# RF TEST REPORT

| | |
|---|---|
| **Report No.:** | 20240617G10565X-W5 |
| **Product Name:** | Thermal Imaging Camera |
| **Model No.:** | TS004 |
| **FCC ID:** | 2AVYW-TS004 |
| **Applicant:** | TOPDON TECHNOLOGY Co., Ltd. |
| **Address:** | 20th & 32nd Floor, Qianhai Shimao Tower, No. 3040, Xinghai Avenue, Nanshan Street, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen, Guangdong, P.R. China |
| **Dates of Testing:** | 06/15/2024 - 07/31/2024 |
| **Issued by:** | CCIC Southern Testing Co., Ltd. |
| **Lab Location:** | Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China |
| | **Tel**：86-755-26627338 **E-Mail**：manager@ccic-set.com |

# Test Report

| | |
|---|---|
| **Product .....:** | Thermal Imaging Camera |
| **Trade Name .....:** | TOPDON |
| **Applicant.....:** | TOPDON TECHNOLOGY Co., Ltd. |
| **Applicant Address.....:** | 20th & 32nd Floor, Qianhai Shimao Tower, No. 3040, Xinghai Avenue, Nanshan Street, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen, Guangdong, P.R. China |
| **Manufacturer .....:** | TOPDON TECHNOLOGY Co., Ltd. |
| **Manufacturer Address .....:** | 20th & 32nd Floor, Qianhai Shimao Tower, No. 3040, Xinghai Avenue, Nanshan Street, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen, Guangdong, P.R. China |
| **Test Standards .....:** | 47 CFR Part 15 Subpart C 15.247<br>ANSI C63.10-2020 |
| **Test Result.....:** | Pass |

| | | |
|---|---|---|
| **Tested by .....:** | Kim Li | 2024.08.05 |
| | Kim Li, Test Engineer | |
| **Reviewed by .....:** | Sun Jiaohui | 2024.08.05 |
| | Sun Jiaohui, Senior Engineer | |
| **Approved by .....:** | Chris You | 2024.08.05 |
| | Chris You, Manager | |

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| Change History | | |
|---|---|---|
| Issue | Date | Reason for change |
| 1.0 | 2024.08.05 | First edition |
| | | |

# 1. GENERAL INFORMATION

## 1.1. EUT Description

| | |
|---|---|
| Product Name | Thermal Imaging Camera |
| Model No. | TS004 |
| Hardware Version | V1.0 |
| Software Version | V1.90 |
| EUT supports Radios application | WLAN2.4GHz 802.11b/g/n (HT20/HT40) |
| Frequency Range | 802.11b/g/n-20MHz: 2.412GHz - 2.462GHz<br>802.11n-40MHz: 2.422GHz-2.452GHz |
| Channel Number | 802.11b/g/n-20MHz: 11<br>802.11n-40MHz: 7 |
| Transfer Rate | 802.11b: 11/5.5/2/1 Mbps<br>802.11g: 54/48/36/24/18/12/9/6 Mbps<br>802.11n : up to 150Mbps |
| Modulation Type | DSSS (802.11b), OFDM (802.11g/n) |
| Test Control Software | QRCT 4.0 |
| Antenna Type | Internal Antenna |
| Antenna Gain | 3.95dBi |
| Power supply | Rechargeable Li-ion Battery DC3.6V/3200mAh |

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 2: The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

Note 3: The information of antenna gain and cable loss is provided by the manufacturer and our lab is not responsible for the accuracy of the antenna gain and cable loss information.

