# FCC TEST REPORT

# FCC ID: 2BB8YSTRIKER

| | | |
|---|---|---|
| **Product** | **:** | **Striker Pro** |
| **Model Name** | **:** | **STRIKER_V03** |
| **Brand** | **:** | **AIMZENIX** |
| **Report No.** | **:** | **NCT23052326E** |

Prepared for

**SHENZHEN FENGYISHULIAN TECHNOLOGY CO., LTD**

**501, No. 5 Ind. 2nd Rd, Dakan Ind. Area, Dakan Cmty,**
**Xili St., Nanshan Dist., Shenzhen, Guangdong, China**

Prepared by

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

**A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District,**
**Shenzhen, People's Republic of China**

**TEL: 400-8868-419**

**FAX: 86-755-27790922**

# 1 TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant's name | : | SHENZHEN FENGYISHULIAN TECHNOLOGY CO., LTD |
| Address | : | 501, No. 5 Ind. 2nd Rd, Dakan Ind. Area, Dakan Cmty, Xili St., Nanshan Dist., Shenzhen, Guangdong, China |
| Manufacture's name | : | SHENZHEN FENGYISHULIAN TECHNOLOGY CO., LTD |
| Address | : | 501, No. 5 Ind. 2nd Rd, Dakan Ind. Area, Dakan Cmty, Xili St., Nanshan Dist., Shenzhen, Guangdong, China |
| Product name | : | Striker Pro |
| Model name | : | STRIKER_V03 |
| Standards | : | FCC CFR47 Part 15 Section 15.247 |
| Test procedure | : | ANSI C63.10:2013 |
| Date of test | : | Dec. 25, 2023-Jan. 01, 2024 |
| Date of Issue | : | Jan. 02, 2024 |

This device described above has been tested by NCT, 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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Test Engineer:

Keven Wu / Engineer

Technical Manager:

Henry Wang / Manager

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# 2 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Conduct 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 (c) | PASS |

Remark:

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

## 2.1 Test Site

Site Description

| | | |
|---|---|---|
| EMC Lab. | : | Accredited by CNAS, 2022-09-27 |
| | | The certificate is valid until 2028.01.07 |
| | | The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017) |
| | | The Certificate Registration Number is L8251 |
| | | Designation Number: CN1347 |
| | | Test Firm Registration Number: 894804 |
| | | Accredited by A2LA, June 14, 2023 |
| | | The Certificate Registration Number is 6837.01 |
| | | Accredited by Industry Canada, November 09, 2018 |
| | | The Conformity Assessment Body Identifier is CN0150 |
| | | Company Number: 30806 |
| Name of Firm | : | Shenzhen NCT Testing Technology Co., Ltd. |
| Site Location | : | A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People's Republic of China |

# 3 General Information

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

| | | |
|---|---|---|
| Product Name | : | Striker Pro |
| Model Name | : | STRIKER_V03 |
| Sample ID | : | 23052326-001# |
| Sample(s) Status: | : | Engineer sample |
| Series Model | : | N/A |
| Model Different.: | : | N/A |
| Operating frequency | : | 2402-2480MHz |
| Number of Channels | : | 40 channels |
| Type of Modulation | : | GFSK |
| Antenna installation | : | PCBl Antenna |
| Antenna Gain | : | 1.68dBi |
| Power supply | : | 5Vdc from Type-C |
| Hardware Version | : | V03 |
| Software Version | : | V1.2.9 |
| 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. | | |

## 3.2 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 C63.10-2013 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.

## 3.3 Test Setup Configuration

Conducted Emission

AC Line — Adapter — DC Line — EUT

Radiated Emission(30MHz-1GHz)

AC Line — Adapter — DC Line — EUT

Radiated Emission(above 1GHz)

AC Line — Adapter — DC Line — EUT

Conducted Spurious

AC Line — Adapter — DC Line — EUT

## 3.4 Test Mode

| | |
|---|---|
| Transmitting mode | Keep the EUT in continuously transmitting mode. |

| | |
|---|---|
| Test Software | FCC_assist_1.0.2.2 |
| Power level setup | < 1 dBm |

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

# 4 Equipment During Test

## 4.1 Equipments List

Conducted emission Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 944 Shielded Room | 944 Room | / | EMToni | 2022/5/31 | 2025/5/30 |
| EMI Test Receiver | ESPI | 101604 | Rohde & Schwarz | 2023/6/21 | 2024/6/20 |
| LISN | ENV 216 | 102796 | Rohde & Schwarz | 2023/6/21 | 2024/6/20 |
| LISN | VN1-13S | 004023 | CRANAGE | 2023/6/21 | 2024/6/20 |
| Cable | RG223-1500MM | NA | RG | 2023/6/21 | 2024/6/20 |

Radiated emission & Radio Frequency Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 966 Shielded Room | 966 Room | / | EMToni | 2022/5/31 | 2025/5/30 |
| EMI Test Receiver | ESCI | 101178 | Rohde & Schwarz | 2023/6/21 | 2024/6/20 |
| Amplifi（30MHz-1GHz） | BBV 9743 B | 00374 | SCHNWARZBECK | 2023/6/21 | 2024/6/20 |
| Bilog Antenna（30MHz-1GHz） | VULB9162 | 00473 | SCHNWARZBECK | 2023/3/19 | 2025/3/18 |
| Horn antenna（1GHz-18GHz） | BBHA 9120 D | 02622 | SCHNWARZBECK | 2023/3/19 | 2025/3/18 |
| Pream plifier（1GHz-18GHz） | BBV 9718D | 0024 | SCHNWARZBECK | 2023/6/21 | 2024/6/20 |
| Spectrum Analyze（10Hz-40GHz） | FSV 40 | 100952 | Rohde & Schwarz | 2023/6/21 | 2024/6/20 |
| Pream plifier（18GHz-40GHz） | BBV 9721 | 0056 | SCHNWARZBECK | 2023/6/21 | 2024/6/20 |
| Double Ridge Guide Horn Antenna（18GHz-40GHz） | SAS-574 | 588 | A.H.System | 2023/3/19 | 2025/3/18 |
| Loop Antenna (9KHz-30MHz) | FMZB1519B | 014 | SCHNWARZBECK | 2023/6/21 | 2024/6/20 |
| Amplifier (9KHz-30MHz) | CVP 9222 C | 00109 | CHNWARZBECK | 2023/6/21 | 2024/6/20 |

| | | | | | |
|---|---|---|---|---|---|
| MXG Signal Analyzer | N9020A | MY50510202 | Agilent | 2023/6/21 | 2024/6/20 |
| MXG Vector Signal Generator | N5182A | MY50140020 | Agilent | 2023/6/21 | 2024/6/20 |
| MXG Analog Signal Generator | N5181A | MY47420919 | Agilent | 2023/6/21 | 2024/6/20 |
| Power Sensor | TR1029-2 | 512364 | Techoy | 2023/6/21 | 2024/6/20 |
| RF Swith | TR1029-1 | 512364 | Techoy | 2023/6/21 | 2024/6/20 |
| Cable | DA800-4000MM | NA | DA | 2023/6/21 | 2024/6/20 |
| Cable | DA800-11000MM | NA | DA | 2023/6/21 | 2024/6/20 |

Other

| Item | Name | Manufacturer | Model | Software version |
|---|---|---|---|---|
| 1 | EMC Conduction Test System | AUDIX | e3 | 6.120718 |
| 2 | EMC radiation test system | AUDIX | e3 | 6.120718 |
| 3 | RF test system | TACHOY | RFTest | V1.0.0 |
| 4 | RF communication test system | TACHOY | RFTest | V1.0.0 |

## 4.2 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: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95% | |

## 4.3 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 | Striker Pro | AIMZENIX | STRIKER_V03 | N/A | EUT |
| E-2 | Adapter | N/A | A18A-050100U-US2 | N/A | Auxiliary |
| E-3 | Mouse | N/A | 1Q64AA | N/A | Auxiliary |
| E-4 | Headset | N/A | MQ635B | N/A | Auxiliary |
| E-5 | Hand shank | N/A | QA2535 | 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.

# 5 Conducted Emission

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR 47 Part 15 Section 15.207 |
| Test Method | : | ANSI C63.10: 2013 |
| Test Result | : | PASS |
| Frequency Range | : | 150kHz to 30MHz |
| Class/Severity | : | Class B |

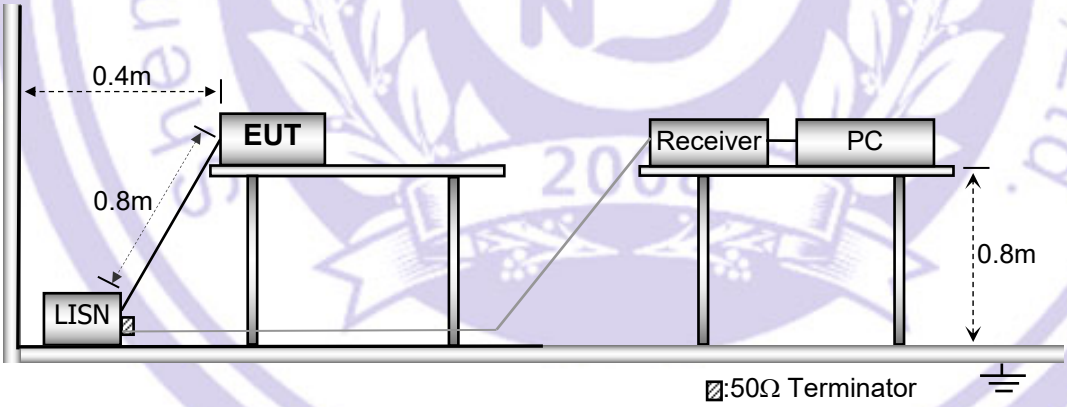
## 5.1 E.U.T. Operation

Operating Environment :

