Ossia, Inc.

TEST REPORT FOR

Cota WPT Source
Model: Cota Tx203

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.247
(DTS 2400-2483.5 MHz)

Report No.: 103895-3

Date of issue: July 8, 2020

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.

Test Certificate # 803.01

TABLE OF CONTENTS

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

REPORT PREPARED BY:

Darcy Thompson
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 103895

DATE OF EQUIPMENT RECEIPT: June 13, 2020
DATE(S) OF TESTING: June 13-29, 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.
22116 23rd Drive S.E., Suite A
Canyon Park, Bothell, WA 98021

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.12

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 C - 15.247 (DTS)

Test Procedure	Description	Modifications	Results
15.247(a)(2)	6dB Bandwidth	NA	Pass
15.247(b)(3)	Output Power	NA	Pass
15.247(e)	Power Spectral Density	NA	Pass
15.247(d)	RF Conducted Emissions & Band Edge	NA	Pass
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted 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
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

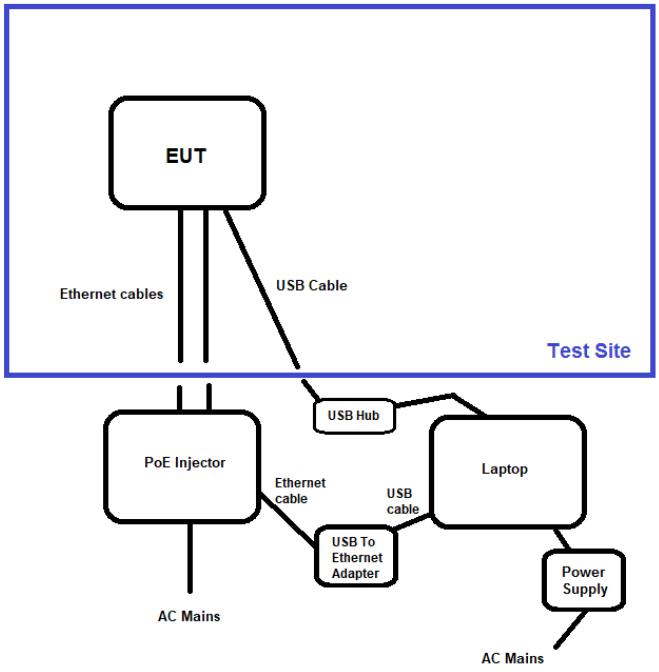
General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	Zigbee 802.15.4
Operating Frequency Range:	2405-2480MHz
Modulation Type(s):	OQPSK
Maximum Duty Cycle:	100% tested as worst case
Number of TX Chains:	1
Antenna Type(s) and Gain:	External Dipole 2dBi
Beamforming Type:	NA
Antenna Connection Type:	External Connector
Nominal Input Voltage:	120VAC, 60Hz
Firmware / Software used for Test:	0x2524CF1

Block Diagram of Test Setup(s)

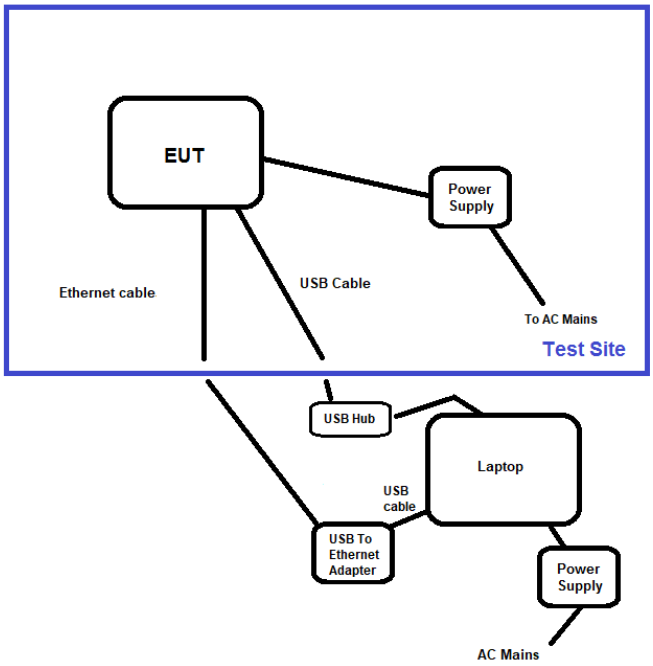
Configuration 1

Test Setup Block Diagram



Configuration 2

Test Setup Block Diagram



FCC Part 15 Subpart C

15.247(a)(2) 6dB Bandwidth

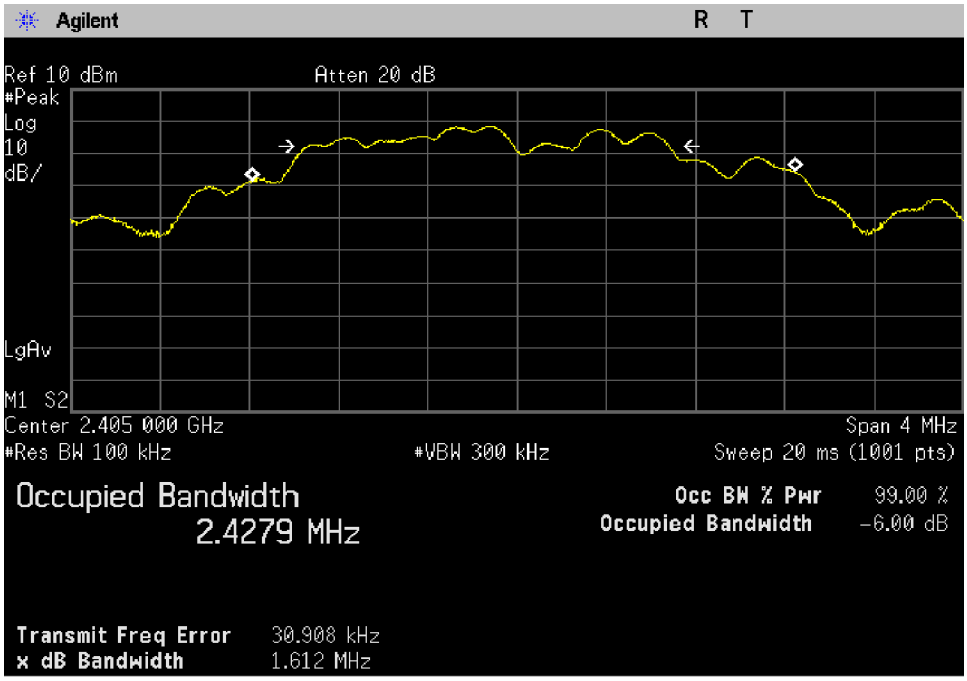
Test Setup/Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	S. Pittsford
Test Method:	ANSI C63.10 (2013) KDB 558074 (April 2, 2019)	Test Date(s):	6/13/2020
Configuration:	2		
Test Setup:	Test Mode: Continuously Modulated. The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator.		

Environmental Conditions			
Temperature (ºC)	22	Relative Humidity (%):	38

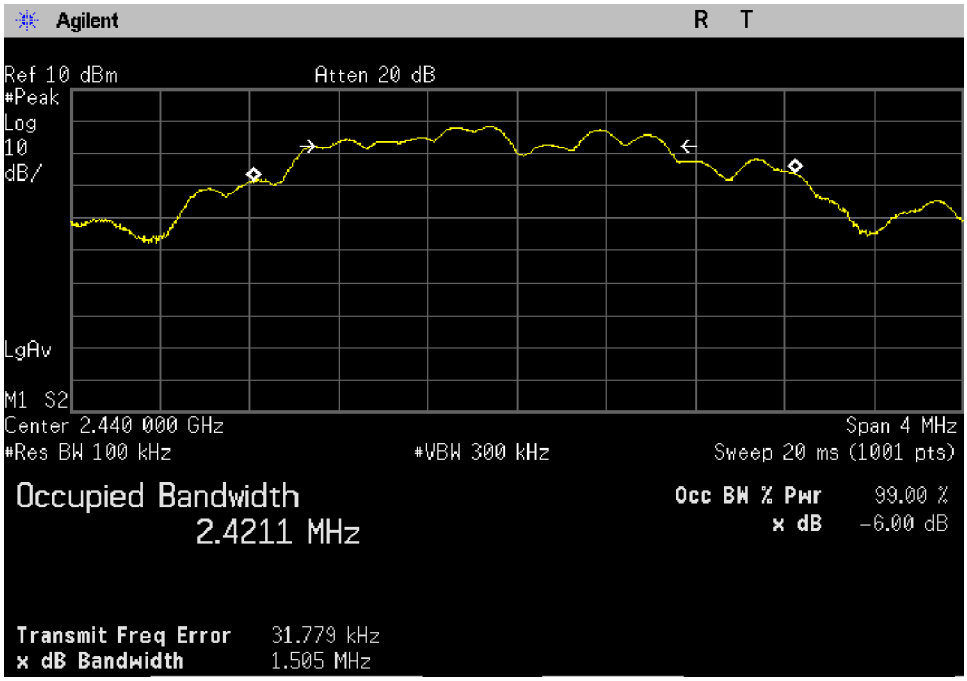
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
P06243	Attenuator	Weinschel	54A-10	1/27/2020	1/27/2022
P06678	Cable	Astrolab	32026-29801-29801-144	2/20/2020	2/20/2022
02673	Spectrum Analyzer	Agilent	E4446A	2/22/2019	2/22/2021

Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
2405	1	OQPSK	1612	≥500	Pass
2440	1	OQPSK	1505	≥500	Pass
2480	1	OQPSK	1599	≥500	Pass

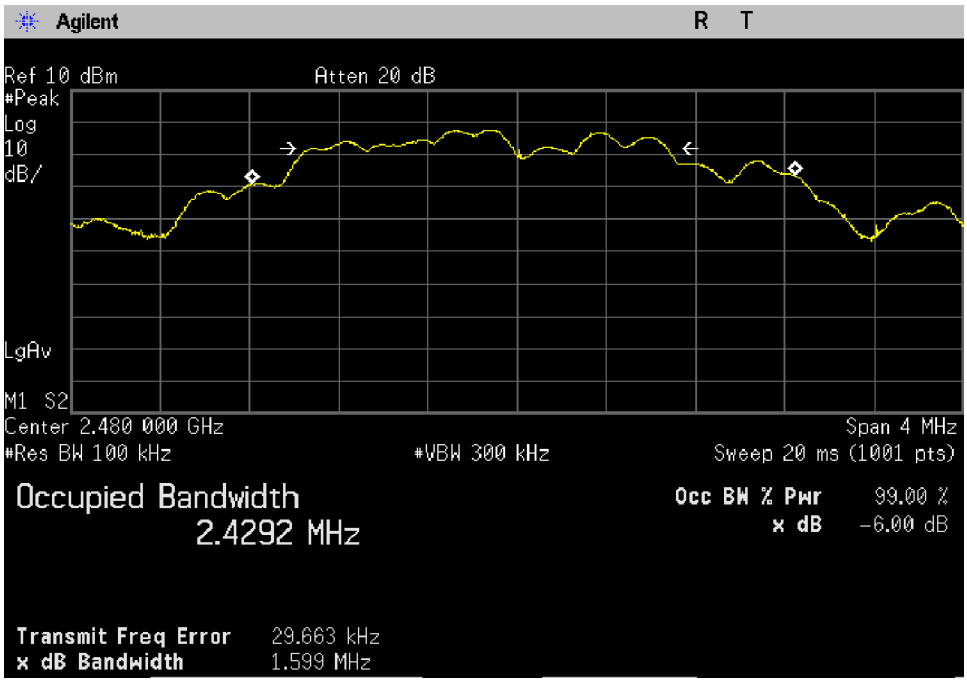
Plot(s)



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

15.247(b)(3) Output Power

Test Setup / Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	S. Pittsford
Test Method:	ANSI C63.10 (2013) KDB 558074 (April 2, 2019)	Test Date(s):	6/13/2020
Configuration:	2		
Test Setup:	Test Mode: Continuously Modulated. The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator. System losses are corrected for internal to the spectrum analyzer. No change in power observed at extreme voltages.		

Environmental Conditions			
Temperature (ºC)	22	Relative Humidity (%):	38

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
P06243	Attenuator	Weinschel	54A-10	1/27/2020	1/27/2022
P06678	Cable	Astrolab	32026-29801-29801-144	2/20/2020	2/20/2022
02673	Spectrum Analyzer	Agilent	E4446A	2/22/2019	2/22/2021

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation / Ant Port**	**$V_{Minimum}$ (dBm)**	**$V_{Nominal}$ (dBm)**	**$V_{Maximum}$ (dBm)**	**Max Deviation from $V_{Nominal}$ (dB)**
2405	OQPSK	3.69	3.69	3.69	0.00
2440	OQPSK	3.42	3.42	3.42	0.00
2480	OQPSK	2.91	2.91	2.91	0.00

Test performed using operational mode with the highest output power, representing worst case.

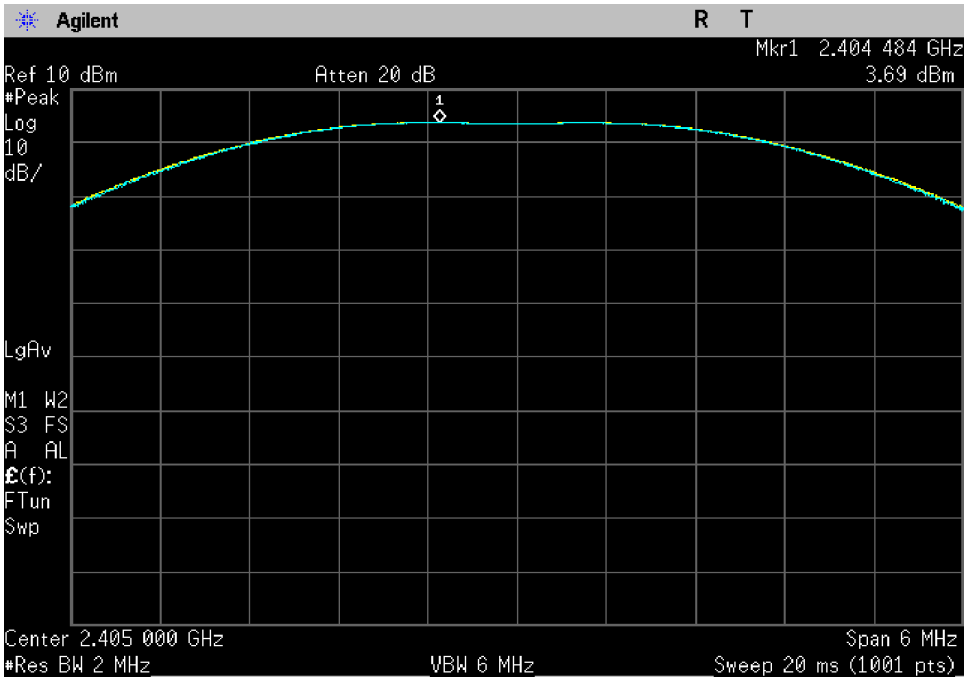
Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

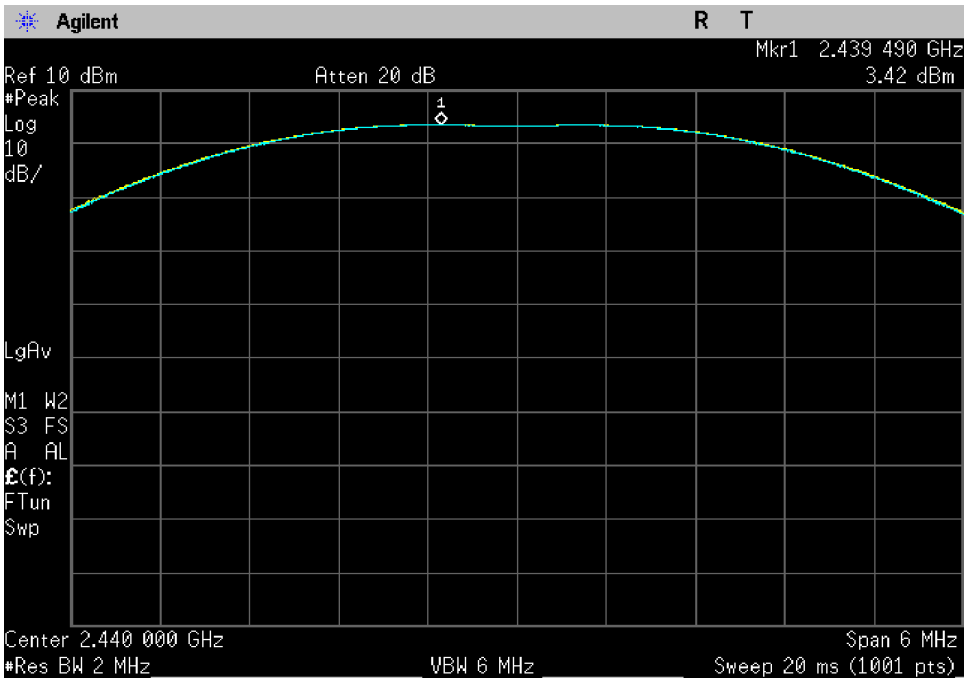
Parameter	Value
$V_{Nominal}$:	85Vrms
$V_{Minimum}$:	120Vrms
$V_{Maximum}$:	276Vrms

Power Output Test Data Summary - RF Conducted Measurement					
Measurement Option: RBW > DTS Bandwidth					
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**Measured (dBm)**	**Limit (dBm)**	**Results**
2405	OQPSK	Dipole 2dBi	3.69	≤30	Pass
2440	OQPSK	Dipole 2dBi	3.42	≤30	Pass
2480	OQPSK	Dipole 2dBi	2.91	≤30	Pass

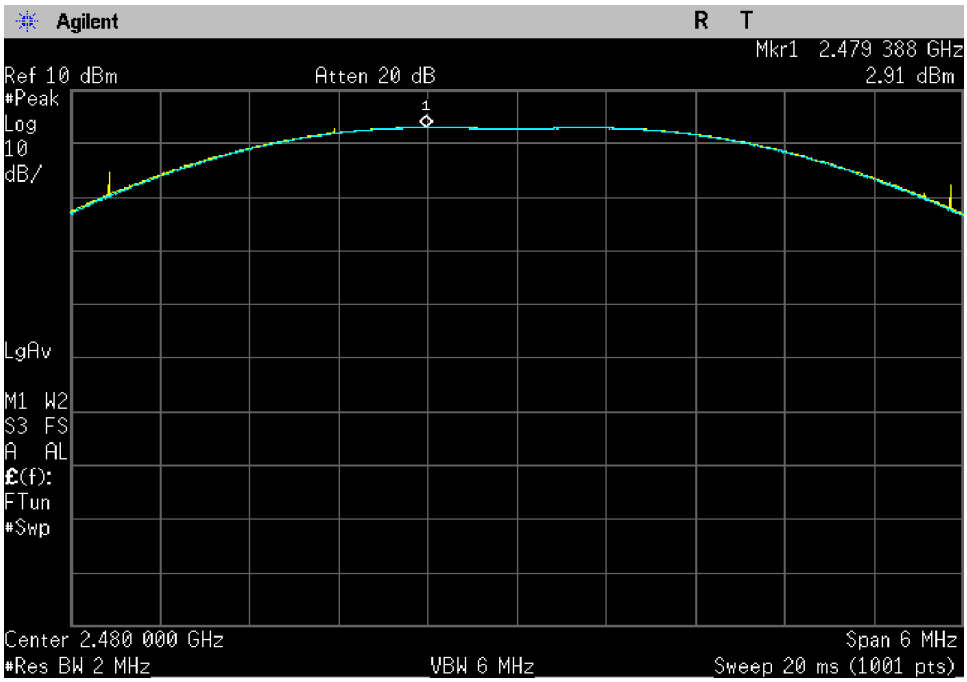
Plots



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

15.247(e) Power Spectral Density

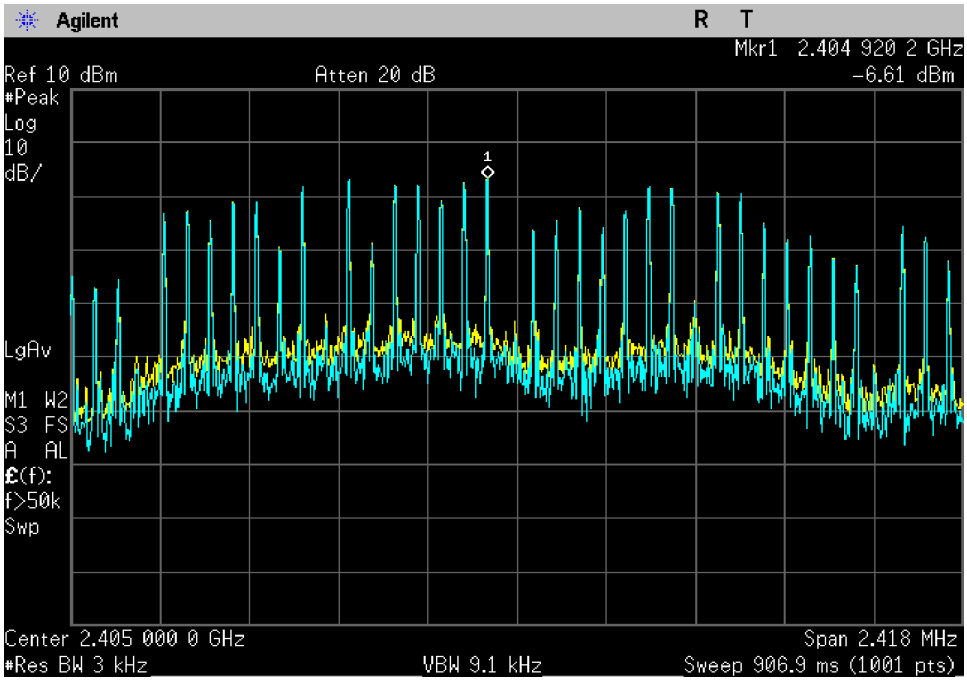
Test Setup / Conditions / Data			
Test Location:	Bothell Lab C3	Test Engineer:	S. Pittsford
Test Method:	ANSI C63.10 (2013) KDB 558074 (April 2, 2019)	Test Date(s):	6/13/2020
Configuration:	2		
Test Setup:	Test Mode: Continuously Modulated. The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator. System losses are corrected for internal to the spectrum analyzer.		

