FCC PART 15, SUBPART C
ISEDC RSS-247, ISSUE 4, July 2025

TEST REPORT

For

Ring LLC

12515 Cerise Ave.,
Hawthorne, CA 90250, USA

FCC ID: 2AEUP-7AFYA9
IC: 20271-7AFYA9

Report Type:	**Product Type:**
C2PC	Car Alarm

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Report Number:	R2605061-247
Report Date:	2026-06-10
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A2LA ACCREDITED
CERTIFICATE #3297.02

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R2605061-247	C2PC Report	2026-06-10

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test report is prepared on behalf of *Ring LLC,* and their product: Car Alarm, model: 7AFYA9, FCC ID: 2AEUP-7AFYA9 ,IC: 20271-7AFYA9 or the "EUT" as referred to in this report. The Ring Car Alarm is an OBD-II device that is able to detect disturbances while parked and communicates via LoRa and BLE. BLE operates in 2.4 GHz frequency range. LoRa operates in 923.3MHz frequency range.

1.2 Mechanical Description of EUT

The EUT measures approximately 6.0 cm (Length) x 4.8 cm (Width) x 2.3 cm (Height) and weigh approximately <0.060 kg.

The data gathered is from a production sample provided by Ring LLC with BACL Assigned S/N: R2605061-2 and R2605061-5.

1.3 Objective

This report is prepared on behalf of Ring LLC in accordance with Part 2, Subpart J, and Part 15, Subpart C of the Federal Communication Commission's rules and ISEDC RSS-247 ISSUE 4, July 2025.

The objective is to determine compliance with FCC Part 15.247 and ISEDC RSS-247 for Antenna Requirement and Radiated Spurious Emissions.

In order to determine compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the immunity should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing and/or I/O cable changes, etc.).

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB 558074 D01 DTS Meas Guidance v05r02: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5%
RF output power, conducted	±0.57 dB
Power Spectral Density, conducted	±1.48 dB
Unwanted Emissions, conducted	±1.57 dB
All emissions, radiated	±4.0 dB
AC power line Conducted Emission	±2.0 dB
Temperature	±2ºC
Humidity	±5%
DC and low frequency voltages	±1.0%
Time	±2%
Duty Cycle	±3%

1.7 Test Facility Registrations

BACLs test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Innovation, Science, and Economic Development Canada (ISED) a under Registration Numbers: 3062A.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0428.

1.8 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

A- ***An independent, 3rd-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2017 by A2LA (Test Laboratory Accreditation Certificate Number 3297.02)*****,** in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2017 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report.

BACL's ISO/IEC 17025:2017 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio/Wireless, RF Exposure, Safety, and Wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include, but are not limited to: Central Office Telecommunications Equipment [including NEBS – Network Equipment Building Systems], Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial Equipment, Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, Railway Equipment, Marine Equipment, and Energy Efficient Lighting. Additionally, BACL offers comprehensive test capabilities for both Unlicensed and Licensed Wireless and RF Devices, per the requirements of the FCC (USA), ISED Canada (Canada), the EU/EEA/EFTA Nations (per the ETSI Standards applicable under the Radio Equipment Directive), Singapore, MIC (Japan), South Korea, Vietnam, and Taiwan ROC.

B- ***A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.03)*** to certify

- For the USA (Federal Communications Commission):
  - 1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
  - 2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
  - 3- All Telephone Terminal Equipment within FCC Scope C.
- For the Canada (Innovation, Science and Economic Development Canada):
  - 1 All Scope 1-Licence-Exempt Radio Frequency Devices;
  - 2 All Scope 2-Licensed Personal Mobile Radio Services;
  - 3 All Scope 3-Licensed General Mobile & Fixed Radio Services;
  - 4 All Scope 4-Licensed Maritime & Aviation Radio Services;
  - 5 All Scope 5-Licensed Fixed Microwave Radio Services
  - 6 All Broadcasting Equipment Technical Standards (BETS) in the Category I Equipment Standards List.
  - 7. RSS-HAC Radio Scope 6 Hearing Aid Compatibility and Volume Control
- For Singapore (Info-Comm Media Development Authority (IMDA)):
  - 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2 IMDA Phase I
  - 2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2 IMDA Phase II
- For the Hong Kong Special Administrative Region & (Office of the Communications Authority-OFCA) – APEC Tel MRA- Phase I and Phase II:
  - 1 Radio Equipment, per KHCA 10XX-series Specifications; HKCA 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1010, 1015, 1016, 1019, 1020, 1022, 1026, 1033, 1034, 1035, 1036, 1037, 1039, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1052, 1053, 1054, 1056, 1057, 1061, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1080, 1081
  - 2 GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications; HKCA 1218, 1223, 1224, 1225, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1277, 1281, 1282, 1283

3 Fixed Network Equipment, per HKCA 20XX-series Specifications; HKCA 2001, 2011, 2014, 2015, 2017, 2026, 2027, 2028, 2029, 2030, 2031

- For Japan:

1 MIC Telecommunication Business Law (Terminal Equipment):
- All Scope A1 - Terminal Equipment for the Purpose of Calls;
- All Scope A2 - Other Terminal Equipment

2 Radio Law (Radio Equipment):
- All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
- All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
- All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

C- ***A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.01)*** to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:

1 Appliances:
- for Clothes Washers (ver. 8.1)
- for Residential Dishwashers (ver. 6.0)
- for Residential Refrigerators and/or Freezers (ver. 5.0)

2 Commercial Food Service Equipment:
- for Commercial Dishwashers (ver. 3.0)
- for Commercial Ice Machines (ver. 3.0)

3 Data Center Equipment:
- for Large Network Equipment (ver. 1.1)

4 Electronics and Office Equipment:
- for Audio/Video Equipment (ver. 3.0)
- for Computers (ver. 8.0)
- for Data Center Storage (ver. 2.1)
- for Displays (ver. 8.0)
- for Enterprise Servers (ver. 4.0)
- for Imaging Equipment (ver. 3.1)
- for Set-top Boxes & Cable Boxes (ver. 5.1)
- for Small Network Equipment (ver. 1.0)
- for Telephony (ver. 3.0)
- for Televisions (ver. 9.0), Title 10 Chapter II CFR Part 430 Subpart B –Appendix BB, Title 10 Chapter II CFR Part 430 Subpart B –Appendix DD

3 Lighting and Fans
- for Decorative Light Strings (ver. 1.5)
- for Downlights (ver. 1.0)
- for Lamps (Light Bulbs)(ver. 2.1)
- for Luminaires (including sub-components) (ver. 2.2)
- for Residential Ceiling Fans (ver. 4.0)
- for Residential Ventilating Fans (ver. 4.1)

4 Other
- for Residential Ceiling Fans (ver. 4.0)

- for Electric Vehicle Supply Equipment (ver. 1.2)(Electric Vehicle Supply Equipment Final Test Method for DC-output EVSE Rev March 2021)
- for Water Coolers (ver. 3.0)
- for Smart Home Energy Management Systems (ver. 1.1)

D- ***A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:***

1. For the USA (Federal Communications Commission), as a Telecommunications Certification Body (TCB):
   - a. All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
   - b. All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
   - c. All Telephone Terminal Equipment within FCC Scope C.

