



**FCC PART 15 SUBPART B  
ICES-003 ISSUE 7 (OCT. 2020)**

**CLASS B TEST REPORT**

For

**Enphase Energy, Inc.**

47281 Bayside Parkway  
Fremont 94538, CA, USA

**Model: CELLMODEM-07-NA-05**

<b>Report Type:</b> Original Report	<b>Product Type:</b> USB Type Cell Modem
<b>Prepared By</b>	Kevin Nguyen Test Engineer
<b>Report Number</b>	R2406042
<b>Report Date</b>	2024-07-02
<b>Reviewed By</b>	Kai Chen Associate Project Engineer
Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave Sunnyvale, CA 94089, USA Tel: (408) 732-9162, Fax: (408) 732 9164	



**Note:** This test report was prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This test report **shall not** be used by the customer to claim product certification, approval, or endorsement by A2LA or any agency of the United States Government or any foreign government.

\* This test report may contain data and test methods that are not covered by BACL's scope of accreditation as of the test report date shown above. These items are marked within the test report text with an asterisk "\*"

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Bay Area Compliance Laboratories Corp.  
 1274 Anvilwood Ave., Sunnyvale, CA 94089, USA  
 Phone: (408) 732-9162, Fax: (408) 732-9164  
 www.baclcorp.com

## ATTESTATION OF TEST RESULTS

Date of Issue: 2024-07-02

Attestation Number: R2406042

**Bay Area Compliance Laboratories Corp. (BACL) hereby declares that testing has been completed and is compliant for the product and standards below:**

<b>Product Name / Description:</b>	USB Type Cell Modem
<b>Model:</b>	CELLMODEM-07-NA-05
<b>Manufactured by:</b>	Enphase Energy, Inc.
<b>Project Number:</b>	R2406042

<b>Standard</b>	<b>Test Result</b>
FCC PART 15 SUBPART B ICES-003 ISSUE 7 (Oct. 2020)	Compliant

BACL tested the above equipment in accordance with the requirement with the above Standards. The results were being documented in Test Report #R2406042 listed in above table apply only to the tested sample under the condition and modes of operation as described herein.

Attestation by: Kai Chen  
 Associate Project Engineer

A handwritten signature in black ink, appearing to read "Kai Chen", is written over a horizontal line.

Signature

2024-07-02  
 Date

This document issued by Bay Area Compliance Laboratories Corp., ("BACL" or "Company"), is subject to its general conditions of service printed on the quotation, purchase order acknowledgement, or on the Product Certification Agreement and is available on request. We hereby notify you that those aforementioned documents contain details on the limitations of the liability, indemnification and jurisdiction issues defined therein. Anyone possessing this document is advised that information contained herein reflects the Company's results or findings at the conclusion of testing or services rendered only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of a duly authorized representative of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. The results, opinions or attestations shown in this document refer only to the sample(s) tested.

CI024-A

### Document Revision History

Revision Number	Report Number	Description of Revision	Date
0	R2406042	Original Report	2024-07-02

# 1 General Information

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## 1.1 General Statements


Bay Area Compliance Laboratory Corp. [BACL] hereby makes the following Statements:

- The Unit(s) described in this Test Report were received at BACL's facilities on 03 June 2024. Testing was performed on the Unit(s) described in this Test Report on 20 June 2024.
- The Test Results reported herein apply only to the Unit(s) actually tested, and to substantially identical Units.
- This Test Report must not be used to claim product endorsement by A2LA, or any agency of the U.S. Government, or by any other foreign government.
- This Test Report is the property of BACL, and shall not be reproduced, except in full, without prior written approval of BACL.

## 1.2 Purpose

This report was prepared on behalf of *Enphase Energy, Inc.* and their product *USB Type Cell Modem*, Model: *CELLMODEM-07-NA-05* in accordance with FCC Part 15B, Radio Frequency Devices – Unintentional Radiators and Issue 7 of Innovation, Science, and Economic Development Canada ICES-003, Interference – Causing Equipment Standards for Digital Apparatus.

THE DATA CONTAINED IN THIS TEST REPORT WAS COLLECTED AND COMPILED BY:



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Kevin Nguyen  
[Test Engineer]

### 1.3 Agent for the Responsible Party

None

### 1.4 Responsible Party

Company Name: Enphase Energy, Inc.  
Contact: Praveen Krishnan  
Street Address: 47281 Bayside Parkway  
City/State/Zip: Fremont, CA 94538  
Country: USA  
Email: [prkrishnan@enphaseenergy.com](mailto:prkrishnan@enphaseenergy.com)  
Web: [www.enphaseenergy.com](http://www.enphaseenergy.com)

### 1.5 Product Description of the Equipment under Test (EUT)

The “EUT” (Equipment under Test) was a USB Type Cell Modem, Model: CELLMODEM-07-NA-05. The highest frequency used and/or generated was 2.6875 GHz.

### 1.6 Mechanical Description of the EUT

**Dimensions:** approximately 9.0 cm (L) x 4.5 cm (W) x 2.9 cm (H)

**Weight:** approximately < 0.1 kg

**Serial Number:** None

**EUT Photos:** See Annex A of this Test Report.

*The data gathered are from a production sample provided by the manufacturer.*

### 1.7 EUT Input Power

The EUT was powered by an 5VDC AC/DC adapter.

### 1.8 Related Submittal(s)/Grant(s)

No related submittals.

## 1.9 Test Facility Registrations

BACL's 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 Industry Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

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-0403.

## 1.10 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

**A- An independent, 3<sup>rd</sup>-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, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment [including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices, Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

**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 (Industry 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 Technical Standards (BETS) in the Category I Equipment Standards List.

- For Singapore (Info-Communications Development Authority (IDA)):

- 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2

2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2
- For the Hong Kong Special Administrative Region:
  - 1 All Radio Equipment, per KHCA 10XX-series Specifications;
  - 2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
  - 3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.
- 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 Electronics and Office Equipment:
  - for Telephony (ver. 3.0)
  - for Audio/Video (ver. 3.0)
  - for Battery Charging Systems (ver. 1.1)
  - for Set-top Boxes & Cable Boxes (ver. 4.1)
  - for Televisions (ver. 6.1)
  - for Computers (ver. 6.0)
  - for Displays (ver. 6.0)
  - for Imaging Equipment (ver. 2.0)
  - for Computer Servers (ver. 2.0)
- 2 Commercial Food Service Equipment
  - for Commercial Dishwashers (ver. 2.0)
  - for Commercial Ice Machines (ver. 2.0)
  - for Commercial Ovens (ver. 2.1)
  - for Commercial Refrigerators and Freezers
- 3 Lighting Products
  - For Decorative Light Strings (ver. 1.5)
  - For Luminaires (including sub-components) and Lamps (ver. 1.2)
  - For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
  - For Integral LED Lamps (ver. 1.4)
- 4 Heating, Ventilation, and AC Products
  - for Residential Ceiling Fans (ver. 3.0)
  - for Residential Ventilating Fans (ver. 3.2)
- 5 Other
  - For Water Coolers (ver. 3.0)

**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:**

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Innovation, Science and Economic development Canada - ISED) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;

- Chinese Taipei (Republic of China – Taiwan):
  - o BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
  - o NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
  - o EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Low Voltage Directive (LVD) 2014/35/EU
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA)  
APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
  - o ENERGY STAR Recognized Test Laboratory – US EPA
  - o Telecommunications Certification Body (TCB) – US FCC;
  - o Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

## 1.11 Measurement Uncertainties

All measurements involve uncertainties. In the case of EMC Emissions tests, the influence quantities (factors) that make a significant contribution to the measurement uncertainties for most types of Emissions measurements are detailed in the latest version of CISPR 16-4-2 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Measurement instrumentation uncertainty” (i.e., in CISPR 16-4-2:2011-06 + C1:2013-04 +A1:2014-02).

