

Test Report

Prepared for: 911Cellular

Model: Badger Plus 5

Serial Number: N/A

Project No: p2640015

FCC ID: 2A9ZA-BADGERRP5

Test Results: Pass

To

FCC Part 15.247

&

RSS Gen Issue 5 (April 2018)

RSS-247 Issue 4 (July 2025)

Date of Issue: August 4, 2026

On behalf of the applicant:

911Cellular
21403 Chagrin Blvd Suite 222
Beachwood, OH 44122

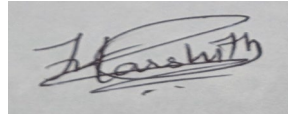
Attention of:

Dan Salahsour, Operations Manager
Ph: 216-283-6100
E-mail: dan.salahshour@911cellular.com

Prepared By:

Compliance Testing, LLC
Mesa, AZ 85204
(480) 926-3100 phone / (480) 926-3598 fax
www.compliancetesting.com
ANAB Cert#: AT-2901
FCC Site Reg. #750616
ISED Site Reg. #2044A-2
CAB US-ID: US0122

Reviewed / Authorized By:



Harshith Devaraja, EMC Engineer

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Test Results Summary

Test Date Range: June 25, 2026 – July 31, 2026

Specification		Test Name	Pass, Fail, N/A	Comments
FCC	RSS			
15.247(a)(2)	RSS Gen 6.7 RSS 247 6.3.1(a)	Occupied Bandwidth	Pass	
15.247(b)(3)	RSS 247 6.3.2	Transmitter Output Power	Pass	
15.247(d)	RSS 247 6.6	Conducted Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	RSS Gen 8.9/8.10 RSS 247 6.6	Spurious Emissions	Pass	
15.247(e)	RSS 247 6.3.1(b)	Power Spectral density	Pass	
15.207	RSS Gen 8.8	A/C Powerline Conducted Emissions	Pass	
15.203	RSS Gen 6.8	Antenna Requirement	Pass	
Method Deviations/Additions: No				

Statements of conformity are reported as:

- Pass - the measured value is below the acceptance limit, *acceptance limit = test limit*.
- Fail - the measured value is above the acceptance limit, *acceptance limit = test limit*.

References/Methods	Description
ANSI C63.4-2014	Method and Measurements of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the range 9kHz to 40GHz.
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
558074 D01 15.247 Meas Guidance v05r02	Guidance for Compliance Measurements on DTS, FHSS, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules
ISO/IEC 17025:2017	General requirements for the Competence of Testing and Calibrations Laboratories

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	August 4, 2026	Harshith Devaraja	Original Document
2.0	September 11, 2026	Karen Springer	Removed LLC from Company Name Removed Reference of IC ID

Current revision of the test report replaces any prior versions. Only the current version of the test report is valid.

EUT Description

Model:	Badger Plus 5
IC HVIN:	Badger Plus 5
IC PMN:	Badger Plus 5
Serial:	N/A
Firmware for conducted testing	Espressif ESP32-C5 RF Test Firmware — ESP32-C5_RFTTest_1bb47f41_20260522
Firmware for radiated spurious	v1.0.1-fcc
Description:	Wearable Panic Button
Additional Information:	Radio Frequency Range and Operational Info: 2.402 – 2.48 GHz BLE GFSK (1 Mbps) Usage: Portable
Receipt of Sample(s):	June 8, 2026
EUT Condition:	Visual Damage No State of Development Production/Production Equivalent
Customer Furnished data:	Is there any customer supplied data in this report? The maximum gain of the antenna is 1.0 dBi The above EUT specifications are provided by the customer. Note: The customer is responsible for any data supplied that may affect the final test results. This includes all EUT specifications

The applicant has been cautioned as to the following

15.21 - Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) - Special Accessories

Equipment marked to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Authorization Requirements

Intentional Radios may require authorization covered under the following rule parts or standards:

-47 CFR Part 2 Subpart J

Note: These notices are specific to the methods and standards related to the testing within this report. Customers should also consider and review additional legal regulations for import/export documentation and labeling for the countries and geographies under consideration by the manufacturer.

Test and Measurement Data

Subpart 2.1033(b)

All tests and measurement data shown were performed in accordance with FCC Rule Parts: 15.247.

Standard Engineering Practices

Unless otherwise indicated, the procedures contained in ANSI C63.10 and ANSI C63.4 were observed during testing.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing. Measurement results, unless otherwise noted, are worst case measurements.

Standard Test Conditions and Engineering Practices

Unless otherwise indicated in the specific measurement results, the ambient temperature was maintained within the range of 10° to 40°C (50° to 104°F) and the relative humidity levels were in the range of 10% to 90%.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Barometric Pressure (mbar)
25.33 - 28.56	24.3 - 39.5	962.5 - 969.8

Test Setup and Modes of Operation

EUT Operation during Tests

EUT was connected to a test laptop to control power and channel selection. The EUT was operated to control the continuous transmission of low, mid and high channels in the 2.402-2.48 GHz frequency range (BLE).

Accessories:

Qty	Description	Manufacturer	Model	S/N
1	Test Laptop	Lenovo	ThinkPad	N/A
1	Wall power adapter	Samsung	EP-TA10JWE	N/A

Cables:

Qty	Description	Length (M)	Ferrites (Y/N)	Shielding Y/N	Shielded Hood Y/N	Termination / Connection
1	USB Power Cable	0.8	N	N	N	Power adapter/ EUT

Software/Firmware:

Name	Description	Version	Installation Info
ESP RF Test Tool	Radio Control Software Application	v5.7	N/A

Modifications to EUT(s): N/A

15.203: Antenna Requirement:

- ☒ The antenna is permanently attached to the EUT
- ☐ The antenna uses a unique coupling
- ☐ The EUT must be professionally installed
- ☐ The antenna requirement does not apply

The antenna gain stated by the manufacturer:
RF Antenna: 1.0 dBi

Transmitter Output Power

Engineer: Madhava Gooduru

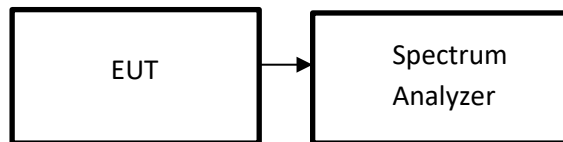
Test Date: 07/08/26

Test Procedure

Conducted Method

EUT, via a pigtail cable, was directly connected to the spectrum analyzer to verify that the EUT met the requirements for Output Power.

Test Setup



The Spectrum Analyzer was set to the following:

RBW $\geq$ OBW Bandwidth

VBW $\geq 3 \times$ RBW

Span $\geq 3 \times$ RBW

Sweep time = auto couple

Detector = peak

Trace Mode = max hold

Transmitter Output Power Summary Table

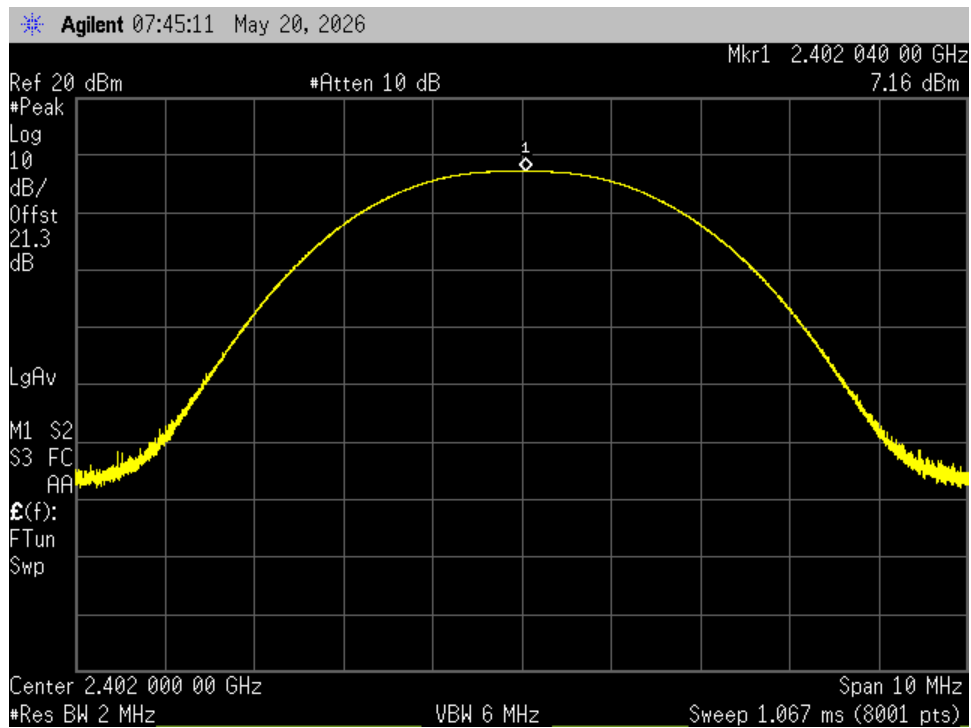
BLE 1 Mbps

Tuned Frequency (MHz)	Conducted Peak power (dBm)	Conducted peak power (mW)	Specification Limit	Result
2402	7.16	5.2	1 W (30 dBm)	Pass
2440	7.57	5.7	1 W (30 dBm)	Pass
2480	7.38	5.5	1 W (30 dBm)	Pass

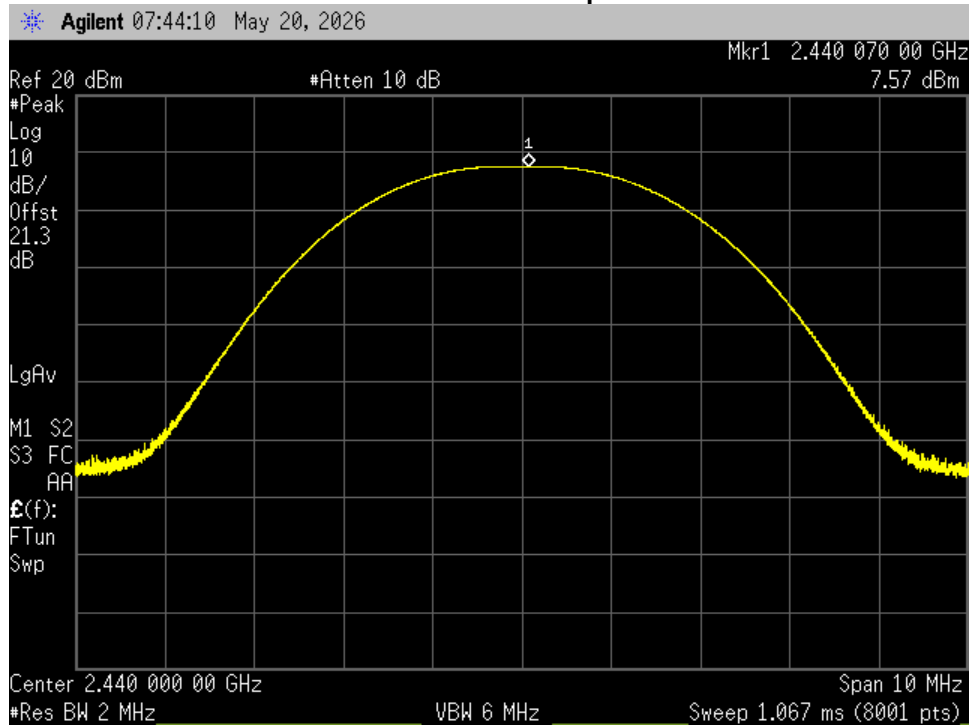
Tuned Frequency (MHz)	Conducted Peak power (dBm)	Antenna Gain (dBi)	EIRP (W)	EIRP (dBm)	EIRP Limit	Result
2402	7.16	1	0.0065	8.16	4 W (36 dBm)	Pass
2440	7.57	1	0.0072	8.57	4 W (36 dBm)	Pass
2480	7.38	1	0.0069	8.38	4 W (36 dBm)	Pass

