# FCC TEST REPORT

## FCC ID: 2AYBG-CHP07

On Behalf of

CheerDots Co., Ltd

Cheerplay

Model No.: CHP07

| | | |
|---|---|---|
| Prepared for | : | CheerDots Co., Ltd |
| Address | : | Room 6031, 6th Floor, Building 12, 10th District, 188 South Fourth Ring West Road, Fengtai District, Beijing China |

| | | |
|---|---|---|
| Prepared By | : | Shenzhen PSI Testing Co., Ltd. |
| Address | : | 1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China |

| | | |
|---|---|---|
| Report Number | : | psi2603024-C01-R01 |
| Date of Receipt | : | Jan.20, 2026 |
| Date of Test | : | Jan.21, 2026-Feb.25, 2026 |
| Date of Report | : | Feb.26, 2026 |
| Version Number | : | V0 |

# TABLE OF CONTENTS


**Description** **Page**

**1. Summary Of Standards And Results ---------- 6**
1.1. Description of Standards and Results ---------- 6
**2. General Information ---------- 7**
2.1. Description of Device (EUT) ---------- 7
2.2. Accessories of Device (EUT) ---------- 8
2.3. Tested Supporting System Details ---------- 8
2.4. Block Diagram of Connection Between EUT and Simulators ---------- 8
2.5. Test Mode Description ---------- 9
2.6. Software test version and power setting information ---------- 9
2.7. Test Conditions ---------- 10
2.8. Test Facility ---------- 10
2.9. Measurement Uncertainty ---------- 10
2.10. Test Equipment List ---------- 11
**3. Spurious Emission ---------- 12**
3.1. Test Limits ---------- 12
3.2. Block Diagram of Test setup ---------- 13
3.3. Test Procedure ---------- 14
3.4. Test Results ---------- 15
**4. Power Line Conducted Emission ---------- 20**
4.1. Test Limits ---------- 20
4.2. Test Procedure ---------- 20
4.3. Test Setup ---------- 20
4.4. Test Results ---------- 21
**5. Out-of-band Emissions ---------- 24**
5.1. Test Limits ---------- 24
5.2. Test Procedure ---------- 24
5.3. Test Setup ---------- 24
5.4. Test Results ---------- 24
**6. Conducted Maximum Output Power ---------- 30**
6.1. Test limits ---------- 30
6.2. Test Procedure ---------- 30
6.3. Test Setup ---------- 30
6.4. Test Results ---------- 30
**7. Peak Power Spectral Density ---------- 31**
7.1. Test limits ---------- 31
7.2. Test Procedure ---------- 31
7.3. Test Setup ---------- 31
7.4. Test Results ---------- 31
**8. Occupied Bandwidth ---------- 34**
8.1. Test limits ---------- 34
8.2. Test Procedure ---------- 34
8.3. Test Setup ---------- 34
8.4. Test Results ---------- 34

**9. Band Edge Test ---------- 37**
9.1. Test Limit ---------- 37
9.2. Block Diagram of Test Setup ---------- 37
9.3. Test Procedure ---------- 37
9.4. Test Results ---------- 38
**10. Antenna Requirement ---------- 39**
10.1. Standard Requirement ---------- 39
10.2. Test Results ---------- 39
**11. Duty cycle ---------- 40**
11.1. Test Limits ---------- 40
11.2. Test Procedure ---------- 40
11.3. Test Setup ---------- 40
11.4. Test Results ---------- 40
**12. Photos of test setup ---------- 43**
**13. Photos of EUT ---------- 43**

# TEST REPORT DECLARATION

| | | |
|---|---|---|
| Applicant | : | CheerDots Co., Ltd |
| Address | : | Room 6031, 6th Floor, Building 12, 10th District, 188 South Fourth Ring West Road, Fengtai District, Beijing China |
| Manufacturer | : | CheerDots Co., Ltd |
| Address | : | Room 6031, 6th Floor, Building 12, 10th District, 188 South Fourth Ring West Road, Fengtai District, Beijing China |
| EUT Description | : | Cheerplay |
| | | (A) Model No. : CHP07 |
| | | (B) Trademark : CHEERDOTS |

Measurement Standard Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**

**ANSI C63.10-2020**

**Test Result: PASS**

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part 15C requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

| | | |
|---|---|---|
| Tested by (name + signature).....…..: | Felix Pang<br>Test Engineer | Felix Pang |
| Approved by (name + signature)…....: | Simple Guan<br>Project Manager | Simple Guan |
| Date of issue……..: | Feb.26, 2026 | |

# Revision History

| Revision | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V0 | Feb.26, 2026 | Initial released Issue | Felix Pang |

# 1. Summary Of Standards And Results

## 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Test Item | Standards Paragraph | Result |
|---|---|---|
| Conducted Emission | FCC Part 15: 15.207ANSI C63.10-2020 | P |
| 6dB Bandwidth | FCC PART 15:15.247(a)(2), ANSI C63.10-2020 | P |
| Output Power | FCC Part 15: 15.247(b)(3), ANSI C63.10-2020 | P |
| Radiated Spurious Emission | FCC Part 15: 15.209<br>FCC Part 15: 15.247(d), ANSI C63.10-2020 | P |
| Conducted Spurious & Band Edge Emission | FCC Part 15: 15.247(d), ANSI C63.10-2020 | P |
| Power Spectral Density | FCC PART 15:15.247(e), ANSI C63.10-2020 | P |
| Radiated Band Edge Emission | FCC Part 15: 15.247(d), ANSI C63.10-2020 | P |
| Antenna Requirement | FCC Part 15: 15.203 | P |

Note: 1. P is an abbreviation for Pass.

2. F is an abbreviation for Fail.

3. N/A is an abbreviation for Not Applicable.

4. Conclusion determination rules of this report: Unless there are clear provisions on measurement uncertainty in the standard or customer requirements, decision by actual test data without considering measurement uncertainty.

5. Measurement method usage KDB 558074 D01 15.247 Meas Guidance v05r02.

# 2. General Information

## 2.1. Description of Device (EUT)

| | | |
|---|---|---|
| Product Name | : | Cheerplay |
| Model | : | CHP07 |
| Diff | : | N/A |
| Test Voltage | : | DC 3.7V 240mAh From Battery |

| | | |
|---|---|---|
| Radio Technology | : | Bluetooth LE |
| Operation frequency | : | 2402-2480MHz |
| Channel No. | : | 40 channels |
| Channel Separation | : | 2MHz |
| Rate | : | 1Mbps |
| Modulation | : | GFSK |
| Antenna Type | : | PCB antenna, maximum gain is -0.58dBi. |
| Software version | : | V1.0.0 |
| Hardware version/FVIN | : | V1.0.0 |
| Note | : | Antenna information is provided by applicant.<br>Testing lab is not responsible for the accuracy of the information. |

## 2.2. Accessories of Device (EUT)

Accessories 1 : N/A

Manufacturer : N/A

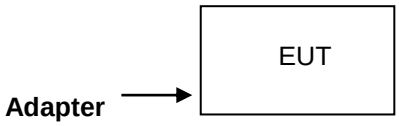
Model : N/A

Rating : N/A

## 2.3. Tested Supporting System Details

| No. | Description | Manufacturer | Model | Serial Number |
|---|---|---|---|---|
| 1 | Adapter | Xiaomi | MDY-11-EM | N/A |

## 2.4. Block Diagram of Connection Between EUT and Simulators



## 2.5. Test Mode Description

| Keeping TX | | | |
|---|---|---|---|
| Mode | Data rate (Mbps) | Channel | Frequency(MHz) |
| GFSK Tx Mode | 1 | CH0 | 2402 |
| | 1 | CH19 | 2440 |
| | 1 | CH39 | 2480 |
| Note: According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test. | | | |

| Channel list: | | | | | |
|---|---|---|---|---|---|
| **Channel** | **Frequency (MHz)** | **Channel** | **Frequency (MHz)** | **Channel** | **Frequency (MHz)** |
| CH0 | 2402 | CH14 | 2430 | CH28 | 2458 |
| CH1 | 2404 | CH15 | 2432 | CH29 | 2460 |
| CH2 | 2406 | CH16 | 2434 | CH30 | 2462 |
| CH3 | 2408 | CH17 | 2436 | CH31 | 2464 |
| CH4 | 2410 | CH18 | 2438 | CH32 | 2466 |
| CH5 | 2412 | CH19 | 2440 | CH33 | 2468 |
| CH6 | 2414 | CH20 | 2442 | CH34 | 2470 |
| CH7 | 2416 | CH21 | 2444 | CH35 | 2472 |
| CH8 | 2418 | CH22 | 2446 | CH36 | 2474 |
| CH9 | 2420 | CH23 | 2448 | CH37 | 2476 |
| CH10 | 2422 | CH24 | 2450 | CH38 | 2478 |
| CH11 | 2424 | CH25 | 2452 | CH39 | 2480 |
| CH12 | 2426 | CH26 | 2454 | -- | -- |
| CH13 | 2428 | CH27 | 2456 | -- | -- |

## 2.6. Software test version and power setting information

| Software testing version | FCC_assist AC695X_1.0.1.2 | | |
|---|---|---|---|
| Mode | The client 's preset testing software is used to control the operation of EUT in continuous transmission mode and select the testing channel, wireless mode: | | |
| Power level setup by client | | | |
| Mode | Channel | Frequency (MHz) | Soft Set |
| GFSK Tx Mode 1Mbps | CH0 | 2402 | TX level is set as defaults value. |
| | CH39 | 2441 | TX level is set as defaults value. |
| | CH78 | 2480 | TX level is set as defaults value. |

## 2.7. Test Conditions

| Items | Required | Actual |
|---|---|---|
| Temperature range: | 15-35℃ | 26℃ |
| Humidity range: | 25-75% | 54% |
| Pressure range: | 86-106kPa | 101kPa |

## 2.8. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission
Registration Number: 916281

## 2.9. Measurement Uncertainty

(95% confidence levels, k=2)

| **Item** | **Uncertainty** |
|---|---|
| Power Line Conducted Emissions Test | 2.13dB |
| Radiation Emission test in 3m chamber(Below 30MHz) | 4.07dB |
| Radiation Emission test in 3m chamber(30MHz to 1GHz) | 4.51dB |
| Radiation Emission test in 3m chamber(1GHz to 18GHz) | 5.07dB |
| Radiation Emission test in 3m chamber(18GHz to 40GHz) | 5.21dB |
| Radio Frequency | 48.24KHz |
| Conducted RF Power | 0.41dB |
| Power Spectral Density | 0.39 dB |
| Occupied-Bandwidth | 968Hz |
| Duty Cycle | 1% |
| Conducted-Spurious Emission | 1.26dB |

## 2.10.Test Equipment List

| Item | Equipment | Manufacturer | Model No. | Serial No. | Firmware Version | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|---|
| 1. | 9*6*6 anechoic chamber | SKET | 9*6*6 | N/A | / | 2025.12.19 | 3 Year |
| 2. | Test Receiver | Rohde&Schwarz | ESCI 7 | 101032/003 | 4.42 SP3 | 2025.12.18 | 1 Year |
| 3. | L.I.S.N.#1 | Rohde&Schwarz | ENV216 | 102282 | / | 2025.12.18 | 1 Year |
| 4. | L.I.S.N.#2 | RFT | NNB111 | 13835240 | / | 2025.12.18 | 1 Year |
| 5. | Loop Antenna | Schwarz beck | FMZB 1519B | 00128 | / | 2025.01.02 | 2 Year |
| 6. | Bilog Antenna | Schwarz beck | VULB 9168 | 01448 | / | 2025.01.02 | 2 Year |
| 7. | Spectrum Analyzer | Rohde&Schwarz | FSV-40N | 101648 | 3.70 | 2025.12.18 | 1 Year |
| 8. | Horn Antenna | Schwarz beck | BBHA 9120 D | 02706 | / | 2025.01.02 | 2 Year |
| 9. | Amplifier | SKET | LAPA_01G18G-45dB | SK2022032901 | / | 2025.12.18 | 1 Year |
| 10. | Horn Antenna | Schwarz beck | BBHA 9170 | 00946 | / | 2024.12.31 | 2 Year |
| 11. | Amplifier | SKET | LNPA_0118G-45 | SK2020010801 | / | 2025.12.18 | 1 Year |
| 12. | RF Power Probe | Rohde&Schwarz | NRP-Z11 | 1138.3004.02-1111533-Fz | / | 2025.12.18 | 1 Year |
| 13. | RF Sensor Unit | Tachoy | TR1029-2 | 20220428P008 | / | 2025.12.18 | 1 Year |
| 14. | Spectrum Analyzer | Agilent | N9020A | MY51281067 | A.14.03 | 2025.12.18 | 1 Year |
| 15. | Temp. & Humid Chamber | Auchno | 9606 | / | / | 2025.12.18 | 1 Year |
| 16. | Regulated DC Power Supply | Xinouhua | ADC120V10A | 202211251638 | / | 2025.12.18 | 1 Year |
| 17. | Cable | SKET | Cable-RE-1 | #02/#03 | / | 2025.12.18 | 1 Year |
| 18. | Cable | SKET | Cable-RE-2 | #01 | / | 2025.12.18 | 1 Year |
| 19. | Cable | SKET | Cable-RE-3 | #04 | / | 2025.12.18 | 1 Year |
| 20. | Cable | SKET | Cable-CE-1 | A-E-24 | / | 2025.12.18 | 1 Year |
| 21. | 6dB Attenuator | Schwarzbeck | DGA 9552N 6dB | CK4186 | / | 2025.12.18 | 1 Year |
| 22. | Power meter | Agilent | E4419B | GB40202121 | / | 2025.12.18 | 1 Year |
| 23. | Comprehensive Test Instrument | Rohde&Schwarz | CMW 500 | 145266 | / | 2025.12.18 | 1 Year |