2. Canada (ISED Canada) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II:
   - a. Phase I Designation Letter
   - b. Phase II ISED Canada recognition as a Product Certification Body for unlicensed wireless devices, licensed radios, radars, etc.:

3. For Singapore (InfoComm Media Development Authority (IMDA)) APEC Tel MRA -Phase I & Phase II:
   - a. All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2 IMDA Phase I
   - b. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2 IMDA Phase II

4. For the Hong Kong Special Administrative Region & (Office of the Communications Authority – OFCA) – APEC Tel MRA -Phase I & Phase II:
   - a. NIST Phase I Scope Recognition Letter from OFCA for BACL –US0057
   - b. OFCA Phase II Designation Letter

5. For Japan (Ministry of Communications):
   - a. NIST Japan Recognition
   - b. MIC Telecommunication Business Law (Terminal Equipment):
     1. All Scope A1 – Terminal Equipment for the Purpose of Calls;
     2. All Scope A2 – Other Terminal Equipment
   - c. Radio Law (Radio Equipment):
     1. All Scope B1 – Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
     2. All Scope B2 – Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
     3. All Scope B3 – Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

   - d. Japan VCCI – Voluntary Control Council for Interference US-Japan Telecom Treaty (VCCI Side Letter)
     1. VCCI Certificate
   - d. Japan Registered Certification Body
     1. RCB Recognition Letter
6. European Union:
   1. Radio Equipment Directive [RED] 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
   2. EMC Directive [EMCD] 2014/30/EU US-EU EMC & Telecom MRA CAB (NB):

7. Australia ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I:
    1.Phase I Designation Letter

8. Chinese Taipei (Republic of China – Taiwan):
    1. NCC (National Communications Commission) APEC Tel MRA -Phase I

9. Republic of Korea (Ministry of Communications – Radio Research Laboratory) APEC Tel MRA - Phase I:
    1. NIST Phase I Scope Update Notification Letter from Korea for BACL

10. Vietnam APEC Tel MRA -Phase I (page 13)
    1. Vietnam (MIC) NIST Phase I Scope

11. Indonesia SDPPI (page 6)
    1. Phase I Listing

12. Israel Phase I
    1. NIST Phase I Scope Update Recognition Letter from Israel for BACL –US0057

13. UK Radio and EMC NIST Designation Letters
    UK website: https://www.gov.uk/uk-market-conformity-assessment-bodies/bay-area-compliance-laboratories-corp-bacl
        1. Electromagnetic Compatibility Regulations (SI 2016/1091)
        https://assets.publishing.service.gov.uk/media/5fe1e344e90e07452fce4e5a/AB_1313_BACL_UK_EMC_Regs_NIST_Designation_Extended.pdf

        2. Radio Equipment Regulations 2017 (SI 2017/1206)
        https://assets.publishing.service.gov.uk/media/5fe1e351e90e074525bf7be6/AB_1313_BACL_UK_Radio_Regs_NIST_Designation_Extended.pdf

14. IFT Mexico Phase I
    1. NIST Phase I New Recognition Letter from Mexico for BACL – US0057

15. Taiwan (BSMI) Phase 1 Designation Letter and designation form.
    1. NIST Phase I Scope Update Designation Letter to BSMI for BACL – US0057
    2. NIST Phase I Scope Update Designation Form to BSMI for BACL – US0057

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 and FCC KDB 558074 D01 DTS Meas Guidance v05r02.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

2.2 EUT Exercise Software

The exercising software used during BLE testing was "BlueTool", the software is compliant with the standard requirements being tested against.

Radio	Frequency (MHz)	Configuration	Power Setting
BLE	2440	1 Mbps	Default

The exercising software used during LoRa testing was "Putty", the software is compliant with the standard requirements being tested against.

Radio	Frequency (MHz)	Power Setting
LoRa	923.3	Default

2.3 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Dell	Laptop	Latitude 5401	HCJH3Z2

2.4 Remote Support Equipment

Manufacturer	Description	Model	Serial Number
N/A	Programming board (Connected to the EUT for BLE Tx operation)	Custom	N/A

2.5 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
-	-	-	-
Note: EUT is powered by a battery.			

2.6 Interface Ports and Cabling

Cable Descriptions	Length (m)	From	To
USBC UART	<1	Programming board	Laptop

3 Summary of Test Results

FCC & ISEDC Rules	Description of Test	Results
FCC §2.1053, §15.35(b), §15.205, §15.209, §15.247(d) ISEDC RSS-247 §6.6 ISEDC RSS-Gen §8.9, §8.10	Radiated Spurious Emissions	Compliant

BACL is responsible for all the information provided in this report, except when information is provided by the customer as identified in this report. Information provided by the customer, e.g., antenna gain, can affect the validity of results.

4 FCC §15.35(b), §15.205, §15.209, §15.247(d) & ISEDC RSS-247 §6.6, RSS-Gen §8.9, §8.10 – Spurious Radiated Emissions

4.1 Applicable Standards

As per FCC §15.35(b): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 –167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §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 (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC §15.247 (d),

in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

As per ISEDC RSS-247 §6.6,

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum device, digitally modulated device, or hybrid system is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power – based on either an RF conducted or a radiated measurement – provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 6.3.2, the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

As per ISEDC RSS-Gen §8.9,

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Field Strength (micro volts/meter)	Measurement Distance (meters)
9 – 490 kHz[Note 1]	6.37/F (F in kHz)	300
490 – 1705 kHz	63.7/F (F in kHz)	30
1.705 – 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

As per ISEDC RSS-Gen §8.10(c),

Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

Table 7 – Restricted frequency bands[Note 1]

MHz	MHz	GHz
0.090 – 0.110	149.9 – 150.05	9.0 – 9.2
0.495 – 0.505	156.52475 – 156.52525	9.3 – 9.5
2.1735 – 2.1905	156.7 – 156.9	10.6 – 12.7
3.020 – 3.026	162.0125 –167.17	13.25 – 13.4
4.125 – 4.128	167.72 – 173.2	14.47 – 14.5
4.17725 – 4.17775	240 – 285	15.35 – 16.2
4.20725 – 4.20775	322 – 335.4	17.7 – 21.4
5.677 – 5.683	399.9 – 410	22.01 – 23.12
6.215 – 6.218	608 – 614	23.6 – 24.0
6.26775 – 6.26825	960 – 1427	31.2 – 31.8
6.31175 – 6.31225	1435 – 1626.5	36.43 – 36.5
8.291 – 8.294	1645.5 – 1646.5	Above 38.6
8.362 – 8.366	1660 – 1710	
8.37625 – 8.38675	1718.8 – 1722.2	
8.41425 – 8.41475	2200 – 2300	
12.29 – 12.293	2310 – 2390	
12.51975 – 12.52025	2483.5 – 2500	
12.57675 – 12.57725	2655 – 2900	
13.36 – 13.41	3260 – 3267	
16.42 – 16.423	3332 – 3339	
16.69475 – 16.69525	3345.8 – 3358	
16.80425 – 16.80475	3500 – 4400	
25.5 – 25.67	4500 – 5150	
37.5 – 38.25	5350 – 5460	
73 – 74.6	7250 – 7750	
74.8 – 75.2	8025 – 8500	
108 – 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

4.2 Test Setup

The radiated emissions tests were performed in the 5-meter chamber, using the setup in accordance with ANSI C63.10. The specification used was the FCC §15.247 and ISEDC RSS-247 limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundled when necessary.

4.3 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT was set 3 meter away from the testing antenna, which was varied from 1-4 meters, and the EUT was placed on a turntable, which was 0.8 meters and 1.5 meters above the ground plane for below and above 1000 MHz measurements, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna's polarity should be changed between horizontal and vertical.