Environmental Conditions			
Temperature (ºC)	22	Relative Humidity (%):	38

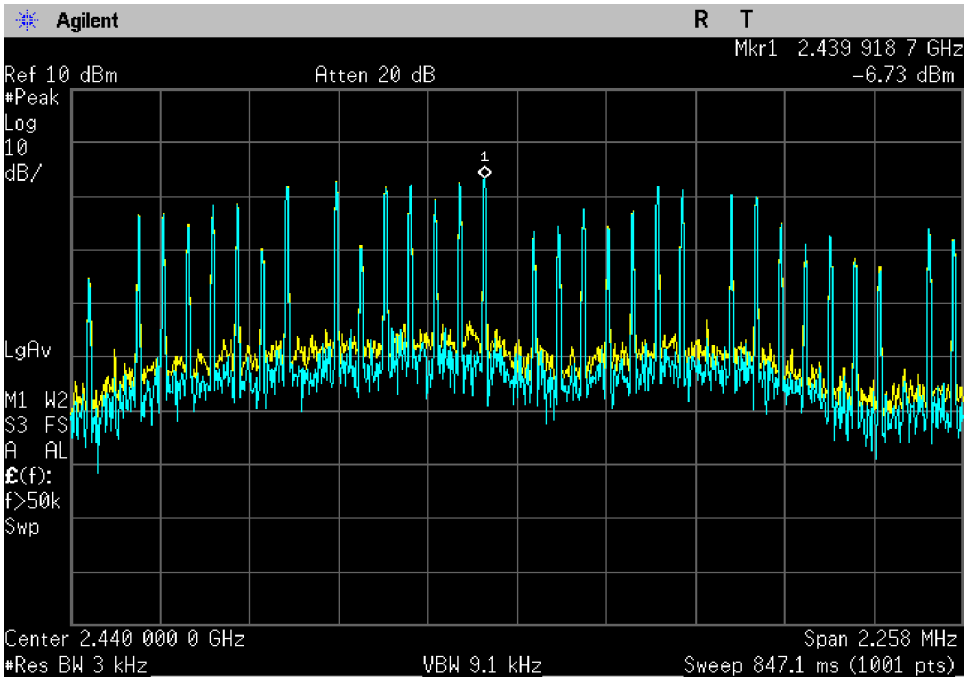
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
P06243	Attenuator	Weinschel	54A-10	1/27/2020	1/27/2022
P06678	Cable	Astrolab	32026-29801-29801-144	2/20/2020	2/20/2022
02673	Spectrum Analyzer	Agilent	E4446A	2/22/2019	2/22/2021

PSD Test Data Summary - RF Conducted Measurement				
Measurement Method: PKPSD				
Frequency (MHz)	**Modulation**	**Measured (dBm/3kHz)**	**Limit (dBm/3kHz)**	**Results**
2405	OQPSK	-6.61	≤8	Pass
2440	OQPSK	-6.73	≤8	Pass
2480	OQPSK	-7.23	≤8	Pass

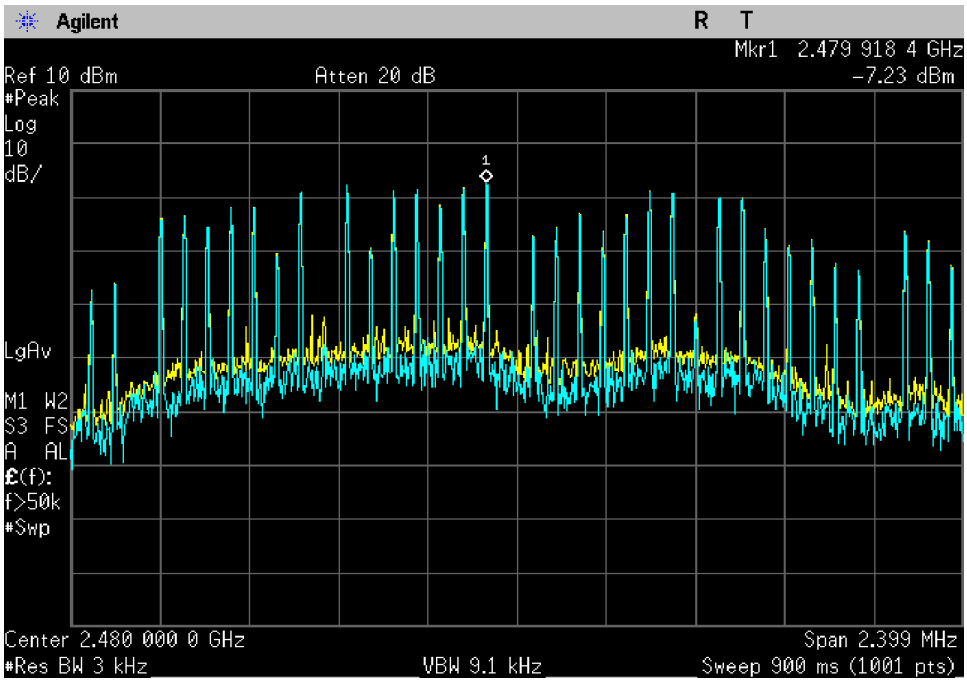
Plots



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

15.247(d) RF Conducted Emissions & Band Edge

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:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**102446**	Date:	6/13/2020
Test Type:	**Conducted Emissions**	Time:	09:00:20
Tested By:	Steven Pittsford	Sequence#:	1
Software:	EMITest 5.03.19		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

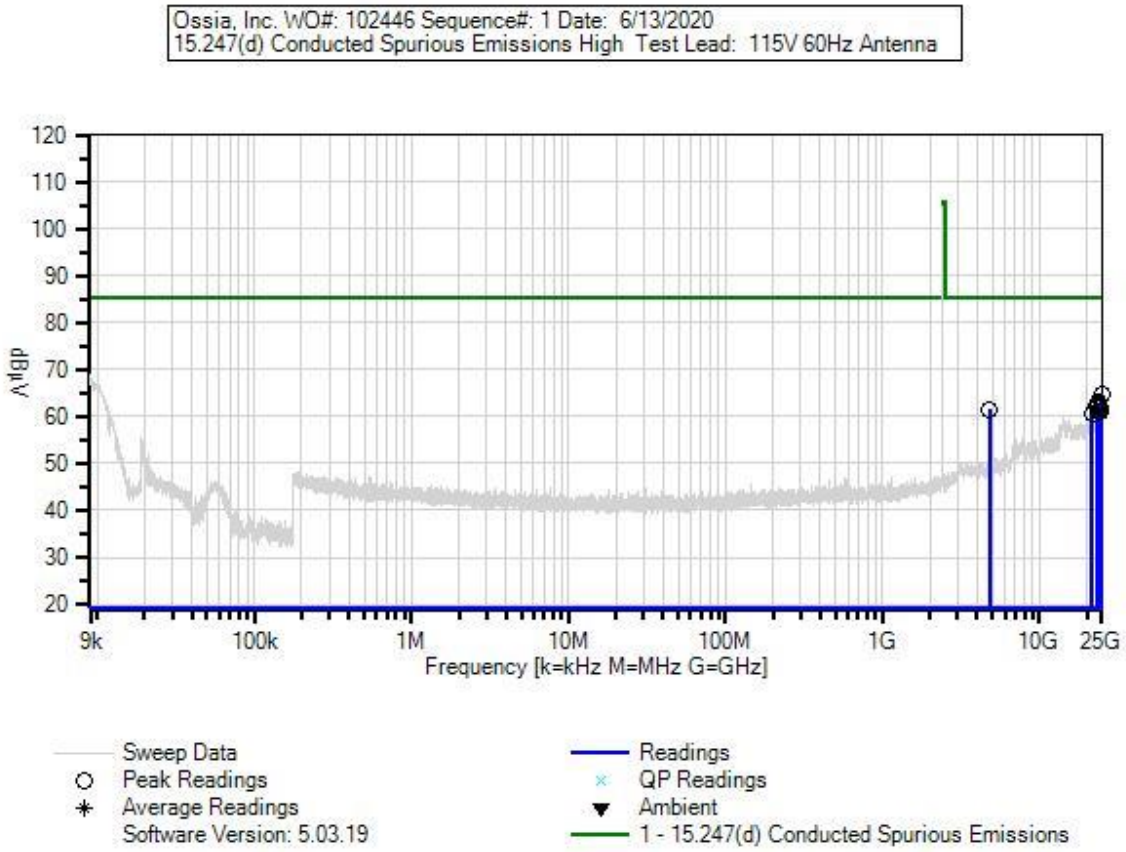
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Mode: Continuously Modulated
EUT is transmitting on Low channel

The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T2	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24973.811 M	44.8	+10.0	+10.0			+0.0	64.8	85.5	-20.7	Anten
2	23598.910 M	43.0	+10.2	+9.7			+0.0	62.9	85.5	-22.6	Anten
3	23520.345 M	42.6	+10.2	+9.7			+0.0	62.5	85.5	-23.0	Anten
4	23206.082 M	42.4	+10.1	+9.6			+0.0	62.1	85.5	-23.4	Anten
5	23376.307 M	42.2	+10.2	+9.7			+0.0	62.1	85.5	-23.4	Anten
6	24253.625 M	41.8	+10.0	+9.9			+0.0	61.7	85.5	-23.8	Anten
7	24109.588 M	41.9	+10.0	+9.8			+0.0	61.7	85.5	-23.8	Anten
8	4808.955M	48.0	+9.8	+3.8			+0.0	61.6	85.5	-23.9	Anten
9	24607.171 M	41.1	+10.0	+10.0			+0.0	61.1	85.5	-24.4	Anten
10	24384.568 M	41.2	+10.0	+9.9			+0.0	61.1	85.5	-24.4	Anten
11	23886.985 M	41.1	+10.0	+9.7			+0.0	60.8	85.5	-24.7	Anten
12	21516.918 M	41.2	+10.2	+9.2			+0.0	60.6	85.5	-24.9	Anten

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**102446**	Date:	6/13/2020
Test Type:	**Conducted Emissions**	Time:	09:24:57
Tested By:	Steven Pittsford	Sequence#:	3
Software:	EMITest 5.03.19		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

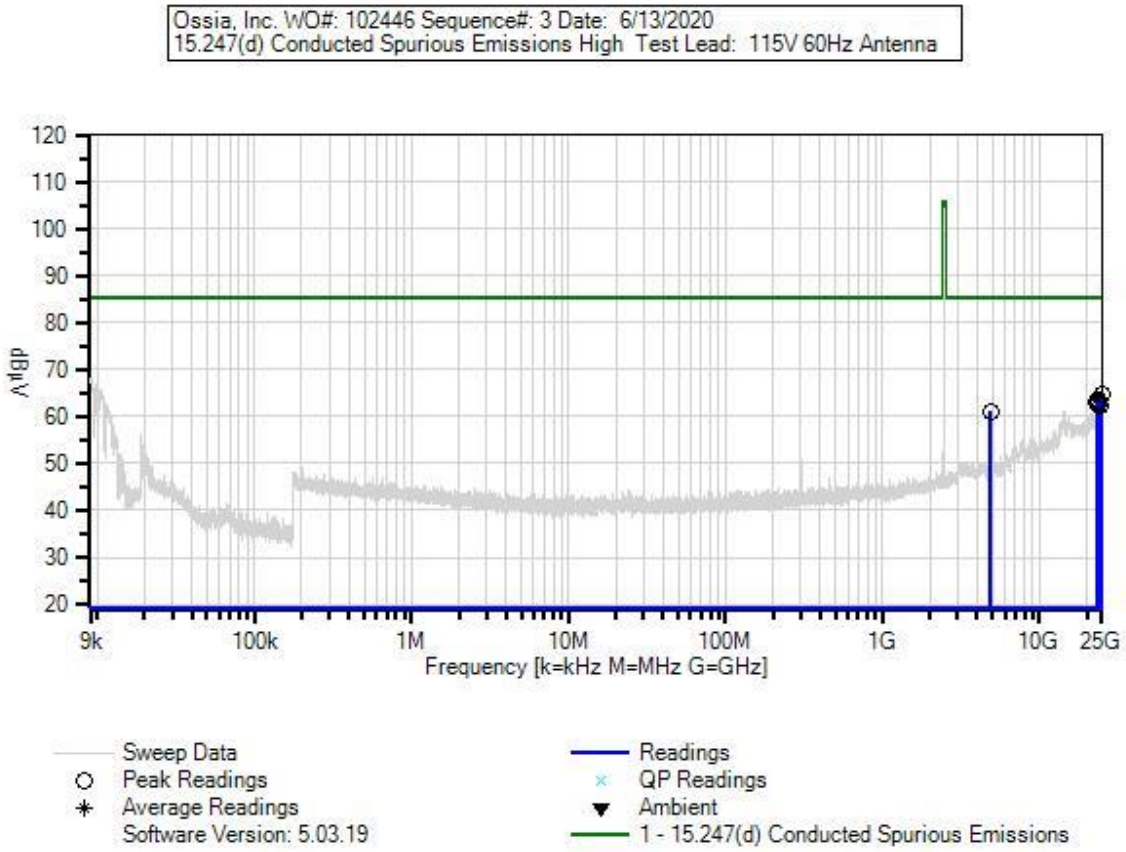
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Mode: Continuously Modulated
EUT is transmitting on Mid channel

The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T2	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24895.246 M	44.9	+10.0	+10.0			+0.0	64.9	85.5	-20.6	Anten
2	23677.476 M	43.8	+10.1	+9.7			+0.0	63.6	85.5	-21.9	Anten
3	23546.533 M	43.3	+10.2	+9.7			+0.0	63.2	85.5	-22.3	Anten
4	23926.268 M	43.5	+10.0	+9.7			+0.0	63.2	85.5	-22.3	Anten
5	23271.553 M	43.3	+10.1	+9.6			+0.0	63.0	85.5	-22.5	Anten
6	23454.873 M	43.0	+10.2	+9.7			+0.0	62.9	85.5	-22.6	Anten
7	23402.496 M	42.8	+10.2	+9.7			+0.0	62.7	85.5	-22.8	Anten
8	24135.777 M	42.4	+10.0	+9.8			+0.0	62.2	85.5	-23.3	Anten
9	4878.960M	47.3	+9.8	+3.9			+0.0	61.0	85.5	-24.5	Anten

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**102446**	Date:	6/13/2020
Test Type:	**Conducted Emissions**	Time:	09:15:30
Tested By:	Steven Pittsford	Sequence#:	2
Software:	EMITest 5.03.19		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

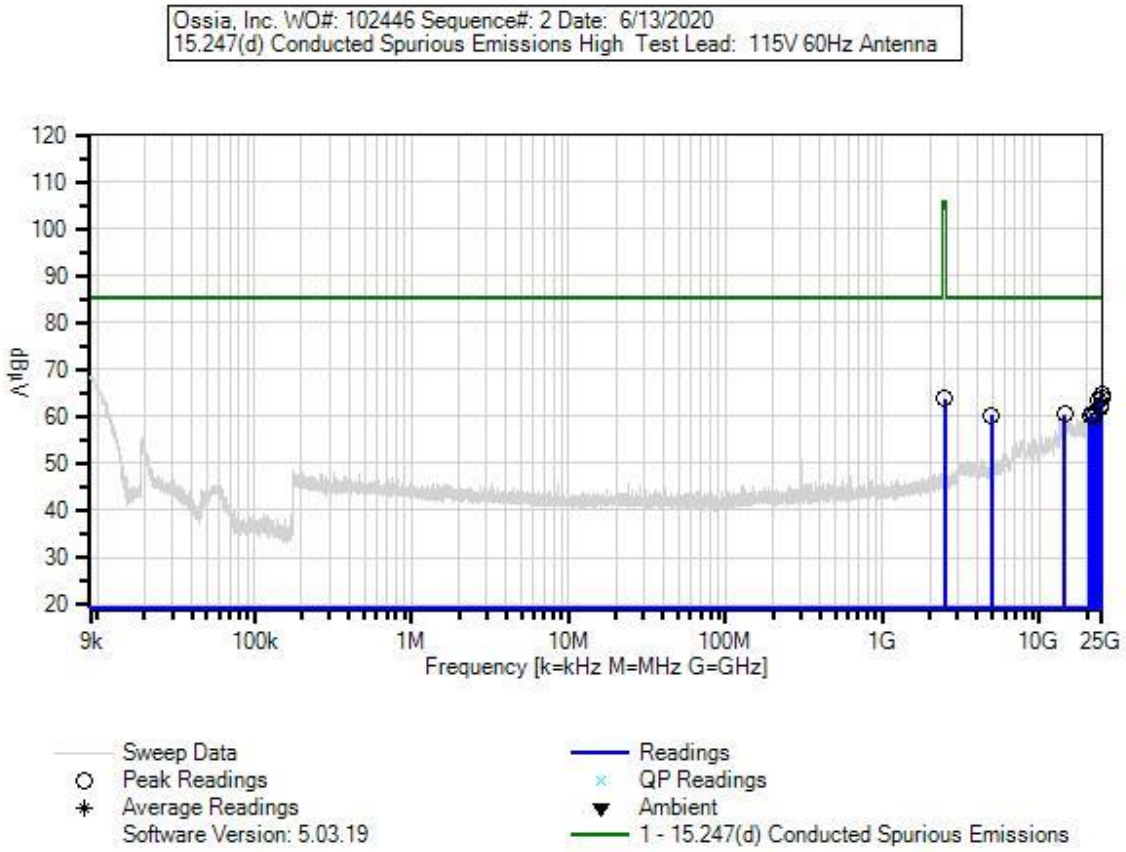
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Mode: Continuously Modulated
EUT is transmitting on High channel

The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T2	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

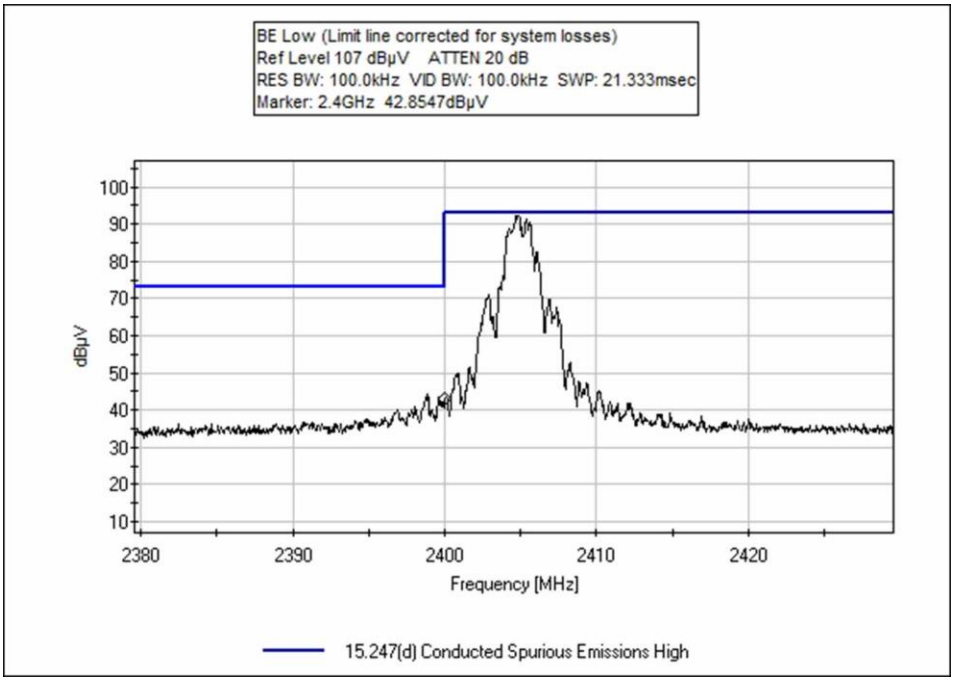
Measurement Data: Reading listed by margin. Test Lead: Antenna

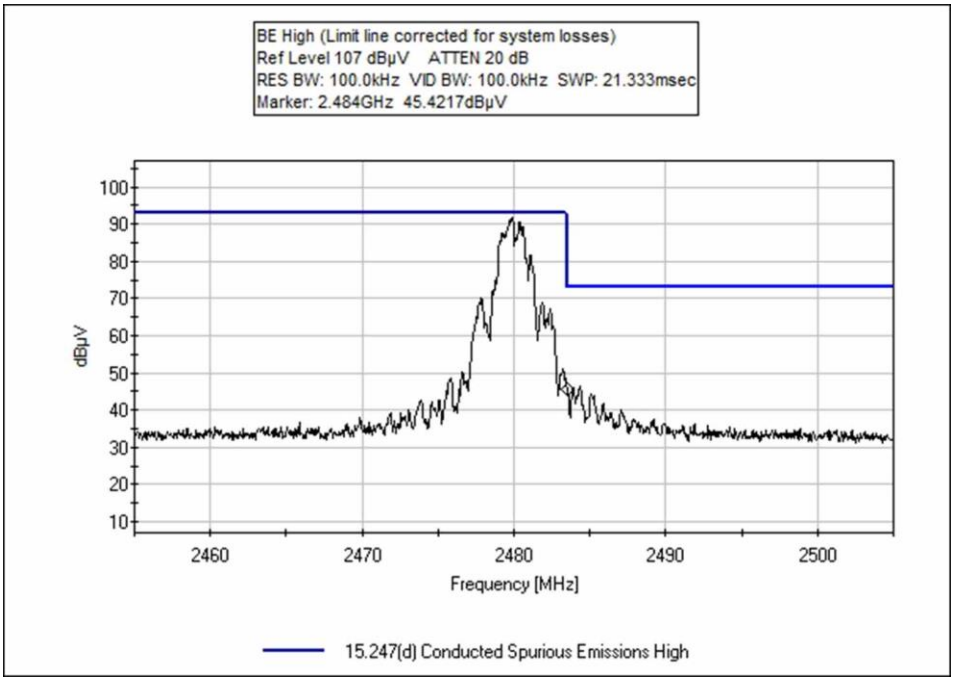
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24986.906 M	44.9	+10.0	+10.0			+0.0	64.9	85.5	-20.6	Anten
2	24842.868 M	44.0	+10.0	+10.0			+0.0	64.0	85.5	-21.5	Anten
3	2483.754M	51.2	+9.8	+2.7			+0.0	63.7	85.5	-21.8	Anten
4	23598.910 M	43.5	+10.2	+9.7			+0.0	63.4	85.5	-22.1	Anten
5	24109.588 M	42.6	+10.0	+9.8			+0.0	62.4	85.5	-23.1	Anten
6	24371.474 M	41.9	+10.0	+9.9			+0.0	61.8	85.5	-23.7	Anten
7	21516.918 M	41.3	+10.2	+9.2			+0.0	60.7	85.5	-24.8	Anten
8	14406.716 M	43.2	+10.0	+7.3			+0.0	60.5	85.5	-25.0	Anten
9	21372.880 M	41.2	+10.1	+9.2			+0.0	60.5	85.5	-25.0	Anten
10	4958.955M	46.4	+9.8	+4.0			+0.0	60.2	85.5	-25.3	Anten
11	22590.650 M	40.8	+10.0	+9.3			+0.0	60.1	85.5	-25.4	Anten
12	20822.920 M	40.7	+10.0	+9.3			+0.0	60.0	85.5	-25.5	Anten

Band Edge

Band Edge Summary				
Limit applied: Max Power/100kHz - 20dB.				
Frequency (MHz)	**Modulation**	**Measured (dBµV)**	**Limit (dBµV)**	**Results**
2400.0	OQPSK	56.8	<85.5	Pass
2483.5	OQPSK	57.9	<85.5	Pass

Band Edge Plots





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:	**15.247(d) Conducted Spurious Emissions High**		
Work Order #:	**102446**	Date:	6/13/2020
Test Type:	**Conducted Emissions**	Time:	09:08:11
Tested By:	Steven Pittsford	Sequence#:	2
Software:	EMITest 5.03.12		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Mode: Continuously Modulated

EUT is transmitting on Low channel.