For Test Software Information

| Item | Software Name | Manufacturer | Version |
|---|---|---|---|
| RE | EZ_EMC | Farad | PSI-3A1 |
| CE | EZ_EMC | Farad | PSI-3A1 |
| RF | RTS | TACHOY | V1.0.0 |

# 3. Spurious Emission

## 3.1. Test Limits

| 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 |
| 30-88 | 100 ** | 3 |
| 88-216 | 150 ** | 3 |
| 216-960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

Note: The peak limit is 20 dB higher than the average limit

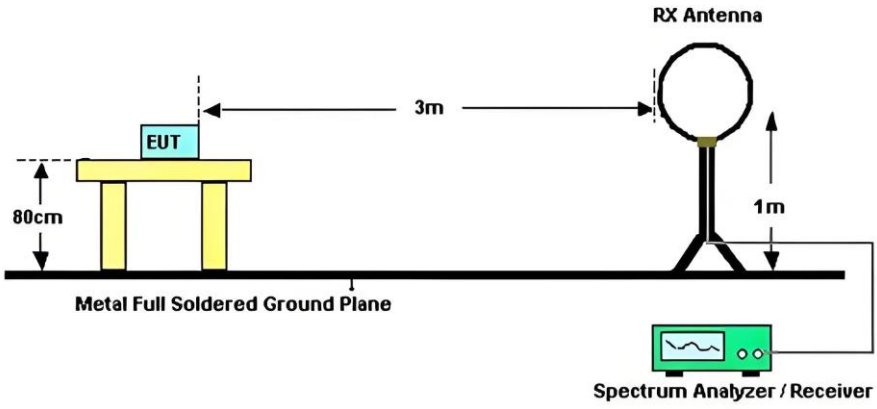
All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

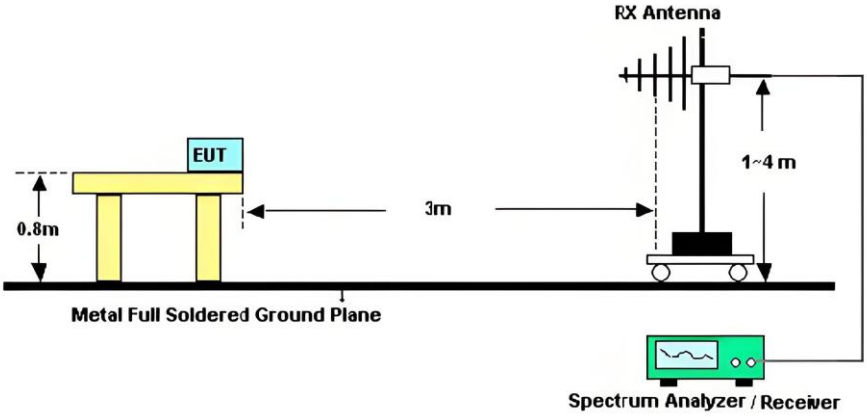
| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1]0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 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]) |

## 3.2. Block Diagram of Test setup

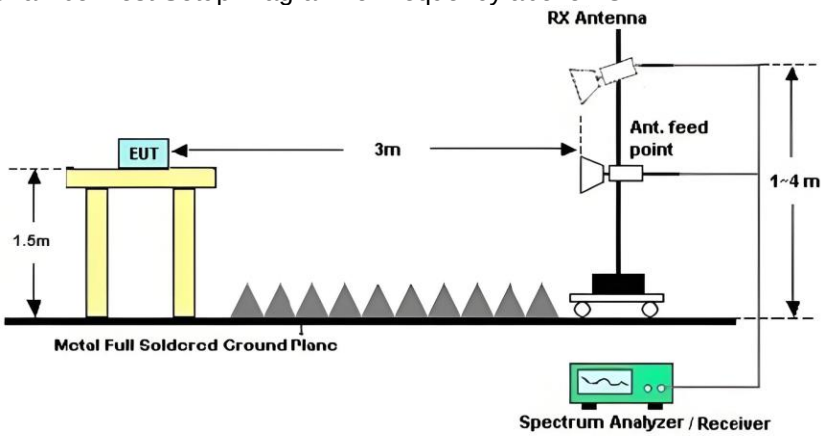
a. In 3m Anechoic Chamber Test Setup Diagram for below 30MHz




b. In 3m Anechoic Chamber Test Setup Diagram for below 1GHz




c. In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



## 3.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.

(2) Setup EUT and simulator

(3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.

(a) Change work frequency or channel of device if practicable.

(b) Change modulation type of device if practicable.

(c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions

(4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated

(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10-2020 on Radiated Emission test.

(6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure.

Test setup information:

| | | |
|---|---|---|
| 9KHz~150KHz | RBW 200Hz | VBW 1KHz |
| 150KHz~30MHz | RBW 9KHz | VBW 30KHz |
| 30MHZ~1GHz | RBW 120KHz | VBW 300KHz |
| Above1GHz | RBW 1MHz | VBW 3MHz |

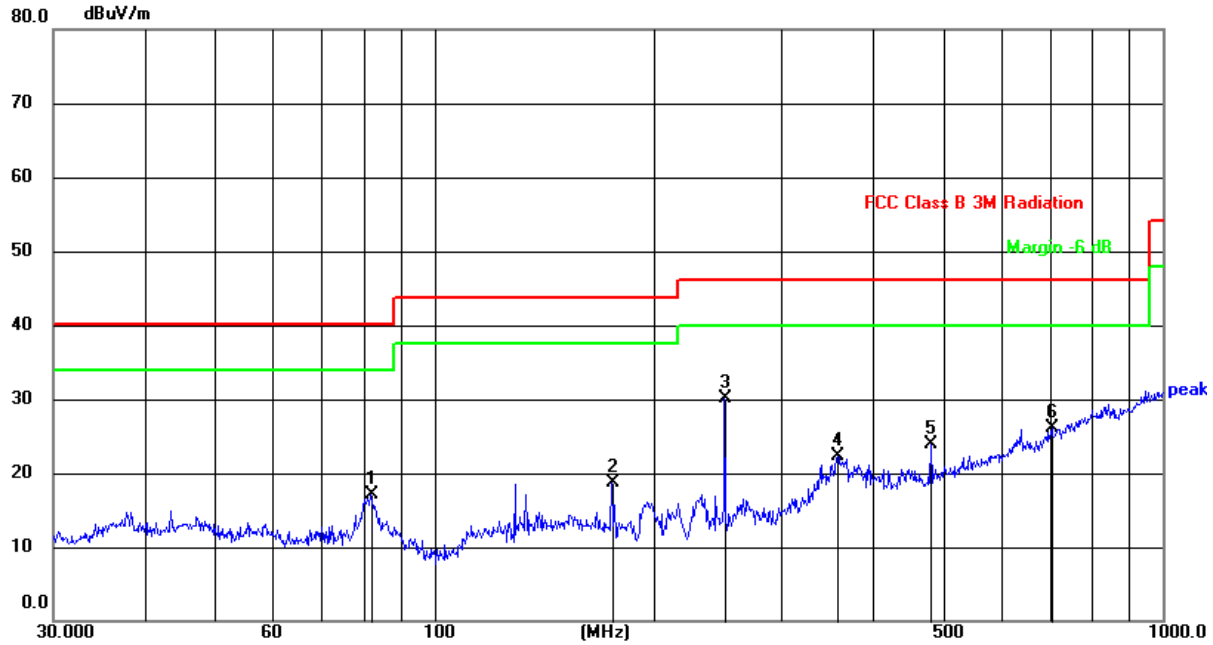
## 3.4. Test Results

We have scanned from 9kHz to the 10th harmonic of the EUT's highest frequency.
Detailed information please see the following page.

| From 9KHz to 30MHz: | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2026.01.27 | Temperature | : | 22.9℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 46% |
| Test Mode | : | GFSK mode | | | |
| Test Results | : | **PASS** | | | |
| Note: | The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. | | | | |

| From 30MHz to 1000MHz: | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2026.01.27 | Temperature | : | 22.9℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 46% |
| Test Mode | : | GFSK mode | | | |
| Test Results | : | **PASS** | | | |
| Note: | 1. The test results are listed in next pages.<br>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.<br>3. All modes have been tested, and only worst data of 1Mbps GFSK (2402MHz) mode was listed in this report. | | | | |

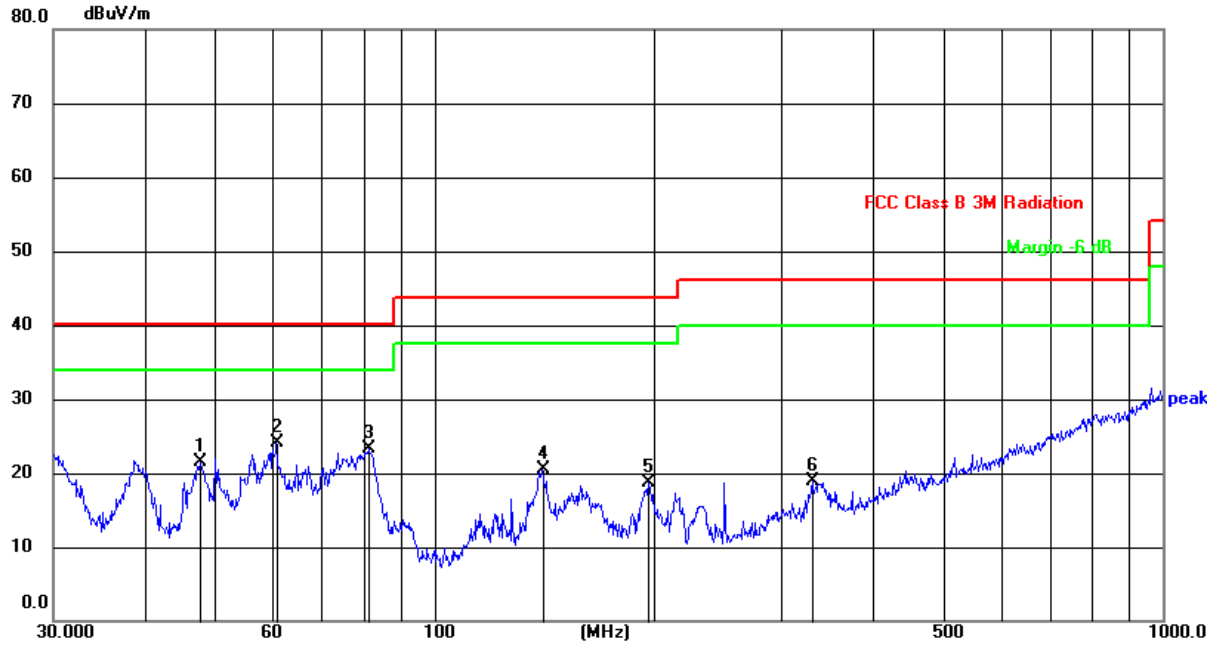
**Polarization: Horizontal**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 81.7833 | 43.08 | -25.96 | 17.12 | 40.00 | -22.88 | QP |
| 2 | 175.0368 | 40.50 | -21.75 | 18.75 | 43.50 | -24.75 | QP |
| 3 | 250.3012 | 52.36 | -22.25 | 30.11 | 46.00 | -15.89 | QP |
| 4 | 357.9287 | 41.38 | -19.02 | 22.36 | 46.00 | -23.64 | QP |
| 5 | 480.5276 | 39.22 | -15.24 | 23.98 | 46.00 | -22.02 | QP |
| 6 | 704.2261 | 35.22 | -9.03 | 26.19 | 46.00 | -19.81 | QP |