The spectrum analyzer or receiver was set as:

9 kHz-150 kHz

RBW = 200Hz /VBW = 1kHz

150 kHz-30 MHz

RBW = 9kHz /VBW = 30kHz

30 MHz- 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
(2) Average: RBW = 1MHz / VBW = 3MHz / Sweep = Auto / Trace averaging for 100 traces

4.4 Corrected Amplitude and Margin Calculation

For emissions below 1 GHz,

The Corrected Amplitude (CA) is calculated by adding the Correction Factor to the S.A. Reading. The basic equation is as follows:

CA = S.A. Reading + Correction Factor

For example, a corrected amplitude of 40.3 dBuV/m = S.A. Reading (32.5 dBuV) + Correction Factor (7.8 dB/m)

The Correction Factor is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) together. This calculation is done in the measurement software, and reported in the test result section. The basic equation is as follows:

Correction Factor = AF + CL + Atten – Ga

The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude – Limit

For emission above 1 GHz,

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + AF + CL + Atten – Ga

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

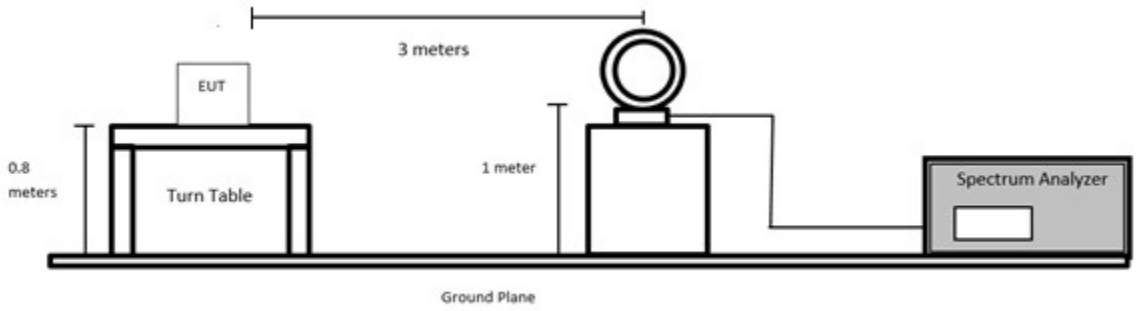
The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude – Limit

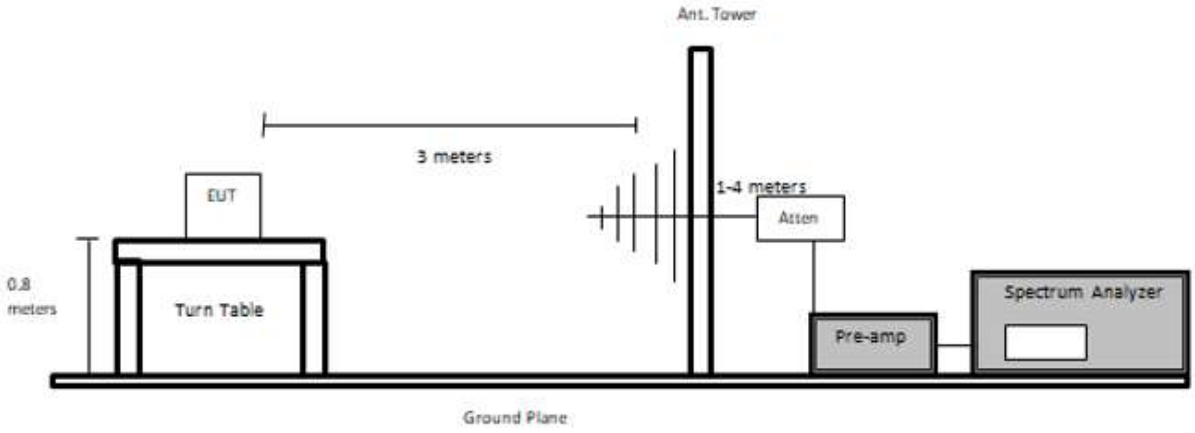
4.5 Test Setup Block Diagram

Radiated:

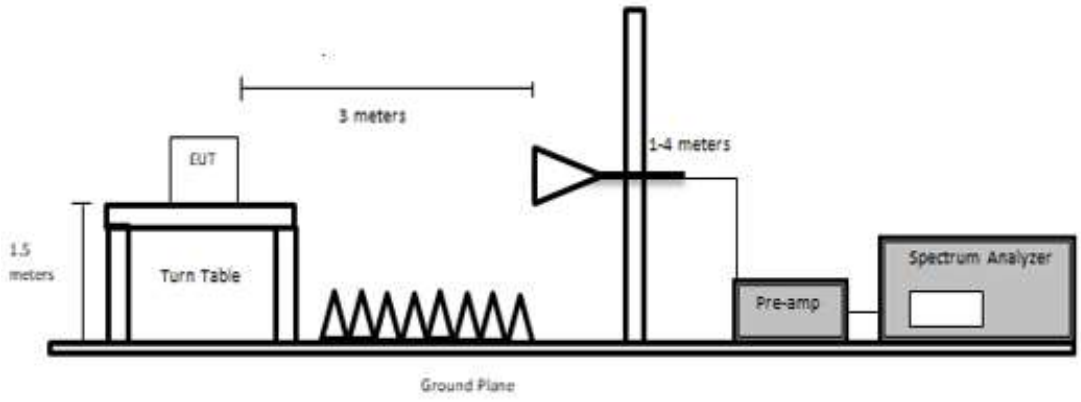
9 kHz to 30 MHz Test Setup



30 MHz to 1 GHz Test Setup



Above 1 GHz Test Setup



4.6 Test Equipment List and Details

Radiated:

BACL No.	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
327	Sunol Sciences	System Controller	SC110V	122303-1	N/R	N/R
1075	Sunol Sciences	Boresight Tower	TLT3	050119-7	N/R	N/R
1388	Sunol Sciences	Flush Mount Turntable	FM	112005-2	N/R	N/R
1432	Keysight Technologies	MXE EMI Receiver, Multi-touch	N9038B	MY60180008	2026-01-22	1 year
316	Sonoma Instruments	Preamplifier 10 kHz - 2.5 GHz	317	260406	2025-11-12	7 months
321	Sunol Sciences	Biconilog Antenna 30MHz-1GHz	JB3	A020106-2; 1504	2025-12-16	2 years
1245	Pasternack	6dB Attenuator	PE7390-6	01182018A	2025-12-16	2 years
1246	Hewlet Packard	RF Limiter 9KHz-1GHz	11867A	01734	2026-03-05	6 months
1626	Global Engineering Services Corp	N-type 15m coax cable	XH500A-N/J-N/J-15M-A	BACL01626A	2026-04-24	6 months
1248	Pasternack	RG214 COAX Cable 9 kHz - 1 GHz	PE3062	BACL01248A	2026-04-06	6 months
1192	ETS Lindgren	Horn Antenna 1-18GHz	3117	00218973	2024-10-23	2 years
1449	BACL	Preamplifier 100MHz-18GHz	BACL1313-A100M18G	4052472	2026-02-17	6 months
90	Wisewave	Horn Antenna 18-26.5GHz	ARH-4223-02	10555-01	2025-05-06	2 years
393	Com-Power	Loop Antenna, Active	AL-130	17043	2025-05-06	2 years
1451	BACL	Preamplifier 18-40GHz	BACL-1313-A1840	4052432	2026-02-17	6 months
1545	Megaphase	K-type coax cable	TM40-K1K3-12	20869601 001	2026-02-17	6 months
1546	Megaphase	SMA coax cable	TM26-S1S3-12	20869602 001	2026-02-27	6 months
1295	CarlisleIT	10m Coaxial Cable	UFB142A-1-3937-200200	64639890912-001	2026-04-14	6 months
672	Micro-Tronics	2.4 - 2.6GHz Notch Filter	BRM50701	160	2026-03-05	1 year
1517	Micro-Tronics	Notch Filter 902 - 928 MHz	BRC50722	G038	2026-03-06	1 year
1232	Micro-Tronics	High Pass Filter	HPM20242	001	2026-04-06	1 year

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

4.7 Test Environmental Conditions

Temperature:	20 – 22.5°C
Relative Humidity:	55%
ATM Pressure:	101.85 kPa

The radiated testing was performed by Rachana Khanduri on 2026-05-13 and 2026-05-14 in 5m chamber 3.

