





# FCC PART 15, SUBPART C TEST AND MEASUREMENT REPORT

For

**Sword Health, S.A**

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**FCC ID: 2AQ4A-BP1**

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\* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\*" (Rev.2)

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**DOCUMENT REVISION HISTORY**

<b>Revision Number</b>	<b>Report Number</b>	<b>Description of Revision</b>	<b>Date of Revision</b>
0	R2402201 -247	Original Report	2024-04-10
1	R2402201 -247 Rev. A	Revised Report	2024-06-14

## **1 General Description**

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### **1.1 Product Description for Equipment Under Test (EUT)**

This test report was prepared on behalf of *Sword Health, S.A* and their product model: BP01, FCC ID: 2AQ4A-BP1 or the “EUT” as referred to in this report. It is an Intravaginal Pelvic Device.

### **1.2 Mechanical Description of EUT**

BP01 measures approximately 6 cm (Length) x 2.9 cm (Width) x 2 cm (High).

*The data gathered is from production sample BP01 provided by Sword Health, S.A. with S/N:M24010008*

### **1.3 Objective**

This report was prepared on behalf of *Sword Health, S.A.* in accordance with Part 2, Subpart J, and Part 15, Subpart C of the Federal Communication Commission’s.

The objective was to determine compliance with FCC Part 15.247 for Antenna Requirement, AC Line Conducted Emissions, Emission Bandwidth, Radiated & Conducted Spurious Emissions, 100 kHz Band Edges, RF Exposure, Maximum Output Power, and Peak Power Spectrum Density

### **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 C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

## 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	$\pm 5$ %
RF output power, conducted	$\pm 0.57$ dB
Power Spectral Density, conducted	$\pm 1.48$ dB
Unwanted Emissions, conducted	$\pm 1.57$ dB
All emissions, radiated	$\pm 4.0$ dB
AC power line Conducted Emission	$\pm 2.0$ dB
Temperature	$\pm 2$ ° C
Humidity	$\pm 5$ %
DC and low frequency voltages	$\pm 1.0$ %
Time	$\pm 2$ %
Duty Cycle	$\pm 3$ %

## 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 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-0027.

## 1.8 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;



## 2 System Test Configuration

### 2.1 Justification

The EUT was configured for testing in accordance to ANSI C63.10.

### 2.2 EUT Exercise Software

The software “nRf Connect” was used to configure the radio. The following channels and power settings were selected for testing.

#### 1MBIT

Channel Frequency (MHz)	Power Setting
2402	4
2440	4
2480	4

#### 2 MBIT

Channel Frequency (MHz)	Power Setting
2402	4
2440	4
2480	4

### 2.3 Duty Cycle Correction Factor

According to KDB 558074 D01 DTS Meas Guidance v05r02 section 6.0:

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be utilized to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data is being acquired (i.e., no transmitter off-time is to be considered).

#### 1MBIT

Radio frequency (MHz)	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
2440	0.3881	0.6295	61.6	2.10

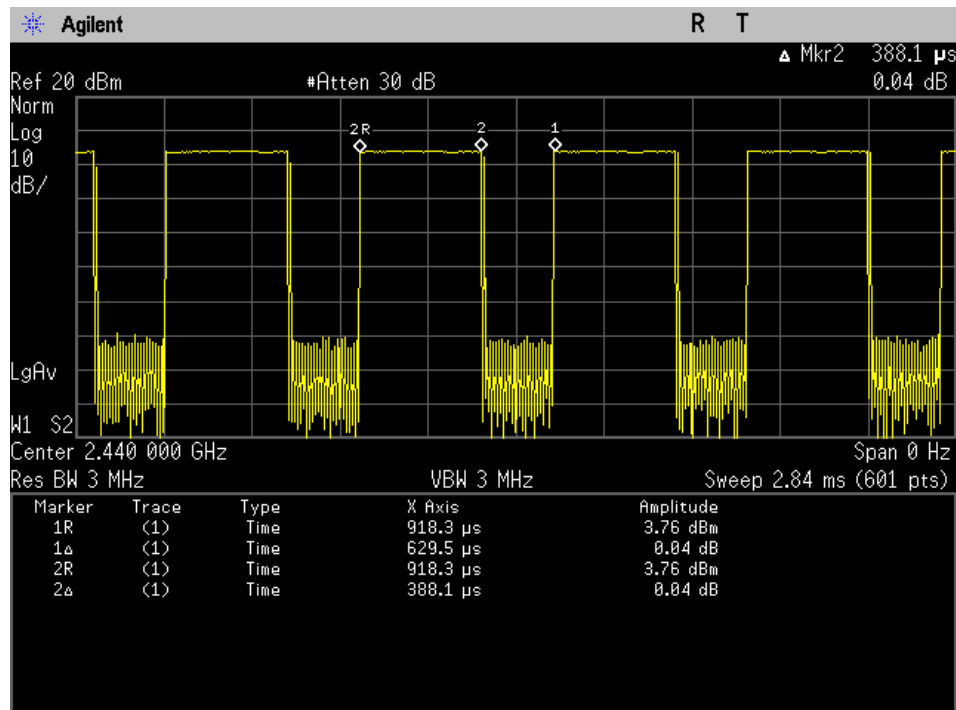
#### 2MBIT

Radio frequency (MHz)	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
2440	0.2261	0.6501	34.78	4.59

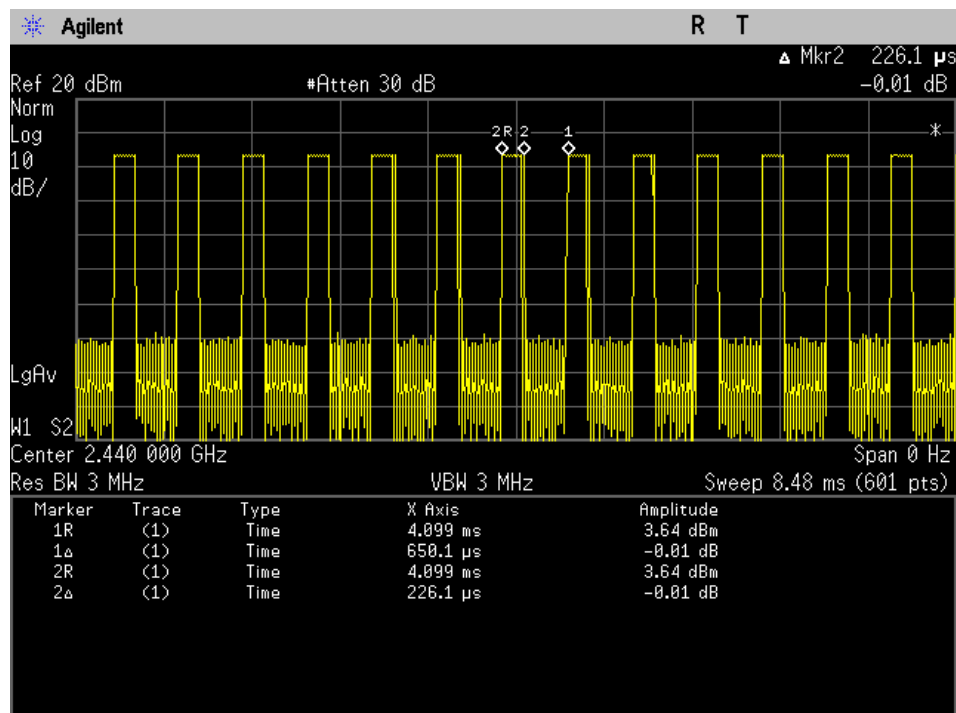
Duty Cycle = On Time (ms)/ Period (ms)