Based on the uncertainty models given in the latest version of CISPR16-4-2, and, based on the calibration uncertainties of the specific instruments and facilities used at BACL to perform the measurements documented in this Test Report, the following estimates have been made of BACL’s Measurement Uncertainties for the measurements documented in this Test Report.

*(Note: in the Tables below, the phrase “Typical U<sub>LAB</sub> values” means that the U<sub>LAB</sub> values presented are the Expanded Measurement Uncertainty values that resulted from the use of the ordinary test processes that are employed on a daily basis in our Test Laboratory. Note that the smaller the value of Expanded Measurement Uncertainty, the better (i.e., the “less uncertain”) the measurement is.*

<b>Type of Measurement: ANSI C63.4-2014 Radiated Emissions (in the BACL 10 m - 1 SAC) Note: Measurements up to 1 GHz made using an R&amp;S ESCI EMI Receiver; Measurements from 1 GHz to 40 GHz made using an agilent E444XA series analyzer</b>	<b>BACL Typical U<sub>LAB</sub> Value (for a k=2 Coverage Factor, equivalent to ~95% level of confidence)</b>	<b>U<sub>CISPR</sub> Value worst-allowable values of the latest version of CISPR 16-4-2 (for a k=2 Coverage Factor, equivalent to ~95% level of confidence)</b>
Radiated Electric Field Disturbance – Horizontal Polarization, 30 MHz – 200 MHz (i.e., Radiated Emissions measured at 10 meters distance)	<b>3.83 dB</b>	<b>5.05 dB</b>
Radiated Electric Field Disturbance – Vertical Polarization, 30 MHz – 200 MHz (i.e., Radiated Emissions measured at 10 meters distance)	<b>3.93 dB</b>	<b>5.03 dB</b>
Radiated Electric Field Disturbance – Horizontal Polarization, 200 MHz – 1000 MHz (i.e., Radiated Emissions at 10 meters distance)	<b>3.83 dB</b>	<b>5.21 dB</b>
Radiated Electric Field Disturbance – Vertical Polarization, 200 MHz – 1000 MHz (i.e., Radiated Emissions measured at 10 meters distance)	<b>3.93 dB</b>	<b>5.22 dB</b>
Radiated Electric Field Disturbance Horizontal & Vertical Polarizations, 1 GHz – 6 GHz (i.e., Radiated Emissions measured at 3 meters distance)	<b>4.14 dB (With Boresighting)</b>	<b>U<sub>CISPR</sub> Value is Not Specified</b>
Radiated Electric Field Disturbance Horizontal & Vertical Polarizations, 6 GHz – 18 GHz (i.e., Radiated Emissions measured at 3 meters distance)	<b>4.15 dB (With Boresighting)</b>	<b>U<sub>CISPR</sub> Value is Not Specified</b>

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## **2 EUT Test Configuration**

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### **2.1 Justification**

The EUT was configured for testing in accordance with requirements of the ANSI C63.4-2014 standard.

### **2.2 EUT Exercising Software**

The exercising software used during testing was called "QCOM\_V1.6".

### **2.3 BACL EMI Measurement Software**

The software used was EMISoft-Vasona 6.0 for EMI testing.

### **2.4 Equipment Modifications**

No equipment modifications were made to the equipment during testing.

### **2.5 Special Equipment**

No special equipment was used during testing.

### **2.6 EUT Mode of Operation**

The EUT was tested on normal operating mode: the LTE module activated and connected to CMW500.

### **2.7 Method of Monitoring**

The EUT was monitored visually through LED and the LTE communication was observed using the package rates data from CMW500. As long as the EUT does not lose power and the LTE connection does not drop, the EUT is functioning properly.

## 2.8 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.0002K50-120503-Um
EMCO	Antenna, Horn	3115	9511-4627
Quectel	Externa 5G Antenna, 600-6000 MHz	YECN009AA	-
Aquil Star Precision Industrial Co., LTD.	5V Switching Adapter	ASSA65w-050240	-

## 2.9 Remote Support Equipment

None

## 2.10 EUT Internal Configuration Details

Manufacturer	Description	Model	Serial Number
Quectel	IoT/M2M-Optimized LTE Module	EC25AFXDGA-128-SGAS	-

## 2.11 External I/O Cabling List and Details

Cable Description	Length (m)	From	To
USB to USB-C	0.5	EUT	AC/DC Adapter

## 2.12 EUT Power Supply List and Details

None

### 3 Summary of Test Results

Standards	Test Description	Result
FCC §15.107 (a), ICES-003 Section 3.2.1 Table 1	Conducted Emissions	Not Applicable <sup>1</sup>
FCC §15.109 (a), ICES-003 Section 3.2.2 Table 2 & 4	Radiated Emissions	Compliant with Class B Limits

<sup>1</sup> The EUT was DC powered.

## 4 FCC §15.109, ICES-003 – Radiated Emissions

### 4.1 Applicable Standards

#### As per FCC §15.109: Radiated Emission Limits

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

(g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22: “Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement.”

*NOTE 1: The lower limit shall apply at the transition frequency.*

*NOTE 2: Additional provisions may be required for cases where interference occurs.*

**As per the ISED ICES-003 Issue 7 (Oct. 2020) Section 3.2.2 Radiated emission limits:**

The quasi-peak limits for the electric component of the radiated field strength emitted from ITE or digital apparatus, within 30 MHz to 1 GHz, for a measurement distance of 3 m or 10 m, are presented in Table 2.

**Table 2: Radiated emissions limits (30 MHz to 1 GHz)**

Frequency Range (MHz)	Class A (3 m) Quasi-peak (dB $\mu$ V/m)	Class A (10 m) Quasi-peak (dB $\mu$ V/m)	Class B (3 m) Quasi-peak (dB $\mu$ V/m)	Class B (10 m) Quasi-peak (dB $\mu$ V/m)
30 – 88	50.0	40.0	40.0	30.0
88 – 216	54.0	43.5	43.5	33.1
216 – 230	56.9	46.4	46.0	35.6
230 – 960	57.0	47.0	47.0	37.0
960 – 1000	60.0	49.5	54.0	43.5

**Note:** The more stringent limit applies at transition frequencies.

At and above 1 GHz, except for outdoor units of home satellite receiving systems, the ITE or digital apparatus shall comply with the limits specified in Table 4 up to the frequency  $F_M$ , which shall be determined as per Table 3. The product under test shall comply with both the average and the peak limits.

