December 2, 2024

1 A Lifesafer, Inc.
Louis Urani
3630 Park 42 Dr. Suite 140
Cincinnati, OH 45241

Dear Louis Urani,

Enclosed is the Electromagnetic Compatibility for the 1 A Lifesafer, Inc., Scram Systems PAM v3, tested to the requirements of:

- FCC Part 22H, 24E and 27 and KDB 996369 D04 V.02 Module Integration Guide.

Thank you for using the services of Eurofins E&E Testing NA, LLC. Please contact me if you have any questions regarding these results or if Eurofins E&E can be of further service to you.

Sincerely,

Rheine Nguyen

Documentation Department
Eurofins E&E Testing NA, LLC.

Reference: EMCS131618-FCC part 22H, 24E and 27 rev1

ACCREDITED
TESTING CERT #0591.02

Eurofins E&E Testing NA, LLC. is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	May 24, 2024	Initial Issue.
1	December 2, 2024	Revised to change company name, corrected FCC ID

This device was tested and the report approved by

Richard Dollente
Richard Dollente
Test Engineer, Wireless Laboratory

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

Gary Chou
Gary Chou
Wireless Engineering Manager, Wireless Laboratory

Rev1 prepared and approved by

Suresh Kondapalli
Suresh Kondapalli
EMC Laboratory Engineer

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements.

Ollie Moyrong
EMC Laboratory Manager, California

Table of Contents

1.0 Testing Summary

The 1 A Lifesafer, Inc., Scram Systems PAM v3 was found to be compliant to the following specification(s).

Product Description: Personal Alcohol Monitoring System.

Refernce Standard: FCC Part 22H, 24E & 27 and KDB 996369 D04 V.02 Module Integration Guide

2.0 Overview

Eurofins E&E Testing NA, LLC. was contracted by 1 A Lifesafer, Inc. to perform testing on the Scram Systems PAM v3, under purchase order number 24220.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of 1 A Lifesafer, Inc., Scram Systems PAM v3.

The results obtained relate only to the item(s) tested.

Product	Personal Alcohol Monitoring System		
Brand	Scram Systems		
Model(s) Tested:	Scram Systems PAM v3		
EUT Specification	Power adpter: 5V DC output/120V acinput		
	Type of Modulation:	LTE CAT4	QPSK 16QAM
EUT Specification	Operating Frequency	LTE Band 4: 1710MHz -1755MHz LTE Band 12: 699MHz - 716MHz LTE Band 13: 777MHz - 787MHz LTE band 14: 788MHz – 798MHz LTE Band 66: 2110MHz – 2200MHz LTE Band 71: 617MH -652MHz	
	FCC ID :	2BGNB-PAM3	
Antenna Type/Manufacturer/Model:	PCB Antenna/KYOVERA/1002436		

Antenna Gain:	Cellular	698 MHz- 960 MHz : 2.3 dBi 1710 MHz- 2200 MHz : 3.2 dBi 2500 MHz- 2700 MHz : 3.0 dBi
Antenna Port:		N/A
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
Environmental Test Conditions:	Relative Humidity: 30-60%	
Evaluated by:	Barometric Pressure: 860-1060 mbar	
	Richard Dollente	
Date(s):	May 30, 2024	

NOTE: The following modules can be chosen to be configured in the EUT.

	Model No.	FCC ID	ISED ID	Note
Cellular	LE910C4-NF	RI7LE910CXNF	5131A-LE910CXNF	-

B. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	ACER	A315-51-533U	NXGNPAA0167300AA597600	-	-

Note: (Describe the outline of a simulator, if used for the tests, as a note under the table.)

Insert Cable Connections to/from EUT provided by test team.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
-	-	-	-	-	-	-

Note: The core(s) is(are) originally attached to the cable(s).

General Description of Applied Standards

C. References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

- **47 CFR FCC Part 2, Part 27**
- **ANSI C63.10:2013**
- **ANSI/TIA/EIA-603-E 2016**
- **ANSI 63.26 2015**

[Gra

E. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.32 dB	2	95%
RF Power Conducted Spurious Emissions	±2.25 dB	2	95%
RF Power Radiated Emissions	±3.01 dB	2	95%

Uncertainty Calculations Summary

2.1 Test Site

All testing was performed at Eurofins E&E Testing NA, LLC., 3162 Belick St. Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology. Eurofins E&E Testing NA, LLC. has been accredited by the American Association for Laboratory Accreditation (A2LA) (Certificate #: 0591.02) in accordance with ISO/IEC 17025:2017.

