# FCC TEST REPORT
# FCC ID:2A2PC-J9PRO

| | | |
|---|---|---|
| **Product** | : | **MINI Projector** |
| **Model Name** | : | **J9 Pro, J21 Pro** |
| **Brand** | : | **N/A** |
| **Report No.** | : | **SZNTT26032645E1-1** |

Prepared for

**SHEN ZHEN LIAN JI XING TECHNOLOLGY CO.,LTD**

**302, Building 6, Zone C, South Biantou Industrial Zone,Dong fang Community, Song gang Street, Bao'an District, Shenzhen, Guangdong, China**

Prepared by

**Shenzhen NTT Testing Technology Co., Ltd.**

**1B, Building 2, Factory Building & 103, Building 3, Factory Building, Dayang Industrial Park No.4, Industrial Avenue, Tangwei Community, Fuhai Sub-district,Bao 'an District, Shenzhen City, China**

**TEL: 0755-27889935**

# 1 TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant's name | : | SHEN ZHEN LIAN JI XING TECHNOLOLGY CO.,LTD |
| Address | : | 302, Building 6, Zone C, South Biantou Industrial Zone,Dong fang Community, Song gang Street, Bao'an District, Shenzhen, Guangdong, China |
| Manufacture's name | : | SHEN ZHEN LIAN JI XING TECHNOLOLGY CO.,LTD |
| Address | : | 302, Building 6, Zone C, South Biantou Industrial Zone,Dong fang Community, Song gang Street, Bao'an District, Shenzhen, Guangdong, China |
| Product name | : | MINI Projector |
| Model name | : | J9 Pro |
| Additional model | : | J21 Pro |
| Standards | : | FCC CFR47 Part 15 Section 15.247 |
| Test procedure | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024<br>KDB 558074 D01 15.247 Meas Guidance v05r02 |
| Test Date | : | Aug. 02, 2026 to Aug. 13, 2026 |
| Date of Issue | : | Aug. 13, 2026 |
| Test Result | : | Pass |

This device described above has been tested by NTT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Prepared by(Test Engineer):

Cindy Qin

Reviewer(Supervisor):

Ken Wu

Approved(Manager):

Abel Yu

# Contents

# 2 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| AC Power Line conducted emission | FCC part 15.207 | PASS |
| Radiated Spurious Emissions | FCC part 15.205/15.209 | PASS |
| Conducted Spurious Emission | FCC part 15. 247(d) | PASS |
| Band edge | FCC part 15.247(d) | PASS |
| 6dB&99% Bandwidth | FCC part 15.247 (a)(2) | PASS |
| Maximum Peak Output Power | FCC part 15.247 (b)(3) | PASS |
| Power Spectral Density | FCC part 15.247 (e) | PASS |
| Antenna Requirement | FCC part 15.203/15.247 (b)(4) | PASS |

Remark:

1. “N/A” denotes test is not applicable in this Test Report.

# 3 TEST FACILITY

Site Description

| | | |
|---|---|---|
| EMC Lab. | : | Designation Number: CN3446<br>Test Firm Registration Number: 129414<br>Accredited by ANAB, Dec. 19, 2025<br>The Certificate Registration Number is AT-3446 |
| Name of Firm | : | Shenzhen NTT Testing Technology Co., Ltd. |
| Site Location | : | 1B, Building 2, Factory Building & 103, Building 3, Factory Building, Dayang Industrial Park No.4, Industrial Avenue, Tangwei Community, Fuhai Sub-district,Bao 'an District, Shenzhen City, China |

# 4 General Information

## 4.1 General Description of E.U.T.

| | | |
|---|---|---|
| Product Name | : | MINI Projector |
| Model Name | : | J9 Pro |
| Sample ID | : | SZNTT26032645-001# |
| Sample(s) Status: | : | Engineer sample |
| Additional model | : | J21 Pro |
| Model Difference | : | All models are the same except for the model name, color and The shape of the appearance. |
| Operating frequency | : | 2402-2480MHz |
| Numbers of Channel | : | 40 channels |
| Type of Modulation | : | GFSK |
| Rate | : | 1Mbps |
| Antenna Type | : | Chip Antenna |
| Antenna Gain | : | 2.71dBi |
| Power supply | : | DC 5V from adapter input AC 120V/60Hz |
| Hardware Version | : | / |
| Software Version | : | / |
| Remark： the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant. | | |

## 4.2 Channel List

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The details of test channels and bandwidth were for RF conductive measurement.

Channel List:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 00 | **2402** | 14 | 2430 | 28 | 2458 |
| 01 | 2404 | 15 | 2432 | 29 | 2460 |
| 02 | 2406 | 16 | 2434 | 30 | 2462 |
| 03 | 2408 | 17 | 2436 | 31 | 2464 |
| 04 | 2410 | 18 | 2438 | 32 | 2466 |
| 05 | 2412 | **19** | **2440** | 33 | 2468 |
| 06 | 2414 | 20 | 2442 | 34 | 2470 |
| 07 | 2416 | 21 | 2444 | 35 | 2472 |
| 08 | 2418 | 22 | 2446 | 36 | 2474 |
| 09 | 2420 | 23 | 2448 | 37 | 2476 |
| 10 | 2422 | 24 | 2450 | 38 | 2478 |
| 11 | 2424 | 25 | 2452 | 39 | **2480** |
| 12 | 2426 | 26 | 2454 | | |
| 13 | 2428 | 27 | 2456 | | |

Note:

1. Test of channel was included the lowest, middle and highest frequency in highest data rate and to perform the test, then record on this report.

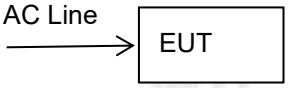
Test Channel：

| | Channel | Frequency(MHz) |
|---|---|---|
| Low Channel | 0 | 2402 |
| Mid Channel | 19 | 2440 |
| High Channel | 39 | 2480 |

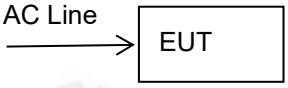
## 4.3 Test Setup Configuration

Conducted Emission

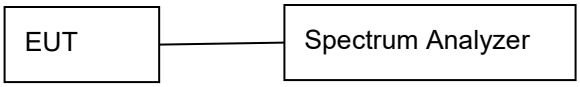

Radiated Emission




Radiated Spurious




RF Conducted Test




## 4.4 Test Mode

| | |
|---|---|
| Transmitting mode | Keep the EUT in continuously transmitting mode. |
| Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data. | |

| | |
|---|---|
| Test Software | FCC_assist 1.0.4 |
| Power level setup | 0 dBm |