## 1.2. Test Standards and Results

The purpose of the report is to conduct testing according to the following FCC certification standards:

| No. | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR Part 15 Subpart C | Radio Frequency Devices |
| 2 | KDB 558074 D01 15.247 Meas Guidance v05r02 | Cuidance for Compliance Measurement on Digital Transmission Systems, Frequency Hopping Spread Spectrum Systems, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules |
| 3 | ANSI C63.10-2020 | American National Standard for Testing Unlicensed Wireless Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section in CFR 47 | Description | Result |
|---|---|---|---|
| 1 | 15.203<br>15.247(c) | Antenna Requirement | PASS |
| 2 | 15.247(b)(3) | Peak Conducted Output Power | PASS |
| 3 | 15.247(a)(2) | 6dB and 99% Bandwidth | PASS |
| 4 | 15.247(d) | Conducted Band Edges and Spurious Emission | PASS |
| 5 | 15.247(e) | Power spectral density (PSD) | PASS |
| 6 | 15.207 | AC Power Line Conducted Emission | PASS |
| 7 | 15.209<br>15.205<br>15.247(d) | Radiated Band Edges and Spurious Emission | PASS |

Note 1: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10-2020.

Note 2: These RF tests were performed according to the method of measurements prescribed in KDB 558074 D01 15.247 Meas Guidance v05r02.

## 1.3. Channel List

For 20MHz bandwidth systems, use Channel 1~ Channel 11.

| Channel No. | Frequency | Channel No. | Frequency | Channel No. | Frequency |
|---|---|---|---|---|---|
| 1 | 2412MHz | 5 | 2432MHz | 9 | 2452MHz |
| 2 | 2417MHz | 6 | 2437MHz | 10 | 2457MHz |
| 3 | 2422MHz | 7 | 2442MHz | 11 | 2462MHz |
| 4 | 2427MHz | 8 | 2447MHz | | |

Note: Channel 1, 6 & 11 selected for 802.11b/g/n-HT20 as Lowest, Middle and Highest channel. Channel 3, 6 & 9 selected for 802.11n-HT40 as Lowest, Middle and Highest Channel.

## 1.4. Test environment and mode

During the measurement, the environmental conditions were within the listed ranges:

| **Operating Environment** | |
|---|---|
| Temperature | 15°C - 35°C |
| Humidity | 30% -60% |
| Atmospheric Pressure | 86kPa-106kPa |
| **Test mode:** | |
| Continuously transmitting mode | Keeps the EUT in 100% duty cycle transmitting with modulation in SISO and MIOMO, duty cycle factor is not required. |

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | Data Rate | Channel |
|---|---|---|---|
| Peak Conducted Output Power<br>Power Spectral Density<br>6dB and 99% Bandwidth<br>Conducted Spurious Emission<br>Radiated Spurious Emission | 802.11b | 1 Mbps | 1/6/11 |
| | 802.11g | 6 Mbps | 1/6/11 |
| | 802.11n-HT20 | MCS 0 | 1/6/11 |
| | 802.11n-HT40 | MCS 0 | 3/6/9 |
| Band Edge | 802.11b | 1 Mbps | 1/11 |
| | 802.11g | 6 Mbps | 1/11 |
| | 802.11n-HT20 | MCS 0 | 1/11 |
| | 802.11n-HT40 | MCS 0 | 3/9 |

## 1.5. Table for Supporting Units

| No. | Equipment | Brand Name | Model Name | Manufacturer | Serial No. | Note |
|---|---|---|---|---|---|---|
| 1 | Laptop | HP | TPN-Q221 | HP | 5CD14347QB | FCC DOC |

## 1.6. EUT Operation Test Setup

For RF test items, an engineering test program was provided and enable to make EUT transmitting.

## 1.7. Laboratory Facilities

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until Jun. 30th, 2025.

**ISED Registration: 11185A**

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A on Aug. 04, 2016, valid time is until Jun. 30th, 2025.

**CAB number: CN0064**

**A2LA Code: 5721.01**

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

# 2. Test Requirements

## 2.1. Antenna requirement

### 2.1.1. Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to RSSGEN 6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

### 2.1.2. Antenna Information

**Antenna Category:** Internal Antenna

A internal Antenna was soldered to the antenna port of EUT via an adaptor cable, can't be removed.

| No. | EUT | Operating frequency range | Ant. Type | Ant. Gain |
|---|---|---|---|---|
| 1 | Thermal Imaging Camera | 2402-2480MHz | Internal | 3.95dBi |

### 2.1.3. Result: comply

The EUT has two permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

## 2.2. Maximum Conducted Output Power

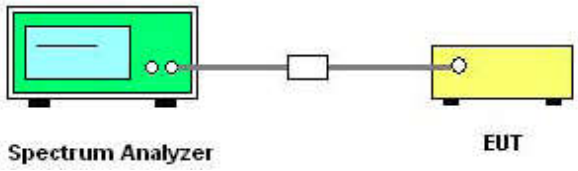
### 2.2.1. Limit of Maximum Conducted Output Power

For DTSs employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W.