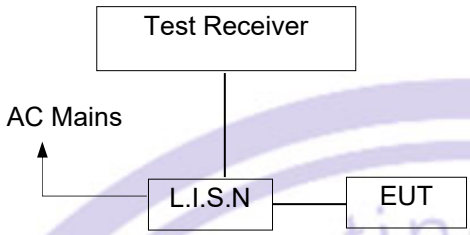
| | | |
|---|---|---|
| Temperature | : | 25.5 °C |
| Humidity | : | 51 % RH |
| Atmospheric Pressure | : | 101.2kPa |

## 5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



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




## 5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

## 5.5 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.

## 5.6 Measurement Description

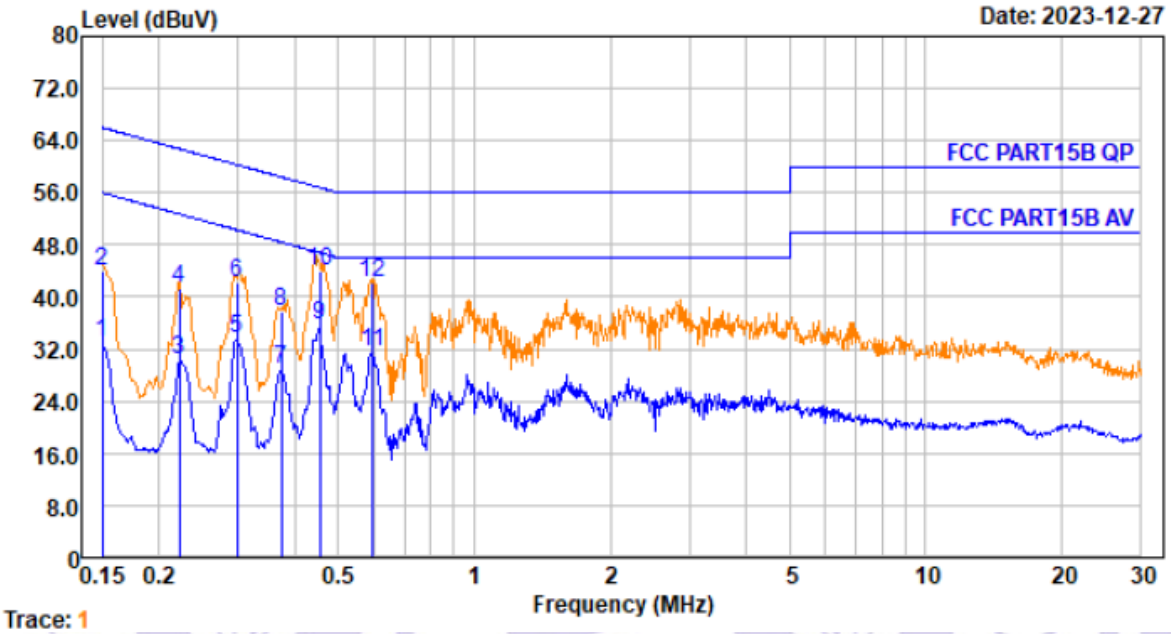
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 5.7 Conducted Emission Test Result

Pass

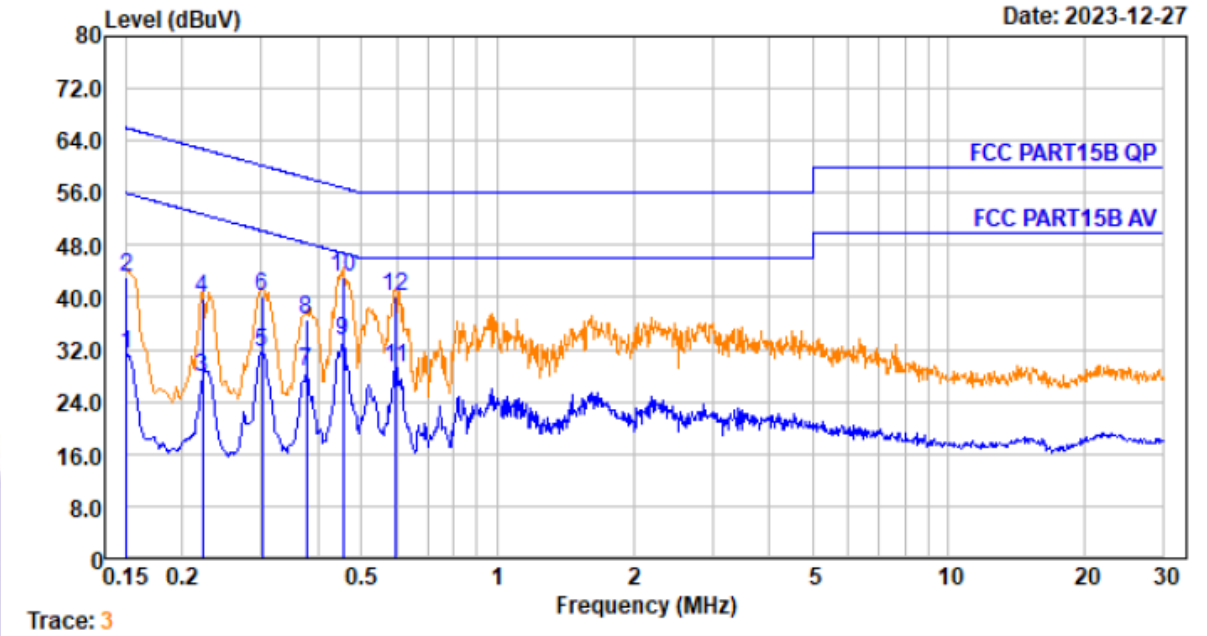
Conducted emission at both 120V & 240V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.

| Channel: | Middle | Phase : | L |
|---|---|---|---|




| No. | Freq MHz | Cable Loss dB | LISN Factor dB/m | Receiver Reading dBuV | Emission Level dBuV/m | Limit dBuV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.150 | 0.00 | 9.54 | 13.25 | 32.95 | 56.00 | -23.05 | Average |
| 2. | 0.150 | 0.00 | 9.54 | 24.20 | 43.90 | 66.00 | -22.10 | QP |
| 3. | 0.222 | 0.01 | 9.55 | 10.81 | 30.52 | 52.74 | -22.22 | Average |
| 4. | 0.222 | 0.01 | 9.55 | 21.70 | 41.41 | 62.74 | -21.33 | QP |
| 5. | 0.299 | 0.01 | 9.56 | 13.98 | 33.68 | 50.28 | -16.60 | Average |
| 6. | 0.299 | 0.01 | 9.56 | 22.40 | 42.10 | 60.28 | -18.18 | QP |
| 7. | 0.373 | 0.01 | 9.56 | 9.11 | 28.81 | 48.43 | -19.62 | Average |
| 8. | 0.373 | 0.01 | 9.56 | 18.10 | 37.80 | 58.43 | -20.63 | QP |
| 9. | 0.454 | 0.01 | 9.57 | 16.00 | 35.70 | 46.80 | -11.10 | Average |
| 10. | 0.454 | 0.01 | 9.57 | 24.30 | 44.00 | 56.80 | -12.80 | QP |
| 11. | 0.595 | 0.02 | 9.58 | 11.89 | 31.60 | 46.00 | -14.40 | Average |
| 12. | 0.595 | 0.02 | 9.58 | 22.39 | 42.10 | 56.00 | -13.90 | QP |

| Channel: | Middle | Phase : | N |
|---|---|---|---|




| No. | Freq MHz | Cable Loss dB | LISN Factor dB/m | Receiver Reading dBuV | Emission Level dBuV/m | Limit dBuV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.151 | 0.00 | 9.53 | 11.54 | 31.23 | 55.96 | -24.73 | Average |
| 2. | 0.151 | 0.00 | 9.53 | 23.50 | 43.19 | 65.96 | -22.77 | QP |
| 3. | 0.222 | 0.01 | 9.55 | 8.13 | 27.84 | 52.74 | -24.90 | Average |
| 4. | 0.222 | 0.01 | 9.55 | 20.10 | 39.81 | 62.74 | -22.93 | QP |
| 5. | 0.302 | 0.01 | 9.56 | 12.02 | 31.72 | 50.19 | -18.47 | Average |
| 6. | 0.302 | 0.01 | 9.56 | 20.40 | 40.10 | 60.19 | -20.09 | QP |
| 7. | 0.377 | 0.01 | 9.57 | 8.93 | 28.64 | 48.34 | -19.70 | Average |
| 8. | 0.377 | 0.01 | 9.57 | 16.90 | 36.61 | 58.34 | -21.73 | QP |
| 9. | 0.454 | 0.01 | 9.58 | 13.60 | 33.31 | 46.80 | -13.49 | Average |
| 10. | 0.454 | 0.01 | 9.58 | 23.50 | 43.21 | 56.80 | -13.59 | QP |
| 11. | 0.595 | 0.02 | 9.58 | 9.47 | 29.18 | 46.00 | -16.82 | Average |
| 12. | 0.595 | 0.02 | 9.58 | 20.39 | 40.10 | 56.00 | -15.90 | QP |

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

# 6 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247,

Test Method : ANSI C63.10:2013

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 | $20\log^{(500)}$ |

## 6.1 EUT Operation

Operating Environment :