# 5 Equipment During Test

## 5.1 Equipments List

Conducted emission Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 944 Shielded Room | HSRCE944 | / | HTEC | 2025/4/30 | 2028/4/29 |
| EMI Test Receiver | ESCI | / | RS | 2025/9/8 | 2026/9/7 |
| LISN | NNLK 8129 | 00603 | Schwarzbeck | 2025/9/8 | 2026/9/7 |
| LISN | NNHV 8123-400 | 00694 | Schwarzbeck | 2025/9/8 | 2026/9/7 |
| LISN | NNHV 8123-400 | 00680 | Schwarzbeck | 2025/9/8 | 2026/9/7 |
| Cable | RG223-1500MM | NA | RG | 2025/9/8 | 2026/9/7 |

Radiated emission & Radio Frequency Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 966 Shielded Room | 966 Room | / | EMToni | 2025/7/24 | 2028/7/23 |
| EMI Test Receiver | ESCI | 101018 | RS | 2025/9/8 | 2026/9/7 |
| Amplifi（30MHz-1GHz） | BBV 9718D | 00042 | SCHWARZBECK | 2025/9/8 | 2026/9/7 |
| Bilog Antenna（30MHz-1GHz） | VULB9168 | 1858 | SCHWARZBECK | 2025/9/9 | 2026/9/8 |
| Horn antenna（1GHz-18GHz） | BBHA 9120 D | 02622 | SCHWARZBECK | 2025/9/9 | 2026/9/8 |
| Pream plifier（1GHz-18GHz） | BBV 9718D | 0024 | SCHWARZBECK | 2025/9/8 | 2026/9/7 |
| Spectrum Analyze（10Hz-40GHz） | FSV 40 | 100952 | Rohde & Schwarz | 2025/9/8 | 2026/9/7 |
| Pream plifier（18GHz-40GHz） | BBV 9721 | 0056 | SCHWARZBECK | 2025/9/8 | 2026/9/7 |
| Double Ridge Guide Horn Antenna（18GHz-40GHz） | SAS-574 | 588 | A.H.System | 2025/9/8 | 2026/9/7 |
| Loop Antenna (9KHz-30MHz) | FMZB1519B | 014 | SCHWARZBECK | 2025/9/8 | 2026/9/7 |
| Amplifier (9KHz-30MHz) | CVP 9222 C | 00109 | SCHWARZBECK | 2025/9/8 | 2026/9/7 |
| MXG Signal Analyzer | N9020A | MY50510202 | Agilent | 2025/9/8 | 2026/9/7 |

| | | | | | |
|---|---|---|---|---|---|
| MXG Vector Signal Generator | N5182A | MY50140020 | Agilent | 2025/9/8 | 2026/9/7 |
| MXG Analog Signal Generator | N5181A | MY47420919 | Agilent | 2025/9/8 | 2026/9/7 |
| Power Sensor | TR1029-2 | 512364 | Techoy | 2025/9/8 | 2026/9/7 |
| RF Swith | TR1029-1 | 512364 | Techoy | 2025/9/8 | 2026/9/7 |
| Cable | DA800-4000MM | NA | DA | 2025/9/8 | 2026/9/7 |
| Cable | DA800-11000MM | NA | DA | 2025/9/8 | 2026/9/7 |

Other

| Item | Name | Manufacturer | Model | Software version |
|---|---|---|---|---|
| 1 | EMC Conduction Test System | FALA | EZ-EMC | Ver.EMC-CON 3A1.1+ |
| 2 | EMC radiation test system | FALA | EZ-EMC | Ver.FA-03A2 RE+ |
| 3 | RF test system | TACHOY | RFTest | V1.0.0 |
| 4 | RF communication test system | TACHOY | RFTest | V1.0.0 |

## 5.2 Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| RF output power, conducted | ±1.0dB |
| Power Spectral Density, conducted | ±2.2dB |
| Radio Frequency | ± 1 x 10-6 |
| Bandwidth | ± 1.5 x 10-6 |
| Time | ±2% |
| Duty Cycle | ±2% |
| Temperature | ±1°C |
| Humidity | ±5% |
| DC and low frequency voltages | ±3% |
| Conducted Emissions (150kHz~30MHz) | ±3.64dB |
| Radiated Emission(9KHz~30MHz) | ±4.51dB |
| Radiated Emission(30MHz~1GHz) | ±5.03dB |
| Radiated Emission(1GHz~25GHz) | ±4.74dB |
| Remark:When making a conformity declaration based on test results for regulations/standards or specifications,the default is to use Clause 4.2.1of ILAC-G8:09/2019 and the guidelines on decision rules and conformity declaration in IEC Guide 115:2023. | |

## 5.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|---|---|---|---|---|---|
| E-1 | MINI Projector | N/A | J9 Pro | N/A | EUT |
| E-2 | Adater | OMIX | X2903 | N/A | Auxiliary |
| E-3 | serial port | N/A | USB to TTL | N/A | Auxiliary |

Note: (1)The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

# 6 Conducted Emission

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR 47 Part 15 Section 15.207 |
| Test Method | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 |
| Test Result | : | PASS |
| Frequency Range | : | 150kHz to 30MHz |
| Class/Severity | : | Class B |

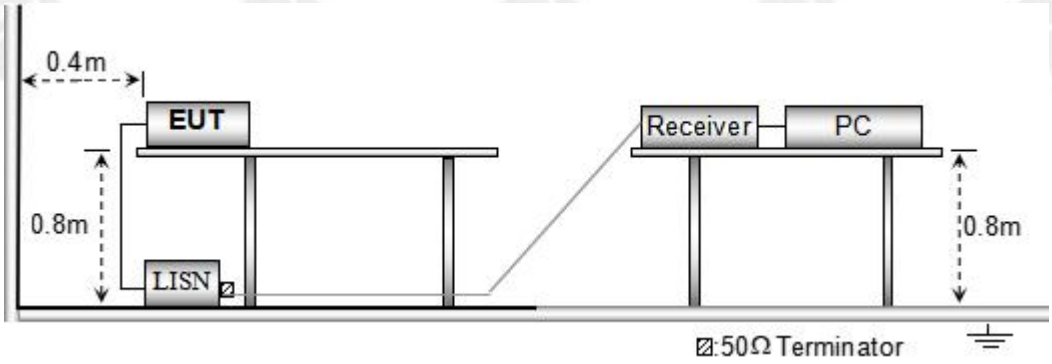
## 6.1 E.U.T. Operation

Operating Environment :

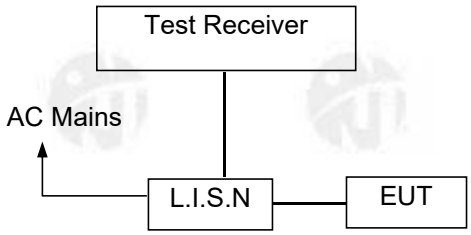
| | | |
|---|---|---|
| Temperature | : | 26 °C |
| Humidity | : | 54 % RH |
| Atmospheric Pressure | : | 101kPa |

## 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10-202( + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024.