Duty Cycle Correction Factor (dB) =  $10 \cdot \log(1/\text{Duty Cycle})$

### 1 MBIT Duty Cycle



### 2 MBIT Duty Cycle



## 2.4 Equipment Modifications

N/A

## 2.5 Local Support Equipment

Manufacturer	Description	Model No.
Dell	Laptop	Latitude E6410

## 2.6 Remote Support Equipment

Manufacturer	Description	Model
-	-	-

## 2.7 Interface Ports and Cabling

Cable Descriptions	Length (m)	From	To
Micro USB	< 1 m	Laptop	EUT

### 3 Summary of Test Results

Results reported relate only to the product tested.

FCC Rules	Description of Test	Results
FCC §15.203	Antenna Requirements	Compliant
FCC §2.1093	RF Exposure	Compliant
FCC §15.207	AC Line Conducted Emissions	N/A
FCC §15.209, §15.247(d)	Radiated Spurious Emissions	Compliant
FCC §15.247(a)(2)	6 dB & 99% Emission Bandwidth	Compliant
FCC §15.247(b)(3)	Maximum Output Power	Compliant
FCC §15.247(e)	Peak Power Spectral Density	Compliant
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §2.1051, §15.247 (d)	Spurious Emissions at Antenna Port	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

Note: AC Line Conducted is not needed because the EUT is battery powered

## 4 FCC §15.203 – Antenna Requirements

### 4.1 Applicable Standards

According to FCC §15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For license-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

### 4.2 Antenna Description

External/Internal/ Integral	Antenna Usage	Antenna Type	Frequency Range (MHz)	Maximum Antenna Gain (dBi)
Internal	2.4GHz BLE	Wire	2402-2480	2.59

## 5 FCC §15.35(b), §15.205, §15.209, §15.247(d) - Spurious Radiated Emissions

### 5.1 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)).

## 5.2 Test Setup

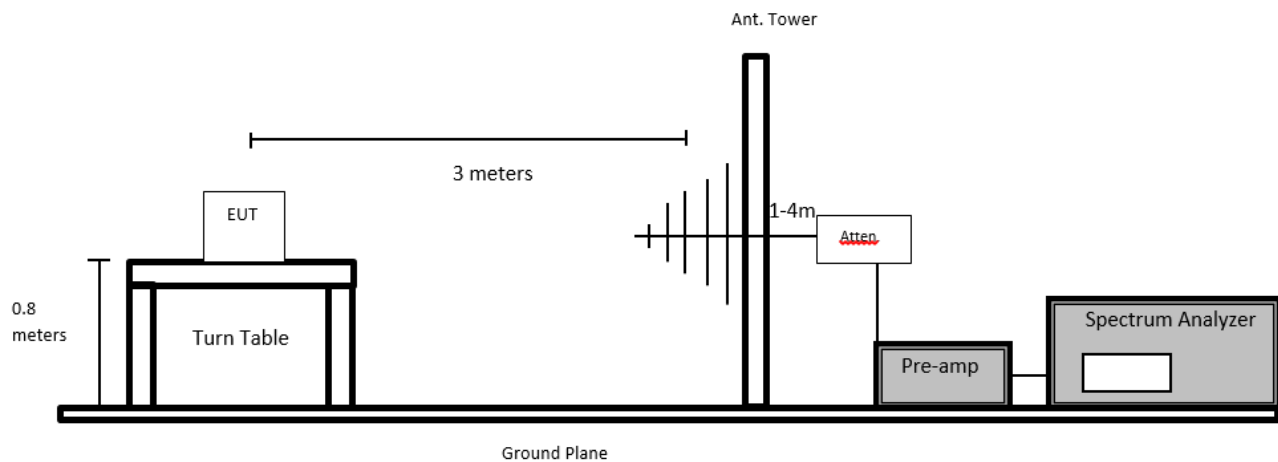
The radiated emissions tests were performed in the 5-meter chamber and 10-meter chamber, using the setup in accordance with ANSI C63.10-2013. The specification used was the FCC 15 Subpart C.

The spacing between the peripherals was 10 centimeters.

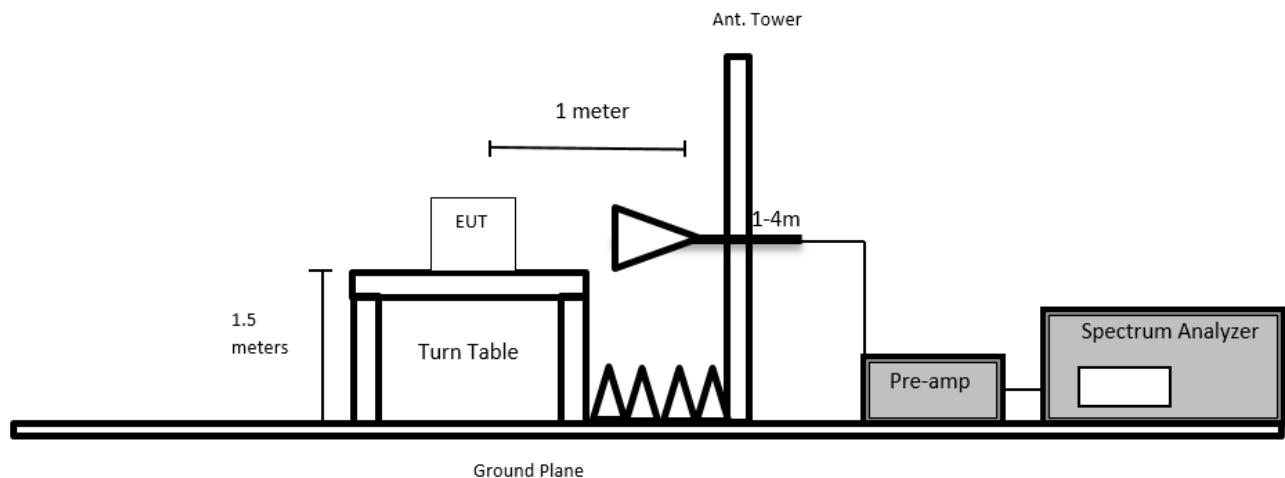
External I/O cables were draped along the edge of the test table and bundled when necessary.