The EUT's antenna port is connected directly to the spectrum analyzer through a RF cable and an attenuator.
Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013) KDB 558074 (April 2, 2019)
Temperature (ºC) 22
Relative Humidity (%): 38

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T2	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2483.500M	45.4	+9.8	+2.7			+0.0	57.9	85.5	-27.6	Anten
2	2400.000M	44.3	+9.9	+2.6			+0.0	56.8	85.5	-28.7	Anten

Test Setup Photo(s)

15.247(d) Radiated Emissions & Band Edge

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:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103895**	Date:	6/15/2020
Test Type:	**Maximized Emissions**	Time:	09:05:56
Tested By:	S. Pittsford/M. Atkinson	Sequence#:	4
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:

Frequency range tested: 9kHz-25GHz
Test Mode: Continuously Modulated

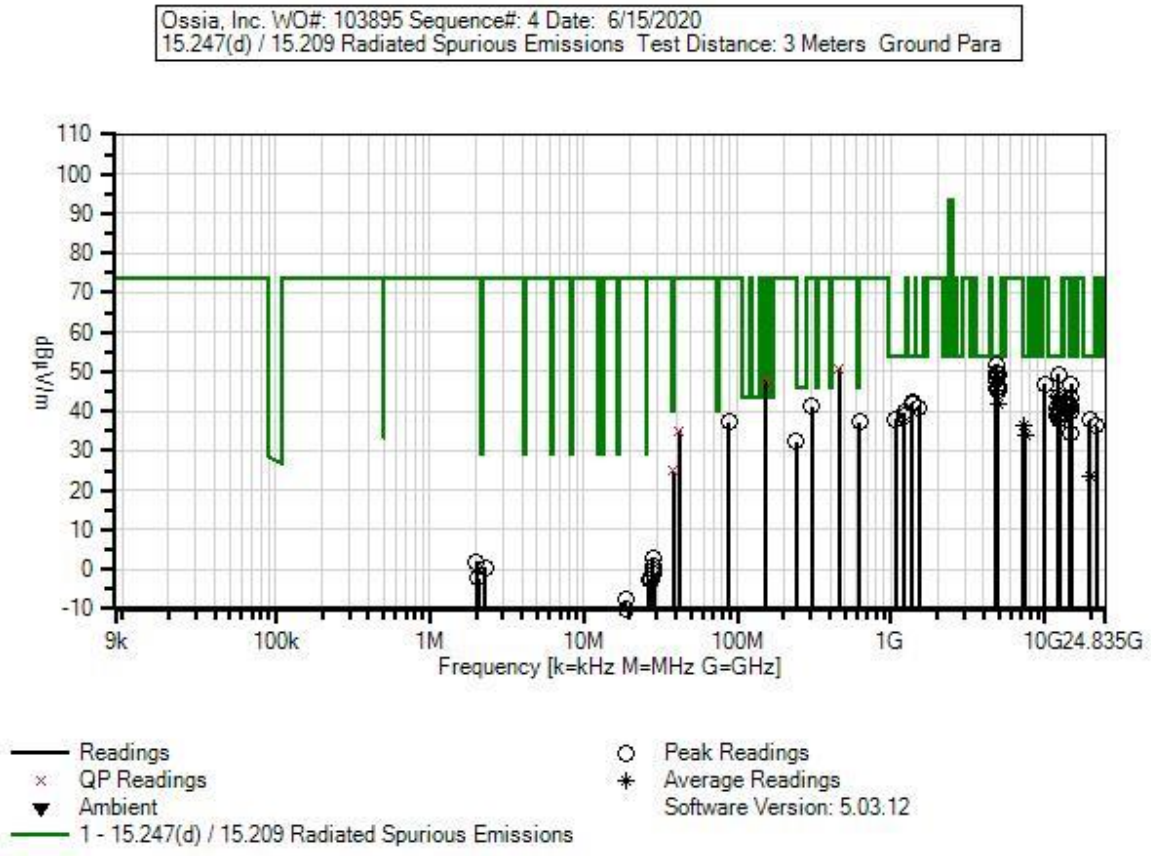
EUT is on a 0.8m test bench below 1GHz and a 1.5m high Styrofoam test bench above 1GHz.

EUT is investigated in Low, Middle, and High Channels, X, Y, & Z Axis with only the worst case reported.
Vertical and Horizontal polarities investigated

EUT connected to support Laptop via USB cable.

No emissions observed within 20dB of limit from 18-25GHz, values provided are noise floor.
EUT connected to AC adapter for power.
EUT connected to support Laptop via Ethernet cable.
Laptop is located remotely.

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013) KDB 558074 (April 2, 2019)
Temperature (ºC) 23
Relative Humidity (%): 33


Ossia, Inc. WO#: 103895 Sequence#: 4 Date: 6/15/2020
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Ground Para
110
100
90
80
70
60
50
40
30
20
10
0
-10
dBµV/m
9k
100k
1M
10M
100M
1G
10G24.835G
Frequency [k=kHz M=MHz G=GHz]
Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
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	Heliax	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
T8	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T9	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T10	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T11	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T12	AN03116	High Pass Filter	11SH10-00313	1/22/2019	1/22/2021
T13	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T14	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T15	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T16	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
T17	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T18	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T19	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

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

#	Freq	Rdng	T1 T5 T9 T13 T17	T2 T6 T10 T14 T18	T3 T7 T11 T15 T19	T4 T8 T12 T16	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4810.790M	46.8	+0.0 +0.0 +32.4 +0.0 +0.0	+0.9 +0.0 +4.1 +0.0 +0.0	+0.0 +0.0 +0.6 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	51.8	54.0 Low Y	-2.2	Horiz
2	4811.010M	44.7	+0.0 +0.0 +32.4 +0.0 +0.0	+0.9 +0.0 +4.1 +0.0 +0.0	+0.0 +0.0 +0.6 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	49.7	54.0 Low Z	-4.3	Horiz
3	12202.582 M	53.9	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	49.4	54.0 Mid Z	-4.6	Horiz

4	4961.090M	44.3	+0.0 +0.0 +32.6 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.4 +0.0 +0.0	+0.0 -33.6 +0.5 +0.0	+0.0	49.3	54.0 High Z	-4.7	Horiz
5	12202.620 M	53.7	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	49.2	54.0 Mid Y	-4.8	Horiz
6	4958.950M	44.2	+0.0 +0.0 +32.6 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.4 +0.0 +0.0	+0.0 -33.6 +0.5 +0.0	+0.0	49.2	54.0 High Y	-4.8	Horiz
7	4878.970M Ave	43.7	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	48.8	54.0 Mid Z	-5.2	Horiz
8	4878.886M Ave	44.3	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.0 +0.0	+0.0	48.8	54.0 Mid X	-5.2	Vert 201
^	4878.860M	50.9	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.0 +0.0	+0.0	55.4	54.0 Mid X	+1.4	Vert 201
10	4880.890M	43.5	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.5 +0.0	+0.0	48.5	54.0 Mid Y	-5.5	Vert
11	4808.930M	43.3	+0.0 +0.0 +32.4 +0.0 +0.0	+0.9 +0.0 +4.1 +0.0 +0.0	+0.0 +0.0 +0.6 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	48.3	54.0 Low Z	-5.7	Vert
12	4879.016M Ave	42.3	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	47.4	54.0 Mid Y	-6.6	Horiz
^	4879.010M	49.4	+0.0 +0.0 +32.5 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	54.5	54.0 Mid Z	+0.5	Horiz

^	4879.054M	48.8	+0.0	+0.9	+0.0	+0.0	+0.0	53.9	54.0	-0.1	Horiz	
			+0.0	+0.0	+0.0	-33.6			Mid Y			
			+32.5	+4.2	+0.5	+0.6						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
^	4879.040M	41.3	+0.0	+0.9	+0.0	+0.0	+0.0	46.4	54.0	-7.6	Horiz	
			+0.0	+0.0	+0.0	-33.6			Mid Z			
			+32.5	+4.2	+0.5	+0.6						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
16	4958.980M	41.3	+0.0	+0.9	+0.0	+0.0	+0.0	46.3	54.0	-7.7	Vert	
			+0.0	+0.0	+0.0	-33.6			High Y			
			+32.6	+4.2	+0.4	+0.5						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
17	4809.080M	40.9	+0.0	+0.9	+0.0	+0.0	+0.0	45.9	54.0	-8.1	Vert	
			+0.0	+0.0	+0.0	-33.6			Low Y			
			+32.4	+4.1	+0.6	+0.6						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
18	4958.940M	40.3	+0.0	+0.9	+0.0	+0.0	+0.0	45.3	54.0	-8.7	Vert	
			+0.0	+0.0	+0.0	-33.6			High Z			
			+32.6	+4.2	+0.4	+0.5						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
19	4810.952M	40.8	+0.0	+0.9	+0.0	+0.0	+0.0	45.2	54.0	-8.8	Vert	
	Ave		+0.0	+0.0	+0.0	-33.6			Low X		223	
			+32.4	+4.1	+0.6	+0.0						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
^	4810.952M	48.6	+0.0	+0.9	+0.0	+0.0	+0.0	53.0	54.0	-1.0	Vert	
			+0.0	+0.0	+0.0	-33.6			Low X		223	
			+32.4	+4.1	+0.6	+0.0						
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
21	12022.420 M	48.8	+0.0	+1.4	+0.0	+0.0	+0.0	44.0	54.0	-10.0	Horiz	
			+0.0	+0.0	+0.0	+0.0						
	Ave		+0.0	+6.8	+0.0	+0.0			Low Y			
			-13.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
22	12397.400 M	48.2	+0.0	+1.5	+0.0	+0.0	+0.0	43.7	54.0	-10.3	Vert	
			+0.0	+0.0	+0.0	+0.0						
			+0.0	+7.0	+0.0	+0.0			High Z			
			-13.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							
23	12397.480 M	48.0	+0.0	+1.5	+0.0	+0.0	+0.0	43.5	54.0	-10.5	Horiz	
			+0.0	+0.0	+0.0	+0.0						
	Ave		+0.0	+7.0	+0.0	+0.0			High Z			
			-13.0	+0.0	+0.0	+0.0						
			+0.0	+0.0	+0.0							

24	12202.427 M Ave	46.8	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	42.3	54.0 Mid Z	-11.7	Horiz
25	1378.000M	50.1	+0.0 +0.0 +25.1 +0.0 +0.0	+0.5 +0.0 +2.0 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +0.0	+0.0 -35.6 +0.0 +0.0	+0.0	42.3	54.0	-11.7	Horiz
26	12397.480 M Ave	46.7	+0.0 +0.0 +0.0 -13.0 +0.0	+1.5 +0.0 +7.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	42.2	54.0 High Y	-11.8	Horiz
^	12397.480 M	54.9	+0.0 +0.0 +0.0 -13.0 +0.0	+1.5 +0.0 +7.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	50.4	54.0 High Z	-3.6	Horiz
^	12397.480 M	53.8	+0.0 +0.0 +0.0 -13.0 +0.0	+1.5 +0.0 +7.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	49.3	54.0 High Y	-4.7	Horiz
29	1375.000M	49.9	+0.0 +0.0 +25.1 +0.0 +0.0	+0.5 +0.0 +2.0 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +0.0	+0.0 -35.7 +0.0 +0.0	+0.0	42.0	54.0	-12.0	Horiz
30	4960.852M Ave	37.3	+0.0 +0.0 +32.6 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.4 +0.0 +0.0	+0.0 -33.6 +0.0 +0.0	+0.0	41.8	54.0 High X	-12.2	Vert 181
^	4960.852M	47.5	+0.0 +0.0 +32.6 +0.0 +0.0	+0.9 +0.0 +4.2 +0.0 +0.0	+0.0 +0.0 +0.4 +0.0 +0.0	+0.0 -33.6 +0.0 +0.0	+0.0	52.0	54.0 High X	-2.0	Vert 181
32	1525.000M	48.2	+0.0 +0.0 +25.1 +0.0 +0.0	+0.5 +0.0 +2.2 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +0.0	+0.0 -35.3 +0.0 +0.0	+0.0	40.9	54.0	-13.1	Horiz
33	12022.351 M	45.5	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	40.7	54.0 Low Z	-13.3	Vert

34	240.000M	40.0	+0.0 +0.9 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+0.8 +11.8 +0.0 +0.0 +0.0	-27.1 +0.0 +0.0 +0.0	+0.0	32.4	46.0	-13.6	Vert 100
35	12202.440 M Ave	44.7	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	40.2	54.0 Mid Y	-13.8	Horiz
^	12202.480 M	43.9	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.4	54.0 Mid Y	-14.6	Horiz
37	12202.427 M	44.7	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	40.2	54.0 Mid Z	-13.8	Vert
38	1223.000M	48.5	+0.0 +0.0 +25.1 +0.0 +0.0	+0.4 +0.0 +1.8 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +0.0	+0.0 -36.1 +0.0 +0.0	+0.0	39.8	54.0	-14.2	Vert
39	12397.580 M	43.7	+0.0 +0.0 +0.0 -13.0 +0.0	+1.5 +0.0 +7.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.2	54.0 High Y	-14.8	Vert
40	12202.423 M	43.6	+0.0 +0.0 +0.0 -12.8 +0.0	+1.4 +0.0 +6.9 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.1	54.0 Mid X	-14.9	Vert
41	12022.420 M	43.9	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.1	54.0 Low Y	-14.9	Vert
42	12022.430 M	43.9	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.1	54.0 Low X	-14.9	Vert
43	12022.400 M Ave	43.9	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	39.1	54.0 Low Z	-14.9	Horiz

^	12022.460 M	55.8	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	51.0	54.0 Low Y	-3.0	Horiz
^	12022.400 M	51.9	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	47.1	54.0 Low Z	-6.9	Horiz
46	1225.000M	47.6	+0.0 +0.0 +25.1 +0.0 +0.0	+0.4 +0.0 +1.8 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +0.0	+0.0 -36.1 +0.0 +0.0	+0.0	38.9	54.0	-15.1	Horiz
47	38.250M QP	33.5	+0.0 +0.3 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.3 +12.9 +0.0 +0.0 +0.0	-28.0 +0.0 +0.0 +0.0	+0.0	24.9	40.0	-15.1	Vert 99
^	38.250M	44.0	+0.0 +0.3 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.3 +12.9 +0.0 +0.0 +0.0	-28.0 +0.0 +0.0 +0.0	+0.0	35.4	40.0	-4.6	Vert 99
49	12397.100 M	42.6	+0.0 +0.0 +0.0 -13.0 +0.0	+1.5 +0.0 +7.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	38.1	54.0 High X	-15.9	Vert
50	1073.000M	47.9	+0.0 +0.0 +24.6 +0.0 +0.0	+0.4 +0.0 +1.8 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +0.0	+0.0 -36.8 +0.0 +0.0	+0.0	38.0	54.0	-16.0	Vert
51	19517.180 M	37.8	+0.0 +0.0 +0.0 +0.0 +0.8	+0.0 +0.0 +0.0 -12.9 +1.0	+0.0 +0.0 +0.0 +9.0 +0.0	+0.0 +0.0 +0.0 +2.1	+0.0	37.8	54.0	-16.2	Vert
52	7289.690M Ave	27.4	+0.0 +0.0 +36.7 +0.0 +0.0	+1.2 +0.0 +5.4 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -34.6 +0.0 +0.0	+0.0	36.6	54.0 Mid X	-17.4	Vert 201
^	7289.690M	42.6	+0.0 +0.0 +36.7 +0.0 +0.0	+1.2 +0.0 +5.4 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -34.6 +0.0 +0.0	+0.0	51.8	54.0 Mid X	-2.2	Vert 201

54	7451.190M Ave	23.9	+0.0 +0.0 +37.2 +0.0 +0.0	+1.6 +0.0 +5.5 +0.0 +0.0	+0.0 +0.0 +0.3 +0.0 +0.0	+0.0 -34.7 +0.0 +0.0	+0.0	33.8	54.0 High X	-20.2	Vert 201
^	7451.190M	38.8	+0.0 +0.0 +37.2 +0.0 +0.0	+1.6 +0.0 +5.5 +0.0 +0.0	+0.0 +0.0 +0.3 +0.0 +0.0	+0.0 -34.7 +0.0 +0.0	+0.0	48.7	54.0 High X	-5.3	Vert 201
56	459.388M QP	52.3	+0.0 +1.4 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.1 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0	+0.0	50.9	73.7	-22.8	Vert 99
^	459.388M	54.0	+0.0 +1.4 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.1 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0	+0.0	52.6	73.7	-21.1	Vert 100
58	153.126M QP	58.8	+0.0 +0.7 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+0.6 +9.4 +0.0 +0.0 +0.0	-27.5 +0.0 +0.0 +0.0	+0.0	48.0	73.7	-25.7	Vert 99
^	153.080M	57.9	+0.0 +0.7 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+0.6 +9.3 +0.0 +0.0 +0.0	-27.5 +0.0 +0.0 +0.0	+0.0	47.0	73.7	-26.7	Vert 100
60	9926.390M	35.2	+0.0 +0.0 +37.5 +0.0 +0.0	+1.3 +0.0 +6.3 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.9 +0.0 +0.0	+0.0	46.9	73.7 High X	-26.8	Vert 201
61	14882.780 M	51.1	+0.0 +0.0 +0.0 -14.4 +0.0	+1.7 +0.0 +8.5 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	46.9	73.7 High Z	-26.8	Horiz
62	14876.920 M	47.4	+0.0 +0.0 +0.0 -14.4 +0.0	+1.7 +0.0 +8.5 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	43.2	73.7 High Y	-30.5	Horiz
63	19520.000 M Ave	23.4	+0.0 +0.0 +0.0 +0.0 +0.8	+0.0 +0.0 +0.0 -12.9 +1.0	+0.0 +0.0 +0.0 +9.0 +0.0	+0.0 +0.0 +0.0 +2.1	+0.0	23.4	54.0	-30.6	Vert

64	14426.660 M	47.2	+0.0 +0.0 +0.0 -14.7 +0.0	+1.4 +0.0 +8.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	41.9	73.7 Low Z	-31.8	Horiz
65	14636.880 M	46.6	+0.0 +0.0 +0.0 -14.7 +0.0	+1.5 +0.0 +8.2 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	41.6	73.7 Mid Y	-32.1	Horiz
66	306.400M	46.8	+0.0 +1.1 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+0.9 +13.4 +0.0 +0.0 +0.0	-27.1 +0.0 +0.0 +0.0	+0.0	41.1	73.7	-32.6	Horiz 141
67	14426.820 M	46.3	+0.0 +0.0 +0.0 -14.7 +0.0	+1.4 +0.0 +8.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	41.0	73.7 Low Y	-32.7	Horiz
68	14642.950 M	45.0	+0.0 +0.0 +0.0 -14.7 +0.0	+1.5 +0.0 +8.2 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	40.0	73.7 Mid Z	-33.7	Horiz
69	88.480M	51.2	+0.0 +0.5 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.4 +7.0 +0.0 +0.0 +0.0	-27.8 +0.0 +0.0 +0.0 +0.0	+0.0	37.2	73.7	-36.5	Vert 100
70	624.800M	35.0	+0.0 +1.7 +0.0 +0.0 +0.0	+0.3 +5.8 +0.0 +0.0 +0.0	+1.2 +21.4 +0.0 +0.0 +0.0	-28.2 +0.0 +0.0 +0.0 +0.0	+0.0	37.2	73.7	-36.5	Vert 100
71	21644.540 M	38.6	+0.0 +0.0 +0.0 +0.0 +1.3	+0.0 +0.0 +0.0 -15.6 +0.8	+0.0 +0.0 +0.0 +9.2 +0.0	+0.0 +0.0 +0.0 +2.0	+0.0	36.3	73.7	-37.4	Horiz
72	7215.505M Ave	27.4	+0.0 +0.0 +36.5 +0.0 +0.0	+1.1 +0.0 +5.3 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -34.5 +0.0 +0.0	+0.0	36.3	73.7 Low X	-37.4	Vert 223
^	7215.505M	42.3	+0.0 +0.0 +36.5 +0.0 +0.0	+1.1 +0.0 +5.3 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -34.5 +0.0 +0.0	+0.0	51.2	73.7 Low X	-22.5	Vert 201