### 2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.2.3. Test Setup




### 2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.9.2.2.4.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings:

   Set instrument center frequency to DTS channel center frequency / Set span to at least 1.5 times the OBW / RBW = 1% to 5% of the OBW, not to exceed 1 MHz. / Set VBW ≥ [3 × RBW]. / Detector: RMS / Sweep time: Auto / Trace mode: Average / Trace average at least 100 traces in power averaging (rms) mode.
5. Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
6. Add [10 log (1 / D)], where D is the duty cycle), to the measured PSD to compute the average PSD during the actual transmission time.
7. Record the measurement results in the test report.

### 2.2.5. Test Result of Maximum Conducted Output Power

Please refer to Appendix A for detail.

## 2.3. 6dB and 99% Bandwidth

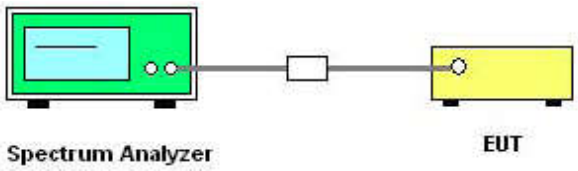
### 2.3.1. Limit of 6dB Bandwidth

The minimum 6 dB Occupied bandwidth shall be at least 500 kHz.

### 2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.3.3. Test Setup




### 2.3.4. Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.8 and 6.9.3.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the spectrum analyzer “Channel Bandwidth” function to easurement the 6dB EBW and 99% OBW.
5. For 6dB EBW Use the following spectrum analyzer settings:
   RBW: 100kHz / VBW: 300kHz / Detector: Peak / Trace mode: Max hold / Sweep time: Auto couple / Allow trace to fully stabilize.
6. For 99% OBW Use the following spectrum analyzer settings:
   Set RBW = approximately 1% EBW or 1.5 times to 5.0 times the OBW, VBW ≥ 3 × RBW.
7. Record the measurement results in the test report.

### 2.3.5. Test Results of 6dB and 99% Bandwidth

Please refer to Appendix A for detail.

## 2.4. Power spectral density (PSD)

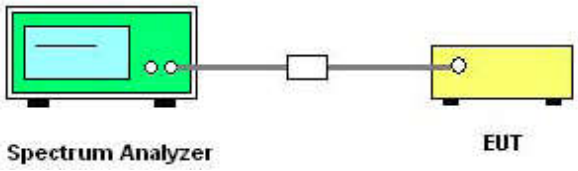
### 2.4.1. Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

### 2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.4.3. Test Setup




### 2.4.4. Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.10.5.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings:

   Set instrument center frequency to DTS channel center frequency / Set the span to 1.5 times the DTS bandwidth / RBW: 3kHz / VBW: 10kHz / Detector: RMS / Sweep time: Auto couple / Trace mode: Average / Employ trace averaging (rms) mode over a minimum of 100 traces / Use the peak marker function to determine the maximum power level.
5. Add [10 log (1 / D)], where D is the duty cycle), to the measured PSD to compute the average PSD during the actual transmission time.
6. Record the measurement results in the test report.

### 2.4.5. Test Results of Power Spectral Density

Please refer to Appendix A for detail.

## 2.5. Conducted Band Edges and Spurious Emissions

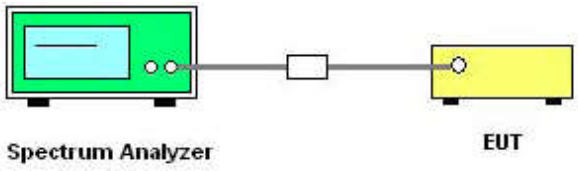
### 2.5.1. Limit of Conducted Band Edges and Spurious Emissions

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is perating, 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. 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.