2.2 Equipment Overview and Test Configuration

The EUT Configuration is for the customer to provide.

2.3 Modifications to the EUT

No modifications were made to the EUT.

2.4 Modifications to the Standard

No modifications were made to the Test Standard.

2.5 Disposition of EUT

The test sample including all support equipment (if any), submitted to the Electromagnetic Compatibility Lab for testing was returned to 1 A Lifesafer, Inc. upon completion of testing.

3.0 Electromagnetic Compatibility Criteria for Intentional Radiators

3.1 Radiated Spurious Emissions

Test Method: ANSI 63.17:2013; FCC KDB 996369 D04 V.02 Module Integration Guide

Test Requirement(s): The following standards specified below are covered in the scope of this section of the test report:

- FCC Part 22H, 24E & 27 and KDB 996369 D04 V.02 Module Integration Guide

22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

24. 238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

27.53(m) Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts)

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

Frequency (MHz)	Field Strength (dBµV/m)	Measurement Distance (m)
30 - 88	40.00	3
88 - 216	43.50	3
216 - 960	46.00	3
Above 960	54.00	3

Sample Calculation for Distance Correction factor (DCF) measurement:

$$F_d = 20*LOG_{10}(D_m/D_s)$$

where:

F_d = Distance Factor in dB
D_m = Measurement Distance in meters
D_s = Specification Distance in meters

Sample formula for calculating the Corrected Data for the Radiated Emissions Measurements:

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dBµV)	ACF (dB/m) (+)	Pre Amp Gain (dB)(-)	CBL (dB) (+)	DCF (dB) (+)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
249.99	V	359.9	240.7	55.46	11.4	28.335	0	0	***38.505***	47	-8.495

Corrected Amplitude (dBµV/m) = Uncorrected Amplitude (dBµV) +ACF (dB/m) - Preamp Gain (dB) + CBL (dB) +DCF (dB) = 55.46 + 11.4 - 28.335 + 0 + 0 = ***38.505***

Test Procedure:

The method of testing, test conditions, and test procedures of ANSI 63.17: 2013 were used in addition to FCC KDB 996369 D04 Module Integration Guide. Any measured frequency that exhibits a margin of compliance that is less than 3 dB below the specification limit is marked. Eurofins E&E recommends that every emission measured has at least a 3 dB margin to allow for deviations in the emission characteristics that may occur during the production process.

For emissions between 30 MHz and 1000 MHz, the EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber a biconilog antenna was located 10m from the EUT on an adjustable mast. A pre-scan was first performed to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated, and the antenna height was varied between 1 m and 4 m to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz resolution bandwidth.

For emissions between 1 GHz and 18 GHz, a double ridged guide horn was located 3 m from the EUT on an adjustable mast. The EUT was placed on a non-metallic table 150 cm above the ground plane inside a semi-anechoic chamber. A pre-scan was performed and used to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated, and the antenna height was varied depending on the geometry of the EUT. To ensure maximized emissions, the horn antenna was positioned both vertically and horizontally. Unless otherwise specified, measurements were made using a peak and average detector with a 1 MHz resolution bandwidth.

For emission between 18 GHz and 20 GHz, a high frequency standard gain horn antenna was located 3 m from the EUT on an adjustable mast. The EUT was placed on a non-metallic table 150 cm above the ground plane inside a semi-anechoic chamber. A pre-scan was performed and used to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated, and the antenna height was varied depending on the geometry of the EUT. To ensure maximized emissions, the horn antenna was positioned both vertically and horizontally. Unless otherwise specified, measurements were made using a peak and average detector with a 1 MHz resolution bandwidth.

Due to the size of the EUT, pre-liminary measurements were performed with the EUT rotated on different axis (X, Y, Z). The worst-case data is presented in this report.

Test Software Used:

