Test Report – Products
Prüfbericht – Produkte

VLAC Lab Accreditation VLAC-017

TÜVRheinland®

Test Report No.: *Prüfbericht-Nr.:*	**JP26ZPN0 002**	**Order No.:** *Auftrags-Nr.:*	**150319784**	**Page 1 of 69** *Seite 1 von 69*
Client Reference No.: *Kunden-Referenz-Nr.:*	N/A	**Order Date:** *Auftragsdatum:*	2025-12-09	
Client: *Auftraggeber:*	A&D Co Ltd 1-243 Asahi, Kitamoto-city, Saitama, 364-8585, Japan			
Test Item: *Prüfgegenstand:*	Digital Blood Pressure Monitor			
Identification / Type No.: *Bezeichnung / Typ-Nr.:*	UA-6010BLEWM	**Serial No.:** *Serien-Nr.:*	See clause 4.3	
Order Content: *Auftrags-Inhalt:*	Wireless Testing			
Test Specification: *Prüfgrundlage:*	FCC 47 CFR Part 15, Subpart C, Section 15.247			

Date of Sample Receipt: *Wareneingangsdatum:*	2026-01-16	-/-
Test Sample No.: *Prüfmuster-Nr.:*	A004188055-001, -002	
Testing Period: *Prüfzeitraum:*	2026-02-05 to 2026-02-13	
Place of Testing: *Ort der Prüfung:*	Yokohama EMC Laboratory	
Testing Laboratory: *Prüflaboratorium:*	TÜV Rheinland Japan Ltd.	
Test Result*: *Prüfergebnis*:*	Pass	

compiled by: *zusammengestellt von:*	Yoshifuru Fujiwara	**authorized by:** *genehmigt von:*	Hidetoshi Sasaki
Date: 2026-03-06 *Datum:*		**Issue Date:** 2026-03-06 *Ausstellungsdatum:*	
Position / *Stellung:*	Project Engineer	**Position** / *Stellung:*	Authorizer

Other / *Sonstiges:*

Condition of the test item at delivery: *Zustand des Prüfgegenstandes bei Anlieferung:*	Test item complete and undamaged *Prüfmuster vollständig und unbeschädigt*

* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
** Legende:*	*P(ass) = entspricht o.g. Prüfgrundlage(n)*	*F(ail) = entspricht nicht o.g. Prüfgrundlage(n)*	*N/A = nicht anwendbar*	*N/T = nicht getestet*

This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

V05

Revisions

Report No.	Issue date	Changes / Remarks
JP26ZPN0 001	2026-02-26	Original document
JP26ZPN0 002	2026-03-06	Added a comment in Figure 1 Corrected typo in section 4.5

Remarks

1	The equipment used during the specified testing period was calibrated according to the test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of the laboratory's management system.
2	Unless otherwise specified by the applied standard(s), the decision rule used in this test report for statements of conformity based on numerical measurement results is the "Zero Guard Band"/"Simple Acceptance" rule in accordance with ILAC G8:2019 and IEC Guide 115:2021. When the "Zero Guard Band" rule is applied, measurement uncertainty is not taken in account. For additional information on the risk resulting from the application of the "Zero Guard Band" decision rule, refer to ILAC G8:2019.

Contents

1. General Remarks 5
1.1 Test Specifications 5
1.2 Test Report Purpose 6
1.3 Complementary Materials 6
2. Test Sites 7
2.1 Test Facilities 7
2.2 List of Test and Measurement Instruments 7
2.3 Measurement Uncertainty 9
3. General Product Information 10
3.1 Product Function and Intended Use 10
3.2 Ratings and System Details 10
3.3 Noise Generating and Noise Suppressing Parts 11
3.4 Submitted Documents and Information 11
4. Test Setup and Operation Modes 12
4.1 Principle of Test Configuration Selection 12
4.2 Operation Modes 12
4.3 Physical Configuration for Testing 13
4.4 Test Software 14
4.5 Special Accessories and Auxiliary Equipment 14
4.6 Countermeasures to achieve Compliance 15
5. Test Results R A D I O 16
5.1 Supply Voltage Requirements 16
5.2 Antenna Requirements 17
5.3 Restricted Bands of Operation 18
5.4 Maximum Peak Output Power 19
5.5 6dB Bandwidth 21
5.6 99% Bandwidth 26
5.7 Conducted Spurious Emissions 31
5.8 Peak Power Spectral Density 38
5.9 Radiated Spurious Emissions of Transmitter 43
5.10 AC Power Line Conducted Emission of Transmitter 59
6. Photographs of the Test Setup 61
7. List of Tables 67

8. List of Figures 67

9. List of Photographs 68

1. General Remarks

1.1 Test Specifications

Table 1: Test Summary

Test	Specifications	Result
Radio: FCC 47 CFR Part 15, Subpart C, Section 15.247 ANSI C63.10-2020 KDB Publication No. 558074 D01 (v05r02): Guidance for Compliance Measurement on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operation under Section 15.247 of the FCC Rules		
Supply Voltage Requirements FCC §15.31(e)	See the section 5.1.	Pass
Antenna Requirements FCC §15.203	See the section 5.2.	Pass
Restricted Bands of Operation FCC §15.205	See the section 5.3.	Pass
Maximum Peak Output Power FCC §15.247(b)(3)	1W (30dBm) (Peak Conducted)	Pass
6dB Bandwidth FCC §15.247(a)(2) and §15.215(c)	Minimum 500kHz 6dB bandwidth shall be contained within the designated frequency band.	Pass
99% Bandwidth	-/-	For. Ref.
Conducted Spurious Emissions FCC §15.247(d)	20dBc 30MHz - 25GHz (10th Harmonics)	Pass
Peak Power Spectral Density FCC §15.247(e)	8dBm in any 3kHz band	Pass
Radiated Spurious Emissions of Transmitter FCC §15.209 and §15.247(d)	9kHz - 25GHz	Pass
Conducted Emission on AC Power Ports of Transmitter FCC §15.207(a)	150kHz - 30MHz	Pass

1.2 Test Report Purpose

The purpose of this test report is to show compliance of the EUT (Equipment Under Test) with the requirements of the standards listed in section 1.1.

This report is a replacement for the original report JP26ZPN0 001.

1.3 Complementary Materials

There is no attachment to this test report.

2. Test Sites

2.1 Test Facilities

TÜV Rheinland Japan Ltd. – Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

The test facility is accredited by VLAC (member of ILAC) under accreditation number VLAC-017-1 according to ISO/IEC 17025:2017.

The test facility is recognized by the Federal Communications Commission (FCC) as a Conformity Assessment Body under designation number JP0017 and test firm registration number 386498.

2.2 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
For Antenna Port Conducted Emission							
EMI Receiver	Rohde & Schwarz	ESW 26	101316	RF-0812	1 year	2025-06-10	2026-06-10
EMI Receiver	Rohde & Schwarz	ESW 44	103396	RF-1250	1 year	2025-05-22	2026-05-22
RF Power Meter	Agilent	N1911A	MY45101737	RF-0393	1 year	2026-01-09	2027-01-09
RF Peak Power Sensor	Agilent	N1921A	MY45242228	RF-0394	1 year	2026-01-09	2027-01-09
For Power Port Conducted Emission (CE)							
Path Loss Correction Factors for CE	-	-	-	RF-0597	1 year	2026-01-29	2027-01-29
CE Measurement Software	Toyo Corporation	ES10/CE-AJ	0700-0183-35	RF-1262	N/A	N/A	N/A
EMI Receiver EPL1000	Rohde & Schwarz	EPL1000	100969	RF-1249	1 year	2025-05-23	2026-05-23
LISN	Rohde & Schwarz	ENV216	101958	RF-0708	1 year	2025-05-21	2026-05-21
For Radiated Emission (RE)							
Path Loss Correction Factors for RE below 1GHz	-	-	-	RF-0596	1 year	2026-01-29	2027-01-29
Path Loss Correction Factors for RE above 1GHz	-	-	-	RF-0995	1 year	2025-11-06	2026-11-06
RE Meas. Software	Toyo Corporation	ES10/RE-AJ	0600-0179-80	RF-1263	N/A	N/A	N/A

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
EMI Receiver	Rohde & Schwarz	ESW 44	103396	RF-1250	1 year	2025-05-22	2026-05-22
RF Selector (10m Chamber)	Toyo Corporation	NS4900	0703-182	RF-0029	N/A	N/A	N/A
Loop Antenna with Amplifier, 9kHz-30MHz	Rohde & Schwarz	HFH2-Z2	100139	RF-0048	1 year	2025-07-18	2026-07-18
Trilog Antenna No. 2, 30-1000MHz	Schwarzbeck	VULB 9168	9168-475	RF-0462	1 year	2025-05-26	2026-05-26
5dB Attenuator	Pasternack	PE7047-5	-	RF-0731	1 year	2025-05-30	2026-05-30
Low Noise Preamplifier, 9kHz-1GHz	TSJ	MLA-10K01-B01-35	1370750	RF-0253	1 year	2025-12-25	2026-12-25
Band Pass Filter	Microwave Factory	MBP301	224969	RF-1015	1 year	2025-03-14	2026-03-14
Horn Antenna, 1-8GHz	Schwarzbeck	BBHA9120 D	9120D-2280	RF-0845	1 year	2025-03-07	2026-03-07
MMW PreAmp 0-50GHz	NEXTEM	RFA-1050000-40	RFA-1905-01	RF-1140	1 year	2025-11-06	2026-11-06
Horn Antenna, 1-18GHz	Schwarzbeck	BBHA9120 D	9120D-2280	RF-0845	1 year	2025-03-07	2026-03-07
Horn Antenna, 6-18GHz (RX)	Schwarzbeck Mess-Elektronik	BBHA9120 C	00775	RF-1315	2 years	2025-10-31	2027-10-31
Pre-amplifier for RF-1315 (6-18 GHz)	TOYO Corporation	HAP06-18W	B1510452 210-123	RF-1318	1 year	2025-11-05	2026-11-05
High Pass Filter, 8-18GHz	Micro-Tronics	HPM50107	G089	RF-1094	N/A	N/A	N/A
Horn Antenna, 18-26.5GHz (RX)	AMETEK	ANT-SGH-18-26.5	11568	RF-1316	1 year	2025-10-31	2026-10-31
Pre-amplifier for RF-1316 (18-26.5 GHz)	Toyo Corporation	HAP18-26W	B2010482 210-125	RF-1319	1 year	2025-11-05	2026-11-05
Horn Antenna, 26.5 -40GHz (RX)	AMETEK	ANT-SGH-26.5-40	11894	RF-1317	1 year	2025-02-21	2026-02-21
Pre-amplifier for RF-1317, 26.5-40GHz	TOYO Corporation	HAP26-40W	B3208602 210-126	RF-1320	1 year	2025-03-14	2026-03-14
Band Reject Filter, 2.4-2.5GHz	Micro-Tronics	BRM50702	G488	RF-0933	1 year	2025-09-19	2026-09-19
Constant Voltage Constant Frequency Stabilizers and Power Accessories							
CVCF (Shielded Room)	NF Corporation	ES2000S	9075612	RF-0210	1 year	2025-03-10	2026-03-10
CVCF Booster (Shielded Room)	NF Corporation	ES2000B	9074403	RF-0211	1 year	2025-03-10	2026-03-10
CVCF (10m Chamber)	NF Corporation	ES2000U	9067307	RF-0212	1 year	2025-03-10	2026-03-10
CVCF Booster (10m Chamber)	NF Corporation	ES2000B	9074408	RF-0213	1 year	2025-03-10	2026-03-10
CVCF (Pulse Test Lab)	NF Corporation	ES2000U	9067195	RF-0122	1 year	2025-05-19	2026-05-19
CVCF Booster (Pulse Test Lab)	NF Corporation	ES2000B	9072108	RF-0121	1 year	2025-05-19	2026-05-19

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
True RMS Multimeter (10m Chamber)	Fluke	87V	97680450	RF-0282	1 year	2025-04-08	2026-04-08
True RMS Multimeter (Pulse Test Lab)	Fluke	87V	16110176	RF-0414	1 year	2025-06-25	2026-06-25

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025 has been confirmed before testing.

2.3 Measurement Uncertainty

Table 3: Measurement Uncertainty

Measurement Type	Frequency Range	Uncertainty (k=2)
Conducted Emission on RF Ports	30MHz - 40GHz	±2.58dB
Conducted Emission on Power Ports	150kHz - 30MHz	±3.31dB
Magnetic Field Strength	9kHz - 30MHz	±4.79dB
Radiated Emission up to 1GHz	30MHz - 1GHz (3m Distance)	±6.05dB (Vertical) ±4.95dB (Horizontal)
Radiated Emission above 1GHz	1 - 6GHz	±5.17dB
	6 - 18GHz	±4.96dB
	18 - 40GHz	±5.05dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a digital blood pressure monitor with BLE connectivity.

3.2 Ratings and System Details

1) EUT

System Input Voltage:	DC 6V (4 x 1.5V batteries or from AC adaptor)
Typical Nominal Voltage:	AC 120V for North America (AC adaptor)
Frequency:	60Hz (AC adaptor)
Protection Class:	III
Rated temperature:	+10 to +40°C
Dimensions:	W 110mm x H 73.1mm x D139.2mm
Weight:	300g (excluding batteries)
Test Voltage:	Refer to each test item.
Test Frequency:	Refer to each test item.