Output Power Plots

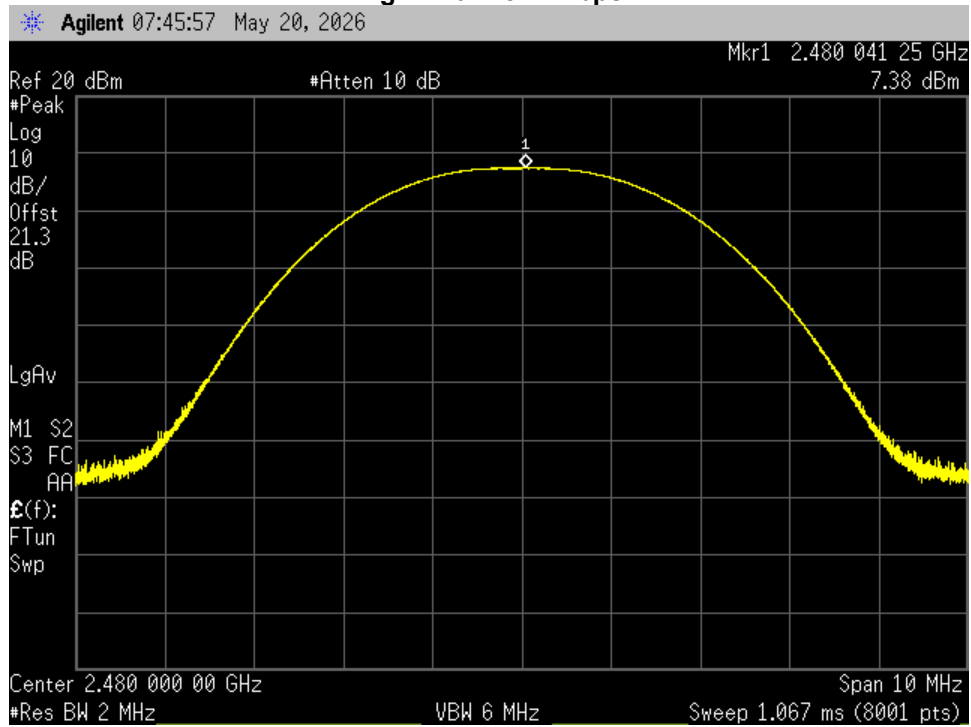
Low Channel 1 Mbps



Mid Channel 1 Mbps



High Channel 1 Mbps



15.209/15.205 Spurious Emissions

Engineer: Madhava Gooduru

Test Date: 06/26/2026

Test Procedure

Radiated Method

The EUT was set up in a semi-anechoic test chamber set 3 m from the receiving antenna. The EUT was set to transmit on the lowest, middle and highest frequency of operation at the maximum power level while the RF port was terminated to 50 Ω load. The EUT was tested, in 3 orthogonal axes, by rotating it 360° with the receive antenna in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure the TX signal levels were maximized. EUT set in the Y axis was determined as the worst-case position. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated spurious Emissions. All emissions across the required range were evaluated and emissions within 20dB margin are reported.

Conducted Method

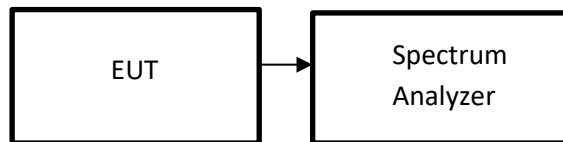
As per ANSI C63.10 Section 11.12.2

EUT, via a pigtail cable, were directly connected to the spectrum analyzer to verify that the EUT met the requirements for spurious emissions.

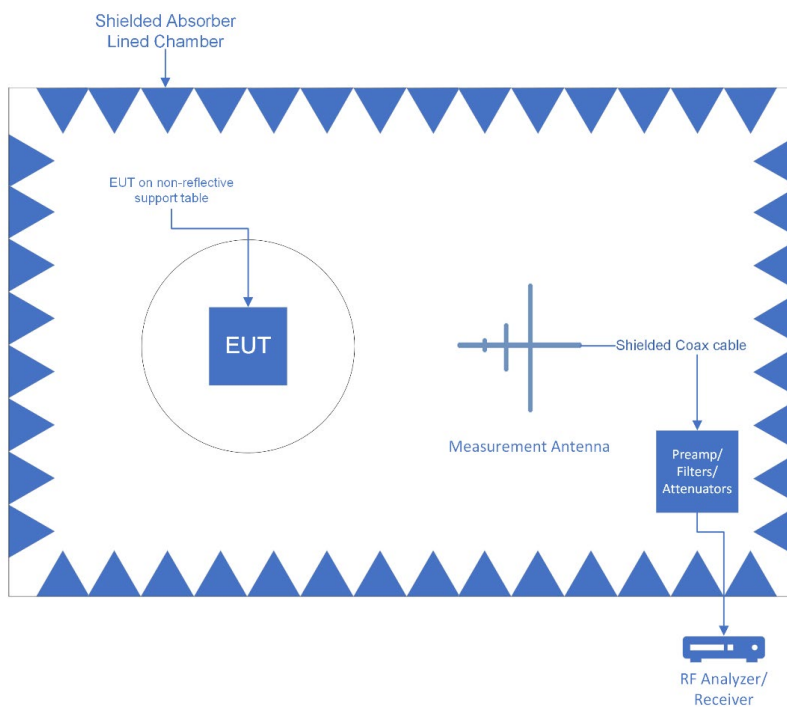
The conducted measurement plot reported below involves the resultant conversion from the EIRP to an equivalent electric field.

$$E = \text{EIRP} - 20 \log(3) + 104.8$$

Conducted Test Setup



Radiated basic Test Setup



	Settings Below 1GHz	Settings Above 1GHz
RBW	120 kHz	1 MHz
VBW	300 kHz	3 MHz
Detector	Quasi Peak	Peak / Average

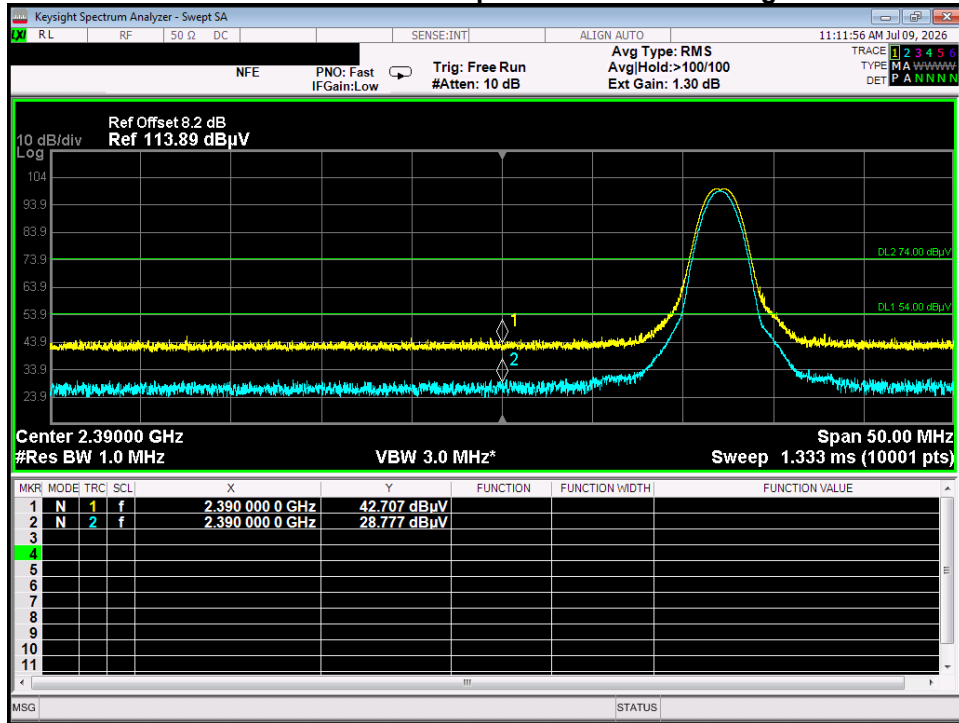
Sample Calculations

Corrected Value = Measured Value + Correction factor

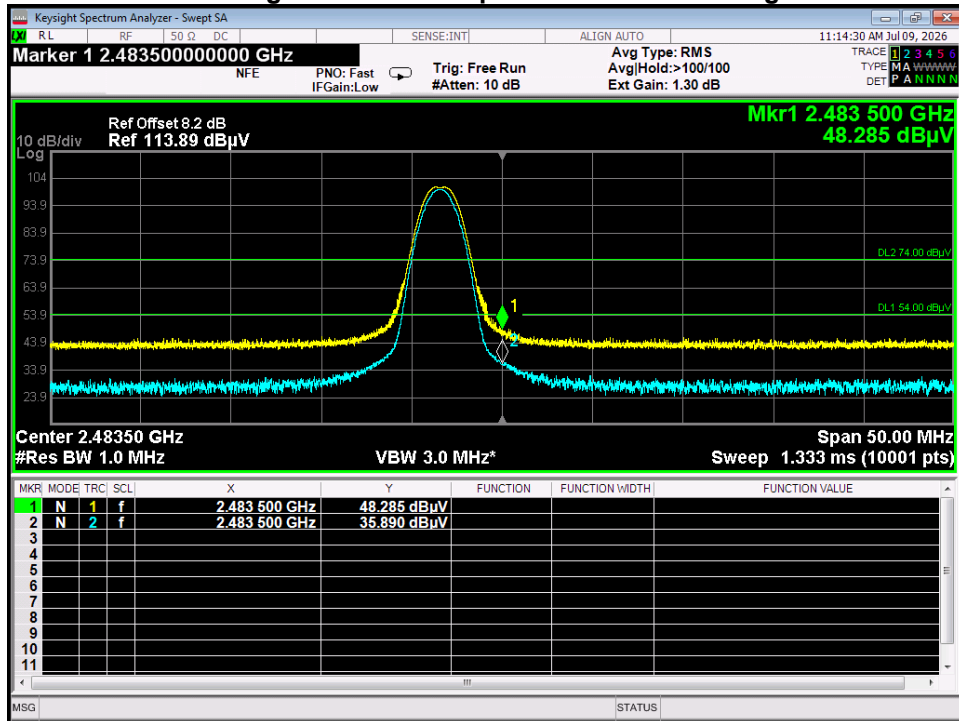
Correction factor = Antenna Correction Factor + Cable loss + Preamp/Attenuator Factor

Conducted Method Plots

BLE Low Channel 1 Mbps Restricted Band Edge



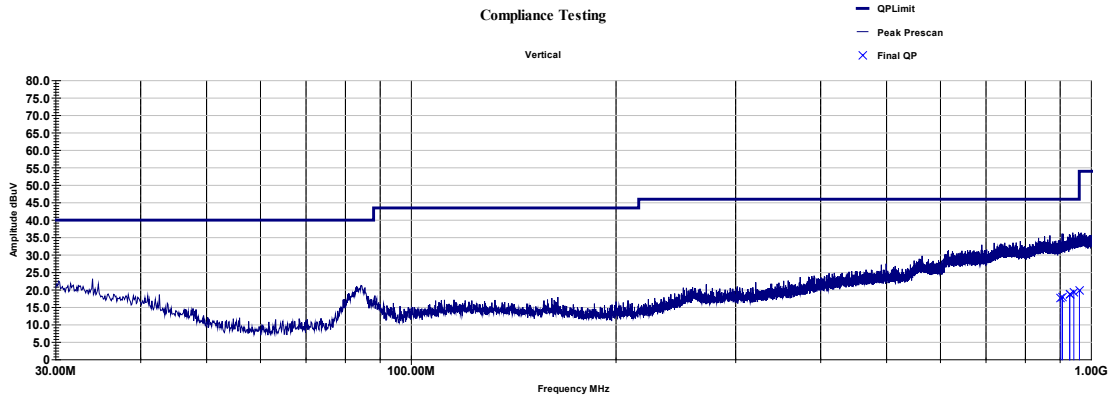
BLE High Channel 1 Mbps Restricted Band Edge



