**CFR 47 FCC PART 15 SUBPART C,**

# TEST REPORT

*For*

**Bluetooth switch module**

**MODEL NUMBER: DL-BTSW**

**REPORT NUMBER: E04A25120555F01301**

**ISSUE DATE: March 10, 2026**

**FCC ID: 2BRGN-DL-BTSW**

*Prepared for*

**Dongguan Daly Electronics Co., Ltd.**
**Room 901, Building 2, No.14 Gongye South Road, Songshan LakePark, Dongguan City, Guangdong Province**

*Prepared by*

**Guangdong Global Testing Technology Co., Ltd.**

**Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park, Dongguan city, Guangdong, People's Republic of China, 523808**

**This report is based on a single evaluation of the submitted sample(s) of the above mentioned product, it does not imply an assessment of the production of the products. This report shall not be reproduced, except in full, without the written approval of Guangdong Global Testing Technology Co., Ltd.**

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V0 | March 10, 2026 | Initial Issue | |

## Summary of Test Results

| Test Item | Limit/Requirement | Result |
|---|---|---|
| Antenna Requirement | FCC Part 15.203/15.247 (c) | Pass |
| AC Power Line Conducted Emission | FCC Part 15.207 | N/A[1] |
| Conducted Output Power | FCC Part 15.247 (b)(3) | Pass |
| 6dB Bandwidth and 99% Occupied Bandwidth | FCC Part 15.247 (a)(2) | Pass |
| Power Spectral Density | FCC Part 15.247 (e) | Pass |
| Conducted Band edge and spurious emission | FCC Part 15.247(d) | Pass |
| Radiated Band edge and Spurious Emission | FCC Part 15.247 (d)<br>FCC Part 15.205/15.209 | Pass |
| Duty Cycle | None; for reporting purposes only. | Pass |

1. The EUT is powered by DC 3.3V.

*This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
*The measurement result for the sample received is <Pass> according to <CFR 47 FCC PART 15 SUBPART C> when <Accuracy Method> decision rule is applied.

# CONTENTS

**1. ATTESTATION OF TEST RESULTS ..... 5**

**2. TEST METHODOLOGY ..... 6**

**3. FACILITIES AND ACCREDITATION ..... 6**

**4. CALIBRATION AND UNCERTAINTY ..... 7**

*4.1. MEASURING INSTRUMENT CALIBRATION ..... 7*

*4.2. MEASUREMENT UNCERTAINTY ..... 7*

**5. EQUIPMENT UNDER TEST ..... 8**

*5.1. DESCRIPTION OF EUT ..... 8*

*5.2. CHANNEL LIST ..... 8*

*5.3. MAXIMUM PEAK OUTPUT POWER ..... 9*

*5.4. TEST CHANNEL CONFIGURATION ..... 9*

*5.5. THE WORSE CASE POWER SETTING PARAMETER ..... 9*

*5.6. DESCRIPTION OF AVAILABLE ANTENNAS ..... 9*

*5.7. SUPPORT UNITS FOR SYSTEM TEST ..... 9*

*5.8. SETUP DIAGRAM ..... 10*

**6. MEASURING EQUIPMENT AND SOFTWARE USED ..... 11**

**7. ANTENNA PORT TEST RESULTS ..... 13**

*7.1. Conducted Output Power ..... 13*

*7.2. 6dB Bandwidth and 99% Occupied Bandwidth ..... 14*

*7.3. Power Spectral Density ..... 16*

*7.4. Conducted Band edge and spurious emission ..... 17*

*7.5. Duty Cycle ..... 19*

**8. RADIATED TEST RESULTS ..... 20**

*8.1. Radiated Band edge and Spurious Emission ..... 25*

**9. ANTENNA REQUIREMENT ..... 37**

# 1. ATTESTATION OF TEST RESULTS

**Applicant Information**

| | |
|---|---|
| Company Name: | Dongguan Daly Electronics Co., Ltd. |
| Address: | Room 901, Building 2, No.14 Gongye South Road, Songshan LakePark, Dongguan City, Guangdong Province |

**Manufacturer Information**

| | |
|---|---|
| Company Name: | Dongguan Daly Electronics Co., Ltd. |
| Address: | Room 901, Building 2, No.14 Gongye South Road, Songshan LakePark, Dongguan City, Guangdong Province |

**EUT Information**

| | |
|---|---|
| Product Description: | Bluetooth switch module |
| Model: | DL-BTSW |
| Series Model: | / |
| Brand: | DALY |
| Sample Received Date: | January 22, 2026 |
| Sample Status: | Normal |
| Sample ID: | A25120555 001 |
| Date of Tested: | January 22, 2026 to March 10, 2026 |

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| **CFR 47 FCC PART 15 SUBPART C** | **Pass** |

Prepared By:

Jok Tang

Project Engineer

Approved By:

Shawn Wen

Laboratory Manager

Checked By:

Alan He

Laboratory Leader

Guangdong Global Testing Technology Co., Ltd. GTG * CERTIFICATE *

## 2. TEST METHODOLOGY

All tests were performed in accordance with the standard CFR 47 FCC PART 15 SUBPART C

## 3. FACILITIES AND ACCREDITATION

| | |
|---|---|
| Accreditation Certificate | **A2LA (Certificate No.: 6947.01)**<br>Guangdong Global Testing Technology Co., Ltd.<br>has been assessed and proved to be in compliance with A2LA.<br>**FCC (FCC Designation No.: CN1343)**<br>Guangdong Global Testing Technology Co., Ltd.<br>has been recognized to perform compliance testing on equipment subject to Supplier's Declaration of Conformity (SDoC) and Certification rules<br>**ISED (Company No.: 30714)**<br>Guangdong Global Testing Technology Co., Ltd.<br>has been registered and fully described in a report filed with ISED. The Company Number is 30714 and the test lab Conformity Assessment Body Identifier (CABID) is CN0148. |

Note: All tests measurement facilities use to collect the measurement data are located at Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park, Dongguan city, Guangdong, People’s Republic of China, 523808

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

## 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test Items | k | Uncertainty |
|---|---|---|
| DTS Bandwidth | 1.96 | ±9.2 PPM |
| 20dB Emission Bandwidth | 1.96 | ±9.2 PPM |
| Carrier Frequency Separation | 1.96 | ±9.2 PPM |
| Time of Occupancy | 1.96 | ±0.57% |
| Conducted Output Power | 1.96 | ±1.5 dB |
| Power Spectral Density Level | 1.96 | ±1.9 dB |
| Conducted Spurious Emission | 1.96 | 9 kHz-30 MHz: ± 0.95 dB<br>30 MHz-1 GHz: ± 1.5 dB<br>1GHz-12.75GHz: ± 1.8 dB<br>12.75 GHz-26.5 GHz: ± 2.1dB |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96. | | |

| Test Item | Measurement Frequency Range | K | U(dB) |
|---|---|---|---|
| Conducted emissions from the AC mains power ports (AMN) | 150 kHz ~ 30 MHz | 2 | 3.37 |
| Radiated emissions | 9 kHz ~ 30 MHz | 2 | 4.16 |
| Radiated emissions | 30 MHz ~ 1 GHz | 2 | 3.79 |
| Radiated emissions | 1 GHz ~ 18 GHz | 2 | 5.62 |
| Radiated emissions | 18 GHz ~ 40 GHz | 2 | 5.54 |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. | | | |

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

| | | |
|---|---|---|
| EUT Name | | Bluetooth switch module |
| Model | | DL-BTSW |
| Series Model | | / |
| Model difference | | / |
| Hardware Version | | DL-BTSW V1.1 |
| Software Version | | 2.3.29 |
| Ratings | | DC 3.3V |
| Power Supply | DC | 3.3V |

| | |
|---|---|
| Frequency Band: | 2400 MHz to 2483.5 MHz |
| Frequency Range: | 2402 MHz to 2480 MHz |
| Bluetooth Version: | 5.0 |
| Type of Modulation: | GFSK |
| Number of Channels: | 40 |
| Channel Separation: | 2 MHz |
| Maximum Peak Power: | 2.87 dBm |
| Antenna Type: | Internal antenna |
| Antenna Gain: | -0.58 dBi |
| EUT Test software: | EMI_Test_Tool |
| Note: | 1.The Antenna Gain was provided by customer, and this information may affect the validity of the results, customer should be responsible for this. |

## 5.2. CHANNEL LIST

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 0 | 2402 | 11 | 2424 | 22 | 2446 | 33 | 2468 |
| 1 | 2404 | 12 | 2426 | 23 | 2448 | 34 | 2470 |
| 2 | 2406 | 13 | 2428 | 24 | 2450 | 35 | 2472 |
| 3 | 2408 | 14 | 2430 | 25 | 2452 | 36 | 2474 |
| 4 | 2410 | 15 | 2432 | 26 | 2454 | 37 | 2476 |
| 5 | 2412 | 16 | 2434 | 27 | 2456 | 38 | 2478 |
| 6 | 2414 | 17 | 2436 | 28 | 2458 | 39 | 2480 |
| 7 | 2416 | 18 | 2438 | 29 | 2460 | / | / |
| 8 | 2418 | 19 | 2440 | 30 | 2462 | / | / |
| 9 | 2420 | 20 | 2442 | 31 | 2464 | / | / |
| 10 | 2422 | 21 | 2444 | 32 | 2468 | / | / |