Level = Reading + Factor Margin = Level - Limit

**Polarization: Vertical**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 47.6586 | 43.08 | -21.52 | 21.56 | 40.00 | -18.44 | QP |
| 2 | 60.7044 | 46.67 | -22.66 | 24.01 | 40.00 | -15.99 | QP |
| 3 | 81.2117 | 49.27 | -26.00 | 23.27 | 40.00 | -16.73 | QP |
| 4 | 140.8351 | 42.10 | -21.53 | 20.57 | 43.50 | -22.93 | QP |
| 5 | 196.5098 | 42.04 | -23.29 | 18.75 | 43.50 | -24.75 | QP |
| 6 | 330.1949 | 38.15 | -19.31 | 18.84 | 46.00 | -27.16 | QP |

Level = Reading + Factor Margin = Level - Limit

| From 1GHz to 25GHz: | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2026.01.27 | Temperature | : | 22.9℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 46% |
| Test Mode | : | GFSK mode | | | |
| Test Results | : | **PASS** | | | |
| Note: | 1. The test results are listed in next pages.<br>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.<br>3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out. | | | | |

1Mbps:

| Test Mode : GFSK TX Low | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Freq MHz | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1 | 4804 | V | 53.77 | -13.25 | 40.52 | 74.00 | -33.48 | Peak |
| 2 | 4804 | V | 44.02 | -13.25 | 30.77 | 54.00 | -23.23 | Avg |
| 3 | 7206 | -- | -- | -- | -- | -- | -- | -- |
| 4 | 9608 | -- | -- | -- | -- | -- | -- | -- |
| 5 | 4804 | H | 51.01 | -13.25 | 37.76 | 74.00 | -36.24 | Peak |
| 6 | 4804 | H | 43.27 | -13.25 | 30.02 | 54.00 | -23.98 | Avg |
| 7 | 7206 | -- | -- | -- | -- | -- | -- | -- |
| 8 | 9608 | -- | -- | -- | -- | -- | -- | -- |
| Test Mode : GFSK TX Mid | | | | | | | | |
| 1 | 4880 | V | 50.76 | -12.98 | 37.78 | 74.00 | -36.22 | Peak |
| 2 | 4880 | V | 45.56 | -12.98 | 32.58 | 54.00 | -21.42 | Avg |
| 3 | 7320 | -- | -- | -- | -- | -- | -- | -- |
| 4 | 9760 | -- | -- | -- | -- | -- | -- | -- |
| 5 | 4880 | H | 49.54 | -12.98 | 36.56 | 74.00 | -37.44 | Peak |
| 6 | 4880 | H | 41.96 | -12.98 | 28.98 | 54.00 | -25.02 | Avg |
| 7 | 7320 | -- | -- | -- | -- | -- | -- | -- |
| 8 | 9760 | -- | -- | -- | -- | -- | -- | -- |
| Test Mode : GFSK TX High | | | | | | | | |
| 1 | 4960 | V | 52.72 | -12.70 | 40.02 | 74.00 | -33.98 | Peak |
| 2 | 4960 | V | 43.36 | -12.70 | 30.66 | 54.00 | -23.34 | Avg |
| 3 | 7440 | -- | -- | -- | -- | -- | -- | -- |
| 4 | 9920 | -- | -- | -- | -- | -- | -- | -- |
| 5 | 4960 | H | 50.20 | -12.70 | 37.50 | 74.00 | -36.50 | Peak |
| 6 | 4960 | H | 41.52 | -12.70 | 28.82 | 54.00 | -25.18 | Avg |
| 7 | 7440 | -- | -- | -- | -- | -- | -- | -- |
| 8 | 9920 | -- | -- | -- | -- | -- | -- | -- |
| Note: | 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.<br>2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.<br>Result=Reading + Correct Factor. Margin= Result-Limit. | | | | | | | |

# 4. Power Line Conducted Emission

## 4.1. Test Limits

| Frequency (MHz) | Limits dB(μV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 0.15 -0.50 | 66 -56* | 56 - 46* |
| 0.50 -5.00 | 56 | 46 |
| 5.00 -30.00 | 60 | 50 |

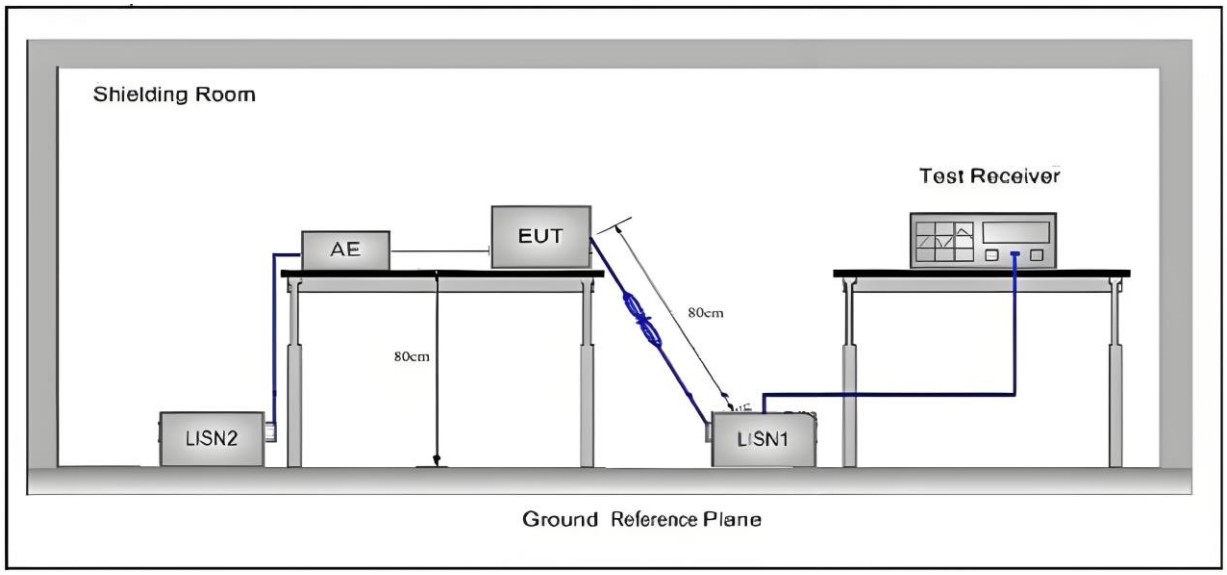
Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 4.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10-2020 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

## 4.3. Test Setup



## 4.4. Test Results

| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2026.1.23 | Temperature | : | 20.0℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 35% |
| Test Mode | : | GFSK mode | | | |
| Test Results | : | **PASS** | | | |

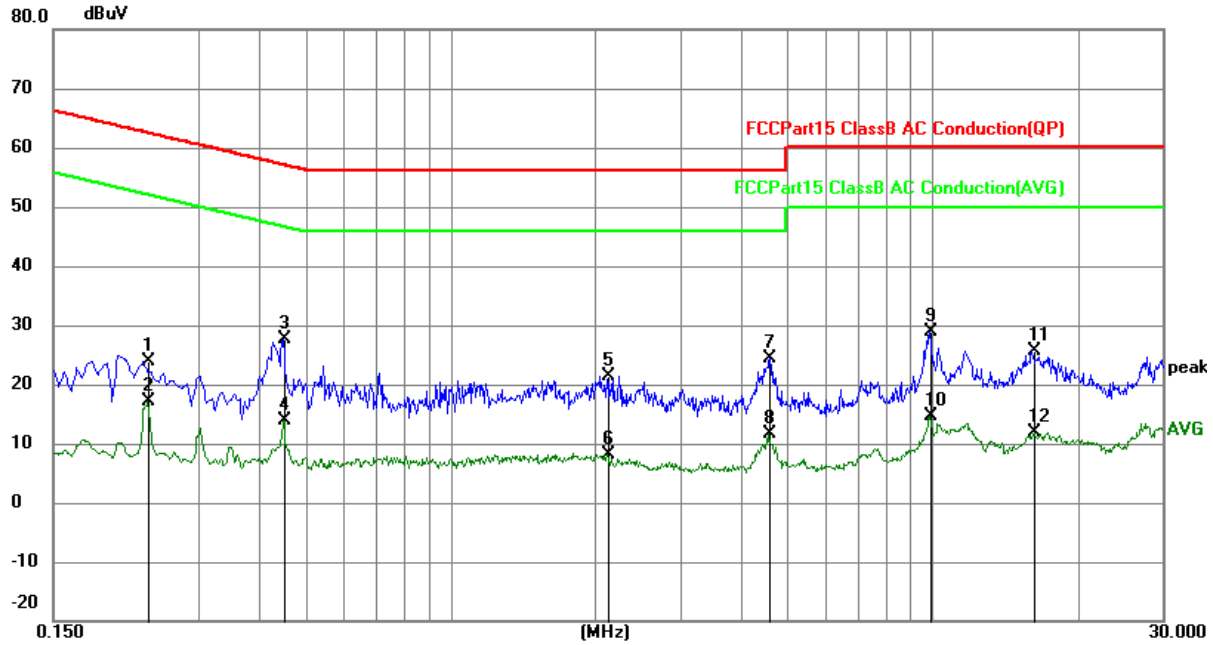
Note: 1. The test results are listed in next pages.

2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.

3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.

4. All modes have been tested, and only worst data of GFSK mode, Channel 2440MHz (AC 120V/ 60Hz) was listed in this report.