## 5.3 Test Setup Diagrams

Below 1 GHz



Above 1 GHz





## 5.4 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:

Below 1000 MHz:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000 MHz:

- (1) Peak:  $\text{RBW} = 1\text{MHz} / \text{VBW} = 1\text{MHz} / \text{Sweep} = \text{Auto}$
- (2) Average:  $\text{RBW} = 1\text{MHz} / \text{VBW} = 10\text{Hz or } 1/\text{T} / \text{Sweep} = \text{Auto}$

## 5.5 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:

$$\text{CA} = \text{S.A. Reading} + \text{Correction Factor}$$

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:

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

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:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

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:

$$\text{CA} = \text{Ai} + \text{AF} + \text{CL} + \text{Atten} - \text{Ga}$$

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:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

## 5.6 Test Equipment List and Details

BACL No.	Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Interval
310	Rohde & Schwarz	EMI test receiver 9 KHZ to 3 GHz	ESCI 1166.5950.03	100338	2023-05-11	1 year
316	Sonoma Instruments	Preamplifier 10 kHz - 2.5 GHz	317	260406	2024-02-27	6 months
321	Sunol Sciences	Biconilog Antenna	JB3	A020106-2; 1504	2023-12-18	2 years
1186	Pasternack	Coaxial Cable, RG214	PE3062-1050CM	-	2023-10-03	6 months
1245	-	6dB Attenuator	PE7390-6	01182018A	2023-12-18	2 years
1246	Hewlet Packard	RF Limiter	11867A	01734	2023-04-13	1 year
1248	Pasternack	RG214 COAX Cable	PE3062	-	2023-10-04	6 months
1249	Time Microwave	LMR-400 Cable Dc-3 GHz	AE13684	2k80612-5 6fts	2023-10-09	6 months
624	Agilent	Spectrum Analyzer	E4446A	MY48250238	2023-05-12	1 year
658	HP/ Agilant	Pre Amplifier 1-26.5 GHz	8449B OPT HO2	3008A01103	2023-12-01	6 months
827	AH Systems	Pre-Amplifier 18-40 GHz	PAM 1840 VH	170	2023-11-08	6 months
90	Wisewave	Horn Antenna	ARH-4223-02	10555-01	2023-05-02	2 years
1192	ETS Lindgren	Horn Antenna	3117	00218973	2022-09-29	2 years
1247	Uti flex	Micro - Coax	-	-	2023-12-01	6 months
1329	Pasternack	2.92mm short coaxial cable	PE360-12	-	2023-11-28	6 months
1346	RFMW	2.92mm 10ft RF cable	KMSE-160SAW-240.0-KSME	-	2023-11-03	6 months
672	Micro -Tronics	2.4-2.6 GHz Notch Filter	BRM50701	160	2024-02-27	1 year
327	Sunol Sciences	System Controller	SC110V	122303-1	NR	NR
1075	Sunol Sciences	Boresight Tower	TLT3	050119-7	NR	NR
1388	Sunol Sciences	Flush Mount Turntable	FM	112005-2	NR	NR

**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".

## 5.7 Test Environmental Conditions

<b>Temperature:</b>	21-23 °C
<b>Relative Humidity:</b>	38-44.5 %
<b>ATM Pressure:</b>	101.8 kPa

*The testing was performed by Will Hu on 2024-03-22 and by Arturo Reyes on 2024-03-15 in 5m chamber 3.*

## 5.8 Summary of Test Results

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

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Configuration
-0.08	47.945	V	GFSK(1M), 2480 MHz

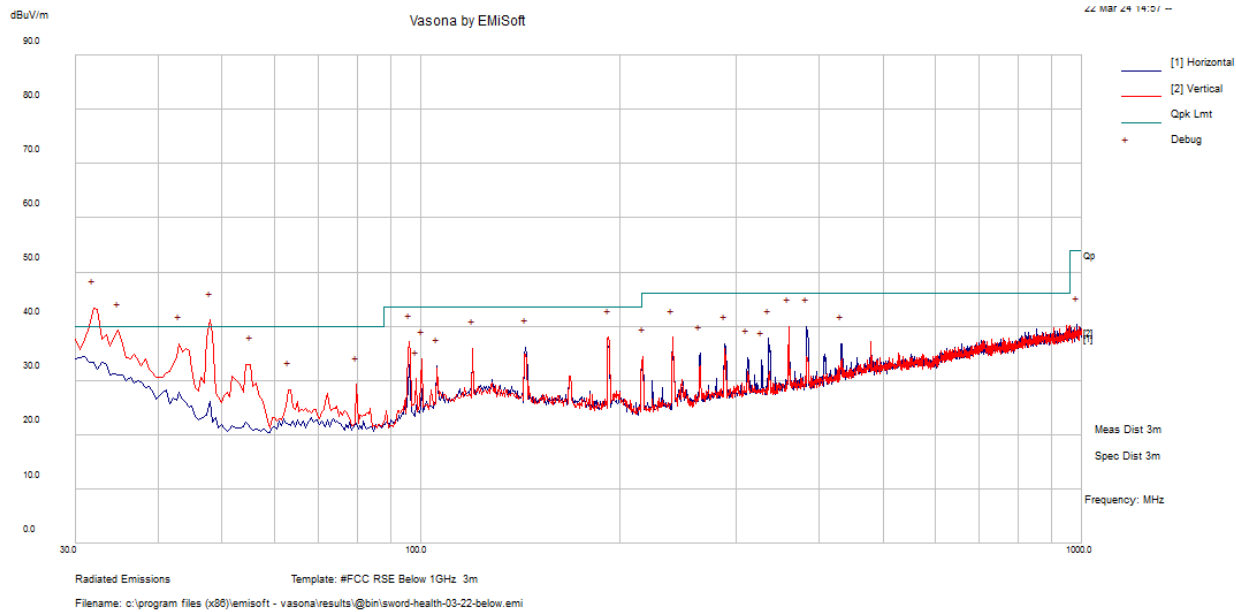
Please refer to the following table and plots for specific test result details.

## 5.9 Radiated Emissions Test Results

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

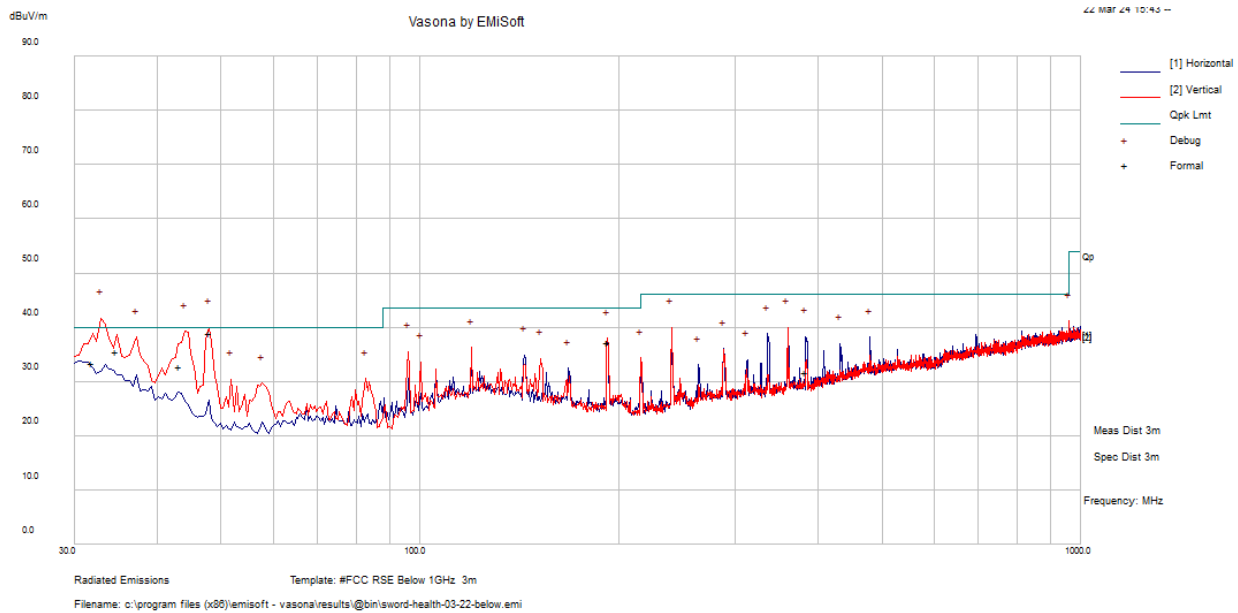
*Note: Pre-scans were performed on all shown configurations in order to determine worst-case results. Following this, a formal scan was performed on the worst-case detailed below*