## 5.3. MAXIMUM PEAK OUTPUT POWER

| Test Mode | Frequency (MHz) | Channel Number | Maximum Peak Output Power (dBm) |
|---|---|---|---|
| GFSK(1Mbps) | 2402 ~ 2480 | 0-39[40] | 2.86 |
| GFSK(2Mbps) | 2402 ~ 2480 | 0-39[40] | 2.87 |

## 5.4. TEST CHANNEL CONFIGURATION

| Test Mode | Test Channel | Frequency |
|---|---|---|
| GFSK(1Mbps) | CH 0(Low Channel), CH 19(MID Channel), CH 39(High Channel) | 2402 MHz, 2440 MHz, 2480 MHz |
| GFSK(2Mbps) | CH 0(Low Channel), CH 19(MID Channel), CH 39(High Channel) | 2402 MHz, 2440 MHz, 2480 MHz |

## 5.5. THE WORSE CASE POWER SETTING PARAMETER

| The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band | | | | |
|---|---|---|---|---|
| Test Software Version | | EMI_Test_Tool | | |
| Modulation Type | Transmit Antenna Number | Test Software setting value | | |
| | | CH 0 | CH 19 | CH 39 |
| GFSK(1Mbps) | 1 | 0.6 | 0.6 | 0.6 |
| GFSK(2Mbps) | 1 | 0.6 | 0.6 | 0.6 |

## 5.6. DESCRIPTION OF AVAILABLE ANTENNAS

| Antenna | Frequency (MHz) | Antenna Type | MAX Antenna Gain (dBi) |
|---|---|---|---|
| 1 | 2402-2480 | Internal antenna | -0.58 |

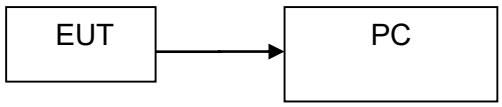
| Test Mode | Transmit and Receive Mode | Description |
|---|---|---|
| GFSK(1Mbps) | ☒1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |
| GFSK(2Mbps) | ☒1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |

## 5.7. SUPPORT UNITS FOR SYSTEM TEST

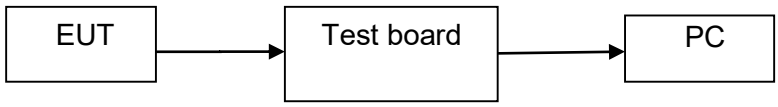
| No. | Equipment | Manufacturer | Model No. | Serial No. |
|---|---|---|---|---|
| 1 | PC | Lenovo | T14 | / |
| 2 | Test board | / | / | / |

## 5.8. SETUP DIAGRAM

Radiated Emission:




RF conducted:



# 6. MEASURING EQUIPMENT AND SOFTWARE USED

| Test Equipment of Conducted RF | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Due Date** |
| Spectrum Analyzer | Rohde & Schwarz | FSV40 | 102257 | 2025/08/25 | 2026/08/24 |
| Spectrum Analyzer | KEYSIGHT | N9020A | MY51285127 | 2025/08/25 | 2026/08/24 |
| EXG Analog Signal Generator | KEYSIGHT | N5173B | MY61253075 | 2025/08/25 | 2026/08/24 |
| Vector Signal Generator | Rohde & Schwarz | SMM100A | 101899 | 2025/08/25 | 2026/08/24 |
| RF Control box | MWRF-test | MW100-RFCB | MW220926GTG | 2025/08/25 | 2026/08/24 |
| Wideband Radio Communication Tester | Rohde & Schwarz | CMW270 | 102792 | 2025/08/25 | 2026/08/24 |
| Wideband Radio Communication Tester | Rohde & Schwarz | CMW500 | 103235 | 2025/08/25 | 2026/08/24 |
| temperature humidity chamber | Espec | SH-241 | SH-241-2014 | 2025/08/25 | 2026/08/24 |
| RF Test Software | MWRF-test | MTS8310E (Ver. V2/0) | N/A | N/A | N/A |

| Test Equipment of Radiated emissions below 1GHz | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Due Date** |
| 3m Semi-anechoic Chamber | ETS | 9m*6m*6m | Q2146 | 2025/08/23 | 2026/08/22 |
| EMI Test Receiver | Rohde & Schwarz | ESCI3 | 101144 | 2025/08/23 | 2026/08/22 |
| Pre-Amplifier | HzEMC | HPA-9K0130 | HYPA21001 | 2025/08/23 | 2026/08/22 |
| Biconilog Antenna | Schwarzbeck | VULB 9168 | 01315 | 2025/09/20 | 2028/09/19 |
| Biconilog Antenna | ETS | 3142E | 00243651 | 2025/02/22 | 2028/02/21 |
| Loop Antenna | ETS | 6502 | 00243668 | 2025/02/22 | 2028/02/21 |
| Test Software | Farad | EZ-EMC (Ver.FA-03A2 RE) | N/A | N/A | N/A |

| Test Equipment of Radiated emissions above 1GHz | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Due Date** |
| 3m Semi-anechoic Chamber | ETS | 9m*6m*6m | Q2149 | 2025/08/23 | 2026/08/22 |
| Spectrum Analyzer | Rohde & Schwarz | FSV40 | 101413 | 2025/08/23 | 2026/08/22 |
| Pre-Amplifier | HzEMC | HPA-1G1850 | HYPA21003 | 2025/08/23 | 2026/08/22 |
| Horn antenna | ETS | 3117 | 00246069 | 2025/02/22 | 2028/02/21 |
| Pre-Amplifier | HzEMC | HPA-184057 | HYPA21004 | 2025/08/23 | 2026/08/22 |
| Horn antenna | ETS | 3116C | 00246265 | 2025/02/22 | 2028/02/21 |
| RF Filter Bank | HzEMC | HSW-F18 | HSWF2218E01 | 2025/08/23 | 2026/08/22 |

| | | | | | |
|---|---|---|---|---|---|
| RF Filter Bank | HzEMC | HPF18 | HPF2218E02 | 2025/08/23 | 2026/08/22 |
| Test Software | Farad | EZ-EMC (Ver.FA-03A2 RE+) | N/A | N/A | N/A |

# 7. ANTENNA PORT TEST RESULTS

## 7.1. CONDUCTED OUTPUT POWER

**LIMITS**

| CFR 47 FCC Part15 (15.247) Subpart C | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| CFR 47 FCC 15.247(b)(3) | Peak Conduct Output Power | 1 watt or 30 dBm | 2400-2483.5 |

**TEST PROCEDURE**

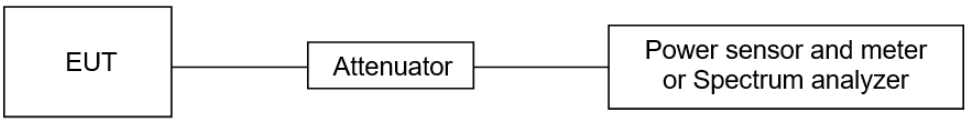
Refer to ANSI C63.10-2020 clause 11.9.1(FCC).

Connect the EUT to the spectrum Analyzer and use the following settings:

| | |
|---|---|
| Center Frequency | The center frequency of the channel under test |
| Detector | Peak |
| RBW | ≥DTS bandwidth |
| VBW | ≥3×RBW |
| Span | ≥3×RBW |
| Trace | Max hold |
| Sweep time | Auto |

Allow trace to stabilize.
Use the marker-to-peak function to set the marker to the peak of the emission.

**TEST SETUP**




**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 22.1℃ | Relative Humidity | 50% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

Please refer to section "Test Data" - Appendix A

## 7.2. 6DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

**LIMITS**

| CFR 47 FCC Part15 (15.247) Subpart C | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| CFR 47 FCC 15.247(a)(2) | 6 dB Bandwidth | ≥ 500 kHz | 2400-2483.5 |

**TEST PROCEDURE**

Refer to ANSI C63.10-2020 clause 11.8 for DTS bandwidth and clause 6.9 for Occupied Bandwidth(FCC).