Radiated Plots

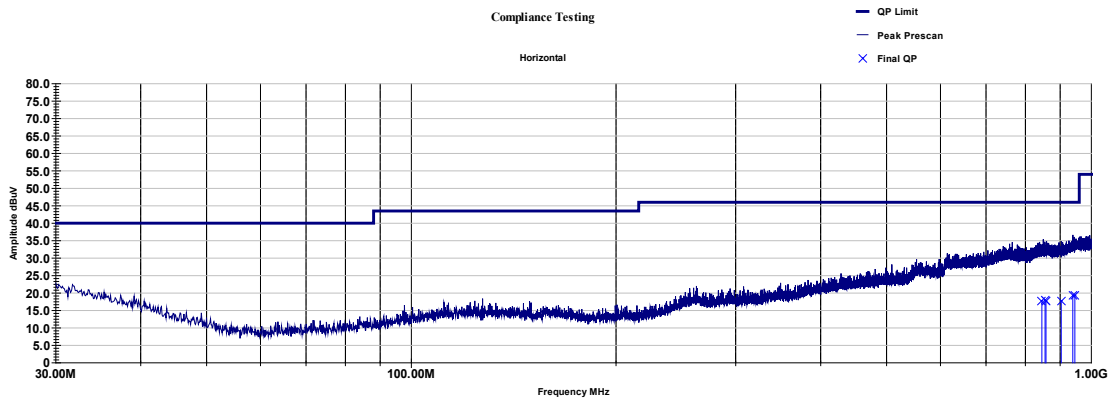
BLE Low Channel 1 Mbps

30-1000 MHz



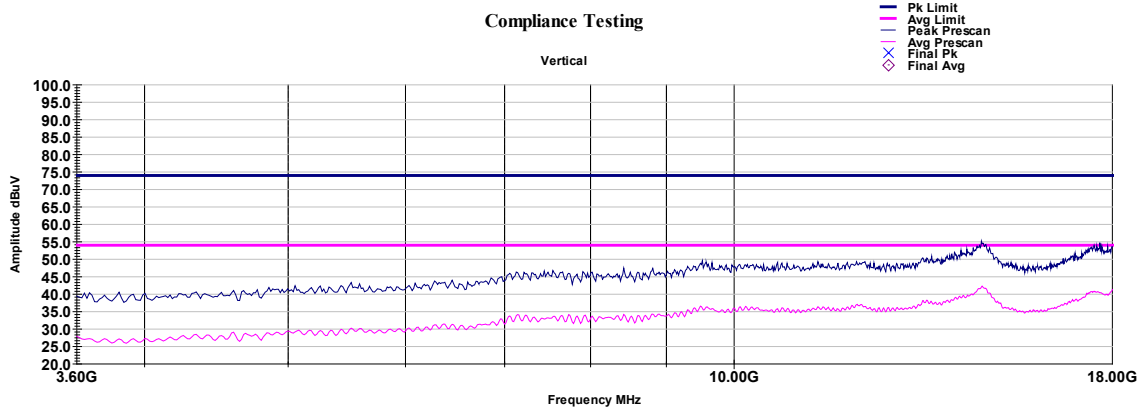
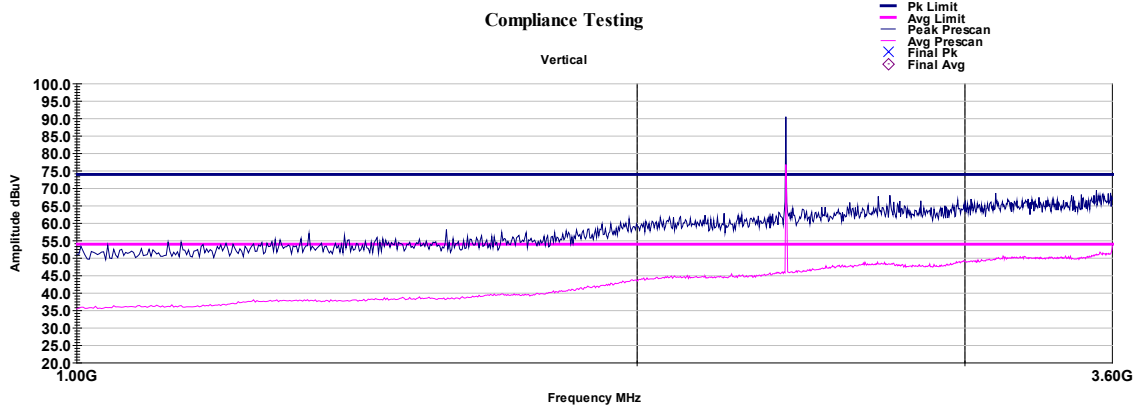
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
902.027	313.00	256.00	20.64	-2.93	17.70	46.00	-28.30
907.119	65.00	100.00	20.64	-2.79	17.80	46.00	-28.20
929.435	331.00	172.00	20.68	-1.94	18.70	46.00	-27.30
929.435	331.00	172.00	20.68	-1.94	18.70	46.00	-27.30
929.504	239.00	389.00	20.81	-1.93	18.90	46.00	-27.10
929.435	331.00	172.00	20.68	-1.94	18.70	46.00	-27.30
942.432	327.00	338.00	20.82	-1.46	19.40	46.00	-26.60
960.704	140.00	306.00	20.74	-0.88	19.90	54.00	-34.10
Final = Raw + Path Loss							

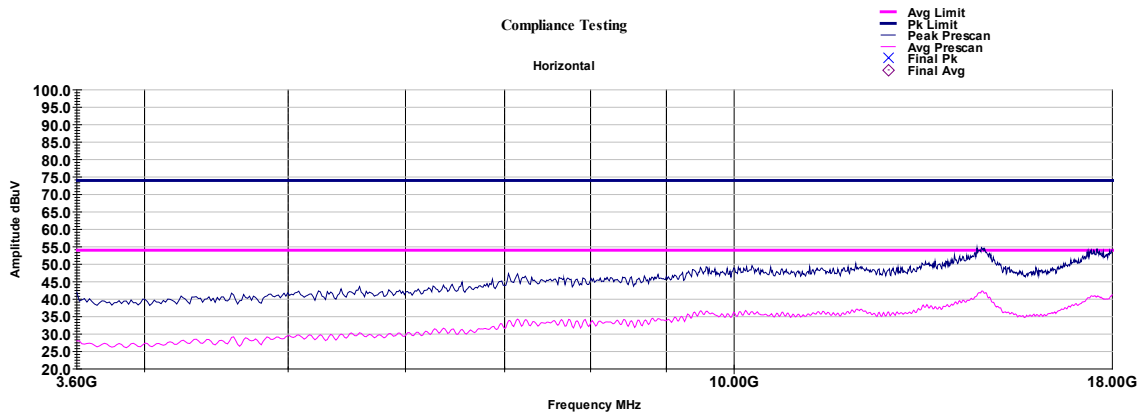
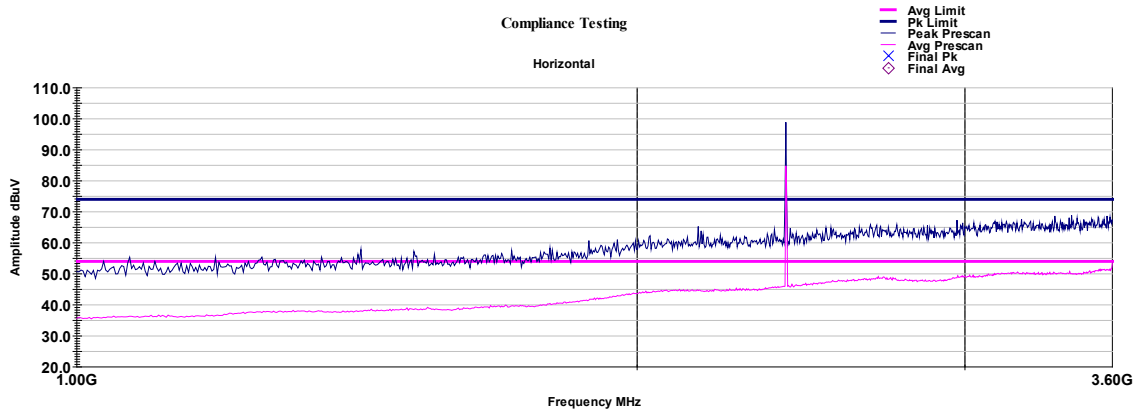
Margin = Final - Limit



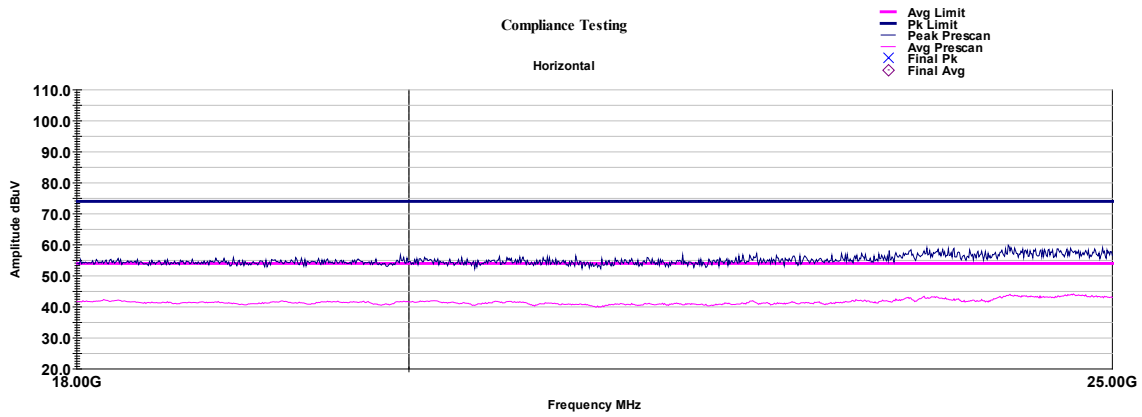
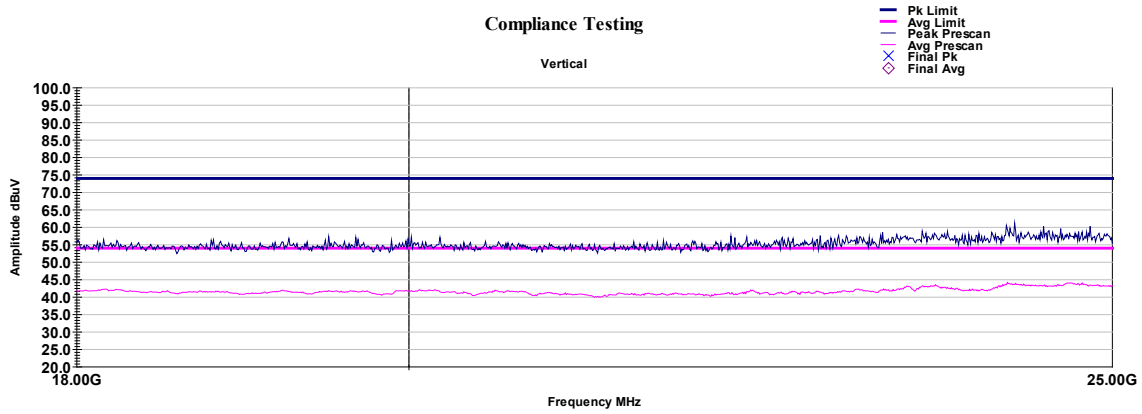
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
845.893	70.00	372.00	20.98	-3.18	17.80	46.00	-28.20
855.137	282.00	100.00	21.02	-3.18	17.80	46.00	-28.20
857.686	33.00	215.00	20.82	-3.19	17.60	46.00	-28.40
903.362	332.00	381.00	20.68	-2.92	17.80	46.00	-28.20
939.288	76.00	110.00	20.77	-1.57	19.20	46.00	-26.80
945.942	107.00	325.00	20.67	-1.34	19.30	46.00	-26.70
Final = Raw + Path Loss							
Margin = Final - Limit							