2) AC Adaptor for EUT

Manufacturer:	A & D Medical
Model:	TB-304
Typical Nominal Voltage:	AC120V
Frequency:	60Hz
Input Current:	0.15A
Protection Class:	II

3) BLE Connectivity

Radio standard:	Bluetooth 5.1
Frequency range:	2402 – 2480MHz
Specified output power	+1.77dBm (conducted peak power)
Antenna number:	1
Antenna gain:	+1.93dBi
Antenna type:	PCB pattern antenna
Antenna mounting type:	Internal

Modulation type:	GFSK
Data rate:	1Mbps, 2Mbps
Channel spacing:	2MHz
Power setting:	0dBm

3.3 Noise Generating and Noise Suppressing Parts

The highest frequency generated or used by the EUT is 2480MHz for radio portion and 64MHz for digital interface portion.

3.4 Submitted Documents and Information

Following information provided in this test report has been submitted by the client:

- client name and address;
- EUT identification, ratings, system details, and description of product function and intended use;
- information related to noise generating and noise suppressing parts (if any).

4. Test Setup and Operation Modes

4.1 Principle of Test Configuration Selection

Radio: The test methodology used is based on the requirements of 47 CFR Part 15, sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209 and 15.247.
The test methods, which have been used, are based on ANSI C63.10 and KDB 558074 D01.

For details, see under each test item.

4.2 Operation Modes

The operation modes used for testing are:

L. Transmitting at the lowest frequency Channel with 100% Duty Cycle.

M. Transmitting at the middle frequency Channel with 100% Duty Cycle.

H. Transmitting at the highest frequency Channel with 100% Duty Cycle.

Above modes are coupled with the following Configurations:

Table 4: Setting of Test Frequencies

Radio	Mode L	Mode M	Mode H	Remark
BLE	2402MHz	2442MHz	2480MHz	Power setting= 0dBm

And the following configurations:

1. 1Mbps
2. 2Mbps

Both AC adaptor operation and battery operation were evaluated to determine the worst case configuration for conductive and radiated test and conducted test.

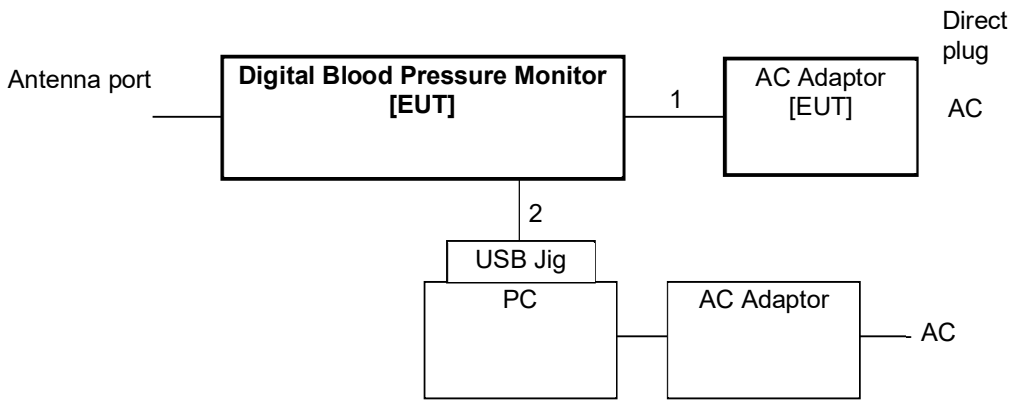
4.3 Physical Configuration for Testing

The test system was configured in a typical fashion (as a customer would normally use it).

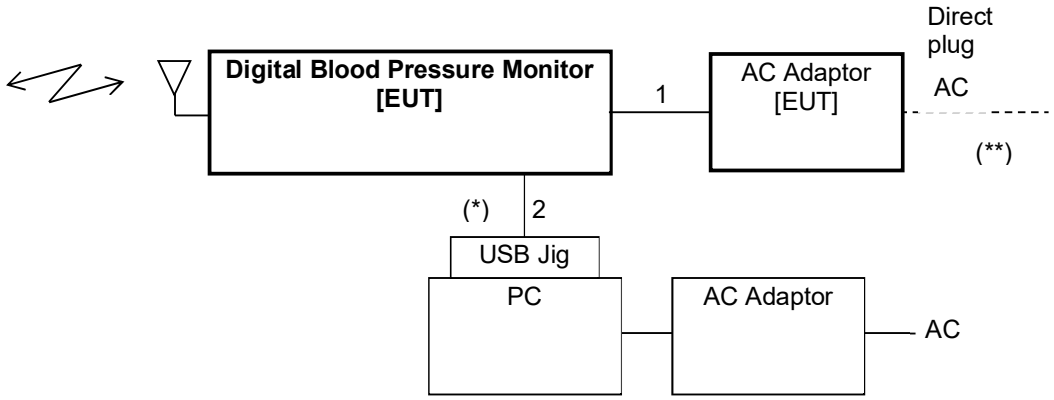
The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.10.

Figure 1: Block Diagram

1) Conducted Radio Testing



2) Radiated Radio Testing and Conducted Emission on AC Power Ports Testing



(*): No.2 cable was disconnected from EUT during the test.
(**): 80cm extension AC power cable (RF-0608) was used to connect measuring equipment in Conducted Emission test on AC Power Port.

Table 5: Interfaces present on the EUT

No.	Interface	Cable Length for Testing, Shielding	Interface Classification
1.	DC Cable	1.6m, un-shielded	DC input power port
2.	Control Cable	0.3m, un-shielded	Signal port

For more details, refer to section 6 “Photographs of the Test Setup”.

Table 6: EUT Serial Numbers

Test Items	Serial Number
Conducted Radio Testing	(21)7251200020
Radiated Spurious Emissions of Transmitter	(21)7251200021
AC Power Line Conducted Emission of Transmitter	(21)7251200021

4.4 Test Software

The EUT was provided by the manufacturer with suitable internal software to allow operation in all the required modes.

Software used for testing:

Tera Term version 4.106 by Tera Term Project.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed in section 4.2 as appropriate.

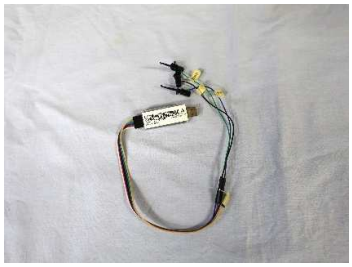
4.5 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

1. Product: Laptop PC
   Manufacturer: HP
   Model: HSN-I14C-5
   Rated Voltage: DC19.5V
   Input Current: 2.31A
   Protection Class: III
   Serial Number: JPH9029GYQ

2. Product: AC Adapter
   Manufacturer: HP
   Model: HSTNN-CA41
   Rated Voltage: AC100–240V
   Input Current: 1.4A
   Frequency: 50–60Hz
   Protection Class: II

3. Product: USB Jig
   Manufacturer: DESHIDE TECH CO. , LTD
   Model: SH-U09C2



4.6 Countermeasures to achieve Compliance

No additional measures were employed to achieve compliance.

5. Test Results RADIO

5.1 Supply Voltage Requirements

RESULT: **Pass**

Requirements:

FCC §15.31(e)

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Verdict:

The EUT has an internal voltage regulator to supply the RF circuit. Hence it complies with the supply voltage requirements.

5.2 Antenna Requirements

RESULT: **Pass**

Requirements:

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.
All antennas for use with the EUT must be listed in the application, including a test report.

Verdict:

As per the guidance by KDB Publication No. 353028 D01, three ways can be used for a Part 15 Intentional radiator. a) Antenna permanently addached is applicable to the EUT.

The EUT has an antenna permanently attached on the printed circuit board. Hence it complies with the antenna requirements.

5.3 Restricted Bands of Operation

RESULT: **Pass**

Requirements:

FCC §15.205

Only spurious emissions are permitted in any of the restricted frequency bands, unless otherwise specified.

Verdict:

The Operation frequency range of the EUT is 2400 – 2483.5MHz as Bluetooth Low Energy, only spurious emissions may be found in the restricted bands below 25GHz. Hence the EUT complies with the restricted frequency band requirement.

5.4 Maximum Peak Output Power

RESULT: **Pass**

Date of testing:	2026-02-09, 2026-02-13
Ambient temperature:	24, 25°C
Relative humidity:	35, 26%
Atmospheric pressure:	1012, 1011hPa

Requirements:

FCC §15.247(b)(3)

For systems using digital modulation in the 2400-2483.5MHz band, the maximum peak output power is 1W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test procedure:

ANSI C63.10-2020 §11.9, KDB 558074 D01.

The maximum peak output power was measured at the antenna port with a broadband peak power meter.

The readings of the measurements take into account the loss generated by all the involved cables.

Both AC adapter operation and battery operation were evaluated to determine the worst-case configuration. Final measurements were performed under AC adapter operation in all operating modes (L, M, and H).

Table 7: Maximum Peak Output Power, BLE, 1Mbps

Freq. [MHz]	Peak Output Power [dBm]	Peak Output Power Limit [dBm]	Peak Output Power Margin [dB]
2402	1.65	30.00	28.35
2442	1.75	30.00	28.25
2480	1.77	30.00	28.23

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

Table 8: Maximum Peak Output Power, BLE, 2Mbps

Freq. [MHz]	Peak Output Power [dBm]	Peak Output Power Limit [dBm]	Peak Output Power Margin [dB]
2402	1.65	30.00	28.35
2442	1.75	30.00	28.25
2480	1.77	30.00	28.23

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

5.5 6dB Bandwidth

RESULT: **Pass**

Date of testing:	2026-02-09, 2026-02-13
Ambient temperature:	24, 25°C
Relative humidity:	35, 26%
Atmospheric pressure:	1012, 1011hPa

Requirements:

FCC §15.215(c), §15.247(a)(2)

For system using digital modulation techniques in the 2400-2483.5MHz band, the 6dB bandwidth shall be at least 500kHz.

Additionally, for FCC, the 6dB bandwidth shall be contained within the frequency band designated in the rule section under which the equipment is operated.

Test procedure:

ANSI C63.10-2020 §11.8 and KDB 558074 D01.

The 6dB bandwidth was measured at the antenna port with a spectrum analyzer using a peak detector with max-hold. The RBW was set to 100kHz and the VBW was set to 300kHz. Markers placed at the lowest and highest intersections of the trace with a 6dBc line were used to calculate the emission bandwidth.

Table 9: 6dB Bandwidth, BLE, 1Mbps

Operating Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
2402	0.726	>0.5
2442	0.726	>0.5
2480	0.749	>0.5

Figure 2: 6dB Bandwidth, BLE, Mode L (2402MHz), 1Mbps

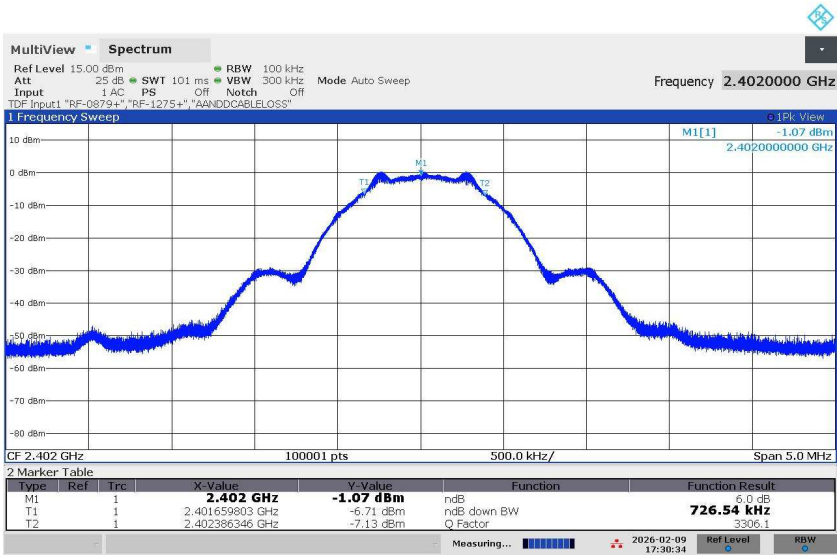


Figure 3: 6dB Bandwidth, BLE, Mode M (2442MHz), 1Mbps

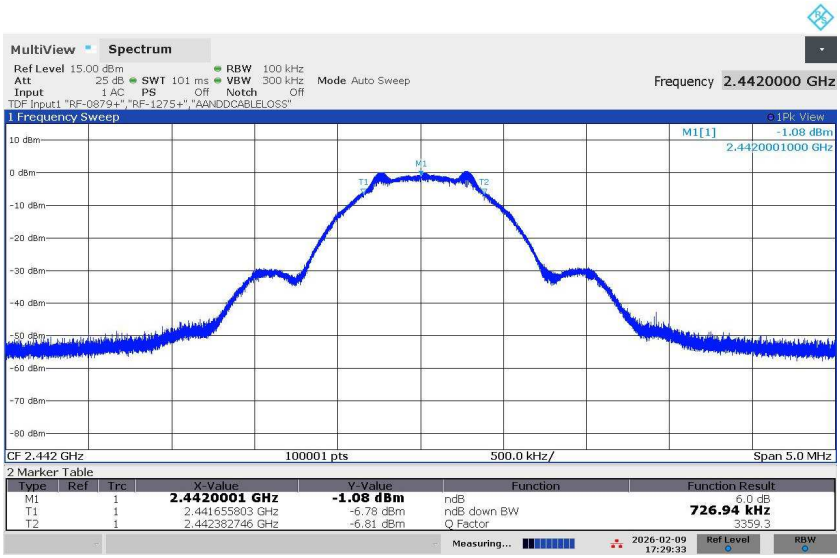


Figure 4: 6dB Bandwidth, BLE, Mode H (2480MHz), 1Mbps

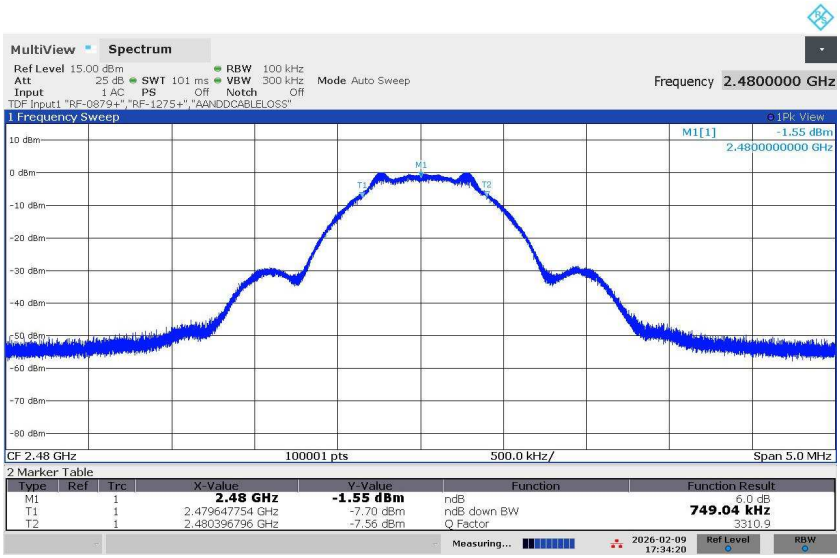


Table 10: 6dB Bandwidth, BLE, 2Mbps

Operating Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
2402	1.27	>0.5
2442	1.20	>0.5
2480	1.35	>0.5