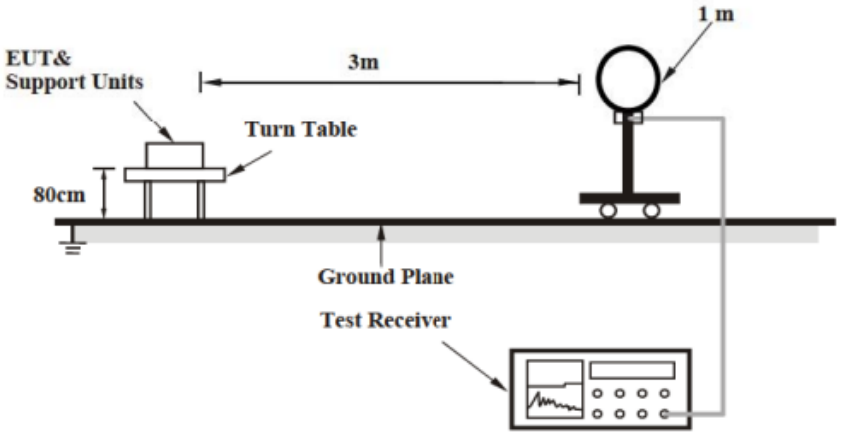
Nexio BAT-EMC MSSQL Version: V2023.0.5.0 was used to perform this test.

Test Procedures:

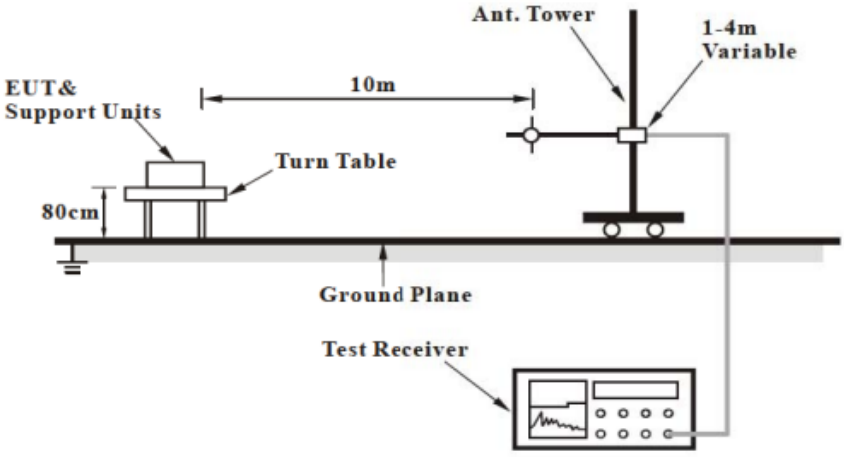
The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line. Only noise floor was measured above 18 GHz.

Test Setup

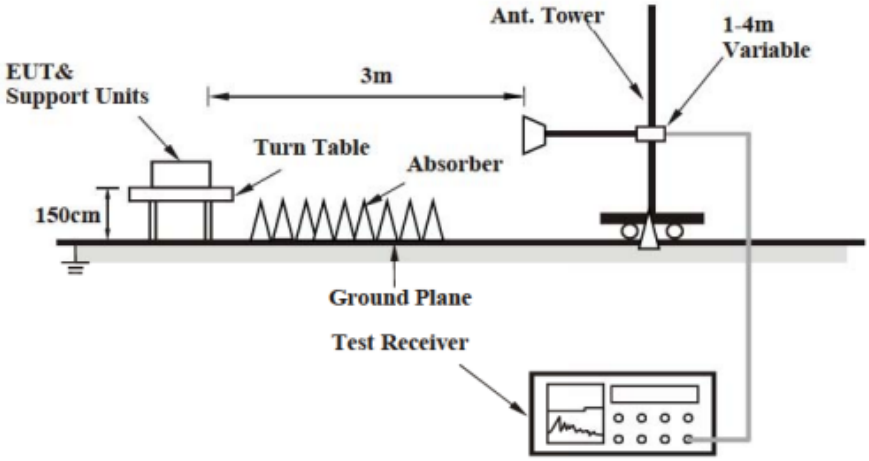
For Radiated Emission Below 30MHz



For Radiated emission 30 MHz to 1GHz



For Radiated emission 30 MHz to 1GHz



Test Results: The EUT was tested is **compliant** with Radiated Spurious Emissions Requirements.