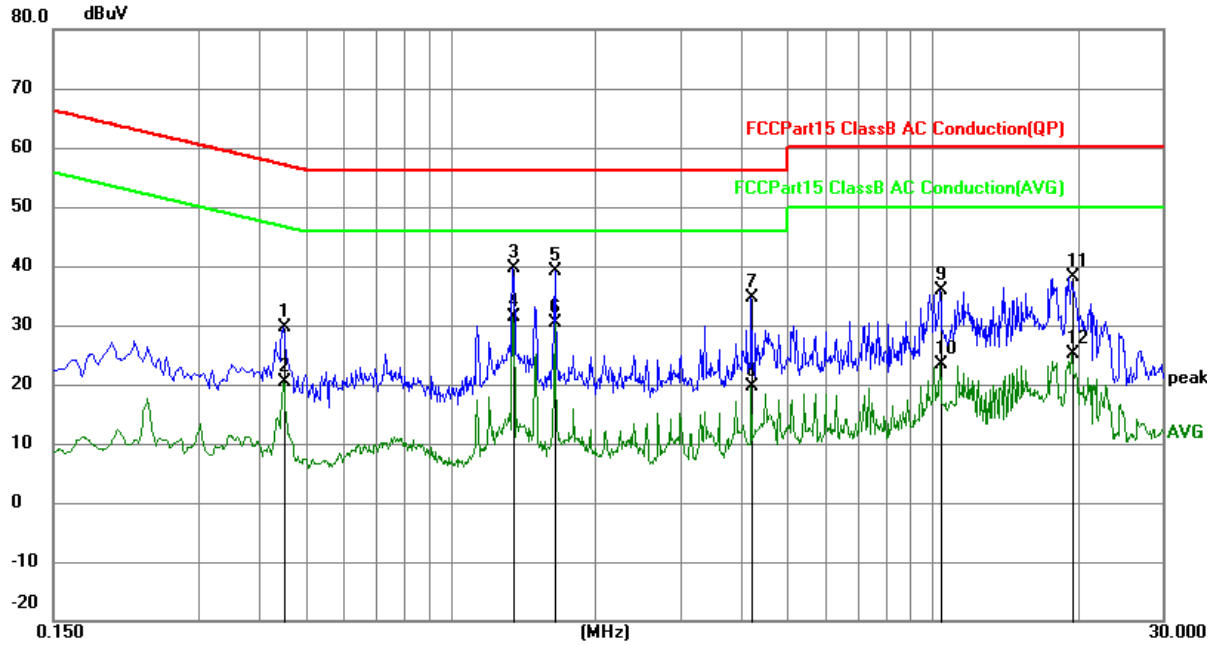
**Polarization: L**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.2355 | 13.98 | 9.82 | 23.80 | 62.25 | -38.45 | QP |
| 2 | 0.2355 | 7.34 | 9.82 | 17.16 | 52.25 | -35.09 | AVG |
| 3 | 0.4515 | 17.79 | 9.92 | 27.71 | 56.85 | -29.14 | QP |
| 4 | 0.4515 | 3.96 | 9.92 | 13.88 | 46.85 | -32.97 | AVG |
| 5 | 2.1165 | 11.41 | 9.85 | 21.26 | 56.00 | -34.74 | QP |
| 6 | 2.1165 | -1.63 | 9.85 | 8.22 | 46.00 | -37.78 | AVG |
| 7 | 4.5780 | 14.58 | 9.84 | 24.42 | 56.00 | -31.58 | QP |
| 8 | 4.5780 | 1.87 | 9.84 | 11.71 | 46.00 | -34.29 | AVG |
| 9 | 9.8700 | 19.05 | 9.84 | 28.89 | 60.00 | -31.11 | QP |
| 10 | 9.8700 | 4.69 | 9.84 | 14.53 | 50.00 | -35.47 | AVG |
| 11 | 16.2959 | 15.99 | 9.73 | 25.72 | 60.00 | -34.28 | QP |
| 12 | 16.2959 | 2.21 | 9.73 | 11.94 | 50.00 | -38.06 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: N**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.4515 | 19.66 | 9.92 | 29.58 | 56.85 | -27.27 | QP |
| 2 | 0.4515 | 10.34 | 9.92 | 20.26 | 46.85 | -26.59 | AVG |
| 3 | 1.3514 | 29.70 | 9.91 | 39.61 | 56.00 | -16.39 | QP |
| 4 | 1.3514 | 21.55 | 9.91 | 31.46 | 46.00 | -14.54 | AVG |
| 5 | 1.6529 | 29.22 | 9.89 | 39.11 | 56.00 | -16.89 | QP |
| 6 | 1.6529 | 20.52 | 9.89 | 30.41 | 46.00 | -15.59 | AVG |
| 7 | 4.2135 | 24.75 | 9.83 | 34.58 | 56.00 | -21.42 | QP |
| 8 | 4.2135 | 9.81 | 9.83 | 19.64 | 46.00 | -26.36 | AVG |
| 9 | 10.3920 | 26.04 | 9.83 | 35.87 | 60.00 | -24.13 | QP |
| 10 | 10.3920 | 13.63 | 9.83 | 23.46 | 50.00 | -26.54 | AVG |
| 11 | 19.4685 | 28.33 | 9.68 | 38.01 | 60.00 | -21.99 | QP |
| 12 | 19.4685 | 15.47 | 9.68 | 25.15 | 50.00 | -24.85 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

# 5. Out-of-band Emissions

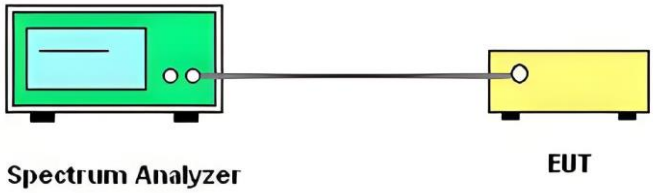
## 5.1. Test Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.

## 5.2. Test Procedure

ANSI C63.10-2020 Section 11.11.1, Section 11.11.2, Section 11.11.3
Connect the transmitter ouput to spectrum analvzer using a low loss RF cable, and set the spectrum analvzerto RBW=100 kHz, VBW= 300 kHz, peak detector, and max hold. Measurements utilizing these setting aremade of the in-band reference level, bandedge and out-of-band emissions.

## 5.3. Test Setup



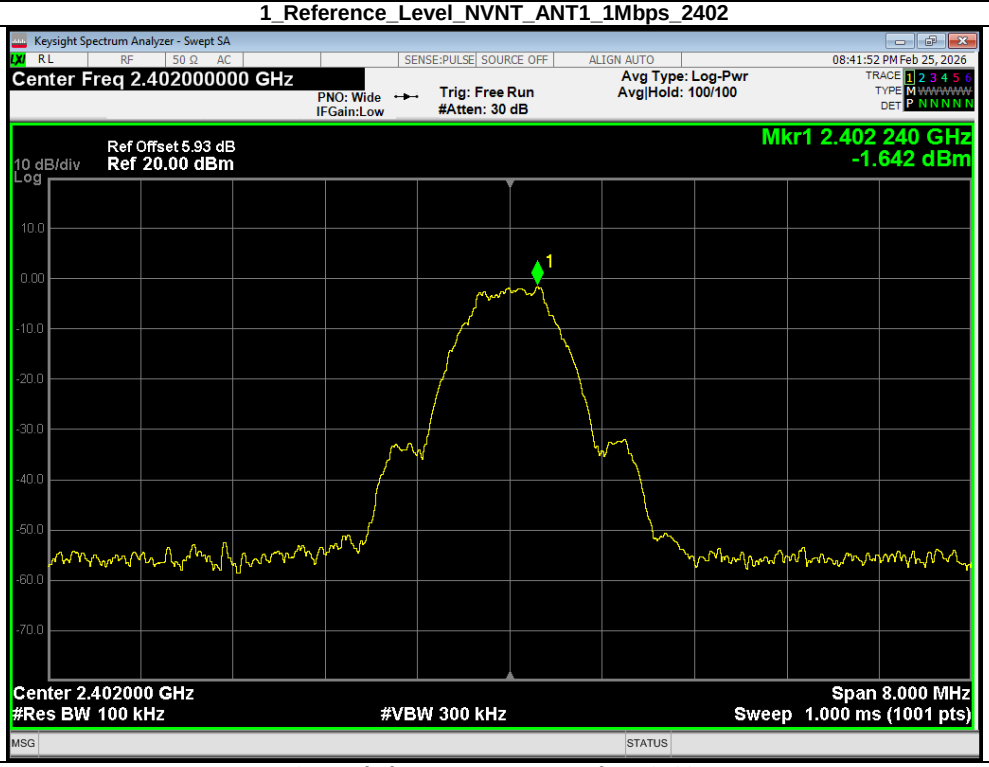

## 5.4. Test Results

PASS.

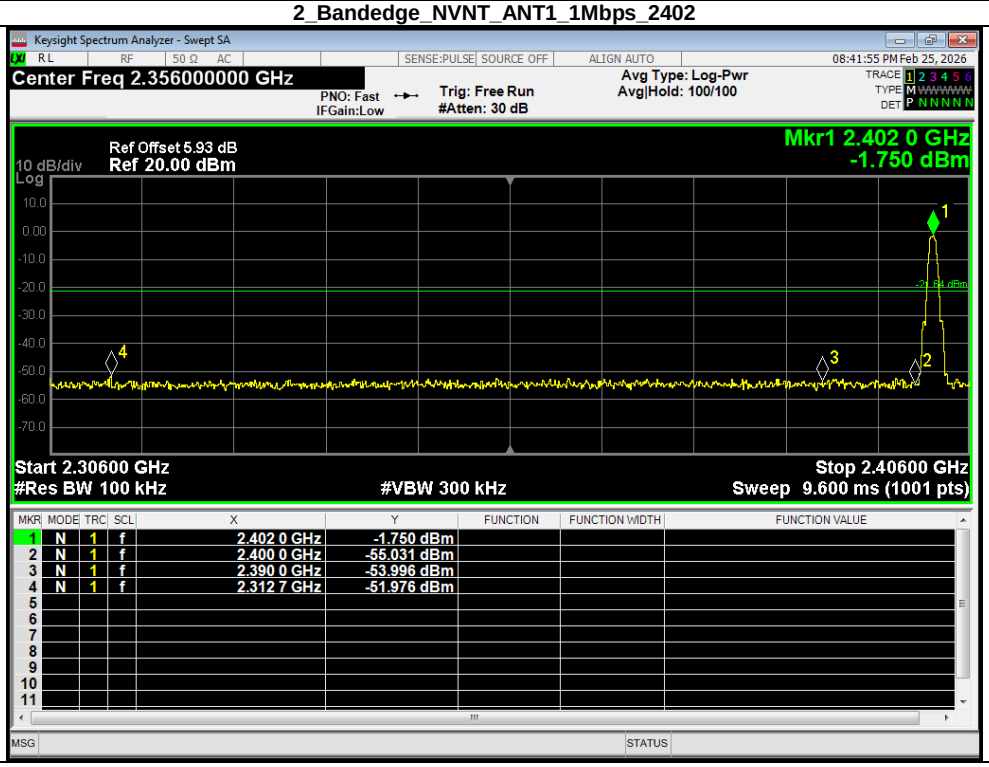
The test results are listed in next pages.