Figure 5: 6dB Bandwidth, BLE, Mode L (2402MHz), 2Mbps

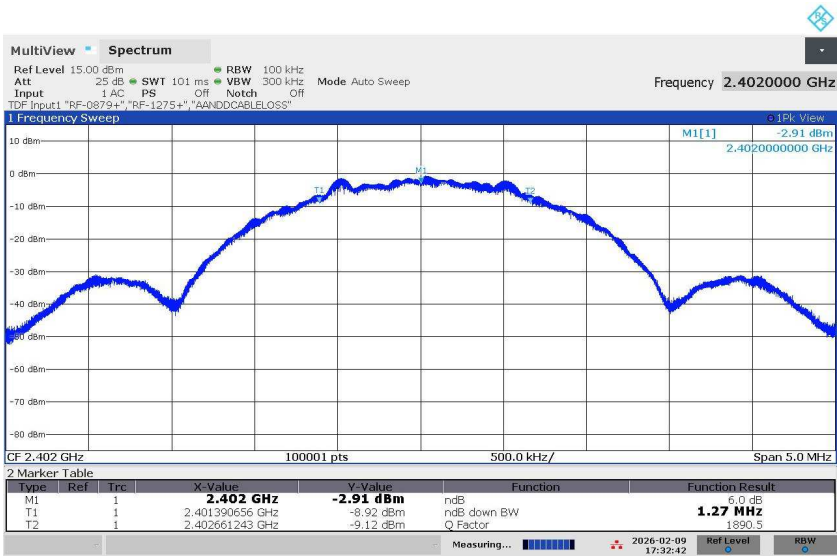


Figure 6: 6dB Bandwidth, BLE, Mode M (2442MHz), 2Mbps

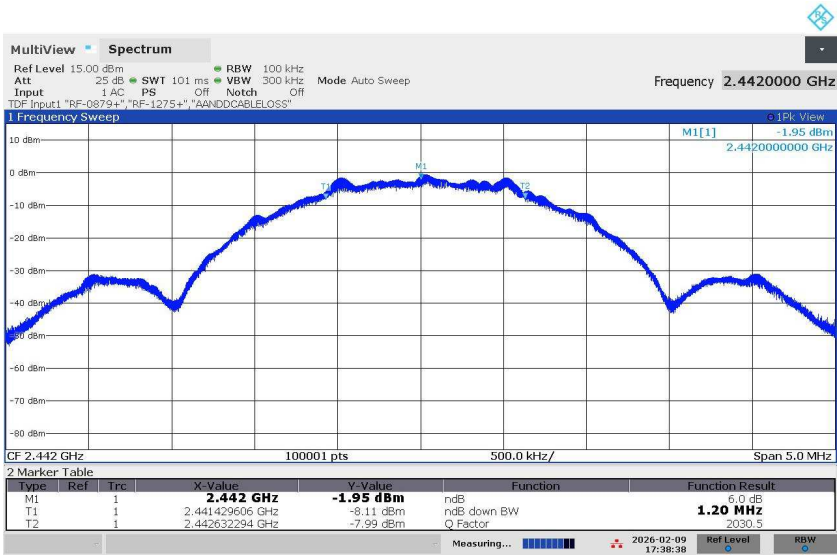
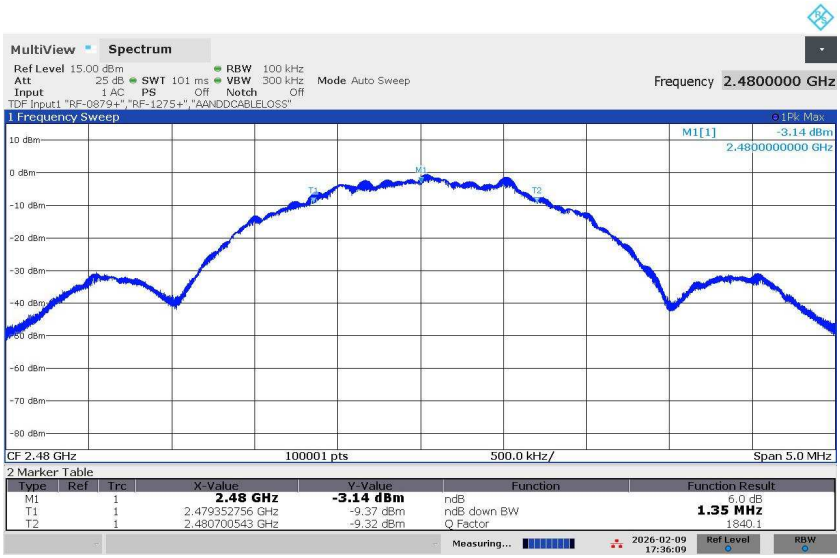


Figure 7: 6dB Bandwidth, BLE, Mode H (2480MHz), 2Mbps



5.6 99% Bandwidth

RESULT: **For. Ref.**

Date of testing:	2026-02-09, 2026-02-13
Ambient temperature:	24, 25°C
Relative humidity:	35, 26%
Atmospheric pressure:	1012, 1011hPa

Test procedure:

ANSI C63.10-2020 §6.9.3

The 99% bandwidth was measured at the antenna port with a spectrum analyzer using with the following settings:

- RBW = 30kHz, VBW = 100kHz, Sample detector with Max Hold

The RBW was set in the range from 1% to 5% of the observed OBW, VBW was set to at least three times of RBW.

Markers were placed at the lowest and highest intersections of the trace by 99% OBW function to obtain the value of the 99% emission bandwidth.

Table 11: 99% Bandwidth, BLE, 1Mbps

Operating Frequency [MHz]	99% Bandwidth [MHz]	Remarks
2402	1.0587	
2442	1.0612	
2480	1.0616	Widest OBW for 1Mbps

Figure 8: 99% Bandwidth, BLE, Mode L (2402MHz), 1Mbps

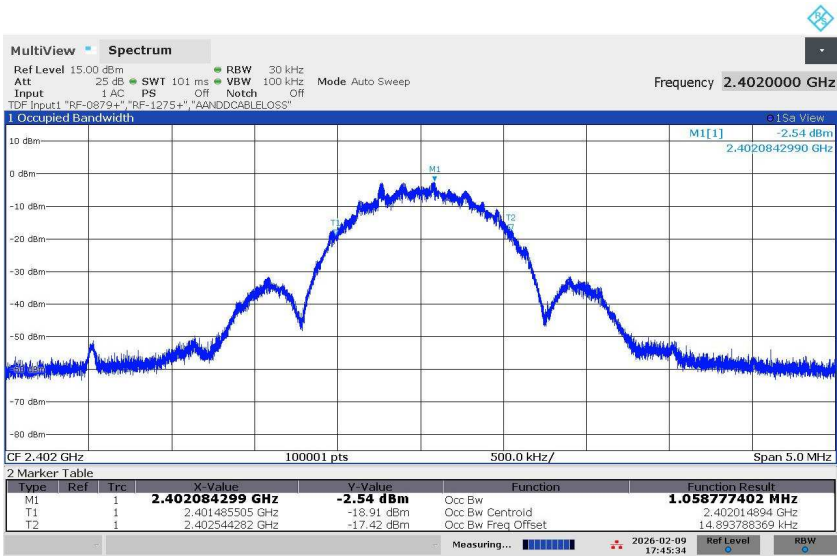


Figure 9: 99% Bandwidth, BLE, Mode M (2442MHz), 1Mbps

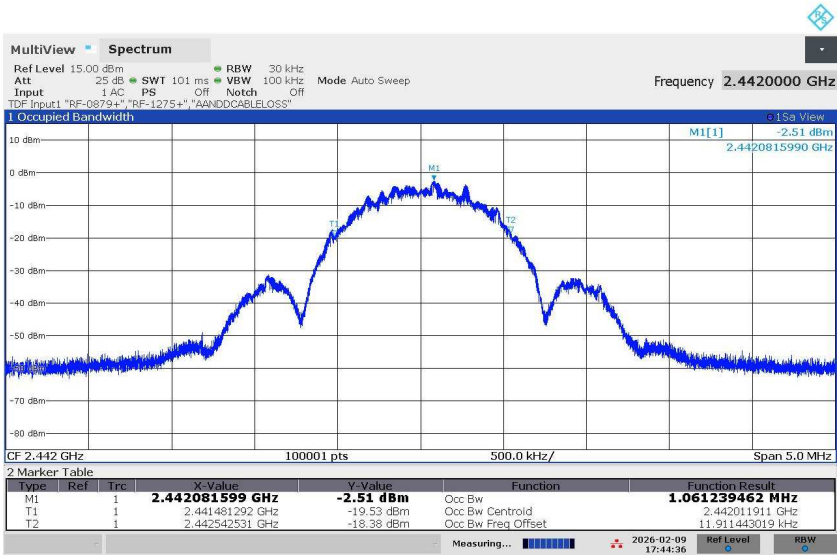


Figure 10: 99% Bandwidth, BLE, Mode H (2480MHz), 1Mbps

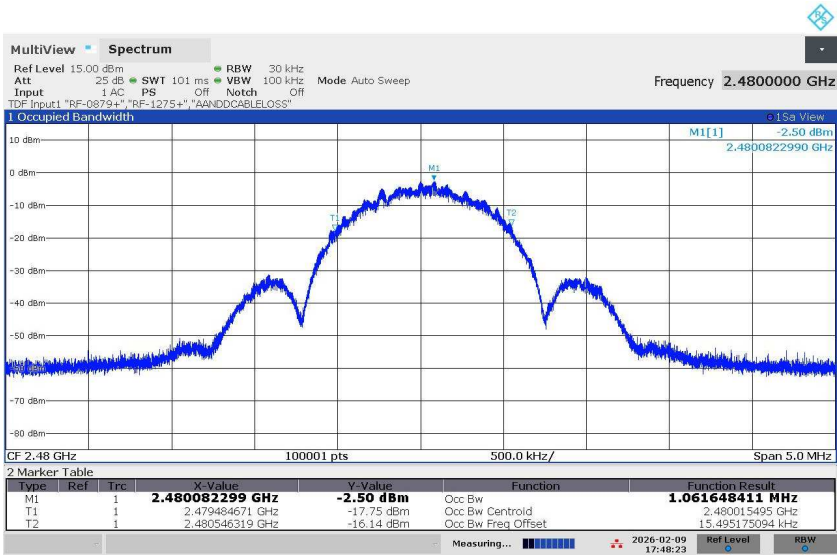


Table 12: 99% Bandwidth, BLE, 2Mbps

Operating Frequency [MHz]	99% Bandwidth [MHz]	Remarks
2402	2.0874	
2442	2.0836	
2480	2.0907	Widest OBW for 2Mbps