74	41.900M	45.3	+0.0	+0.1	+0.3	-28.0	+0.0	35.0	73.7	-38.7	Vert
	QP		+0.3	+5.8	+11.2	+0.0					99
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	41.900M	52.6	+0.0	+0.1	+0.0	+0.0	+0.0	52.7	73.7	-21.0	Vert
			+0.0	+0.0	+0.0	+0.0					100
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
76	14636.898	39.6	+0.0	+1.5	+0.0	+0.0	+0.0	34.6	73.7	-39.1	Vert
	M		+0.0	+0.0	+0.0	+0.0					
			+0.0	+8.2	+0.0	+0.0			Mid X		
			-14.7	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
77	28.057M	37.3	+0.0	+0.1	+0.0	+0.0	-40.0	2.7	73.7	-71.0	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+5.0						
78	2.008M	32.3	+0.0	+0.0	+0.0	+0.0	-40.0	1.9	73.7	-71.8	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.1	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+9.5						
79	28.415M	35.4	+0.0	+0.1	+0.0	+0.0	-40.0	0.7	73.7	-73.0	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+4.9						
80	2.305M	30.8	+0.0	+0.0	+0.0	+0.0	-40.0	0.4	73.7	-73.3	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.1	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+9.5						
81	28.326M	34.5	+0.0	+0.1	+0.0	+0.0	-40.0	-0.2	73.7	-73.9	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+4.9						
82	28.620M	33.6	+0.0	+0.1	+0.0	+0.0	-40.0	-1.2	73.7	-74.9	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+4.8						
83	2.062M	28.3	+0.0	+0.0	+0.0	+0.0	-40.0	-2.1	73.7	-75.8	Perp
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.1	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+9.5						

84	27.880M	32.1	+0.0	+0.1	+0.0	+0.0	-40.0	-2.4	73.7	-76.1	Perp
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+5.1						
85	26.780M	31.4	+0.0	+0.1	+0.0	+0.0	-40.0	-2.6	73.7	-76.3	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+5.6						
86	18.728M	24.3	+0.0	+0.1	+0.0	+0.0	-40.0	-7.6	73.7	-81.3	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.8						
87	18.788M	22.1	+0.0	+0.1	+0.0	+0.0	-40.0	-9.9	73.7	-83.6	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.7						
88	18.820M	21.2	+0.0	+0.1	+0.0	+0.0	-40.0	-10.8	73.7	-84.5	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.7						
89	18.420M	18.4	+0.0	+0.1	+0.0	+0.0	-40.0	-13.4	73.7	-87.1	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.9						

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103895**	Date:	6/16/2020
Test Type:	**Maximized Emissions**	Time:	09:56:49
Tested By:	S. Pittsford/M. Atkinson	Sequence#:	5
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:

Frequency range tested: 9kHz-25GHz

Test Mode: Continuously Modulated

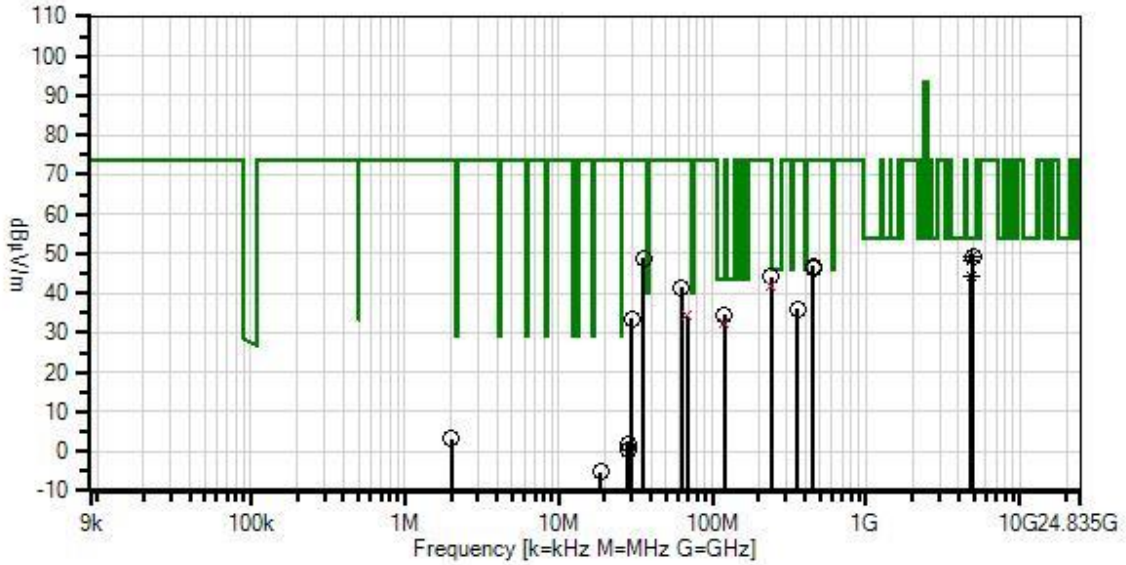
EUT is on a 0.8m test bench below 1GHz and a 1.5m high Styrofoam test bench above 1GHz.

EUT is investigated in Low, Middle, and High Channels, X, Y, & Z Axis with only the worst case reported.
Vertical and Horizontal polarities investigated

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.
PoE box and support
Laptop are located remotely.

No emissions observed within 20dB of limit from 18-25GHz, values provided are noise floor.
Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013) KDB 558074 (April 2, 2019)
Temperature (ºC) 23
Relative Humidity (%): 33

Ossia, Inc. WO#: 103895 Sequence#: 5 Date: 6/16/2020
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Various



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
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	Heliax	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
T8	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T9	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T10	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T11	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T12	AN03116	High Pass Filter	11SH10-00313	1/22/2019	1/22/2021
	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T13	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

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

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	240.500M	51.9	+0.0 +0.9 +0.0 +0.0	+0.2 +5.8 +0.0	+0.8 +11.8 +0.0	-27.1 +0.0 +0.0	+0.0	44.3	46.0	-1.7	Horiz
2	240.021M QP	49.6	+0.0 +0.9 +0.0 +0.0	+0.2 +5.8 +0.0	+0.8 +11.8 +0.0	-27.1 +0.0 +0.0	+0.0	42.0	46.0	-4.0	Horiz
3	4960.970M	44.4	+0.0 +0.0 +32.6 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.4	+0.0 -33.6 +0.5	+0.0	49.4	54.0	-4.6	Horiz

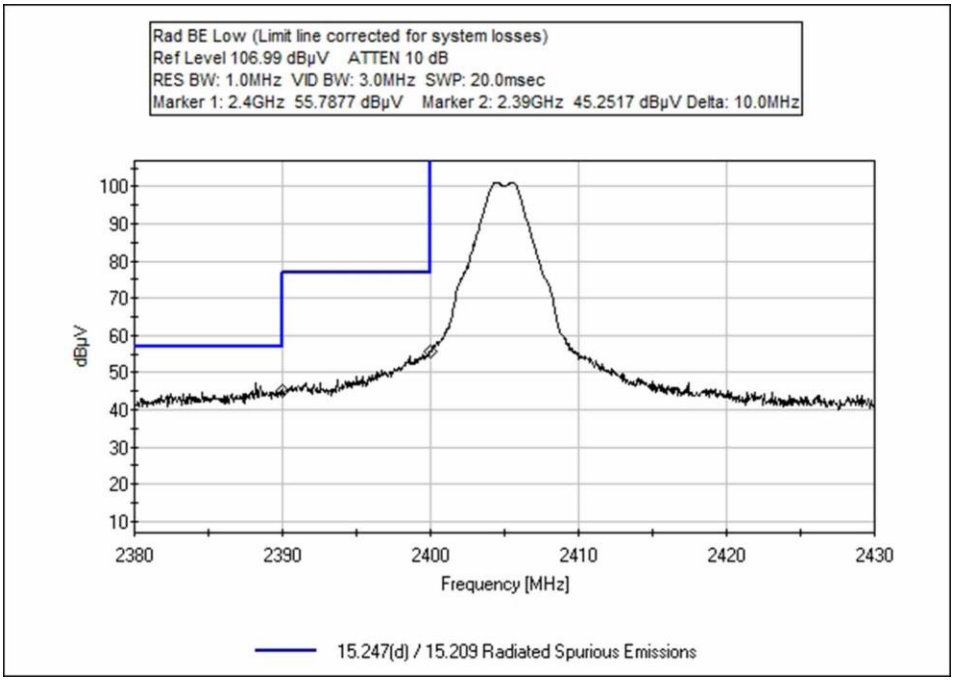
4	4878.947M Ave	44.1	+0.0 +0.0 +32.5 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.5	+0.0 -33.6 +0.6	+0.0	49.2	54.0	-4.8	Vert
^	4878.947M	50.3	+0.0 +0.0 +32.5 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.5	+0.0 -33.6 +0.6	+0.0	55.4	54.0	+1.4	Vert
^	4878.962M	46.2	+0.0 +0.0 +32.5 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.5	+0.0 -33.6 +0.6	+0.0	51.3	54.0	-2.7	Vert
7	4878.920M Ave	43.3	+0.0 +0.0 +32.5 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.5	+0.0 -33.6 +0.6	+0.0	48.4	54.0	-5.6	Horiz
^	4878.950M	49.5	+0.0 +0.0 +32.5 +0.0	+0.9 +0.0 +4.2	+0.0 +0.0 +0.5	+0.0 -33.6 +0.6	+0.0	54.6	54.0	+0.6	Horiz
9	120.200M	47.1	+0.0 +0.6 +0.0 +0.0	+0.1 +5.8 +0.0	+0.5 +8.0 +0.0	-27.6 +0.0 +0.0	+0.0	34.5	43.5	-9.0	Vert
10	4810.954M Ave	39.5	+0.0 +0.0 +32.4 +0.0	+0.9 +0.0 +4.1	+0.0 +0.0 +0.6	+0.0 -33.6 +0.6	+0.0	44.5	54.0	-9.5	Horiz
^	4810.970M	45.7	+0.0 +0.0 +32.4 +0.0	+0.9 +0.0 +4.1	+0.0 +0.0 +0.6	+0.0 -33.6 +0.6	+0.0	50.7	54.0	-3.3	Horiz
^	4810.980M	44.4	+0.0 +0.0 +32.4 +0.0	+0.9 +0.0 +4.1	+0.0 +0.0 +0.6	+0.0 -33.6 +0.6	+0.0	49.4	54.0	-4.6	Horiz
13	120.023M QP	45.3	+0.0 +0.6 +0.0 +0.0	+0.1 +5.8 +0.0	+0.5 +8.0 +0.0	-27.6 +0.0 +0.0	+0.0	32.7	43.5	-10.8	Vert
14	35.800M	56.3	+0.0 +0.3 +0.0 +0.0	+0.1 +5.8 +0.0	+0.3 +13.9 +0.0	-27.9 +0.0 +0.0	+0.0	48.8	73.7	-24.9	Vert
15	451.000M	48.5	+0.0 +1.4 +0.0 +0.0	+0.2 +5.8 +0.0	+1.0 +18.0 +0.0	-27.9 +0.0 +0.0	+0.0	47.0	73.7	-26.7	Horiz
16	451.000M	47.9	+0.0 +1.4 +0.0 +0.0	+0.2 +5.8 +0.0	+1.0 +18.0 +0.0	-27.9 +0.0 +0.0	+0.0	46.4	73.7	-27.3	Vert

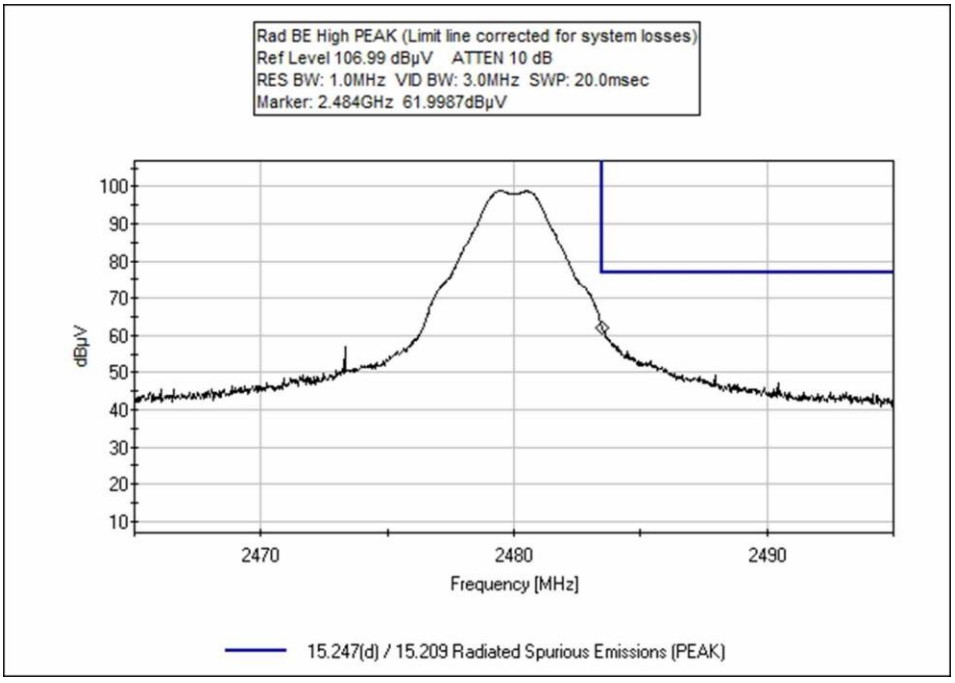
17	63.000M	54.9	+0.0 +0.5 +0.0 +0.0	+0.1 +5.8 +0.0	+0.4 +7.6 +0.0	-27.8 +0.0 +0.0	+0.0	41.5	73.7	-32.2	Vert
18	359.800M	39.3	+0.0 +1.2 +0.0 +0.0	+0.2 +5.8 +0.0	+0.9 +15.9 +0.0	-27.3 +0.0 +0.0	+0.0	36.0	73.7	-37.7	Vert
19	68.800M QP	47.8	+0.0 +0.5 +0.0 +0.0	+0.1 +5.8 +0.0	+0.4 +7.4 +0.0	-27.8 +0.0 +0.0	+0.0	34.2	73.7	-39.5	Vert
^	68.800M	54.9	+0.0 +0.5 +0.0 +0.0	+0.1 +5.8 +0.0	+0.4 +7.4 +0.0	-27.8 +0.0 +0.0	+0.0	41.3	73.7	-32.4	Vert
21	30.000M	29.1	+0.0 +0.0 +0.0 +4.2	+0.1 +0.0 +0.3	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	33.7	73.7	-40.0	Perp
22	2.014M	33.5	+0.0 +0.0 +0.0 +9.5	+0.0 +0.0 +0.1	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	3.1	73.7	-70.6	Para
23	28.266M	36.6	+0.0 +0.0 +0.0 +5.0	+0.1 +0.0 +0.3	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	2.0	73.7	-71.7	Groun
24	28.445M	35.0	+0.0 +0.0 +0.0 +4.9	+0.1 +0.0 +0.3	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	0.3	73.7	-73.4	Groun
25	18.728M	26.8	+0.0 +0.0 +0.0 +7.8	+0.1 +0.0 +0.2	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	-5.1	73.7	-78.8	Groun

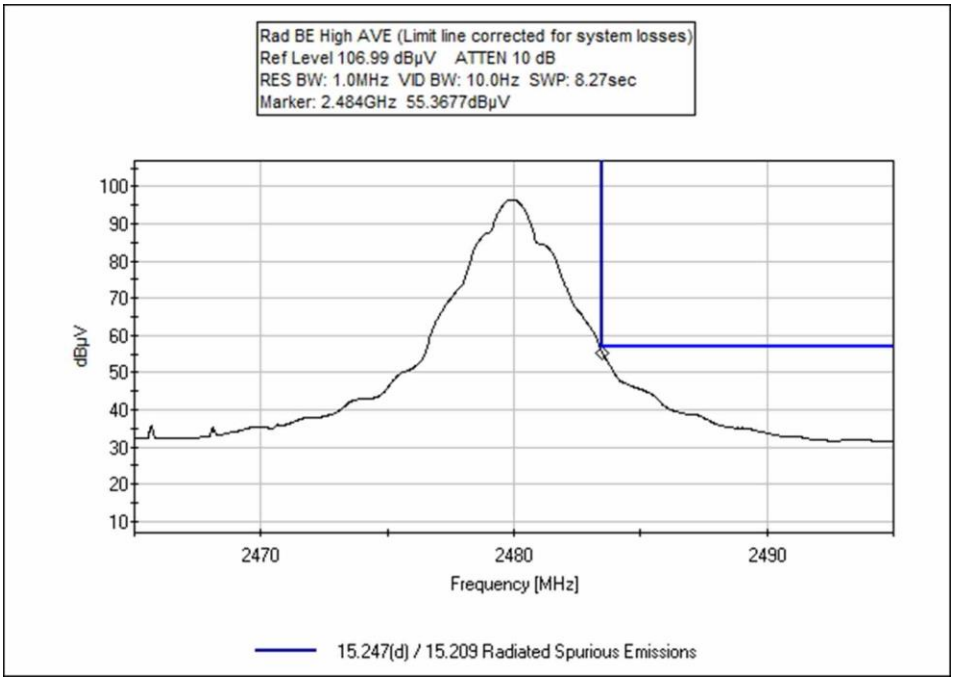
Band Edge

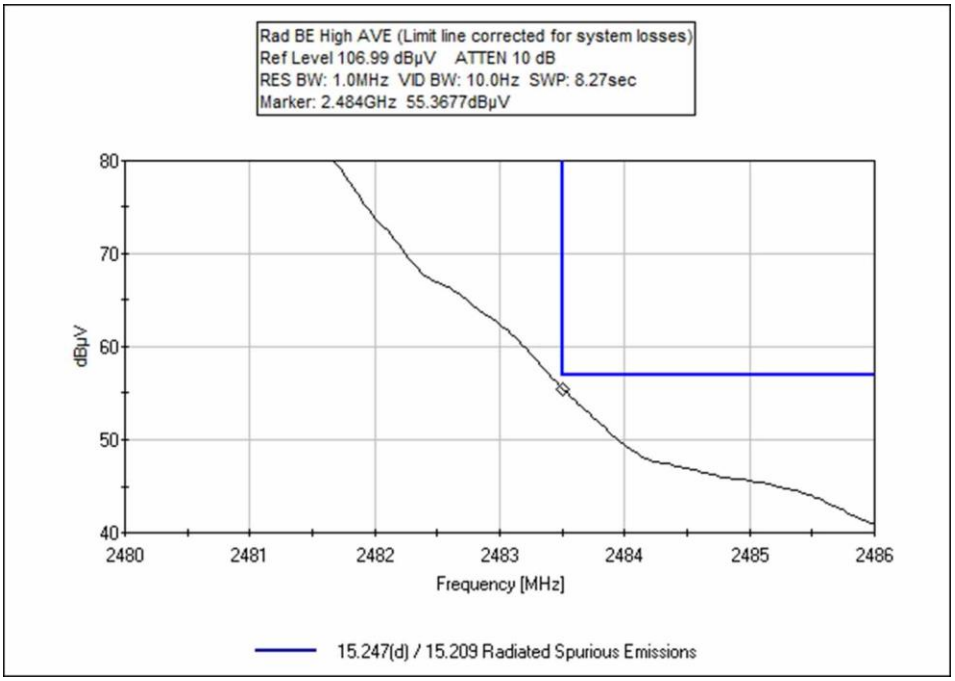
Band Edge Summary					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
2390.0	OQPSK	Dipole	42.2	<54	Pass
2400.0	OQPSK	Dipole	52.7	<73.7	Pass
2483.5	OQPSK	Dipole	59.0	<74 (PEAK)	Pass
2483.5	OQPSK	Dipole	52.4	<54 (AVE)	Pass

Band Edge Plots






Rad BE High AVE (Limit line corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 8.27sec
Marker: 2.484GHz 55.3677dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2470
2480
2490
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE High AVE (Limit line corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 8.27sec
Marker: 2.484GHz 55.3677dBµV
dBµV
80
70
60
50
40
2480
2481
2482
2483
2484
2485
2486
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

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:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102119**	Date:	6/13/2020
Test Type:	**Maximized Emissions**	Time:	16:27:01
Tested By:	Steven Pittsford	Sequence#:	5
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:

Frequency range tested: Band Edge
Test Mode: Continuously Modulated

EUT is on a 0.8m test bench below 1GHz and a 1.5m high Styrofoam test bench above 1GHz.

EUT is investigated in Low, Middle, and High Channels, X, Y, & Z Axis with only the worst case reported.
Vertical and Horizontal polarities investigated

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. (Configuration 2)

Also investigated 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.
PoE box and support Laptop are located remotely. (Configuration 1)

Data collected is representative of worst case.