**Band Edge: Pass**

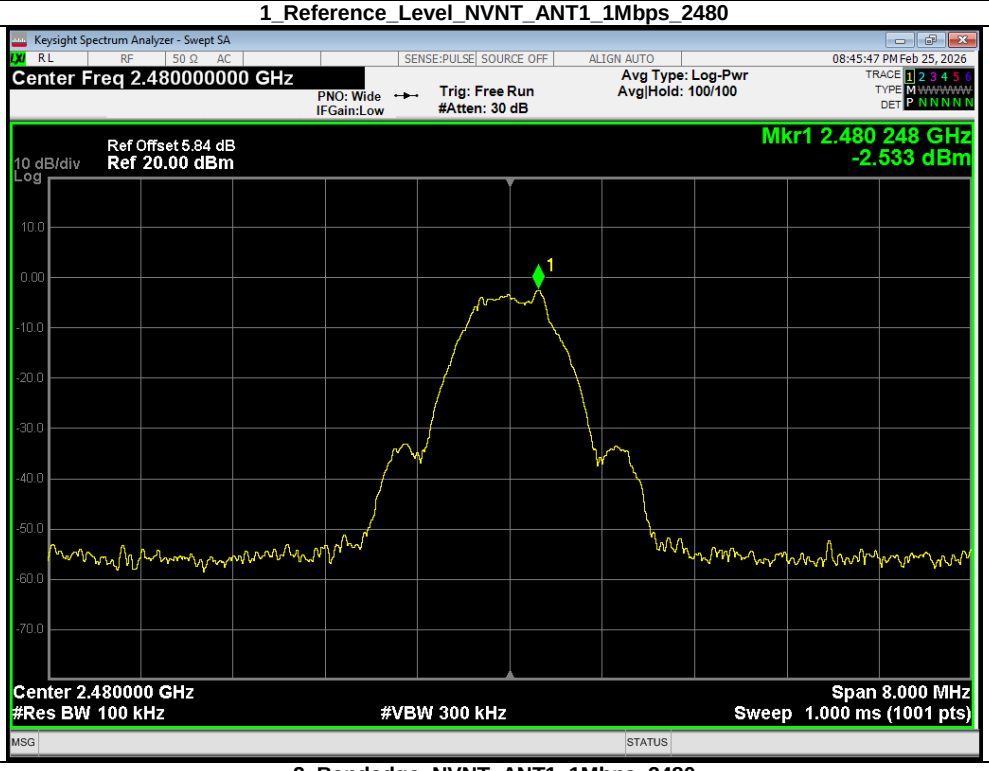
1_Reference_Level_NVNT_ANT1_1Mbps_2402



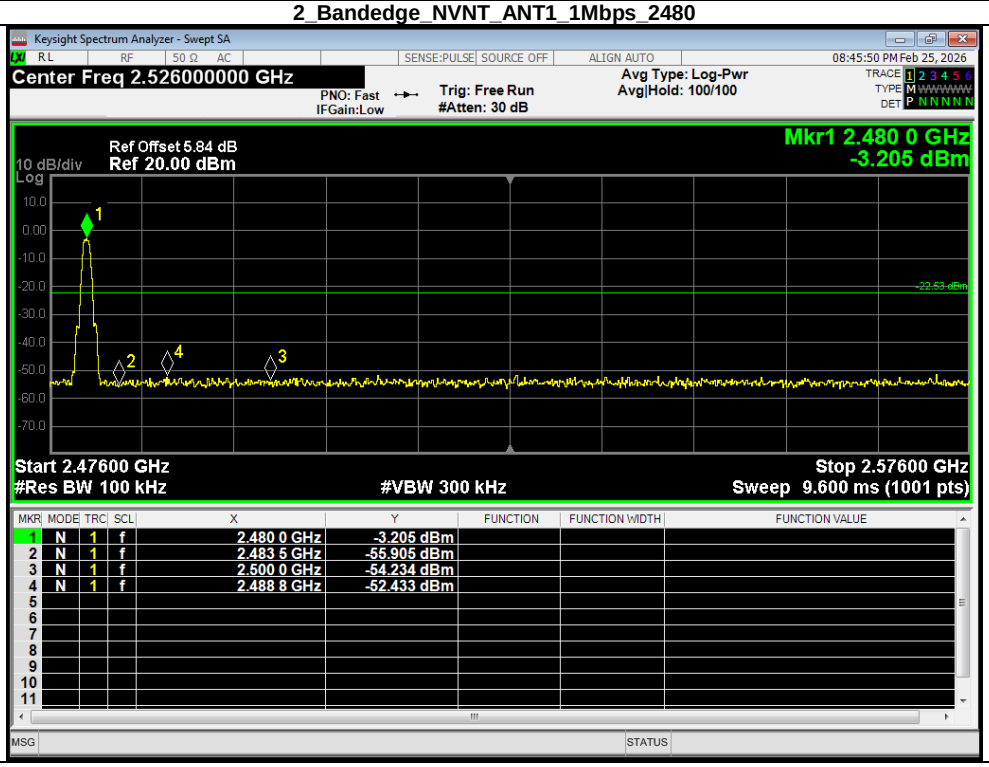

2_Bandedge_NVNT_ANT1_1Mbps_2402



**1_Reference_Level_NVNT_ANT1_1Mbps_2480**

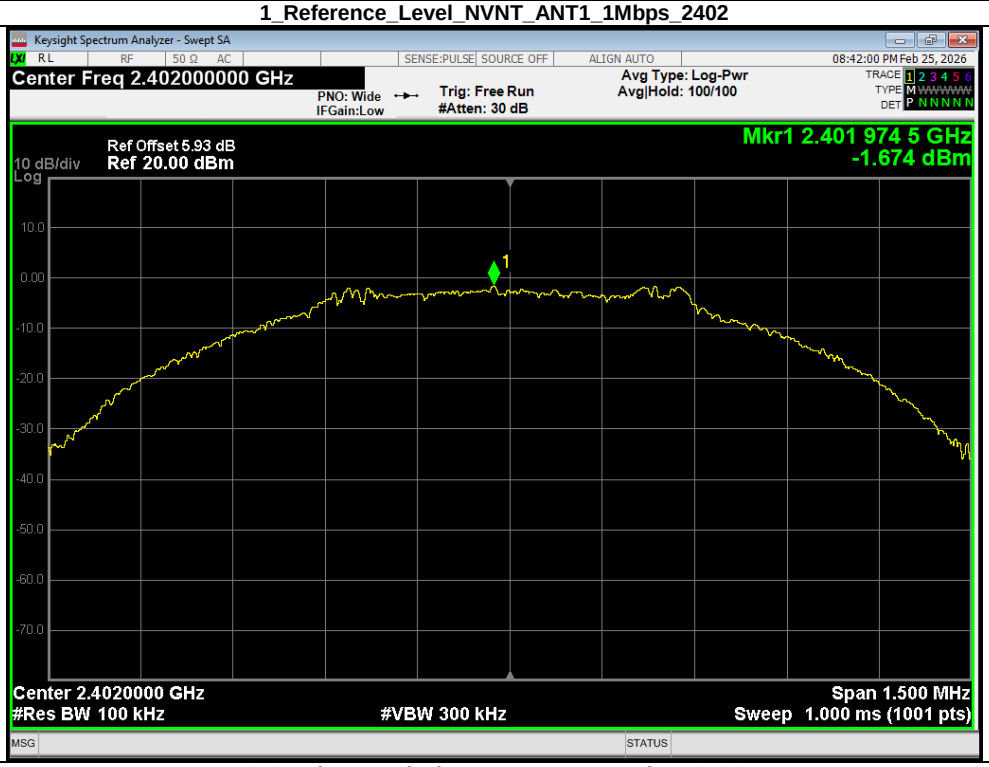



**2_Bandedge_NVNT_ANT1_1Mbps_2480**

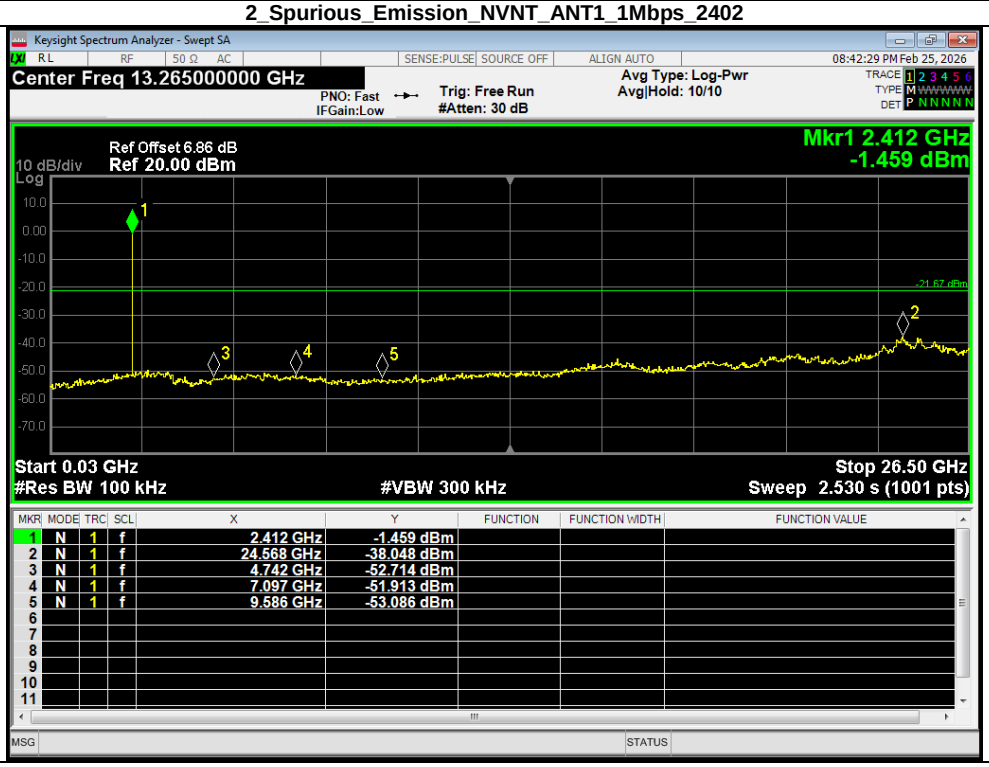


## Spurious Emission: Pass

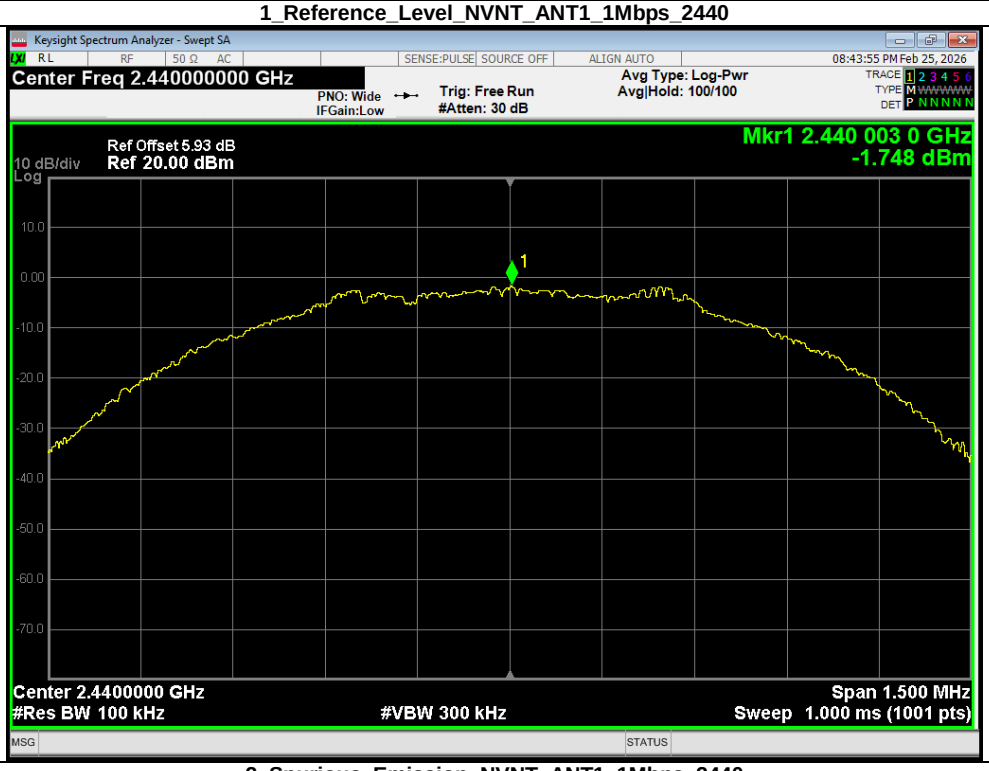
**1_Reference_Level_NVNT_ANT1_1Mbps_2402**