Figure 11: 99% Bandwidth, BLE, Mode L (2402MHz), 2Mbps

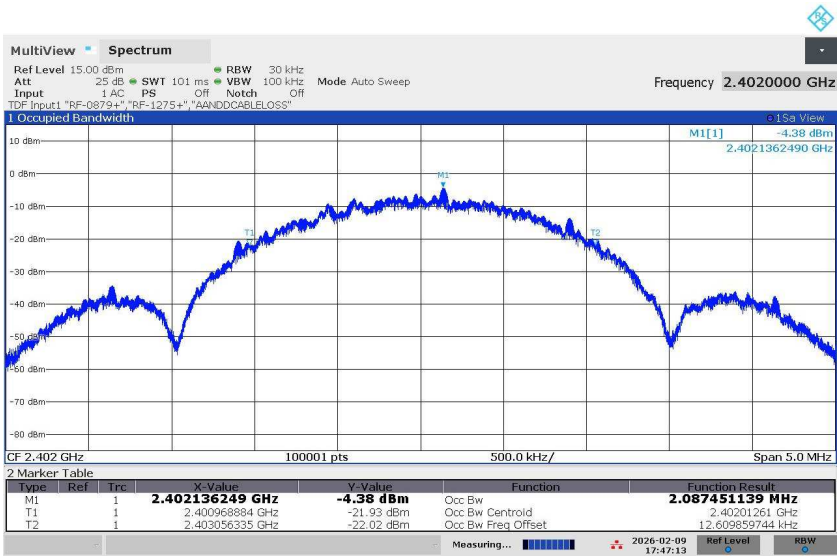


Figure 12: 99% Bandwidth, BLE, Mode M (2442MHz), 2Mbps

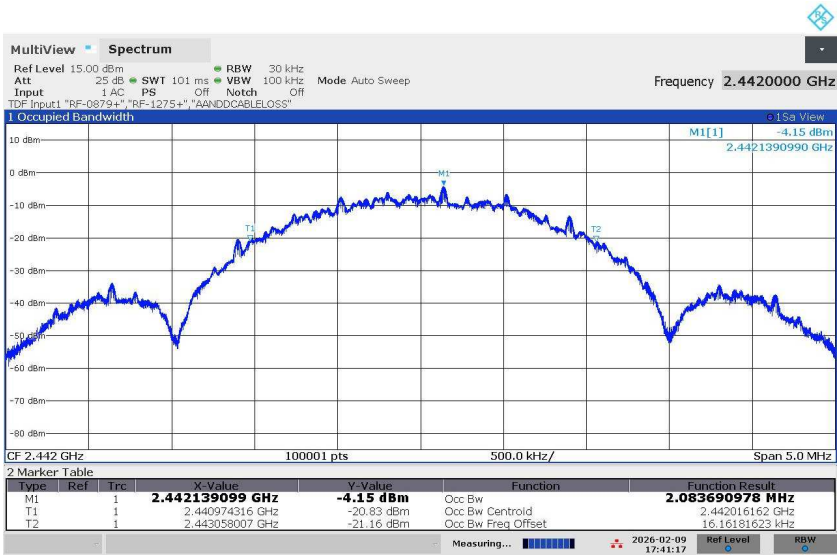
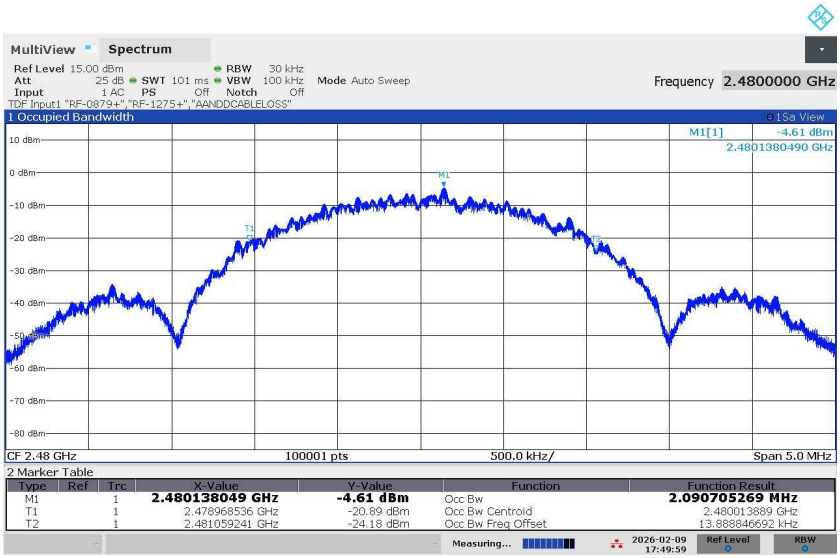


Figure 13: 99% Bandwidth, BLE, Mode H (2480MHz), 2Mbps



5.7 Conducted Spurious Emissions

RESULT: **Pass**

Date of testing:	2026-02-09, 2026-02-13
Ambient temperature:	24, 25°C
Relative humidity:	35, 26%
Atmospheric pressure:	1012, 1011hPa

Requirements:

FCC §15.247(d)

In any 100kHz bandwidth outside the frequency band in which the intentional radiator is operating, the RF power shall be at least 20dBc below that of the maximum in-band 100kHz emission.

Test procedure:

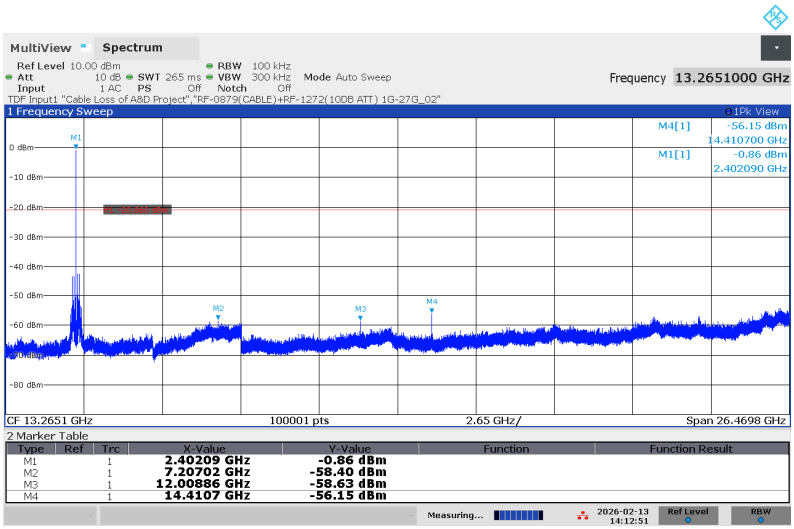
ANSI C63.10-2020 §6.7, §6.10 and KDB 558074 D01.

The conducted spurious emissions were measured at the antenna port with a spectrum analyzer using a peak detector. The RBW was set to 100kHz and the VBW was set to 300kHz. Measurements were performed from 30MHz to 25GHz (10th harmonics).

The readings of the measurements take into account the loss generated by all the involved cables.

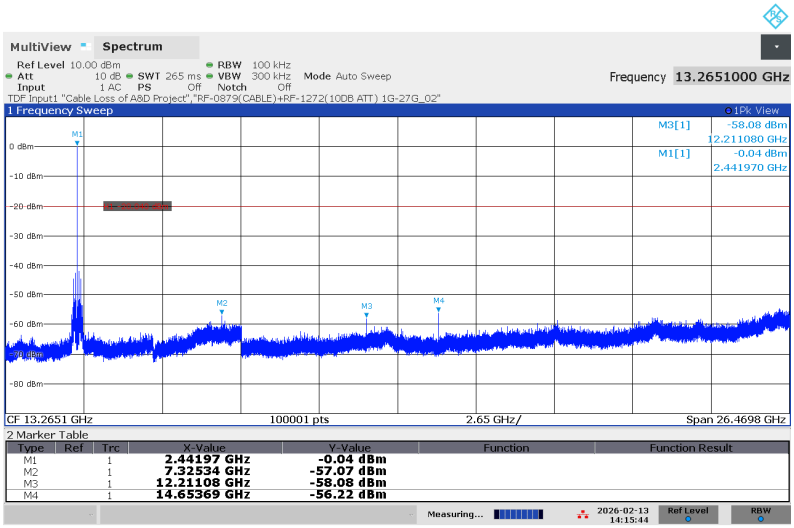
Authorized-band band-edge measurements (relative method) were performed by conducted, as per §6.10.4 of ANSI C63.10-2020.

Figure 14: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode L (2402MHz), 1Mbps



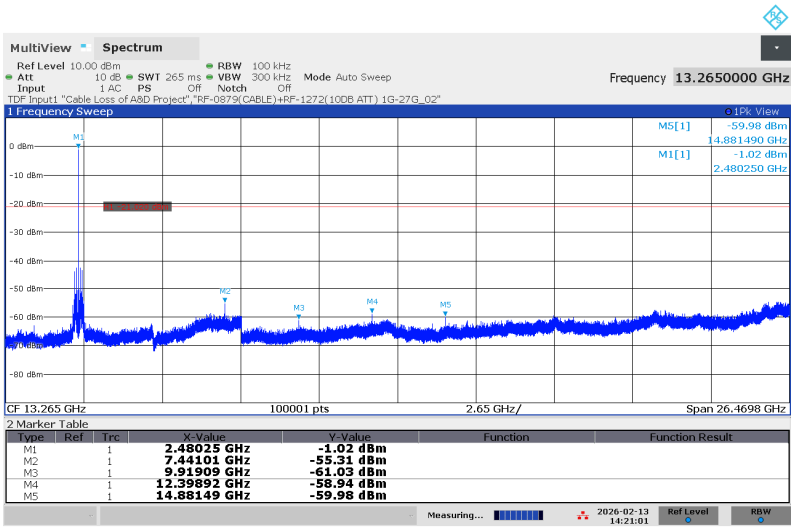
02:12:51 PM 02/13/2026

Figure 15: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode M (2442MHz), 1Mbps



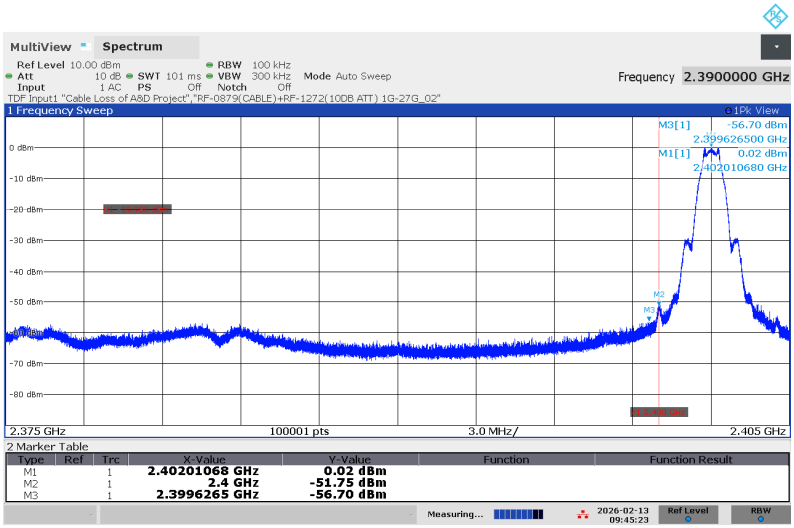
02:15:44 PM 02/13/2026

Figure 16: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode H (2480MHz), 1Mbps



02:21:01 PM 02/13/2026

Figure 17: Authorized-band band-edge, BLE, Mode L (2402MHz), 1Mbps



09:45:24 AM 02/13/2026

Figure 18: Authorized-band band-edge, BLE, Mode H (2480MHz), 1Mbps

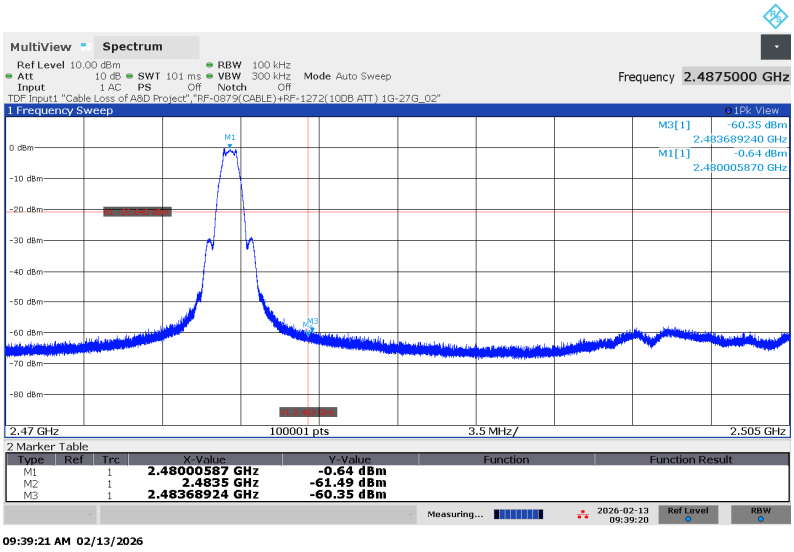


Figure 19: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode L (2402MHz), 2Mbps

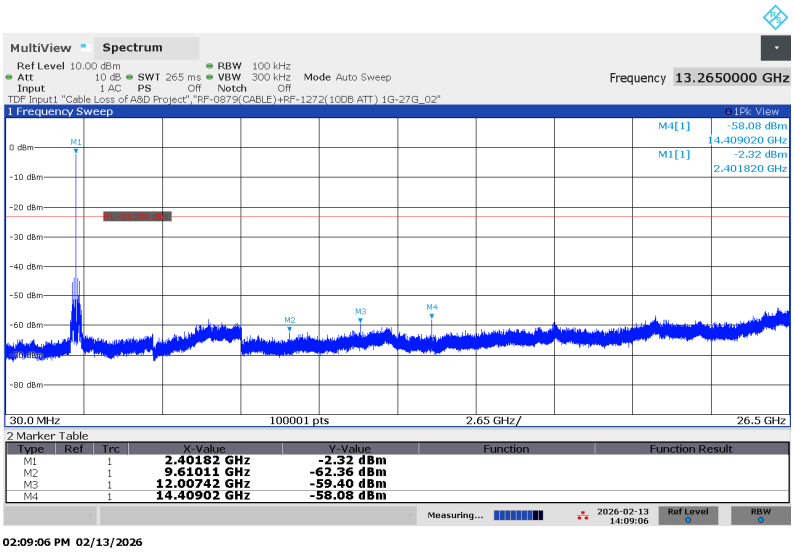


Figure 20: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode M (2442MHz), 2Mbps