4.8 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15.209, 15.247 and ISEDC RSS-247 standards' radiated emissions limits, and had the worst margin of:

Worst Case – Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Configuration**
-0.57	16023.75	Horizontal	GFSK(1M), 2440 MHz

Please refer to the tables and plots in the next section for detailed test results.

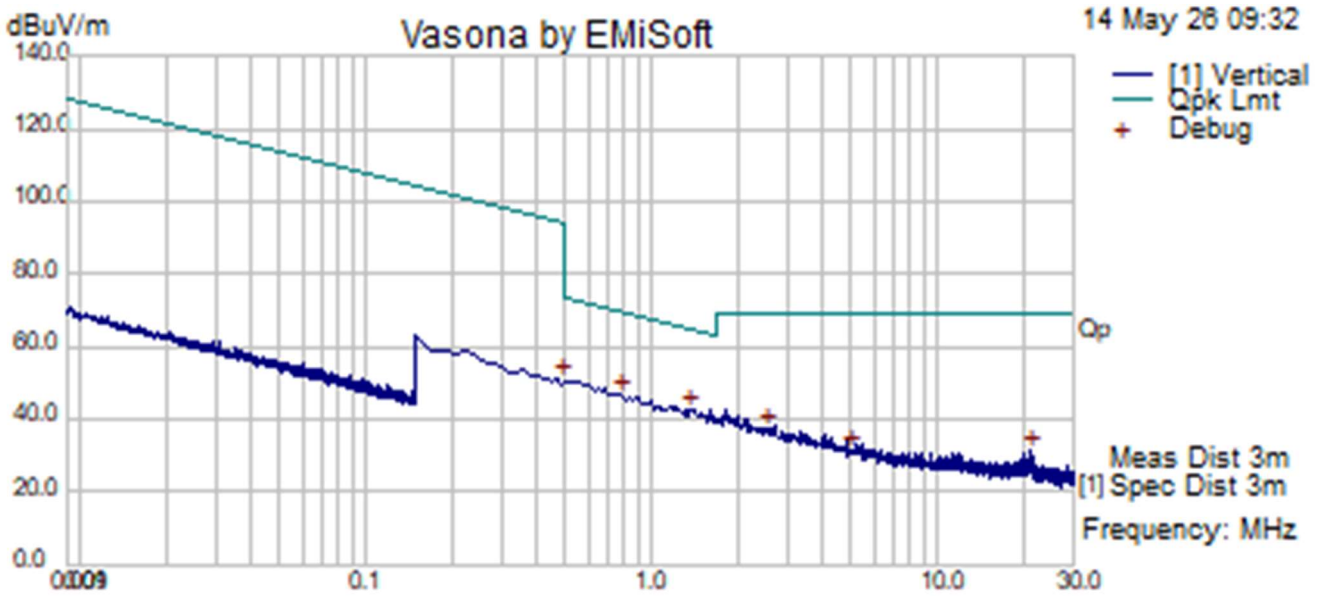
4.9 Radiated Emissions Test Results

Note:
1. Pre-scan was performed in order to determine worst-case orientation of device with respect to measurement antenna in the X/Y/Z axis. Plots/data shown represent measurements made in worst-case orientation.
2. BLE, 2440MHz at 1Mbps used as worst case configuration to show compliance for 9 kHz to 26.5GHz.

1) 9 kHz – 30 MHz, Measured at 3 meters

BLE GFSK (1Mbps), 2440 MHz

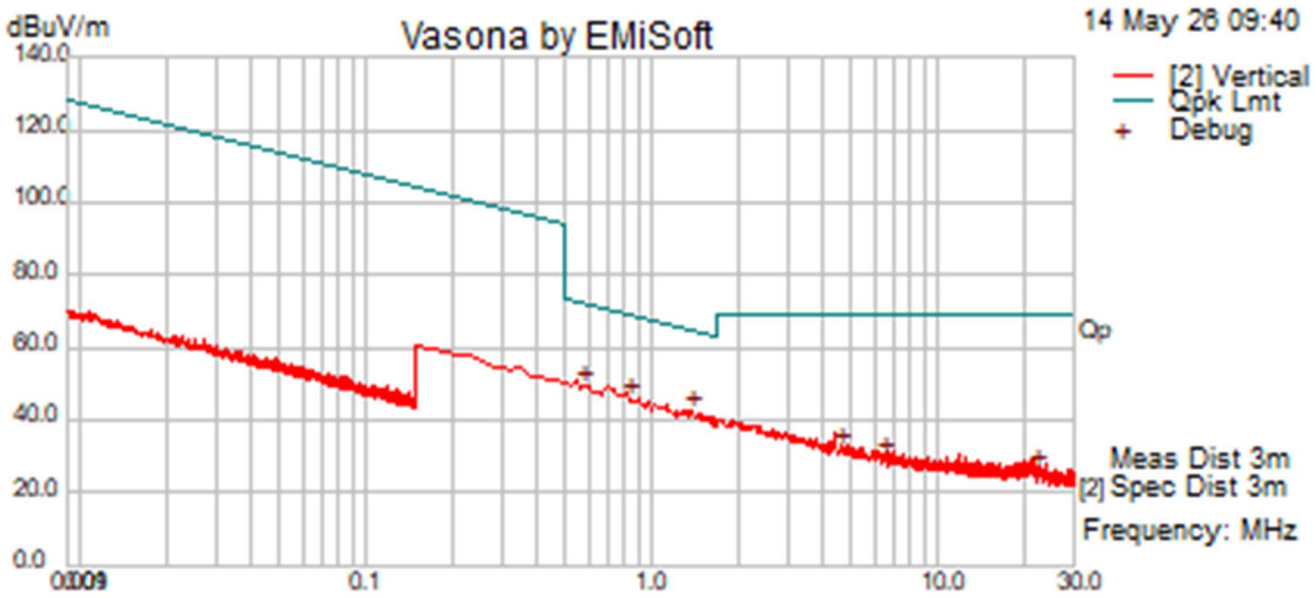
Parallel



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.48	40.24	10.14	50.38	Parallel	94.03	-43.65	Peak
0.77	36.69	10.05	46.74	Parallel	69.84	-23.10	Peak
1.35	32.00	10.12	42.12	Parallel	65.01	-22.89	Peak
2.49	26.60	10.32	36.93	Parallel	69.54	-32.61	Peak
4.90	20.76	10.19	30.96	Parallel	69.54	-38.58	Peak
21.14	22.05	9.09	31.14	Parallel	69.54	-38.40	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