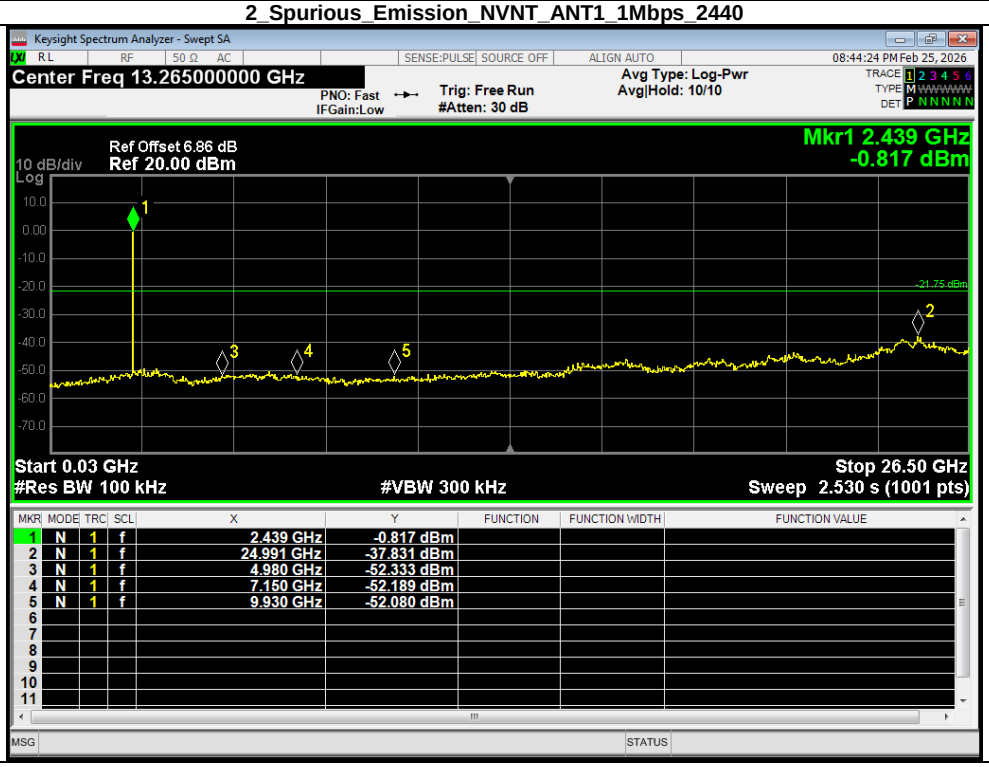

**2_Spurious_Emission_NVNT_ANT1_1Mbps_2402**



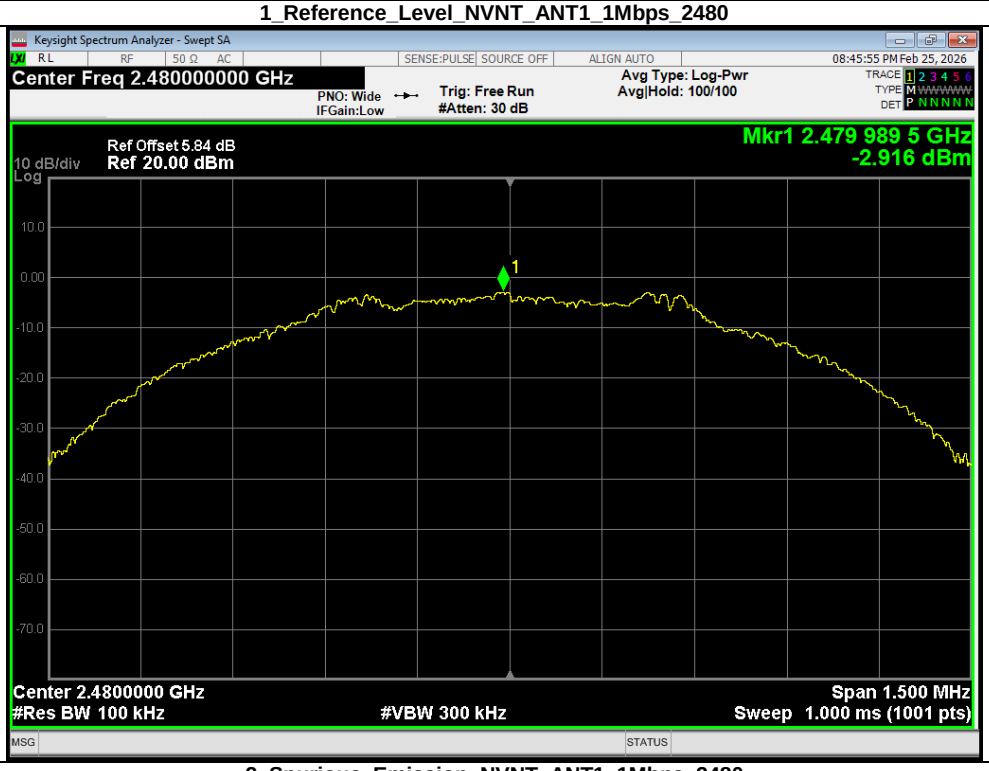
**1_Reference_Level_NVNT_ANT1_1Mbps_2440**



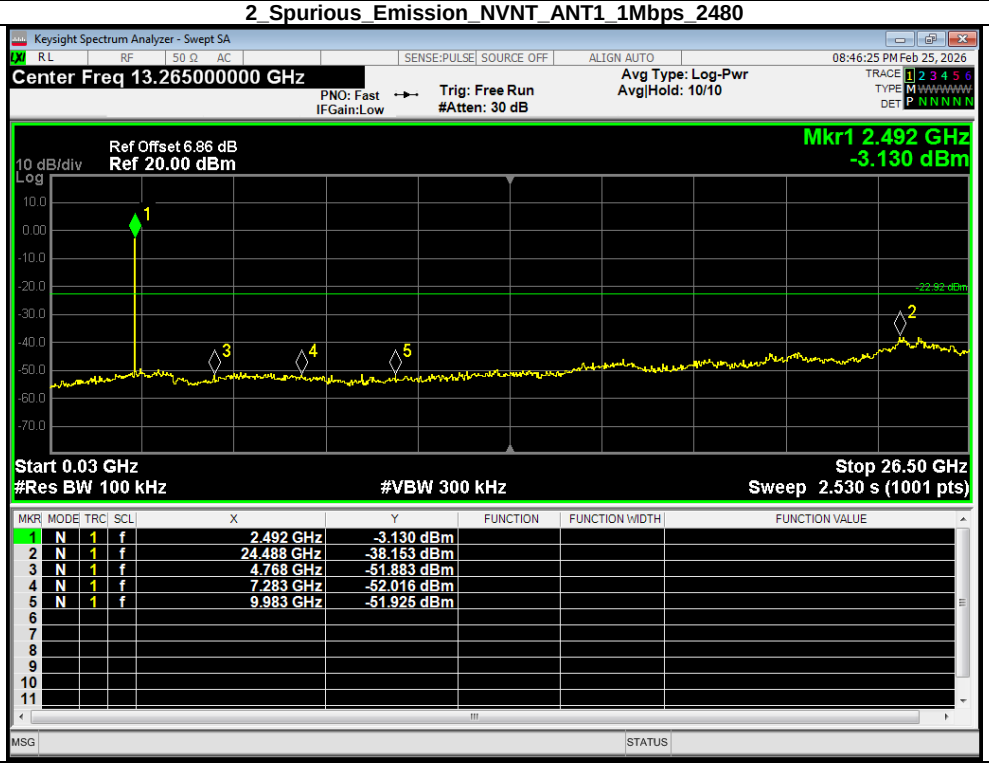

**2_Spurious_Emission_NVNT_ANT1_1Mbps_2440**



**1_Reference_Level_NVNT_ANT1_1Mbps_2480**




**2_Spurious_Emission_NVNT_ANT1_1Mbps_2480**



# 6. Conducted Maximum Output Power

## 6.1. Test limits

Please refer FCC PART 15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1 W(30dBm)

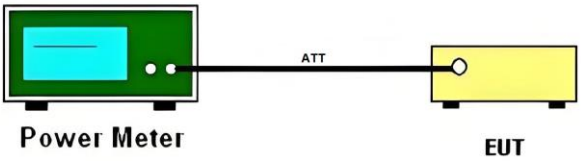
## 6.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

1. Place the EUT on the table and set it in transmitting mode.
2. Connected the EUT's antenna port to peak power meter by 6dB attenuator.
3. Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

## 6.3. Test Setup




## 6.4. Test Results

| Condition | Antenna | Rate | Frequency (MHz) | Max. Conducted Power(dBm) | Max. Conducted Power(mW) | Limit(mW) | Result |
|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 1Mbps | 2402.00 | 0.33 | 1.08 | 1000 | Pass |
| NVNT | ANT1 | 1Mbps | 2440.00 | -0.61 | 0.87 | 1000 | Pass |
| NVNT | ANT1 | 1Mbps | 2480.00 | -1.96 | 0.64 | 1000 | Pass |

# 7. Peak Power Spectral Density

## 7.1. Test limits

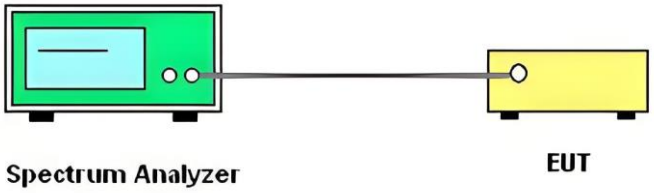
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

## 7.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 30kHz(Set the RBW to: 3 kHz≤RBW≤100 kHz.), VBW = 300kHz(Set the VBW≥3×RBW), span≥1.5×DTS bandwidth., detail see the test plot.
4. Record the max reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

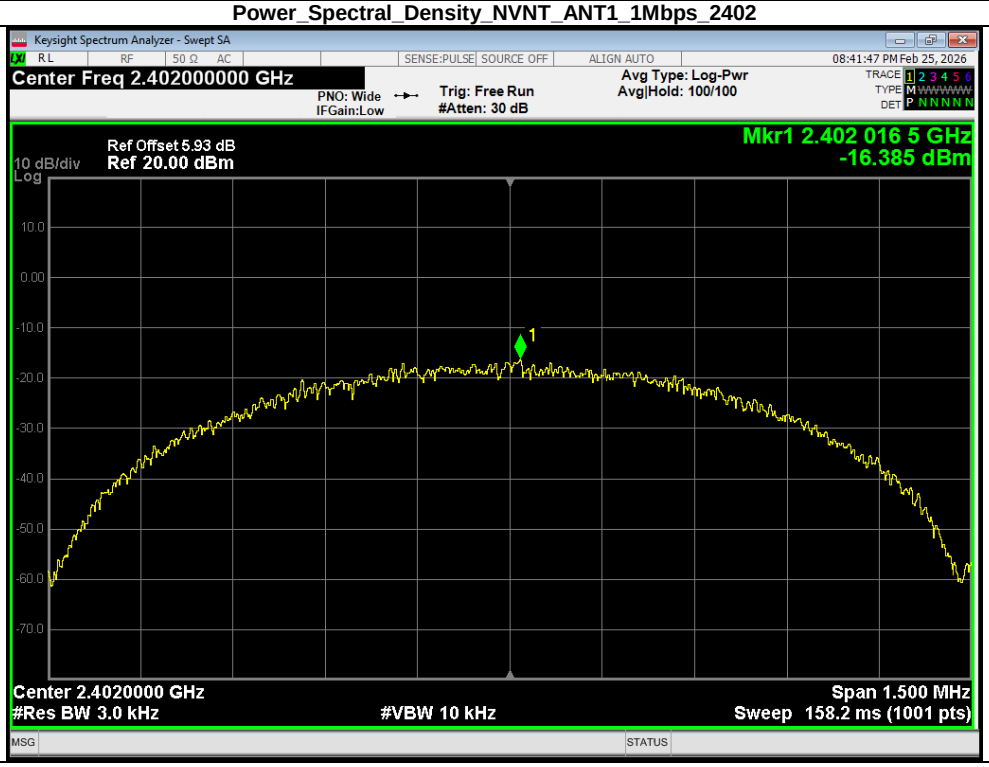
## 7.3. Test Setup



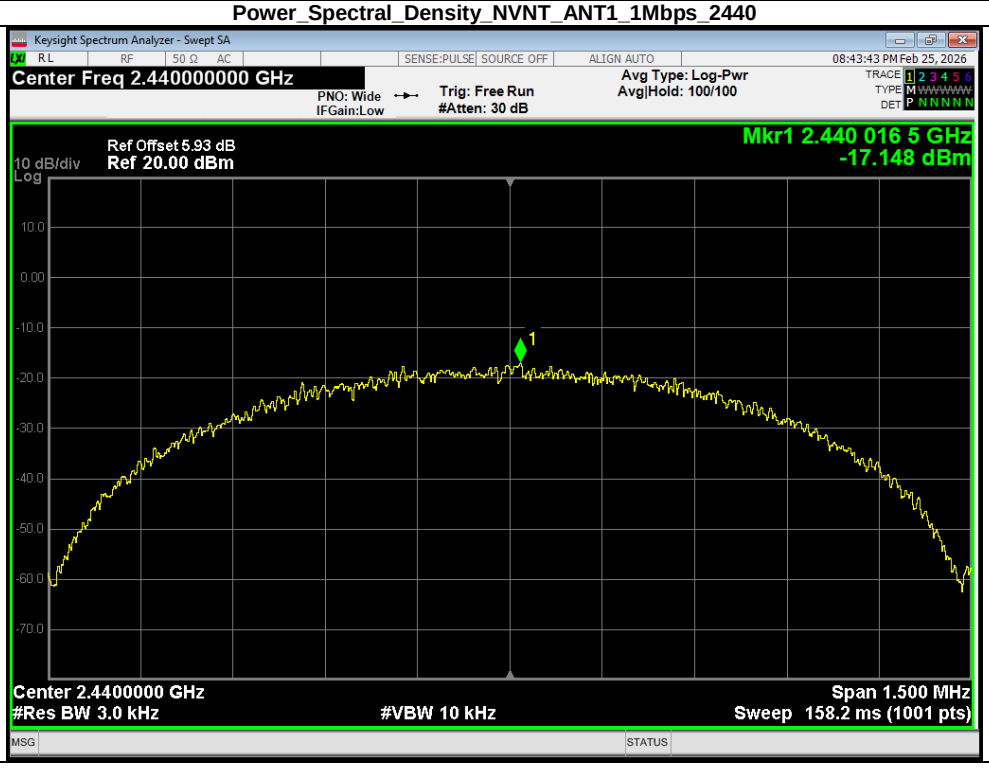

## 7.4. Test Results

| Condition | Antenna | Rate | Frequency (MHz) | Power Spectral Density(dBm/3kHz) | Limit(dBm/3kHz) | Result |
|---|---|---|---|---|---|---|
| NVNT | ANT1 | 1Mbps | 2402.00 | -16.385 | 8 | Pass |
| NVNT | ANT1 | 1Mbps | 2440.00 | -17.148 | 8 | Pass |
| NVNT | ANT1 | 1Mbps | 2480.00 | -18.449 | 8 | Pass |