Temperature : 23.5 °C

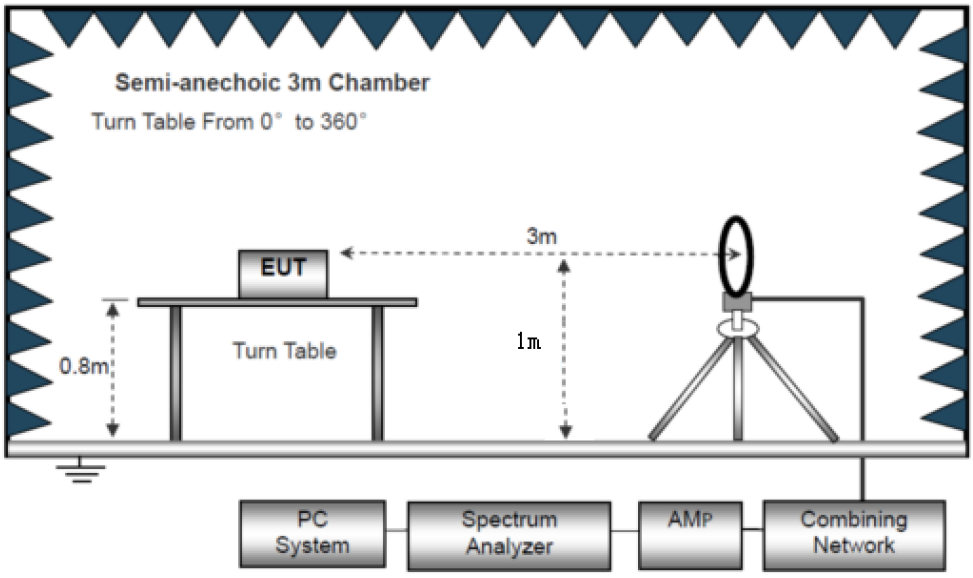
Humidity : 51.1 % RH

Atmospheric Pressure : 101.2kPa

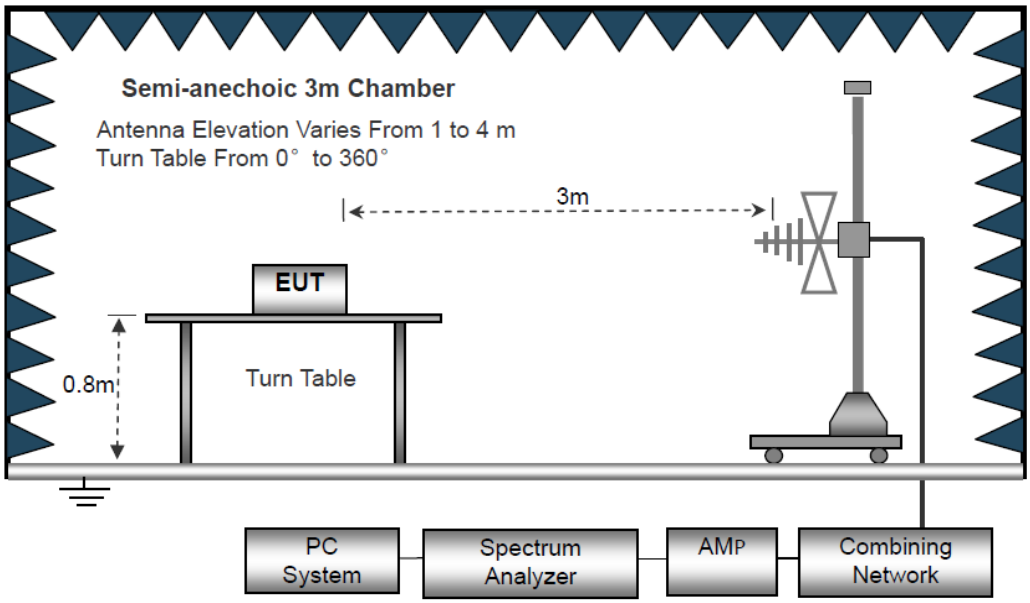
## 6.2 Test Setup

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

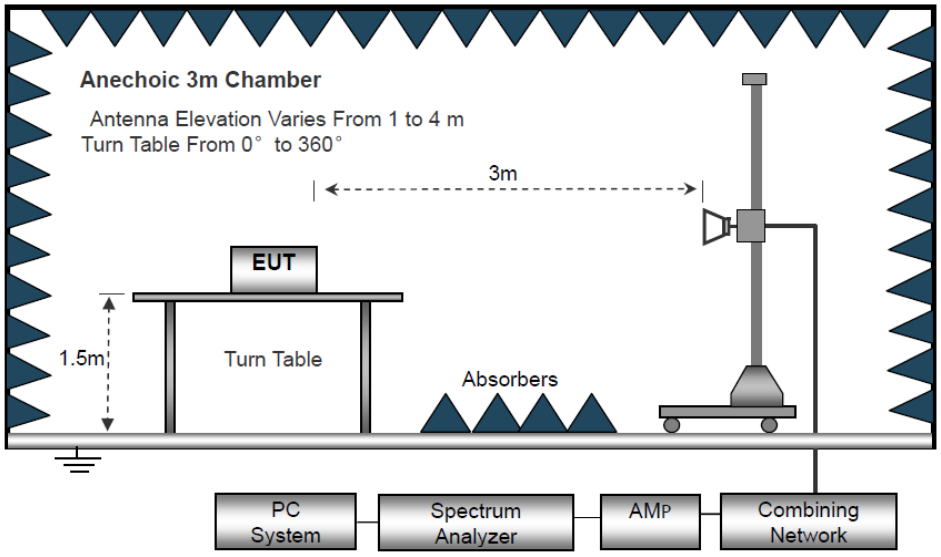
The test setup for emission measurement below 30MHz




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



The test setup for emission measurement above 1 GHz




## 6.3 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 |

## 6.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.

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 1.5m 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 analyser 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.

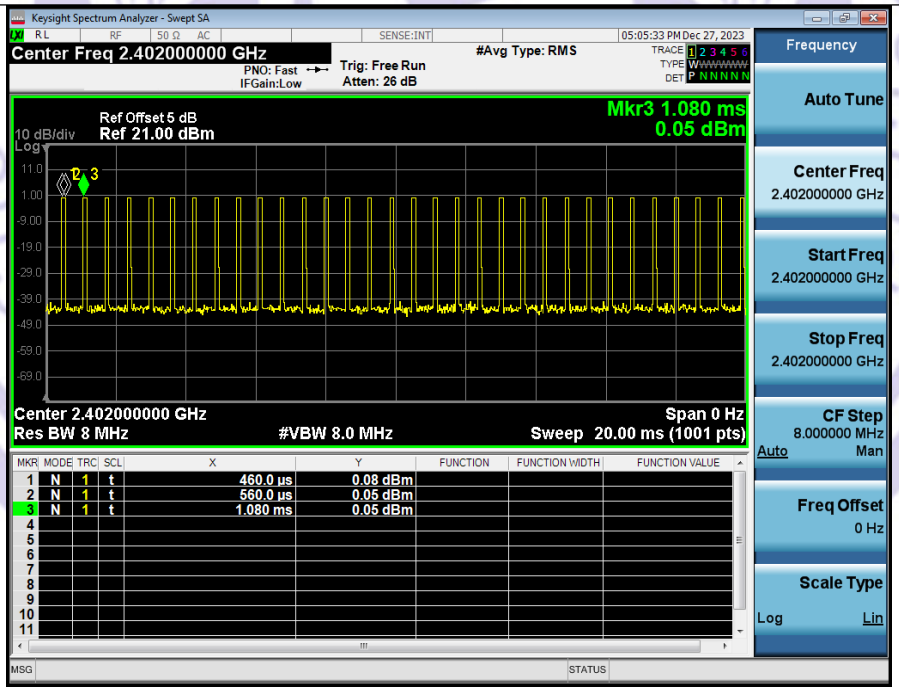
For Average Measurement:

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

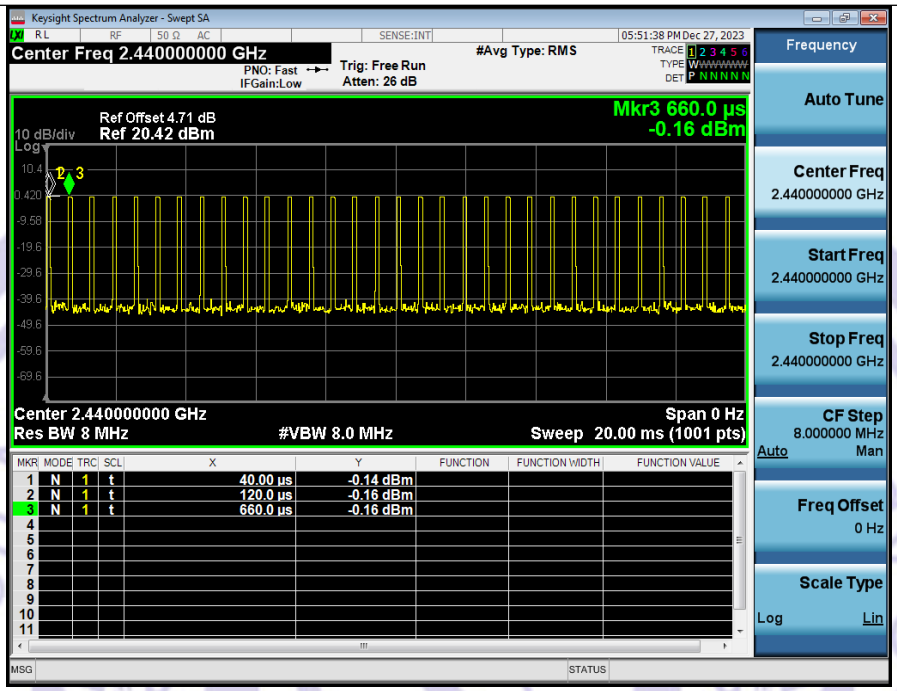
VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

| Condition | Antenna | Rate | Frequency (MHz) | Dutycycle(%) | Duty_factor |
|---|---|---|---|---|---|
| NVNT | ANT1 | 1Mbps | 2402 | 16.13 | 7.92 |
| NVNT | ANT1 | 1Mbps | 2440.00 | 12.90 | 8.89 |
| NVNT | ANT1 | 1Mbps | 2480 | 12.90 | 8.89 |