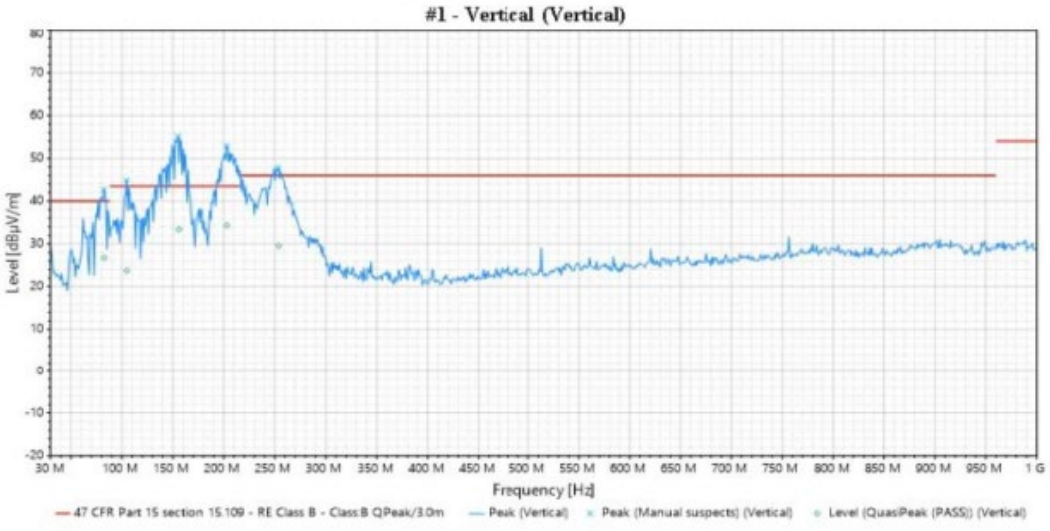
Test Equipment List

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2003	EMI Test Receiver	Keysight	N9030B	11/06/2023	11/06/2024
1S2399	Turntable Controller	SUNOL SCIENCE	SC99V	Not Required	Not Required
1S2486	5 Meter Chamber Control Room	Panashield	5 Meter Control Room	Not Required	Not Required
1S2435	Horn Antenna	ETS-LINDGREN	3117	04/06/2023	04/06/2025
1S4802	Preamplifier	EMC Instrument	EMC118A45SE	Note 1	Note 1
1S2668	Preamplifier	Sonoma Instrument	310N	Note 1	Note 1
1S2600	Antenna	Sunol Sciences Corp	JB3	04/ 11/ 2023	04/ 11/ 2025
Note 1: Verified by calibrated instrumentation at the time of testing					

Test Data
Radiated Emissions (30 MHz~1000 MHz)

EUT Test Condition		Measurement Detail	
Input Power	120 Vac	Frequency Range	30MHz-1GHz
Environmental Conditions	25 deg. C, 70% RH	Tested By	Richard Dollente
Test Mode	LTE Band 4, 10MHz		

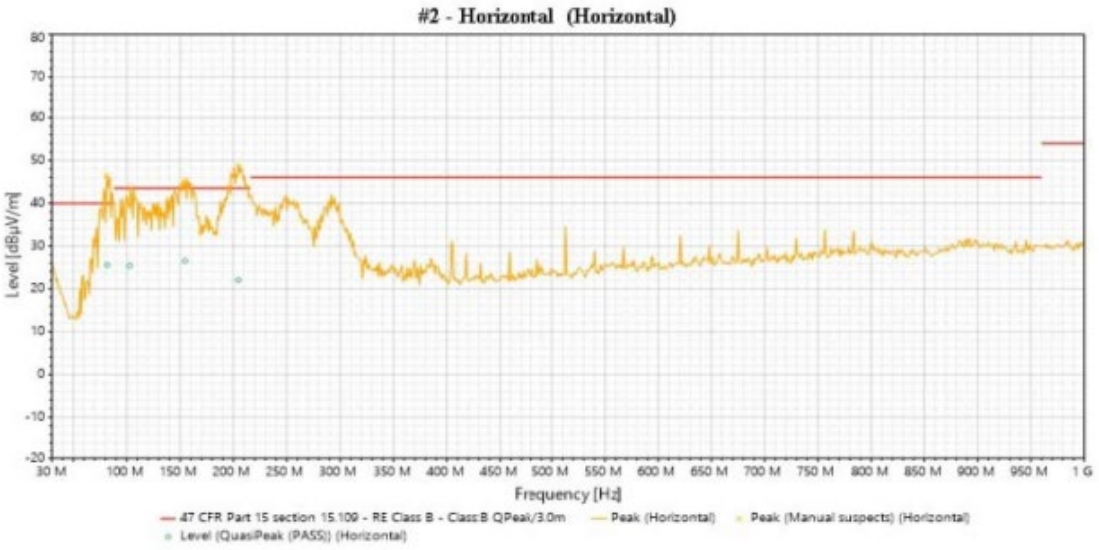


Antenna Polarity & Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Polarization	Level Peak[dB(uV/m)]	Limit Peak dB(uV/m)	Margin Peak [dB]	Height (m)	Angle (Deg)	Factor [dB(1/m)]	Pass/ Fail
1	82.536	Vertical	26.748	40	-13.252	1.232	81	-14.722	Pass
2	104.882	Vertical	23.757	43.5	-19.743	2.581	267	-9.641	Pass
3	155.898	Vertical	33.412	43.5	-10.088	1.168	228	-8.461	Pass
4	202.888	Vertical	34.306	43.5	-9.194	1.027	243	-7.696	Pass
5	253.784	Vertical	29.545	46	-16.455	1.278	32	-8.674	Pass