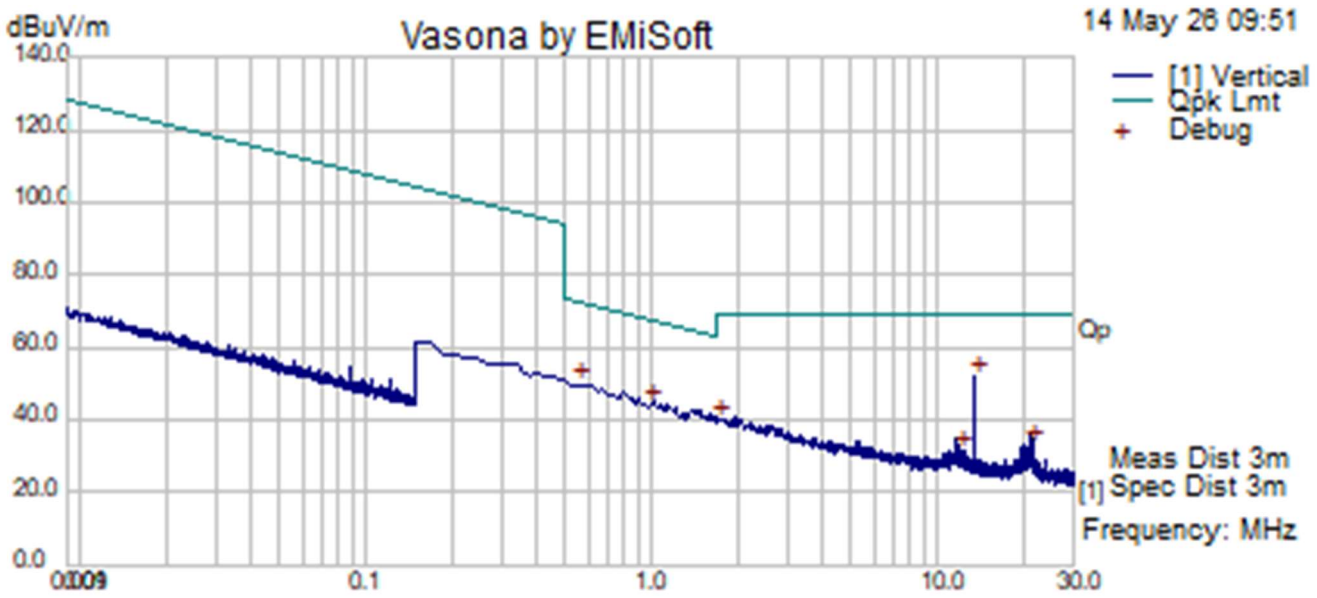
Perpendicular



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.56	38.53	10.12	48.65	Perpendicular	72.58	-23.93	Peak
0.84	35.22	10.03	45.25	Perpendicular	69.13	-23.88	Peak
1.36	31.96	10.12	42.08	Perpendicular	64.94	-22.86	Peak
4.55	21.95	10.24	32.19	Perpendicular	69.54	-37.35	Peak
6.48	19.04	10.34	29.38	Perpendicular	69.54	-40.16	Peak
22.22	17.07	8.45	25.52	Perpendicular	69.54	-44.02	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

Parallel to the ground plane

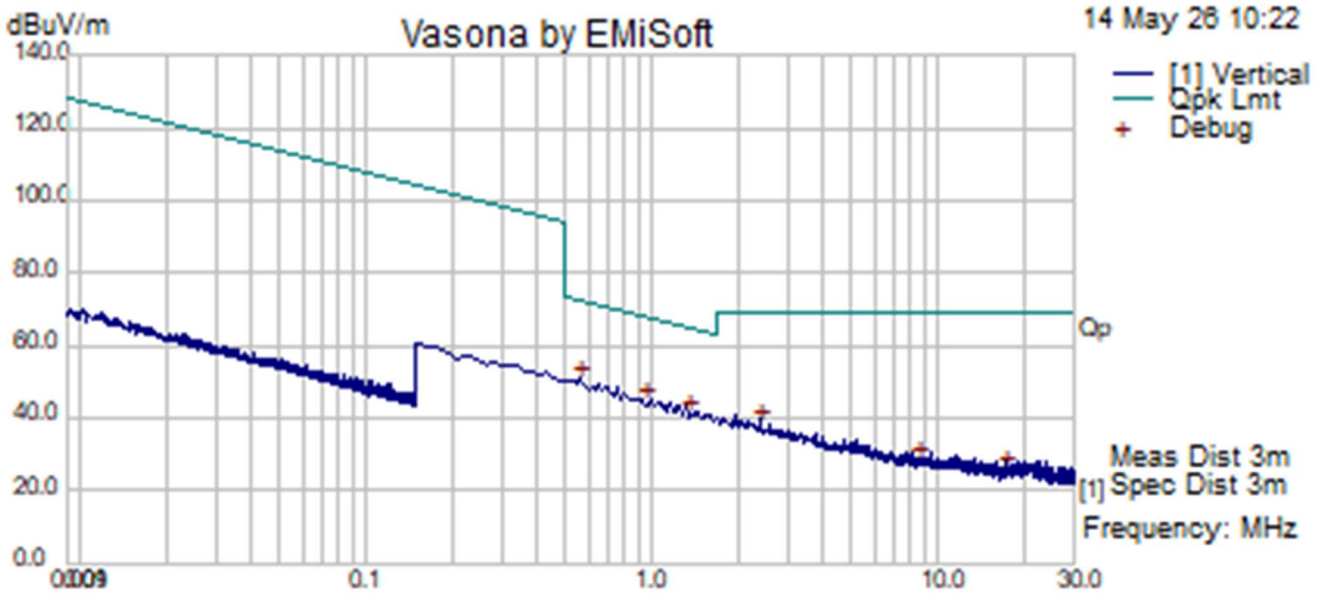


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.55	39.55	10.12	49.67	Ground-Parallel	72.74	-23.07	Peak
0.98	33.80	9.99	43.79	Ground-Parallel	67.76	-23.97	Peak
1.72	29.53	10.22	39.75	Ground-Parallel	69.54	-29.79	Peak
11.95	20.26	10.52	30.77	Ground-Parallel	69.54	-38.77	Peak
13.56	41.42	10.46	51.88	Ground-Parallel	69.54	-17.66	Peak
21.43	23.93	8.87	32.80	Ground-Parallel	69.54	-36.74	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