## 6.3 Test SET-UP (Block Diagram of Configuration)



## 6.4 Measurement Procedure

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back

and forth in the center forming a bundle 30 to 40 cm long.

3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the

cable may be terminated, if required, using the correct terminating impedance. The overall

length shall not exceed 1 m.

4. LISN at least 80 cm from nearest part of EUT chassis.

5.For the actual test configuration, please refer to the related Item – EUT Test Photos.

## 6.5 Conducted Emission Limit

**Conducted Emission**

| Frequency(MHz) | Quasi-peak | Average |
|---|---|---|
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

**Note:**

1. The lower limit shall apply at the transition frequencies

2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 6.6 Measurement Description

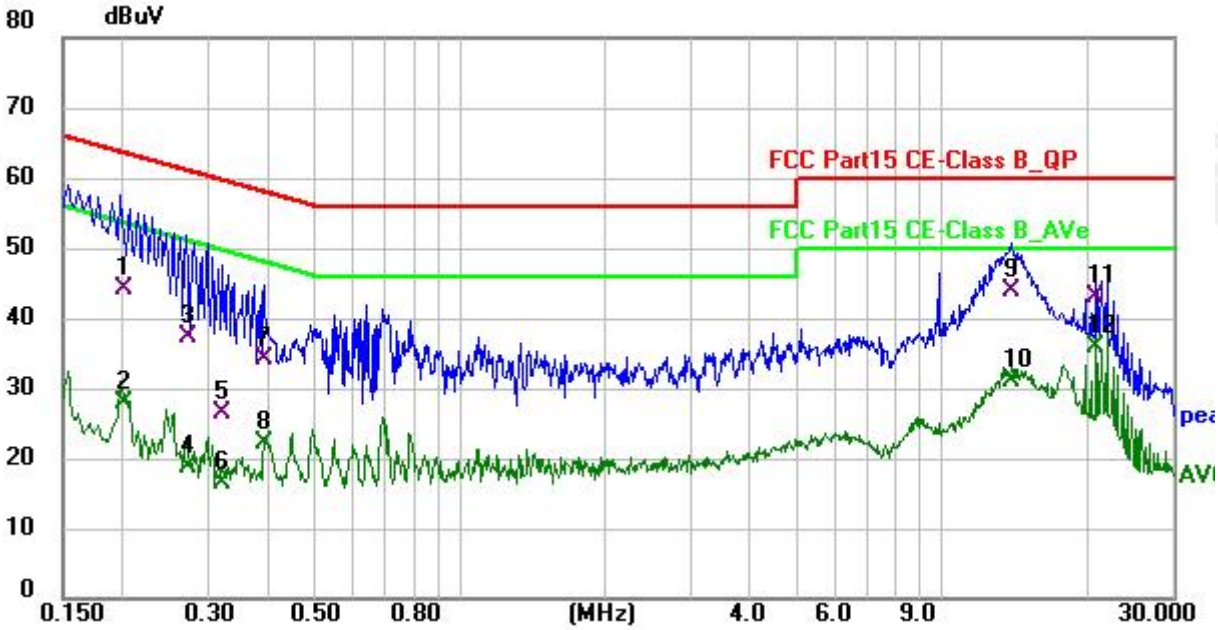
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 6.7 Conducted Emission Test Result

Pass

All the modulation modes were tested the data of the worst mode (GFSK, Middle channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

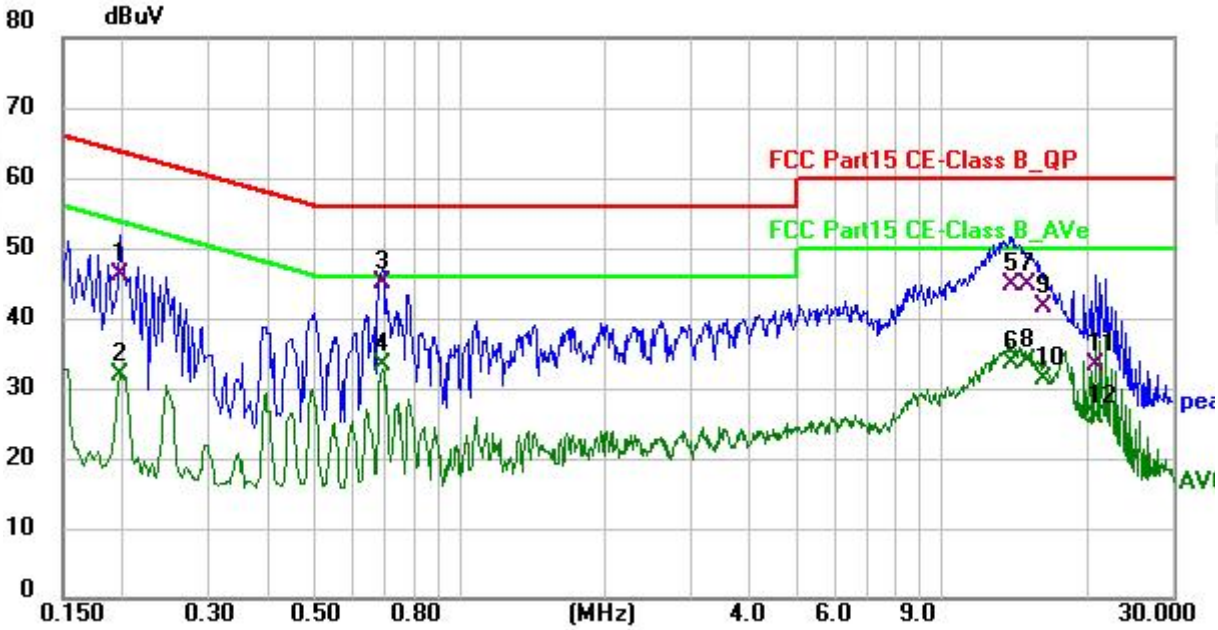
| | | | |
|---|---|---|---|
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
| Pressure: | 1010hPa | Phase : | L |
| Test Voltage : | AC 120V/60Hz | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.2009 | 24.27 | 19.94 | 44.21 | 63.57 | -19.36 | QP |
| 2 | 0.2009 | 8.04 | 19.94 | 27.98 | 53.57 | -25.59 | AVG |
| 3 | 0.2722 | 17.43 | 19.97 | 37.40 | 61.05 | -23.65 | QP |
| 4 | 0.2722 | -1.19 | 19.97 | 18.78 | 51.05 | -32.27 | AVG |
| 5 | 0.3204 | 6.60 | 19.96 | 26.56 | 59.70 | -33.14 | QP |
| 6 | 0.3204 | -3.64 | 19.96 | 16.32 | 49.70 | -33.38 | AVG |
| 7 | 0.3933 | 14.03 | 19.99 | 34.02 | 57.99 | -23.97 | QP |
| 8 | 0.3933 | 2.22 | 19.99 | 22.21 | 47.99 | -25.78 | AVG |
| 9 | 13.9674 | 23.84 | 20.06 | 43.90 | 60.00 | -16.10 | QP |
| 10 | 13.9674 | 10.82 | 20.06 | 30.88 | 50.00 | -19.12 | AVG |
| 11 | 20.9136 | 22.63 | 20.23 | 42.86 | 60.00 | -17.14 | QP |
| 12 * | 20.9136 | 15.66 | 20.23 | 35.89 | 50.00 | -14.11 | AVG |