### 2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.5.3. Test Setup




### 2.5.4. Test Procedure

1. The testing follows the Measurement Procedure of ANSI C63.10-2020 Section 11.11 and 11.13.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings:

   Reference level measurement: Set spectrum analyzer center frequency to DTS channel center frequency / Set the span to ≥1.5 times the DTS bandwidth / RBW: 100kHz / VBW: 300kHz / Detector: Peak / Sweep time: Auto couple / Trace mode: Max hold / Allow trace to fully stabilize / Use the peak marker function to determine the maximum PSD level and attenuate it by 30dB.

   Emission level measurement: Set the center frequency and span to encompass frequency range to be measured / RBW: 100kHz / VBW: 300kHz / Detector: Peak / Sweep time: Auto couple / Trace mode: Max hold / Allow trace to fully stabilize / Use the peak marker function to determine the maximum amplitude level.
5. Record the measurement results in the test report.

### 2.5.5. Test Results of Conducted Band Edges and Spurious Emissions

Please refer to Appendix A for detail.

## 2.6. Radiated Band Edge and Spurious Emission

### 2.6.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the frequency band in which the 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. If the transmitter uses an RMS average conducted power limit, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the estricted bands, as defi ned in §15.205(a), must also comply with the radiated emission limits specifi ed in §15.209(a).

§15.209(a) Radiated emission limits:

| Frequency (MHz) | Field Strength (μV/m) | Measurement Distance (m) |
|---|---|---|
| 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 |

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

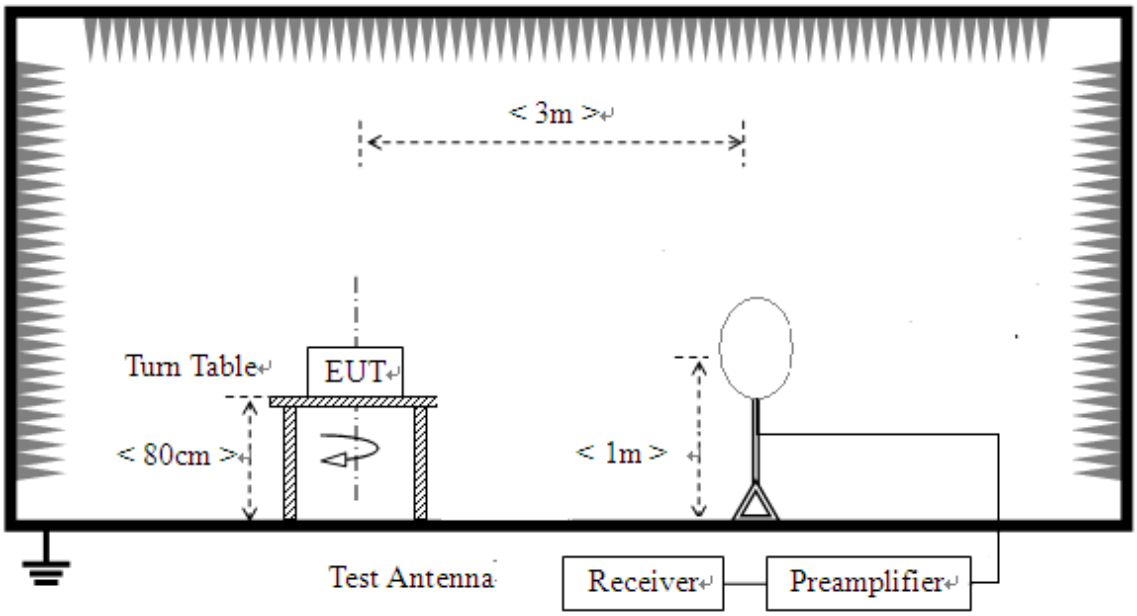
| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| [1]0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | ([2]) |
| 13.36-13.41 | / | / | / |
| Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.<br>[2]Above 38.6. | | | |