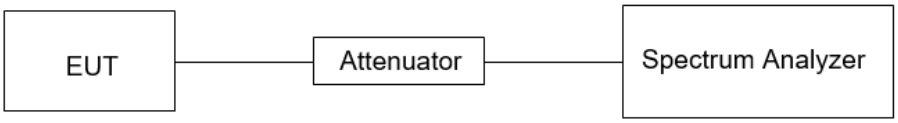
Connect the EUT to the spectrum analyser and use the following settings:

| | |
|---|---|
| Center Frequency | The center frequency of the channel under test |
| Frequency Span | For 6 dB Bandwidth: Enough to capture all products of the modulation carrier emission<br>For 99 % Occupied Bandwidth: Between 1.5 times and 5.0 times the OBW |
| Detector | Peak |
| RBW | For 6 dB Bandwidth: 100 kHz<br>For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth |
| VBW | For 6 dB Bandwidth: ≥3 × RBW<br>For 99 % Occupied Bandwidth: ≥3 × RBW |
| Trace | Max hold |
| Sweep | Auto couple |

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

b) Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**TEST SETUP**



**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 22.1℃ | Relative Humidity | 50% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

Please refer to section "Test Data" - Appendix A

## 7.3. POWER SPECTRAL DENSITY

**LIMITS**

| CFR 47 FCC Part15 (15.247) Subpart C | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| CFR 47 FCC §15.247 (e) | Power Spectral Density | 8 dBm in any 3 kHz band | 2400-2483.5 |

**TEST PROCEDURE**

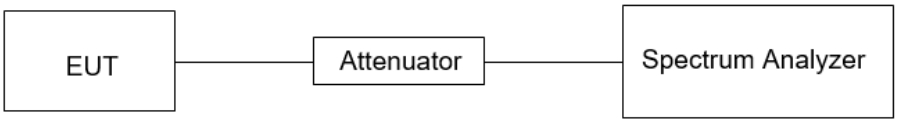
Refer to ANSI C63.10-2020 clause 11.10(FCC).

Connect the EUT to the spectrum analyser and use the following settings:

| | |
|---|---|
| Center Frequency | The center frequency of the channel under test |
| Detector | PEAK |
| RBW | 3 kHz ≤ RBW ≤ 100 kHz |
| VBW | ≥3 × RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple |

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**TEST SETUP**




**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 22.1℃ | Relative Humidity | 50% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

Please refer to section "Test Data" - Appendix A

NOTE: **1.dBm/3kHz=dBm/30kHz-10log(30/3)**

## 7.4. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

**LIMITS**

| CFR 47 FCC Part15 (15.247) Subpart C | | |
|---|---|---|
| Section | Test Item | Limit |
| CFR 47 FCC §15.247 (d) | Conducted Bandedge and Spurious Emissions | at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power |

**TEST PROCEDURE**

Refer to ANSI C63.10-2020 clause 11.11 and 11.13(FCC).

Connect the EUT to the spectrum analyser and use the following settings for reference level measurement:

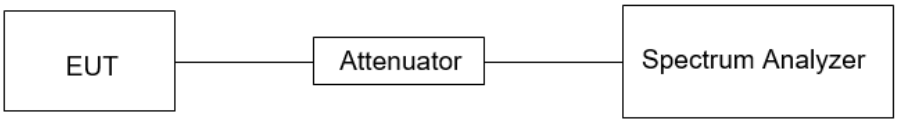
| | |
|---|---|
| Center Frequency | The center frequency of the channel under test |
| Detector | Peak |
| RBW | 100 kHz |
| VBW | ≥3 × RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level.
Change the settings for emission level measurement:

| | |
|---|---|
| Span | Set the center frequency and span to encompass frequency range to be measured |
| Detector | Peak |
| RBW | 100 kHz |
| VBW | ≥3 × RBW |
| measurement points | ≥span/RBW |
| Trace | Max hold |
| Sweep time | Auto couple. |

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11.

**TEST SETUP**




**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 22.1℃ | Relative Humidity | 50% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

Please refer to section "Test Data" - Appendix A

## 7.5. DUTY CYCLE

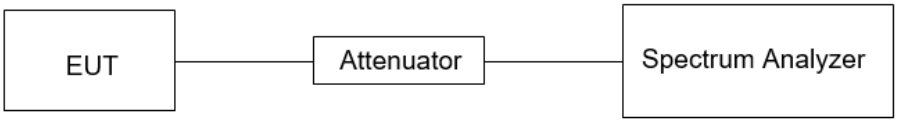
**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

Refer to ANSI C63.10-2020 clause 11.6 Zero – Span Spectrum Analyzer method(FCC).

**TEST SETUP**




**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 22.1℃ | Relative Humidity | 50% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

Please refer to section "Test Data" - Appendix A

# 8. RADIATED TEST RESULTS

**LIMITS**

Please refer to CFR 47 FCC §15.205 and §15.209.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

| Emissions radiated outside of the specified frequency bands above 30 MHz | | | |
|---|---|---|---|
| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m | |
| | | Quasi-Peak | |
| 30 - 88 | 100 | 40 | |
| 88 - 216 | 150 | 43.5 | |
| 216 - 960 | 200 | 46 | |
| Above 960 | 500 | 54 | |
| Above 1000 | 500 | Peak | Average |
| | | 74 | 54 |

| FCC Emissions radiated outside of the specified frequency bands below 30 MHz | | |
|---|---|---|
| Frequency (MHz) | Field strength (microvolts/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 |

FCC Restricted bands of operation refer to FCC §15.205 (a):

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| [1]0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | ([2]) |
| 13.36-13.41 | | | |

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

**TEST PROCEDURE**

Below 30 MHz

The setting of the spectrum analyser

| | |
|---|---|
| RBW | 200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz) |
| VBW | 200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz) |
| Sweep | Auto |

1. The testing follows the guidelines in ANSI C63.10-2020 clause 6.4(FCC).

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz

The setting of the spectrum analyser

| | |
|---|---|
| RBW | 120 kHz |
| VBW | 300 kHz |
| Sweep | Auto |
| Detector | Peak/QP |

| | |
|---|---|
| Trace | Max hold |

1. The testing follows the guidelines in ANSI C63.10-2020 clause 6.5(FCC).

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1G

The setting of the spectrum analyser

| | |
|---|---|
| RBW | 1 MHz |
| VBW | PEAK: 3 MHz<br>AVG: see note 6 |
| Sweep | Auto |
| Detector | Peak |
| Trace | Max hold |

1. The testing follows the guidelines in ANSI C63.10-2020 clause 6.6(FCC).

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

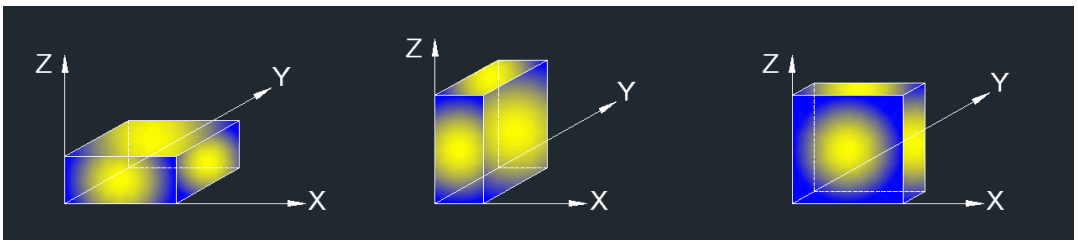
3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

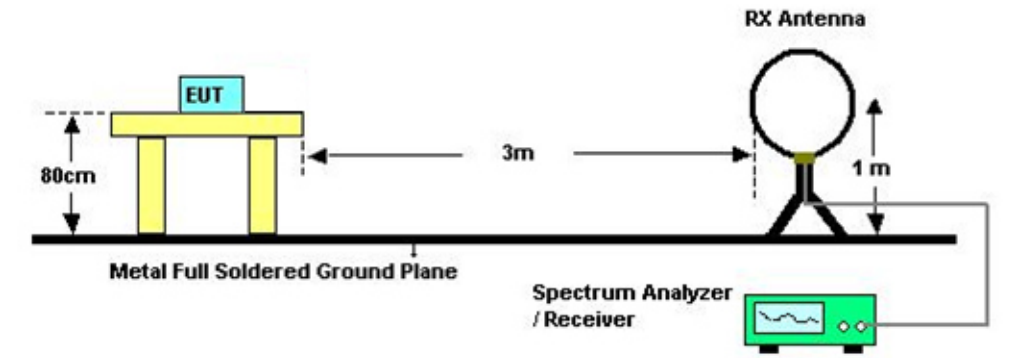
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