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Margin = Reading level + Correct Factor - Limit.

| | | | |
|---|---|---|---|
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
| Pressure: | 1010hPa | Phase : | N |
| Test Voltage : | AC 120V/60Hz | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.1979 | 26.24 | 19.90 | 46.14 | 63.70 | -17.56 | QP |
| 2 | 0.1979 | 12.09 | 19.90 | 31.99 | 53.70 | -21.71 | AVG |
| 3 * | 0.6902 | 24.96 | 20.00 | 44.96 | 56.00 | -11.04 | QP |
| 4 | 0.6902 | 13.41 | 20.00 | 33.41 | 46.00 | -12.59 | AVG |
| 5 | 13.8496 | 24.75 | 20.02 | 44.77 | 60.00 | -15.23 | QP |
| 6 | 13.8496 | 13.69 | 20.02 | 33.71 | 50.00 | -16.29 | AVG |
| 7 | 14.9894 | 24.58 | 20.04 | 44.62 | 60.00 | -15.38 | QP |
| 8 | 14.9894 | 13.79 | 20.04 | 33.83 | 50.00 | -16.17 | AVG |
| 9 | 16.2068 | 21.39 | 20.07 | 41.46 | 60.00 | -18.54 | QP |
| 10 | 16.2068 | 11.21 | 20.07 | 31.28 | 50.00 | -18.72 | AVG |
| 11 | 20.8213 | 13.18 | 20.16 | 33.34 | 60.00 | -26.66 | QP |
| 12 | 20.8213 | 5.68 | 20.16 | 25.84 | 50.00 | -24.16 | AVG |

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Margin = Reading level + Correct Factor - Limit

# 7 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method : ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024

Test Result : PASS

Measurement Distance : 3m

Limit : See the follow table

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))}$ + 80 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))}$ + 40 |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)}$ + 40 |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

## 7.1 EUT Operation

Operating Environment :