**Table 4: Radiated emissions limits at 3 m distance (at and above 1 GHz)**

Frequency Range (GHz) <sup>i</sup>	Class A <sup>ii, iii, iv</sup> Average dB( $\mu$ V/m)	Class A <sup>ii, iii, iv</sup> Peak dB( $\mu$ V/m)	Class B <sup>ii, iii, iv</sup> Average dB( $\mu$ V/m)	Class B <sup>ii, iii, iv</sup> Peak dB( $\mu$ V/m)
1 – $F_M$	60	80	54	74

i. The highest measurement frequency,  $F_M$ , in GHz, shall be determined as per Table 3.  
ii. The measurement bandwidth shall be 1 MHz or greater.  
iii. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test.  
iv. The test site shall have been validated at the distance used for radiated emission measurements on the ITE or digital apparatus under test.

At and above 1 GHz, if the ITE or digital apparatus is an outdoor unit of home satellite receiving systems, it shall comply with the limits in Table A.7 in clause A.2 of CAN/CSA-CISPR 32:17 (in Annex A therein). For these types of ITE or digital apparatus, the highest measurement frequency shall be 18 GHz.

## 4.2 EUT Setup

The radiated emissions tests were performed in the 10-meter test chamber, using the setup in accordance with ANSI C63.4 measurement procedures. The specifications used were in accordance with FCC 15B and ICES-003 Class B limits.

If applicable, the spacing between the peripherals was 10 cm.

If applicable, the external I/O cables were draped along the test table and bundled as required.

The EUT was connected to AC power source via 5VDC AC/DC adapter.

## 4.3 Test Procedure

Maximization procedure was performed on the six (6) highest emissions readings to ensure the EUT is compliant with all installation combinations.

All data was recorded in the Quasi-Peak detection mode for below 1 GHz and Max Peak and Average detection mode for above 1 GHz.

The bandwidth on the receiving device was set to as follows:

Below 1000 MHz, the Resolution Bandwidth was set to 120 kHz and the Video Bandwidth was set to 300 kHz for each sweep. The receiver automatically sets to these values.

Above 1000 MHz, the Resolution Bandwidth was set to 1 MHz and the Video Bandwidth was set to 3 MHz for the Max Peak. The Resolution Bandwidth was set to 1 MHz and the Video Bandwidth was set to 10 Hz for the Video Bandwidth. The receiver automatically sets to these values.

#### 4.4 Corrected Amplitude and Margin Calculations

The Corrected Amplitude (CA) is calculated by adding the Correction Factor to the indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + \text{Correction Factor}$$

For example, the Corrected Amplitude (CA) of 40.3 dB $\mu$ V/m = indicated Amplitude reading (Ai) 32.5 dB $\mu$ V + 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). The calculation is done by the testing software, and the value is reported in the tabular results below. The basic equation is as follow,

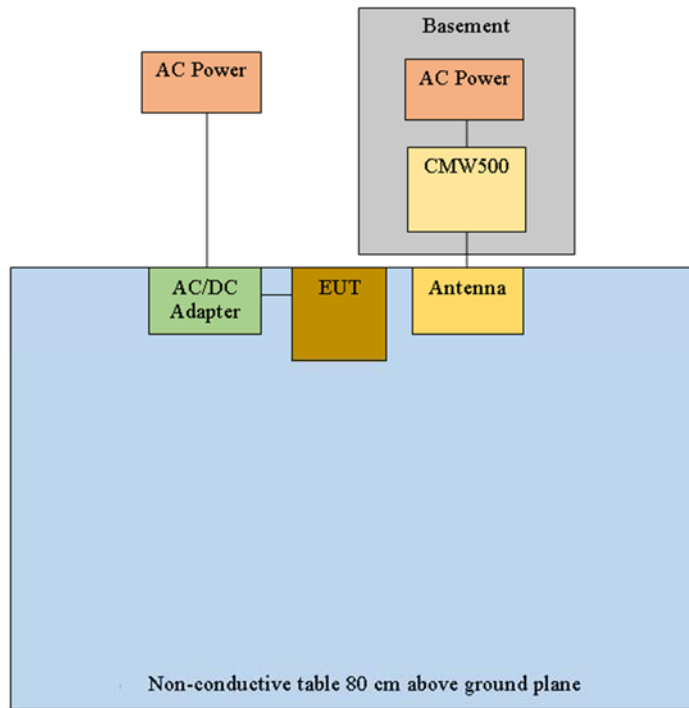
$$\text{Correction Factor} = AF + CL + \text{Atten} - Ga$$

For example, the Correction Factor of 7.8 dB/m = Antenna Factor (AF) 23.5 dB/m + Cable Loss (CL) 3.7 dB + Attenuator (Atten) 10 dB - Amplifier Gain (Ga) 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 at the measured frequency. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Corrected Amplitude (dB}\mu\text{V/m)} - \text{Limit (dB}\mu\text{V/m)}$$

### 4.5 Test Setup Block Diagram



### 4.6 Test Equipment List and Details

BACL Asset #	Manufacturers	Descriptions	Models	Serial Numbers	Calibration Date	Calibration Due Date
01413	Rohde & Schwarz	ESR EMI Test Receiver 10Hz to 3.6GHz	ESR3 1316.3003K03	103191	2024-01-08	2025-01-08
00311	Sunol Sciences	Controller, System	SC104V	113005-1	Calibration Not Required	Calibration Not Required
00445	Sonoma Instruments	Amplifier	315	303125	2024-01-22	2024-07-22
00811	Keysight Technologies	RF Limiter	11867A	MY42242932	2024-02-13	2024-08-13
00307	Sunol Sciences	Antenna, BiConiLog	JB3	A020106-3; 01182018A	2024-03-18	2026-03-18
01200	Pasternack	N Shielded RF Cable	LMR 400 Coaxial Cable	1809041	2024-01-22	2024-07-22
01358	Pasternack	N 300in RF Cable	PE3496LF-300	-	2024-02-26	2024-08-26
01297	Pasternack	N 18m RF Cable	PE 360-12	1809042	2024-02-29	2024-08-29
01427	Keysight Technologies	PXE EMI Receiver 1hz to 44Ghz	N9048B	MY59500006	2023-12-21	2024-12-21
00032	HP	Pre-Amplifier	8449B	3008A01978	2024-04-09	2024-10-09
01203	CarlisleIT	SMA 90cm RF Cable	NA	NA	2024-01-23	2024-07-23
01295	Carlisle	10m Ultra Low Loss Coaxial Cable	UFB142A-1-3937-200200	64639890912-001	2024-05-01	2024-11-01
00187	A.R.A	Antenna, Horn	DRG-118/A	1132	2024-03-18	2026-03-18
00926	UMTS	Notch Filter 1865 - 2025 Mhz	-	938147B 60656 0944	Verify before Use	Verify before Use
00344	Behlman	Generator, Variable Voltage	BL12000C-1	6867	Calibration not Required	Calibration not Required