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013) KDB 558074 (April 2, 2019)
Temperature (ºC) 23
Relative Humidity (%): 33

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T2	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T3	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T4	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T5	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	55.4	+0.6 +0.3	-34.2	+27.6	+2.7	+0.0	52.4	54.0	-1.6	Horiz 222
2	2390.000M	45.3	+0.6 +0.3	-34.3	+27.7	+2.6	+0.0	42.2	54.0	-11.8	Horiz 222
3	2483.500M	62.0	+0.6 +0.3	-34.2	+27.6	+2.7	+0.0	59.0	74.0	-15.0	Horiz 222
4	2400.000M	55.8	+0.6 +0.3	-34.3	+27.7	+2.6	+0.0	52.7	73.7	-21.0	Horiz 222

Test Setup Photo(s)

Configuration 1 – Below 1GHz

Configuration 1 – Above 1GHz

Configuration 2 – Below 1GHz

Configuration 2 – Above 1GHz


X Axis
06.13.2020 15:00


Y Axis
06.13.2020 15:00


Z Axis
08.13.2020 15:07

15.207 AC Conducted Emissions

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:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	09:26:08
Tested By:	Michael Atkinson	Sequence#:	60
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:

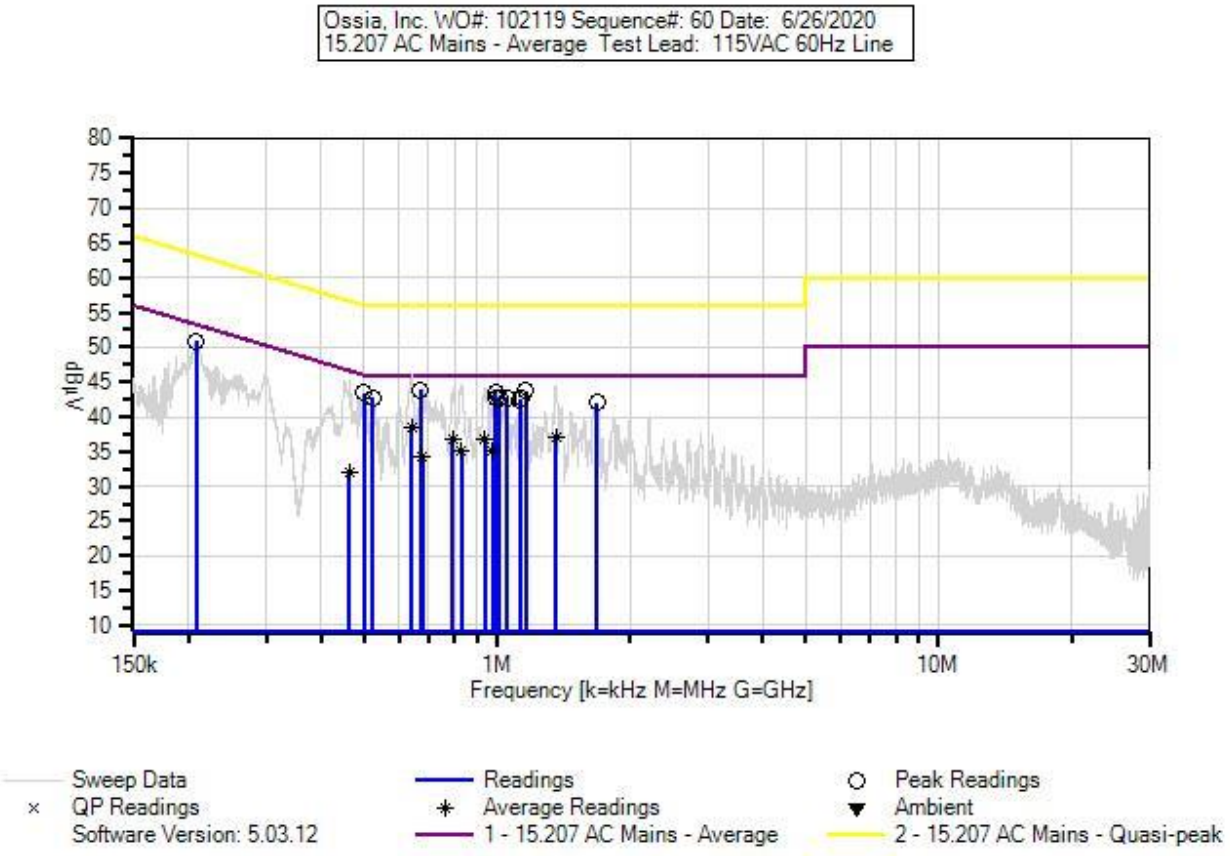
Temperature: 23°C
Humidity: 34%
Pressure: 101.6kPa

Method: ANSI C63.10 (2013)

Frequency: 0.15-30MHz

EUT connected to support Laptop via USB cable.
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.

Zigbee is continuously transmitting on mid-channel as representative of worst case.



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	669.575k	34.9	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.9	46.0	-2.1	Line
2	1.159M	34.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.7	46.0	-2.3	Line
3	208.372k	42.7	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	50.9	53.3	-2.4	Line
4	990.470k	34.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.6	46.0	-2.4	Line
5	499.938k	34.5	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	43.4	46.0	-2.6	Line
6	1.055M	33.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.8	46.0	-3.2	Line
7	995.092k	33.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.8	46.0	-3.2	Line
8	523.826k	33.8	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.7	46.0	-3.3	Line
9	1.012M	33.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.7	46.0	-3.3	Line
10	1.135M	33.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.6	46.0	-3.4	Line
11	1.125M	33.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.5	46.0	-3.5	Line
12	1.683M	32.9	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	42.0	46.0	-4.0	Line
13	640.546k Ave	29.4	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	38.4	46.0	-7.6	Line
^	640.546k	37.1	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	46.1	46.0	+0.1	Line
15	1.356M Ave	28.1	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	37.2	46.0	-8.8	Line
^	1.356M	35.5	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	44.6	46.0	-1.4	Line
17	937.565k Ave	27.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	36.8	46.0	-9.2	Line
^	937.565k	35.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.3	46.0	-1.7	Line
19	794.260k Ave	27.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	36.8	46.0	-9.2	Line
^	794.259k	35.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.1	46.0	-1.9	Line
21	830.728k Ave	26.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	35.2	46.0	-10.8	Line
^	830.728k	35.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.8	46.0	-1.2	Line

23 Ave	978.143k	26.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	35.1	46.0	-10.9	Line
^	978.142k	35.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.2	46.0	-1.8	Line
25 Ave	678.042k	25.3	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	34.3	46.0	-11.7	Line
^	678.041k	35.3	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.3	46.0	-1.7	Line
27 Ave	462.443k	23.2	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	32.1	46.6	-14.5	Line
^	462.443k	36.3	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	45.2	46.6	-1.4	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	09:15:32
Tested By:	Michael Atkinson	Sequence#:	59
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:

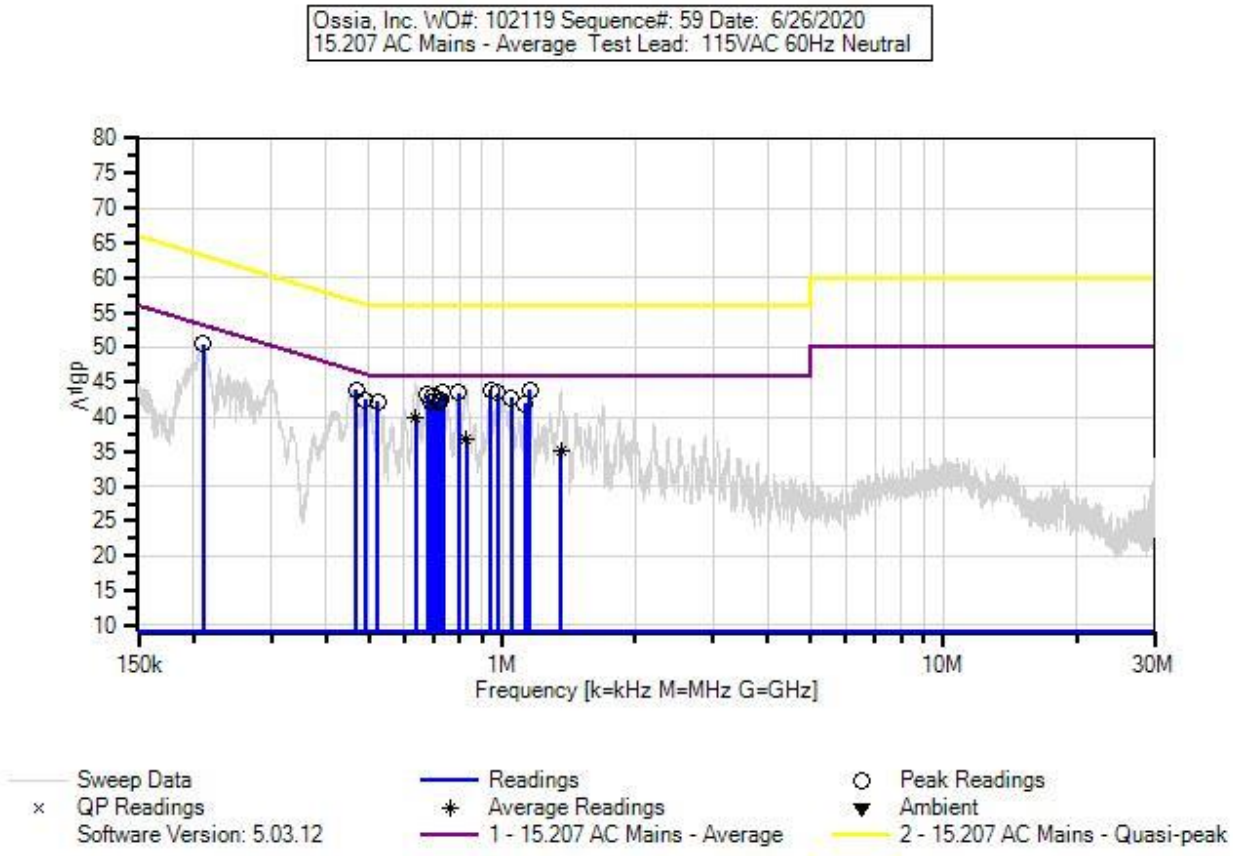
Temperature: 23°C
Humidity: 34%
Pressure: 101.6kPa

Method: ANSI C63.10 (2013)

Frequency: 0.15-30MHz

EUT connected to support Laptop via USB cable.
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.

Zigbee is continuously transmitting on mid-channel as representative of worst case.



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	940.647k	34.9	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.9	46.0	-2.1	Neutr
2	1.157M	34.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Neutr
3	733.982k	34.5	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	43.4	46.0	-2.6	Neutr
4	796.827k	34.4	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.4	46.0	-2.6	Neutr
5	976.601k	34.4	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.4	46.0	-2.6	Neutr
6	466.374k	35.0	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	43.9	46.6	-2.7	Neutr
7	210.154k	42.1	+0.3 -1.1	+0.0	+0.0	+9.1	+0.0	50.4	53.2	-2.8	Neutr
8	678.344k	34.1	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.1	46.0	-2.9	Neutr
9	696.789k	34.0	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.0	46.0	-3.0	Neutr
10	1.047M	33.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.8	46.0	-3.2	Neutr
11	489.355k	33.6	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.5	46.2	-3.7	Neutr
12	727.632k	33.4	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.3	46.0	-3.7	Neutr
13	522.919k	33.3	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Neutr
14	691.648k	33.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Neutr
15	716.141k	33.1	+0.3 -0.3	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Neutr
16	686.206k	33.0	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.0	46.0	-4.0	Neutr
17	1.127M	32.9	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.9	46.0	-4.1	Neutr
18	638.430k Ave	30.9	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	39.9	46.0	-6.1	Neutr
^	638.429k	36.0	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	45.0	46.0	-1.0	Neutr
20	828.160k Ave	27.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	36.7	46.0	-9.3	Neutr
^	828.159k	35.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.2	46.0	-1.8	Neutr
22	1.359M Ave	26.1	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	35.2	46.0	-10.8	Neutr
^	1.359M	34.9	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	44.0	46.0	-2.0	Neutr

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/14/2020
Test Type:	**Conducted Emissions**	Time:	15:40:00
Tested By:	Michael Atkinson	Sequence#:	37
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:

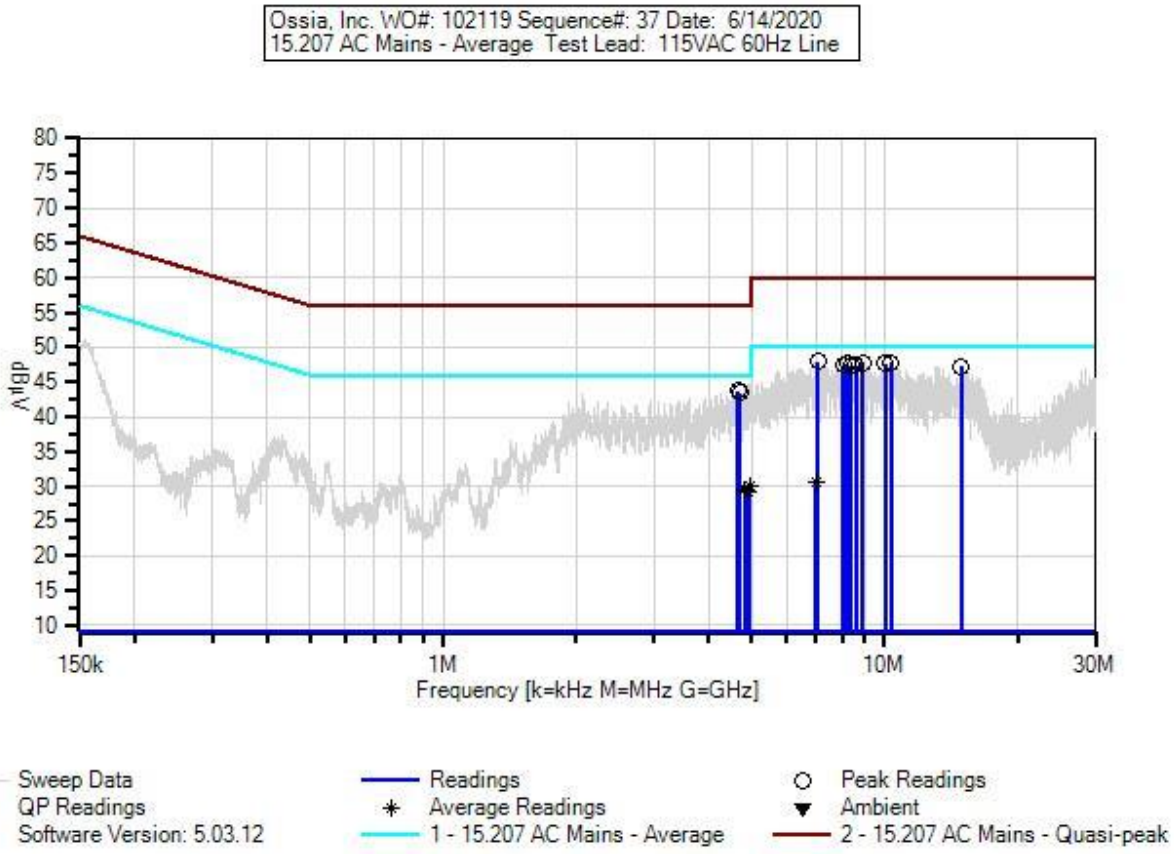
Temperature: 19-21°C
Humidity: 29-32%
Pressure: 102-103kPa

Method: ANSI C63.10 (2013)

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.

Zigbee is continuously transmitting on mid-channel as representative of worst case.



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T5	AN01492	50uH LISN-Line (L1)	3816/2NM	10/14/2019	10/14/2021
	AN01492	50uH LISN-Neutral (L2)	3816/2NM	10/14/2019	10/14/2021

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	7.049M	38.0	+0.1 +0.6	+0.0	+0.1	+9.1	+0.0	47.9	50.0	-2.1	Line
2	10.337M	37.9	+0.1 +0.5	+0.0	+0.2	+9.1	+0.0	47.8	50.0	-2.2	Line
3	8.939M	37.8	+0.1 +0.6	+0.0	+0.2	+9.1	+0.0	47.8	50.0	-2.2	Line
4	4.651M	33.9	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	43.7	46.0	-2.3	Line
5	10.034M	37.8	+0.1 +0.5	+0.0	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Line
6	8.242M	37.7	+0.1 +0.6	+0.0	+0.1	+9.1	+0.0	47.6	50.0	-2.4	Line
7	4.691M	33.6	+0.1 +0.6	+0.0	+0.1	+9.1	+0.0	43.5	46.0	-2.5	Line
8	8.404M	37.5	+0.1 +0.6	+0.0	+0.1	+9.1	+0.0	47.4	50.0	-2.6	Line
9	8.610M	37.4	+0.1 +0.6	+0.0	+0.2	+9.1	+0.0	47.4	50.0	-2.6	Line
10	8.075M	37.6	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	47.4	50.0	-2.6	Line
11	14.923M	37.2	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	47.3	50.0	-2.7	Line
12	4.935M Ave	20.2	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	30.0	46.0	-16.0	Line
^	4.935M	34.9	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	44.7	46.0	-1.3	Line
14	4.832M Ave	19.6	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	29.4	46.0	-16.6	Line
^	4.832M	34.3	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	44.1	46.0	-1.9	Line
16	4.902M Ave	19.5	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	29.3	46.0	-16.7	Line
^	4.902M	34.8	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	44.6	46.0	-1.4	Line
18	6.976M Ave	20.8	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	30.6	50.0	-19.4	Line
^	6.976M	38.2	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	48.0	50.0	-2.0	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/14/2020
Test Type:	**Conducted Emissions**	Time:	15:34:45
Tested By:	Michael Atkinson	Sequence#:	36
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:

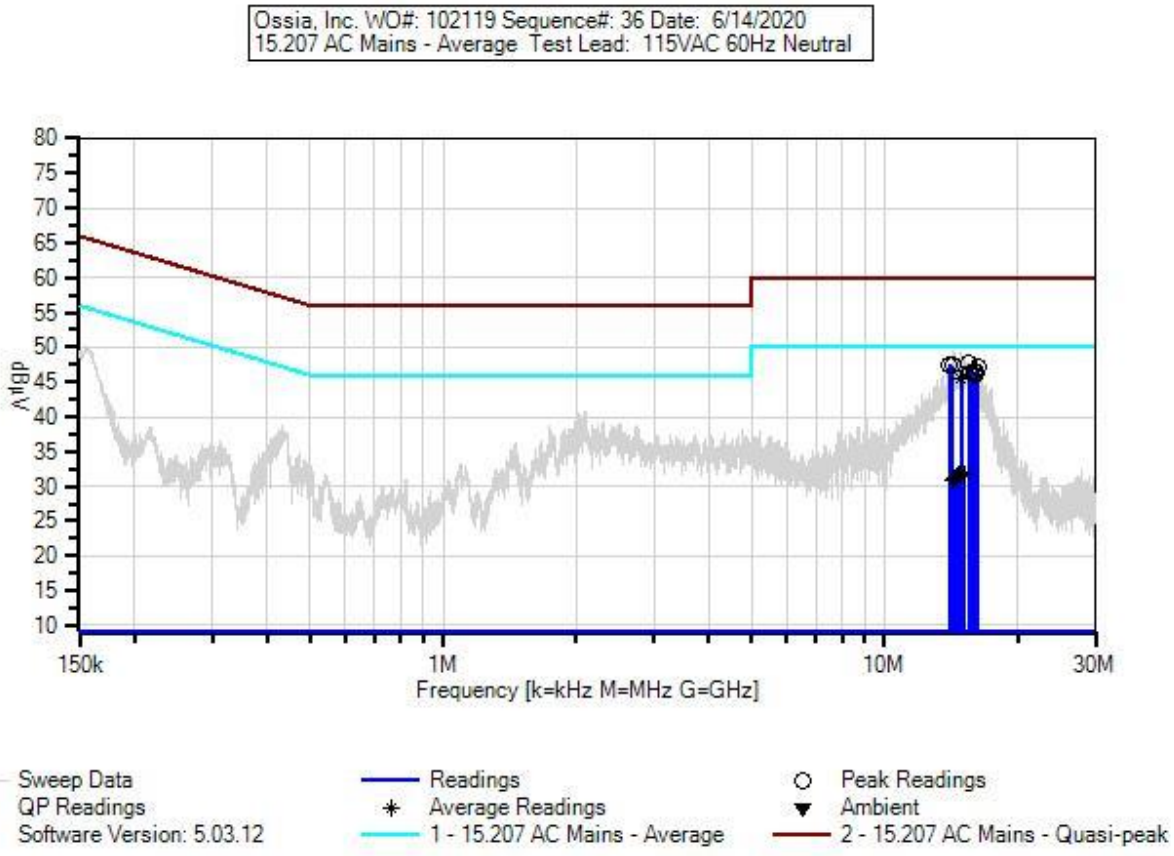
Temperature: 19-21°C
Humidity: 29-32%
Pressure: 102-103kPa

Method: ANSI C63.10 (2013)

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.

Zigbee is continuously transmitting on mid-channel as representative of worst case.



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
	AN01492	50uH LISN-Line (L1)	3816/2NM	10/14/2019	10/14/2021
T5	AN01492	50uH LISN-Neutral (L2)	3816/2NM	10/14/2019	10/14/2021

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	15.547M	37.5	+0.2 +0.6	+0.1	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Neutr
2	13.993M	37.5	+0.2 +0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Neutr
3	14.218M	37.3	+0.2 +0.6	+0.0	+0.2	+9.1	+0.0	47.4	50.0	-2.6	Neutr
4	16.281M	37.0	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	47.1	50.0	-2.9	Neutr
5	16.005M	36.4	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	46.5	50.0	-3.5	Neutr
6	16.092M	36.2	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	46.3	50.0	-3.7	Neutr
7	15.700M	36.1	+0.2 +0.6	+0.1	+0.2	+9.1	+0.0	46.3	50.0	-3.7	Neutr
8	16.034M	35.9	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	46.0	50.0	-4.0	Neutr
9 Ave	14.930M	35.5	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	45.6	50.0	-4.4	Neutr
^	14.930M	39.3	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	49.4	50.0	-0.6	Neutr
11 Ave	14.944M	21.8	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	31.9	50.0	-18.1	Neutr
^	14.944M	39.0	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	49.1	50.0	-0.9	Neutr
13 Ave	14.785M	21.6	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	31.7	50.0	-18.3	Neutr
^	14.785M	38.1	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	48.2	50.0	-1.8	Neutr
15 Ave	15.119M	21.4	+0.2 +0.6	+0.1	+0.2	+9.1	+0.0	31.6	50.0	-18.4	Neutr
^	15.119M	38.8	+0.2 +0.6	+0.1	+0.2	+9.1	+0.0	49.0	50.0	-1.0	Neutr
17 Ave	14.647M	21.4	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	31.5	50.0	-18.5	Neutr
^	14.647M	38.3	+0.2 +0.5	+0.1	+0.2	+9.1	+0.0	48.4	50.0	-1.6	Neutr
19 Ave	14.465M	21.3	+0.2 +0.5	+0.0	+0.2	+9.1	+0.0	31.3	50.0	-18.7	Neutr
^	14.465M	39.2	+0.2 +0.5	+0.0	+0.2	+9.1	+0.0	49.2	50.0	-0.8	Neutr
21 Ave	14.327M	20.8	+0.2 +0.6	+0.0	+0.2	+9.1	+0.0	30.9	50.0	-19.1	Neutr
^	14.327M	39.5	+0.2 +0.6	+0.0	+0.2	+9.1	+0.0	49.6	50.0	-0.4	Neutr

Test Setup Photo(s)

Configuration 1

Configuration 2

Appendix A: Co-Location Testing

Co-Location testing was performed and no mixing products were observed within 15dB of 15.209 limit.