Temperature : 26 °C

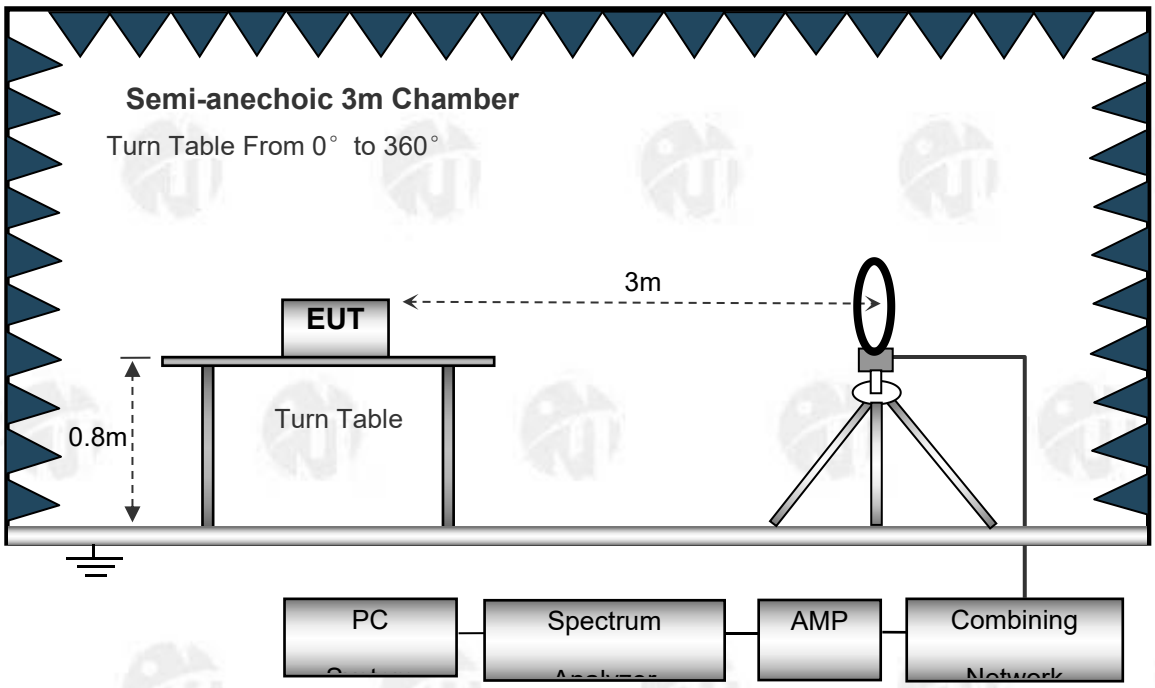
Humidity : 54 % RH

Atmospheric Pressure : 101kPa

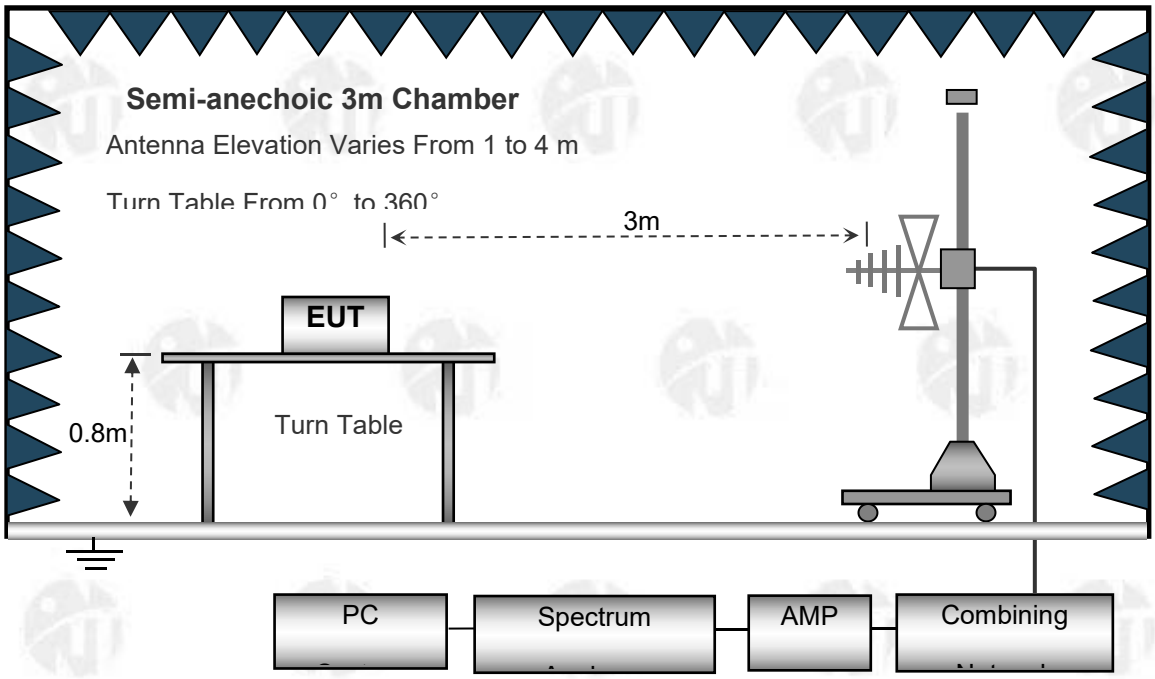
## 7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

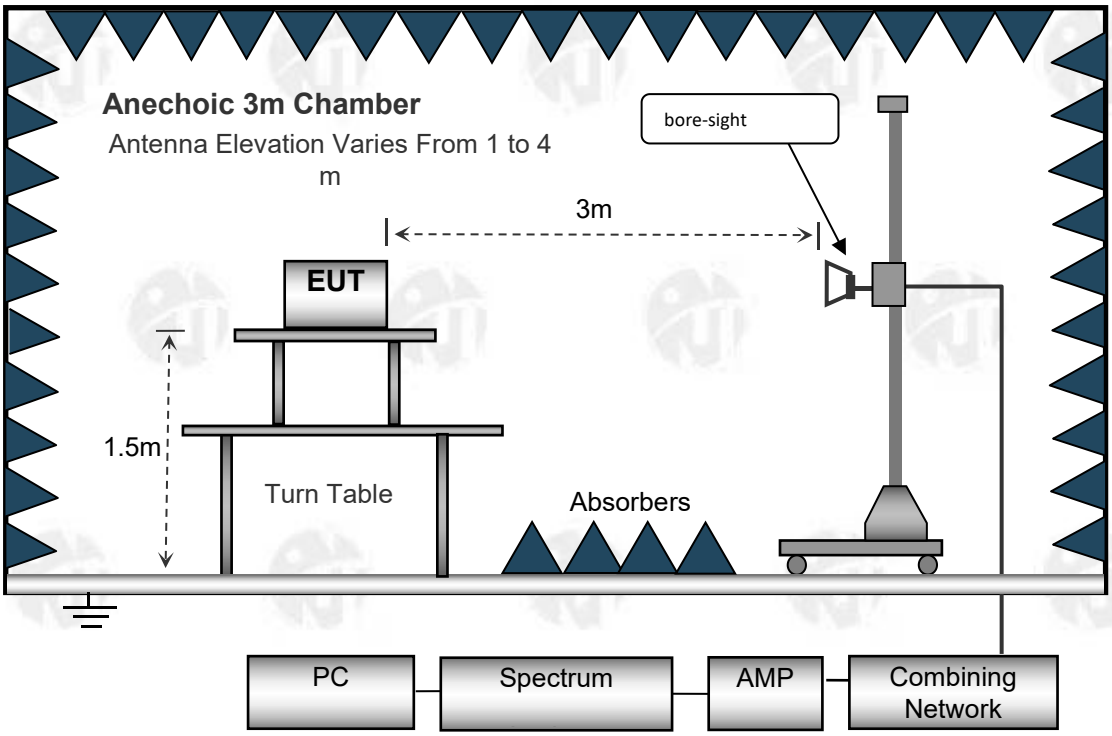
The test setup for emission measurement below 30MHz




The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz




## 7.3 Spectrum Analyzer Setup

| | Frequency | Detector | RBW | VBW | Remark |
|---|---|---|---|---|---|
| Receiver Setup | Below 30MHz | -- | 10kHz | 10kHz | -- |
| | 30MHz ~ 1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| | | RMS | 1MHz | 3MHz | Average Value |

## 7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024.

2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 0.8m above ground plane.

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

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) 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 to comply with the guidelines.

5. Set to the maximum power setting and enable the EUT transmit continuously.

6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.

7. Test Procedure of measurement (For Above 1GHz):

1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).

2) Change the antenna polarization and repeat 1) with vertical polarization.

3) Make a hardcopy of the spectrum.

4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.

5) Change the analyzer mode to Clear/ Write and found the cone of emission.

6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.

7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.

8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

8. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

For Average Measurement:

VBW=10Hz, when duty cycle is no less than 98 percent.

VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

## 7.5 Summary of Test Results

**Test Frequency: 9KHz-30MHz**

| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV/m) | Limit 3m (dBuV/m) | Over (dB) |
|---|---|---|---|---|
| -- | -- | -- | -- | >20 |