1 – 18 GHz Range



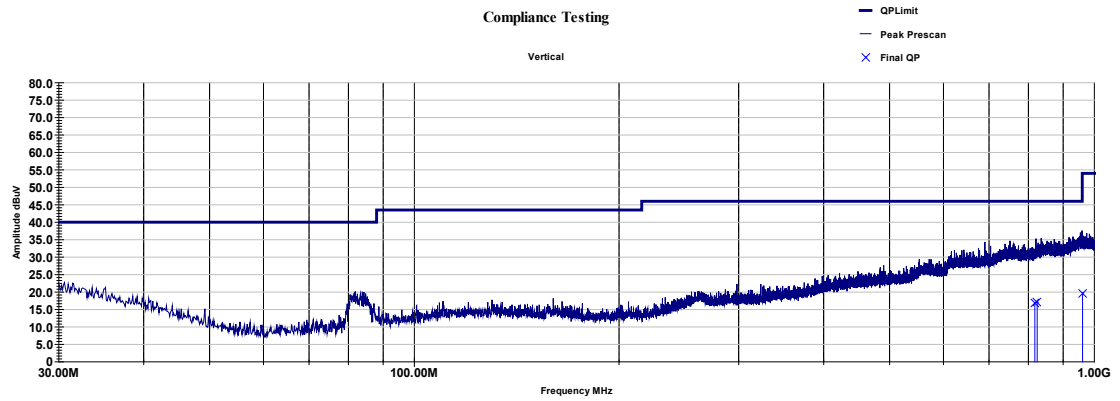


18 - 25 GHz Range

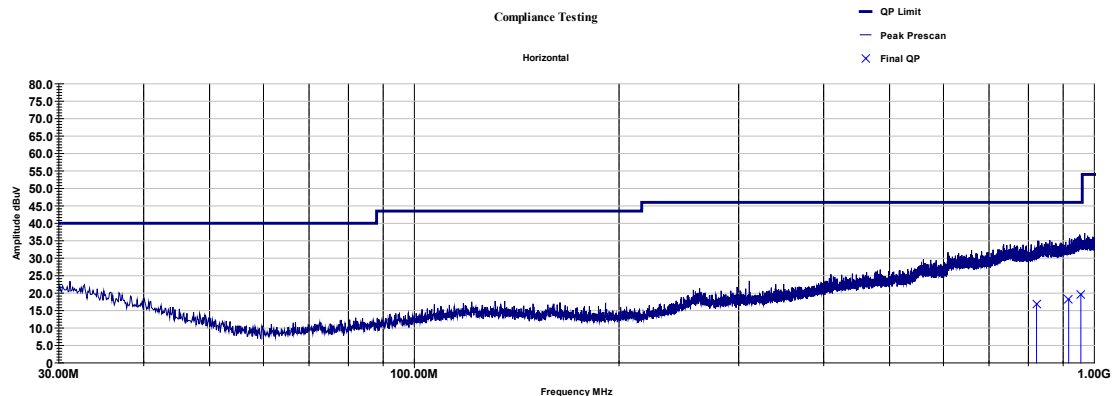


BLE Mid Channel 1 Mbps

30-1000 MHz

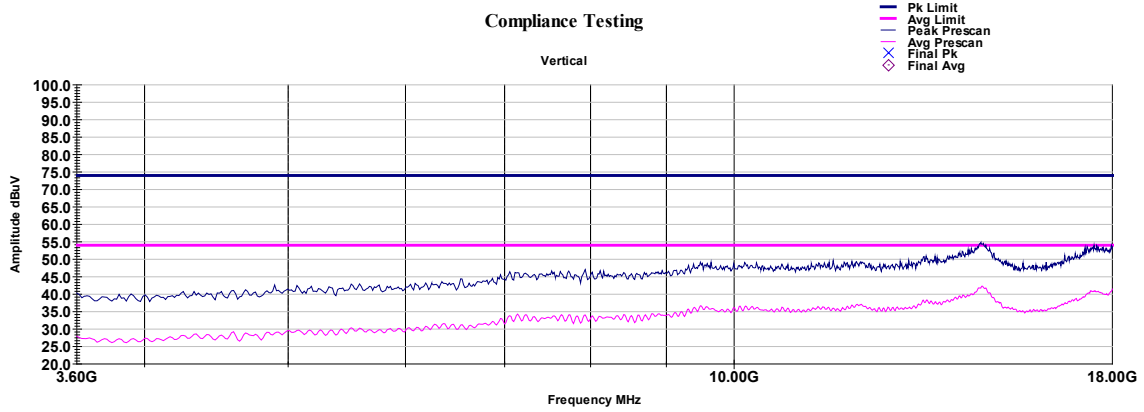
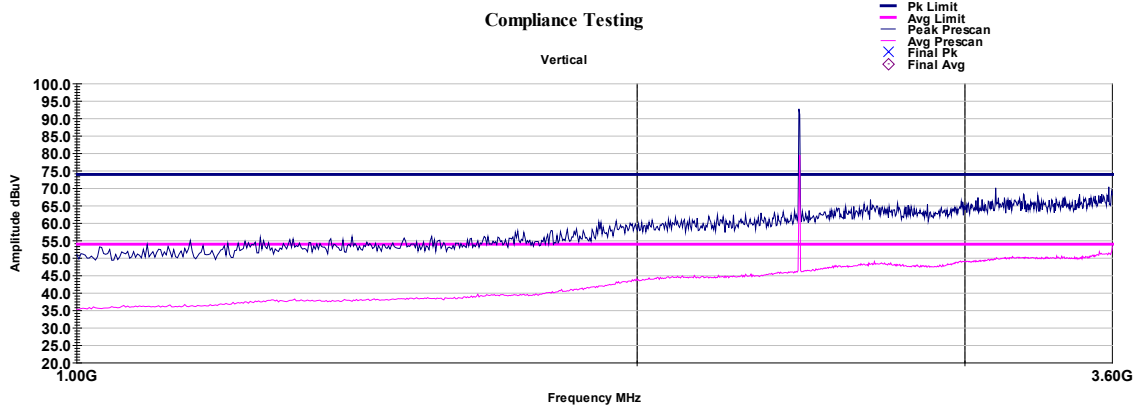


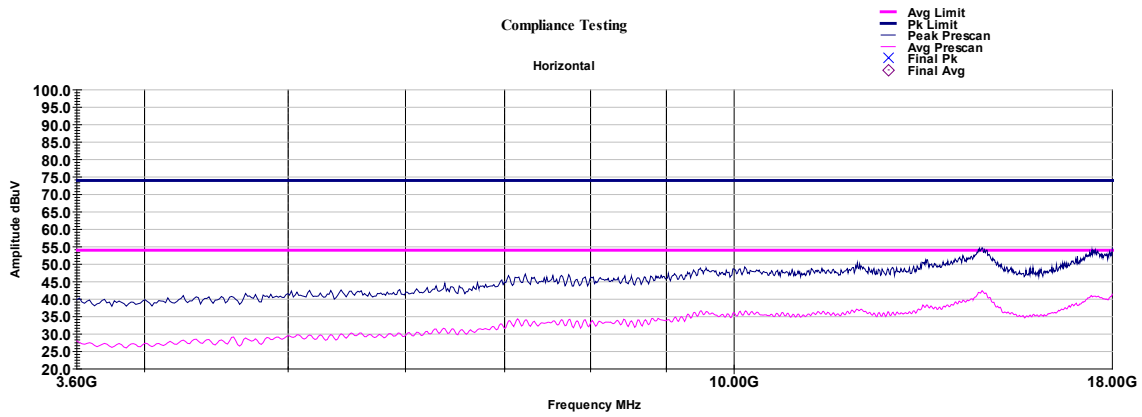
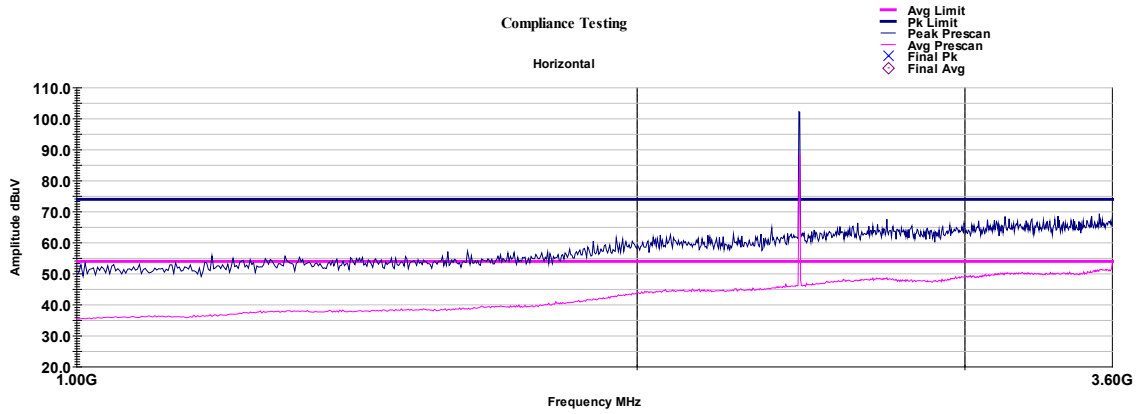
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
817.631	256.00	372.00	21.42	-4.49	16.90	46.00	-29.10
824.018	275.00	346.00	21.19	-4.18	17.00	46.00	-29.00
961.045	1.00	181.00	20.59	-0.86	19.70	54.00	-34.30
Final = Raw + Path Loss							
Margin = Final - Limit							



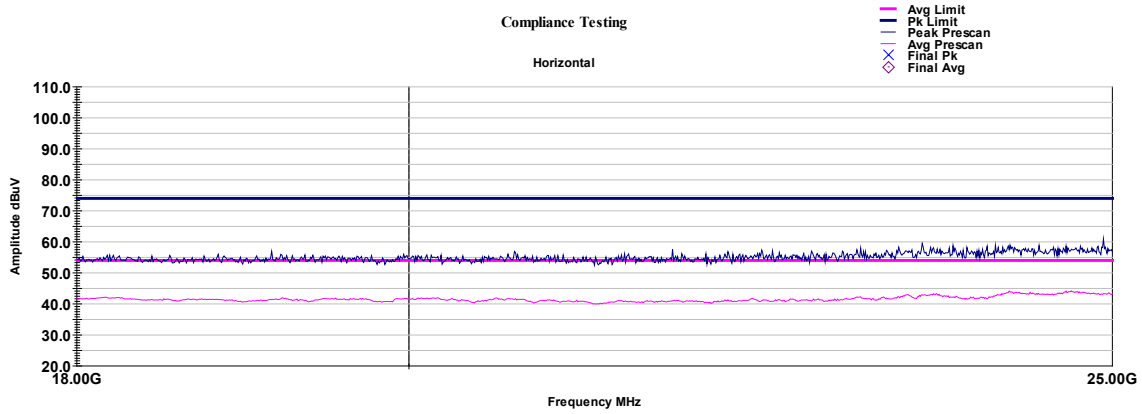
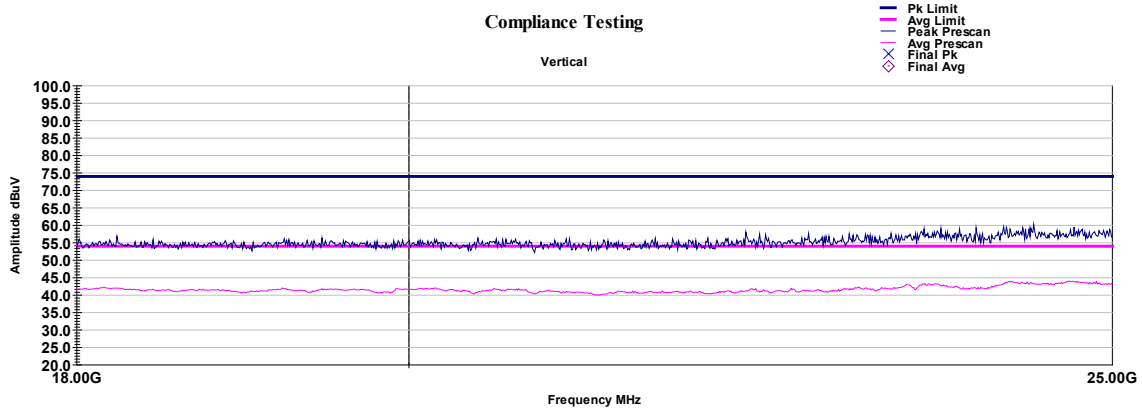
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
822.204	88.00	100.00	21.17	-4.20	17.00	46.00	-29.00
916.986	339.00	325.00	20.69	-2.52	18.20	46.00	-27.80
955.466	260.00	133.00	20.74	-1.04	19.70	46.00	-26.30
Final = Raw + Path Loss							
Margin = Final - Limit							