### 2.6.2. Measuring Instruments

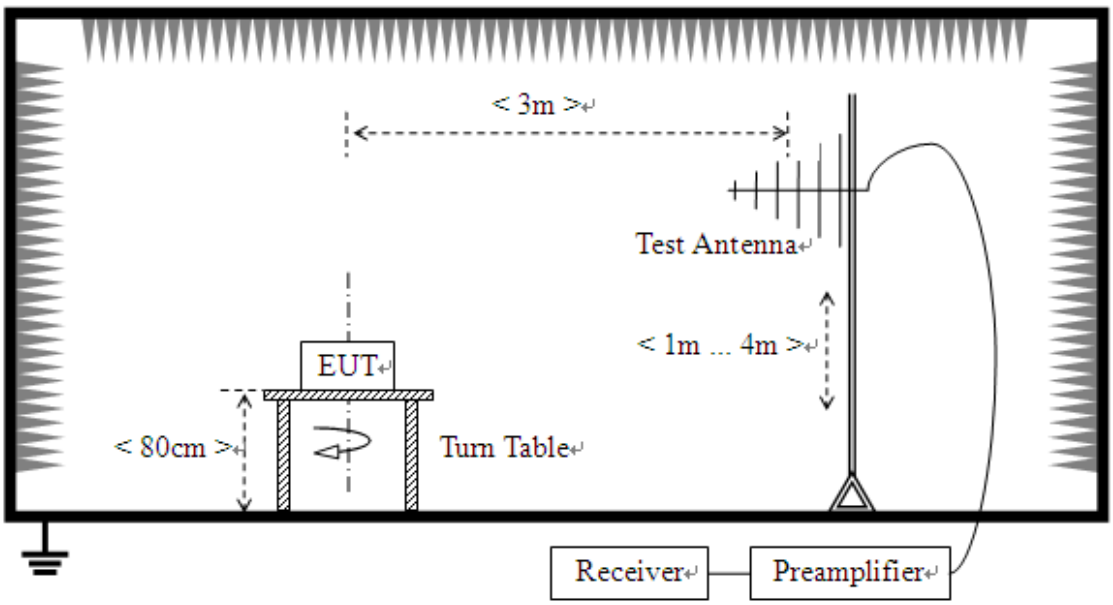
The measuring equipment is listed in the section 3 of this test report.

### 2.6.3. Test Setup

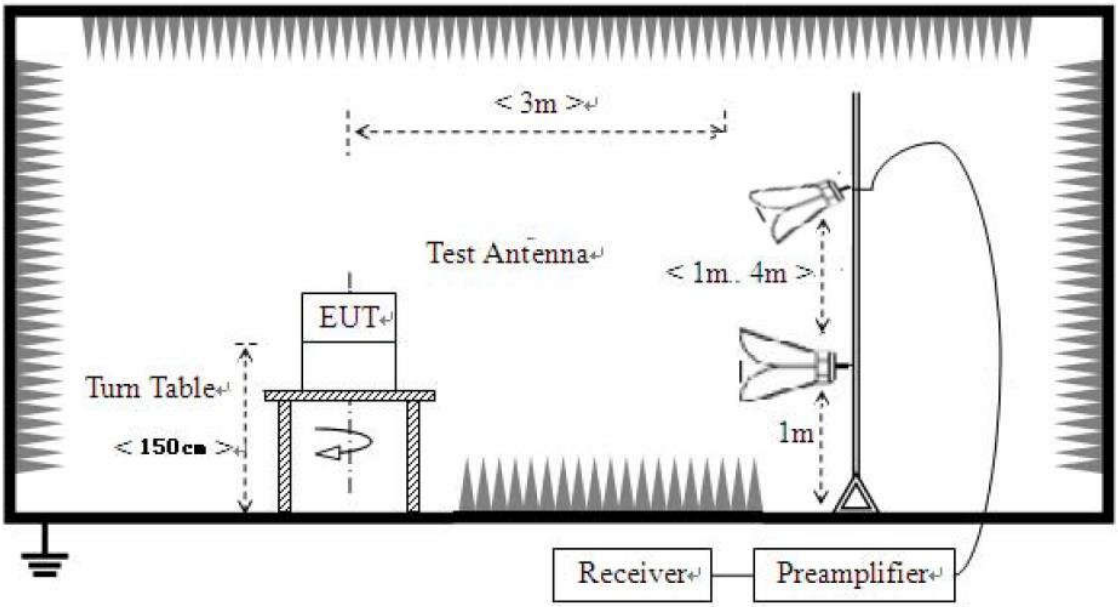
**For radiated emissions from 9 kHz to 30 MHz**