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

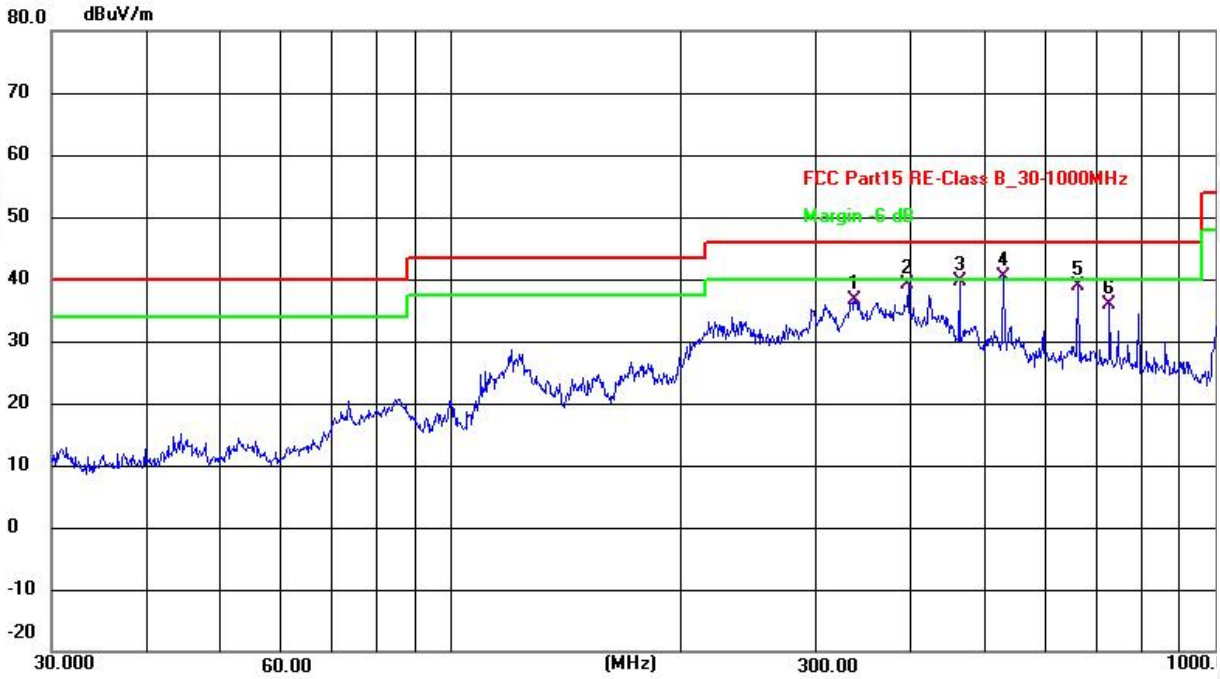
Distance extrapolation factor =40log(Specific distance/ test distance)( dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

**Test Frequency: 30MHz ~ 1GHz**

Pass.

**Please refer to the following test plots for the worst test mode (GFSK, Lowest Channel).**

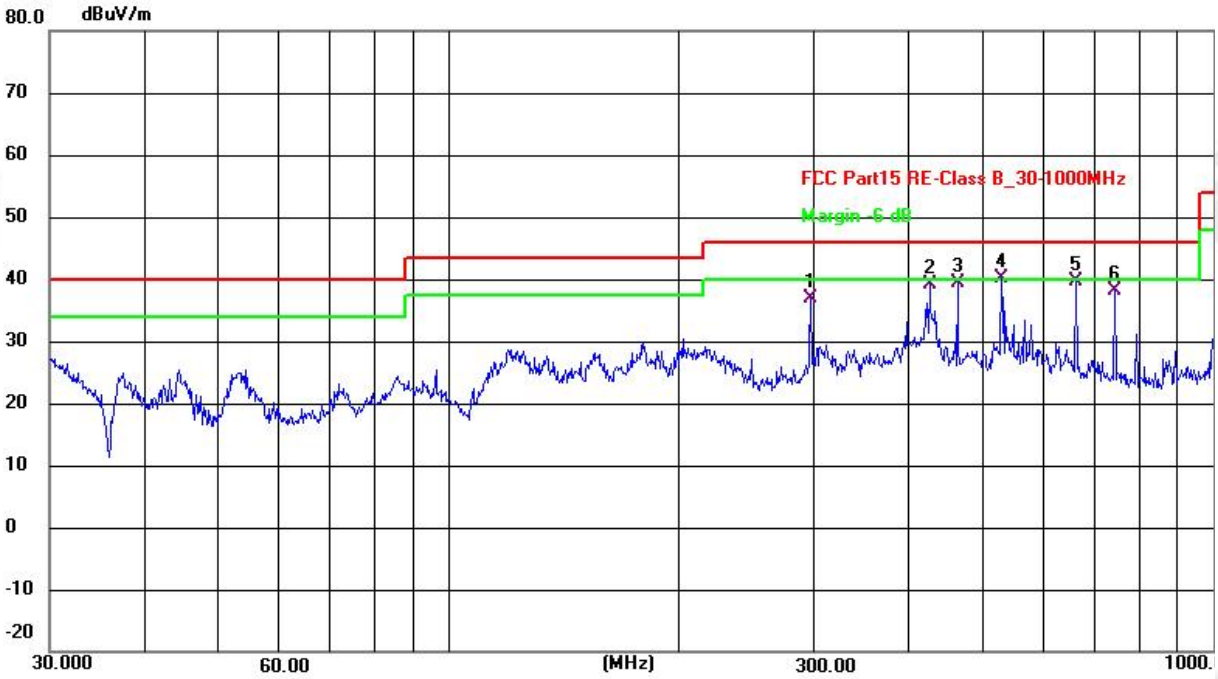
| | | | |
|---|---|---|---|
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
| Pressure: | 1010hPa | Phase : | Horizontal |
| Test Voltage : | AC 120V/60Hz | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 337.2155 | 49.57 | -12.86 | 36.71 | 46.00 | -9.29 | QP |
| 2 | 396.2412 | 51.08 | -11.97 | 39.11 | 46.00 | -6.89 | QP |
| 3 | 462.3455 | 50.51 | -10.95 | 39.56 | 46.00 | -6.44 | QP |
| 4 | 528.2458 | 50.39 | -9.89 | 40.50 | 46.00 | -5.50 | QP |
| 5 | 661.1503 | 46.74 | -7.75 | 38.99 | 46.00 | -7.01 | QP |
| 6 | 726.8052 | 42.18 | -6.35 | 35.83 | 46.00 | -10.17 | QP |

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Correct Factor = Antenna Factor + Cable Loss– pre-amplifier.
4. Margin = Reading level + Correct Factor - Limit

| | | | |
|---|---|---|---|
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
| Pressure: | 1010hPa | Phase : | Vertical |
| Test Voltage : | AC 120V/60Hz | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 297.2240 | 51.03 | -14.23 | 36.80 | 46.00 | -9.20 | QP |
| 2 | 425.0280 | 50.53 | -11.29 | 39.24 | 46.00 | -6.76 | QP |
| 3 | 462.3455 | 50.29 | -10.95 | 39.34 | 46.00 | -6.66 | QP |
| 4 | 528.2458 | 50.10 | -9.89 | 40.21 | 46.00 | -5.79 | QP |
| 5 | 661.1503 | 47.43 | -7.75 | 39.68 | 46.00 | -6.32 | QP |
| 6 | 742.2586 | 44.29 | -6.12 | 38.17 | 46.00 | -7.83 | QP |

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Correct Factor = Antenna Factor + Cable Loss– pre-amplifier.
4. Margin = Reading level + Correct Factor - Limit