#### Worst Case: GFSK(1M), 2402 MHz

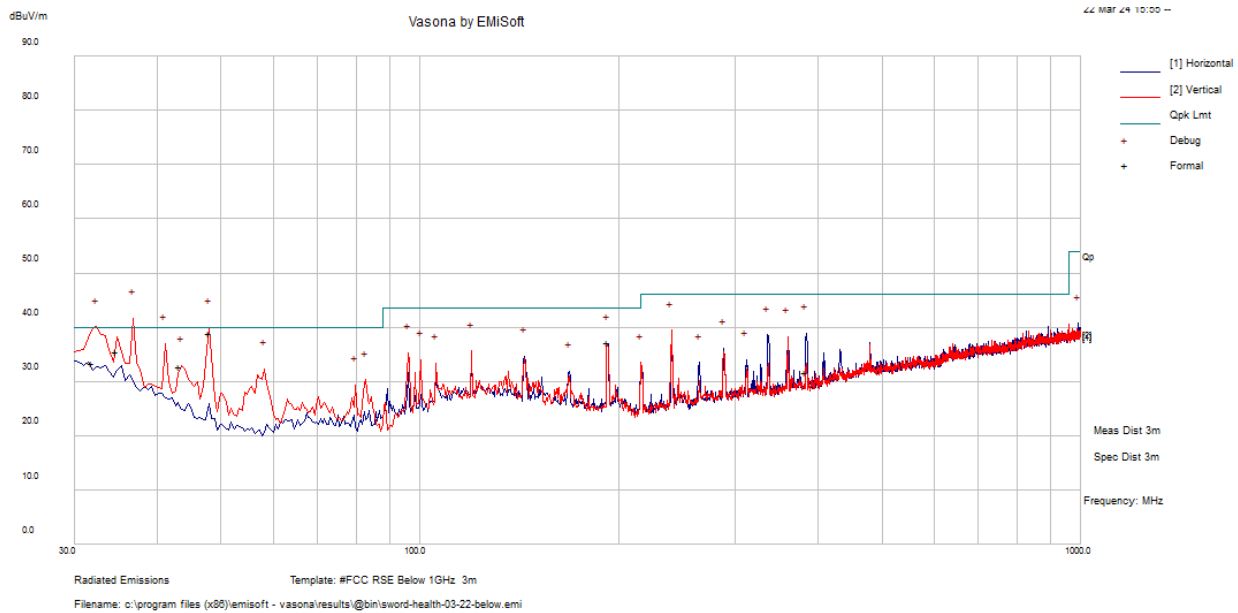


Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
31.86025	35.69	-2.38	33.31	122	V	255	40	-6.69	QP
47.997	51.7	-12.76	38.94	123	V	275	40	-1.06	QP
34.7115	39.75	-4.18	35.57	198	V	225	40	-4.43	QP
43.33175	42.93	-10.12	32.81	201	V	264	40	-7.19	QP
191.9905	46.08	-8.81	37.27	175	V	42	43.5	-6.23	QP
383.46875	36.46	-4.7	31.76	126	H	282	46	-14.24	QP

## GFSK(1M), 2440 MHz



Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
32.91	33.82	-3.1	30.72	100	V	360	40	-9.28	QP
47.945	52.65	-12.74	39.91	100	V	360	40	-0.09	QP
44.065	49.89	-10.65	39.24	200	V	360	40	-0.76	QP
37.275	44.01	-5.85	38.16	100	V	360	40	-1.84	QP
191.99	46.75	-8.81	37.94	100	V	360	43.5	-5.56	QP
240.005	48.74	-8.76	39.98	100	V	360	46	-6.02	QP

**GFSK(1M), 2480 MHz**

Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
36.79	34.96	-5.52	29.44	100	V	360	40	-10.56	QP
32.425	33.22	-2.78	40.06	100	V	360	40	-9.56	QP
47.945	52.66	-12.74	39.92	100	V	360	40	-0.08	QP
41.155	45.54	-8.59	36.95	100	V	360	40	-3.05	QP
192.475	45.72	-8.73	36.99	200	H	360	43.5	-6.51	QP
240.005	48.19	-8.76	39.43	100	V	360	46	-6.57	QP

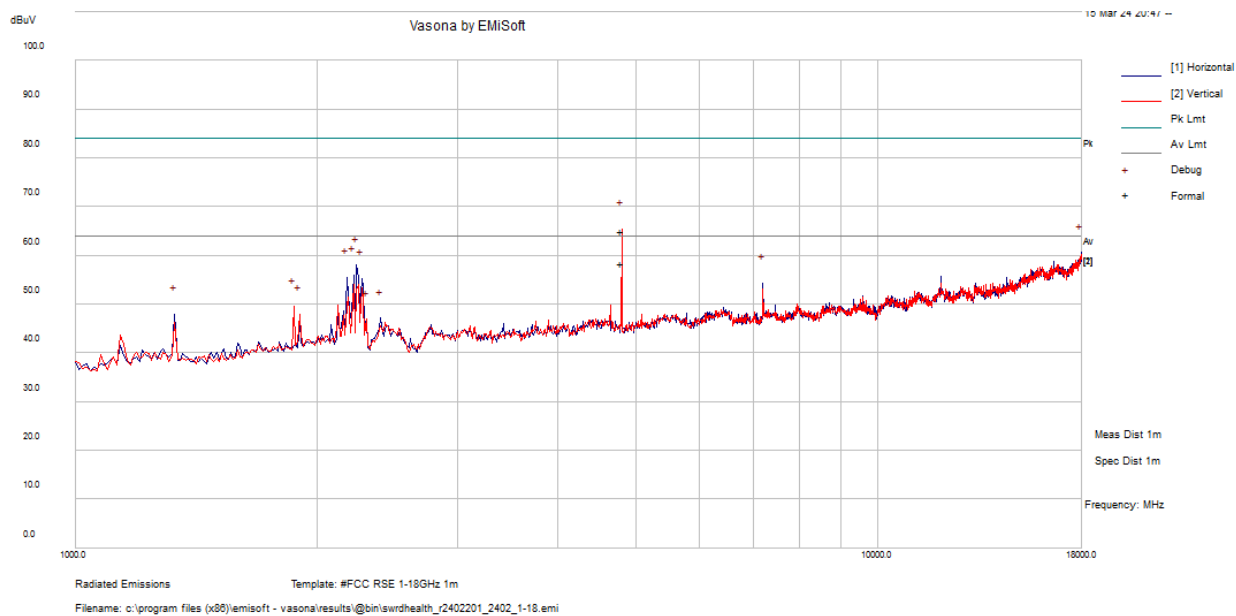
## 2) 1 – 18 GHz, Measured at 1 meter

FCC Limits for 1 GHz to 26.5 GHz				
Applicability	(dBm)	(uV/m at 3meters)	(dBuV/m at 3meters)	(dBuV/m at 1meter) <sup>2</sup>
Restricted Band Average Limit	-	500	54	63.54
Restricted Band Peak Limit <sup>1</sup>	-	-	74	83.54

Note<sup>1</sup>: Restricted Band Peak Limit is defined to be 20dB higher than Average Limit.