**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 Environmental Conditions

<b>Testing Date:</b>	2024-06-20
<b>Testing Site:</b>	10m Chamber 1
<b>Temperature:</b>	23 °C
<b>Relative Humidity:</b>	46 %
<b>ATM Pressure:</b>	100.9 kPa
<b>Testing Personnel:</b>	Kevin Nguyen

#### 4.8 Summary of Test Results

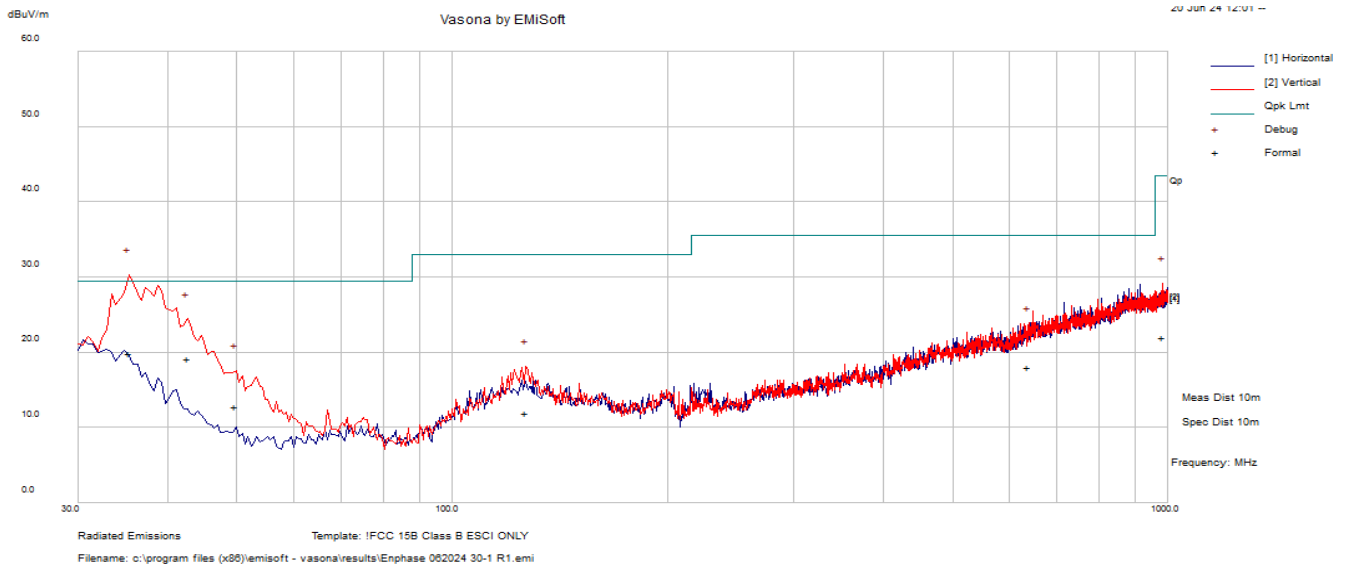
According to the recorded data, the EUT complied with FCC §15.109 and ICES-003 Class B limits, and had the worst margin reading of:

<b>FCC 15B &amp; ICES-003 Radiated Emissions Worst Case (30 MHz to 1000 MHz at 10m)</b>			
<b>Frequency (MHz)</b>	<b>Highest Quasi-Peak Corrected Amplitude (dB<math>\mu</math>V/m)</b>	<b>Polarization (Horizontal / Vertical)</b>	<b>Quasi-Peak Margin (dB)</b>
35.46425	19.88	Vertical	-9.62

<b>FCC 15B &amp; ICES-003 Radiated Emissions Worst Case (1 GHz to 18 GHz at 1m)</b>			
<b>Frequency (MHz)</b>	<b>Highest Peak Corrected Amplitude (dB<math>\mu</math>V/m)</b>	<b>Polarization (Horizontal / Vertical)</b>	<b>Peak Margin (dB)</b>
17978.4	68.19	Horizontal	-15.81
<b>Frequency (MHz)</b>	<b>Highest Average Corrected Amplitude (dB<math>\mu</math>V/m)</b>	<b>Polarization (Horizontal / Vertical)</b>	<b>Average Margin (dB)</b>
17978.4	54.45	Horizontal	-9.55

### 4.9 Radiated Emissions Test Plot and Data

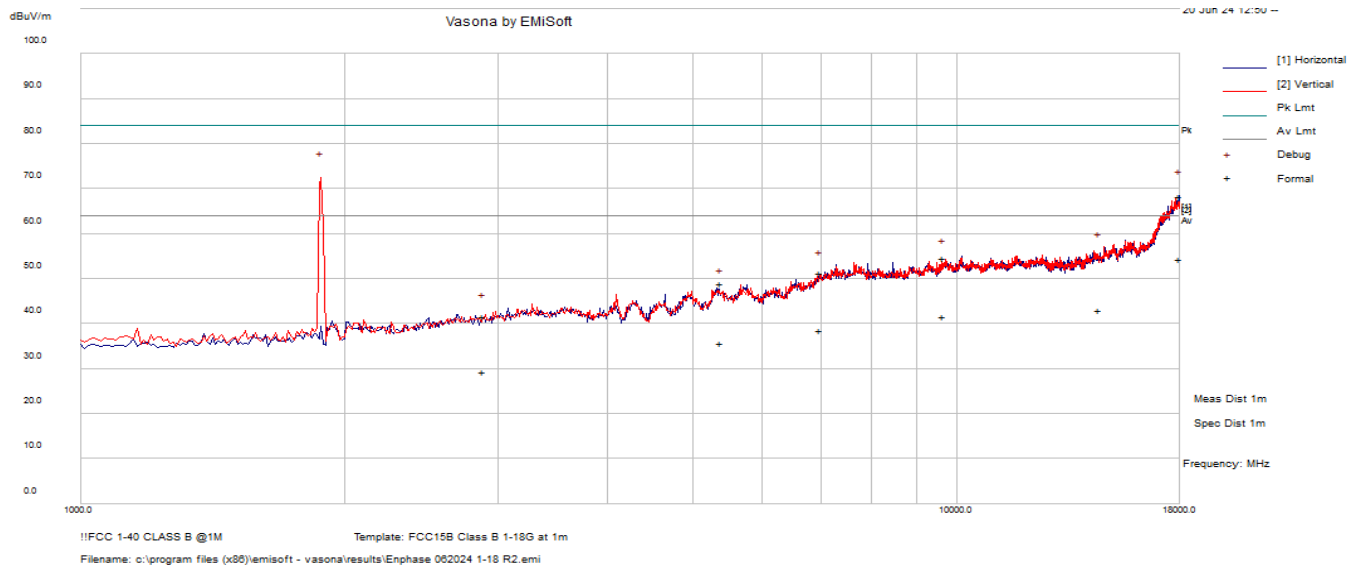
#### 30 MHz to 1000 MHz at 10m



#### Quasi-Peak Measurements

Frequency (MHz)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
35.46425	-17.45	19.88	V	260	29	29.5	-9.62
42.72375	-22.7	19.1	V	316	191	29.5	-10.4
49.86875	-26.1	12.73	V	193	195	29.5	-16.77
637.203	-9.89	17.99	H	281	70	35.5	-17.51
126.5165	-19.07	11.86	V	106	168	33	-21.14
982.92225	-4.2	21.98	V	371	133	43.5	-21.52

**1 GHz to 18 GHz at 1m**



Note: a notch filter was used for intentional LTE radio.