The following configurations were tested as representative of worst case with channels available at time of test:

WPT 2.45GHz + Pi Wi-Fi 2.452GHz
WPT 2.45GHz + Pi Wi-Fi 2.452GHz + Zigbee 2.455GHz
Pi Wi-Fi 2.452GHz + Zigbee 2.45GHz
Pi Wi-Fi 5.180GHz + Zigbee 2.480GHz Zigbee
Pi Wi-Fi 5.180GHz + WPT 2.46GHz

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	09:50:06
Tested By:	Michael Atkinson	Sequence#:	61
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

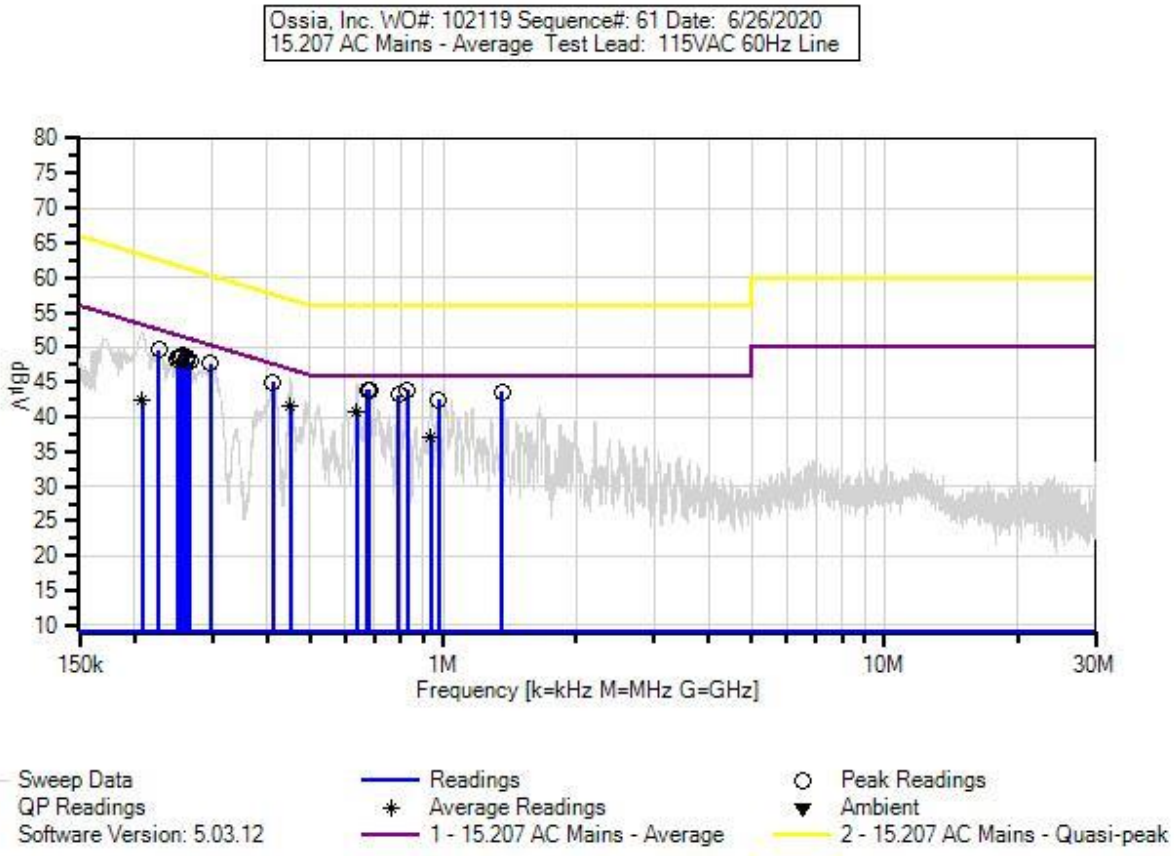
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 2.4GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 1 (2412MHz) at worst case data rate for spurious emissions.

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.
PoE box and support Laptop are located remotely. (Configuration 1)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	830.728k	34.9	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.9	46.0	-2.1	Line
2	675.320k	34.8	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Line
3	680.460k	34.8	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Line
4	1.358M	34.5	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.6	46.0	-2.4	Line
5	296.986k	39.2	+0.1 -0.7	+0.0	+0.0	+9.1	+0.0	47.7	50.3	-2.6	Line
6	411.983k	36.2	+0.2 -0.5	+0.0	+0.0	+9.1	+0.0	45.0	47.6	-2.6	Line
7	256.755k	40.4	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.8	51.5	-2.7	Line
8	792.718k	34.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.2	46.0	-2.8	Line
9	227.550k	41.2	+0.3 -1.0	+0.0	+0.0	+9.1	+0.0	49.6	52.5	-2.9	Line
10	261.561k	40.0	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	48.5	51.4	-2.9	Line
11	254.693k	40.1	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.5	51.6	-3.1	Line
12	252.806k	40.1	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.5	51.7	-3.2	Line
13	263.341k	39.6	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	48.1	51.3	-3.2	Line
14	266.545k	39.4	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	47.9	51.2	-3.3	Line
15	250.606k	39.9	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.3	51.7	-3.4	Line
16	978.142k	33.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.5	46.0	-3.5	Line
17 Ave	451.558k	32.6	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.5	46.8	-5.3	Line
^	451.557k	36.8	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	45.7	46.8	-1.1	Line
19 Ave	638.430k	31.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	40.6	46.0	-5.4	Line
^	638.429k	35.7	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.7	46.0	-1.3	Line
21 Ave	938.079k	28.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	37.2	46.0	-8.8	Line
^	938.078k	35.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.2	46.0	-1.8	Line
23 Ave	208.268k	34.1	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	42.3	53.3	-11.0	Line
^	208.267k	44.0	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	52.2	53.3	-1.1	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	09:53:53
Tested By:	Michael Atkinson	Sequence#:	62
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

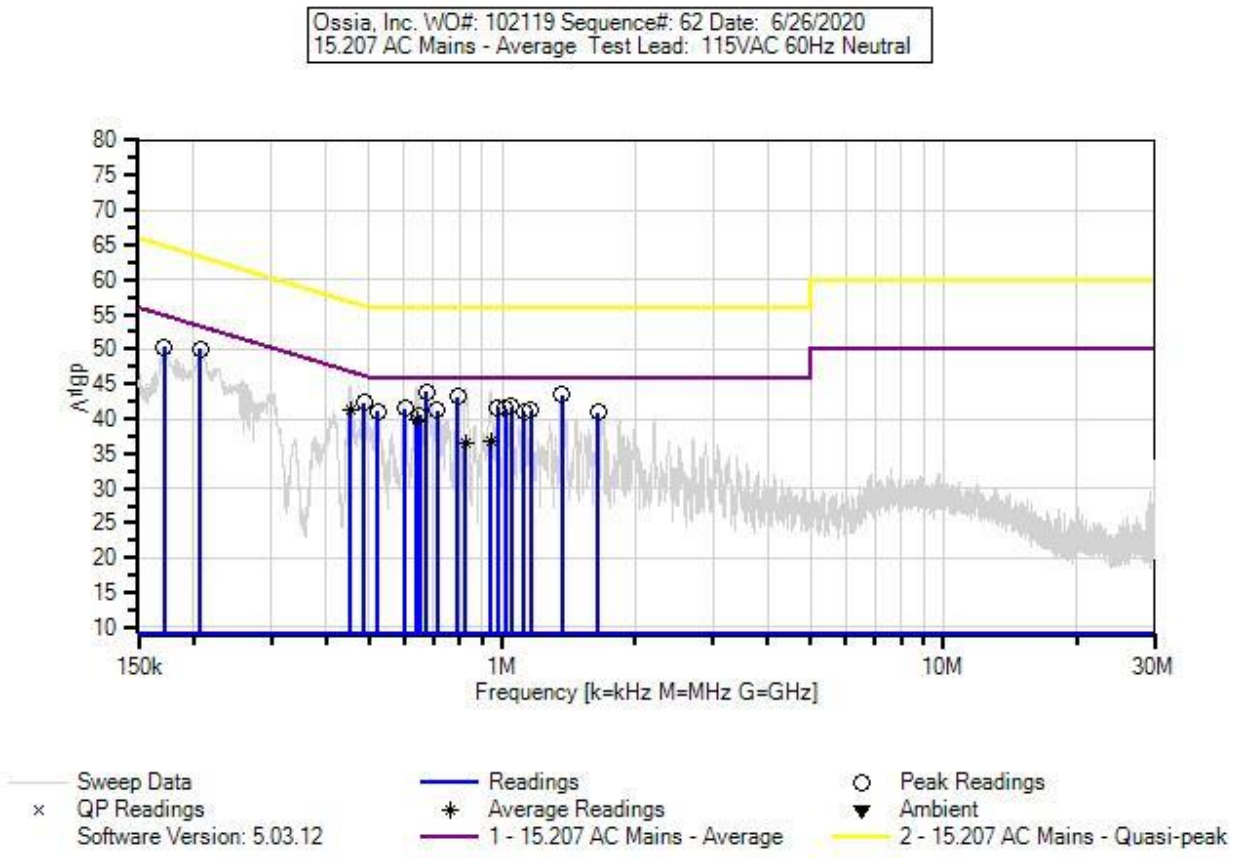
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 2.4GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 1 (2412MHz) at worst case data rate for spurious emissions.

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.
PoE box and support Laptop are located remotely. (Configuration 1)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	674.413k	34.8	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Neutr
2	1.364M	34.3	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.4	46.0	-2.6	Neutr
3	791.691k	34.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.1	46.0	-2.9	Neutr
4	207.428k	41.8	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	50.0	53.3	-3.3	Neutr
5	486.633k	33.4	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.3	46.2	-3.9	Neutr
6	1.049M	32.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.7	46.0	-4.3	Neutr
7	978.142k	32.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.6	46.0	-4.4	Neutr
8	1.017M	32.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.5	46.0	-4.5	Neutr
9	601.841k	32.5	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	41.5	46.0	-4.5	Neutr
10	171.901k	42.3	+0.4 -1.5	+0.0	+0.0	+9.1	+0.0	50.3	54.9	-4.6	Neutr
11	711.908k	32.1	+0.3 -0.3	+0.0	+0.0	+9.1	+0.0	41.2	46.0	-4.8	Neutr
12	1.160M	32.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.2	46.0	-4.8	Neutr
13	522.617k	32.1	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	41.0	46.0	-5.0	Neutr
14	1.124M	32.0	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.0	46.0	-5.0	Neutr
15	1.649M	31.8	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	40.9	46.0	-5.1	Neutr
16	452.162k Ave	32.4	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.3	46.8	-5.5	Neutr
^	452.162k	36.0	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	44.9	46.8	-1.9	Neutr
18	650.222k	31.5	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	40.5	46.0	-5.5	Neutr
19	639.942k Ave	31.0	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	40.0	46.0	-6.0	Neutr
^	639.941k	35.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.6	46.0	-1.4	Neutr
21	941.674k Ave	27.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	36.7	46.0	-9.3	Neutr
^	941.674k	35.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.3	46.0	-1.7	Neutr
23	825.592k Ave	27.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	36.6	46.0	-9.4	Neutr
^	825.591k	35.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.3	46.0	-1.7	Neutr

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	10:12:07
Tested By:	Michael Atkinson	Sequence#:	64
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

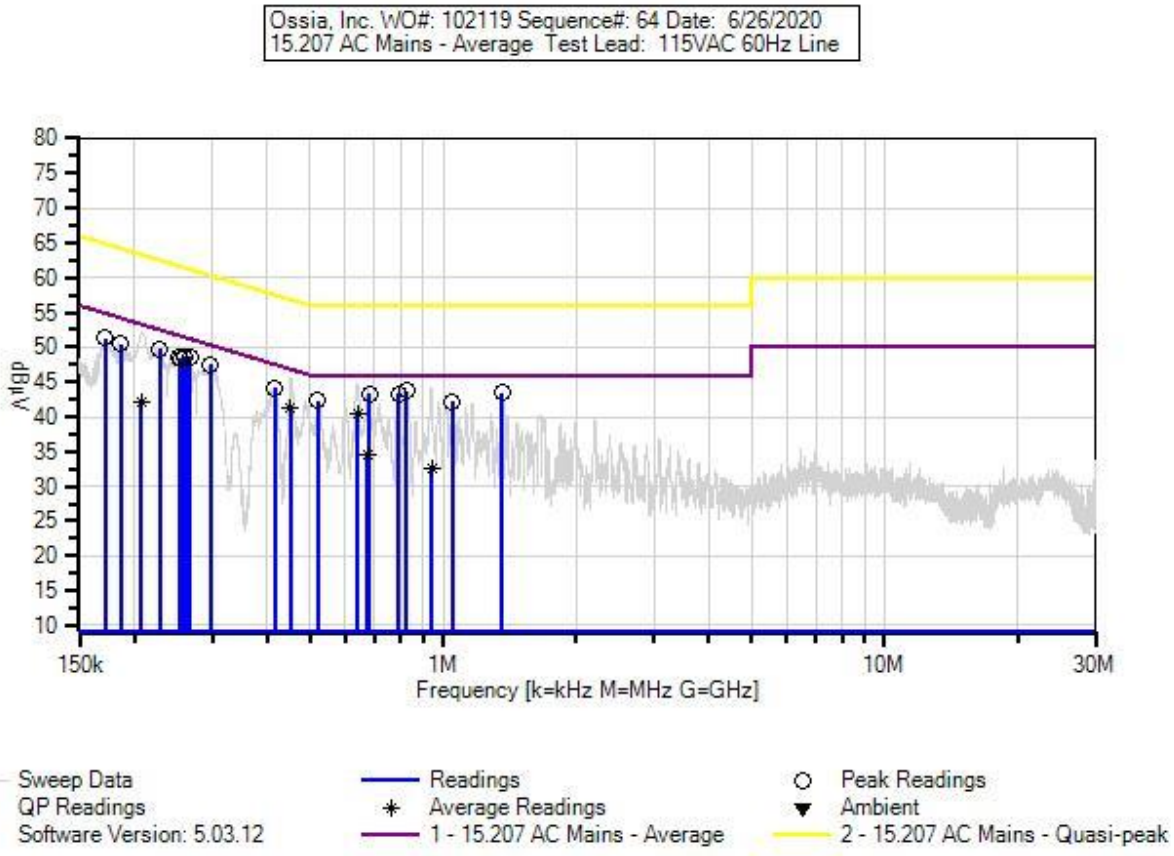
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 5GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 36 (5180MHz) at worst case data rate for spurious emissions. Also investigated Channel 140 (5700MHz) but no emissions observed within 20dB of 15.209 limit.

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.
PoE box and support Laptop are located remotely. (Configuration 1)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	825.078k	34.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.7	46.0	-2.3	Line
2	266.545k	40.2	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	48.7	51.2	-2.5	Line

3	1.357M	34.4	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.5	46.0	-2.5	Line
4	260.137k	40.2	+0.2 -0.8	+0.0	+0.0	+9.1	+0.0	48.7	51.4	-2.7	Line
5	681.065k	34.3	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Line
6	793.232k	34.3	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.3	46.0	-2.7	Line
7	296.808k	39.0	+0.1 -0.7	+0.0	+0.0	+9.1	+0.0	47.5	50.3	-2.8	Line
8	227.864k	41.3	+0.3 -1.0	+0.0	+0.0	+9.1	+0.0	49.7	52.5	-2.8	Line
9	252.492k	40.1	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.5	51.7	-3.2	Line
10	255.509k	39.9	+0.2 -0.9	+0.0	+0.0	+9.1	+0.0	48.3	51.6	-3.3	Line
11	416.077k	35.3	+0.2 -0.5	+0.0	+0.0	+9.1	+0.0	44.1	47.5	-3.4	Line
12	171.693k	43.3	+0.4 -1.5	+0.0	+0.0	+9.1	+0.0	51.3	54.9	-3.6	Line
13	186.469k	42.4	+0.3 -1.3	+0.0	+0.0	+9.1	+0.0	50.5	54.2	-3.7	Line
14	520.500k	33.4	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.3	46.0	-3.7	Line
15	1.050M	33.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Line
16	451.860k Ave	32.5	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.4	46.8	-5.4	Line
^	451.860k	36.7	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	45.6	46.8	-1.2	Line
18	639.337k Ave	31.5	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	40.5	46.0	-5.5	Line
^	639.336k	35.9	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.9	46.0	-1.1	Line
20	207.325k Ave	34.0	+0.2 -1.2	+0.0	+0.0	+9.1	+0.0	42.1	53.3	-11.2	Line
^	207.324k	44.2	+0.2 -1.2	+0.0	+0.0	+9.1	+0.0	52.3	53.3	-1.0	Line
22	673.808k Ave	25.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	34.6	46.0	-11.4	Line
^	673.808k	35.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.2	46.0	-1.8	Line
24	944.756k Ave	23.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	32.5	46.0	-13.5	Line
^	944.756k	35.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.2	46.0	-1.8	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	10:04:41
Tested By:	Michael Atkinson	Sequence#:	63
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

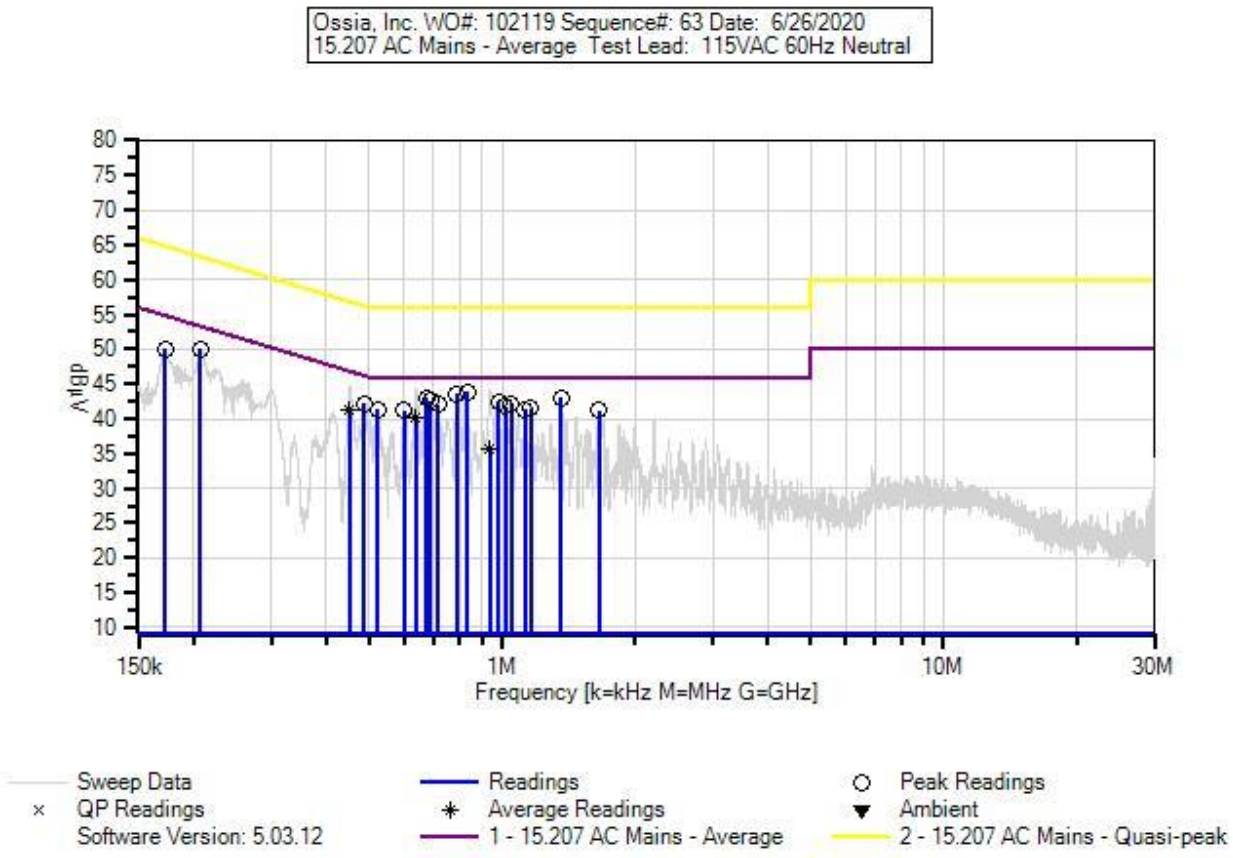
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 5GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 36 (5180MHz) at worst case data rate for spurious emissions. Also investigated Channel 140 (5700MHz) but no emissions observed within 20dB of 15.209 limit.