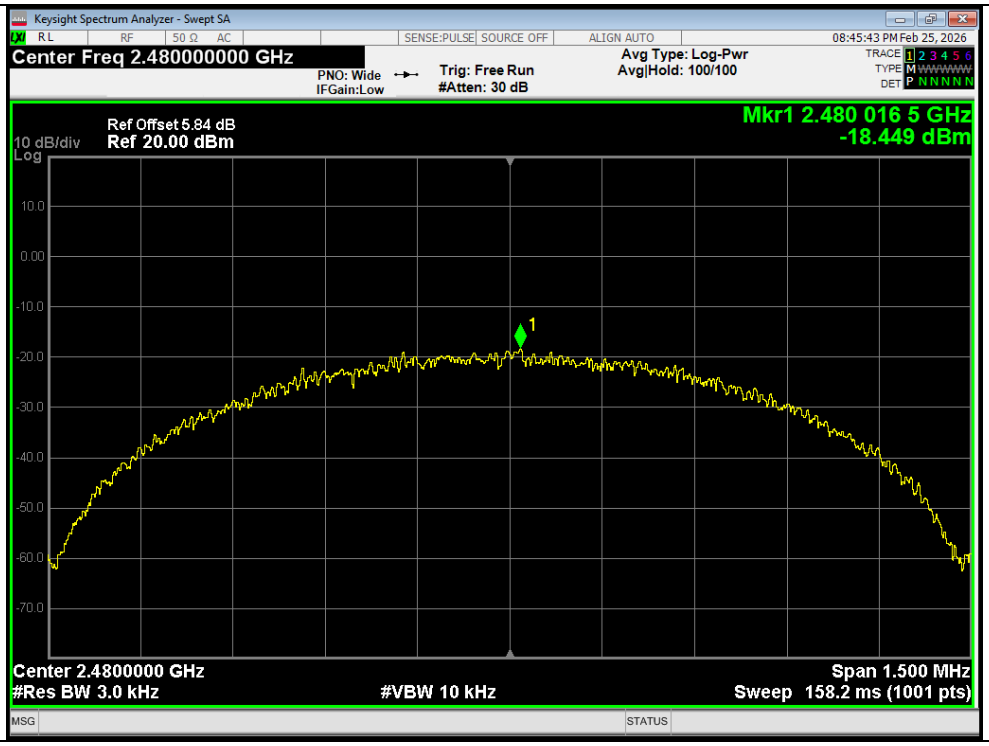
**Power_Spectral_Density_NVNT_ANT1_1Mbps_2402**




**Power_Spectral_Density_NVNT_ANT1_1Mbps_2440**




**Power_Spectral_Density_NVNT_ANT1_1Mbps_2480**


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
SOURCE OFF
ALIGN AUTO
08:45:43 PM Feb 25, 2026
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 5.84 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 016 5 GHz
-18.449 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.500 MHz
Sweep 158.2 ms (1001 pts)
MSG
STATUS

# 8. Occupied Bandwidth

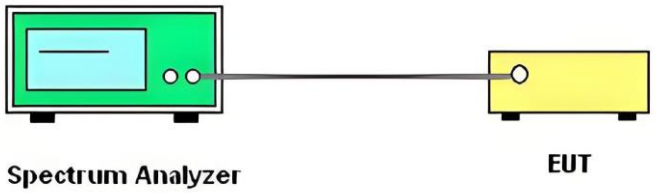
## 8.1. Test limits

Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz

## 8.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02 and C63.10 section 6.9.3
a) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
b) The test receiver set RBW = 100kHz, VBW≥3*RBW =300kHz, Peak Detector, Sweep time set auto, detail see the test plot.
c) The test receiver set RBW =1-5%BW, VBW>3*RBW, Sweep time set auto, detail see the test plot for 99%Bandwidth.

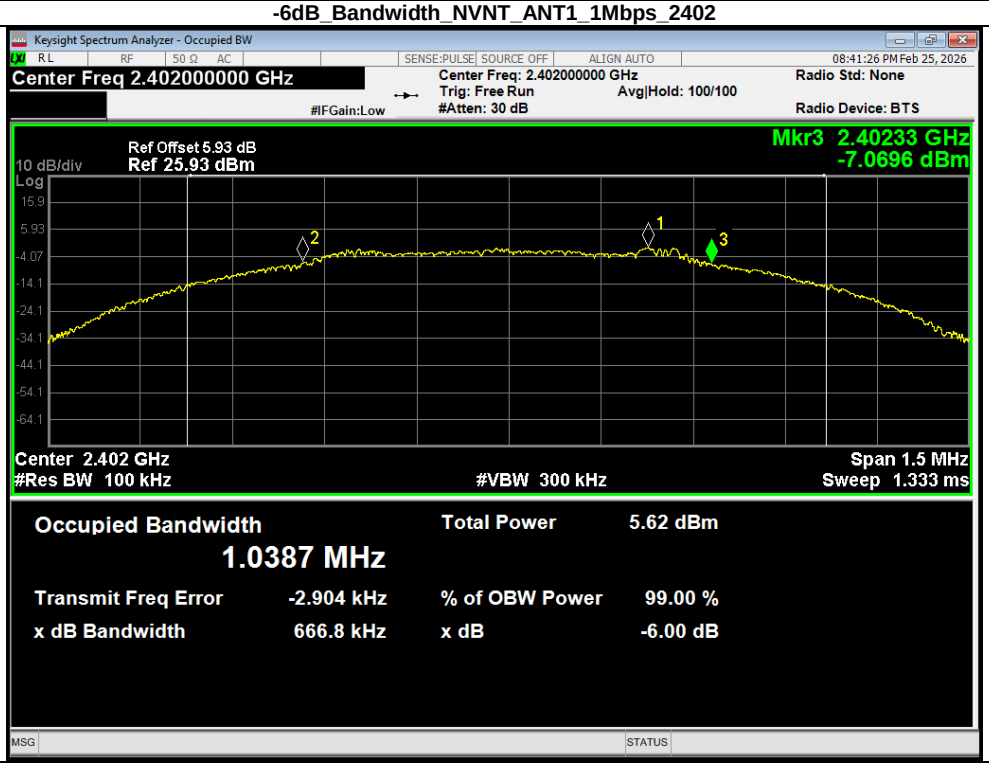
## 8.3. Test Setup



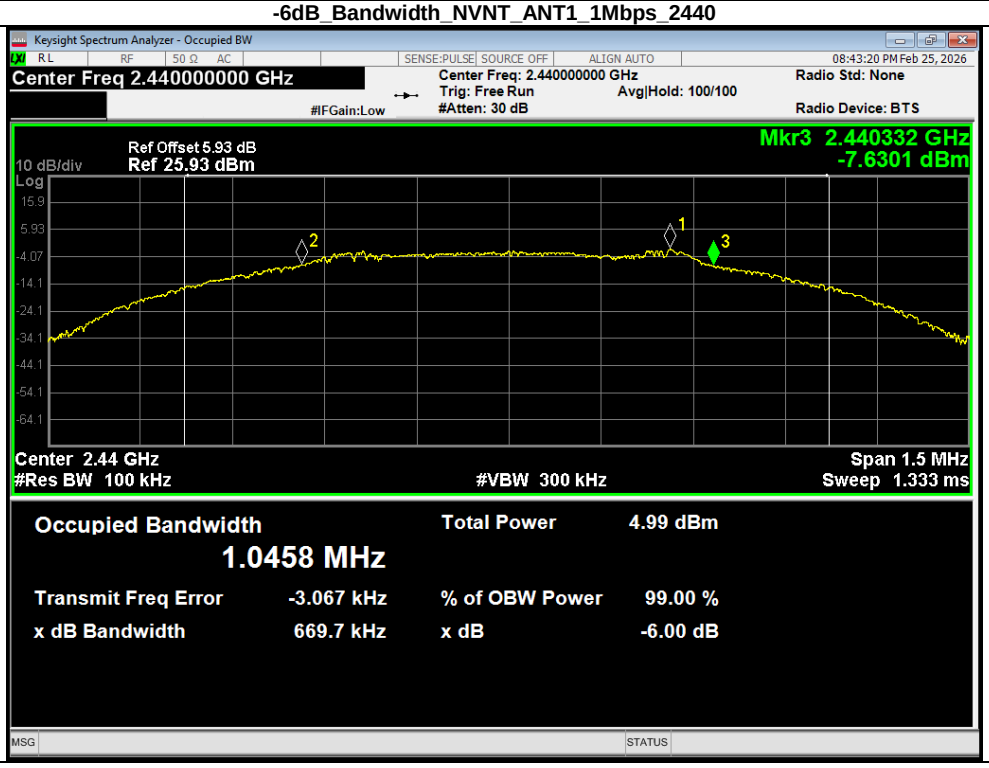

## 8.4. Test Results

| Condition | Antenna | Rate | Frequency (MHz) | -6dB BW(kHz) | limit(kHz) | Result |
|---|---|---|---|---|---|---|
| NVNT | ANT1 | 1Mbps | 2402.00 | 666.8 | 500 | Pass |
| NVNT | ANT1 | 1Mbps | 2440.00 | 669.7 | 500 | Pass |
| NVNT | ANT1 | 1Mbps | 2480.00 | 660.3 | 500 | Pass |

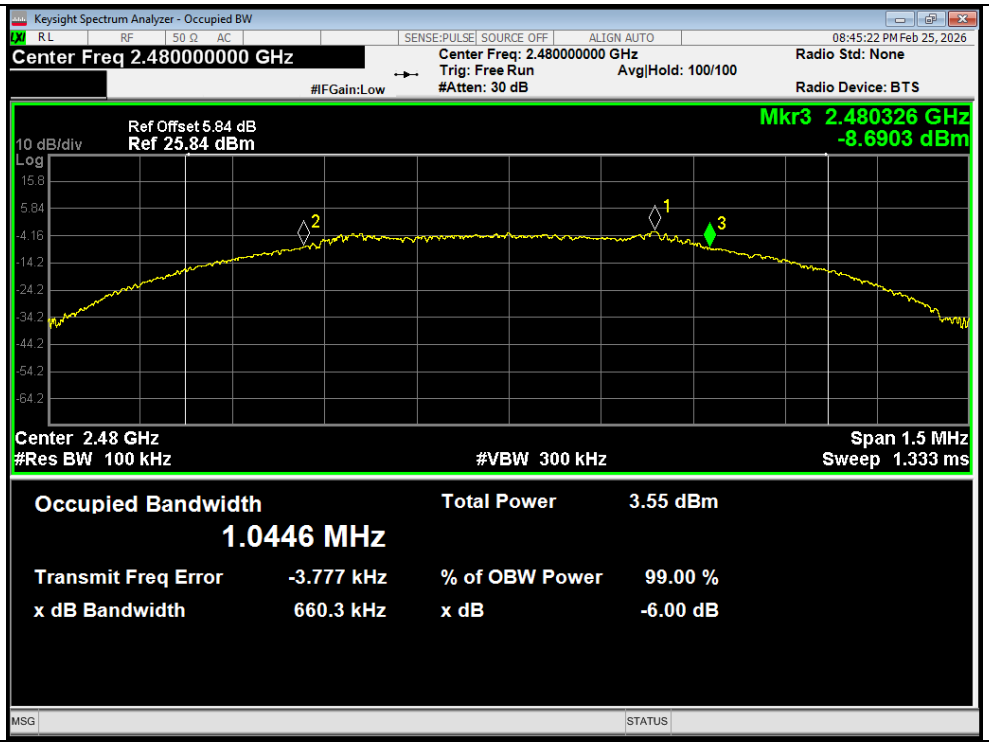
**-6dB_Bandwidth_NVNT_ANT1_1Mbps_2402**




**-6dB_Bandwidth_NVNT_ANT1_1Mbps_2440**




**-6dB_Bandwidth_NVNT_ANT1_1Mbps_2480**


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
SOURCE OFF
ALIGN AUTO
08:45:22 PM Feb 25, 2026
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Ref Offset 5.84 dB
10 dB/div
Ref 25.84 dBm
Log
Mkr3 2.480326 GHz
-8.6903 dBm
15.8
5.84
-4.16
-14.2
-24.2
-34.2
-44.2
-54.2
-64.2
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 1.5 MHz
Sweep 1.333 ms
Occupied Bandwidth
1.0446 MHz
Total Power 3.55 dBm
Transmit Freq Error -3.777 kHz
% of OBW Power 99.00 %
x dB Bandwidth 660.3 kHz
x dB -6.00 dB
MSG
STATUS

# 9. Band Edge Test

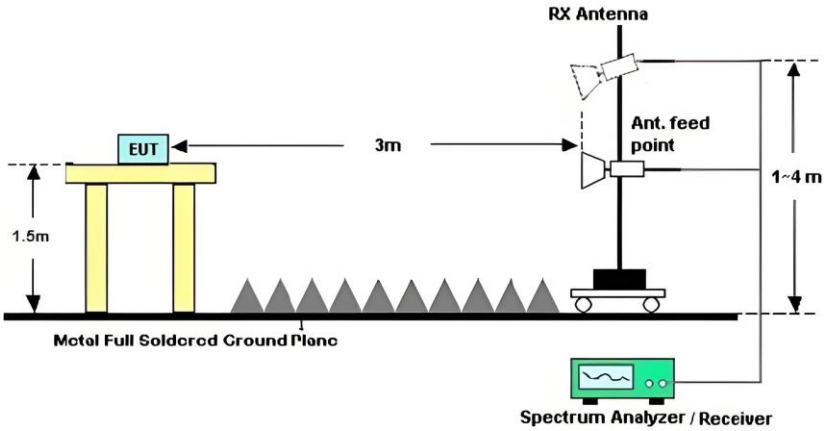
## 9.1. Test Limit

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`

| 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 |
| 30-88 | 100 ** | 3 |
| 88-216 | 150 ** | 3 |
| 216-960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241

## 9.2. Block Diagram of Test Setup




## 9.3. Test Procedure

ANSI C63.10-2020 section 6.10.5.2
All restriction band and non- restriction band have been tested, only worse case is reported.
Details see the KDB558074 D01 Meas Guidance v05r02

1. Put the EUT on a 1.5m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission
2. Check the spurious emissions out of band.
3. RBW 1MHz, VBW 3MHz, peak detector for peak value, RBW 1MHz, VBW 10Hz, RMS detector for AV value.