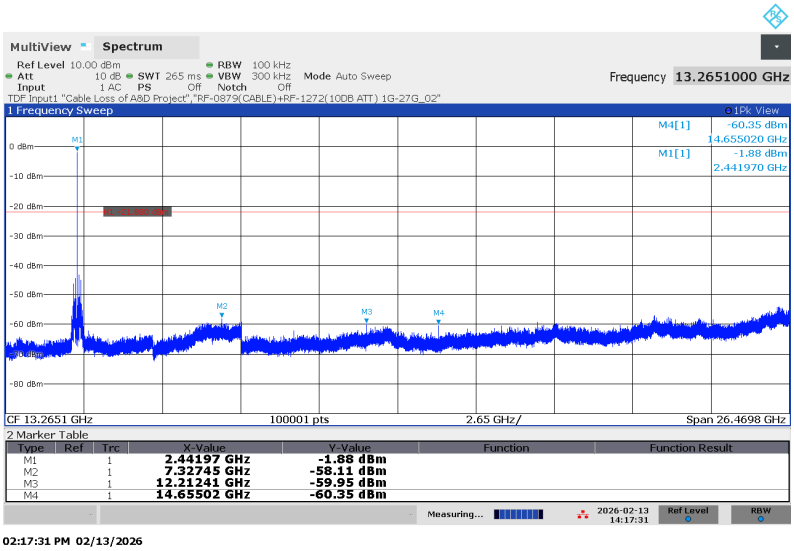
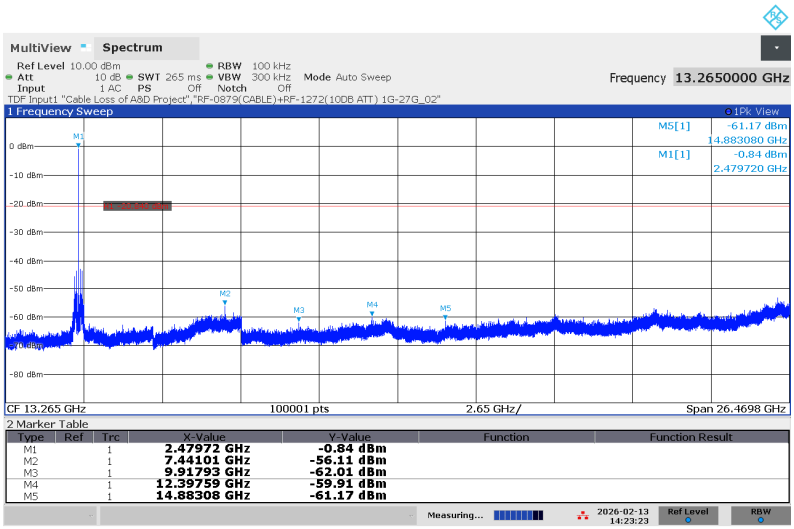
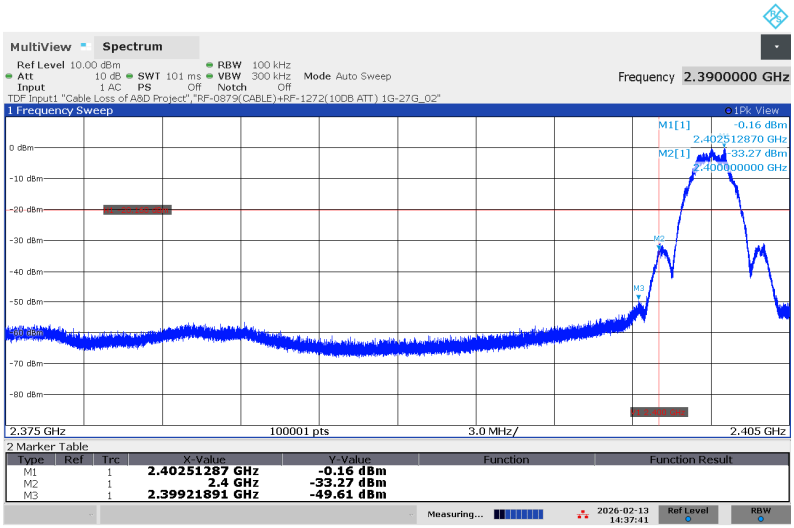


Figure 21: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode H (2480MHz), 2Mbps



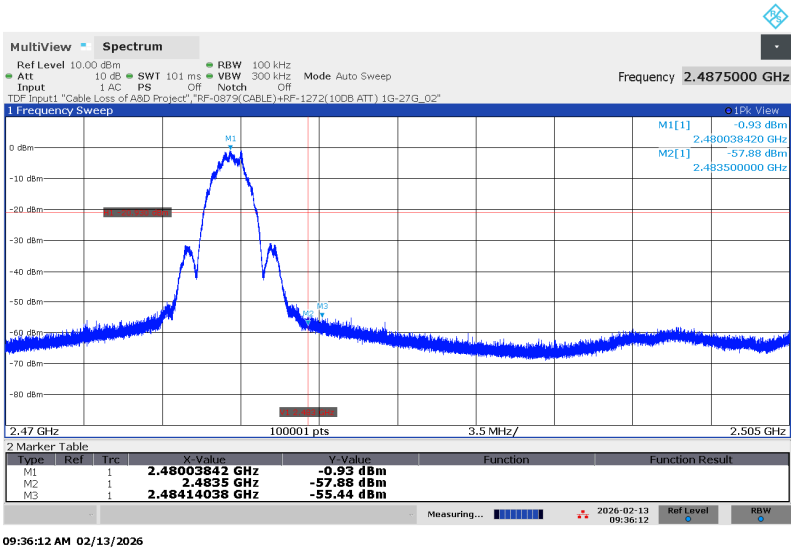
02:23:23 PM 02/13/2026

Figure 22: Authorized-band band-edge, BLE, Mode L (2402MHz), 2Mbps



02:37:42 PM 02/13/2026

Figure 23: Authorized-band band-edge, BLE, Mode H (2480MHz), 2Mbps



5.8 Peak Power Spectral Density

RESULT: **Pass**

Date of testing:	2026-02-09, 2026-02-13
Ambient temperature:	24, 25°C
Relative humidity:	35, 26%
Atmospheric pressure:	1012, 1011hPa

Requirements:

FCC §15.247(e)

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

Test procedure:

ANSI C63.10-2020 §11.10, KDB 558074 D01.

The peak power spectral density was measured at the antenna port with a spectrum analyzer using a peak detector with a RBW of 3kHz and a VBW of 10kHz.

The readings of the measurements take into account the loss generated by all the involved cables.

Table 13: Peak Power Spectral Density, BLE, 1Mbps

Operating Frequency [MHz]	Max PSD [dBm]	Limit [dBm]	Margin [dB]
2402	-11.05	8.00	19.05
2442	-11.81	8.00	19.81
2480	-11.56	8.00	19.56

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

Figure 24: Power Spectral Density, BLE, Mode L (2402MHz), 1Mbps

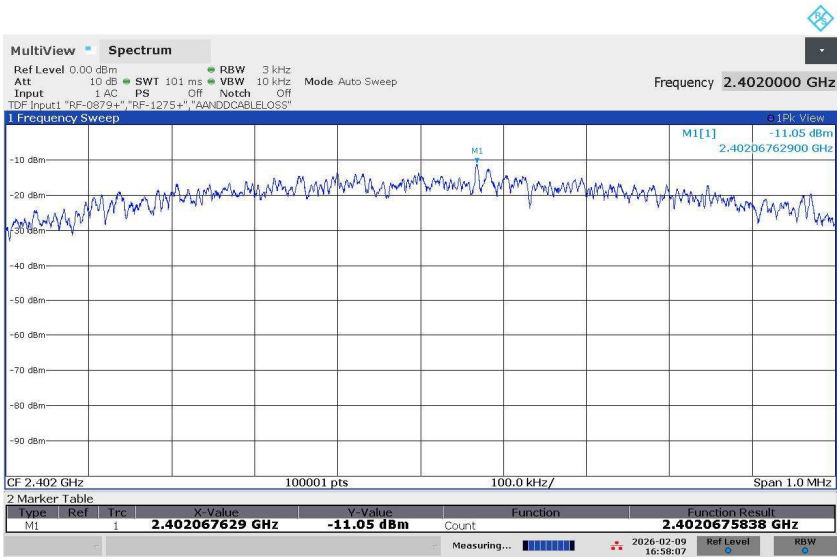


Figure 25: Power Spectral Density, BLE, Mode M (2442MHz), 1Mbps

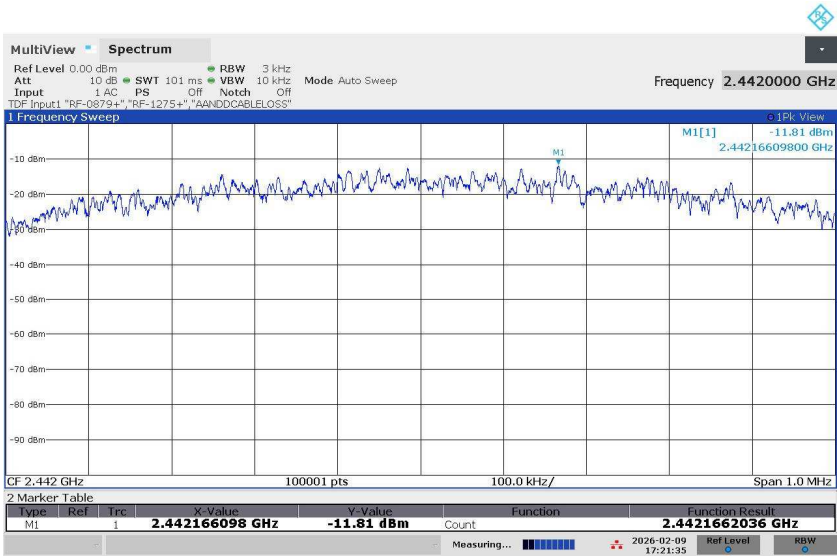


Figure 26: Power Spectral Density, BLE, Mode H (2480MHz), 1Mbps

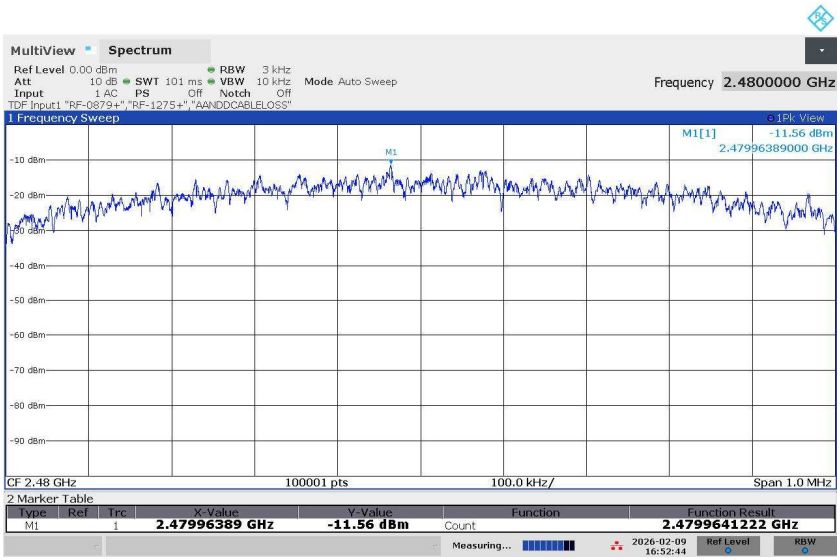


Table 14: Peak Power Spectral Density, BLE, 2Mbps

Operating Frequency [MHz]	Max PSD [dBm]	Limit [dBm]	Margin [dB]
2402	-15.81	8.00	23.81
2442	-15.85	8.00	23.85
2480	-14.91	8.00	22.91

