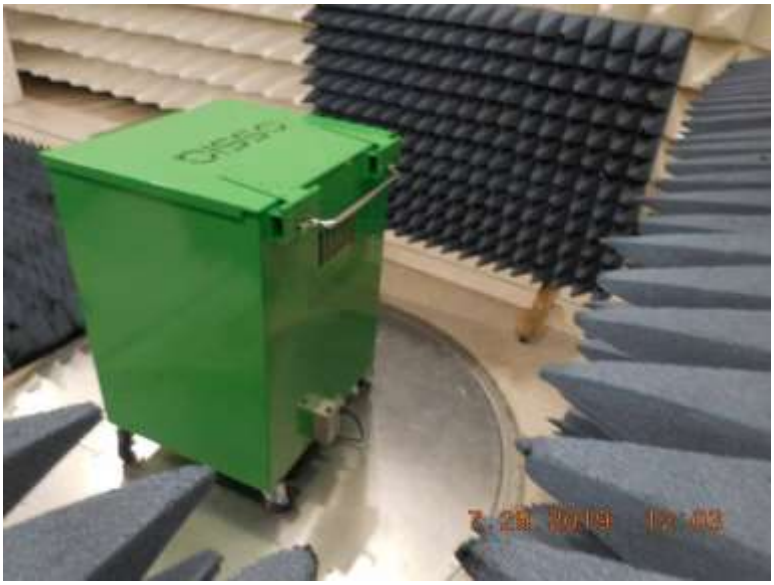
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	12912.998 M	39.0	+1.1	+7.2	-13.9		-10.5	22.9	49.5	-26.6	Vert /Horiz 99
2	10153.540 M	38.9	+0.4	+6.3	-12.2		-10.5	22.9	49.5	-26.6	Vert /Horiz 99
3	10272.351 M	38.7	+0.5	+6.2	-12.1		-10.5	22.8	49.5	-26.7	Vert /Horiz 99
4	10618.730 M	38.2	+0.7	+6.2	-12.0		-10.5	22.6	49.5	-26.9	Vert /Horiz 99
5	12914.399 M	38.4	+1.1	+7.2	-13.9		-10.5	22.3	49.5	-27.2	Vert /Horiz 99
6	10117.897 M	38.4	+0.4	+6.3	-12.3		-10.5	22.3	49.5	-27.2	Vert /Horiz 99
7	12807.279 M	38.1	+1.2	+7.2	-13.7		-10.5	22.3	49.5	-27.2	Vert /Horiz 99
8	12952.425 M	38.4	+1.0	+7.3	-13.9		-10.5	22.3	49.5	-27.2	Vert /Horiz 99
9	10600.451 M	37.7	+0.7	+6.2	-11.9		-10.5	22.2	49.5	-27.3	Vert /Horiz 99
10	12941.035 M	38.3	+1.0	+7.3	-13.9		-10.5	22.2	49.5	-27.3	Vert /Horiz 99
11	12945.853 M	38.3	+1.0	+7.3	-13.9		-10.5	22.2	49.5	-27.3	Vert /Horiz 99
12	12915.801 M	38.1	+1.1	+7.3	-13.9		-10.5	22.1	49.5	-27.4	Vert /Horiz 99
13	12933.324 M	38.1	+1.1	+7.3	-13.9		-10.5	22.1	49.5	-27.4	Vert /Horiz 99

14	12982.827 M	38.2	+1.0	+7.3	-14.0	-10.5	22.0	49.5	-27.5	Vert /Horiz 99
15	12612.084 M	26.8	+1.2	+7.1	-13.2	-10.5	11.4	49.5	-38.1	Vert /Horiz 99
Ave										
^	12612.084 M	38.5	+1.2	+7.1	-13.2	-10.5	23.1	49.5	-26.4	Vert /Horiz 99

Test Setup Photo(s)

Below 1GHz



Above 1GHz

Below 1GHz

Above 1GHz

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.