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.
PoE box and support Laptop are located remotely. (Configuration 1)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	833.296k	34.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.8	46.0	-2.2	Neutr
2	788.609k	34.6	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	43.6	46.0	-2.4	Neutr
3	675.622k	34.0	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	43.0	46.0	-3.0	Neutr
4	1.356M	33.9	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	43.0	46.0	-3.0	Neutr
5	207.114k	41.8	+0.2 -1.1	+0.0	+0.0	+9.1	+0.0	50.0	53.3	-3.3	Neutr
6	687.415k	33.6	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	42.6	46.0	-3.4	Neutr
7	982.765k	33.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.5	46.0	-3.5	Neutr
8	1.048M	33.2	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	42.2	46.0	-3.8	Neutr
9	714.932k	33.0	+0.3 -0.3	+0.0	+0.0	+9.1	+0.0	42.1	46.0	-3.9	Neutr
10	487.238k	33.3	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	42.2	46.2	-4.0	Neutr
11	1.018M	32.7	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.7	46.0	-4.3	Neutr
12	1.158M	32.5	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.5	46.0	-4.5	Neutr
13	522.012k	32.5	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	41.4	46.0	-4.6	Neutr
14	1.127M	32.4	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	41.4	46.0	-4.6	Neutr
15	172.531k	41.9	+0.4 -1.4	+0.0	+0.0	+9.1	+0.0	50.0	54.8	-4.8	Neutr
16	598.212k	32.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	41.2	46.0	-4.8	Neutr
17	1.662M	32.1	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	41.2	46.0	-4.8	Neutr
18	451.860k Ave	32.5	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.4	46.8	-5.4	Neutr
^	451.860k	35.9	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	44.8	46.8	-2.0	Neutr
20	638.430k Ave	31.2	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	40.2	46.0	-5.8	Neutr
^	638.429k	35.5	+0.3 -0.4	+0.0	+0.0	+9.1	+0.0	44.5	46.0	-1.5	Neutr
22	936.538k Ave	26.8	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	35.8	46.0	-10.2	Neutr
^	936.537k	35.1	+0.2 -0.3	+0.0	+0.0	+9.1	+0.0	44.1	46.0	-1.9	Neutr

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	14:13:25
Tested By:	Michael Atkinson	Sequence#:	78
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

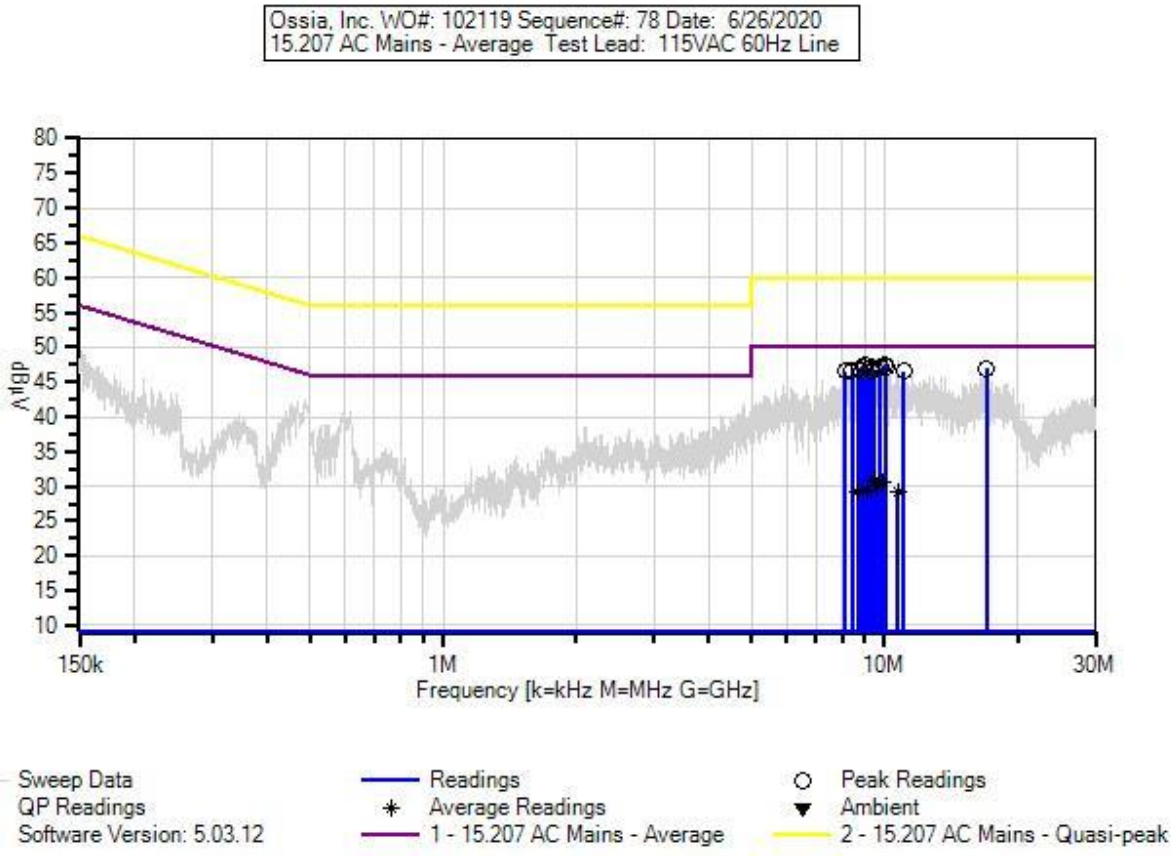
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 2.4GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 1 (2412MHz) at worst case data rate for spurious emissions.

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. (Configuration 2)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	9.050M	38.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Line
2	10.051M	38.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Line

3	8.939M	38.3	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.2	50.0	-2.8	Line
4	10.068M	38.3	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.2	50.0	-2.8	Line
5	9.273M	38.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.1	50.0	-2.9	Line
6	9.798M	38.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.1	50.0	-2.9	Line
7	17.029M	38.0	+0.2 -0.7	+0.1	+0.2	+9.1	+0.0	46.9	50.0	-3.1	Line
8	8.747M	38.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.9	50.0	-3.1	Line
9	9.486M	37.9	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.8	50.0	-3.2	Line
10	11.044M	37.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.6	50.0	-3.4	Line
11	8.439M	37.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.5	50.0	-3.5	Line
12	8.156M	37.7	+0.1 -0.5	+0.0	+0.1	+9.1	+0.0	46.5	50.0	-3.5	Line
13	9.324M	37.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.5	50.0	-3.5	Line
14	8.849M	37.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	46.5	50.0	-3.5	Line
15	9.516M Ave	22.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	30.9	50.0	-19.1	Line
^	9.516M	39.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.3	50.0	-1.7	Line
17	9.905M Ave	21.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	30.6	50.0	-19.4	Line
^	9.905M	40.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.9	50.0	-1.1	Line
19	9.610M Ave	21.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	30.0	50.0	-20.0	Line
^	9.610M	39.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.3	50.0	-1.7	Line
21	9.110M Ave	20.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	29.5	50.0	-20.5	Line
^	9.110M	39.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.0	50.0	-2.0	Line
23	8.687M Ave	20.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	29.1	50.0	-20.9	Line
^	8.687M	38.9	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.8	50.0	-2.2	Line
25	10.702M Ave	20.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	29.1	50.0	-20.9	Line
^	10.702M	39.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.1	50.0	-1.9	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	14:09:01
Tested By:	Michael Atkinson	Sequence#:	77
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

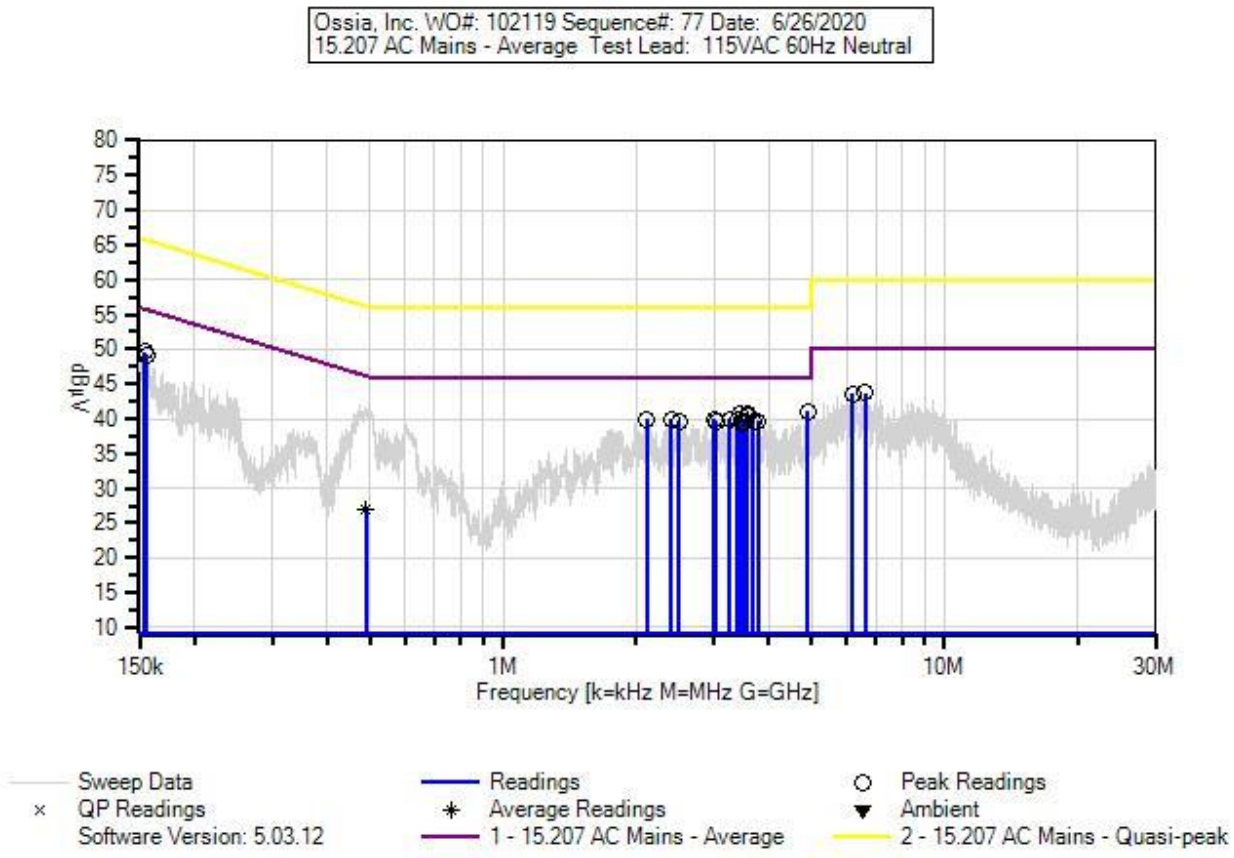
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 2.4GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 1 (2412MHz) at worst case data rate for spurious emissions.

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. (Configuration 2)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	4.895M	32.2	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	41.1	46.0	-4.9	Neutr
2	3.427M	31.6	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.6	46.0	-5.4	Neutr
3	3.575M	31.6	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.6	46.0	-5.4	Neutr
4	3.563M	31.3	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.3	46.0	-5.7	Neutr
5	3.003M	31.0	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.0	46.0	-6.0	Neutr
6	2.113M	30.9	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	40.0	46.0	-6.0	Neutr
7	3.391M	31.0	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.0	46.0	-6.0	Neutr
8	3.258M	31.0	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	40.0	46.0	-6.0	Neutr
9	2.403M	30.9	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.9	46.0	-6.1	Neutr
10	153.981k	41.4	+0.8 -1.7	+0.0	+0.0	+9.1	+0.0	49.6	55.8	-6.2	Neutr
11	3.501M	30.7	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.7	46.0	-6.3	Neutr
12	2.505M	30.7	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.7	46.0	-6.3	Neutr
13	6.613M	34.8	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	43.7	50.0	-6.3	Neutr
14	3.777M	30.7	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.7	46.0	-6.3	Neutr
15	3.031M	30.6	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.6	46.0	-6.4	Neutr
16	6.189M	34.7	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	43.6	50.0	-6.4	Neutr
17	155.762k	41.0	+0.8 -1.7	+0.0	+0.0	+9.1	+0.0	49.2	55.7	-6.5	Neutr
18	3.689M	30.5	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.5	46.0	-6.5	Neutr
19	3.458M	30.4	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.4	46.0	-6.6	Neutr
20	489.658k Ave	18.0	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	26.9	46.2	-19.3	Neutr
^	489.657k	32.8	+0.2 -0.4	+0.0	+0.0	+9.1	+0.0	41.7	46.2	-4.5	Neutr

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	14:20:34
Tested By:	Michael Atkinson	Sequence#:	79
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

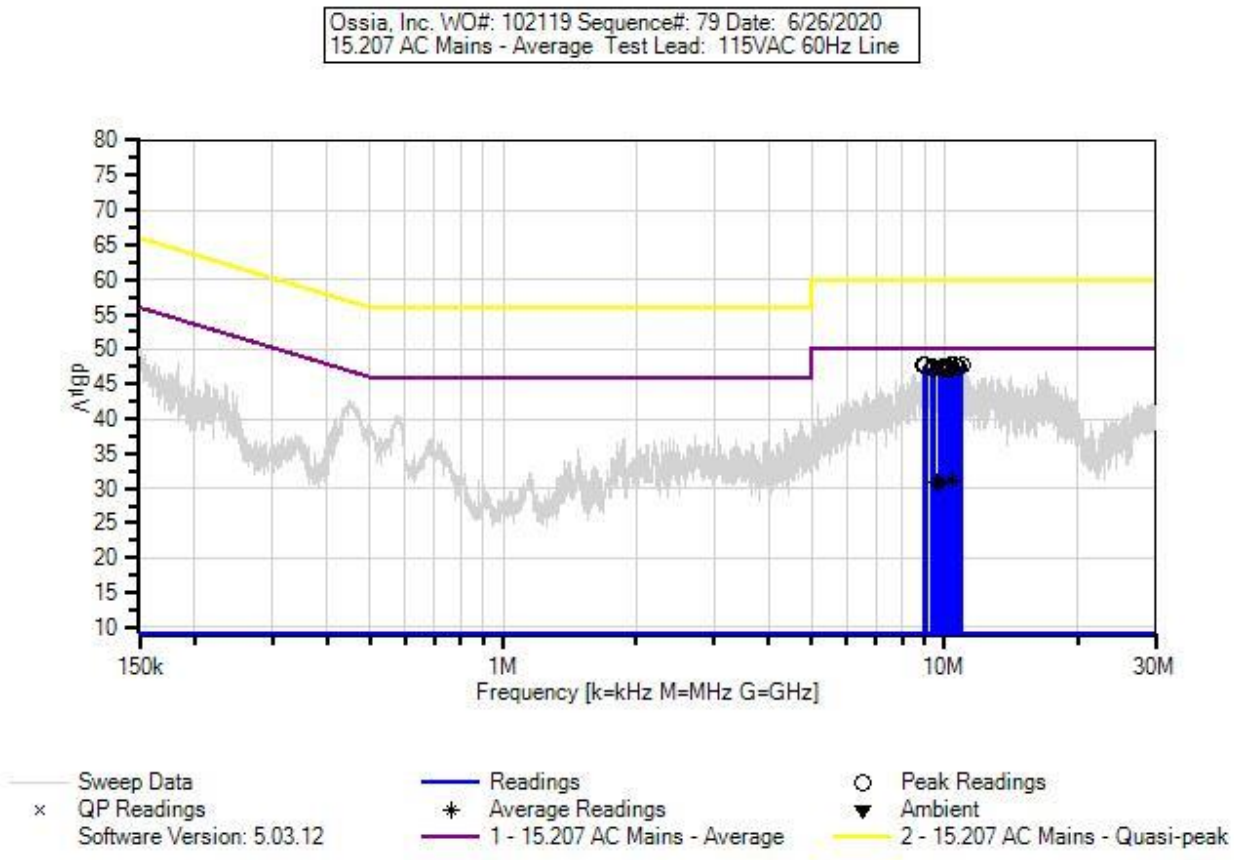
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 5GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 36 (5180MHz) at worst case data rate for spurious emissions. Also investigated Channel 140 (5700MHz) but no emissions observed within 20dB of 15.209 limit.

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. (Configuration 2)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	10.312M	38.9	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.8	50.0	-2.2	Line
2	10.935M	38.8	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.7	50.0	-2.3	Line
3	8.952M	38.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.6	50.0	-2.4	Line
4	9.080M	38.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.6	50.0	-2.4	Line
5	10.492M	38.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.6	50.0	-2.4	Line
6	9.897M	38.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Line
7	10.218M	38.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Line
8	10.688M	38.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.5	50.0	-2.5	Line
9	9.452M	38.5	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.4	50.0	-2.6	Line
10	10.042M	38.5	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.4	50.0	-2.6	Line
11	10.615M	38.5	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.4	50.0	-2.6	Line
12	9.401M	38.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.3	50.0	-2.7	Line
13	10.136M	38.3	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.2	50.0	-2.8	Line
14	10.333M	38.3	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.2	50.0	-2.8	Line
15	9.760M	38.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.1	50.0	-2.9	Line
16	9.957M	38.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.1	50.0	-2.9	Line
17 Ave	10.448M	22.4	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	31.3	50.0	-18.7	Line
^	10.448M	39.6	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.5	50.0	-1.5	Line
19 Ave	9.743M	22.1	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	31.0	50.0	-19.0	Line
^	9.743M	40.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	49.1	50.0	-0.9	Line
21 Ave	9.563M	22.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	30.9	50.0	-19.1	Line
^	9.563M	39.2	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	48.1	50.0	-1.9	Line
23 Ave	9.657M	21.7	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	30.6	50.0	-19.4	Line
^	9.657M	39.0	+0.1 -0.5	+0.0	+0.2	+9.1	+0.0	47.9	50.0	-2.1	Line

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102119**	Date:	6/26/2020
Test Type:	**Conducted Emissions**	Time:	14:23:41
Tested By:	Michael Atkinson	Sequence#:	80
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 0.15-30MHz

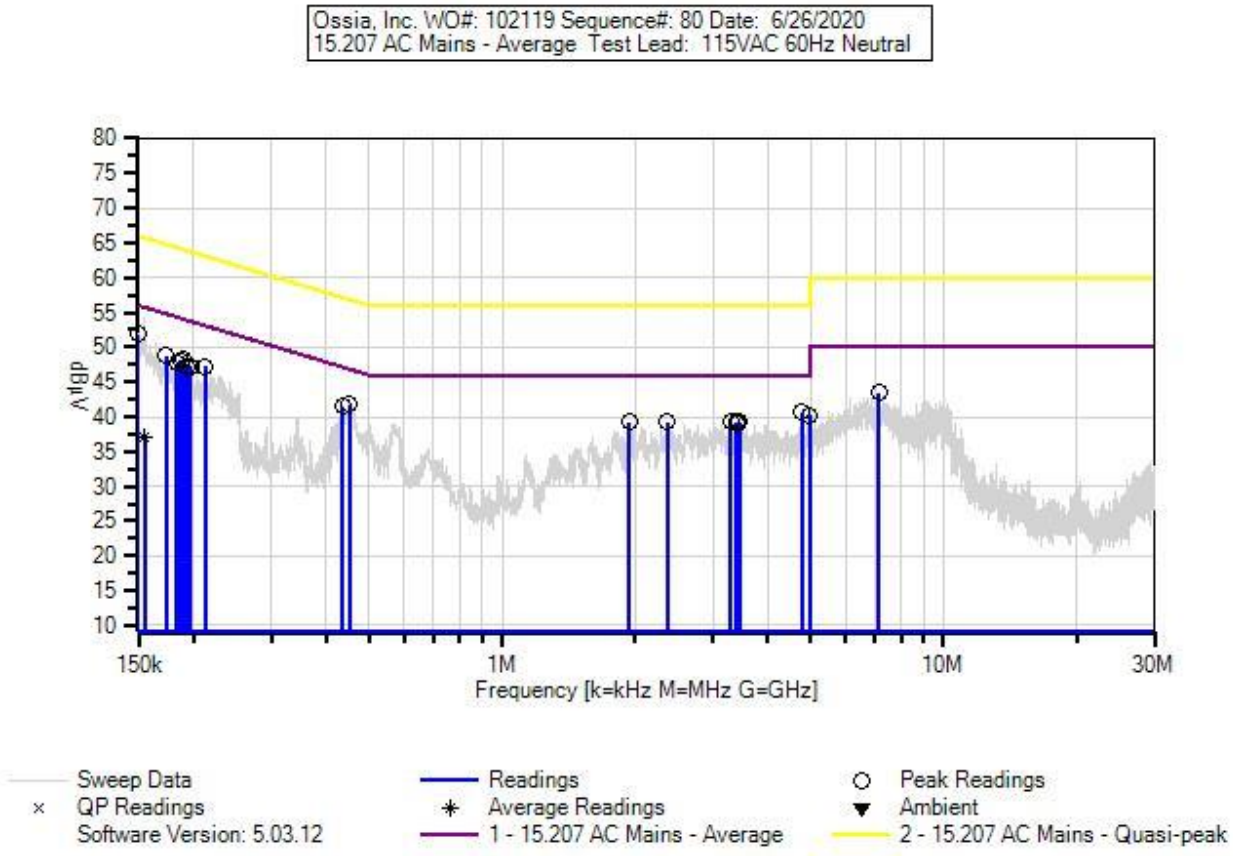
XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 5GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 36 (5180MHz) at worst case data rate for spurious emissions. Also investigated Channel 140 (5700MHz) but no emissions observed within 20dB of 15.209 limit.

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. (Configuration 2)

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)



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	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	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: 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	150.000k	42.1	+2.5 -1.8	+0.0	+0.0	+9.1	+0.0	51.9	56.0	-4.1	Neutr
2	450.045k	32.9	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.8	46.9	-5.1	Neutr
3	4.771M	31.8	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	40.7	46.0	-5.3	Neutr
4	435.833k	32.6	+0.2 -0.5	+0.0	+0.1	+9.1	+0.0	41.5	47.1	-5.6	Neutr
5	190.452k	40.1	+0.3 -1.3	+0.0	+0.0	+9.1	+0.0	48.2	54.0	-5.8	Neutr
6	212.459k	39.0	+0.3 -1.1	+0.0	+0.0	+9.1	+0.0	47.3	53.1	-5.8	Neutr
7	4.978M	31.3	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	40.2	46.0	-5.8	Neutr
8	173.684k	40.8	+0.4 -1.5	+0.0	+0.0	+9.1	+0.0	48.8	54.8	-6.0	Neutr
9	186.679k	40.0	+0.3 -1.3	+0.0	+0.0	+9.1	+0.0	48.1	54.2	-6.1	Neutr
10	197.368k	39.2	+0.2 -1.2	+0.0	+0.0	+9.1	+0.0	47.3	53.7	-6.4	Neutr
11	7.130M	34.5	+0.1 -0.4	+0.0	+0.1	+9.1	+0.0	43.4	50.0	-6.6	Neutr
12	192.443k	39.1	+0.3 -1.3	+0.0	+0.0	+9.1	+0.0	47.2	53.9	-6.7	Neutr
13	182.906k	39.6	+0.4 -1.4	+0.0	+0.0	+9.1	+0.0	47.7	54.4	-6.7	Neutr
14	3.295M	30.3	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.3	46.0	-6.7	Neutr
15	3.439M	30.3	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.3	46.0	-6.7	Neutr
16	3.400M	30.3	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.3	46.0	-6.7	Neutr
17	1.940M	30.1	+0.2 -0.3	+0.0	+0.1	+9.1	+0.0	39.2	46.0	-6.8	Neutr
18	2.363M	30.2	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.2	46.0	-6.8	Neutr
19	3.406M	30.1	+0.1 -0.3	+0.0	+0.1	+9.1	+0.0	39.1	46.0	-6.9	Neutr
20	155.030k Ave	29.0	+0.8 -1.7	+0.0	+0.0	+9.1	+0.0	37.2	55.7	-18.5	Neutr
^	155.030k	46.2	+0.8 -1.7	+0.0	+0.0	+9.1	+0.0	54.4	55.7	-1.3	Neutr

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102119**	Date:	6/29/2020
Test Type:	**Maximized Emissions**	Time:	11:03:14
Tested By:	Michael Atkinson	Sequence#:	7
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 9kHz-25GHz

XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

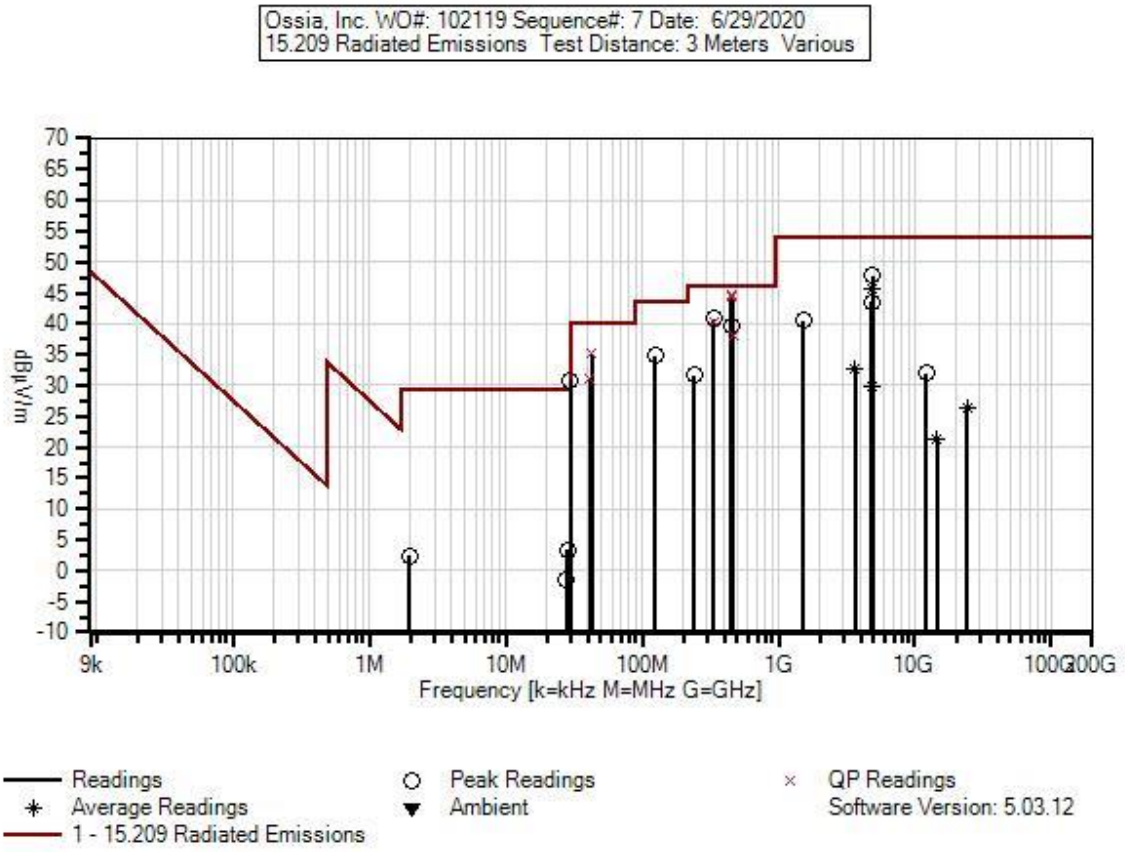
Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 2.4GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 1 (2412MHz) at worst case data rate for spurious emissions.