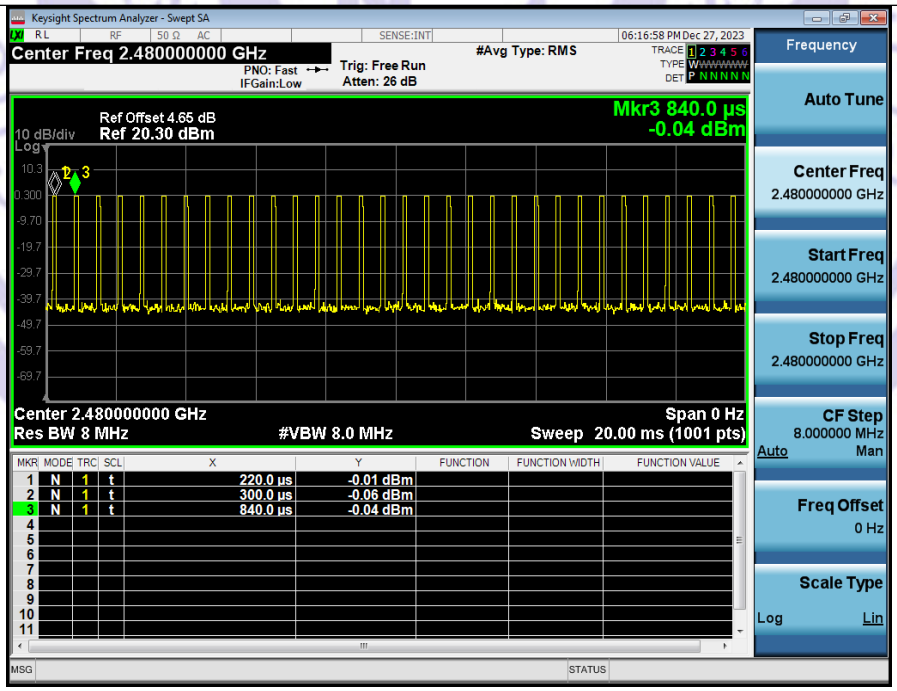
**Duty_Cycle_NVNT_ANT1_1Mbps_2402**



**Duty_Cycle_NVNT_ANT1_1Mbps_2440**




**Duty_Cycle_NVNT_ANT1_1Mbps_2480**



## 6.5 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.

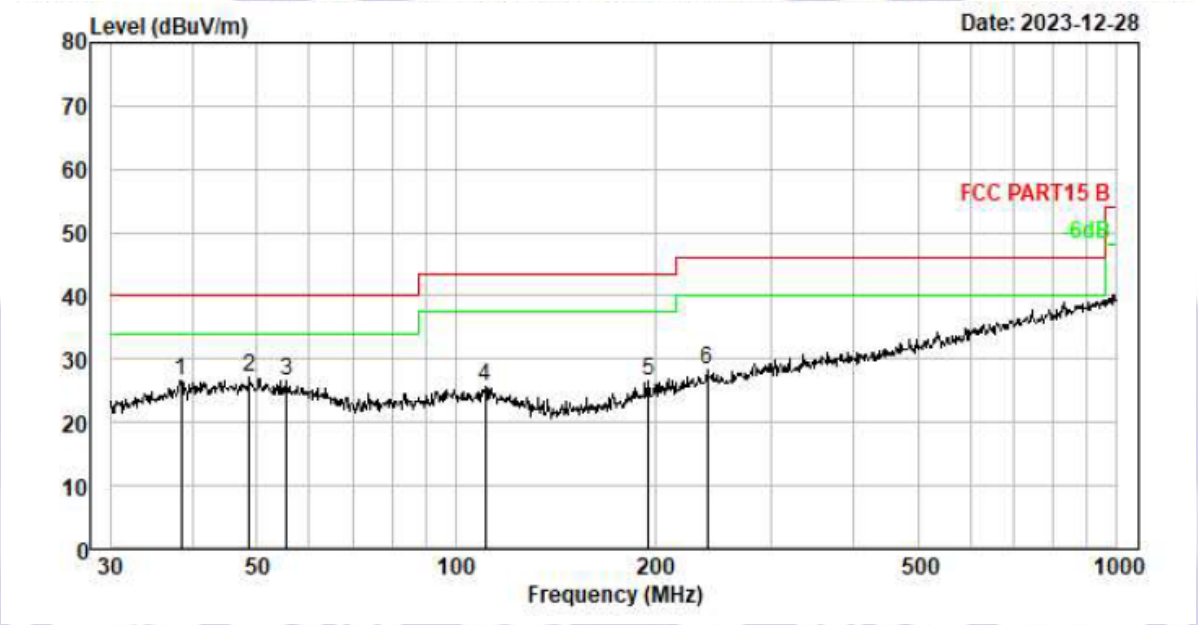
Distance extrapolation factor =40log(Specific distance/ test distance)( dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

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

Pass.

Please refer to the following test plots for the worst test mode (GFSK (CH00: 2402MHz)).

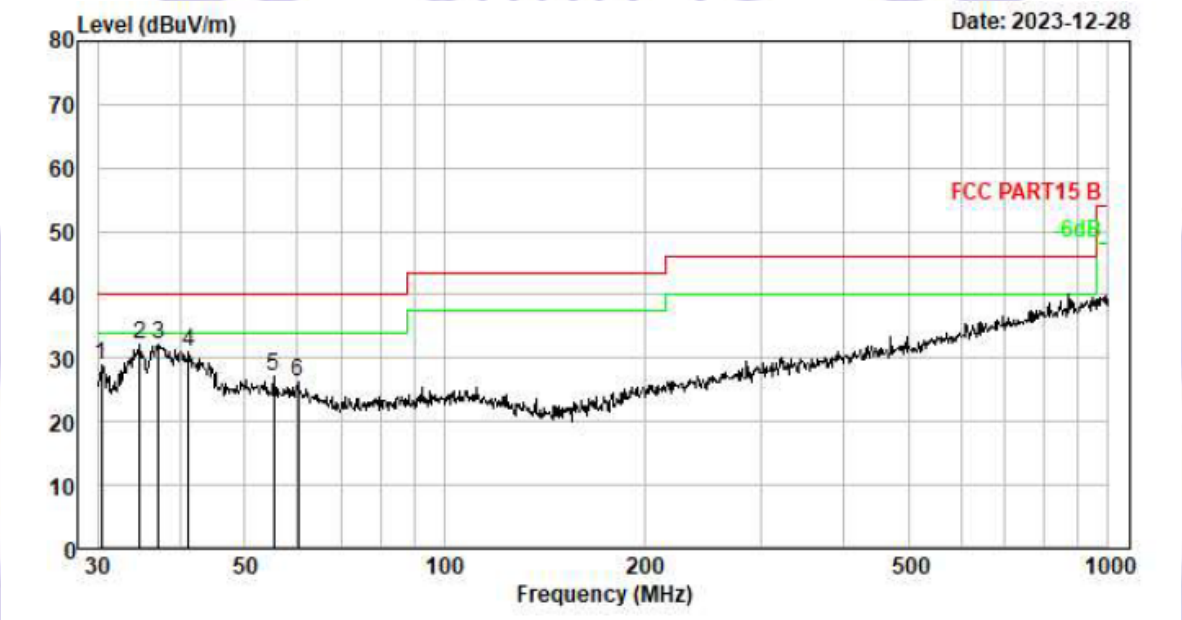
| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101 kPa | Polarization: | Horizontal |
| Test Voltage: | DC 5V from Adapter input AC 120V/60Hz | | |




| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Preamp Gain dB | Receiver Reading dBμV | Emission Level dBμV/m | Limit dBμV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 38.346 | 0.33 | 12.07 | 0.00 | 14.20 | 26.60 | 40.00 | -13.40 | QP |
| 2 | 48.672 | 0.42 | 12.68 | 0.00 | 13.91 | 27.01 | 40.00 | -12.99 | QP |
| 3 | 55.415 | 0.47 | 12.14 | 0.00 | 13.83 | 26.44 | 40.00 | -13.56 | QP |
| 4 | 110.957 | 0.75 | 11.11 | 0.00 | 13.87 | 25.73 | 43.50 | -17.77 | QP |
| 5 | 195.822 | 1.05 | 11.28 | 0.00 | 14.17 | 26.50 | 43.50 | -17.00 | QP |
| 6 | 239.987 | 1.16 | 12.70 | 0.00 | 14.43 | 28.29 | 46.00 | -17.71 | QP |

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101 kPa | Polarization: | Vertical |
| Test Voltage: | DC 5V from Adapter input AC 120V/60Hz | | |




| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Preamp Gain dB | Receiver Reading dBμV | Emission Level dBμV/m | Limit dBμV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 30.424 | 0.25 | 9.74 | 0.00 | 18.94 | 28.93 | 40.00 | -11.07 | QP |
| 2 | 34.760 | 0.30 | 11.08 | 0.00 | 20.67 | 32.05 | 40.00 | -7.95 | QP |
| 3 | 37.025 | 0.32 | 11.72 | 0.00 | 20.04 | 32.08 | 40.00 | -7.92 | QP |
| 4 | 41.132 | 0.36 | 12.53 | 0.00 | 18.13 | 31.02 | 40.00 | -8.98 | QP |
| 5 | 55.221 | 0.47 | 12.16 | 0.00 | 14.55 | 27.18 | 40.00 | -12.82 | QP |
| 6 | 60.069 | 0.50 | 11.68 | 0.00 | 14.12 | 26.30 | 40.00 | -13.70 | QP |