LoRa, 923.3 MHz

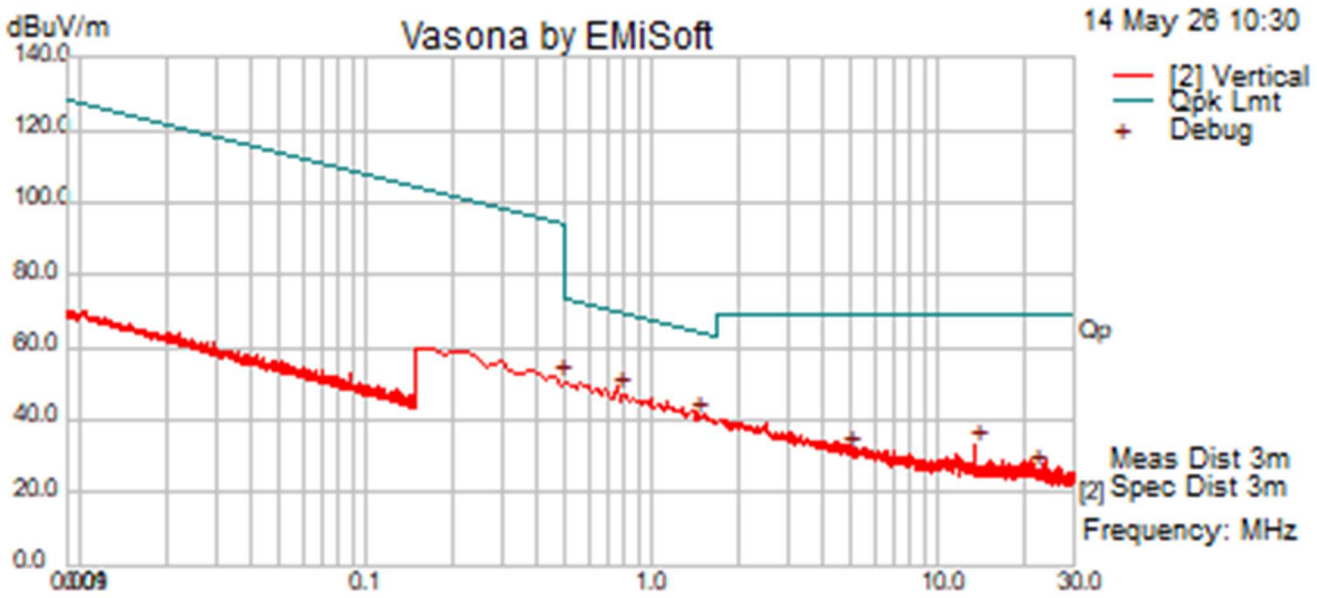
Parallel



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.55	40.12	10.12	50.24	Parallel	72.74	-22.50	Peak
0.95	34.17	10.00	44.17	Parallel	68.08	-23.91	Peak
1.35	30.30	10.12	40.42	Parallel	65.01	-24.59	Peak
8.46	16.76	10.45	27.22	Parallel	69.54	-42.32	Peak
17.00	14.40	10.33	24.73	Parallel	69.54	-44.81	Peak
2.40	27.68	10.32	38.00	Parallel	69.54	-31.54	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

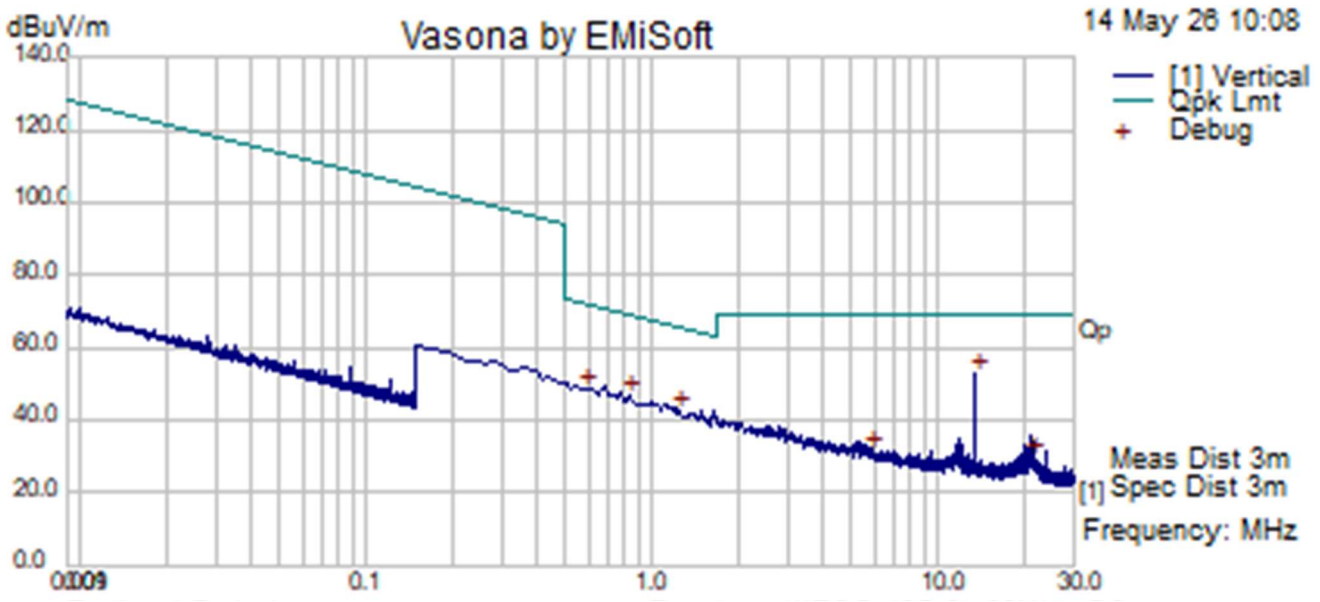
Perpendicular



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.48	40.20	10.14	50.34	Perpendicular	94.03	-43.69	Peak
0.77	37.42	10.05	47.47	Perpendicular	69.84	-22.37	Peak
1.45	30.47	10.15	40.62	Perpendicular	64.38	-23.76	Peak
4.90	21.12	10.19	31.32	Perpendicular	69.54	-38.22	Peak
13.56	22.27	10.46	32.73	Perpendicular	69.54	-36.81	Peak
21.78	17.59	8.59	26.18	Perpendicular	69.54	-43.36	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

Parallel to the ground plane

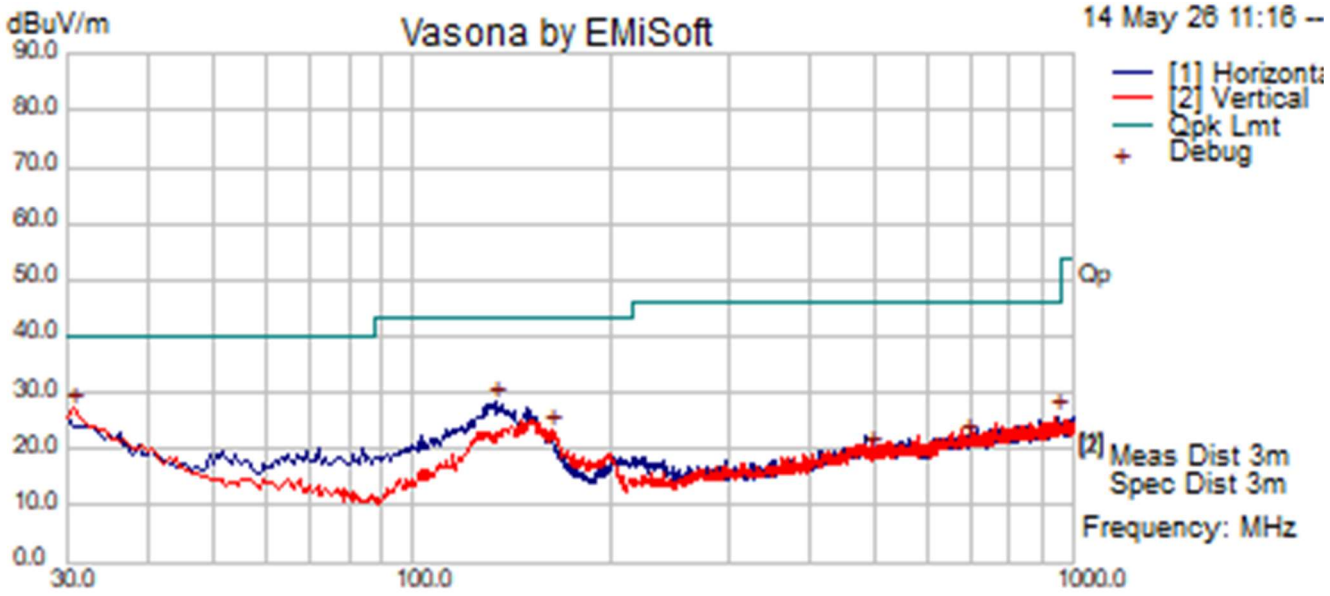


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Position	Limit (dBµV/m)	Margin (dB)	Detector
0.58	38.03	10.12	48.14	Ground-Parallel	72.34	-24.20	Peak
0.83	36.08	10.04	46.11	Ground-Parallel	69.20	-23.09	Peak
1.23	32.13	10.08	42.21	Ground-Parallel	65.82	-23.61	Peak
5.90	21.01	10.42	31.43	Ground-Parallel	69.54	-38.11	Peak
13.56	42.30	10.46	52.76	Ground-Parallel	69.54	-16.78	Peak
21.60	20.95	8.73	29.68	Ground-Parallel	69.54	-39.86	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