## Test Frequency 1GHz-25GHz

GFSK

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:2402MHz | | | | | | | | | |
| V | 4804.00 | 52.14 | 34.12 | 5.03 | 32.39 | 55.44 | 74.00 | -18.56 | Pk |
| V | 4804.00 | 41.15 | 34.12 | 5.03 | 32.39 | 44.45 | 54.00 | -9.55 | AV |
| V | 7206.00 | 47.64 | 32.54 | 6.29 | 35.86 | 57.25 | 74.00 | -16.75 | Pk |
| V | 7206.00 | 32.58 | 32.54 | 6.29 | 35.86 | 42.19 | 54.00 | -11.81 | AV |
| V | 9608.00 | 47.28 | 32.98 | 7.55 | 38.40 | 60.25 | 74.00 | -13.75 | Pk |
| V | 9608.00 | 30.34 | 32.98 | 7.55 | 38.40 | 43.31 | 54.00 | -10.69 | AV |
| V | 12010.00 | 43.72 | 32.09 | 8.93 | 39.00 | 59.56 | 74.00 | -14.44 | Pk |
| V | 12010.00 | 27.64 | 32.09 | 8.93 | 39.00 | 43.48 | 54.00 | -10.52 | AV |
| H | 4804.00 | 49.74 | 34.12 | 5.03 | 32.39 | 53.04 | 74.00 | -20.96 | Pk |
| H | 4804.00 | 39.08 | 34.12 | 5.03 | 32.39 | 42.38 | 54.00 | -11.62 | AV |
| H | 7206.00 | 47.39 | 32.54 | 6.29 | 35.86 | 57.00 | 74.00 | -17.00 | Pk |
| H | 7206.00 | 30.64 | 32.54 | 6.29 | 35.86 | 40.25 | 54.00 | -13.75 | AV |
| H | 9608.00 | 46.18 | 32.98 | 7.55 | 38.40 | 59.15 | 74.00 | -14.85 | Pk |
| H | 9608.00 | 28.83 | 32.98 | 7.55 | 38.40 | 41.80 | 54.00 | -12.20 | AV |
| H | 12010.00 | 38.40 | 32.09 | 8.93 | 39.00 | 54.24 | 74.00 | -19.76 | Pk |
| H | 12010.00 | 25.63 | 32.09 | 8.93 | 39.00 | 41.47 | 54.00 | -12.53 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Middle Channel:2440MHz | | | | | | | | | |
| V | 4880.00 | 50.36 | 34.07 | 5.09 | 32.59 | 53.97 | 74.00 | -20.03 | Pk |
| V | 4880.00 | 40.04 | 34.07 | 5.09 | 32.59 | 43.65 | 54.00 | -10.35 | AV |
| V | 7320.00 | 46.16 | 32.63 | 6.34 | 35.96 | 55.83 | 74.00 | -18.17 | Pk |
| V | 7320.00 | 33.79 | 32.63 | 6.34 | 35.96 | 43.46 | 54.00 | -10.54 | AV |
| V | 9760.00 | 42.24 | 32.92 | 7.59 | 38.40 | 55.31 | 74.00 | -18.69 | Pk |
| V | 9760.00 | 27.57 | 32.92 | 7.59 | 38.40 | 40.64 | 54.00 | -13.36 | AV |
| V | 12200.00 | 40.55 | 31.96 | 8.88 | 39.04 | 56.51 | 74.00 | -17.49 | Pk |
| V | 12200.00 | 30.17 | 31.96 | 8.88 | 39.04 | 46.13 | 54.00 | -7.87 | AV |
| H | 4880.00 | 49.58 | 34.07 | 5.09 | 32.59 | 53.19 | 74.00 | -20.81 | Pk |
| H | 4880.00 | 40.18 | 34.07 | 5.09 | 32.59 | 43.79 | 54.00 | -10.21 | AV |
| H | 7320.00 | 45.23 | 32.63 | 6.34 | 35.96 | 54.90 | 74.00 | -19.10 | Pk |
| H | 7320.00 | 32.99 | 32.63 | 6.34 | 35.96 | 42.66 | 54.00 | -11.34 | AV |
| H | 9760.00 | 39.88 | 32.92 | 7.59 | 38.40 | 52.95 | 74.00 | -21.05 | Pk |
| H | 9760.00 | 29.80 | 32.92 | 7.59 | 38.40 | 42.87 | 54.00 | -11.13 | AV |
| H | 12200.00 | 39.39 | 31.96 | 8.88 | 39.04 | 55.35 | 74.00 | -18.65 | Pk |
| H | 12200.00 | 29.75 | 31.96 | 8.88 | 39.04 | 45.71 | 54.00 | -8.29 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:2480MHz | | | | | | | | | |
| V | 4960.00 | 47.03 | 34.02 | 5.15 | 32.80 | 50.96 | 74.00 | -23.04 | Pk |
| V | 4960.00 | 34.88 | 34.02 | 5.15 | 32.80 | 38.81 | 54.00 | -15.19 | AV |
| V | 7440.00 | 45.66 | 32.71 | 6.40 | 36.05 | 55.40 | 74.00 | -18.60 | Pk |
| V | 7440.00 | 34.54 | 32.71 | 6.40 | 36.05 | 44.28 | 54.00 | -9.72 | AV |
| V | 9920.00 | 40.22 | 32.86 | 7.62 | 38.40 | 53.38 | 74.00 | -20.62 | Pk |
| V | 9920.00 | 28.42 | 32.86 | 7.62 | 38.40 | 41.58 | 54.00 | -12.42 | AV |
| V | 12400.00 | 37.21 | 31.82 | 8.84 | 39.08 | 53.31 | 74.00 | -20.69 | Pk |
| V | 12400.00 | 27.62 | 31.82 | 8.84 | 39.08 | 43.72 | 54.00 | -10.28 | AV |
| H | 4960.00 | 46.89 | 34.02 | 5.15 | 32.80 | 50.82 | 74.00 | -23.18 | Pk |
| H | 4960.00 | 37.57 | 34.02 | 5.15 | 32.80 | 41.50 | 54.00 | -12.50 | AV |
| H | 7440.00 | 45.20 | 32.71 | 6.40 | 36.05 | 54.94 | 74.00 | -19.06 | Pk |
| H | 7440.00 | 30.52 | 32.71 | 6.40 | 36.05 | 40.26 | 54.00 | -13.74 | AV |
| H | 9920.00 | 39.88 | 32.86 | 7.62 | 38.40 | 53.04 | 74.00 | -20.96 | Pk |
| H | 9920.00 | 29.25 | 32.86 | 7.62 | 38.40 | 42.41 | 54.00 | -11.59 | AV |
| H | 12400.00 | 37.25 | 31.82 | 8.84 | 39.08 | 53.35 | 74.00 | -20.65 | Pk |
| H | 12400.00 | 26.08 | 31.82 | 8.84 | 39.08 | 42.18 | 54.00 | -11.82 | AV |

Note: 1. The testing has been conformed to 10*2480MHz=24800MHz.