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

**Test Frequency 1GHz-25GHz:**

| 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 | 53.21 | 30.55 | 5.77 | 24.66 | 53.09 | 74.00 | -20.91 | Pk |
| V | 4804.00 | 43.86 | 30.55 | 5.77 | 24.66 | 43.74 | 54.00 | -10.26 | AV |
| V | 7206.00 | 53.15 | 30.33 | 6.32 | 24.55 | 53.69 | 74.00 | -20.31 | Pk |
| V | 7206.00 | 43.69 | 30.33 | 6.32 | 24.55 | 44.23 | 54.00 | -9.77 | AV |
| V | 9608.00 | 52.69 | 30.85 | 7.45 | 24.69 | 53.98 | 74.00 | -20.02 | Pk |
| V | 9608.00 | 42.36 | 30.85 | 7.45 | 24.69 | 43.65 | 54.00 | -10.35 | AV |
| V | 12010.00 | 53.78 | 31.02 | 8.99 | 25.57 | 57.32 | 74.00 | -16.68 | Pk |
| V | 12010.00 | 42.59 | 31.02 | 8.99 | 25.57 | 46.13 | 54.00 | -7.87 | AV |
| H | 4804.00 | 53.36 | 30.55 | 5.77 | 24.66 | 53.24 | 74.00 | -20.76 | Pk |
| H | 4804.00 | 43.78 | 30.55 | 5.77 | 24.66 | 43.66 | 54.00 | -10.34 | AV |
| H | 7206.00 | 53.58 | 30.33 | 6.32 | 24.55 | 54.12 | 74.00 | -19.88 | Pk |
| H | 7206.00 | 42.69 | 30.33 | 6.32 | 24.55 | 43.23 | 54.00 | -10.77 | AV |
| H | 9608.00 | 53.18 | 30.85 | 7.45 | 24.69 | 54.47 | 74.00 | -19.53 | Pk |
| H | 9608.00 | 43.59 | 30.85 | 7.45 | 24.69 | 44.88 | 54.00 | -9.12 | AV |
| H | 12010.00 | 51.23 | 31.02 | 8.99 | 25.57 | 54.77 | 74.00 | -19.23 | Pk |
| H | 12010.00 | 42.39 | 31.02 | 8.99 | 25.57 | 45.93 | 54.00 | -8.07 | 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 | 53.11 | 30.55 | 5.77 | 24.66 | 52.99 | 74.00 | -21.01 | Pk |
| V | 4880.00 | 42.27 | 30.55 | 5.77 | 24.66 | 42.15 | 54.00 | -11.85 | AV |
| V | 7320.00 | 52.27 | 30.33 | 6.32 | 24.55 | 52.81 | 74.00 | -21.19 | Pk |
| V | 7320.00 | 42.09 | 30.33 | 6.32 | 24.55 | 42.63 | 54.00 | -11.37 | AV |
| V | 9760.00 | 52.56 | 30.85 | 7.45 | 24.69 | 53.85 | 74.00 | -20.15 | Pk |
| V | 9760.00 | 42.13 | 30.85 | 7.45 | 24.69 | 43.42 | 54.00 | -10.58 | AV |
| V | 12200.00 | 52.78 | 31.02 | 8.99 | 25.57 | 56.32 | 74.00 | -17.68 | Pk |
| V | 12200.00 | 41.69 | 31.02 | 8.99 | 25.57 | 45.23 | 54.00 | -8.77 | AV |
| H | 4880.00 | 52.53 | 30.55 | 5.77 | 24.66 | 52.41 | 74.00 | -21.59 | Pk |
| H | 4880.00 | 41.66 | 30.55 | 5.77 | 24.66 | 41.54 | 54.00 | -12.46 | AV |
| H | 7320.00 | 52.78 | 30.33 | 6.32 | 24.55 | 53.32 | 74.00 | -20.68 | Pk |
| H | 7320.00 | 41.19 | 30.33 | 6.32 | 24.55 | 41.73 | 54.00 | -12.27 | AV |
| H | 9760.00 | 52.88 | 30.85 | 7.45 | 24.69 | 54.17 | 74.00 | -19.83 | Pk |
| H | 9760.00 | 41.56 | 30.85 | 7.45 | 24.69 | 42.85 | 54.00 | -11.15 | AV |
| H | 12200.00 | 53.69 | 31.02 | 8.99 | 25.57 | 57.23 | 74.00 | -16.77 | Pk |
| H | 12200.00 | 41.39 | 31.02 | 8.99 | 25.57 | 44.93 | 54.00 | -9.07 | 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 | 53.16 | 30.55 | 5.77 | 24.66 | 53.04 | 74.00 | -20.96 | Pk |
| V | 4960.00 | 43.78 | 30.55 | 5.77 | 24.66 | 43.66 | 54.00 | -10.34 | AV |
| V | 7440.00 | 52.63 | 30.33 | 6.32 | 24.55 | 53.17 | 74.00 | -20.83 | Pk |
| V | 7440.00 | 42.43 | 30.33 | 6.32 | 24.55 | 42.97 | 54.00 | -11.03 | AV |
| V | 9920.00 | 54.78 | 30.85 | 7.45 | 24.69 | 56.07 | 74.00 | -17.93 | Pk |
| V | 9920.00 | 42.58 | 30.85 | 7.45 | 24.69 | 43.87 | 54.00 | -10.13 | AV |
| V | 12400.00 | 54.18 | 31.02 | 8.99 | 25.57 | 57.72 | 74.00 | -16.28 | Pk |
| V | 12400.00 | 42.69 | 31.02 | 8.99 | 25.57 | 46.23 | 54.00 | -7.77 | AV |
| H | 4960.00 | 52.23 | 30.55 | 5.77 | 24.66 | 52.11 | 74.00 | -21.89 | Pk |
| H | 4960.00 | 43.33 | 30.55 | 5.77 | 24.66 | 43.21 | 54.00 | -10.79 | AV |
| H | 7440.00 | 54.15 | 30.33 | 6.32 | 24.55 | 54.69 | 74.00 | -19.31 | Pk |
| H | 7440.00 | 43.33 | 30.33 | 6.32 | 24.55 | 43.87 | 54.00 | -10.13 | AV |
| H | 9920.00 | 52.25 | 30.85 | 7.45 | 24.69 | 53.54 | 74.00 | -20.46 | Pk |
| H | 9920.00 | 42.13 | 30.85 | 7.45 | 24.69 | 43.42 | 54.00 | -10.58 | AV |
| H | 12400.00 | 52.39 | 31.02 | 8.99 | 25.57 | 55.93 | 74.00 | -18.07 | Pk |
| H | 12400.00 | 42.22 | 31.02 | 8.99 | 25.57 | 45.76 | 54.00 | -8.24 | AV |

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

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

## 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) | Detector Type | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| GFSK | Low Channel: 2402MHz | | | | | | | | | |
| | H | 2390.00 | 58.03 | 30.22 | 4.85 | 23.98 | 56.64 | 74.00 | PK | PASS |
| | H | 2390.00 | 46.96 | 30.22 | 4.85 | 23.98 | 45.57 | 54.00 | AV | PASS |
| | H | 2400.00 | 59.12 | 30.22 | 4.85 | 23.98 | 57.73 | 74.00 | PK | PASS |
| | H | 2400.00 | 48.23 | 30.22 | 4.85 | 23.98 | 46.84 | 54.00 | AV | PASS |
| | V | 2390.00 | 60.15 | 30.22 | 4.85 | 23.98 | 58.76 | 74.00 | PK | PASS |
| | V | 2390.00 | 48.96 | 30.22 | 4.85 | 23.98 | 47.57 | 54.00 | AV | PASS |
| | V | 2400.00 | 60.23 | 30.22 | 4.85 | 23.98 | 58.84 | 74.00 | PK | PASS |
| | V | 2400.00 | 49.26 | 30.22 | 4.85 | 23.98 | 47.87 | 54.00 | AV | PASS |
| | High Channel: 2480MHz | | | | | | | | | |
| | H | 2483.50 | 58.22 | 30.22 | 4.85 | 23.98 | 56.83 | 74.00 | PK | PASS |
| | H | 2483.50 | 48.56 | 30.22 | 4.85 | 23.98 | 47.17 | 54.00 | AV | PASS |
| | H | 2500.00 | 60.23 | 30.22 | 4.85 | 23.98 | 58.84 | 74.00 | PK | PASS |
| | H | 2500.00 | 50.01 | 30.22 | 4.85 | 23.98 | 48.62 | 54.00 | AV | PASS |
| | V | 2483.50 | 61.02 | 30.22 | 4.85 | 23.98 | 59.63 | 74.00 | PK | PASS |
| | V | 2483.50 | 47.88 | 30.22 | 4.85 | 23.98 | 46.49 | 54.00 | AV | PASS |
| | V | 2500.00 | 61.23 | 30.22 | 4.85 | 23.98 | 59.84 | 74.00 | PK | PASS |
| | V | 2500.00 | 48.78 | 30.22 | 4.85 | 23.98 | 47.39 | 54.00 | AV | PASS |

Remark:

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

# 7 Conduct Band Edge And Spurious Emissions Measurement

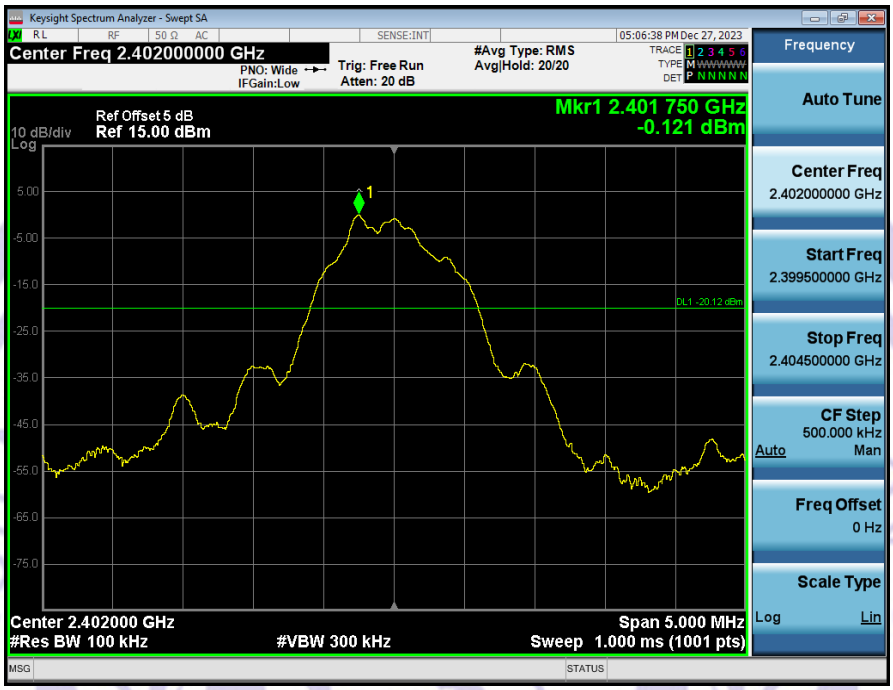
| | | |
|---|---|---|
| Test Requirement | : | Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). |
| Test Method | : | ANSI C63.10:2013 |
| 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)). |