1 – 18 GHz Range



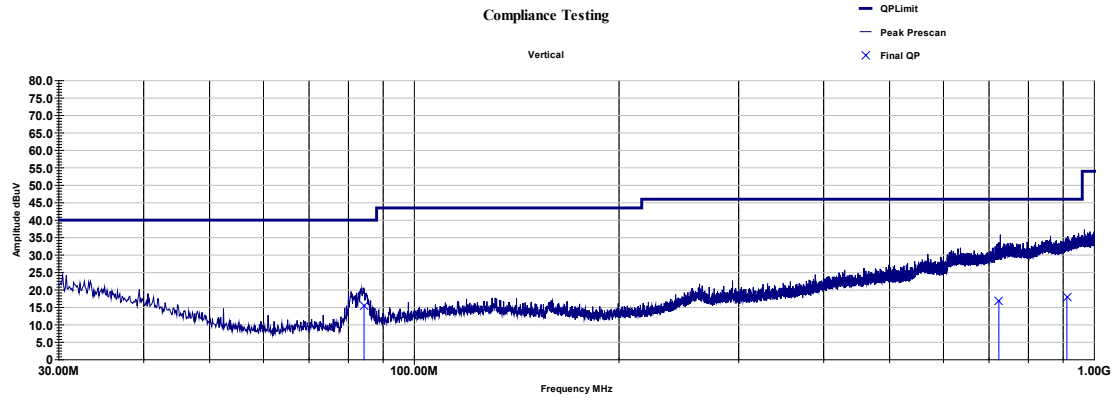


18 - 25 GHz Range

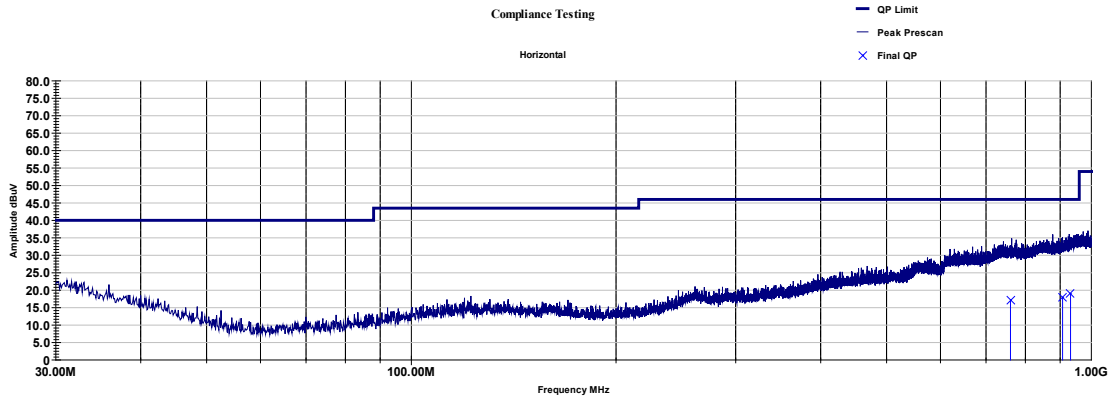


BLE High Channel 1 Mbps

30-1000 MHz

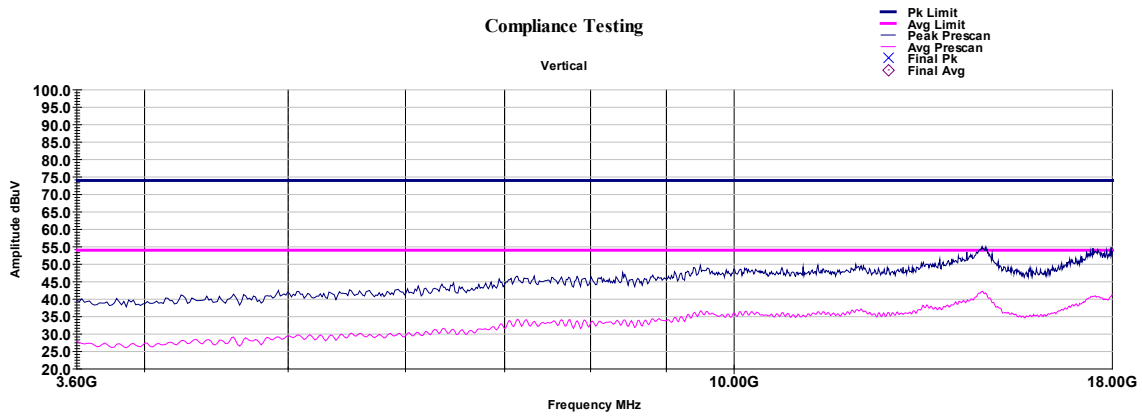
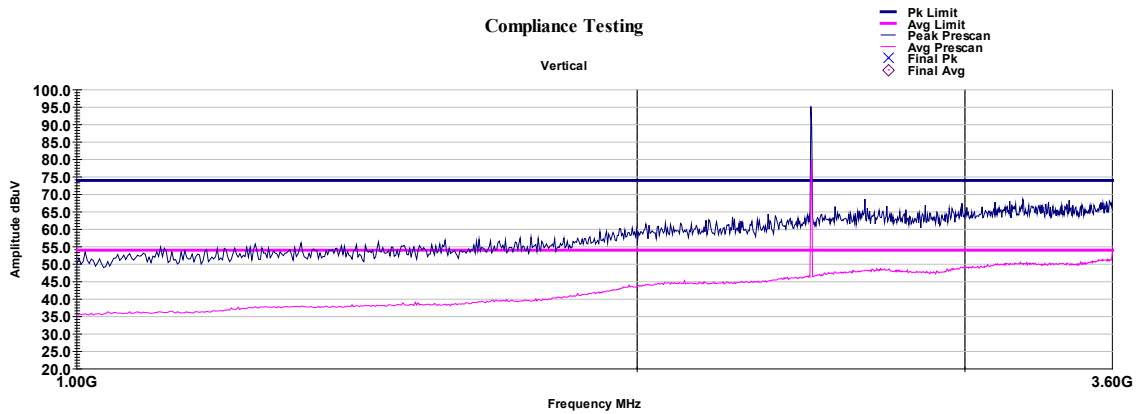


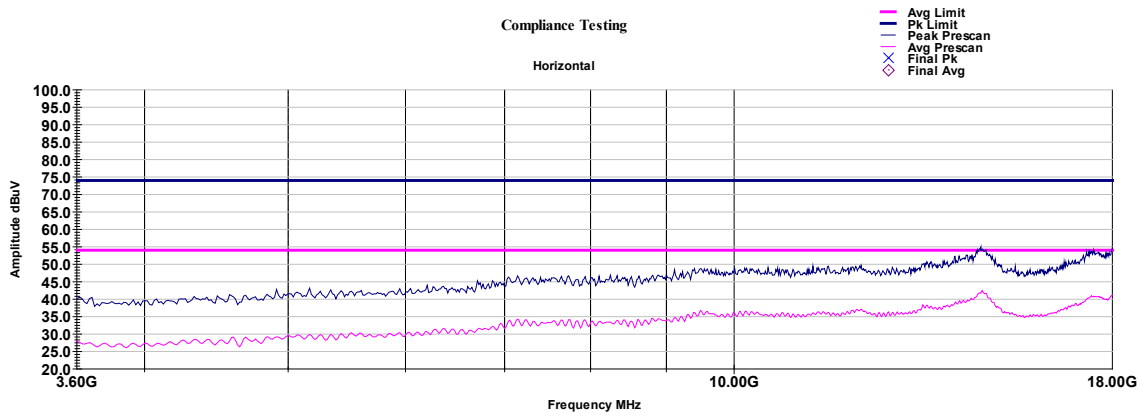
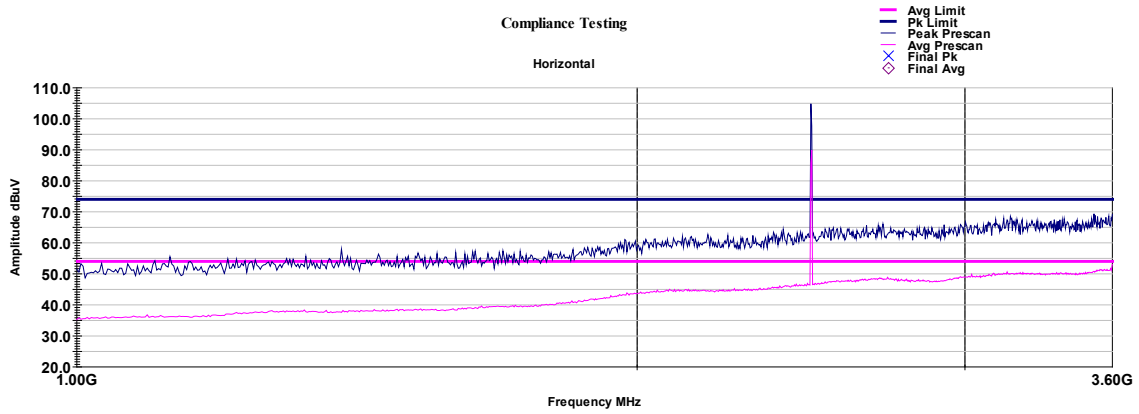
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
84.339	196.00	109.00	38.71	-23.12	15.60	40.00	-24.40
723.889	240.00	262.00	22.58	-5.76	16.80	46.00	-29.20
911.304	350.00	325.00	20.68	-2.73	18.00	46.00	-28.00
Final = Raw + Path Loss							
Margin = Final - Limit							



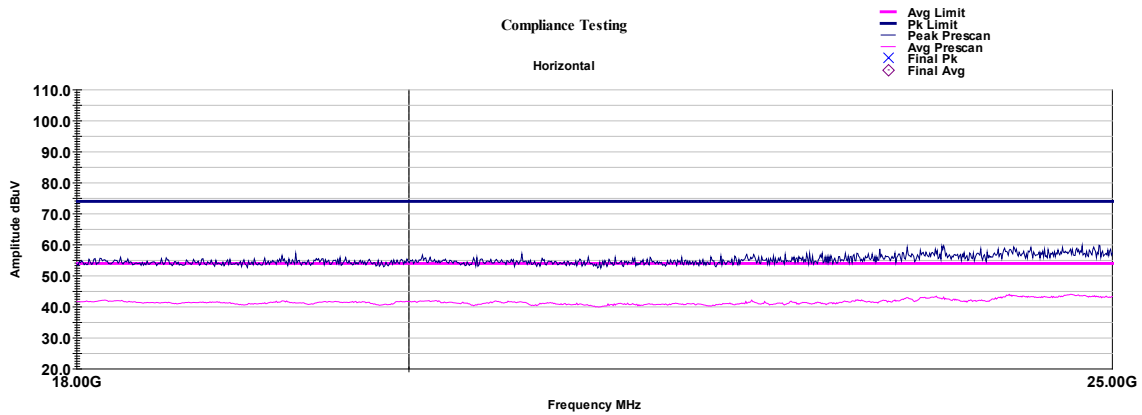
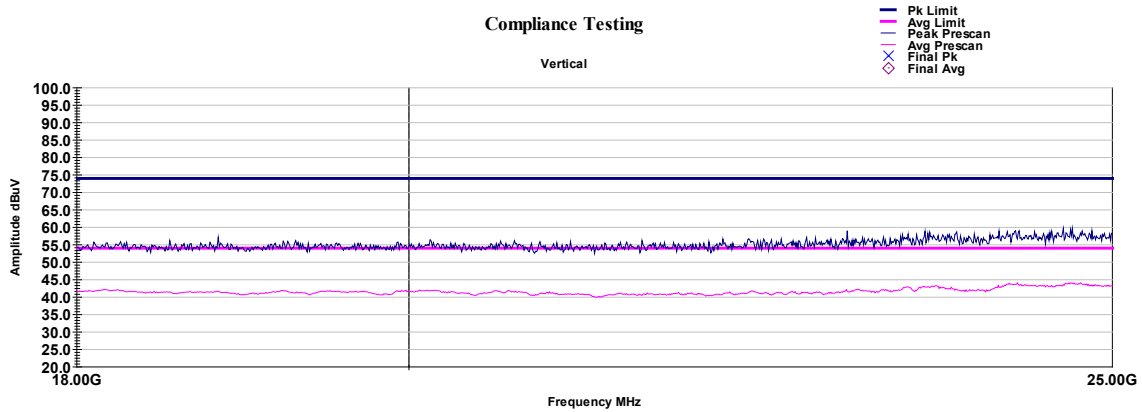
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
760.492	352.00	100.00	21.94	-4.79	17.20	46.00	-28.80
907.203	128.00	180.00	20.62	-2.79	17.80	46.00	-28.20
932.023	48.00	175.00	20.75	-1.82	18.90	46.00	-27.10
Final = Raw + Path Loss							
Margin = Final - Limit							