2. All other emissions more than 30dB below the limit.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
   Emission Level = Reading + Factor
   Margin=Emission Level-Limit
4. All the modes have tested and recorded the worst mode(GFSK) in the report
   The 1-25GHz range has been tested, and the report only records the worst performance of the 1-18G range.

## Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

| | Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB/m) | Emission level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|---|
| GFSK | Low Channel: 2402MHz | | | | | | | | | |
| | H | 2390.00 | 57.58 | 35.17 | 3.48 | 27.49 | 53.38 | 74.00 | -20.62 | PK |
| | H | 2390.00 | 49.40 | 35.17 | 3.48 | 27.49 | 45.20 | 54.00 | -8.80 | AV |
| | H | 2400.00 | 58.95 | 35.16 | 3.49 | 27.52 | 54.80 | 74.00 | -19.20 | PK |
| | H | 2400.00 | 49.54 | 35.16 | 3.49 | 27.52 | 45.39 | 54.00 | -8.61 | AV |
| | V | 2390.00 | 56.96 | 35.17 | 3.48 | 27.49 | 52.76 | 74.00 | -21.24 | PK |
| | V | 2390.00 | 48.69 | 35.17 | 3.48 | 27.49 | 44.49 | 54.00 | -9.51 | AV |
| | V | 2400.00 | 58.56 | 35.16 | 3.49 | 27.52 | 54.41 | 74.00 | -19.59 | PK |
| | V | 2400.00 | 49.13 | 35.16 | 3.49 | 27.52 | 44.98 | 54.00 | -9.02 | AV |
| | High Channel: 2480MHz | | | | | | | | | |
| | H | 2483.50 | 56.91 | 35.11 | 3.56 | 27.75 | 53.11 | 74.00 | -20.89 | PK |
| | H | 2483.50 | 48.68 | 35.11 | 3.56 | 27.75 | 44.88 | 54.00 | -9.12 | AV |
| | H | 2500.00 | 58.93 | 35.10 | 3.57 | 27.80 | 55.20 | 74.00 | -18.80 | PK |
| | H | 2500.00 | 48.72 | 35.10 | 3.57 | 27.80 | 44.99 | 54.00 | -9.01 | AV |
| | V | 2483.50 | 57.74 | 35.11 | 3.56 | 27.75 | 53.94 | 74.00 | -20.06 | PK |
| | V | 2483.50 | 49.66 | 35.11 | 3.56 | 27.75 | 45.86 | 54.00 | -8.14 | AV |
| | V | 2500.00 | 58.05 | 35.10 | 3.57 | 27.80 | 54.32 | 74.00 | -19.68 | PK |
| | V | 2500.00 | 49.09 | 35.10 | 3.57 | 27.80 | 45.36 | 54.00 | -8.64 | AV |

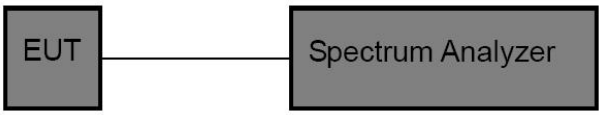
**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

# 8 Conduct Band Edge And Spurious Emissions Measurement

| | | |
|---|---|---|
| Test Requirement | : | Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). |
| Test Method | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 |
| Test Limit | : | Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the Radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). |

## 8.1 Test Setup




## 8.2 Test Procedure

For Spurious Emissions:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer:

a) Set instrument center frequency to DTS channel center frequency.

b) Set the span to _ 1.5 times the DTS bandwidth.

c) Set the RBW = 100 kHz.

d) Set the VBW _ [3 × RBW].

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

For Band Edge:

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

5. Repeat above procedures until all measured frequencies were complete.

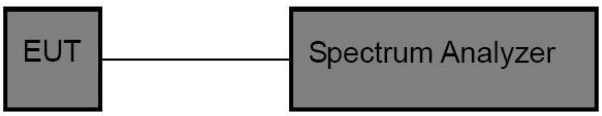
## 8.3 Test Result

Please see the Appendix for the BLE data

# 9 -6dB Bandwidth and 99% Bandwidth Measurement

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 |
| Test Limit | | Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. |

## 9.1 Test Setup




## 9.2 Test Procedure

**For 6dB Bandwidth Measurement**

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2.The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1(i.e, RBW= 100 kHz VBW>3 x RBW,and peak detector with maximum hold) is implemented by the instrumentation function.When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ⩾6 dB.

3. The steps for the first option are as follows:

a.Set RBW= shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.

b.Set the VBW[3 x RBW].

c.Detector = peak

d.Trace mode = max-hold.

e.Sweep = No faster than coupled (auto) time.

f.Allow the trace to stabilize.

g.Measure the maximum width of the emission by placing two markers, one at the lowest frequencyand the other at the highest frequency of the envelope of the spectral display, such that each markeris at or slightly below the "-6 dB down amplitude". If a marker is below this "-6 dB down amplitude?' value, then it shalil be as close as possible to this value.

**For 99% Bandwidth Measurement**

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer: RBW = 1%-5% OBW, VBW ⩾ 3RBW

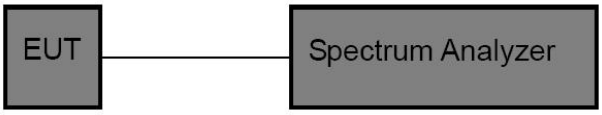
## 9.3 Test Result

Please see the Appendix for the BLE data

# 10 Maximum Peak Output Power

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 |
| Test Limit | : | Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. |

## 10.1 Test Setup




## 10.2 Test Procedure

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

a)Set the RBW ≥ DTS bandwidth.

b)Set VBW ≥ 3 RBW.

c)Set span ≥ 3 x RBW

d)Sweep time = auto couple.

e)Detector = peak.

f)Trace mode = max hold.

g)Allow trace to fully stabilize.

h)Use peak marker function to determine the peak amplitude level.

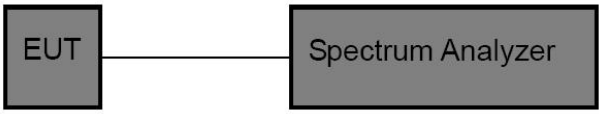
## 10.3 Test Result

Please see the Appendix for the BLE data

# 11 Power Spectral density

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 |
| Test Limit | : | Regulation 15.247(e) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. |

## 11.1 Test Setup




## 11.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

## 11.3 Test Result

Please see the Appendix for the BLE data

# 12 Antenna Application

## 12.1 Antenna Requirement

15.203 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, 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.

15.247(b)(4) requirement:

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.

## 12.2 Result

The antenna is Chip Antenna, the Max gain of the antennas is 2.71 dBi, reference to the attachment for details.

# 13 Test Setup Photos and EUT Photos

Please see the attachment for details.

******THE END REPORT******