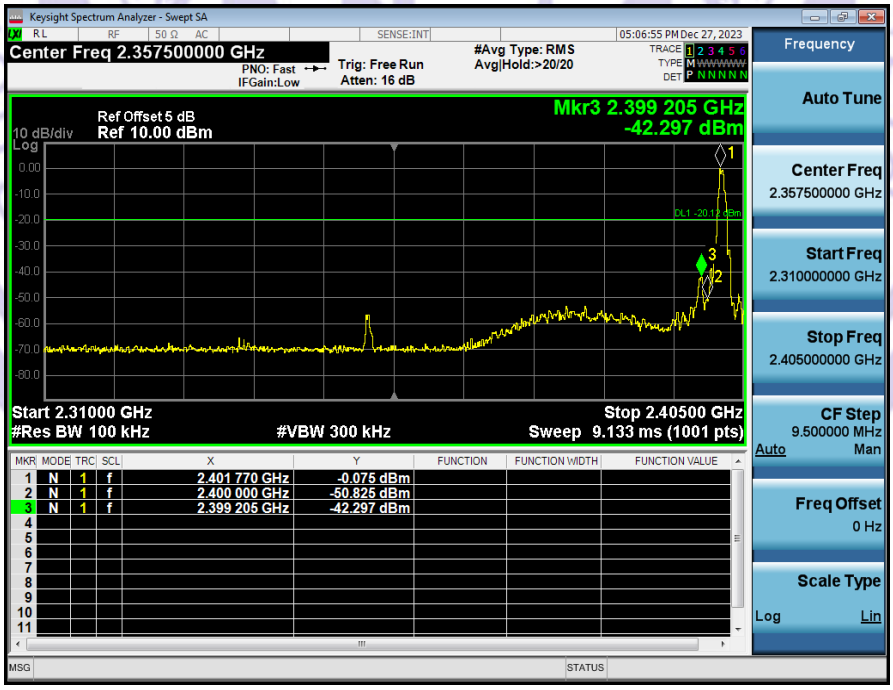
## 7.1 Test Procedure

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 = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