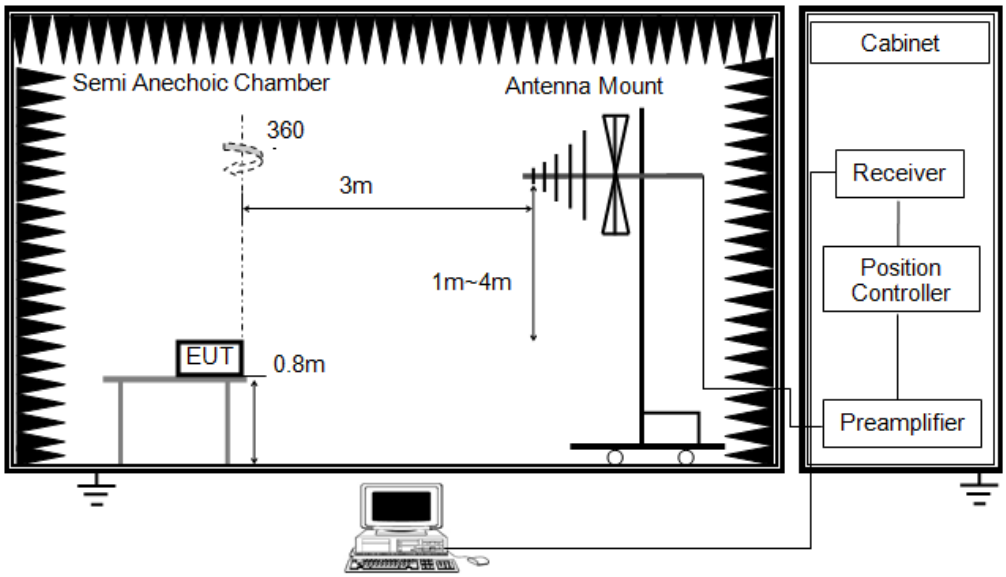
X axis, Y axis, Z axis positions:

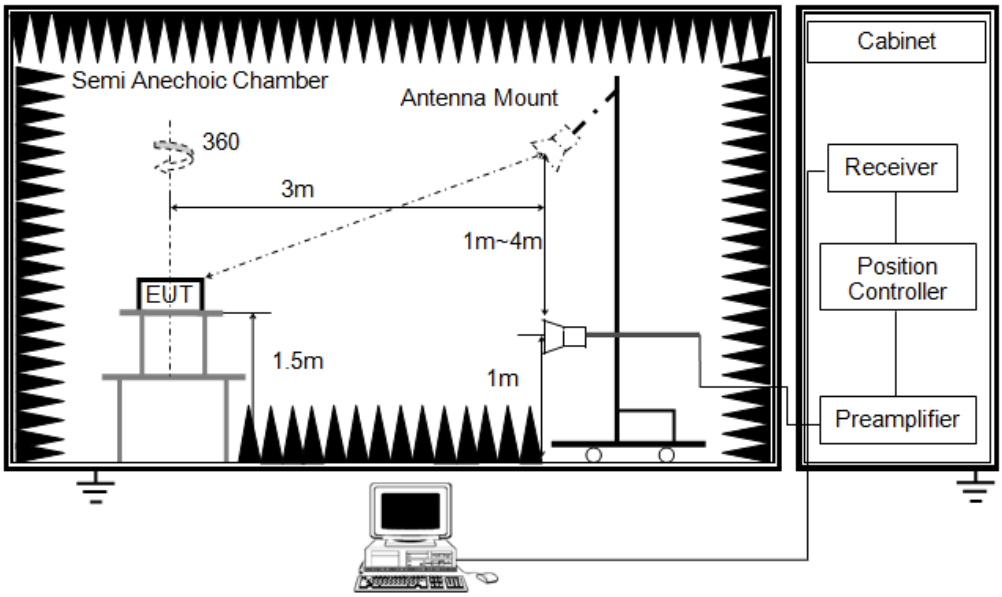



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

**TEST SETUP**





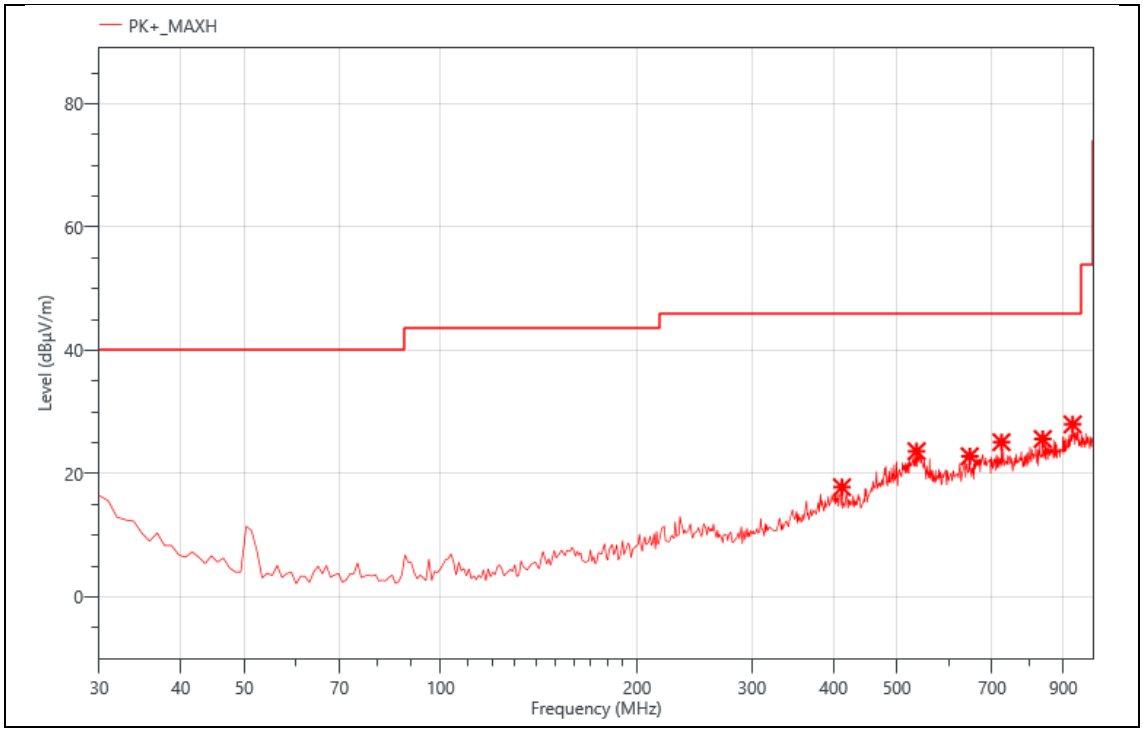

**TEST ENVIRONMENT**

| | | | |
|---|---|---|---|
| Temperature | 21.1℃ | Relative Humidity | 52% |
| Atmosphere Pressure | 101kPa | | |

**TEST RESULTS**

## 8.1. RADIATED BAND EDGE AND SPURIOUS EMISSION

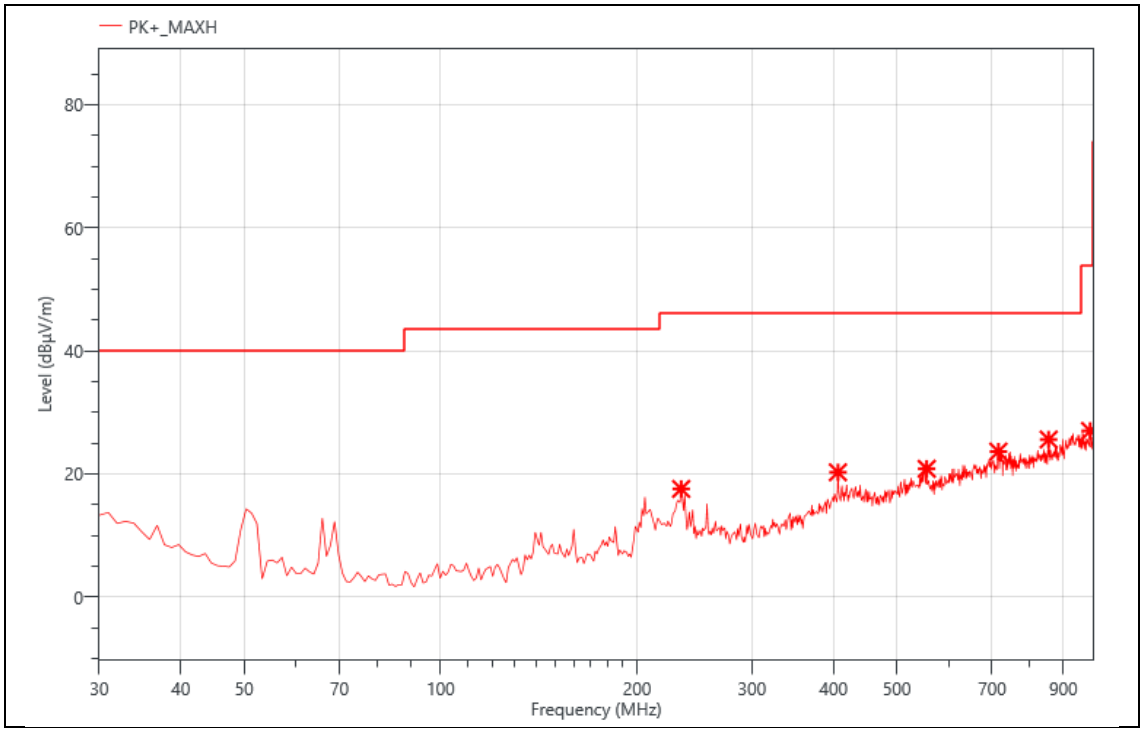
| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




### Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 412.180 | 31.27 | -13.47 | 17.80 | 46.00 | 28.20 | PK+ | V |
| 2 | 536.340 | 33.81 | -10.17 | 23.64 | 46.00 | 22.36 | PK+ | V |
| 3 | 646.920 | 30.95 | -8.13 | 22.82 | 46.00 | 23.18 | PK+ | V |
| 4 | 723.550 | 31.63 | -6.53 | 25.10 | 46.00 | 20.90 | PK+ | V |
| 5 | 837.040 | 30.85 | -5.23 | 25.62 | 46.00 | 20.38 | PK+ | V |
| 6 | 930.160 | 30.10 | -2.1 | 28.00 | 46.00 | 18.00 | PK+ | V |

| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

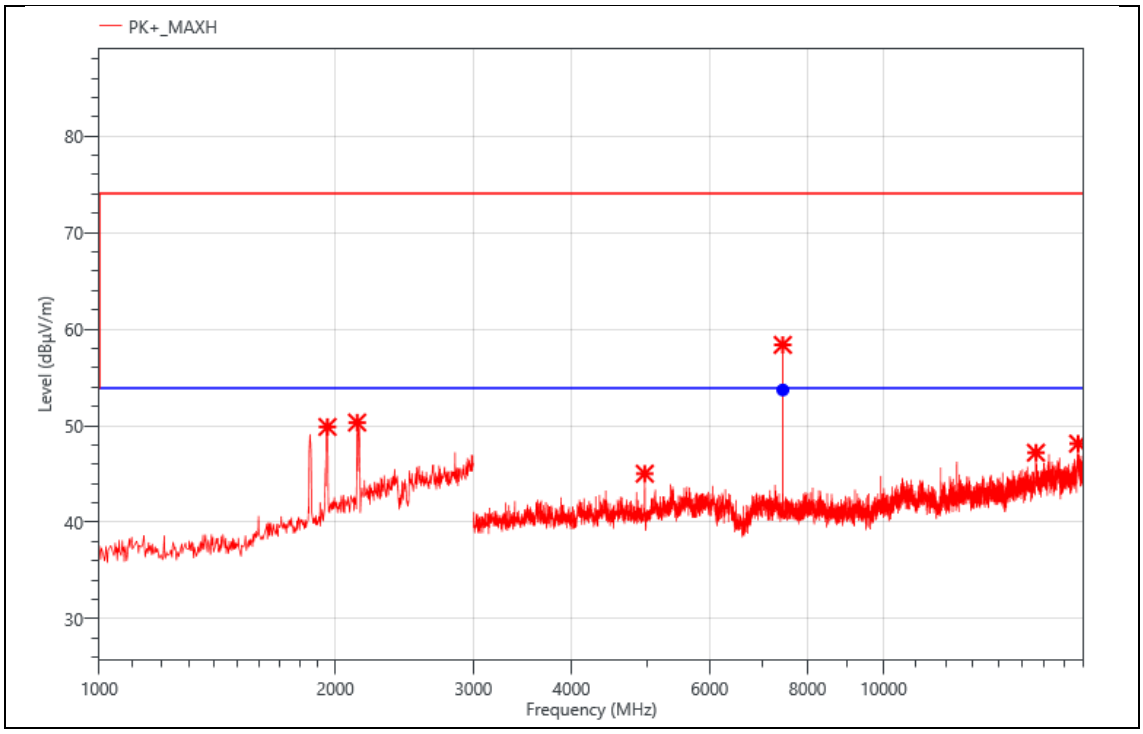
| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 233.700 | 37.21 | -19.64 | 17.57 | 46.00 | 28.43 | PK+ | H |
| 2 | 406.360 | 33.68 | -13.41 | 20.27 | 46.00 | 25.73 | PK+ | H |
| 3 | 555.740 | 30.62 | -9.78 | 20.84 | 46.00 | 25.16 | PK+ | H |
| 4 | 715.790 | 30.16 | -6.52 | 23.64 | 46.00 | 22.36 | PK+ | H |
| 5 | 854.500 | 30.64 | -5.04 | 25.60 | 46.00 | 20.40 | PK+ | H |
| 6 | 989.330 | 29.54 | -2.55 | 26.99 | 53.90 | 26.91 | PK+ | H |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Peak: Peak detector.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

For the frequency below 30MHz, a pre-scan was performed, and the result was 20 dB lower than the limit line, the test data was not shown in the report.

| | |
|---|---|
| Mode: | BLE2M-2480 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |

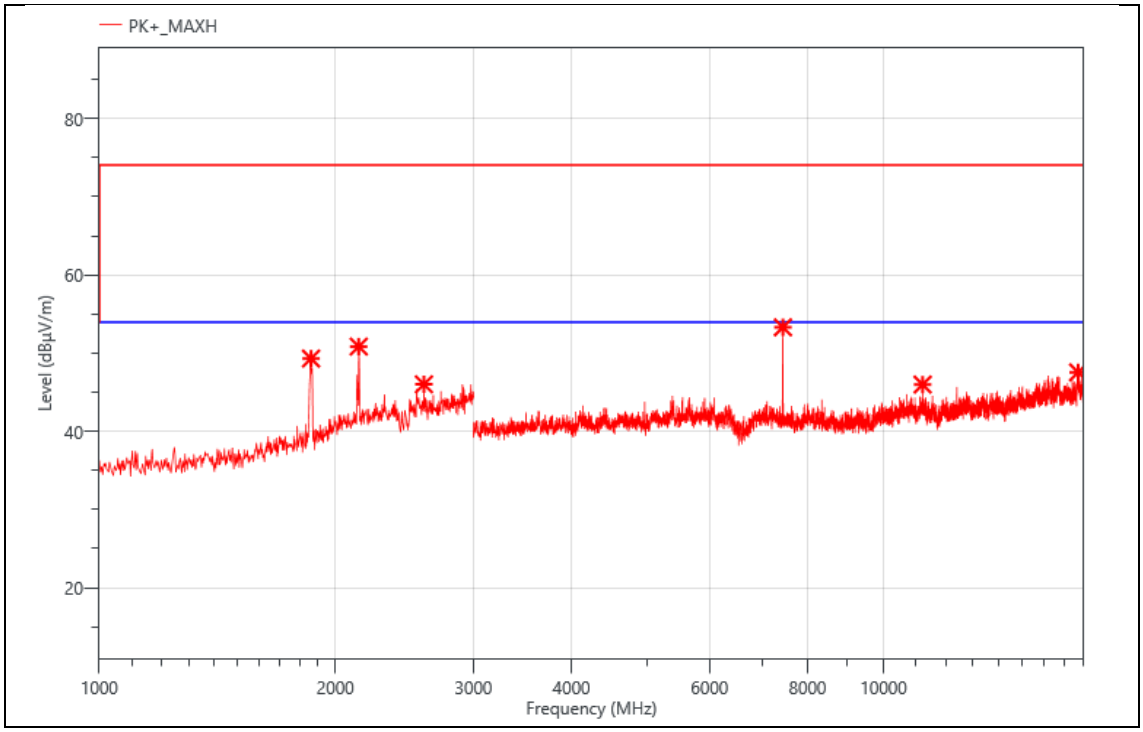



## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1954.000 | 59.39 | -9.52 | 49.87 | 74.00 | 24.13 | PK+ | H |
| 2 | 2132.000 | 59.38 | -9.05 | 50.33 | 74.00 | 23.67 | PK+ | H |
| 3 | 4960.500 | 56.37 | -11.34 | 45.03 | 74.00 | 28.97 | PK+ | H |
| 4 | 7438.500 | 66.32 | -7.95 | 58.37 | 74.00 | 15.63 | PK+ | H |
| 5 | 15642.000 | 49.24 | -2.04 | 47.20 | 74.00 | 26.80 | PK+ | H |
| 6 | 17706.000 | 48.09 | 0.05 | 48.14 | 74.00 | 25.86 | PK+ | H |

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7438.500 | 61.65 | -7.95 | 53.70 | 53.90 | 0.20 | AVG | H | PASS |