**For radiated emissions from 30MHz to 1GHz**



**For radiated emissions above 1GHz**




## 2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8m for below 1GHz and 1.5m for above 1GHz above the ground at a 3 meters semi-anechoic chamber.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on thetop of a variable height antenna tower.
3. Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. For the radiated emission test above 1GHz:
   Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at

the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

### 2.6.5. Test Results of Radiated Band Edge and Spurious Emission

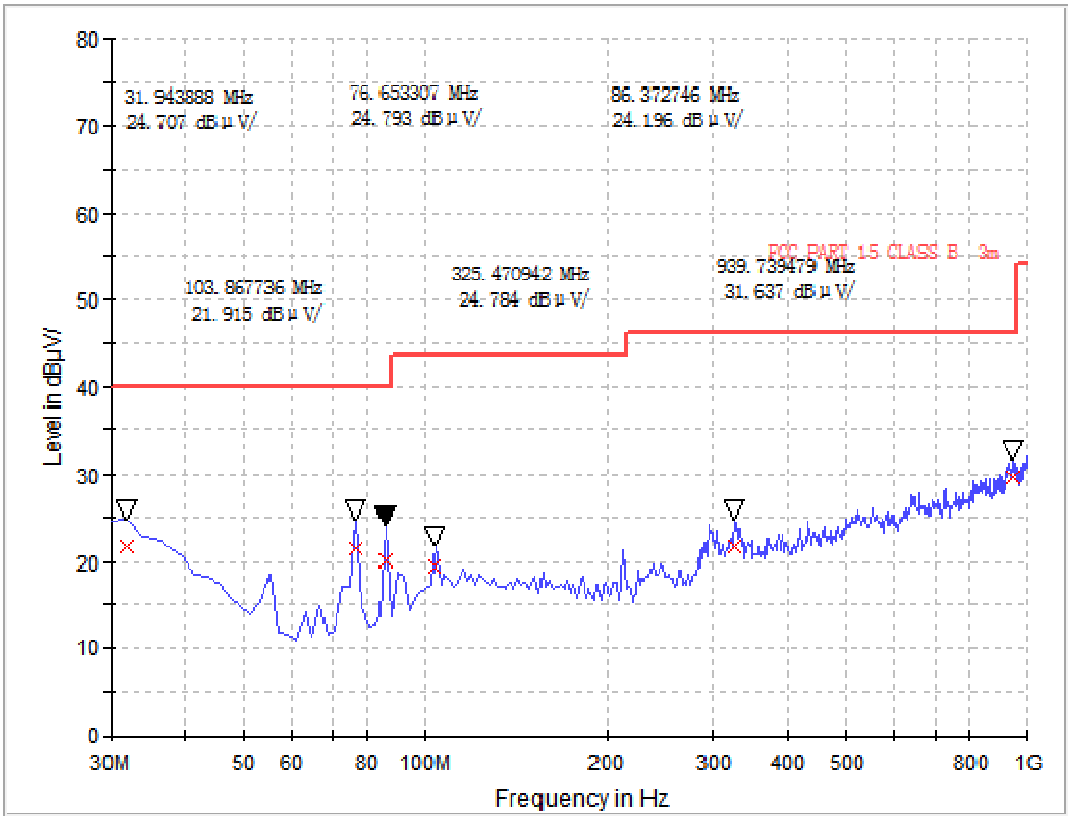
For 9 kHz to 30MHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1GHz, All of the EUT Configure mode were tested and found 802.11b_2412MHz channel is the worst mode, the worst case is recorded in this report.

For 1GHz to 25GHz, Only worst-case data is reported.