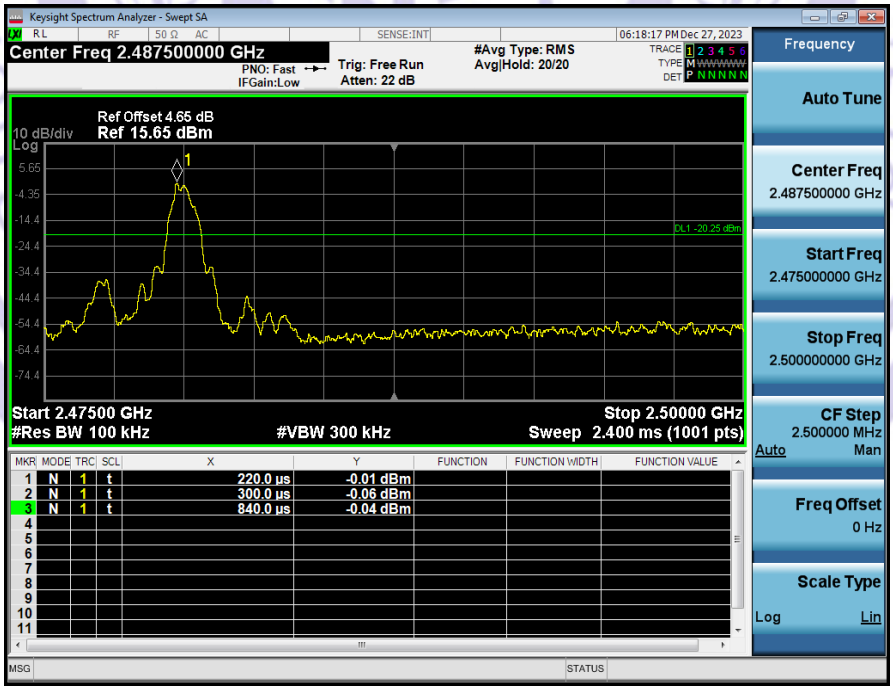
## 7.2 Test Result

GFSK: Band Edge, Left Side

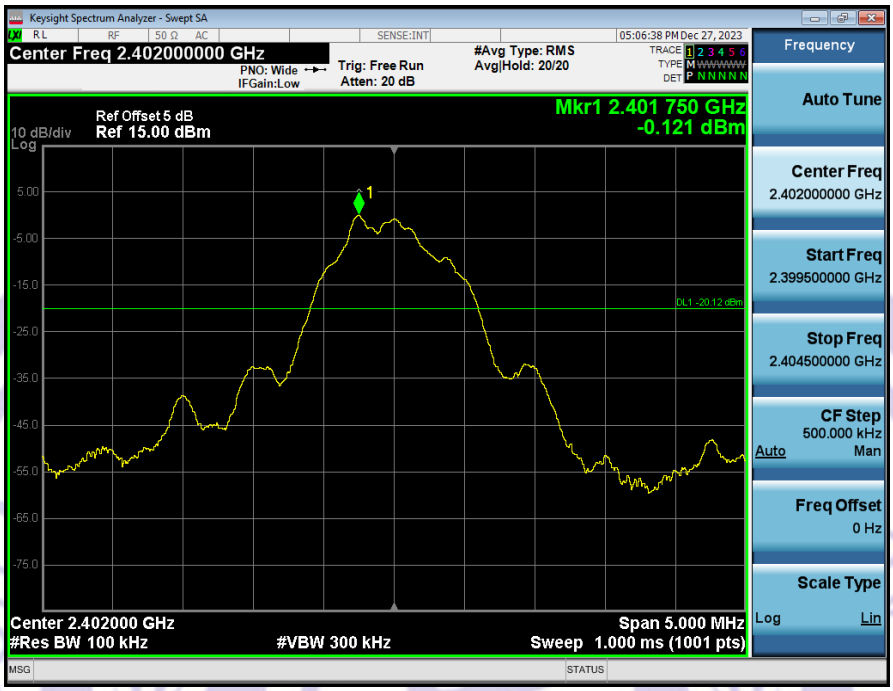


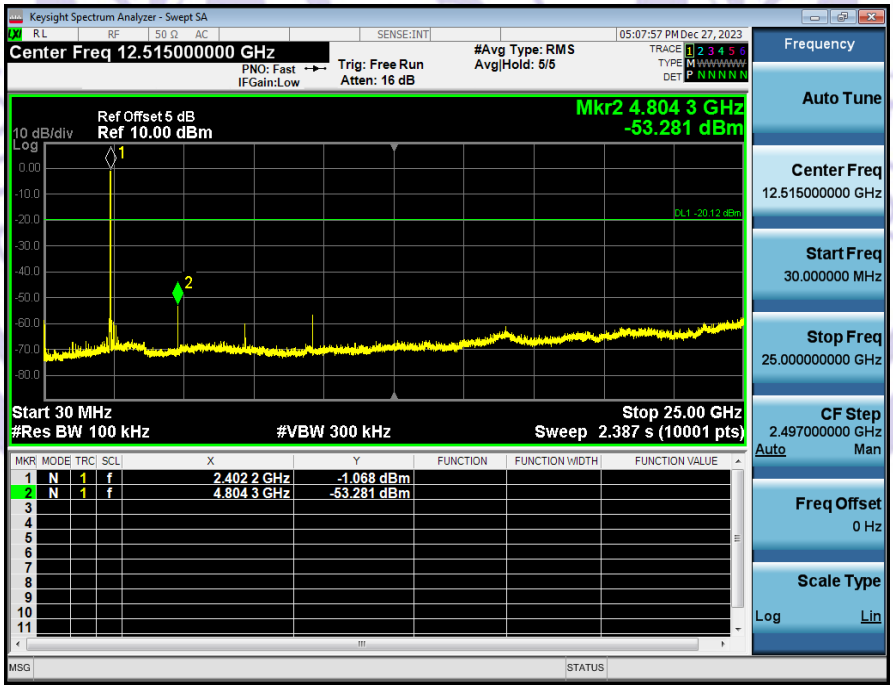



GFSK: Band Edge, Right Side



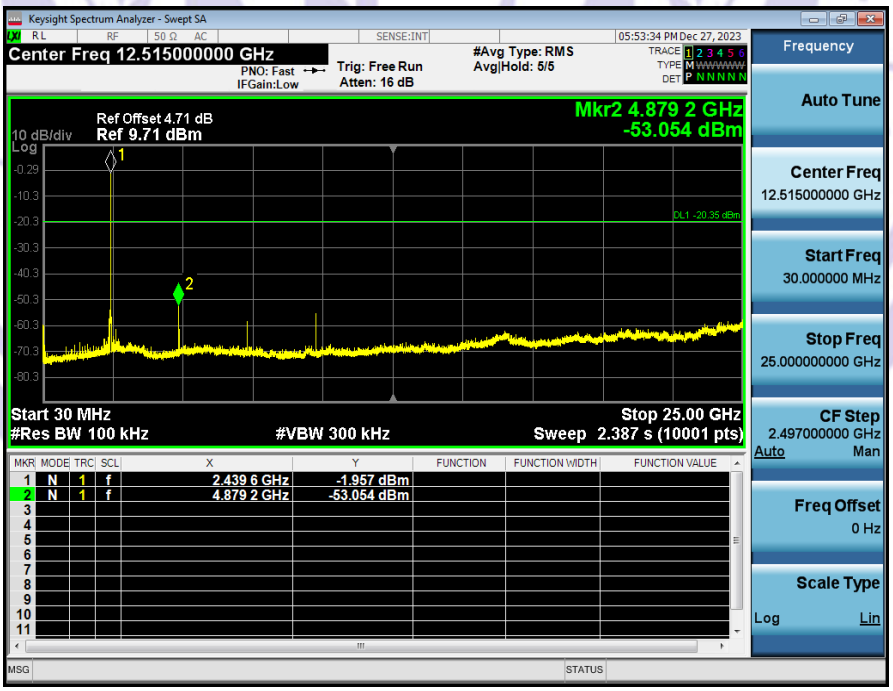
Lowest channel



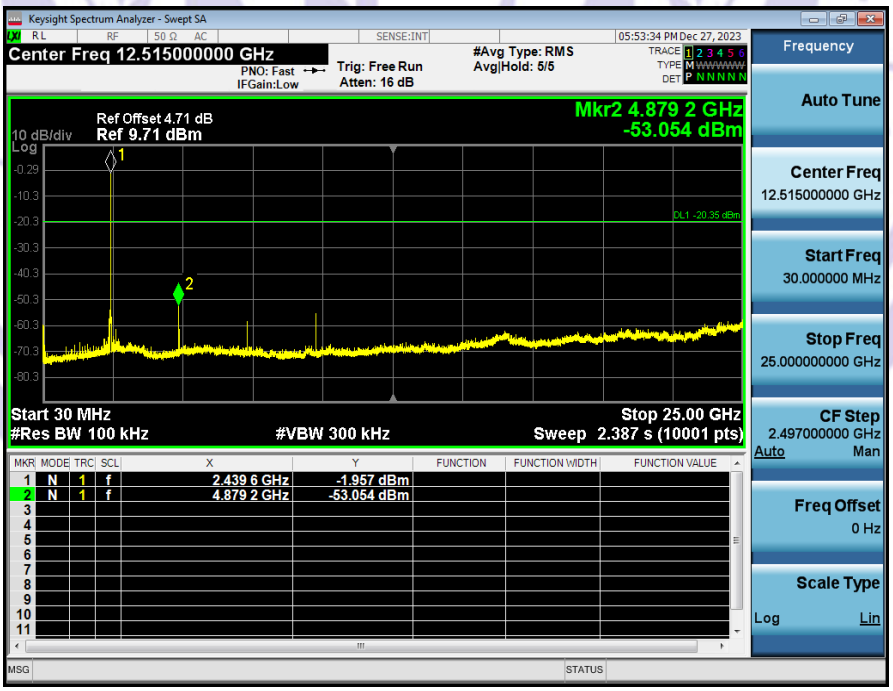



Mid channel

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.440000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 20/20
05:52:34 PM Dec 27, 2023
Ref Offset 4.71 dB
10 dB/div
Ref 14.42 dBm
Log
Mkr1 2.439 745 GHz
-0.351 dBm
Center 2.440000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.437500000 GHz
Stop Freq
2.442500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin


Keysight Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 16 dB
#Avg Type: RMS
Avg|Hold: 5/5
05:53:34 PM Dec 27, 2023
Ref Offset 4.71 dB
10 dB/div
Ref 9.71 dBm
Log
Mkr2 4.879 2 GHz
-53.054 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (10001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.439 6 GHz -1.957 dBm
2 N 1 f 4.879 2 GHz -53.054 dBm
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

Highest channel



# 8 6dB Bandwidth Measurement

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| 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. |

## 8.1 Test Procedure

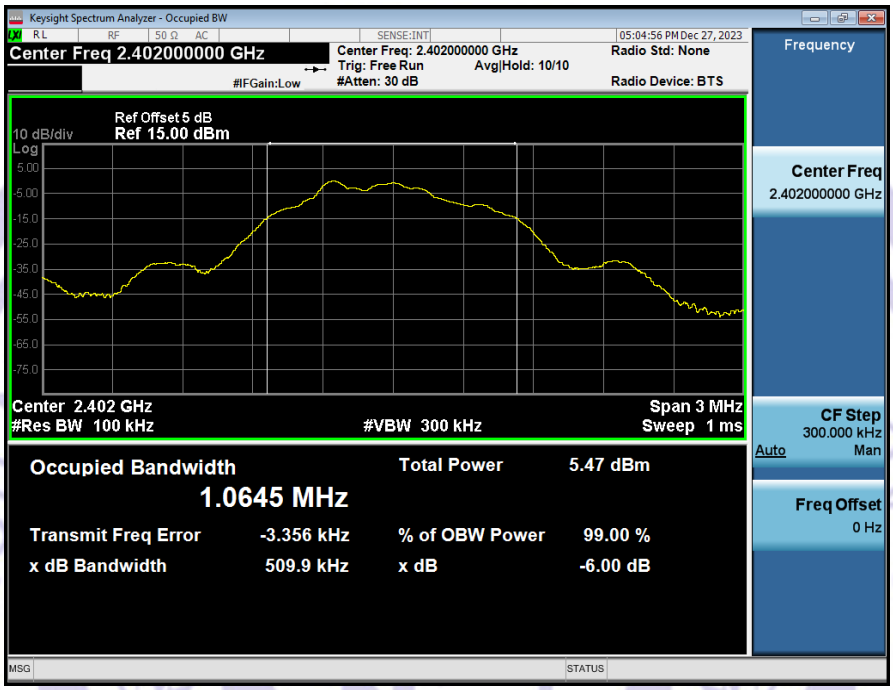
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

## 8.2 Test Result

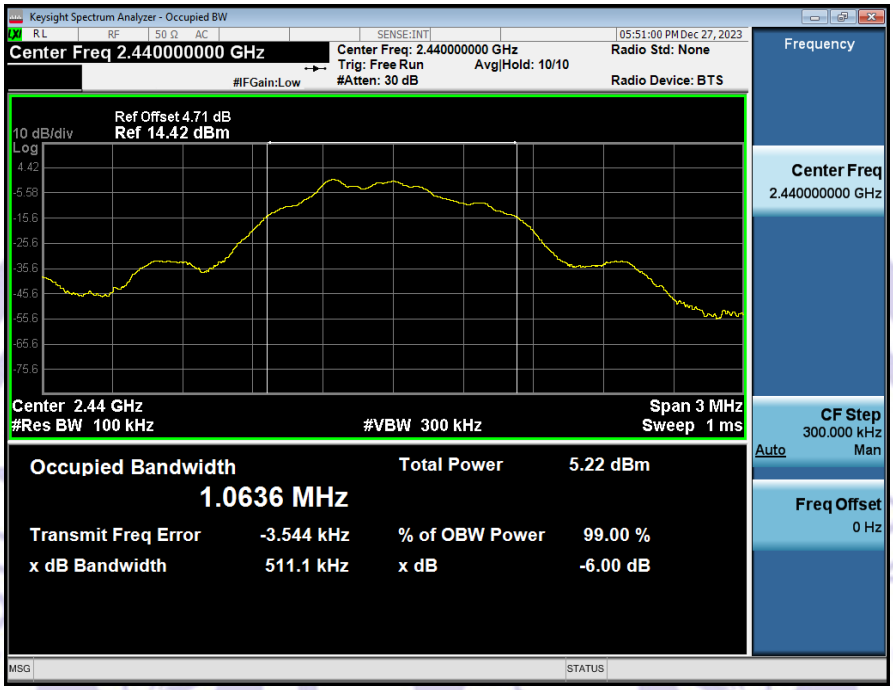
| Channel number | Channel frequency (MHz) | -6dB Occupy Bandwidth (KHz) | Limit (KHz) | 99% Occupy Bandwidth (MHz) | Limit (KHz) |
|---|---|---|---|---|---|
| 00 | 2402 | 509.87 | >500 | / | / |
| 19 | 2440 | 511.07 | >500 | / | / |
| 39 | 2480 | 505.09 | >500 | / | / |

-6dB Occupy Bandwidth

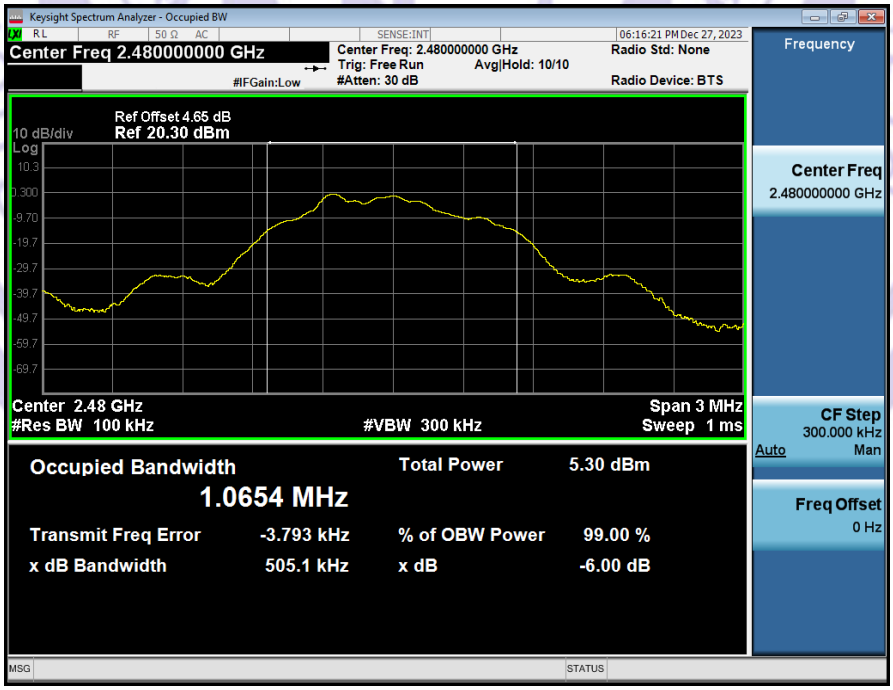
CH00



CH19


Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.440000000 GHz
Center Freq: 2.440000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
05:51:00 PM Dec 27, 2023
#IFGain:Low
Ref Offset 4.71 dB
10 dB/div
Ref 14.42 dBm
Center 2.44 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
Occupied Bandwidth
1.0636 MHz
Total Power 5.22 dBm
Transmit Freq Error -3.544 kHz
% of OBW Power 99.00 %
x dB Bandwidth 511.1 kHz
x dB -6.00 dB
Frequency
Center Freq
2.440000000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