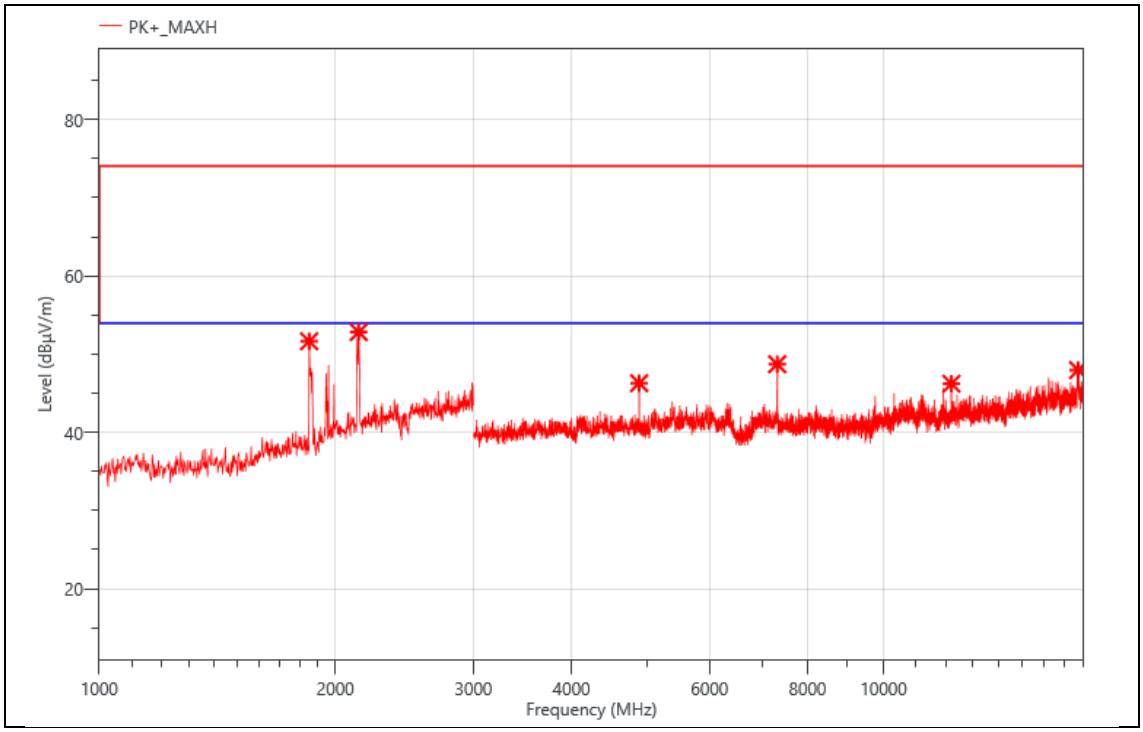
| | |
|---|---|
| Mode: | BLE2M-2480 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1862.000 | 59.71 | -10.41 | 49.30 | 74.00 | 24.70 | PK+ | V |
| 2 | 2142.000 | 59.89 | -9.05 | 50.84 | 74.00 | 23.16 | PK+ | V |
| 3 | 2594.000 | 54.13 | -8.12 | 46.01 | 74.00 | 27.99 | PK+ | V |
| 4 | 7441.500 | 61.28 | -7.98 | 53.30 | 74.00 | 20.70 | PK+ | V |
| 5 | 11215.500 | 50.12 | -4.14 | 45.98 | 74.00 | 28.02 | PK+ | V |
| 6 | 17706.000 | 47.49 | 0.05 | 47.54 | 74.00 | 26.46 | PK+ | V |

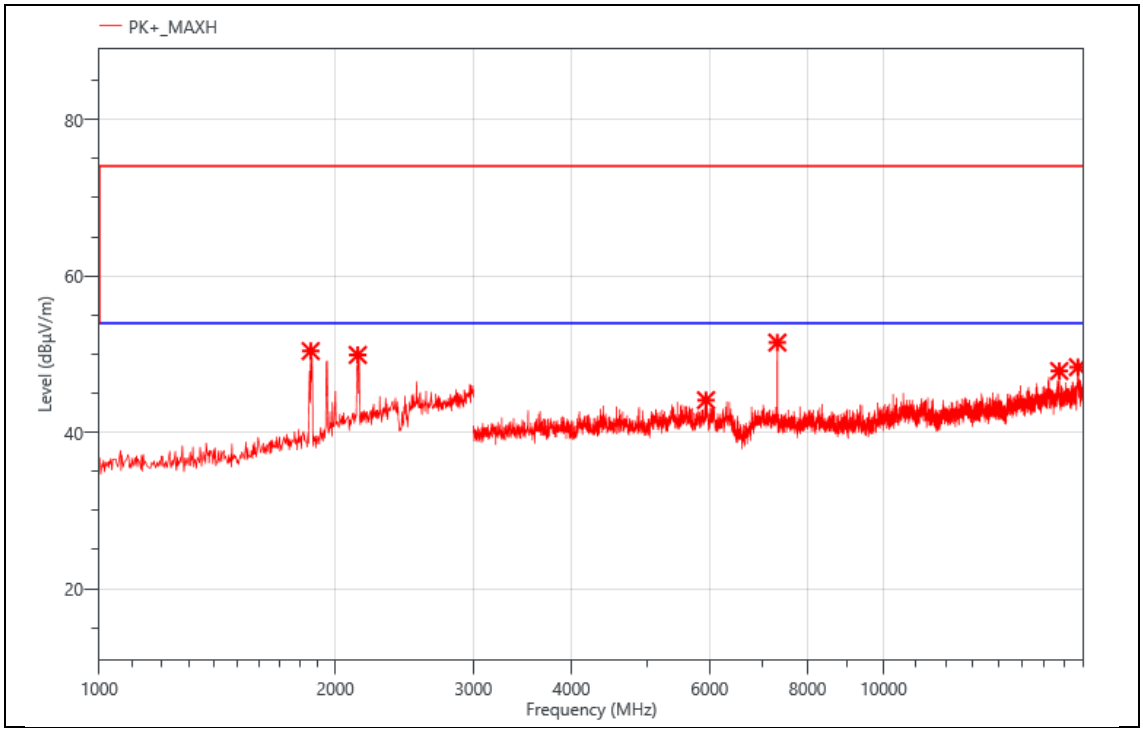
| | |
|---|---|
| Mode: | BLE2M-2440 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1852.000 | 62.12 | -10.47 | 51.65 | 74.00 | 22.35 | PK+ | H |
| 2 | 2142.000 | 61.87 | -9.05 | 52.82 | 74.00 | 21.18 | PK+ | H |
| 3 | 4879.500 | 57.42 | -11.14 | 46.28 | 74.00 | 27.72 | PK+ | H |
| 4 | 7318.500 | 56.53 | -7.82 | 48.71 | 74.00 | 25.29 | PK+ | H |
| 5 | 12202.500 | 50.90 | -4.68 | 46.22 | 74.00 | 27.78 | PK+ | H |
| 6 | 17704.500 | 47.88 | 0.08 | 47.96 | 74.00 | 26.04 | PK+ | H |

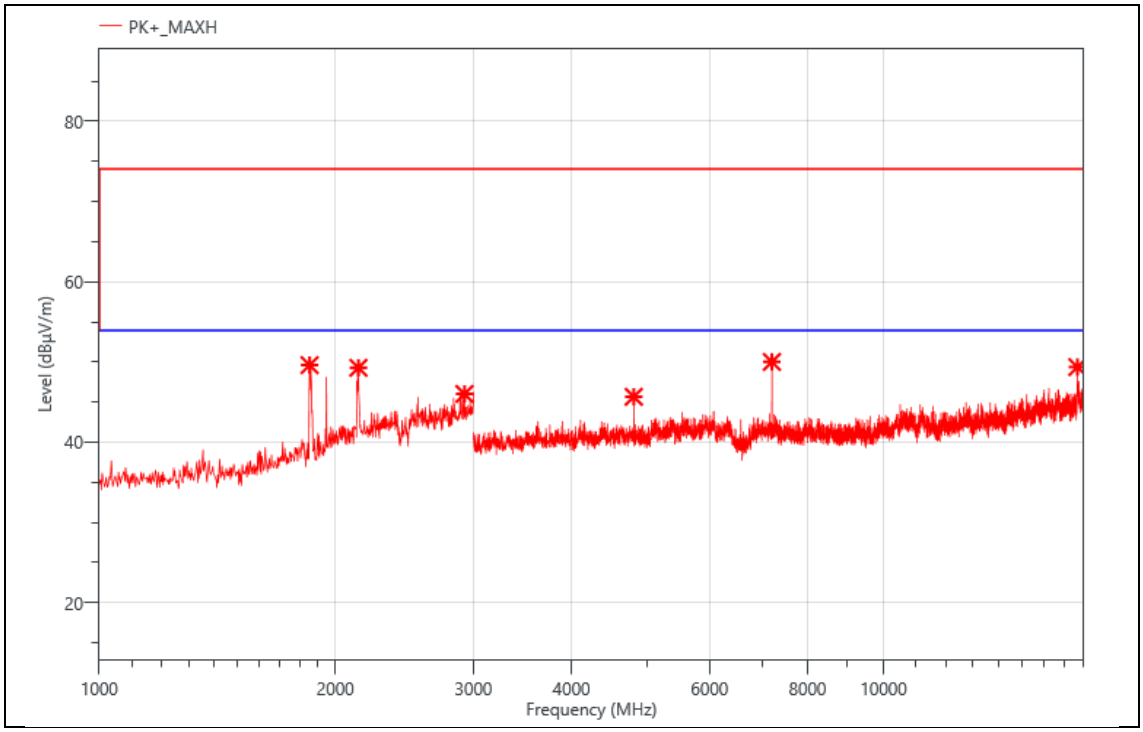
| | |
|---|---|
| Mode: | BLE2M-2440 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1860.000 | 60.81 | -10.42 | 50.39 | 74.00 | 23.61 | PK+ | V |
| 2 | 2136.000 | 58.94 | -9.05 | 49.89 | 74.00 | 24.11 | PK+ | V |
| 3 | 5937.000 | 52.94 | -8.83 | 44.11 | 74.00 | 29.89 | PK+ | V |
| 4 | 7321.500 | 59.39 | -7.91 | 51.48 | 74.00 | 22.52 | PK+ | V |
| 5 | 16752.000 | 48.89 | -1.05 | 47.84 | 74.00 | 26.16 | PK+ | V |
| 6 | 17697.000 | 48.13 | 0.2 | 48.33 | 74.00 | 25.67 | PK+ | V |