2) 30 MHz – 1 GHz, Measured at 3 meters

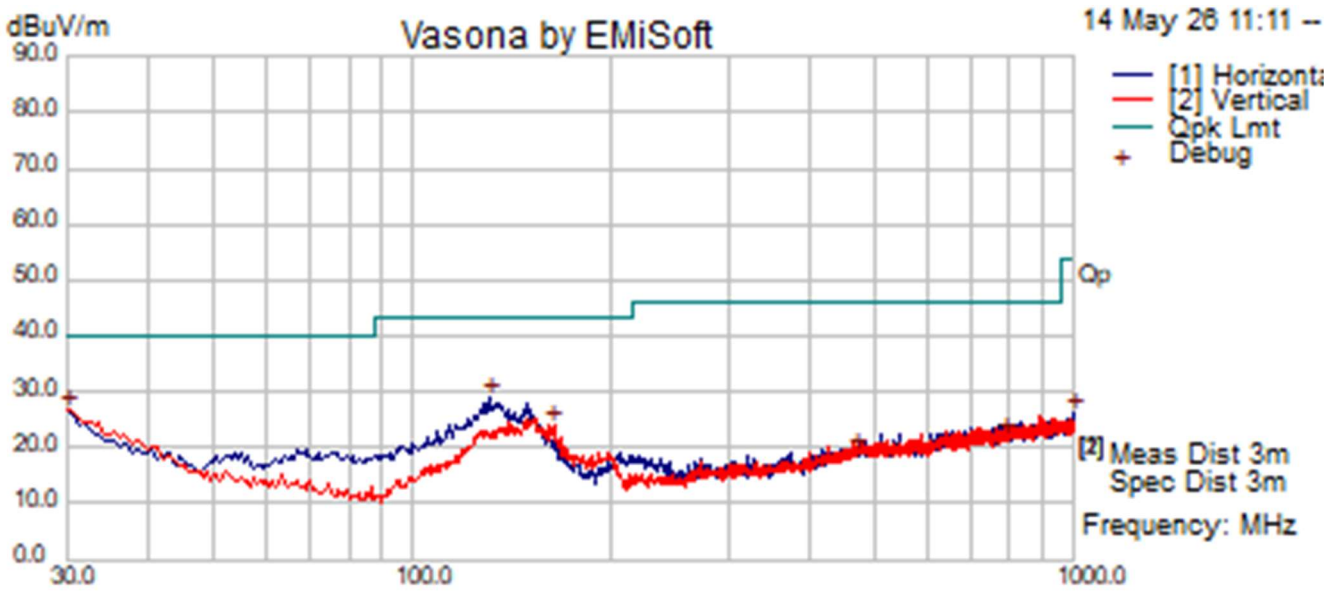
BLE GFSK (1Mbps), 2440 MHz



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Limit (dBµV/m)	Margin (dB)	Detector
30.61	38.93	-11.67	27.26	V	40	-12.74	Peak
133.06	47.23	-18.94	28.29	H	43.5	-15.21	Peak
946.65	37.45	-11.65	25.81	H	46	-20.19	Peak
162.16	43.91	-20.65	23.26	V	43.5	-20.24	Peak
493.33	35.29	-15.76	19.53	H	46	-26.47	Peak
687.15	35.07	-13.66	21.40	H	46	-24.60	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

LoRa, 923.3 MHz

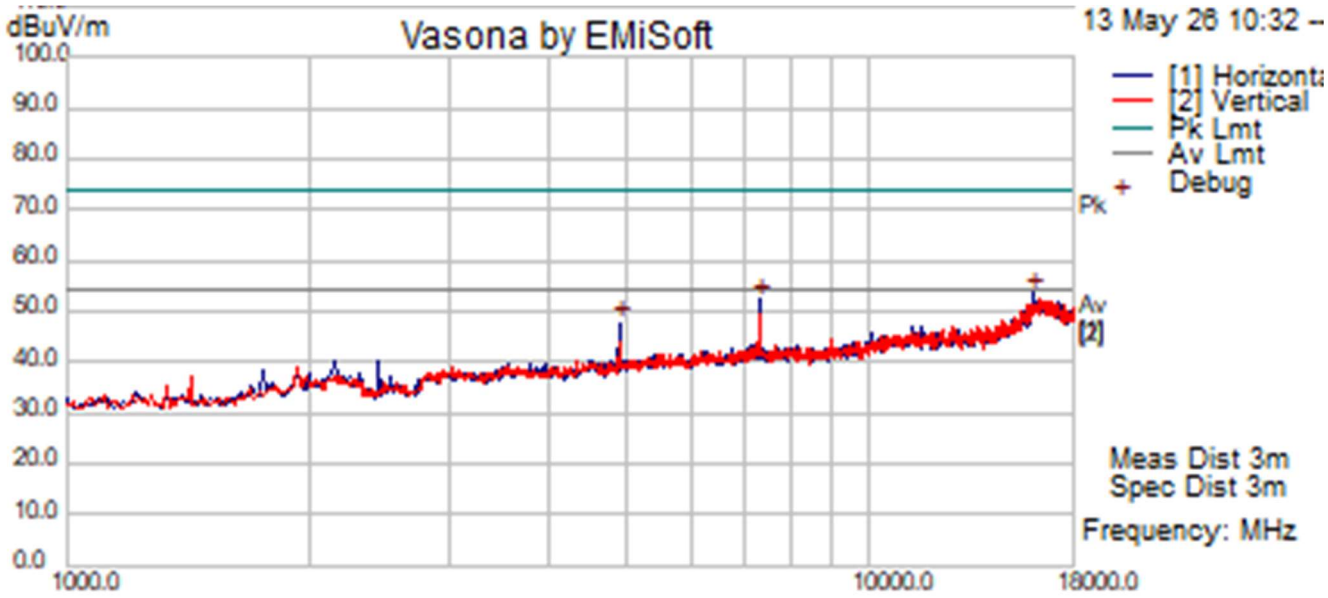


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Limit (dBµV/m)	Margin (dB)	Detector
30.00	37.82	-11.22	26.60	V	40	-13.40	Peak
130.64	47.47	-18.71	28.75	H	43.5	-14.75	Peak
160.95	44.56	-20.62	23.94	V	43.5	-19.56	Peak
998.79	37.17	-11.11	26.07	H	54	-27.93	Peak
465.60	34.85	-15.84	19.01	H	46	-26.99	Peak
787.85	34.78	-12.95	21.83	H	46	-24.17	Peak

Note: Peak emissions are compared to QP limits to show worst-case compliance.