**Peak Measurements**

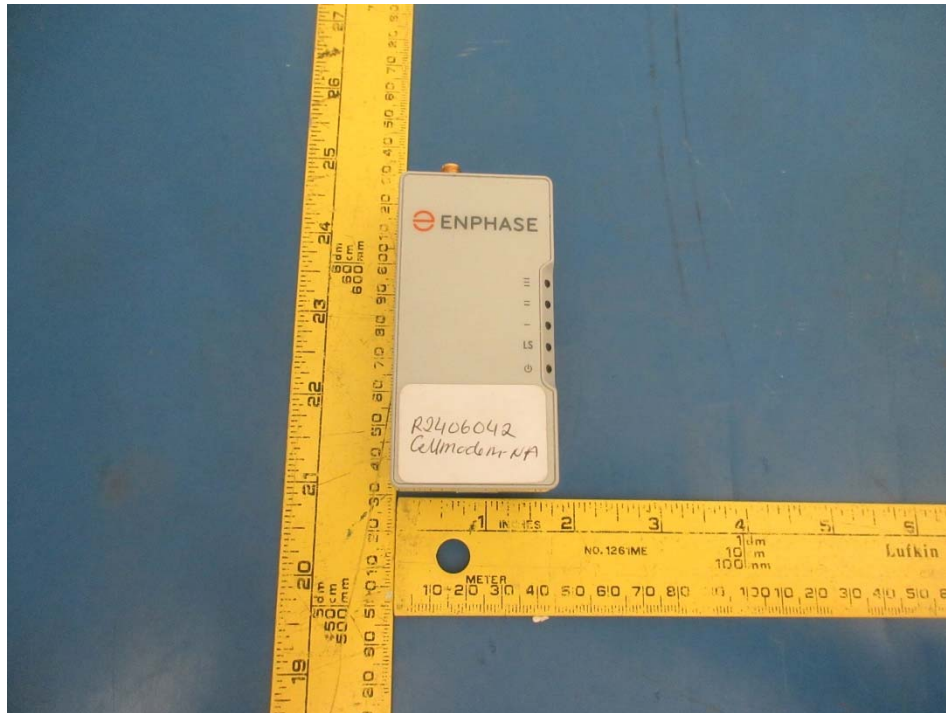
Frequency (MHz)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
17978.4	27.67	68.19	H	185	111	84	-15.81
14555.263	16.87	56.75	H	190	184	84	-27.25
9683.2905	11.14	54.61	H	119	94	84	-29.39
6983.6775	9.1	51.19	H	170	0	84	-32.81
5378.824	5.8	48.99	H	170	157	84	-35.01
2881.622	-1.45	41.55	H	131	45	84	-42.46

**Average Measurements**

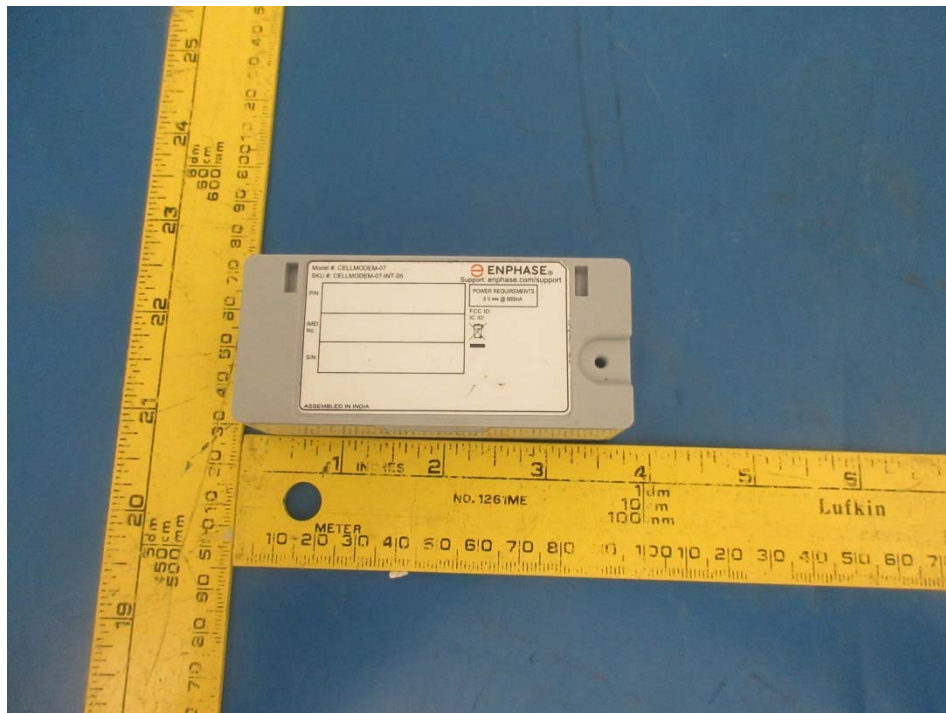
Frequency (MHz)	Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
17978.4	27.67	54.45	H	185	111	64	-9.55
14555.263	16.87	42.9	H	190	184	64	-21.1
9683.2905	11.14	41.58	H	119	94	64	-22.42
6983.6775	9.1	38.46	H	170	0	64	-25.54
5378.824	5.8	35.71	H	170	157	64	-28.29
2881.622	-1.45	29.37	H	131	45	64	-34.63