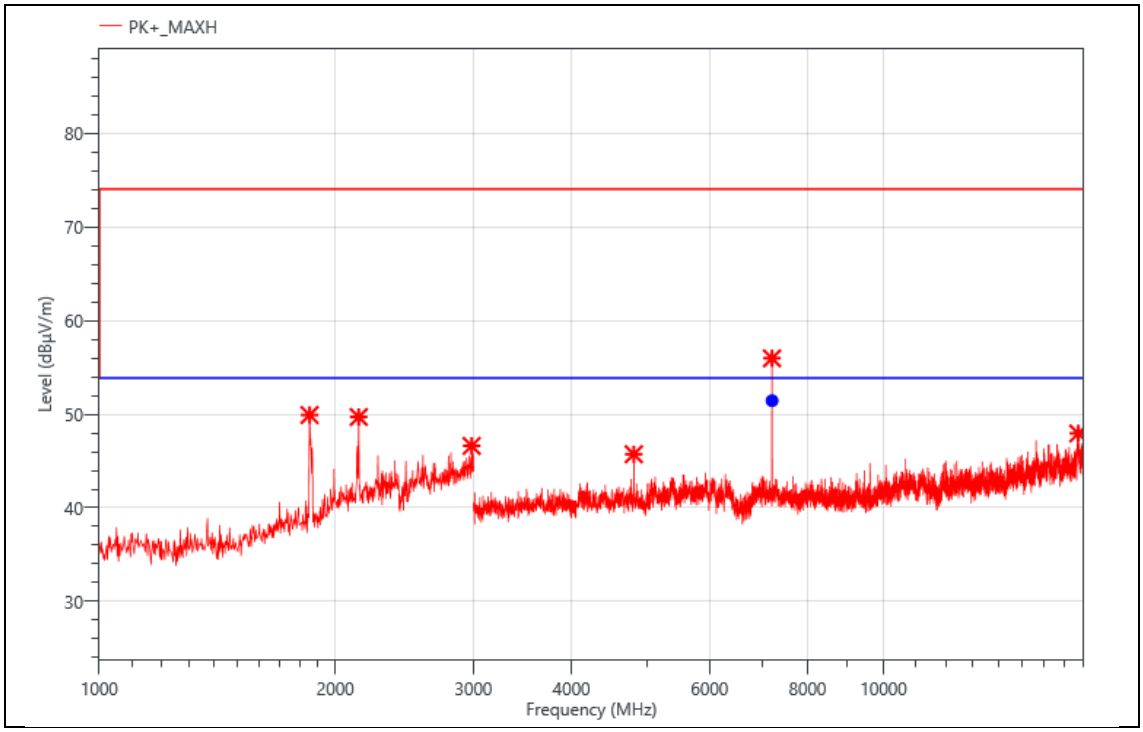
| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1854.000 | 60.06 | -10.45 | 49.61 | 74.00 | 24.39 | PK+ | V |
| 2 | 2140.000 | 58.33 | -9.05 | 49.28 | 74.00 | 24.72 | PK+ | V |
| 3 | 2922.000 | 53.62 | -7.6 | 46.02 | 74.00 | 27.98 | PK+ | V |
| 4 | 4803.000 | 57.00 | -11.34 | 45.66 | 74.00 | 28.34 | PK+ | V |
| 5 | 7204.500 | 58.03 | -8.02 | 50.01 | 74.00 | 23.99 | PK+ | V |
| 6 | 17668.500 | 49.12 | 0.24 | 49.36 | 74.00 | 24.64 | PK+ | V |

| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1854.000 | 60.37 | -10.45 | 49.92 | 74.00 | 24.08 | PK+ | H |
| 2 | 2142.000 | 58.76 | -9.05 | 49.71 | 74.00 | 24.29 | PK+ | H |
| 3 | 2984.000 | 53.58 | -6.96 | 46.62 | 74.00 | 27.38 | PK+ | H |
| 4 | 4803.000 | 57.07 | -11.34 | 45.73 | 74.00 | 28.27 | PK+ | H |
| 5 | 7207.500 | 63.97 | -7.99 | 55.98 | 74.00 | 18.02 | PK+ | H |
| 6 | 17712.000 | 48.03 | -0.08 | 47.95 | 74.00 | 26.05 | PK+ | H |

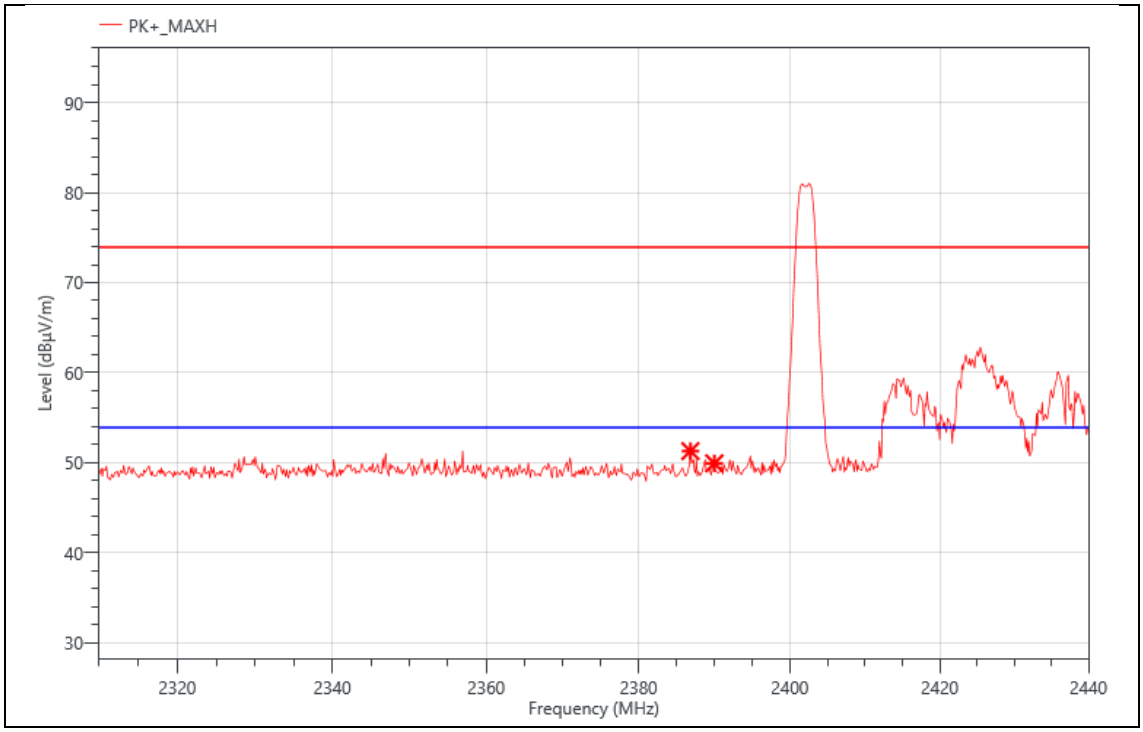
| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7207.500 | 59.44 | -7.99 | 51.45 | 53.90 | 2.45 | AVG | H | PASS |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

For the frequency above 18 GHz, a pre-scan was performed, and the result was 20 dB lower than the limit line, the test data was not shown in the report.