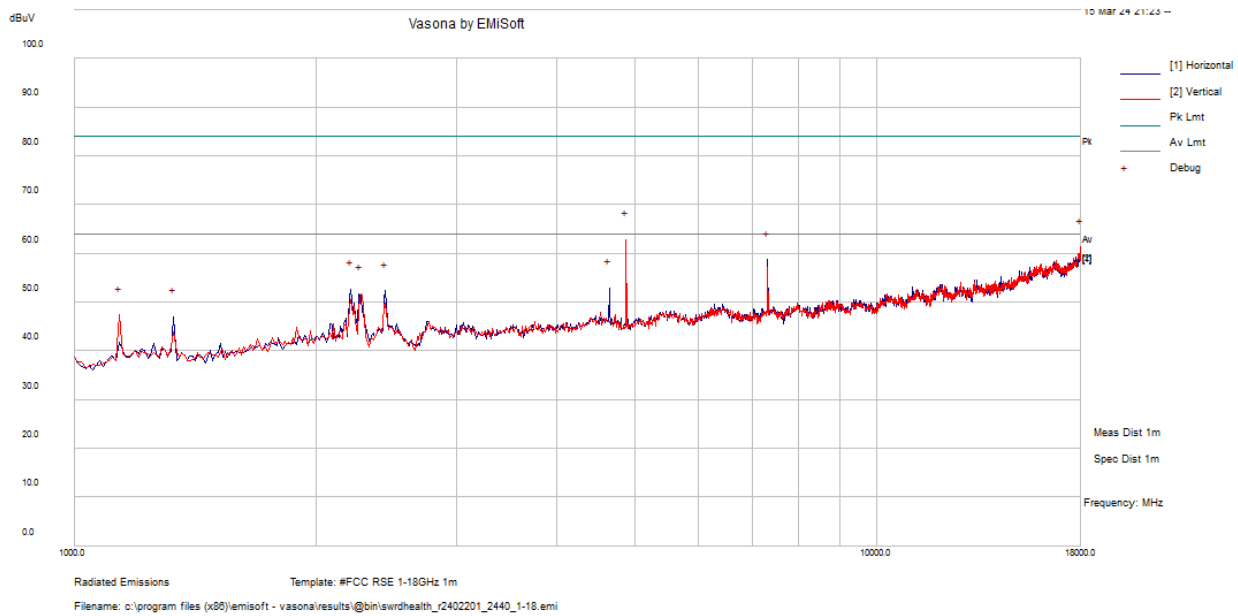
Note<sup>2</sup>: Limits at 1 meter are determined by applying a Distance correction factor accounts for extrapolation from 1 meters to 3 meters. Formula used is as follows:  $20 \cdot \log(3\text{meters}/1\text{meter}) = 9.54$  (According to ANSI C63.10-2013 Section 9.4)

## GFSK(1M), 2402 MHz



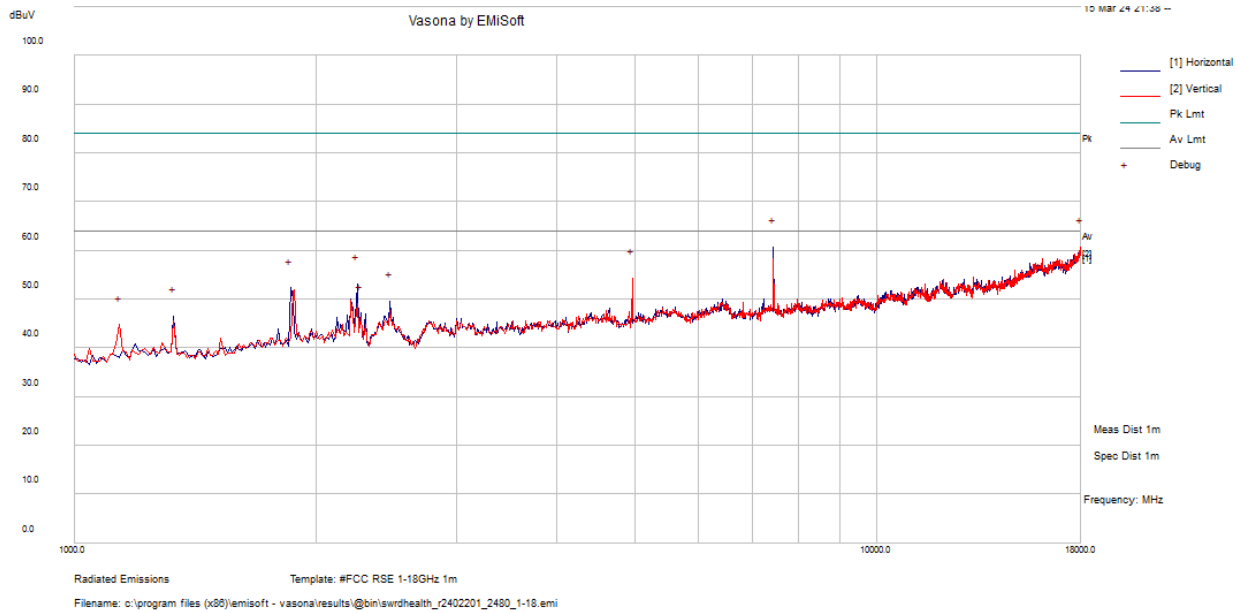
Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBuV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBuV/m)	Margin (dB)	Comment
4804.035	65.59	-0.5	65.09	105	V	167	83.54	-18.45	Peak
4804.035	58.93	-0.5	58.43	105	V	167	63.54	-5.11	Avg



**GFSK(1M), Middle channel, 2440 MHz**

Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμ V/m)	Margin (dB)	Comment
4878.125	63.14	-0.34	62.8	100	V	360	63.54	-0.74	Peak

Note: Peak measurement is used to compare with average limit to show compliance.