3) 1 GHz – 18 GHz, Measured at 3 meters

BLE GFSK (1Mbps), 2440 MHz

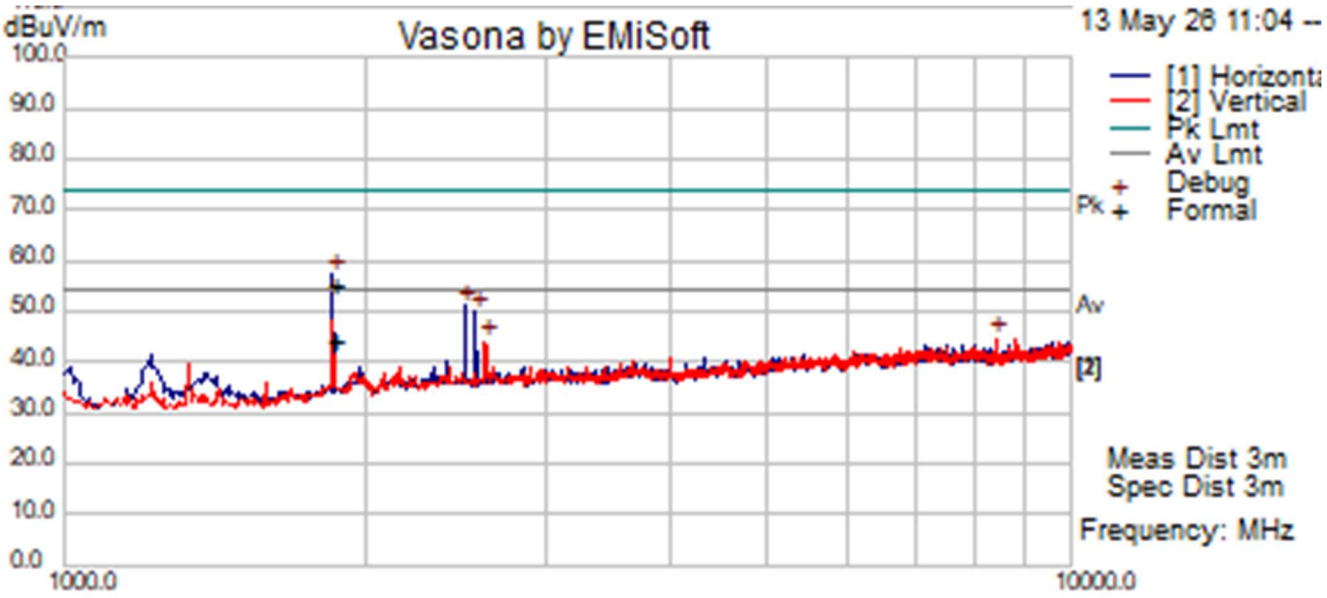


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Limit (dBµV/m)	Margin (dB)	Detector
16023.75	34.09	19.35	53.43	H	54	-0.57	Peak
7321.88	47.47	5.00	52.47	H	54	-1.53	Peak
4878.13	47.04	0.74	47.78	H	54	-6.22	Peak
11533.49	31.55	12.03	43.57	H	54	-10.43	Peak

Note: Peak emissions are compared to average limits to show worst-case compliance.

4) 1 GHz – 10 GHz, Measured at 3 meters

LoRa, 923.3 MHz

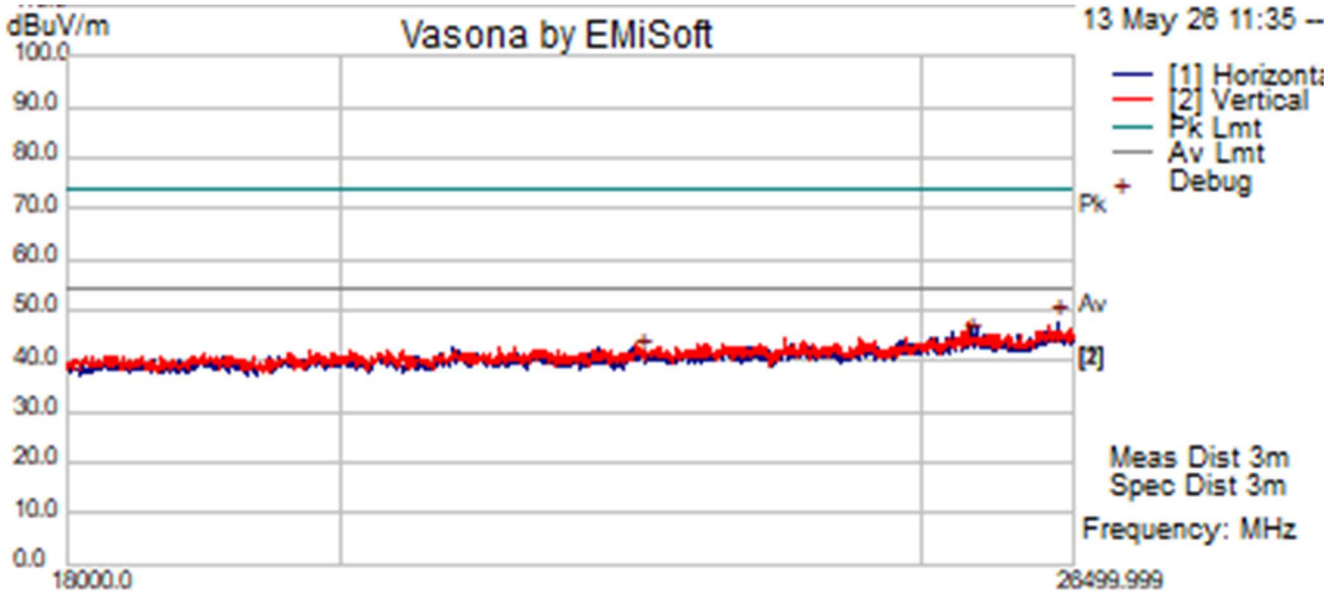


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Limit (dBµV/m)	Margin (dB)	Detector
1847.3775	59.91	-5.01	54.9	H	74	-19.1	Peak
1847.3775	49.28	-5.01	44.26	H	54	-9.74	Average
2501.88	53.90	-2.67	51.23	H	54	-2.77	Peak
2563.75	52.55	-2.54	50.00	H	54	-4.00	Peak
8430.63	38.47	6.04	44.52	V	54	-9.48	Peak
2620.00	46.33	-2.37	43.96	V	54	-10.04	Peak

Note: Peak emissions are compared to average limits to show worst-case compliance.

5) 18 GHz – 26.5 GHz, Measured at 3 meters

BLE GFSK(1Mbps), 2440 MHz



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Limit (dBµV/m)	Margin (dB)	Detector
26335.31	39.40	8.25	47.66	H	54	-6.34	Peak
22426.70	37.74	3.66	41.40	H	54	-12.60	Peak
25474.91	36.57	7.35	43.93	H	54	-10.07	Peak

Note: Peak measurement is used to compare to the average limit.

5 Appendix A (Normative) – EUT Test Setup Photographs

Please refer to the attachment.

6 Appendix B (Normative) – EUT External Photographs

Please refer to the attachment.

7 Appendix C (Normative) – EUT Internal Photographs

Please refer to the attachment.

8 Appendix D (Normative) – A2LA Electrical Testing Certificate

Accredited Laboratory

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 13th day of September 2024.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2026

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

Please follow the web link below for a full ISO 17025 scope.

https://www.a2la.org/scopepdf/3297-02.pdf

--- END OF REPORT ---