## 9.4. Test Results

| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2026.01.27 | Temperature | : | 22.9℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 46% |
| Test Results | : | **PASS** | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency Range : **2310MHz~2410MHz** | | | | | | | | |
| Test Mode : 1Mbps: GFSK TX 2402MHz | | | | | | | | |
| No. | Freq MHz | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1 | 2390 | H | 57.96 | -20.45 | 37.51 | 74.00 | -36.49 | Peak |
| 2 | 2390 | H | -- | -20.45 | -- | 54.00 | -- | Avg |
| 3 | 2400 | H | 58.25 | -20.41 | 37.84 | 74.00 | -36.16 | Peak |
| 4 | 2400 | H | -- | -20.41 | -- | 54.00 | -- | Avg |
| | | | | | | | | |
| 1 | 2390 | V | 60.50 | -20.45 | 40.05 | 74.00 | -33.95 | Peak |
| 2 | 2390 | V | -- | -20.45 | -- | 54.00 | -- | Avg |
| 3 | 2400 | V | 63.38 | -20.41 | 42.97 | 74.00 | -31.03 | Peak |
| 4 | 2400 | V | -- | -20.41 | -- | 54.00 | -- | Avg |
| | | | | | | | | |
| Frequency Range : **2450MHz~2550MHz** | | | | | | | | |
| Test Mode : 1Mbps: GFSK TX 2480MHz | | | | | | | | |
| 1 | 2483.5 | H | 60.25 | -20.15 | 40.10 | 74.00 | -33.90 | Peak |
| 2 | 2483.5 | H | -- | -20.15 | -- | 54.00 | -- | Avg |
| | | | | | | | | |
| 1 | 2483.5 | V | 64.55 | -20.15 | 44.40 | 74.00 | -29.60 | Peak |
| 2 | 2483.5 | V | -- | -20.15 | -- | 54.00 | -- | Avg |

Note:
1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.
2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.
Result=Reading + Correct Factor. Margin= Result-Limit.
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.

# 10. Antenna Requirement

## 10.1.Standard Requirement

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.

## 10.2.Test Results

The EUT antenna is PCB antenna. It complies with the standard requirement.

# 11. DUTY CYCLE

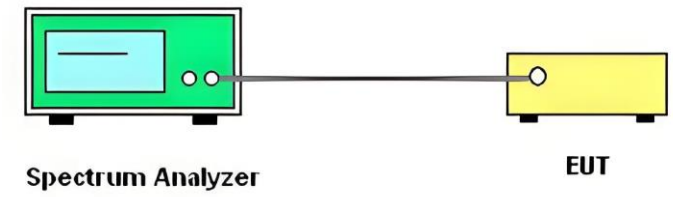
## 11.1.Test Limits

N/A

## 11.2.Test Procedure

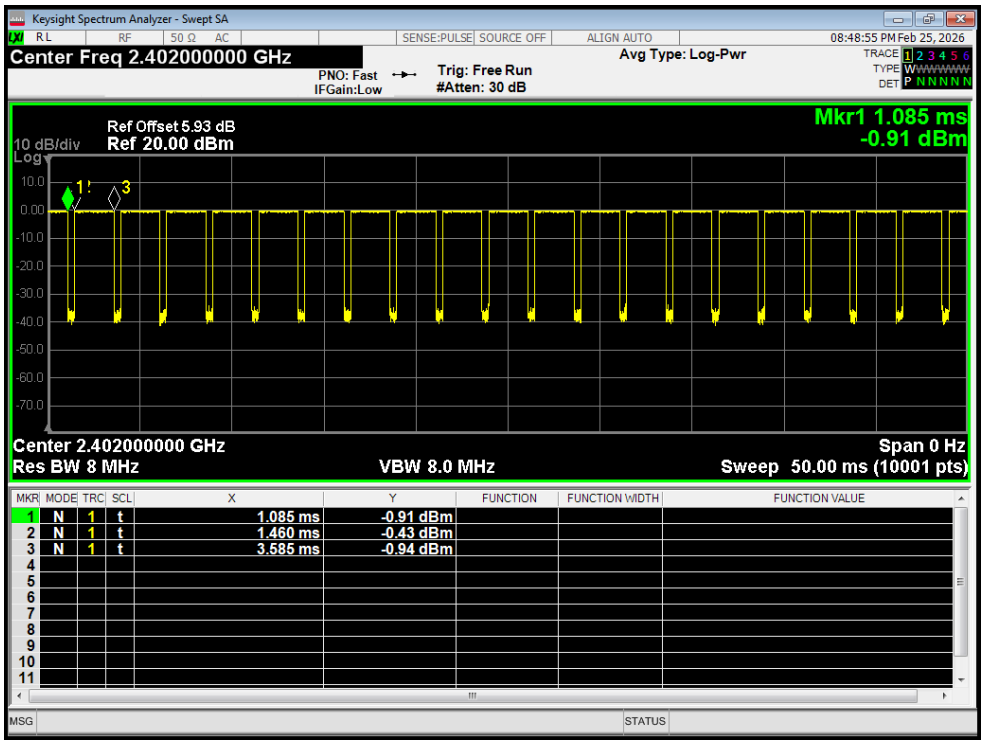
ANSI C63.10:2020 §11.6

## 11.3.Test Setup

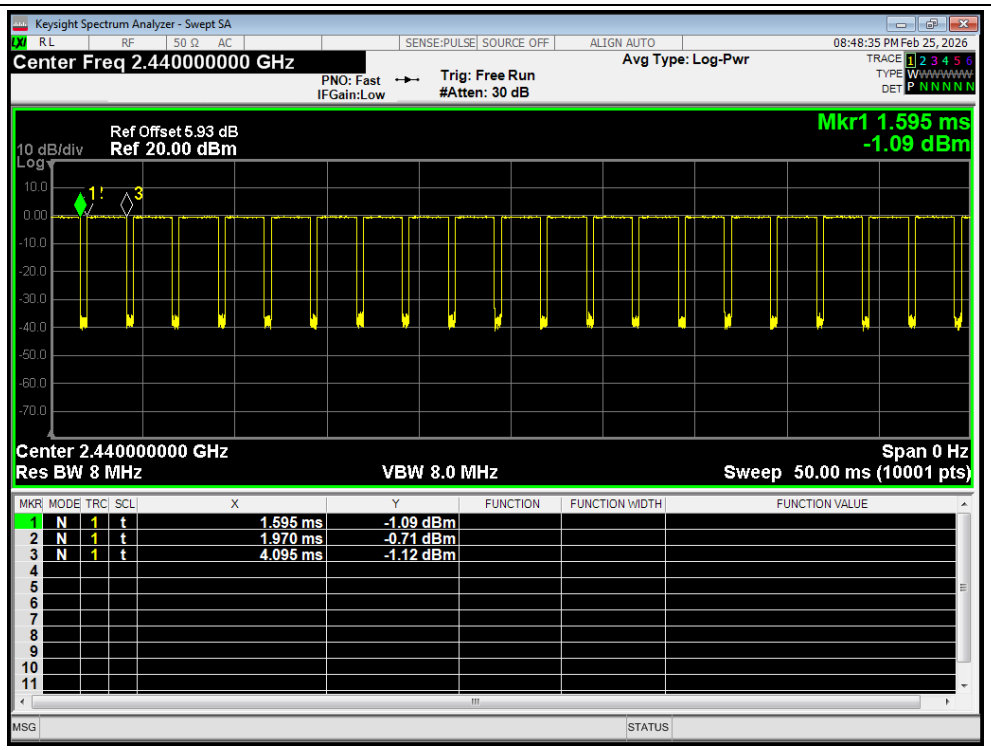



## 11.4.Test Results

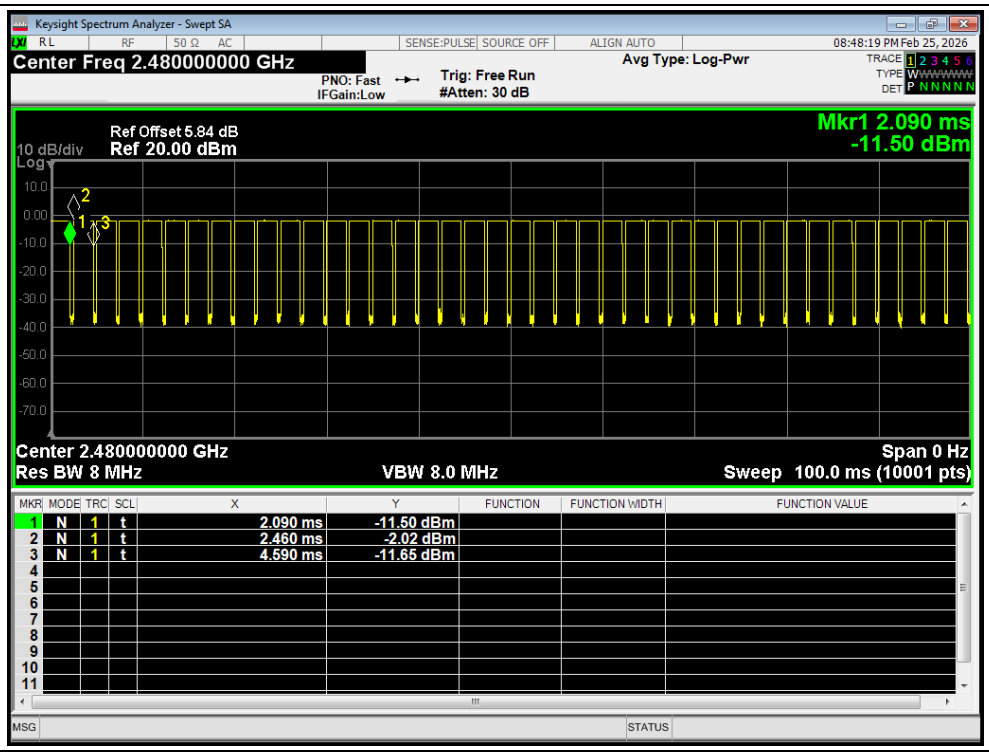
| Condition | Antenna | Modulation | Frequency (MHz) | Duty cycle(%) | Duty factor(dB) |
|---|---|---|---|---|---|
| NVNT | ANT1 | Lowest | 2402.00 | 85.00 | 0.71 |
| NVNT | ANT1 | Middle | 2440.00 | 85.00 | 0.71 |
| NVNT | ANT1 | Highest | 2480.00 | 85.20 | 0.70 |




Lowest channel




Middle channel




Highest channel

## 12. Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

## 13. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

**------ END OF REPORT------**