1 – 18 GHz Range





18 - 25 GHz Range



Occupied Bandwidth

Engineer: Madhava Gooduru

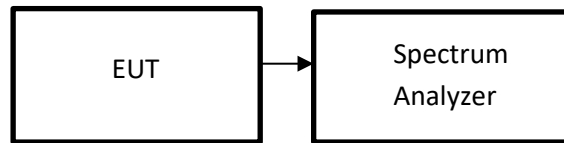
Test Date: 07/08/26

Test Procedure

Conducted Method

EUT, via a pigtail cable, were directly connected to the spectrum analyzer to verify that the EUT met the requirements for Occupied Bandwidth.

Test Setup



The Spectrum Analyzer was set to the following:

RBW = 1%-5% of the OWB but not less than 100 kHz

VBW $\geq 3 \times$ RBW

Peak Detector

Trace mode = max hold

Sweep = auto couple

Span = $(1.5 - 5) \times$ OBW

-6 dB Occupied Bandwidth Summary

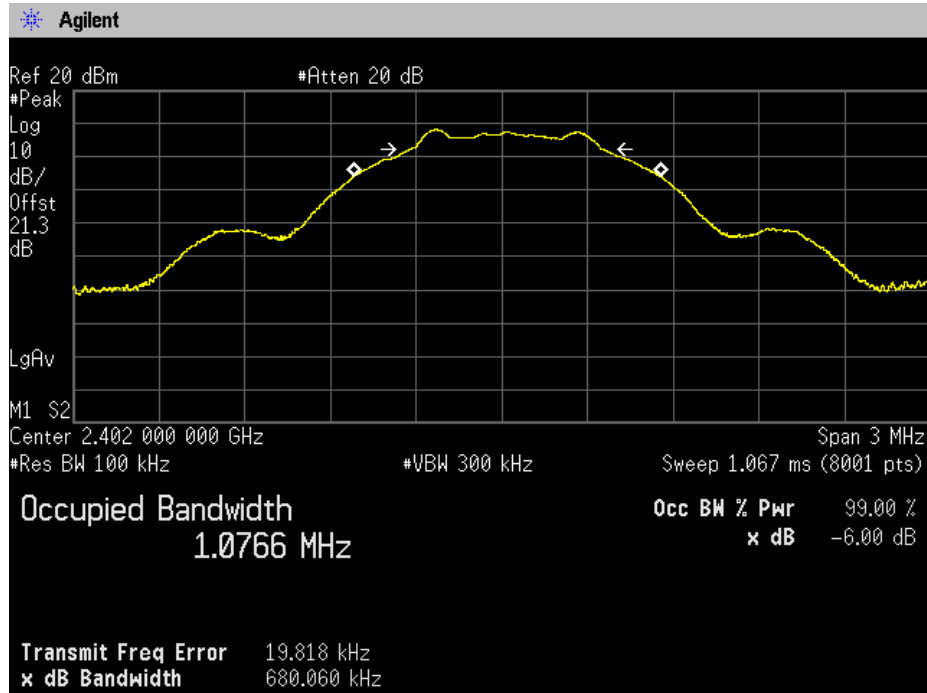
BLE 1 Mbps

Frequency (MHz)	Measured Bandwidth (kHz)	Specification Limit (kHz)	Result
2402	680.060	> 500	Pass
2440	671.367	> 500	Pass
2480	673.143	> 500	Pass

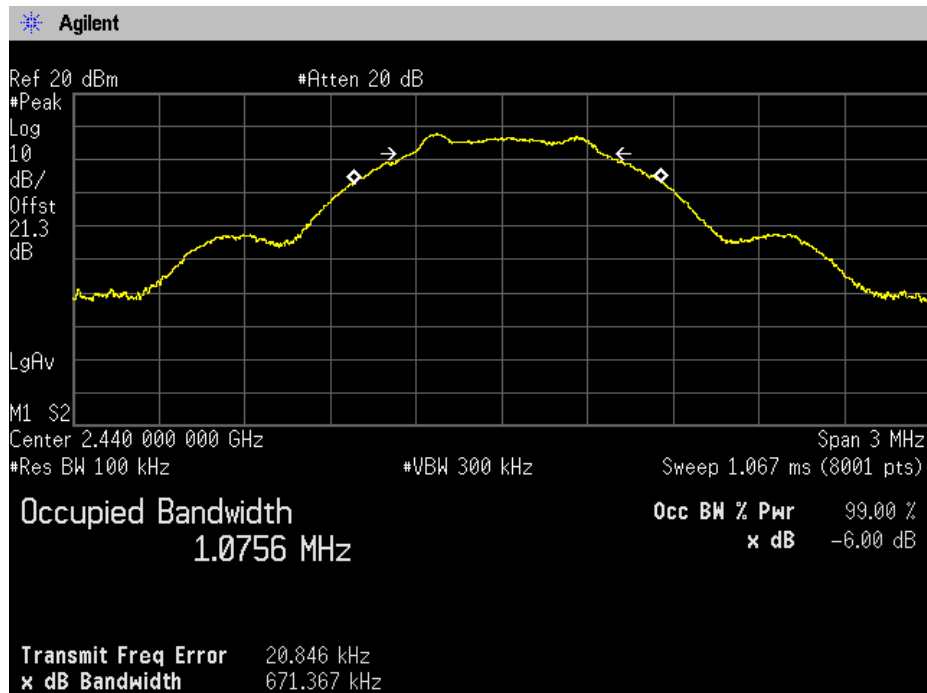
-6 dB and 99% Bandwidth Plots

BLE 1 Mbps

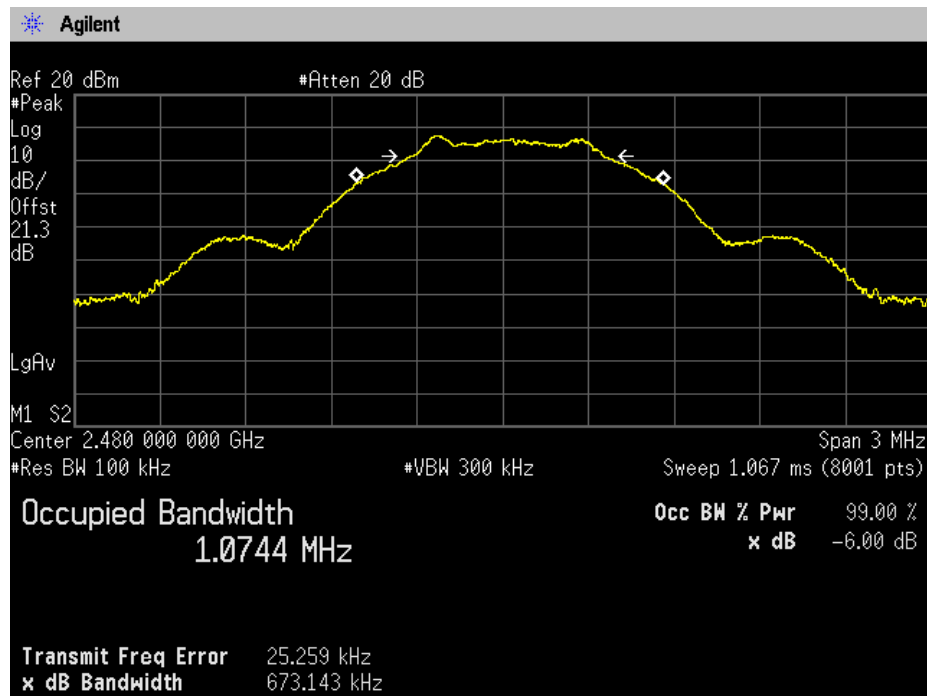
Low Channel



Mid channel



High channel



Power Spectral Density

Engineer: Madhava Gooduru

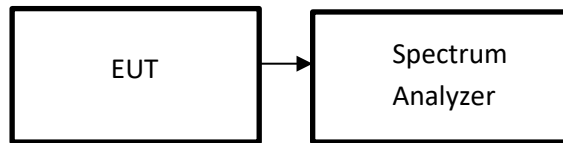
Test Date: 07/08/26

Test Procedure

Conducted Method

EUT, via a pigtail cable, were directly connected to the spectrum analyzer to verify that the EUT met the requirements for power spectral density.

Test Setup



The Spectrum Analyzer was set to the following:

RBW = 3 kHz

VBW $\geq 3 \times$ RBW

Peak Detector

Trace mode = max hold

Sweep = auto couple

Span $> 1.5 \times$ OBW

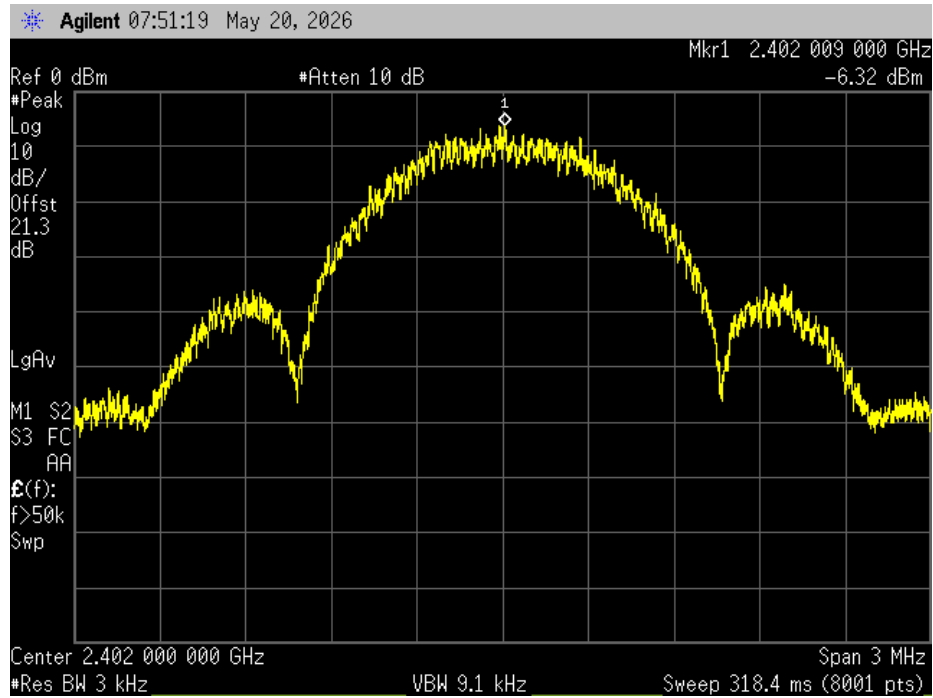
Power Spectral Density Summary

BLE 1 Mbps

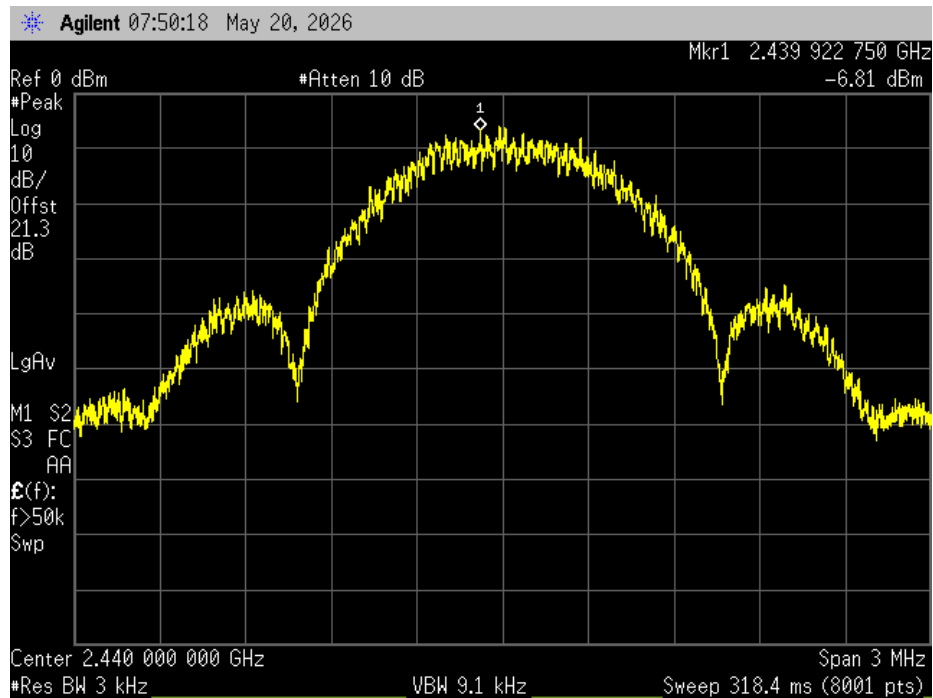
Frequency (MHz)	PSD (dBm/3kHz)	Specification Limit (dBm/3kHz)	Result
2402	-6.32	8	Pass
2440	-6.81	8	Pass
2480	-6.11	8	Pass

PSD Plots

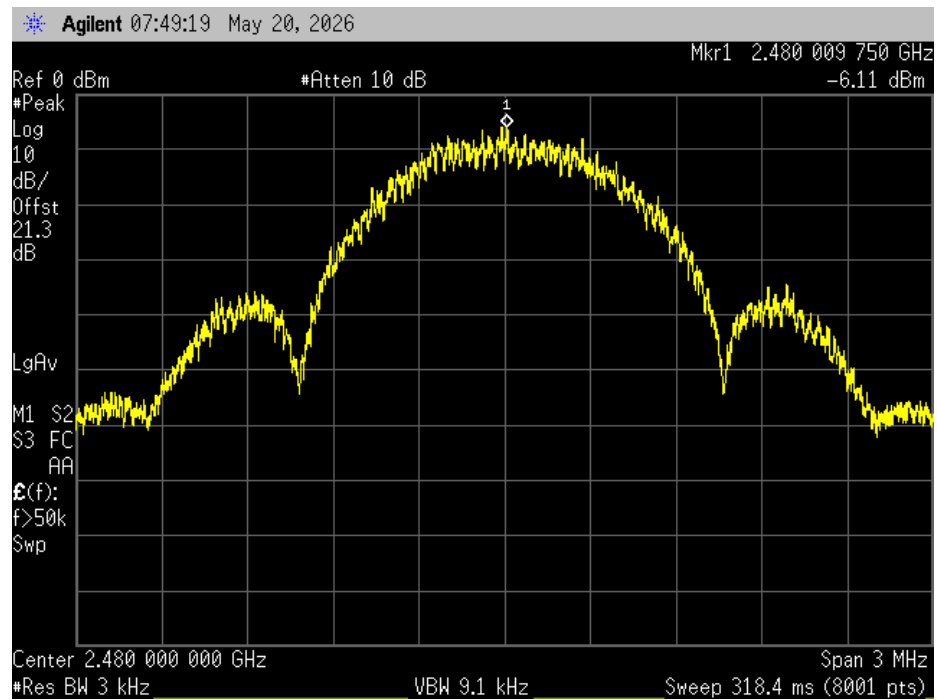
BLE 1 Mbps Low channel



Mid channel



High channel



Conducted Spurious Emissions

Engineer: Madhava Gooduru

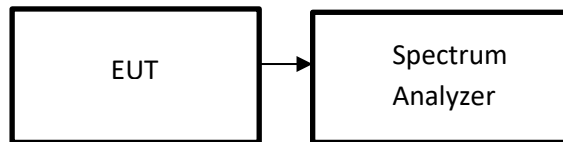
Test Date: 07/08/26

Test Procedure

Conducted Method

EUT, via a pigtail cable, were directly connected to the spectrum analyzer to verify that the EUT met the requirements for out of band emission in the 100 kHz bandwidth.

Test Setup

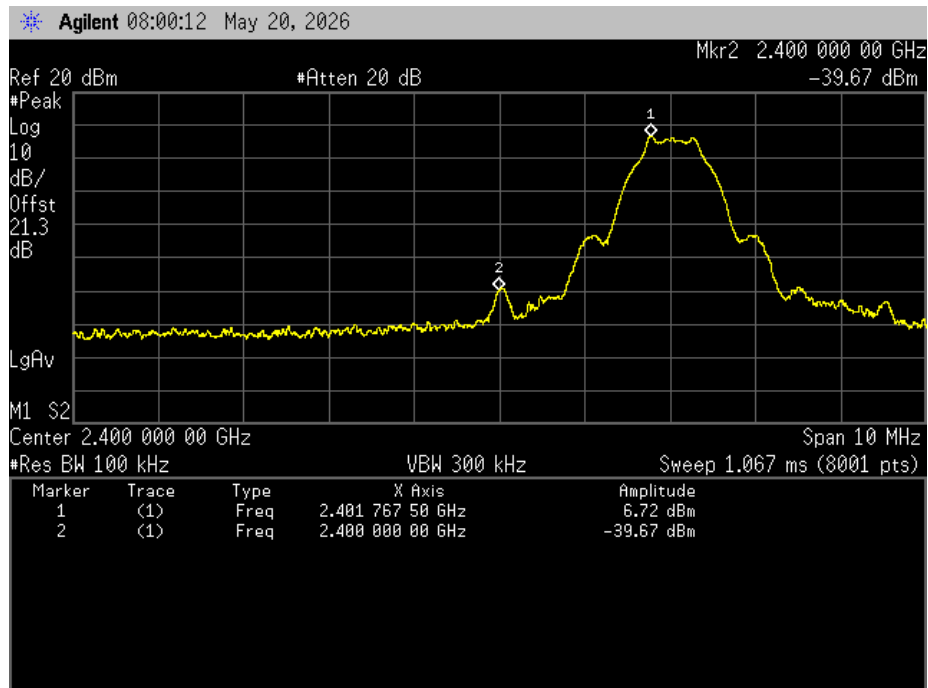
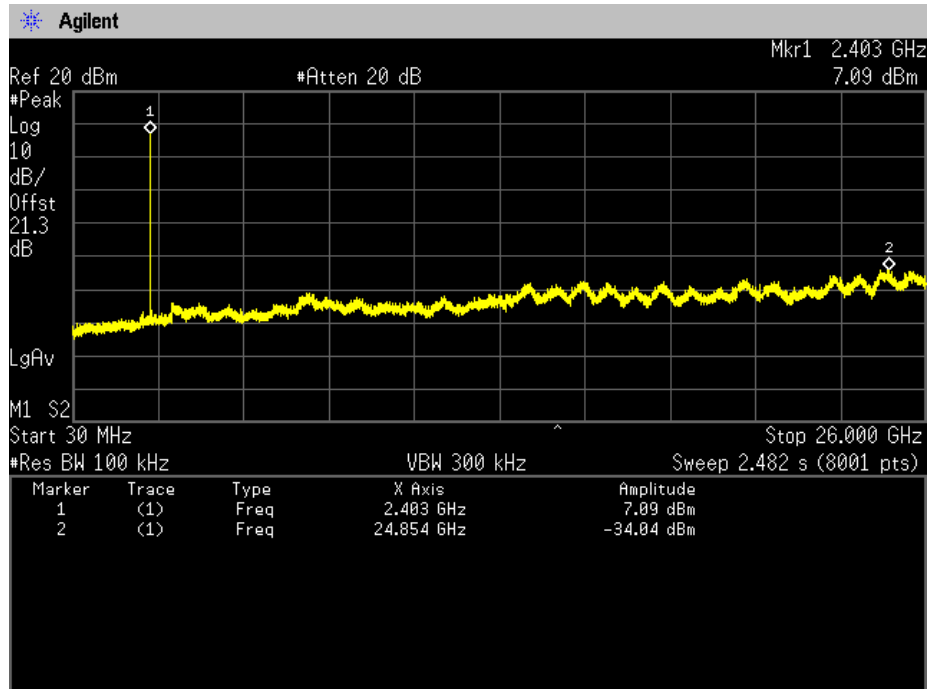


The Spectrum Analyzer was set to the following:

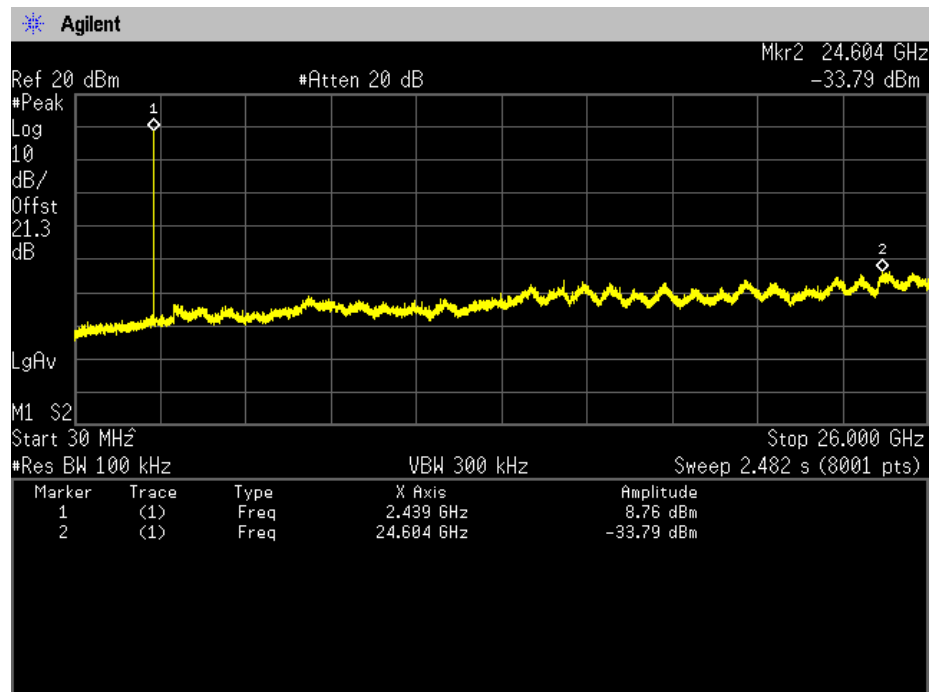
RBW = 100 kHz
VBW $\geq 3 \times$ RBW
Peak Detector
Trace mode = max hold
Sweep = auto couple