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.
PoE box and support Laptop are located remotely.

The manufacturer declares the other power configuration is unlikely to affect the Radiated Spurious Emissions of the 2.4GHz WiFi from the module, however, AC emissions will be run in both PoE and AC Adapter configurations.

No emissions observed above 18GHz, values provided are noise floor.

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)


Ossia, Inc. WO#: 102119 Sequence#: 7 Date: 6/29/2020
15.209 Radiated Emissions Test Distance: 3 Meters Various
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
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	Heliax	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
T8	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T9	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T10	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T11	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T12	AN03116	High Pass Filter	11SH10-00313	1/22/2019	1/22/2021
T13	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T14	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T15	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T16	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
T17	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T18	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T19	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
	ANP07226	Attenuator	PE7004-6	10/2/2019	10/2/2021

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

#	Freq	Rdng	T1 T5 T9 T13 T17	T2 T6 T10 T14 T18	T3 T7 T11 T15 T19	T4 T8 T12 T16	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	448.529M QP	46.1	+0.0 +1.4 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.0 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0	+0.0	44.6	46.0	-1.4	Horiz
^	448.529M	51.1	+0.0 +1.4 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.0 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0	+0.0	49.6	46.0	+3.6	Horiz

3	454.728M	45.7	+0.0	+0.2	+1.0	-27.9	+0.0	44.3	46.0	-1.7	Vert
	QP		+1.4	+5.8	+18.1	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	454.728M	48.1	+0.0	+0.2	+1.0	-27.9	+0.0	46.7	46.0	+0.7	Vert
			+1.4	+5.8	+18.1	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
5	42.543M	45.8	+0.0	+0.1	+0.3	-28.0	+0.0	35.2	40.0	-4.8	Vert
	QP		+0.3	+5.8	+10.9	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
6	333.600M	45.1	+0.0	+0.2	+0.9	-27.1	+0.0	40.8	46.0	-5.2	Vert
			+1.2	+5.8	+14.7	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
7	333.346M	44.5	+0.0	+0.2	+0.9	-27.1	+0.0	40.2	46.0	-5.8	Vert
	QP		+1.2	+5.8	+14.7	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
8	4897.000M	42.8	+0.0	+0.9	+0.0	+0.0	+0.0	47.8	54.0	-6.2	Vert
			+0.0	+0.0	+0.0	-33.6					
			+32.5	+4.2	+0.5	+0.5					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
9	451.000M	41.0	+0.0	+0.2	+1.0	-27.9	+0.0	39.5	46.0	-6.5	Vert
			+1.4	+5.8	+18.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
10	468.400M	39.2	+0.0	+0.3	+1.1	-28.0	+0.0	38.0	46.0	-8.0	Horiz
	QP		+1.4	+5.8	+18.2	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	468.400M	42.2	+0.0	+0.3	+1.1	-28.0	+0.0	41.0	46.0	-5.0	Horiz
			+1.4	+5.8	+18.2	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						

12	4900.000M	40.8	+0.0	+0.9	+0.0	+0.0	+0.0	45.8	54.0	-8.2	Horiz
	Ave		+0.0	+0.0	+0.0	-33.6					
			+32.5	+4.2	+0.5	+0.5					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	4900.000M	44.4	+0.0	+0.9	+0.0	+0.0	+0.0	49.4	54.0	-4.6	Horiz
			+0.0	+0.0	+0.0	-33.6					
			+32.5	+4.2	+0.5	+0.5					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
14	125.100M	47.5	+0.0	+0.1	+0.5	-27.6	+0.0	34.8	43.5	-8.7	Vert
			+0.7	+5.8	+7.8	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
15	41.600M	41.3	+0.0	+0.1	+0.3	-28.0	+0.0	31.2	40.0	-8.8	Vert
	QP		+0.3	+5.8	+11.4	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	41.600M	50.0	+0.0	+0.1	+0.3	-28.0	+0.0	39.9	40.0	-0.1	Vert
			+0.3	+5.8	+11.4	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
17	30.000M	26.2	+0.0	+0.1	+0.0	+0.0	+0.0	30.8	40.0	-9.2	Perp
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+4.2						
18	4823.970M	38.6	+0.0	+0.9	+0.0	+0.0	+0.0	43.5	54.0	-10.5	Vert
			+0.0	+0.0	+0.0	-33.6					
			+32.4	+4.1	+0.5	+0.6					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
19	1530.000M	47.7	+0.0	+0.5	+0.0	+0.0	+0.0	40.5	54.0	-13.5	Horiz
			+0.0	+0.0	+0.0	-35.3					
			+25.2	+2.2	+0.2	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
20	240.500M	39.2	+0.0	+0.2	+0.8	-27.1	+0.0	31.6	46.0	-14.4	Vert
			+0.9	+5.8	+11.8	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						

21	3619.430M Ave	30.3	+0.0 +0.0 +30.4 +0.0 +0.0	+0.8 +0.0 +3.6 +0.0 +0.0	+0.0 +0.0 +0.6 +0.0 +0.0	+0.0 -33.8 +0.8 +0.0	+0.0	32.7	54.0	-21.3	Vert
^	3619.450M	42.5	+0.0 +0.0 +30.4 +0.0 +0.0	+0.8 +0.0 +3.6 +0.0 +0.0	+0.0 +0.0 +0.6 +0.0 +0.0	+0.0 -33.8 +0.8 +0.0	+0.0	44.9	54.0	-9.1	Vert
23	12060.000 M	36.7	+0.0 +0.0 +0.0 -13.0 +0.0	+1.4 +0.0 +6.8 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0	31.9	54.0	-22.1	Horiz
24	4823.970M Ave	24.9	+0.0 +0.0 +32.4 +0.0 +0.0	+0.9 +0.0 +4.1 +0.0 +0.0	+0.0 +0.0 +0.5 +0.0 +0.0	+0.0 -33.6 +0.6 +0.0	+0.0	29.8	54.0	-24.2	Horiz
25	28.505M	38.1	+0.0 +0.0 +0.0 +0.0 +0.0	+0.1 +0.0 +0.3 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +4.8	+0.0 +0.0 +0.0 +0.0	-40.0	3.3	29.5	-26.2	Groun
26	1.984M	32.8	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +9.5	+0.0 +0.0 +0.0 +0.0	-40.0	2.4	29.5	-27.1	Para
27	24119.900 M Ave	25.9	+0.0 +0.0 +0.0 +0.0 +1.0	+0.0 +0.0 +0.0 -13.2 +1.0	+0.0 +0.0 +0.0 +9.8 +0.0	+0.0 +0.0 +0.0 +1.9	+0.0	26.4	54.0	-27.6	Vert
28	27.907M	32.9	+0.0 +0.0 +0.0 +0.0 +0.0	+0.1 +0.0 +0.3 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +5.1	+0.0 +0.0 +0.0 +0.0	-40.0	-1.6	29.5	-31.1	Perp

29	14472.000	26.8	+0.0	+1.3	+0.0	+0.0	+0.0	21.4	54.0	-32.6	Horiz
	M		+0.0	+0.0	+0.0	+0.0					
	Ave		+0.0	+8.1	+0.0	+0.0					
			-14.8	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	14472.000	38.2	+0.0	+1.3	+0.0	+0.0	+0.0	32.8	54.0	-21.2	Horiz
	M		+0.0	+0.0	+0.0	+0.0					
			+0.0	+8.1	+0.0	+0.0					
			-14.8	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
31	29.990M	22.6	+0.0	+0.1	+0.0	+0.0	-40.0	-12.8	29.5	-42.3	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+4.2						
32	18.758M	18.8	+0.0	+0.1	+0.0	+0.0	-40.0	-13.2	29.5	-42.7	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.7						

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Ossia, Inc.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102119**	Date:	6/29/2020
Test Type:	**Maximized Emissions**	Time:	10:26:37
Tested By:	Michael Atkinson	Sequence#:	8
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: 20-25°C
Humidity: 30-36%
Pressure: 101-102kPa

Method: ANSI C63.10 (2013)

Frequency range tested: 9kHz-40GHz

XYZ EUT orientations investigated, worst case reported.

Below 30MHz, 3 x orthogonal axes investigated, above 30MHz, Horizontal and Vertical Antenna polarities investigated, worst case reported.

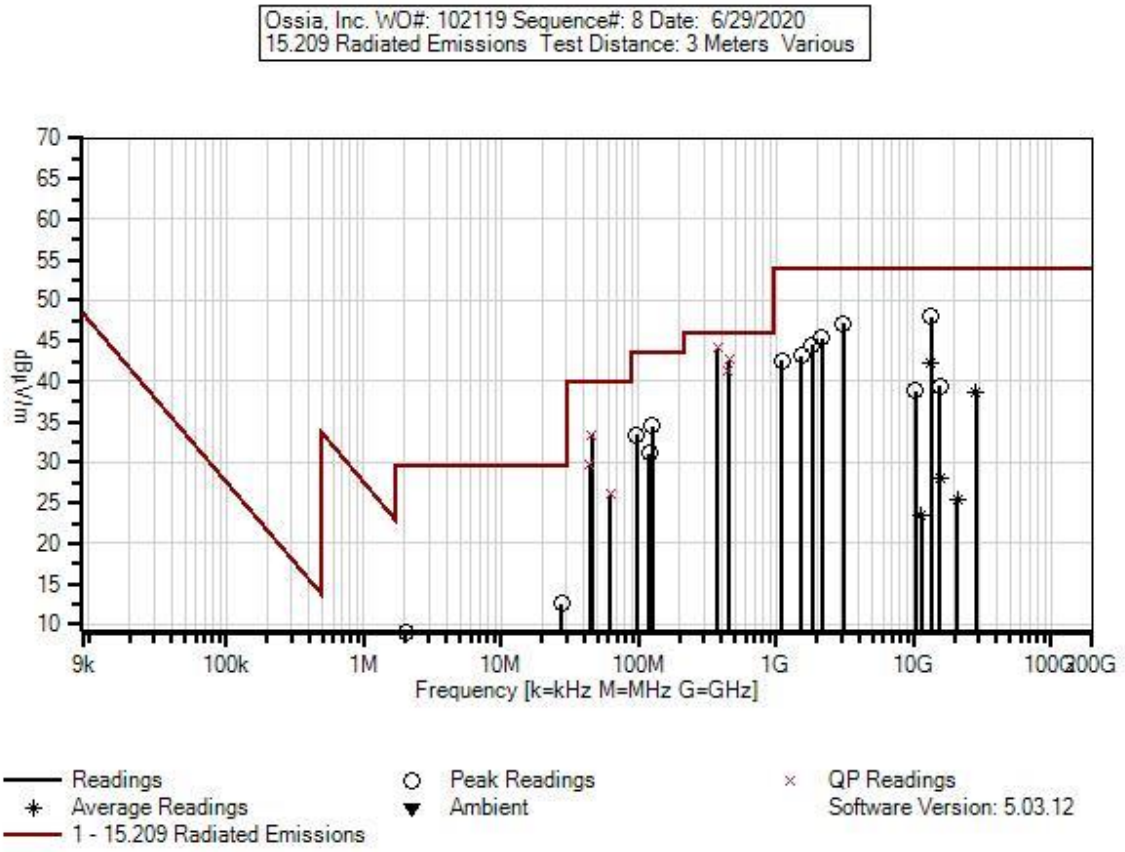
Investigated Radiated Spurious Emissions of Integrated Raspberry Pi 4 module while running the 5GHz Wi-Fi radio continuously. Customer was provided a worst case script of maximum power, running on Channel 36 (5180MHz) at worst case data rate for spurious emissions. Also investigated Channel 140 (5700MHz) but no emissions observed within 20dB of 15.209 limit.

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.
PoE box and support Laptop are located remotely.

The manufacturer declares the other power configuration is unlikely to affect the Radiated Spurious Emissions of the 5GHz WiFi from the module, however, AC emissions will be run in both PoE and AC Adapter configurations.

No emissions observed above 18GHz, values provided are noise floor.

Integrated Module Info
Raspberry Pi 4B (FCC ID 2ABCB-RPI4B)


Ossia, Inc. WO#: 102119 Sequence#: 8 Date: 6/29/2020
15.209 Radiated Emissions Test Distance: 3 Meters Various
dBuV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
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	Heliax	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
T8	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T9	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T10	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T11	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
	AN03116	High Pass Filter	11SH10-00313	1/22/2019	1/22/2021
T12	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T13	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T14	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T15	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
T16	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T17	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T18	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T19	ANP07226	Attenuator	PE7004-6	10/2/2019	10/2/2021
T20	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
T21	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022

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

#	Freq	Rdng	T1 T5 T9 T13 T17 T21	T2 T6 T10 T14 T18	T3 T7 T11 T15 T19	T4 T8 T12 T16 T20	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	375.002M QP	46.9	+0.0 +1.3 +0.0 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +16.5 +0.0 +0.0 +0.0	-27.5 +0.0 +0.0 +0.0 +0.0	+0.0	44.2	46.0	-1.8	Vert
2	457.800M QP	44.1	+0.0 +1.4 +0.0 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.1 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0 +0.0	+0.0	42.7	46.0	-3.3	Horiz

3	451.000M QP	42.9	+0.0 +1.4 +0.0 +0.0 +0.0 +0.0	+0.2 +5.8 +0.0 +0.0 +0.0	+1.0 +18.0 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0 +0.0	+0.0	41.4	46.0	-4.6	Vert
4	13472.000 M	45.9	+0.0 +0.0 +40.5 +0.0 +0.0 +0.0	+1.3 +0.0 +7.5 +0.0 +0.0	+0.0 +0.0 +1.0 +0.0 +0.0	+0.0 -33.7 -14.5 +0.0 +0.0	+0.0	48.0	54.0	-6.0	Vert
5	45.500M QP	45.4	+0.0 +0.4 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.3 +9.4 +0.0 +0.0 +0.0	-28.0 +0.0 +0.0 +0.0 +0.0	+0.0	33.4	40.0	-6.6	Vert
6	3106.000M	41.8	+0.0 +0.0 +29.3 +0.0 +0.0 +0.0	+0.8 +0.0 +3.0 +0.0 +0.0	+0.0 +0.0 +0.4 +0.0 +5.9	+0.0 -34.0 +0.0 +0.0 +0.0	+0.0	47.2	54.0	-6.8	Vert
7	2161.000M	42.8	+0.0 +0.0 +27.8 +0.0 +0.0 +0.0	+0.6 +0.0 +2.4 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +5.9	+0.0 -34.4 +0.0 +0.0 +0.0	+0.0	45.3	54.0	-8.7	Vert
8	125.100M	47.2	+0.0 +0.7 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.5 +7.8 +0.0 +0.0 +0.0	-27.6 +0.0 +0.0 +0.0 +0.0	+0.0	34.5	43.5	-9.0	Vert
9	1837.000M	44.0	+0.0 +0.0 +26.4 +0.0 +0.0 +0.0	+0.5 +0.0 +2.3 +0.0 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +0.0 +5.9	+0.0 -34.8 +0.0 +0.0 +0.0	+0.0	44.5	54.0	-9.5	Vert
10	96.900M	46.3	+0.0 +0.6 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0 +0.0	+0.5 +7.8 +0.0 +0.0 +0.0 +0.0	-27.7 +0.0 +0.0 +0.0 +0.0 +0.0	+0.0	33.4	43.5	-10.1	Vert

11	44.500M QP	41.2	+0.0 +0.4 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.3 +9.9 +0.0 +0.0 +0.0	-28.0 +0.0 +0.0 +0.0 +0.0	+0.0	29.7	40.0	-10.3	Vert
12	1531.000M	44.5	+0.0 +0.0 +25.2 +0.0 +0.0 +0.0	+0.5 +0.0 +2.2 +0.0 +0.0	+0.0 +0.0 +0.2 +0.0 +5.9	+0.0 -35.3 +0.0 +0.0 +0.0	+0.0	43.2	54.0	-10.8	Vert
13	1108.000M	46.4	+0.0 +0.0 +24.7 +0.0 +0.0 +0.0	+0.4 +0.0 +1.8 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +5.9	+0.0 -36.7 +0.0 +0.0 +0.0	+0.0	42.6	54.0	-11.4	Horiz
14	13475.175 M Ave	40.1	+0.0 +0.0 +40.5 +0.0 +0.0 +0.0	+1.3 +0.0 +7.5 +0.0 +0.0	+0.0 +0.0 +1.0 +0.0 +0.0	+0.0 -33.7 -14.5 +0.0 +0.0	+0.0	42.2	54.0	-11.8	Vert
15	120.200M	43.7	+0.0 +0.6 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.5 +8.0 +0.0 +0.0 +0.0	-27.6 +0.0 +0.0 +0.0 +0.0	+0.0	31.1	43.5	-12.4	Vert
16	62.000M QP	39.5	+0.0 +0.5 +0.0 +0.0 +0.0 +0.0	+0.1 +5.8 +0.0 +0.0 +0.0	+0.4 +7.6 +0.0 +0.0 +0.0	-27.8 +0.0 +0.0 +0.0 +0.0	+0.0	26.1	40.0	-13.9	Vert
17	15541.110 M	36.7	+0.0 +0.0 +39.0 +0.0 +0.0 +0.0	+1.8 +0.0 +8.2 +0.0 +0.0	+0.0 +0.0 +0.7 +0.0 +0.0	+0.0 -34.2 -12.8 +0.0 +0.0	+0.0	39.4	54.0	-14.6	Horiz
18	10360.560 M	40.4	+0.0 +0.0 +36.3 +0.0 +0.0 +0.0	+1.3 +0.0 +6.2 +0.0 +0.0	+0.0 +0.0 +0.8 +0.0 +0.0	+0.0 -34.1 -12.1 +0.0 +0.0	+0.0	38.8	54.0	-15.2	Vert

19	28310.000 M Ave	19.3	+0.0 +0.0 +0.0 +0.0 +1.1 +3.9	+0.0 +0.0 +0.0 +10.8 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +1.3 +2.2	+0.0	38.6	54.0	-15.4	Vert
20	27.518M	46.8	+0.0 +0.0 +0.0 +0.0 +0.0 +0.0	+0.1 +0.0 +0.3 +0.0 +5.3	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	-40.0	12.5	29.5	-17.0	Groun
21	2.014M	39.5	+0.0 +0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.1 +0.0 +9.5	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	-40.0	9.1	29.5	-20.4	Groun
22	15539.885 M Ave	25.4	+0.0 +0.0 +39.0 +0.0 +0.0 +0.0	+1.8 +0.0 +8.2 +0.0 +0.0	+0.0 +0.0 +0.7 +0.0 +0.0	+0.0 -34.2 -12.8 +0.0 +0.0	+0.0	28.1	54.0	-25.9	Horiz
23	20720.000 M Ave	25.9	+0.0 +0.0 +0.0 -13.9 +0.9 +0.0	+0.0 +0.0 +0.0 +9.2 +0.0	+0.0 +0.0 +0.0 +2.0 +0.0	+0.0 +0.0 +0.0 +1.2 +0.0	+0.0	25.3	54.0	-28.7	Vert
24	11398.750 M Ave	28.9	+0.0 +0.0 +0.0 +0.0 +0.0 +0.0	+1.4 +0.0 +6.5 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 -13.3 +0.0 +0.0	+0.0	23.5	54.0	-30.5	Vert
^	11398.750 M	42.2	+0.0 +0.0 +0.0 +0.0 +0.0 +0.0	+1.4 +0.0 +6.5 +0.0 +0.0	+0.0 +0.0 +0.0 +0.0 +0.0	+0.0 +0.0 -13.3 +0.0 +0.0	+0.0	36.8	54.0	-17.2	Vert

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. Compliance is deemed to occur provided measurements are below the specified limits.

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.