CH39


Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
06:16:21 PM Dec 27, 2023
#IFGain:Low
Ref Offset 4.65 dB
10 dB/div
Ref 20.30 dBm
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
Occupied Bandwidth
1.0654 MHz
Total Power 5.30 dBm
Transmit Freq Error -3.793 kHz
% of OBW Power 99.00 %
x dB Bandwidth 505.1 kHz
x dB -6.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

# 9 Maximum Peak Output Power

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| 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. |

## 9.1 Test Procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

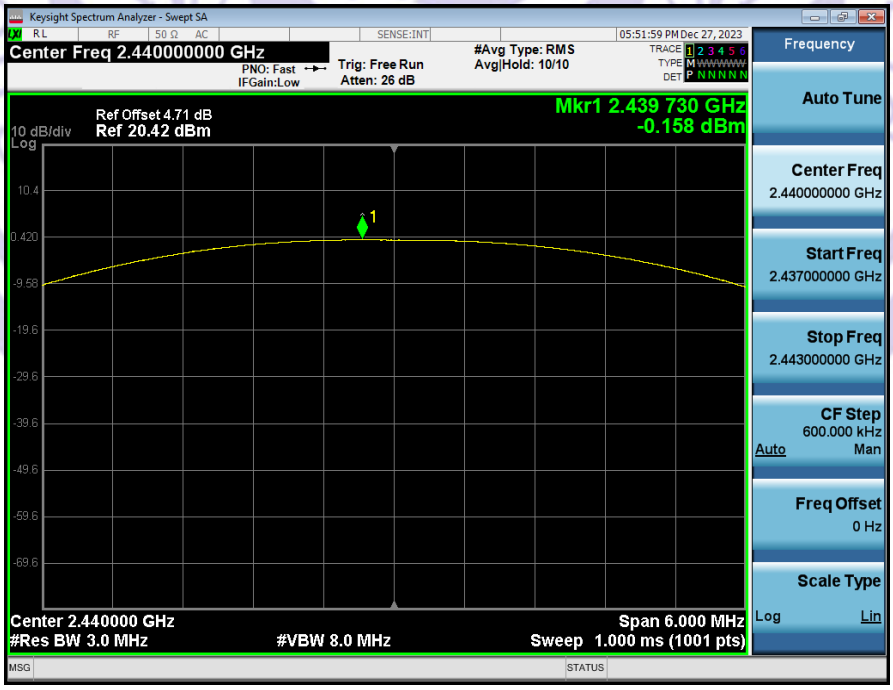
## 9.2 Test Result

| Channel number | Channel Frequency (MHz) | Peak Power Output(dBm) | Peak Power Limit(dBm) | Verdict |
|---|---|---|---|---|
| 00 | 2402 | 0.08 | 30 | PASS |
| 19 | 2440 | -0.16 | 30 | PASS |
| 39 | 2480 | -0.06 | 30 | PASS |

CH00

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.402000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 26 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:05:55 PM Dec 27, 2023
Ref Offset 5 dB
10 dB/div
Ref 21.00 dBm
Mkr1 2.401 790 GHz
0.077 dBm
Center 2.402000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 6.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.402000000 GHz
Start Freq
2.399000000 GHz
Stop Freq
2.405000000 GHz
CF Step
600.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH19


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.440000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 26 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:51:59 PM Dec 27, 2023
Ref Offset 4.71 dB
10 dB/div
Ref 20.42 dBm
Mkr1 2.439 730 GHz
-0.158 dBm
Center 2.440000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 6.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.437000000 GHz
Stop Freq
2.443000000 GHz
CF Step
600.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH39

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 26 dB
#Avg Type: RMS
Avg|Hold: 10/10
06:17:19 PM Dec 27, 2023
Ref Offset 4.65 dB
10 dB/div
Ref 20.30 dBm
Log
Mkr1 2.479 724 GHz
-0.055 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 6.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477000000 GHz
Stop Freq
2.483000000 GHz
CF Step
600.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

# 10 Power Spectral density

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| Test Limit | : | Regulation 15.247(f) 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. |

## 10.1 Test Procedure

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

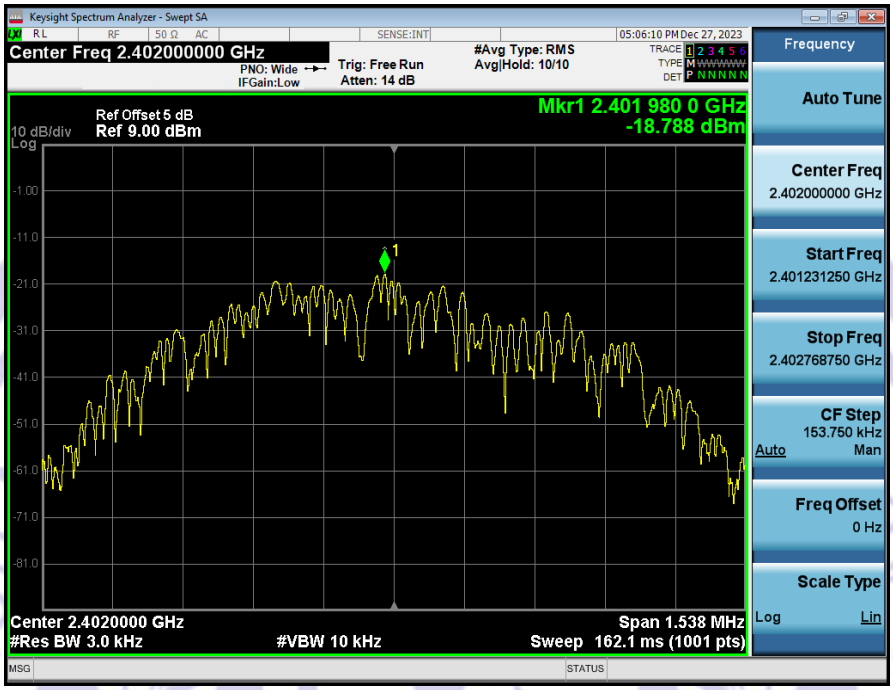
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

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.

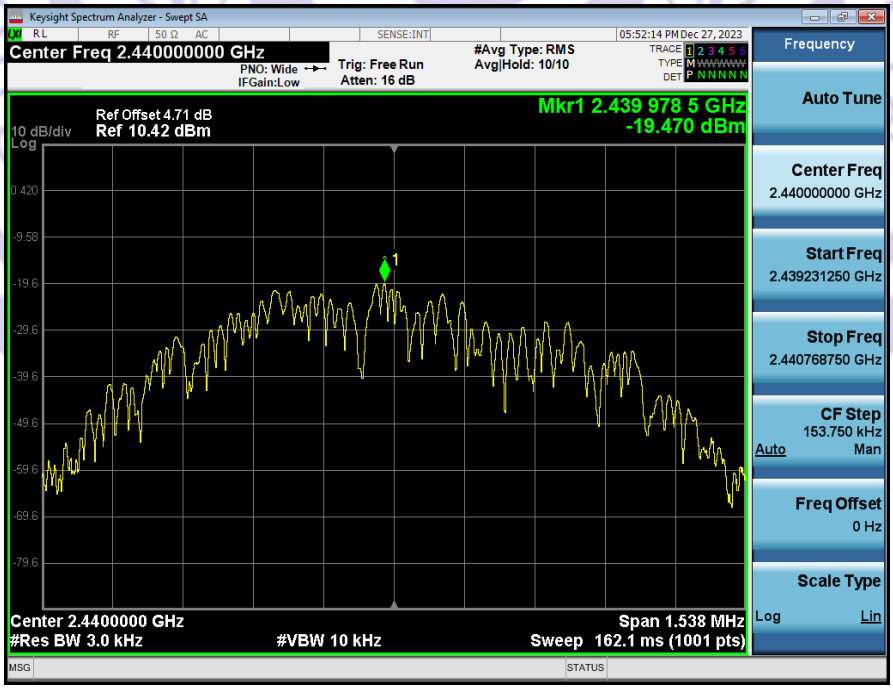
## 10.2 Test Result

| Channel number | Channel frequency (MHz) | Measurement level (dBm) | Required Limit (dBm/3kHz) | Pass/Fail |
|---|---|---|---|---|
| | | PSD/3kHz | | |
| 00 | 2402 | -18.79 | 8 | PASS |
| 19 | 2440 | -19.47 | 8 | PASS |
| 39 | 2480 | -19.27 | 8 | PASS |

CH00


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.402000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 14 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:06:10 PM Dec 27, 2023
Ref Offset 5 dB
10 dB/div
Ref 9.00 dBm
Mkr1 2.401 980 0 GHz
-18.788 dBm
Center 2.4020000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.538 MHz
Sweep 162.1 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.402000000 GHz
Start Freq
2.401231250 GHz
Stop Freq
2.402768750 GHz
CF Step
153.750 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH19


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.440000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:52:14 PM Dec 27, 2023
Ref Offset 4.71 dB
10 dB/div
Ref 10.42 dBm
Mkr1 2.439 978 5 GHz
-19.470 dBm
Center 2.4400000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.538 MHz
Sweep 162.1 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.439231250 GHz
Stop Freq
2.440768750 GHz
CF Step
153.750 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH39

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
#Avg Type: RMS
Avg|Hold: 10/10
06:17:34 PM Dec 27, 2023
Ref Offset 4.65 dB
10 dB/div
Ref 10.30 dBm
Log
Mkr1 2.479 978 4 GHz
-19.273 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.541 MHz
Sweep 162.5 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479229750 GHz
Stop Freq
2.480770250 GHz
CF Step
154.050 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

# 11 Antenna Application

## 11.1 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(c) (1)(i) requirement:

Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

## 11.2 Result

The antenna is PCB antenna, the best case gain of the antennas is 1.68 dBi, reference to the attachment for details.

# 12 Test Setup Photos and EUT Photos

Please see the attachment for details.

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