## 5 Annex A (Normative) – EUT Photographs

### 5.1 EUT – Top View



### 5.2 EUT – Bottom View



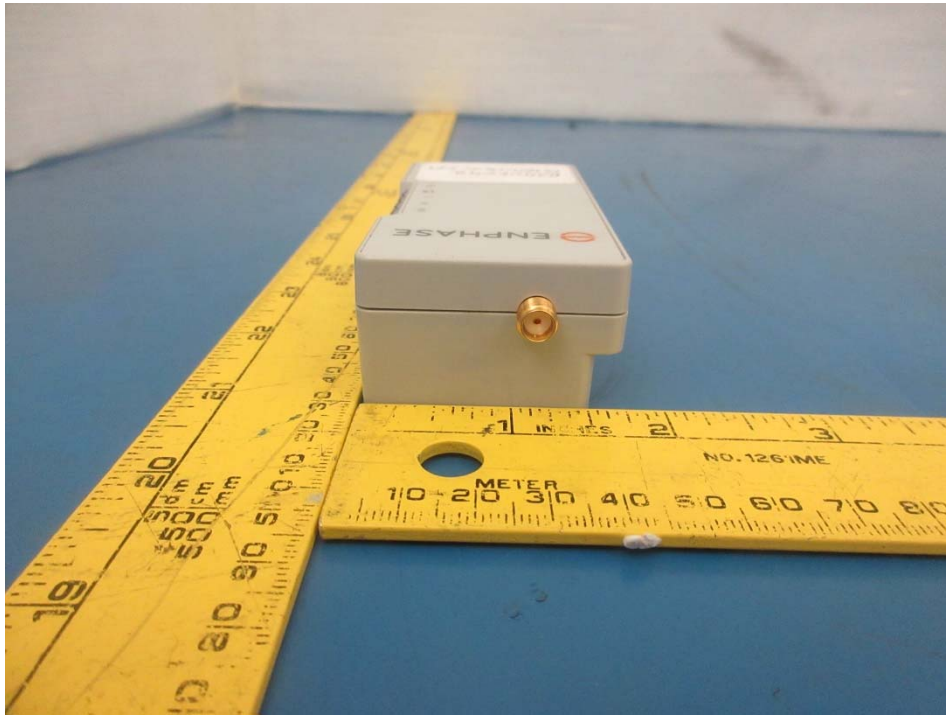
### 5.3 EUT – Front View



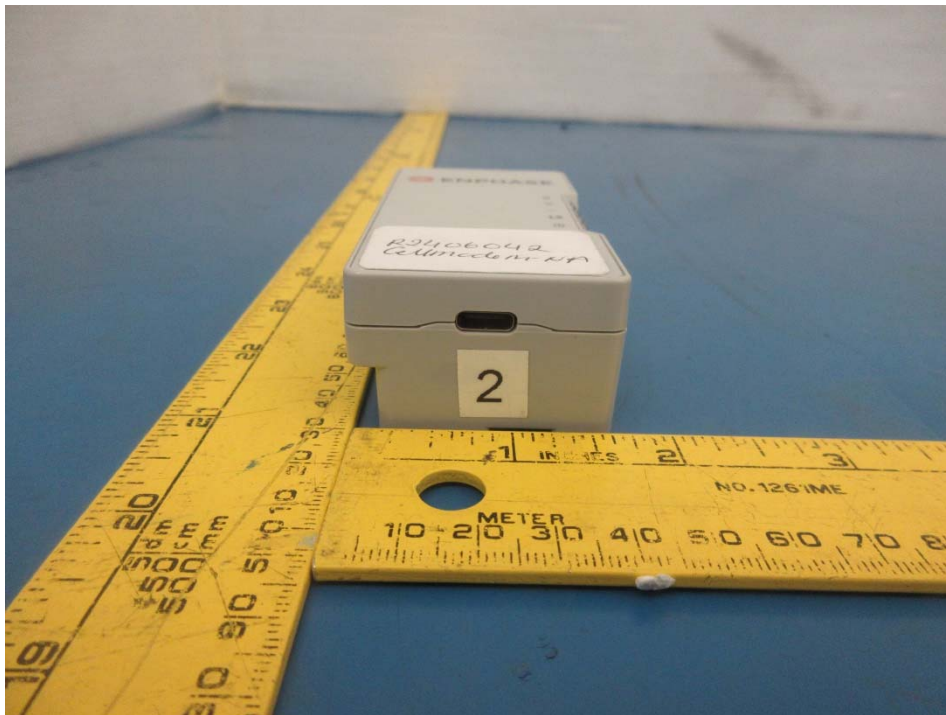
### 5.4 EUT – Rear View



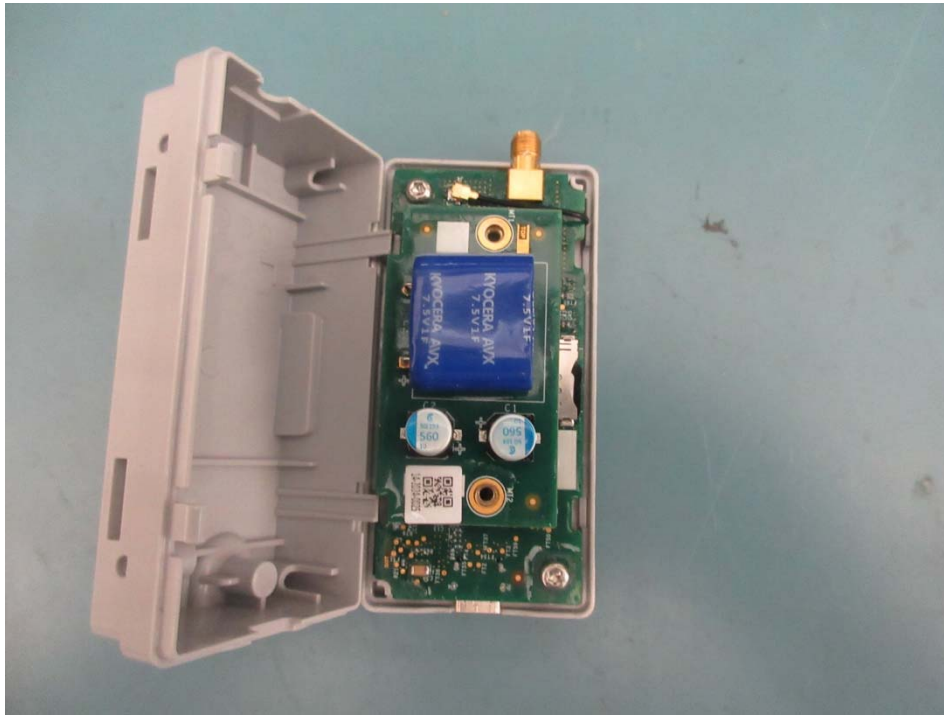
### 5.5 EUT – Right Side View



### 5.6 EUT – Left Side View



**5.7 EUT – Internal View 1**



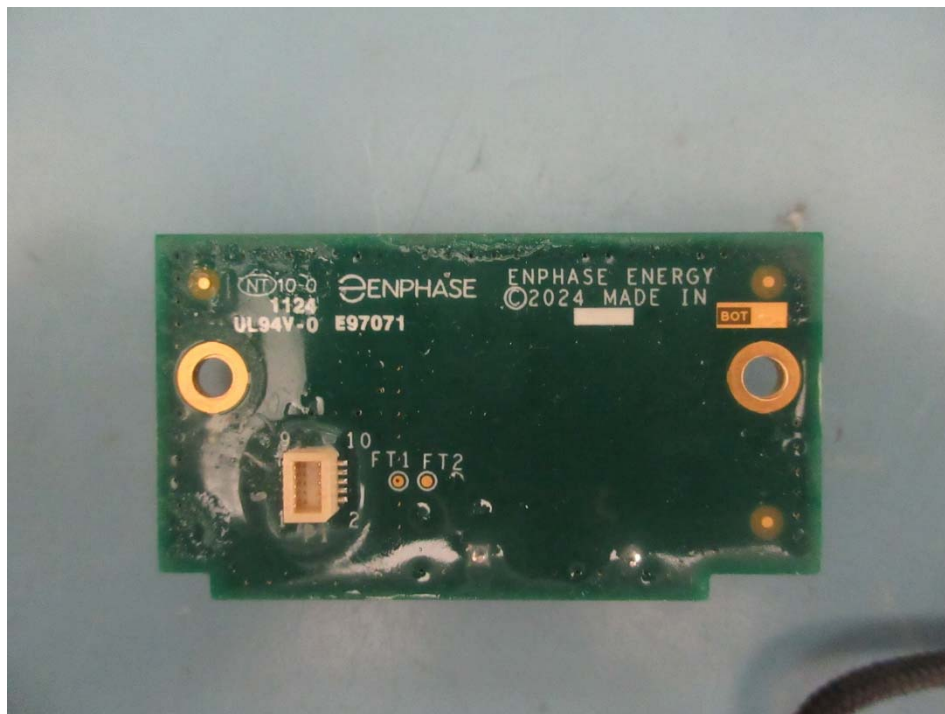
**5.8 EUT – Internal View 2**



### 5.9 EUT – Top View PCB 1



### 5.10 EUT – Bottom View PCB 1



### 5.11 EUT – Top View PCB 2



### 5.12 EUT – Bottom View PCB 1



## 6 Annex B (Normative) – Labeling Information

### 6.1 FCC Labeling Information

#### As per FCC §15.19: Labeling Requirements Paragraph 3

(3) All other devices shall bear the following statement in a conspicuous location on the device:



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Specifications: Text is white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened and shall be affixed at a conspicuous location on the EUT.

#### As per FCC §15.105: Information to the User

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## 6.2 ICES-003 Labeling Information

### As per ISED ICES-003 Clause 4.2 Labeling and User Manual Requirements

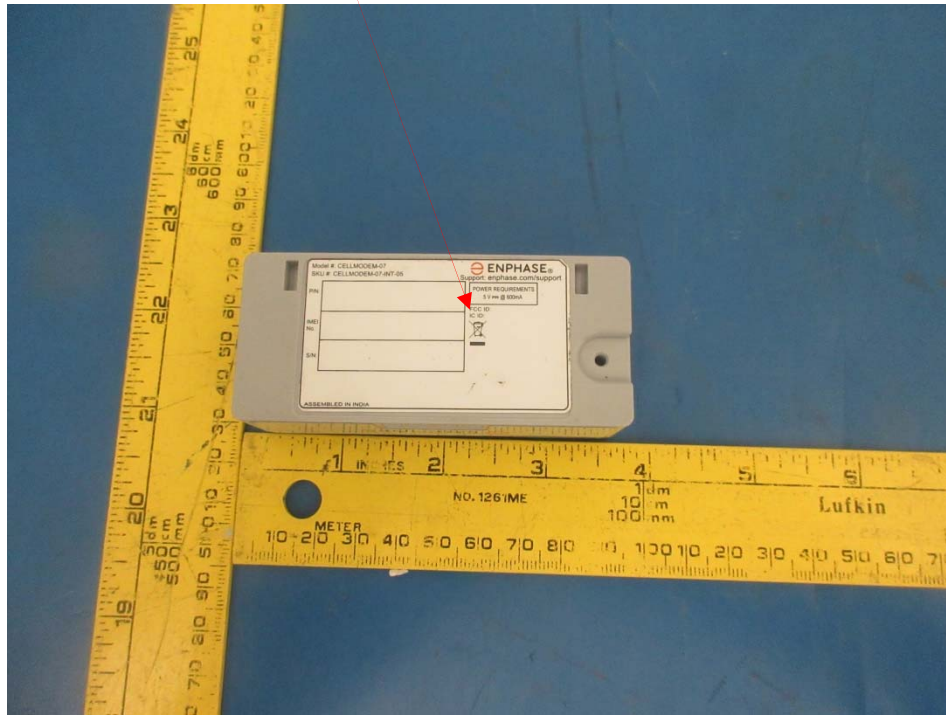
The requirements specified in ICES-Gen shall apply. An example ISED compliance label, to be placed on each unit of an equipment model (or in the user manual, if allowed), is given below:

**CAN ICES-003 (B) / NMB-003 (B)**

The above label is only an example. The specific format is left to the manufacturer to decide, as long as the label includes the required information, in accordance with ICES-Gen.