REMARKS:

1. Level (dBuV) = Reading (dBuV) + Factor (dB(1/m)).
2. Factor (dB(1/m)) = Antenna Factor(AF) (dB(1/m)) + Cable Loss (dB) +Preamplifier
3. Margin value = Emission level – Limit value.
4. The emission levels of other frequencies were less than 20dB margin against the limit.

EUT Test Condition		Measurement Detail	
Input Power	120 Vac	Frequency Range	30MHz-1GHz
Environmental Conditions	25 deg. C, 70% RH	Tested By	Richard Dollente
Test Mode	LTE Band 4, 10 MHz		



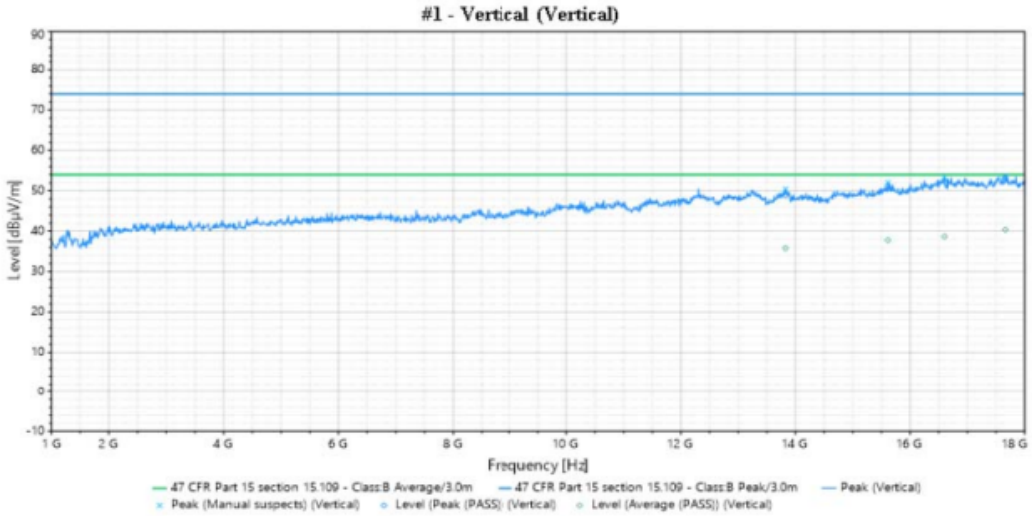
Antenna Polarity & Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Polarization	Level Peak[dB(uV/m)]	Limit Peak dB(uV/m)	Margin Peak [dB]	Height (m)	Angle (Deg)	Factor [dB(1/m)]	Pass/ Fail
1	25.586	Horizontal	40	-14.414	1.443	373	40	-14.787	Pass
2	25.418	Horizontal	43.5	-18.082	1.798	348	43.5	-10.024	Pass
3	26.529	Horizontal	43.5	-16.971	2.432	219	43.5	-8.82	Pass
4	22.064	Horizontal	43.5	-21.436	3.38	267	43.5	-8.64	Pass

REMARKS:

1. Level (dBuV) = Reading (dBuV) + Factor (dB(1/m)).
2. Factor (dB(1/m)) = Antenna Factor(AF) (dB(1/m)) + Cable Loss (dB) +Preamplifier
3. Margin value = Emission level – Limit value.
4. The emission levels of other frequencies were less than 20dB margin against the limit.

Radiated Emissions (Above 1GHz)

EUT Test Condition		Measurement Detail	
Input Power	120 Vac	Frequency Range	1GHz-18GHz
Environmental Conditions	25 deg. C, 70% RH	Tested By	Richard Dollente
Test Mode	LTE Band 4, 10 MHz		