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

Figure 27: Power Spectral Density, BLE, Mode L (2402MHz), 2Mbps

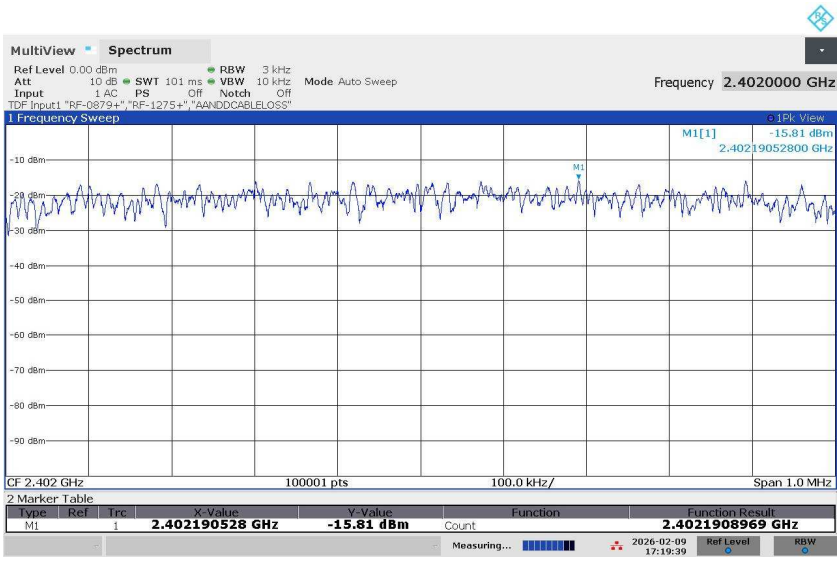


Figure 28: Power Spectral Density, BLE, Mode M (2442MHz), 2Mbps

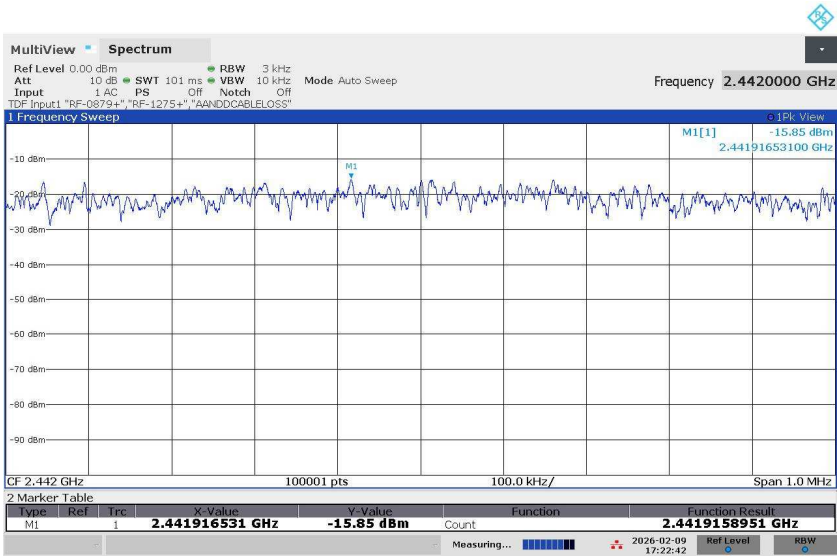
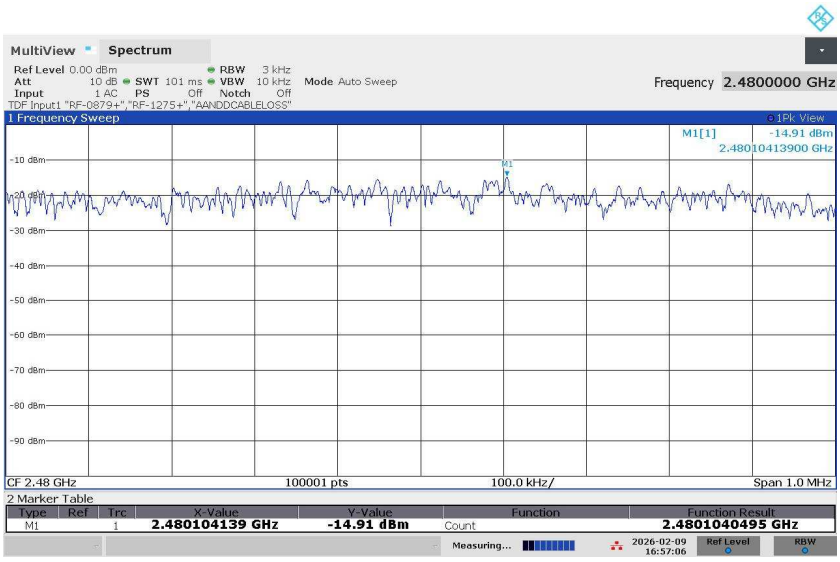


Figure 29: Power Spectral Density, BLE, Mode H (2480MHz), 2Mbps



5.9 Radiated Spurious Emissions of Transmitter

RESULT: **Pass**

Date of testing:	2026-02-05, 2026-02-06, 2026-02-10, 2026-02-12, 2026-02-13
Ambient temperature:	22, 21, 20, 18, 20°C
Relative humidity:	25, 31, 55, 35, 33%
Atmospheric pressure:	1011, 1005, 1015, 1012, 1012hPa
Frequency range:	9kHz - 25GHz
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

FCC §15.205, §15.209, §15.247(d)

Radiated emissions which fall in the restricted bands, as defined in FCC §15.205(a) must comply with the radiated emission limits specified in FCC §15.209(a).

Radiated emissions which fall outside the operation frequency band and outside restricted bands shall either meet the limit specified in FCC §15.209(a) or be attenuated at least 20dB below the power level in the 100kHz bandwidth within the band that contains the highest level of the desired power (the less severe limit applies).

Test procedure:

ANSI C63.10-2020 §6.3, §6.4, §6.5, §6.6, §6.10 and KDB 558074 D01

The EUT was placed on a nonconductive turntable. The table height was 80cm for measurements below 1GHz and 1.5m for measurements above 1GHz. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 9kHz to the 10th harmonic of the highest fundamental transmitter frequency (25GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° in order to determine the emission's maximum level. For frequencies above 30MHz, the antenna was raised and lowered from 1 to 4m and measurements were taken using both horizontal and vertical antenna polarizations.

For emissions between 30MHz and 1GHz, measurements were performed with a test receiver operating in the CISPR quasi-peak detection mode with a 6dB bandwidth set to 120kHz.

For emissions above 1GHz, measurements were performed with a spectrum analyzer using the following settings: for peak field strength: RBW = 1MHz & VBW = 3MHz; for average field strength: RBW = 1MHz & VBW = 10Hz. Positive peak detector was applied.

Absorbers have been placed on the floor between the EUT and the measuring antenna for testing above 1GHz.

Both AC adapter operation and battery operation were evaluated to determine the worst-case configuration. Final measurements were performed under AC adapter operation in all operating modes (L, M, and H). X, Y, and Z axes were tested to determine the worst axis. The final measurements were performed on the X axis.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

Table 15: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, BLE, Mode L (2402MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading QP [dBµV]	Factor [dB(1/m)]	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]	Angle [°]
0.0093	V	18.2	19.9	38.1	128.3	90.2	245
0.0096	H	18.4	19.8	38.2	127.9	89.7	190
0.1844	H	10.8	19.5	30.3	102.3	72.0	43
0.1956	V	11.9	19.5	31.4	101.8	70.4	169
0.4776	V	7.8	19.4	27.2	94.0	66.8	161
0.5483	H	5.5	19.4	24.9	72.8	47.9	199
0.8087	V	4.3	19.4	23.7	69.4	45.7	263
2.0523	H	3.5	19.4	22.9	69.5	46.6	118
6.6885	V	4.2	19.7	23.9	69.5	45.6	206
24.1464	H	4.5	20.3	24.8	69.5	44.7	224
24.4344	V	4.6	20.3	24.9	69.5	44.6	359

Note: Level QP = Reading QP + Factor

Table 16: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading QP [dBµV]	Factor [dB(1/m)]	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]	Height [cm]	Angle [°]
43.574	V	44.6	-21.5	23.1	40.0	16.9	132	158
50.000	V	46.9	-21.2	25.7	40.0	14.3	132	174
51.990	V	47.0	-21.3	25.7	40.0	14.3	158	2
52.003	H	45.5	-21.3	24.2	40.0	15.8	169	240
90.000	V	52.2	-26.6	25.6	43.5	17.9	156	239
99.998	V	57.3	-25.4	31.9	43.5	11.6	146	0
99.999	H	52.4	-25.4	27.0	43.5	16.5	156	270
139.488	V	47.1	-20.8	26.3	43.5	17.2	100	215

Note: Level QP = Reading QP + Factor

Table 17: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
2274.024	V	60.5	-16.0	44.5	74.0	29.5	190	0
2274.024	H	64.3	-16.0	48.3	74.0	25.7	134	28
4804.000	V	55.2	-10.3	44.9	74.0	29.1	100	301
4804.000	H	55.1	-10.3	44.8	74.0	29.2	197	199
7206.000	H	57.1	-3.5	53.6	74.0	20.4	101	1
7206.000	V	59.2	-3.5	55.7	74.0	18.3	197	321
11875.340	H	45.3	-0.3	45.0	74.0	29.0	399	99
12015.950	V	47.8	0.7	48.5	74.0	25.5	400	359
14418.500	V	48.4	0.8	49.2	74.0	24.8	194	342
14488.260	H	45.9	0.7	46.6	74.0	27.4	400	1
19236.800	V	50.6	-9.6	41.0	74.0	33.0	215	1
19468.270	H	49.6	-9.2	40.4	74.0	33.6	374	251
21826.125	V	47.7	-6.7	41.0	74.0	33.0	395	3
21832.240	H	48.1	-6.7	41.4	74.0	32.6	400	291

Note: Level PK = Reading PK + Factor

Table 18: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
2274.024	V	52.7	-16.0	36.7	54.0	17.3	190	0
2274.024	H	58.9	-16.0	42.9	54.0	11.1	134	28
4804.000	V	41.1	-10.3	30.8	54.0	23.2	100	301
4804.000	H	41.4	-10.3	31.1	54.0	22.9	197	199
7206.000	H	49.0	-3.5	45.5	54.0	8.5	101	1
7206.000	V	49.7	-3.5	46.2	54.0	7.8	197	321
11875.340	H	37.4	-0.3	37.1	54.0	16.9	399	99
12015.950	V	37.9	0.7	38.6	54.0	15.4	400	359
14418.500	V	37.9	0.8	38.7	54.0	15.3	194	342
14488.260	H	36.7	0.7	37.4	54.0	16.6	400	1
19236.800	V	45.3	-9.6	35.7	54.0	18.3	215	1
19468.270	H	45.2	-9.2	36.0	54.0	18.0	374	251
21826.125	V	43.9	-6.7	37.2	54.0	16.8	395	3
21832.240	H	43.0	-6.7	36.3	54.0	17.7	400	291

Note: Level AV = Reading AV + Factor

Table 19: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
4883.450	H	55.6	-10.0	45.6	74.0	28.4	102	202
4884.080	V	55.7	-10.0	45.7	74.0	28.3	100	116
7326.071	V	57.3	-3.6	53.7	74.0	20.3	200	318
7326.071	H	55.9	-3.6	52.3	74.0	21.7	100	347
12210.350	V	49.1	-0.4	48.7	74.0	25.3	370	16
12213.700	H	47.3	-0.4	46.9	74.0	27.1	128	326
14653.450	V	48.0	0.6	48.6	74.0	25.4	205	236
14721.640	H	45.8	0.7	46.5	74.0	27.5	400	182

Note: Level PK = Reading PK + Factor

Table 20: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
4883.450	H	42.7	-10.0	32.7	54.0	21.3	102	202
4884.080	V	42.4	-10.0	32.4	54.0	21.6	100	116
7326.071	V	46.4	-3.6	42.8	54.0	11.2	200	318
7326.071	H	43.0	-3.6	39.4	54.0	14.6	100	347
12210.350	V	39.4	-0.4	39.0	54.0	15.0	370	16
12213.700	H	39.7	-0.4	39.3	54.0	14.7	128	326
14653.450	V	41.4	0.6	42.0	54.0	12.0	205	236
14721.640	H	37.1	0.7	37.8	54.0	16.2	400	182

Note: Level AV = Reading AV + Factor

Table 21: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
4959.998	V	54.4	-9.6	44.8	74.0	29.2	199	60
4959.998	H	55.8	-9.6	46.2	74.0	27.8	100	194
7440.070	H	56.3	-3.9	52.4	74.0	21.6	100	151
7440.070	V	57.7	-3.9	53.8	74.0	20.2	148	123
12290.330	H	45.7	-0.7	45.0	74.0	29.0	104	348
12403.500	V	49.8	-1.1	48.7	74.0	25.3	166	350
14742.190	H	46.1	0.7	46.8	74.0	27.2	399	359
14877.900	V	48.5	0.9	49.4	74.0	24.6	166	19

Note: Level PK = Reading PK + Factor

Table 22: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 1Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
4959.998	V	42.7	-9.6	33.1	54.0	20.9	199	60
4959.998	H	42.8	-9.6	33.2	54.0	20.8	100	194
7440.070	H	44.7	-3.9	40.8	54.0	13.2	100	151
7440.070	V	47.7	-3.9	43.8	54.0	10.2	148	123
12290.330	H	38.7	-0.7	38.0	54.0	16.0	104	348
12403.500	V	38.3	-1.1	37.2	54.0	16.8	166	350
14742.190	H	37.6	0.7	38.3	54.0	15.7	399	359
14877.900	V	38.3	0.9	39.2	54.0	14.8	166	19

Note: Level AV = Reading AV + Factor

Table 23: Restricted-band Band-edge, BLE, 1Mbps

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	49.73	55.61	54.00	74.00	4.27 (*)	18.39
2402	V	43.81	53.01	54.00	74.00	10.19	20.99
2480	H	37.86	49.01	54.00	74.00	16.14	24.99
2480	V	36.86	47.38	54.00	74.00	17.14	26.62

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log_{10}(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Figure 30: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 1Mbps, Horizontal Antenna Orientation

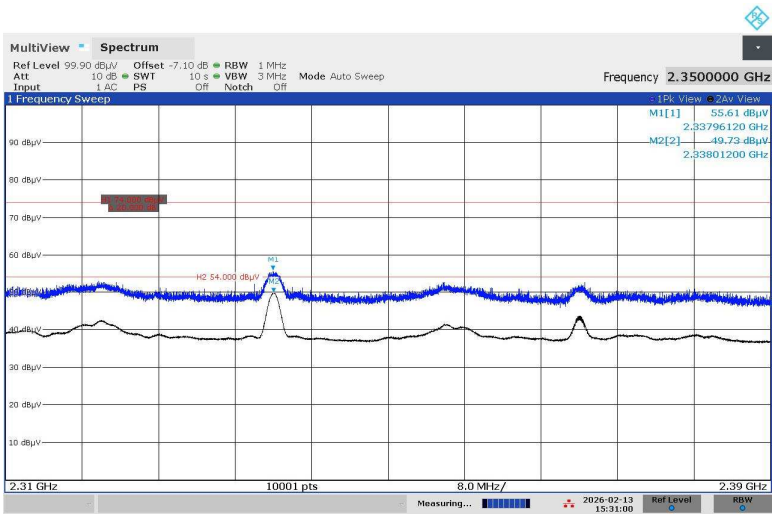


Figure 31: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 1Mbps, Vertical Antenna Orientation