## 7 Annex C (Normative) – Product Label

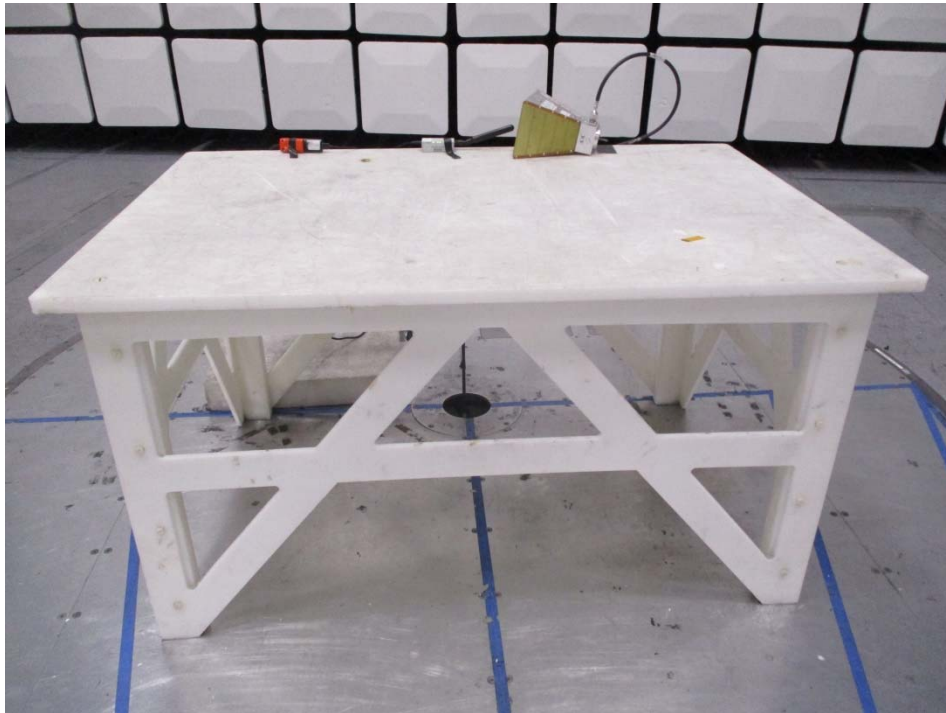
### 7.1 Suggested Label Location on EUT



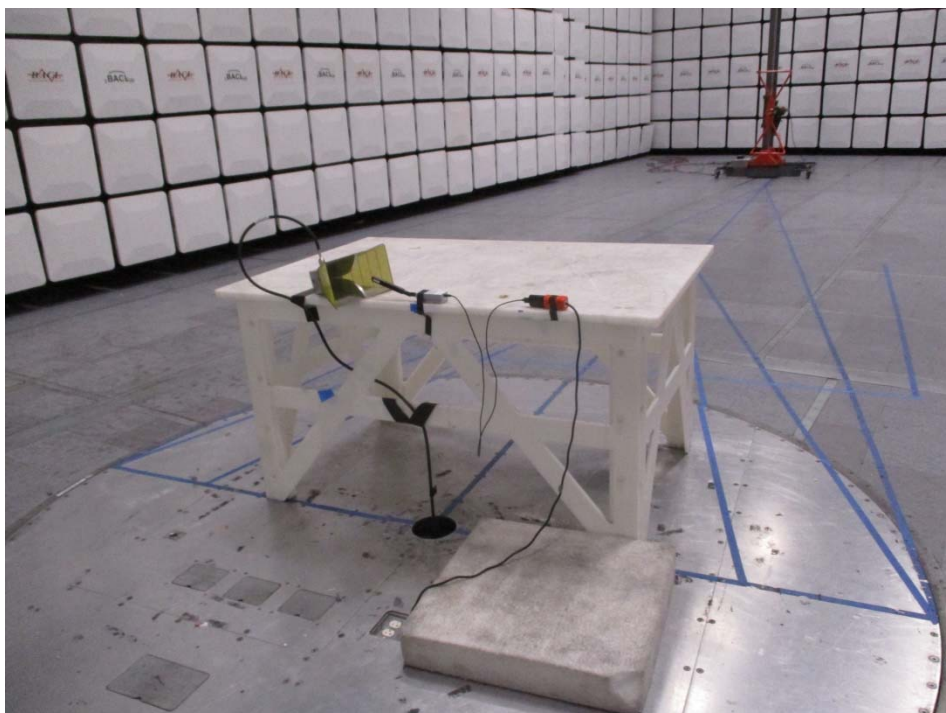
## 8 Annex D (Normative) – Test Setup Photographs

### 8.1 Radiated Emissions

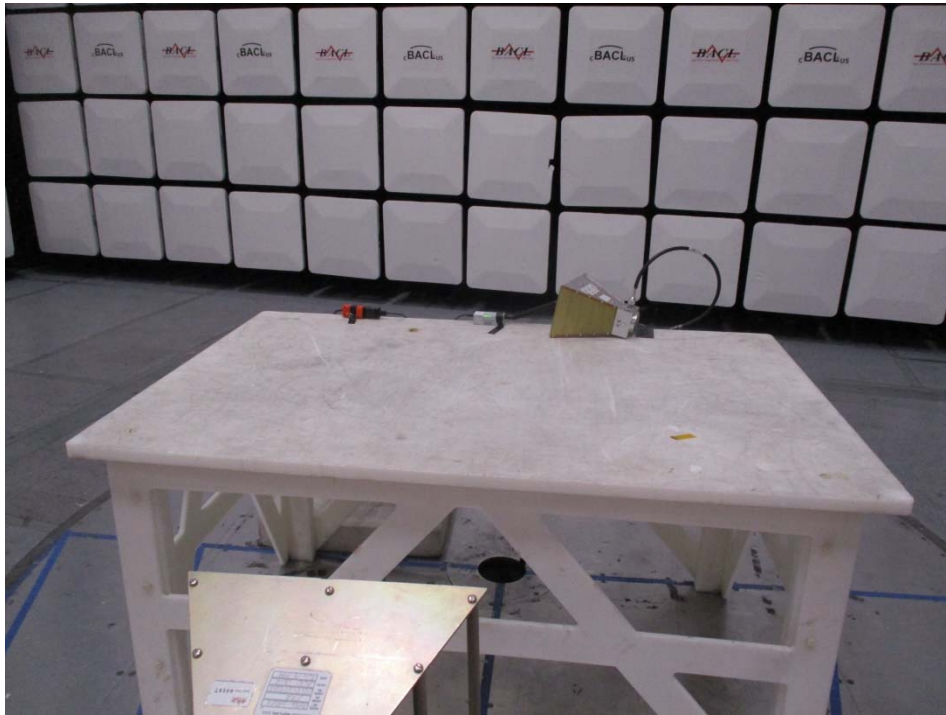
30 MHz to 1000 MHz, Front View



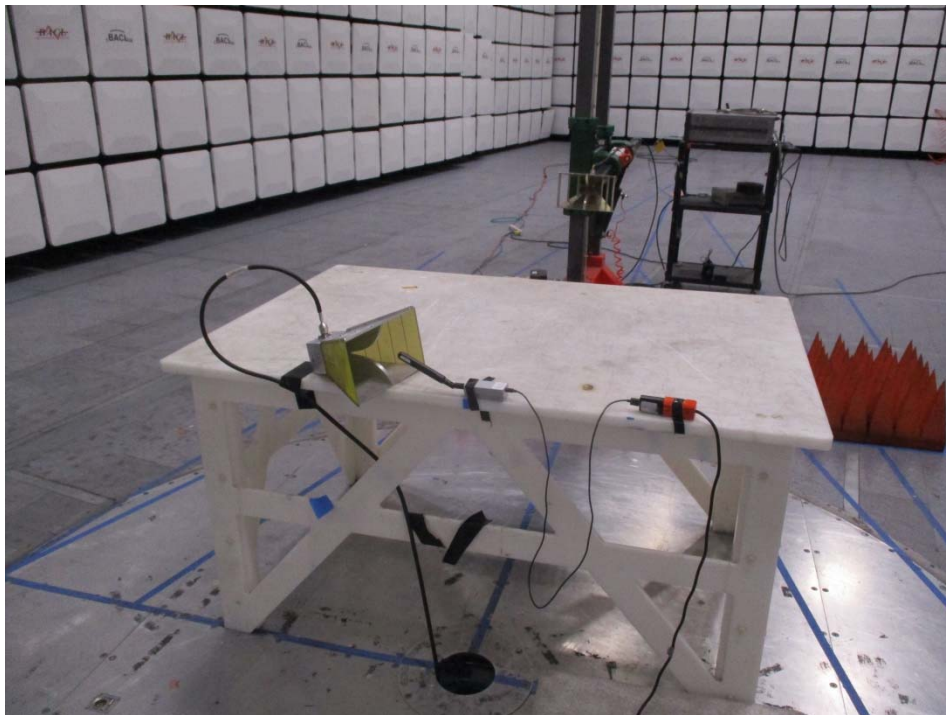
30 MHz to 1000 MHz, Rear View



1 GHz to 18 GHz, Front View



1 GHz to 18 GHz, Rear View



**9 Annex E (Normative) – ISO/IEC 17025 Certificate and Scope of Accreditation**



**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 21<sup>st</sup> day of December 2022.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3297.02  
Valid to September 30, 2024

*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 ---