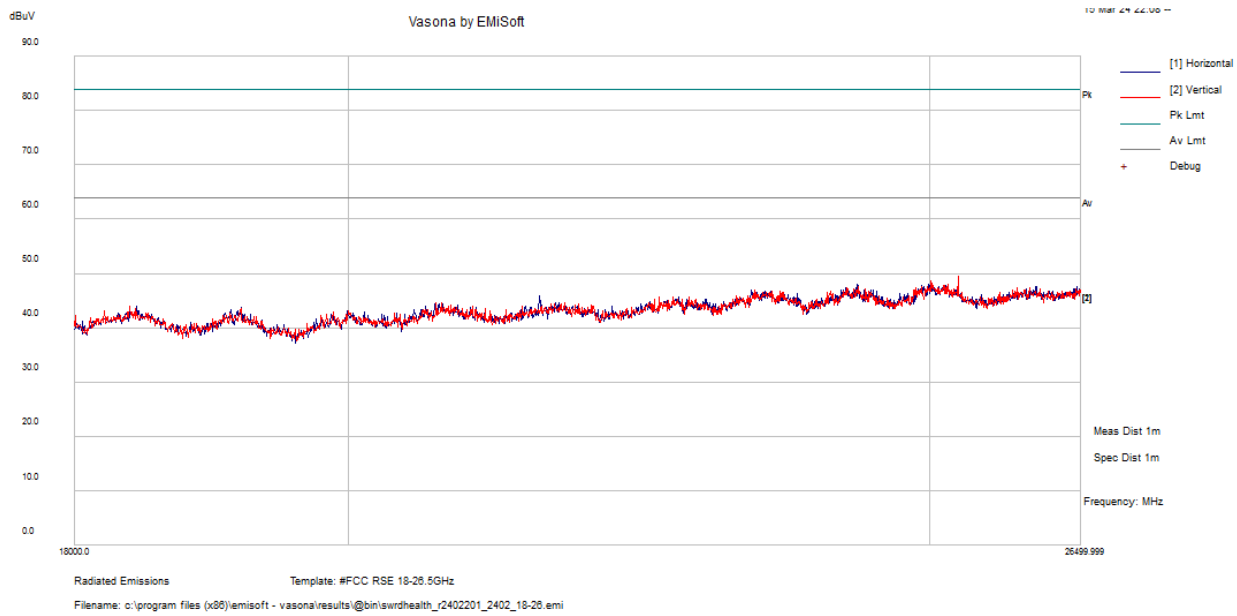
**GFSK(1M), 2480 MHz**

Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
7438.75	58.24	2.45	60.69	200	H	360	63.54	-2.85	Peak

Note: Peak measurement is used to compare with average limit to show compliance.

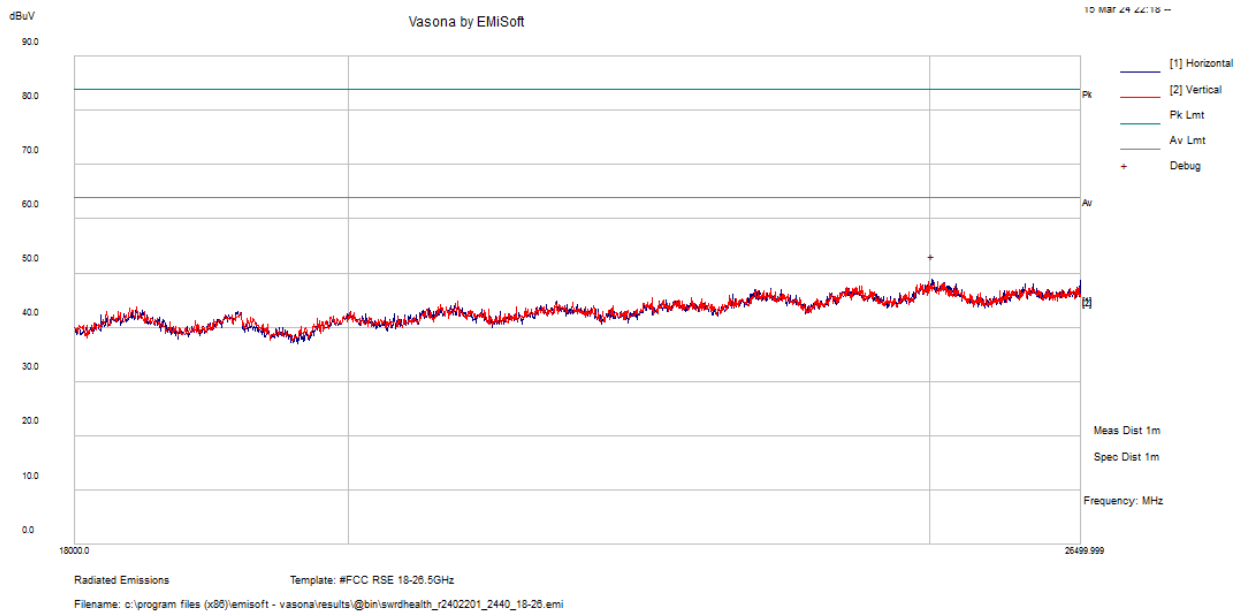
## 3) 18 - 26.5 GHz, Measured at 1 meter

## GFSK(1M), 2402 MHz



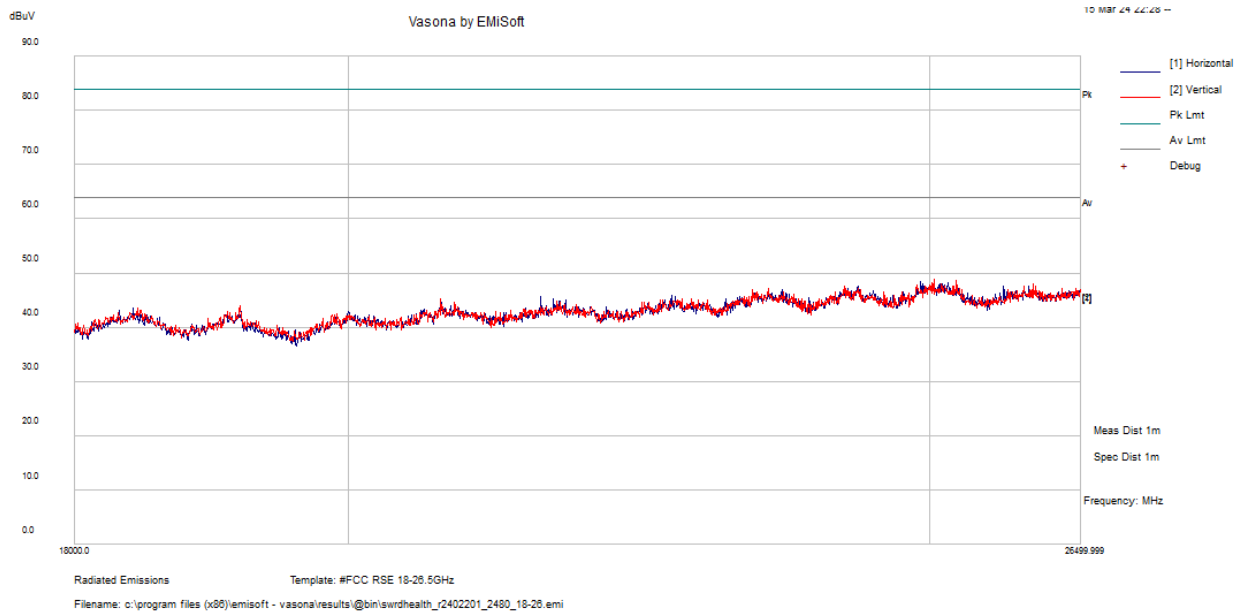
Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
25277.919	41.96	7.38	49.34	200	V	7	63.54	-14.2	Peak

Note: Peak measurement is used to compare with average limit to show compliance.