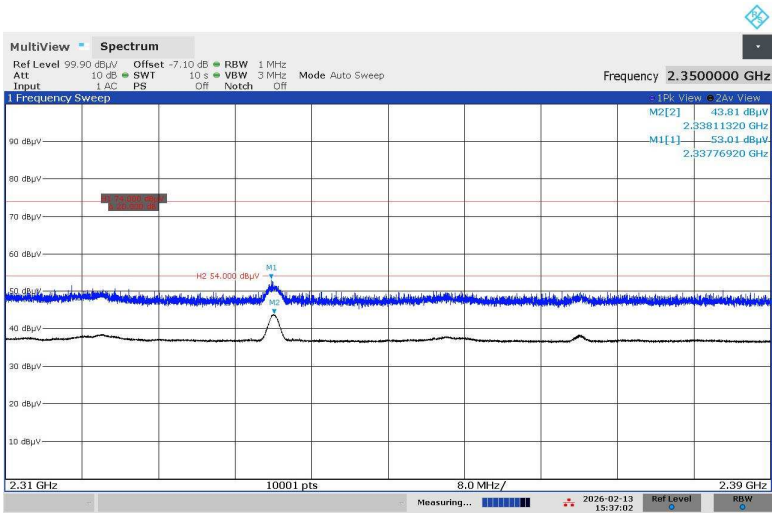


Figure 32: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 1Mbps, Horizontal Antenna Orientation

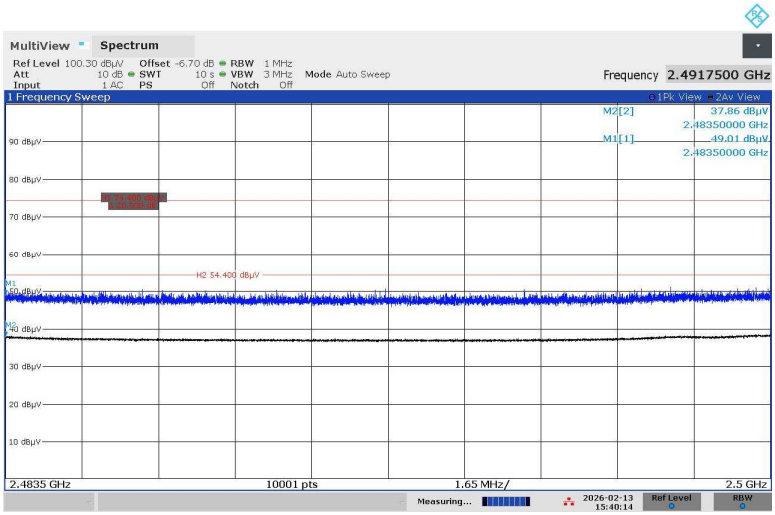


Figure 33: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 1Mbps, Vertical Antenna Orientation

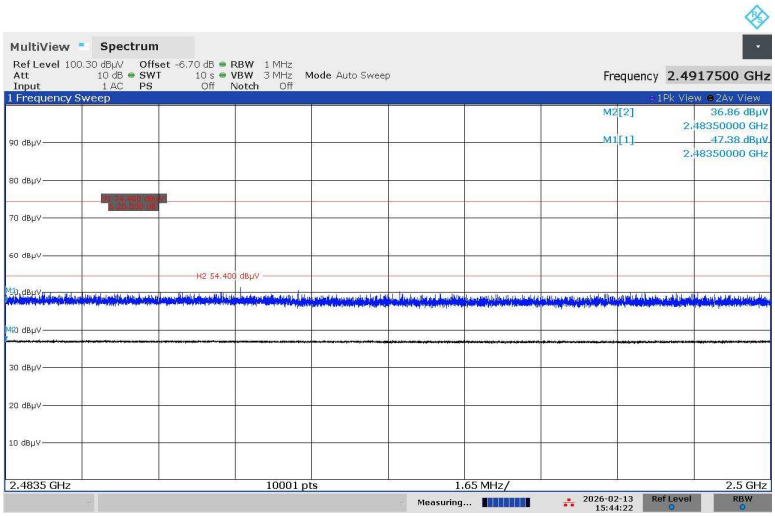


Table 24: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading QP [dBµV]	Factor [dB(1/m)]	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]	Height [cm]	Angle [°]
43.470	V	44.4	-21.5	22.9	40.0	17.1	120	164
49.997	V	46.9	-21.2	25.7	40.0	14.3	132	11
50.000	H	43.9	-21.2	22.7	40.0	17.3	101	132
51.990	H	43.0	-21.3	21.7	40.0	18.3	133	203
51.993	V	46.6	-21.3	25.3	40.0	14.7	144	344
89.998	V	49.3	-26.6	22.7	43.5	20.8	157	237
99.998	V	57.8	-25.4	32.4	43.5	11.1	144	92
99.999	H	53.1	-25.4	27.7	43.5	15.8	169	78
138.286	V	47.1	-20.9	26.2	43.5	17.3	100	215

Note: Level QP = Reading QP + Factor

Table 25: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
2274.030	H	63.1	-16.0	47.1	74.0	26.9	196	36
2274.030	V	60.4	-16.0	44.4	74.0	29.6	134	215
4804.684	V	55.8	-10.3	45.5	74.0	28.5	100	109
4804.684	H	55.4	-10.3	45.1	74.0	28.9	100	199
7207.259	V	56.6	-3.5	53.1	74.0	20.9	156	306
7207.300	H	58.2	-3.5	54.7	74.0	19.3	115	120
11903.490	H	45.8	0.0	45.8	74.0	28.2	400	359
12016.690	V	47.2	0.7	47.9	74.0	26.1	165	1
14172.870	H	46.6	0.3	46.9	74.0	27.1	400	182
14433.590	V	49.0	0.7	49.7	74.0	24.3	189	1
19236.500	V	51.7	-9.6	42.1	74.0	31.9	278	353
19455.790	H	50.2	-9.3	40.9	74.0	33.1	400	98
21753.370	V	48.3	-6.8	41.5	74.0	32.5	400	1
21891.200	H	48.8	-6.7	42.1	74.0	31.9	400	1

Note: Level PK = Reading PK + Factor

Table 26: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
2274.030	H	56.7	-16.0	40.7	54.0	13.3	196	36
2274.030	V	52.0	-16.0	36.0	54.0	18.0	134	215
4804.684	V	41.5	-10.3	31.2	54.0	22.8	100	109
4804.684	H	42.1	-10.3	31.8	54.0	22.2	100	199
7207.259	V	44.7	-3.5	41.2	54.0	12.8	156	306
7207.300	H	46.2	-3.5	42.7	54.0	11.3	115	120
11903.490	H	36.5	0.0	36.5	54.0	17.5	400	359
12016.690	V	35.6	0.7	36.3	54.0	17.7	165	1
14172.870	H	36.9	0.3	37.2	54.0	16.8	400	182
14433.590	V	38.4	0.7	39.1	54.0	14.9	189	1
19236.500	V	45.5	-9.6	35.9	54.0	18.1	278	353
19455.790	H	45.2	-9.3	35.9	54.0	18.1	400	98
21753.370	V	43.8	-6.8	37.0	54.0	17.0	400	1
21891.200	H	40.9	-6.7	34.2	54.0	19.8	400	1

Note: Level AV = Reading AV + Factor

Table 27: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
4884.896	H	55.5	-10.0	45.5	74.0	28.5	162	249
4884.896	V	55.9	-10.0	45.9	74.0	28.1	189	69
7327.269	V	56.7	-3.6	53.1	74.0	20.9	163	340
7327.269	H	58.1	-3.6	54.5	74.0	19.5	142	118
12202.650	V	49.2	-0.4	48.8	74.0	25.2	399	11
12333.170	H	46.2	-0.8	45.4	74.0	28.6	400	4
14648.650	V	49.2	0.6	49.8	74.0	24.2	182	36
14679.730	H	48.2	0.6	48.8	74.0	25.2	400	274

Note: Level PK = Reading PK + Factor

Table 28: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
4884.896	H	41.7	-10.0	31.7	54.0	22.3	162	249
4884.896	V	42.3	-10.0	32.3	54.0	21.7	189	69
7327.269	V	43.8	-3.6	40.2	54.0	13.8	163	340
7327.269	H	46.3	-3.6	42.7	54.0	11.3	142	118
12202.650	V	38.8	-0.4	38.4	54.0	15.6	399	11
12333.170	H	38.8	-0.8	38.0	54.0	16.0	400	4
14648.650	V	38.1	0.6	38.7	54.0	15.3	182	36
14679.730	H	38.0	0.6	38.6	54.0	15.4	400	274

Note: Level AV = Reading AV + Factor

Table 29: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading PK [dBµV]	Factor [dB(1/m)]	Level PK [dBµV/m]	Limit [dBµV/m]	Margin PK [dB]	Height [cm]	Angle [°]
4960.798	V	55.8	-9.6	46.2	74.0	27.8	129	120
4960.798	H	55.5	-9.6	45.9	74.0	28.1	123	148
7441.228	H	55.9	-3.9	52.0	74.0	22.0	100	189
7441.228	V	57.6	-3.9	53.7	74.0	20.3	159	118
12402.300	V	50.2	-1.1	49.1	74.0	24.9	285	359
12411.650	H	48.5	-1.0	47.5	74.0	26.5	399	51
14650.450	H	46.5	0.6	47.1	74.0	26.9	399	359
14882.900	V	48.9	0.9	49.8	74.0	24.2	227	20

Note: Level PK = Reading PK + Factor

Table 30: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 2Mbps

Freq. [MHz]	Antenna Orient.	Reading AV [dBµV]	Factor [dB(1/m)]	Level AV [dBµV/m]	Limit [dBµV/m]	Margin AV [dB]	Height [cm]	Angle [°]
4960.798	V	42.3	-9.6	32.7	54.0	21.3	129	120
4960.798	H	42.5	-9.6	32.9	54.0	21.1	123	148
7441.228	H	43.6	-3.9	39.7	54.0	14.3	100	189
7441.228	V	45.8	-3.9	41.9	54.0	12.1	159	118
12402.300	V	37.7	-1.1	36.6	54.0	17.4	285	359
12411.650	H	36.9	-1.0	35.9	54.0	18.1	399	51
14650.450	H	37.3	0.6	37.9	54.0	16.1	399	359
14882.900	V	36.2	0.9	37.1	54.0	16.9	227	20

Note: Level AV = Reading AV + Factor

Table 31: Restricted-band Band-edge, BLE, 2Mbps

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	48.81	55.01	54.00	74.00	5.19 (*)	18.99
2402	V	43.02	52.21	54.00	74.00	10.98	21.79
2480	H	40.56	51.44	54.00	74.00	13.44	22.56
2480	V	37.37	47.74	54.00	74.00	16.63	26.26

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log_{10}(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Figure 34: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 2Mbps, Horizontal Antenna Orientation

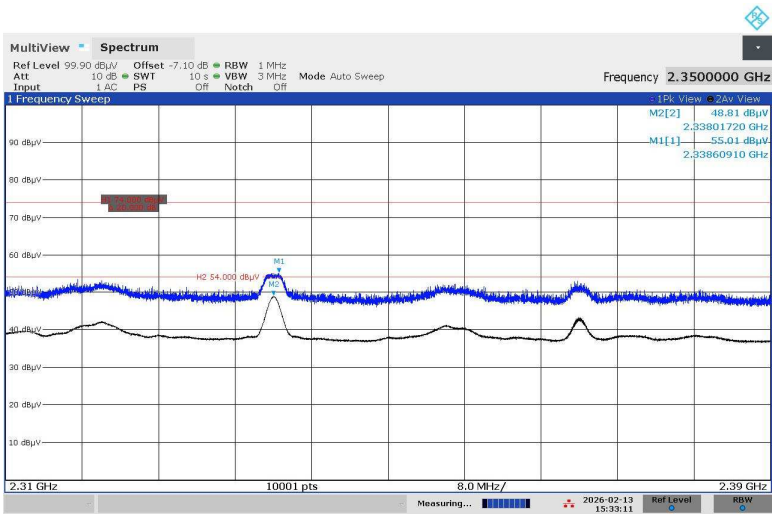


Figure 35: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 2Mbps, Vertical Antenna Orientation

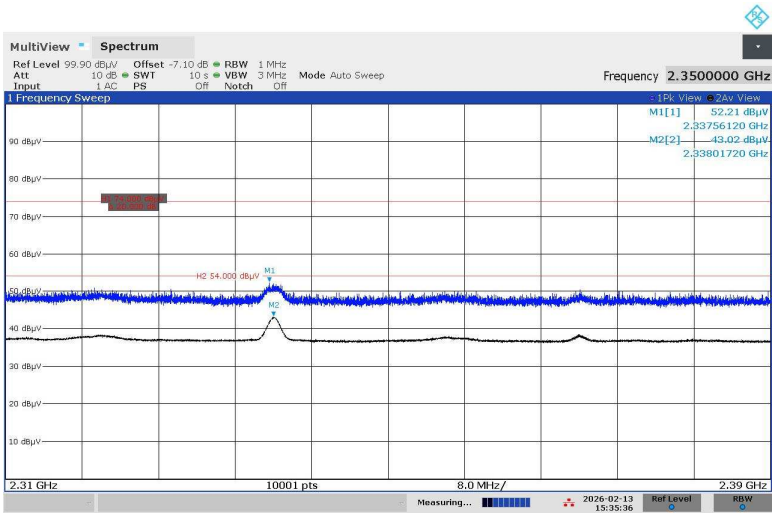


Figure 36: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 2Mbps, Horizontal Antenna Orientation