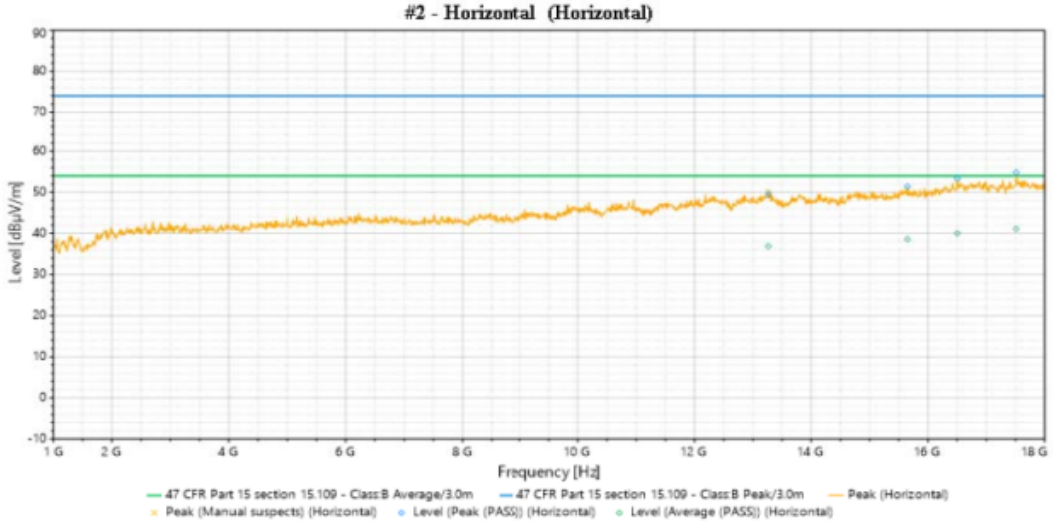


Antenna Polarity & Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Polarization	Level [dB(uV/m)]	Limit dB(uV/m)	Margin [dB]	Height (m)	Angle (Deg)	Factor [dB(1/m)]	Measure type/ Result
1	13824.6	Vertical	48.849	74	-25.151	3.6	378	8.21	Peak (PASS)
2	13824.6	Vertical	35.809	54	-18.191	3.6	378	8.21	Average (PASS)
3	15611.5	Vertical	51.268	74	-22.732	3.6	103	9.955	Peak (PASS)
4	15611.5	Vertical	37.782	54	-16.218	3.6	103	9.955	Average (PASS)
5	16601.5	Vertical	52.294	74	-21.706	3.6	120	10.679	Peak (PASS)
6	16601.5	Vertical	38.686	54	-15.314	3.6	120	10.679	Average (PASS)
7	17661.7	Vertical	53.312	74	-20.688	3.6	368	8.883	Peak (PASS)
8	17661.7	Vertical	40.359	54	-13.641	3.6	368	8.883	Average (PASS)

REMARKS:

1. Level (dBuV) = Reading (dBuV) + Factor (dB(1/m)).
2. Factor (dB(1/m)) = Antenna Factor(AF) (dB(1/m)) + Cable Loss (dB) +Preamplifier
3. Margin value – Emission level – Limit value.
4. The emission levels of other frequencies were less than 20dB margin against the limit.

EUT Test Condition		Measurement Detail	
Input Power	120 Vac	Frequency Range	1GHz-18GHz
Environmental Conditions	25 deg. C, 70% RH	Tested By	Richard Dollente
Test Mode	LTE Band 4 , 10 MHz		



Antenna Polarity & Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Polarization	Level [dB(uV/m)]	Limit dB(uV/m)	Margin [dB]	Height (m)	Angle (Deg)	Factor [dB(1/m)]	Measure type/ Result
1	13263.8	Horizontal	49.597	74	-24.403	4	54	8.719	Peak (PASS)
2	13263.8	Horizontal	36.866	54	-17.134	4	54	8.719	Average (PASS)
3	15648	Horizontal	51.395	74	-22.605	4	263	9.933	Peak (PASS)
4	15648	Horizontal	38.572	54	-15.428	4	263	9.933	Average (PASS)
5	16502.4	Horizontal	53.333	74	-20.667	4	194	10.618	Peak (PASS)
6	16502.4	Horizontal	40.022	54	-13.978	4	194	10.618	Average (PASS)
7	17511.9	Horizontal	54.838	74	-19.162	4	135	8.958	Peak (PASS)
8	17511.9	Horizontal	41.133	54	-12.867	4	135	8.958	Average (PASS)

REMARKS:

1. Level (dBuV) = Reading (dBuV) + Factor (dB(1/m)).
2. Factor (dB(1/m)) = Antenna Factor(AF) (dB(1/m)) + Cable Loss (dB) +Preamplifier
3. Margin value = Emission level – Limit value.
4. The emission levels of other frequencies were less than 20dB margin against the limit.

END OF REPORT