**GFSK(1M), 2440 MHz**

Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
25035.356	40.21	7.8	48.01	200	V	7	63.54	-15.53	Peak

Note: Peak measurement is used to compare with average limit to show compliance.

**GFSK(1M), 2480 MHz**

Frequency (MHz)	S.A. Reading (dBuV)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
25137.234	39.42	7.81	47.23	200	V	352	63.54	-16.31	Peak

Note: Peak measurement is used to compare with average limit to show compliance.

## 6 FCC §15.247(a) (2) – Emission Bandwidth

### 6.1 Applicable Standards

According to FCC §15.247(a) (2) §5.2: the minimum 6 dB bandwidth shall be 500 kHz.

### 6.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v05r02: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8: DTS bandwidth.

As per ANSI C63.10 Clause 11.8: DTS bandwidth

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e.,  $RBW = 100\text{ kHz}$ ,  $VBW \geq 3 \times RBW$ , and peak detector with maximum hold) is implemented by the instrumentation function.

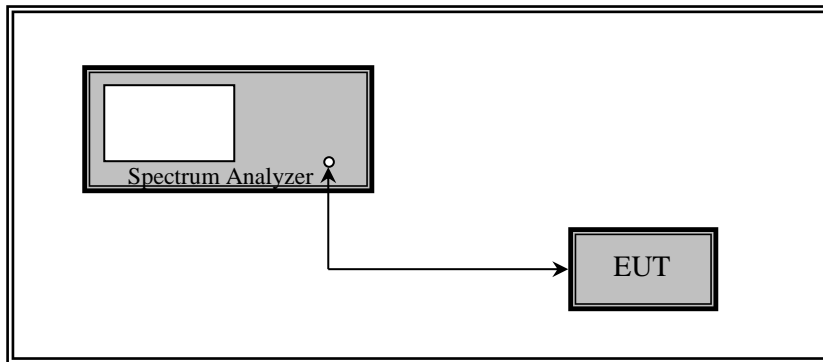
When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be  $\geq 6\text{ dB}$ .

As per the ANSI 63.10 Clause 6.9.3: Occupied Bandwidth

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a. The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (OBW/RBW)]$  below the reference level. Specific guidance is given in 4.1.5.2.
- d. Step a) through step c) might require iteration to adjust within the specified range.
- e. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g. If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h. The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

### 6.3 Test Setup Block Diagram



### 6.4 Test Equipment List and Details

BACL No	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
424	Agilent	Spectrum Analyzer	E4440A	US45303156	03-06-2024	1 year
624	Agilent	Spectrum Analyzer	E4446A	MY48250238	05-12-2023	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”.

**NOTE:** Testing performed on 03-15-2024 was done with Asset No 624, and testing performed on 06-13-2024 was done with asset No 424

### 6.5 Test Environmental Conditions

<b>Temperature:</b>	21° C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.5 kPa

The testing was performed by Libass Thiaw on 03-15-2024 and 06-13-2024 at RF test site.

## 6.6 Test Results

Channel	Frequency (MHz)	99% OBW (MHz)	6 dB OBW (kHz)	6 dB OBW Limit (kHz)	Result
<b>1MBIT</b>					
Low	2402	1.0484	687.699	$\geq 500$	Pass
Middle	2440	1.0462	695.992	$\geq 500$	Pass
High	2480	1.0520	704.378	$\geq 500$	Pass

Channel	Frequency (MHz)	99% OBW (MHz)	6 dB OBW (MHz)	6 dB OBW Limit (kHz)	Result
<b>2MBIT</b>					
Low	2402	2.0725	1.145	$\geq 500$	Pass
Middle	2440	2.0670	1.154	$\geq 500$	Pass
High	2480	2.0819	1.152	$\geq 500$	Pass

Please refer to Annex A for detailed Emissions Bandwidth test results.



## 7 FCC §2.1093 - RF Exposure

### 7.1 Applicable Standards

According to FCC KDB 447498 D01 General RF Exposure Guidance v06 Section 4.3.1, Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\left[ \frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

- 2) At 100 MHz to 6 GHz and for test separation distances  $> 50$  mm, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B:

- a)  $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)] \text{ mW, at 100 MHz to 1500 MHz}$
- b)  $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot 10] \text{ mW at } > 1500 \text{ MHz and } \leq 6 \text{ GHz}$

- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion, and as illustrated in Appendix C:

- a) The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by  $[1 + \log(100/f(\text{MHz}))]$  for test separation distances  $> 50$  mm and  $< 200$  mm
- b) The power threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$  for test separation distances  $\leq 50$  mm
- c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

## 7.2 RF exposure evaluation exemption for FCC

The maximum power of channel, including tune-up tolerance is 6.52 dBm(4.49mW). According to FCC KDB 447498,

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] [\sqrt{f(\text{GHz})}] = (4.49 \text{ mW}/5\text{mm}) * \sqrt{2.402} = 1.39$ , which is less than 3. Therefore, FCC SAR testing is excluded.

## **8 FCC §15.247(b)(3) & §5.4 – Maximum Output Power**

### **8.1 Applicable Standards**

According to FCC §15.247(b) (3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### **8.2 Measurement Procedure**

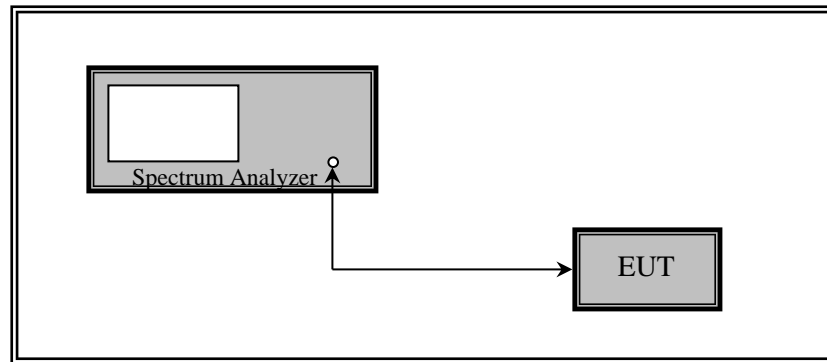
The BLE measurements are based on ANSI C63.10-2013, Section 11.9.1.1

11.9.1.1  $RBW \geq DTS$  bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a. Set the  $RBW \geq DTS$  bandwidth..
- b. Set  $VBW \geq [3 \times RBW]$ .
- c. Set  $span \geq [3 \times RBW]$ .
- d. Sweep time = auto couple. Sweep time = auto.
- e. Detector = peak.
- f. Trace mode = max hold.
- g. Allow trace to fully stabilize.
- h. Use peak marker function to determine the peak amplitude level.