Conducted Spurious emission plots

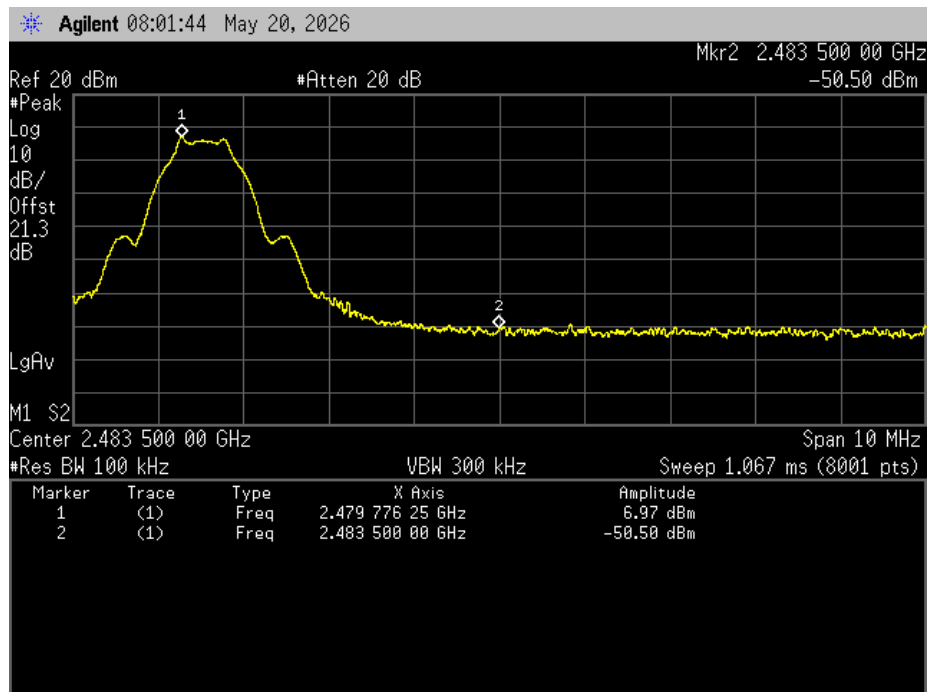
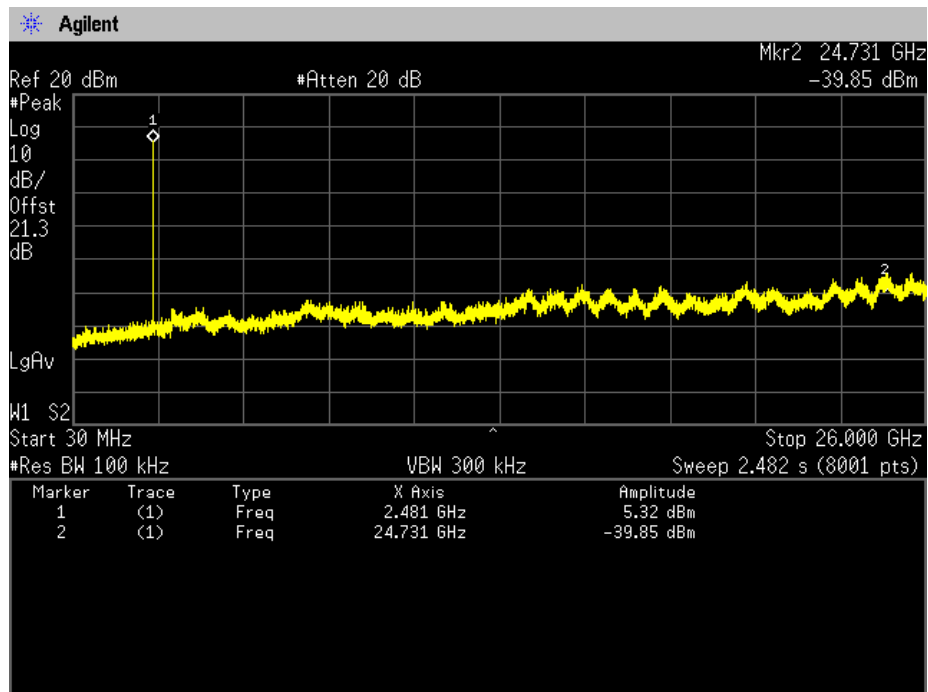
BLE 1 Mbps Low channel



Mid channel



High channel



A/C Powerline Conducted Emissions

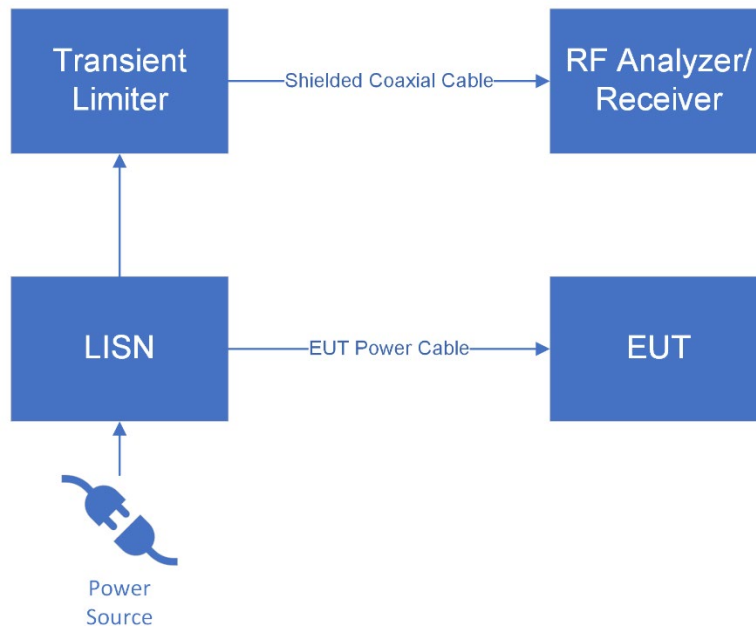
Engineer: John Michalowicz

Test Date: 07/31/2026

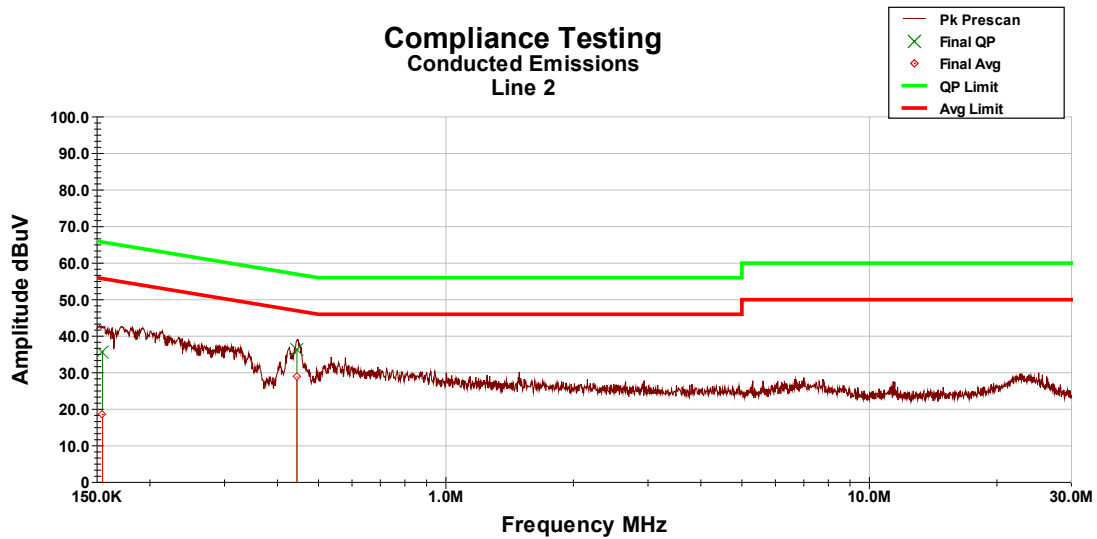
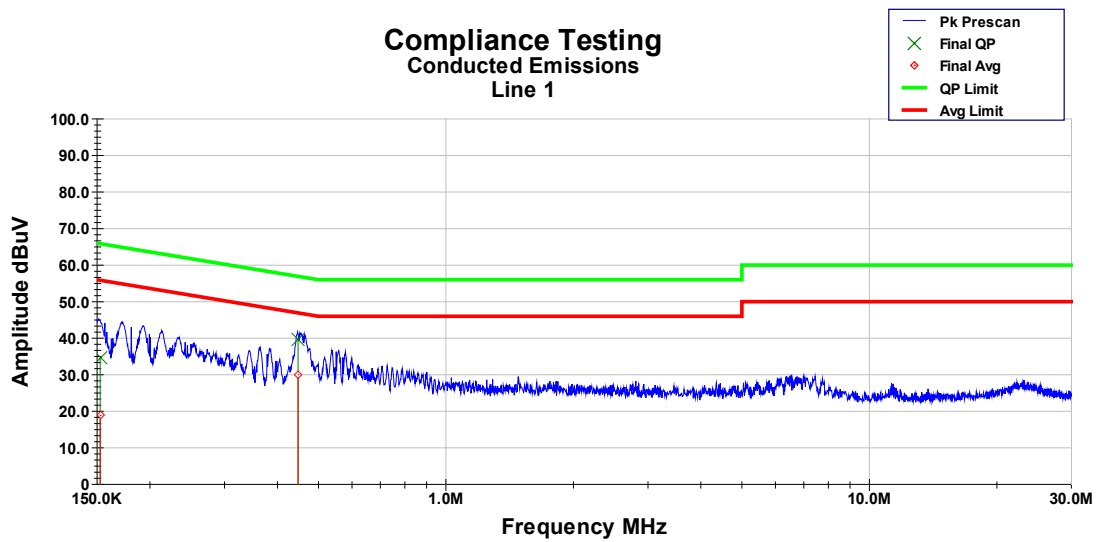
Test Procedure

The EUT power cable was connected to a LISN and the monitored output of the LISN was connected to a transient limiter, which then connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were measured and compared to the specification limits.

Basic Test Setup



AC Line Conducted Emission Plot



All emissions are under the quasi-peak and average limits.

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Horn Antenna (1-18GHz)	ARA	DRG-118/A	i00271	8/9/24	8/9/26
Horn Antenna (18-40 Ghz)	EMCO	3116	i00085	3/18/25	3/18/27
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	2/27/25	2/27/27
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	9/13/23	9/13/26
44GHz EMI receiver	Keysight	N9038A	i00552	3/23/26	3/23/27
PSA Spectrum Analyzer	Agilent	E4448A	i00688	10/22/25	10/22/26
Temp./humidity/pressure monitor (Main Lab)	Omega Engineering	iBTHX-W-5	i00686	1/25/26	1/25/27
EMI Receiver	HP	85462A	i00033	6/22/26	6/22/27
Transient Limiter	Com-Power	LIT-153	i00123	Verified on: PTV	
AC Power Source	Behlman	BL 6000	i00362	NCR	
LISN	COM-Power	LI-125A	i00447	4/9/26	4/9/28
LISN	COM-Power	LI-125A	i00449	4/9/26	4/9/28
Preamplifier	COM-Power	PAM-103	i00734	Verified on: 06/24/26	
Preamplifier	Eravant	SBB-0115034019-2F2F-E3	i00756	Verified on: 06/24/26	

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the equipment described. Prior to testing these components were tested to verify proper operation.

Measurement Uncertainty

Measurement Uncertainty (U_{lab}) for Compliance Testing is listed in the table below.

Measurement	U_{lab}
Radio Frequency	$\pm 3.3 \times 10^{-8}$
RF Power, conducted	± 1.5 dB
RF Power Density, conducted	± 1.0 dB
Conducted Emissions	± 1.8 dB
Radiated Emissions	± 4.5 dB
Temperature	± 1.5 deg C
Humidity	± 4.3 %
DC voltage	± 0.20 VDC
AC Voltage	± 1.2 VAC

The reported expanded uncertainty $\pm U_{lab}$ (dB) has been estimated at a 95% confidence level ($k=2$) U_{lab} is less than or equal to U_{EMC} therefore;

- Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.
- Non-Compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

END OF TEST REPORT