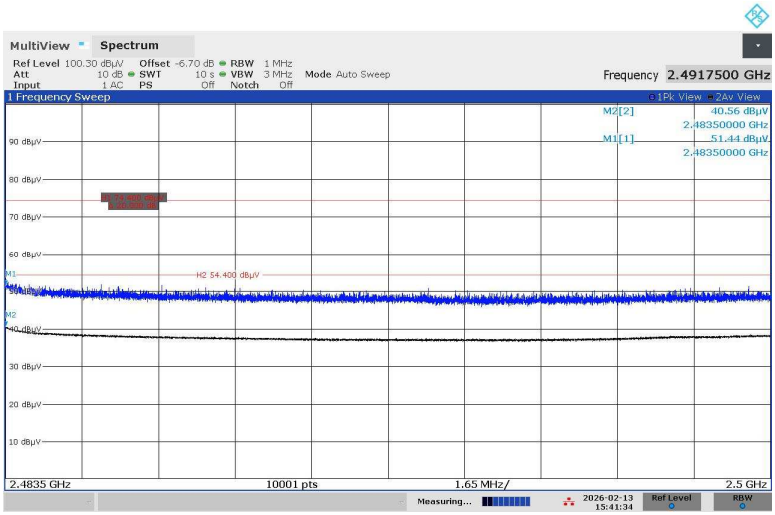
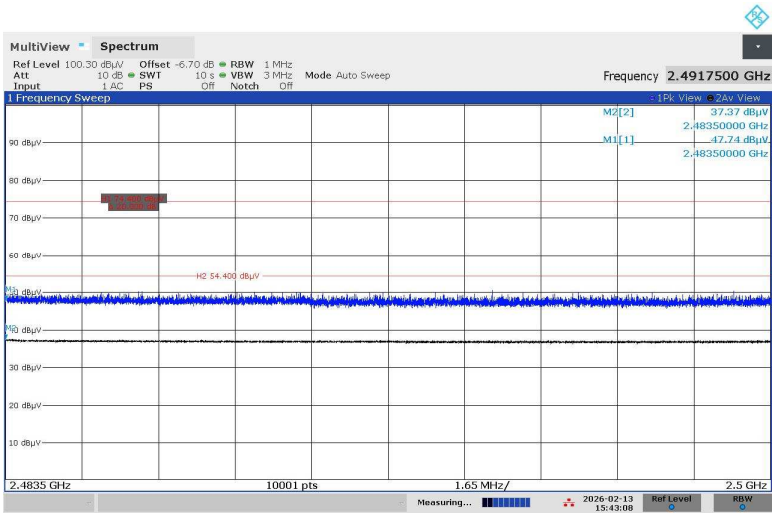


Figure 37: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 2Mbps, Vertical Antenna Orientation



5.10 AC Power Line Conducted Emission of Transmitter

RESULT: **Pass**

Date of testing:	2026-02-13
Ambient temperature:	25°C
Relative humidity:	26%
Atmospheric pressure:	1011hPa
Frequency range:	0.15 - 30MHz
Kind of test site:	Shielded Room

Requirements:

FCC §15.207

The AC power line conducted emission on any frequency within the band 150kHz to 30MHz shall not exceed the limits specified in FCC §15.207(a).

Test procedure:

ANSI C63.10-2020 §6.2

The EUT was placed on an wooden table raised 80cm above the reference ground plane. A vertical conducting plane of the screened room was located 40cm to the rear of the EUT. The AC input port of the EUT was connected to a Line Impedance Stabilization Network (LISN).

The physical arrangement of the test system and associated cabling was varied to determine the effect on the EUT's emissions in amplitude and frequency in order to ensure that maximum emission amplitudes were attained.

The measurements were performed with a measurement receiver operating in the CISPR quasi-peak and average detection modes. The receiver’s 6dB bandwidth was set to 9kHz.

Prechecks have been performed in the all operation modes to determine which mode produces the highest emission level. Final measurement was performed for the worst case operation mode.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned were small or not detectable.

Table 32: AC Power Line Conducted Emission, 0.15 - 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), BLE, 1M, Mode H, (2480MHz)

Freq. [MHz]	Phase	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Level QP [dBµV]	Level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]
0.5055	N	22.2	14.2	9.9	32.1	24.1	56.0	46.0	23.9	21.9
0.5078	L	24.9	13.8	9.9	34.8	23.7	56.0	46.0	21.2	22.3
0.5303	N	18.5	10.3	9.9	28.4	20.2	56.0	46.0	27.6	25.8
0.5303	L	19.8	9.2	9.9	29.7	19.1	56.0	46.0	26.3	26.9
0.5438	N	21.5	12.5	9.9	31.4	22.4	56.0	46.0	24.6	23.6
0.5438	L	22.8	11.7	9.9	32.7	21.6	56.0	46.0	23.3	24.4
3.6938	L	22.8	12.5	10.0	32.8	22.5	56.0	46.0	23.2	23.5
3.7343	N	22.0	10.7	10.0	32.0	20.7	56.0	46.0	24.0	25.3
4.7085	L	23.2	13.6	10.1	33.3	23.7	56.0	46.0	22.7	22.3
4.7467	N	22.8	13.3	10.1	32.9	23.4	56.0	46.0	23.1	22.6
6.3398	N	28.1	17.2	10.2	38.3	27.4	60.0	50.0	21.7	22.6
6.3398	L	28.2	17.7	10.1	38.3	27.8	60.0	50.0	21.7	22.2
7.1160	N	28.5	17.6	10.2	38.7	27.8	60.0	50.0	21.3	22.2
7.1160	L	28.9	17.8	10.2	39.1	28.0	60.0	50.0	20.9	22.0
8.0318	N	28.9	18.0	10.3	39.2	28.3	60.0	50.0	20.8	21.7
8.0318	L	29.5	18.4	10.3	39.8	28.7	60.0	50.0	20.2	21.3
8.7090	N	27.2	16.8	10.3	37.5	27.1	60.0	50.0	22.5	22.9
8.7090	L	27.8	17.2	10.3	38.1	27.5	60.0	50.0	21.9	22.5
9.7260	N	26.5	14.8	10.4	36.9	25.2	60.0	50.0	23.1	24.8
9.7260	L	27.1	15.2	10.3	37.4	25.5	60.0	50.0	22.6	24.5
17.8553	N	23.9	9.1	10.7	34.6	19.8	60.0	50.0	25.4	30.2
17.8553	L	23.5	9.4	10.7	34.2	20.1	60.0	50.0	25.8	29.9
24.0000	N	21.2	12.7	11.0	32.2	23.7	60.0	50.0	27.8	26.3
24.0000	L	21.1	13.3	10.9	32.0	24.2	60.0	50.0	28.0	25.8

Note: Level QP = Reading QP + Factor, Level AV = Reading AV + Factor

7. List of Tables

Table 1: Test Summary 5
Table 2: List of Test and Measurement Equipment 7
Table 3: Measurement Uncertainty 9
Table 4: Setting of Test Frequencies 12
Table 5: Interfaces present on the EUT 14
Table 6: EUT Serial Numbers 14
Table 7: Maximum Peak Output Power, BLE, 1Mbps 20
Table 8: Maximum Peak Output Power, BLE, 2Mbps 20
Table 9: 6dB Bandwidth, BLE, 1Mbps 22
Table 10: 6dB Bandwidth, BLE, 2Mbps 24
Table 11: 99% Bandwidth, BLE, 1Mbps 27
Table 12: 99% Bandwidth, BLE, 2Mbps 29
Table 13: Peak Power Spectral Density, BLE, 1Mbps 39
Table 14: Peak Power Spectral Density, BLE, 2Mbps 41
Table 15: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, BLE, Mode L (2402MHz), 1Mbps 45
Table 16: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps 45
Table 17: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps 46
Table 18: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 1Mbps 46
Table 19: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 1Mbps 47
Table 20: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 1Mbps 47
Table 21: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 1Mbps 48
Table 22: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 1Mbps 48
Table 23: Restricted-band Band-edge, BLE, 1Mbps 49
Table 24: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps 52
Table 25: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps 53
Table 26: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode L (2402MHz), 2Mbps 53
Table 27: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 2Mbps 54
Table 28: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode M (2442MHz), 2Mbps 54
Table 29: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 2Mbps 55
Table 30: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, BLE, Mode H (2480MHz), 2Mbps 55
Table 31: Restricted-band Band-edge, BLE, 2Mbps 56
Table 32: AC Power Line Conducted Emission, 0.15 - 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), BLE, 1M, Mode H, (2480MHz) 60

8. List of Figures

Figure 1: Block Diagram 13

Figure 2: 6dB Bandwidth, BLE, Mode L (2402MHz), 1Mbps 22
Figure 3: 6dB Bandwidth, BLE, Mode M (2442MHz), 1Mbps 22
Figure 4: 6dB Bandwidth, BLE, Mode H (2480MHz), 1Mbps 23
Figure 5: 6dB Bandwidth, BLE, Mode L (2402MHz), 2Mbps 24
Figure 6: 6dB Bandwidth, BLE, Mode M (2442MHz), 2Mbps 24
Figure 7: 6dB Bandwidth, BLE, Mode H (2480MHz), 2Mbps 25
Figure 8: 99% Bandwidth, BLE, Mode L (2402MHz), 1Mbps 27
Figure 9: 99% Bandwidth, BLE, Mode M (2442MHz), 1Mbps 27
Figure 10: 99% Bandwidth, BLE, Mode H (2480MHz), 1Mbps 28
Figure 11: 99% Bandwidth, BLE, Mode L (2402MHz), 2Mbps 29
Figure 12: 99% Bandwidth, BLE, Mode M (2442MHz), 2Mbps 29
Figure 13: 99% Bandwidth, BLE, Mode H (2480MHz), 2Mbps 30
Figure 14: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode L (2402MHz), 1Mbps 32
Figure 15: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode M (2442MHz), 1Mbps 32
Figure 16: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode H (2480MHz), 1Mbps 33
Figure 17: Authorized-band band-edge, BLE, Mode L (2402MHz), 1Mbps 33
Figure 18: Authorized-band band-edge, BLE, Mode H (2480MHz), 1Mbps 34
Figure 19: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode L (2402MHz), 2Mbps 35
Figure 20: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode M (2442MHz), 2Mbps 35
Figure 21: Conducted Spurious Emissions, 30MHz - 25GHz, BLE, Mode H (2480MHz), 2Mbps 36
Figure 22: Authorized-band band-edge, BLE, Mode L (2402MHz), 2Mbps 36
Figure 23: Authorized-band band-edge, BLE, Mode H (2480MHz), 2Mbps 37
Figure 24: Power Spectral Density, BLE, Mode L (2402MHz), 1Mbps 39
Figure 25: Power Spectral Density, BLE, Mode M (2442MHz), 1Mbps 40
Figure 26: Power Spectral Density, BLE, Mode H (2480MHz), 1Mbps 40
Figure 27: Power Spectral Density, BLE, Mode L (2402MHz), 2Mbps 41
Figure 28: Power Spectral Density, BLE, Mode M (2442MHz), 2Mbps 42
Figure 29: Power Spectral Density, BLE, Mode H (2480MHz), 2Mbps 42
Figure 30: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 1Mbps, Horizontal Antenna Orientation 49
Figure 31: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 1Mbps, Vertical Antenna Orientation 50
Figure 32: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 1Mbps, Horizontal Antenna Orientation 50
Figure 33: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 1Mbps, Vertical Antenna Orientation 51
Figure 34: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 2Mbps, Horizontal Antenna Orientation 56
Figure 35: Restricted-band Band-edge, Spectral Diagram, BLE, Mode L (2402MHz), 2Mbps, Vertical Antenna Orientation 57
Figure 36: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 2Mbps, Horizontal Antenna Orientation 57
Figure 37: Restricted-band Band-edge, Spectral Diagram, BLE, Mode H (2480MHz), 2Mbps, Vertical Antenna Orientation 58

9. List of Photographs

Photograph 1: Set-up for Antenna Port Conducted Emission of Transmitter, General View 61
Photograph 2: Set-up for Radiated Spurious Emission below 30MHz 61
Photograph 3: Set-up for Radiated Spurious Emission below 1GHz, Front View 62
Photograph 4: Set-up for Radiated Spurious Emission below 1GHz, Rear View 62
Photograph 5: Set-up for Radiated Spurious Emission above 1GHz, Front View 63
Photograph 6: Set-up for Radiated Spurious Emission above 1GHz, Rear View 63

Photograph 7: Set-up for AC Power Line Conducted Emission, Front View.....64
Photograph 8: Set-up for AC Power Line Conducted Emission, Rear View.....64
Photograph 9: Set-up for X-Axis of the EUT.....65
Photograph 10: Set-up for Y-Axis of the EUT.....65
Photograph 11: Set-up for Z-Axis of the EUT.....66

– End of test report –