### 8.3 Test Setup Block Diagram



### 8.4 Test Equipment List and Details

BACL No	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
424	Agilent	Spectrum Analyzer	E4440A	US45303156	03-06-2024	1 year
624	Agilent	Spectrum Analyzer	E4446A	MY48250238	05-12-2023	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".*

**NOTE:** Testing performed on 03-15-2024 was done with Asset No 624, and testing performed on 06-13-2024 was done with asset No 424

### 8.5 Test Environmental Conditions

<b>Temperature:</b>	21° C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.5 kPa

The testing was performed by Libass Thiaw on 03-15-2024 and 06-13-2024 at RF test site.

**8.6 Test Results**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Conducted Output Power Limit (dBm)	Result
<b>1MBIT</b>				
Low	2402	3.93	< 30	Pass
Middle	2440	3.81	< 30	Pass
High	2480	3.69	< 30	Pass

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Conducted Output Power Limit (dBm)	Result
<b>2MBIT</b>				
Low	2402	3.84	< 30	Pass
Middle	2440	3.72	< 30	Pass
High	2480	3.71	< 30	Pass

**Note: EUT used short soldered SMA adaptor that was connected directly to PSA. As loss is negligible, offset doesn't reflect a cable loss offset**

Please refer to Annex B for detailed Maximum Output Power test results.

## 9 FCC §15.247(e) – Peak Power Spectral Density

### 9.1 Applicable Standards

According to ECFR §15.247(e) for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 9.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v05r02: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8.4: Maximum power spectral density level in the fundamental emission.

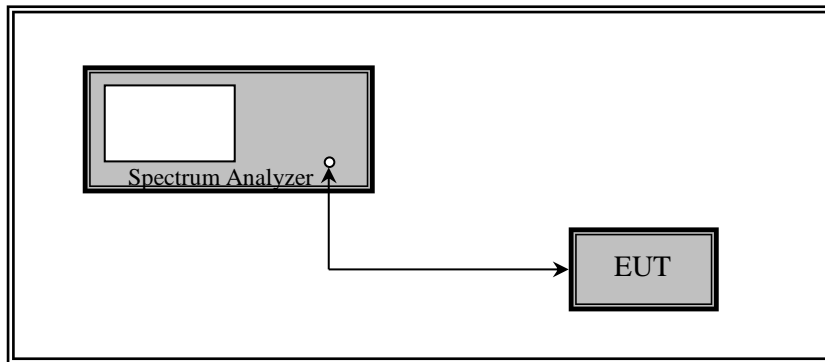
As per ANSI C63.10 Clause 11.10: Maximum power spectral density level in the fundamental emission

Some regulatory requirements specify a conducted PSD limit within the DTS bandwidth during any time interval of continuous transmission.<sup>88</sup> Such specifications require that the same method as used to determine the conducted output power shall be used to determine the power spectral density. If maximum peak conducted output power was measured, then the peak PSD procedure 11.10.2 (method PKPSD) shall be used. If maximum conducted output power was measured, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option):

**Method PKPSD (peak PSD):** The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d. Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.
- j. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

### 9.3 Test Setup Block Diagram



### 9.4 Test Equipment List and Details

BACL No	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
424	Agilent	Spectrum Analyzer	E4440A	US45303156	03-06-2024	1 year
624	Agilent	Spectrum Analyzer	E4446A	MY48250238	05-12-2023	1 year

Note<sup>1</sup>: cables, attenuators and notch filters included in the test set-up were checked each time before testing.

**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".

**NOTE:** Testing performed on 03-15-2024 was done with Asset No 624, and testing performed on 06-13-2024 was done with asset No 424

### 9.5 Test Environmental Conditions

<b>Temperature:</b>	21° C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.5 kPa

The testing was performed by Libass Thiaw on 03-15-2024 and 06-13-2024 at RF test site.

## 9.6 Test Results

Channel	Frequency (MHz)	PSD [dBm/10kHz]	Limit (dBm/3kHz)	Result
<b>1MBIT</b>				
Low	2402	-5.78	< 8	Pass
Middle	2440	-6.76	< 8	Pass
High	2480	-6.01	< 8	Pass

Channel	Frequency (MHz)	PSD [dBm/10kHz]	Limit (dBm/3kHz)	Result
<b>2MBIT</b>				
Low	2402	-6.34	< 8	Pass
Middle	2440	-6.53	< 8	Pass
High	2480	-6.32	< 8	Pass

**Note:** The EUT passed with stringent RBW of 10kHz, thus complied with FCC RBW requirement of 3kHz.

**Note:** EUT used short soldered SMA adaptor that was connected directly to PSA. As loss is negligible, offset doesn't reflect a cable loss offset

Please refer to Annex C for detailed Peak Power Spectral Density test results.



## 10 FCC §15.247(d) –Emissions at Antenna Terminal and 100 kHz Band Edges

### 10.1 Applicable Standards

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c).

### 10.2 Measurement Procedure

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation

RBW = 100 kHz

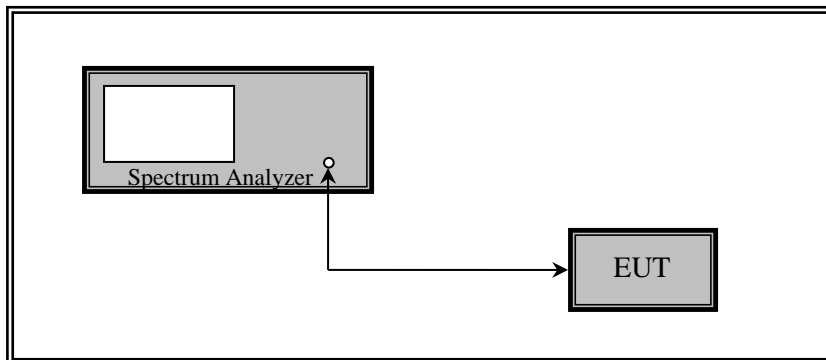
VBW = 300 kHz

Sweep = coupled

Detector function = peak

Trace = max hold

### 10.3 Test Setup Block Diagram



#### 10.4 Test Equipment List and Details

BACL No	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
424	Agilent	Spectrum Analyzer	E4440A	US45303156	03-06-2024	1 year
624	Agilent	Spectrum Analyzer	E4446A	MY48250238	05-12-2023	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".

*NOTE:* Testing performed on 03-15-2024 was done with Asset No 624, and testing performed on 06-13-2024 was done with asset No 424

#### 10.5 Test Environmental Conditions

<b>Temperature:</b>	21° C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.5 kPa

The testing was performed by Libass Thiaw on 03-15-2024 and 06-13-2024 at RF test site.

#### 10.6 Test Results

Please refer to Annex D for detailed 100 kHz Spurious Emissions at Antenna Terminal test results.

## **11 Appendix A (Normative) - Test Setup Photographs**

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Please refer to the attachment

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## **12 Appendix B (Normative) - EUT Photographs**

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Please refer to the attachment

## **13 Appendix C (Normative) – Internal Photos**

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Please refer to the attachment

## 14 Appendix D (Normative) - A2LA Electrical Testing Certificate



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

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

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