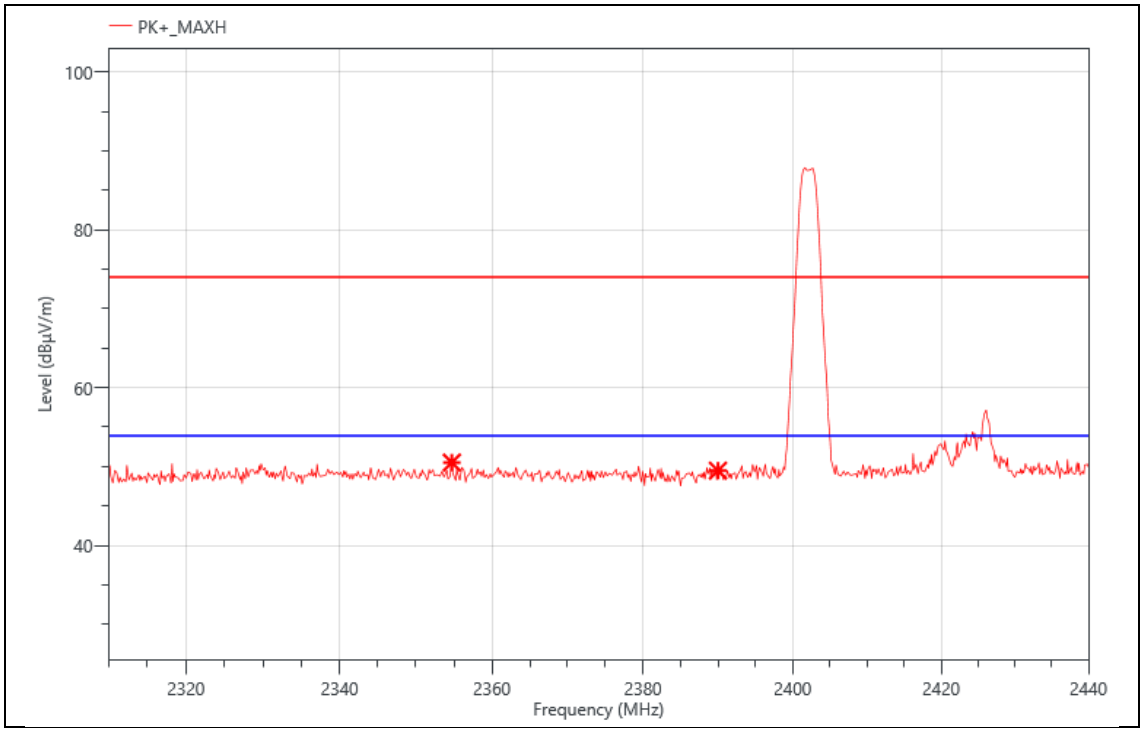
| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2386.830 | 28.62 | 22.66 | 51.28 | 74.00 | 22.72 | PK+ | V |
| 2 | 2390.000 | 27.20 | 22.72 | 49.92 | 74.00 | 24.08 | PK+ | V |

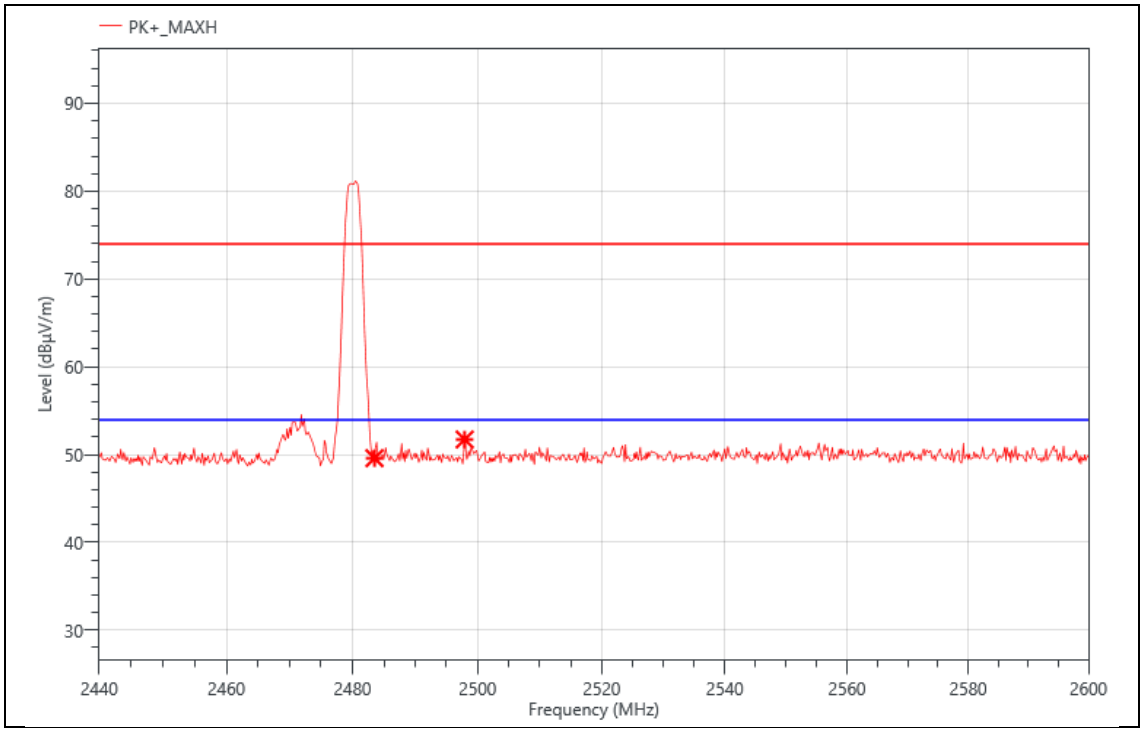
| | |
|---|---|
| Mode: | BLE2M-2402 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2354.720 | 27.74 | 22.77 | 50.51 | 74.00 | 23.49 | PK+ | H |
| 2 | 2390.000 | 26.76 | 22.72 | 49.48 | 74.00 | 24.52 | PK+ | H |

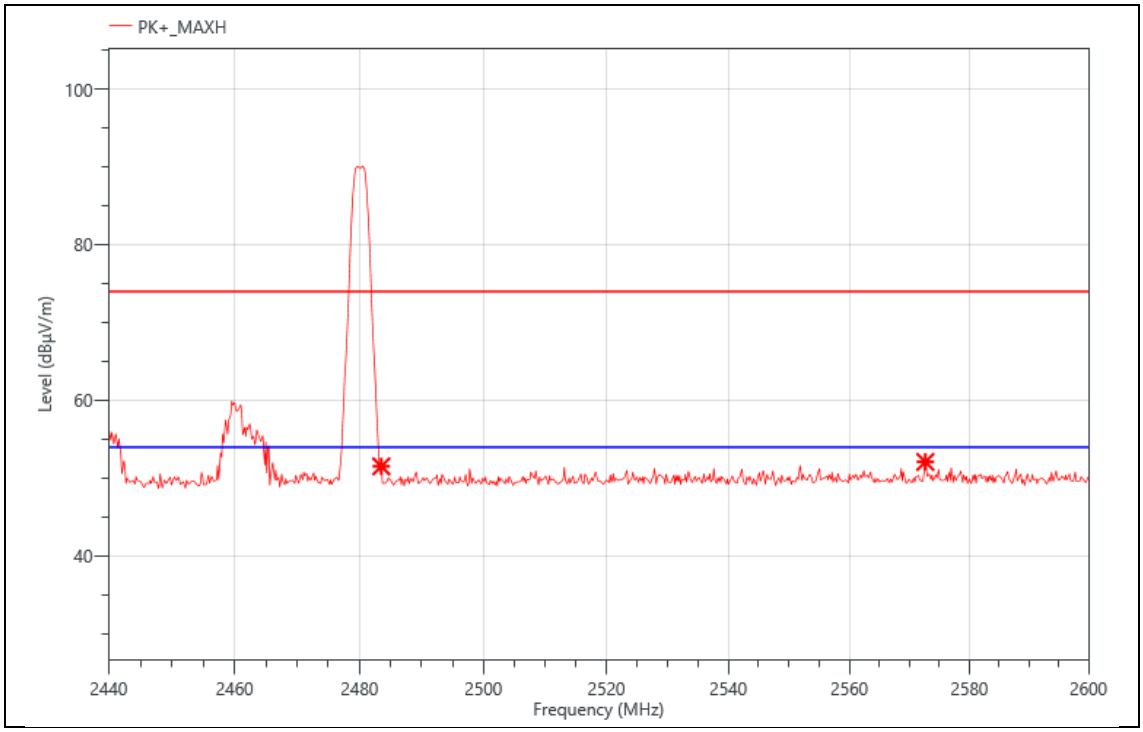
| | |
|---|---|
| Mode: | BLE2M-2480 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 26.44 | 23.15 | 49.59 | 74.00 | 24.41 | PK+ | V |
| 2 | 2497.920 | 28.61 | 23.11 | 51.72 | 74.00 | 22.28 | PK+ | V |

| | |
|---|---|
| Mode: | BLE2M-2480 |
| Power: | DC 3.3V |
| TE: | Berny |
| Date | 2026/01/29 |
| T/A/P | 21.1℃/52%/101Kpa |




## Critical_Freqs

| No. | Freq. (MHz) | Reading (dBµV) | Corr. (dB) | Meas. (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Det. | Pol. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.34 | 23.15 | 51.49 | 74.00 | 22.51 | PK+ | H |
| 2 | 2572.640 | 28.84 | 23.22 | 52.06 | 74.00 | 21.94 | PK+ | H |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

# 9. ANTENNA REQUIREMENT

**REQUIREMENT**

Please refer 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.

Please refer to FCC §15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DESCRIPTION**

Pass

**END OF REPORT**