**For 30MHz to 1000MHz**

| Test site: | 3M anechoic chamber | Environment: | Temp: 23℃; Humi:48%;101kPa |
|---|---|---|---|
| Operator: | Huang Chaoming | Test Date: | 2024.06.25 |
| Test Mode: | WIFI - TX | Test Result: | Pass |

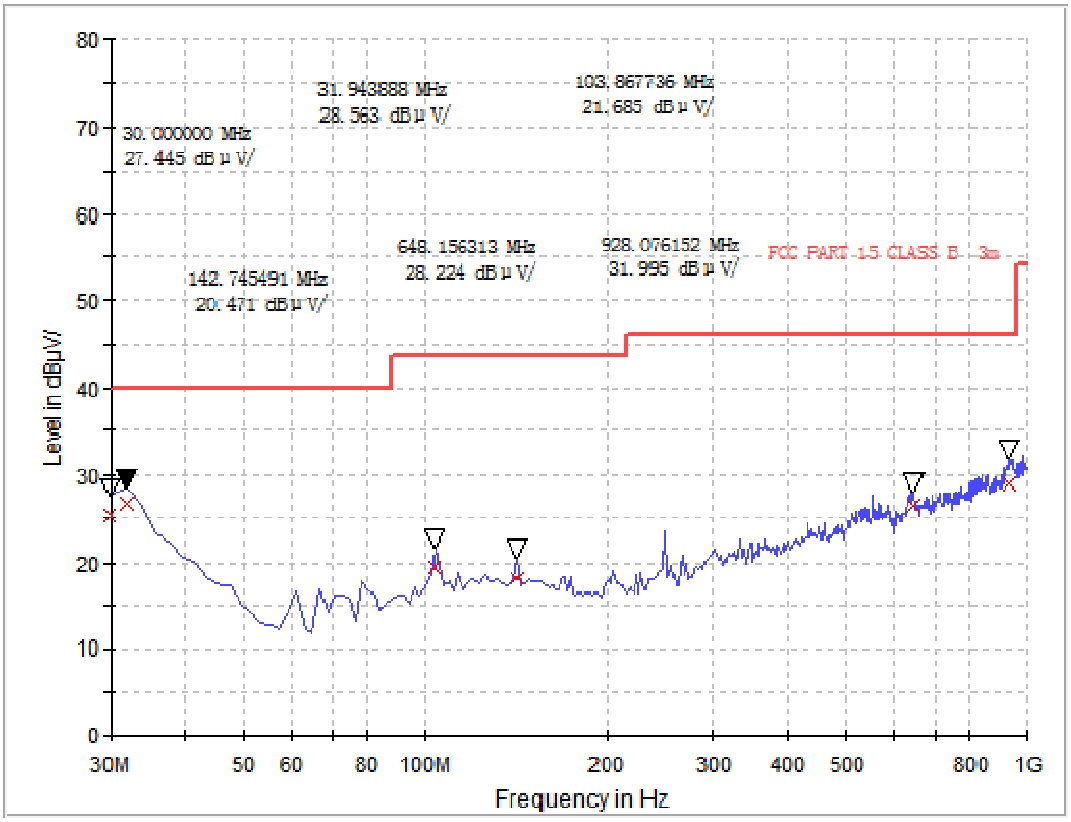



| Frequency (MHz) | QuasiPeak (dBµV/m) | Bandwidth (kHz) | Height (cm) | Polarity | Corr. (dB/m) | Margin - QPK | Limit - QPK |
|---|---|---|---|---|---|---|---|
| 31.960000 | 21.78 | 120.000 | 100.0 | H | 23.5 | 18.22 | 40.0 |
| 76.640000 | 21.45 | 120.000 | 100.0 | H | 12.4 | 18.55 | 40.0 |
| 86.360000 | 20.05 | 120.000 | 100.0 | H | 13.5 | 19.95 | 40.0 |
| 103.88000 | 19.52 | 120.000 | 100.0 | H | 15.7 | 23.98 | 43.5 |
| 325.48000 | 21.58 | 120.000 | 100.0 | H | 20.2 | 24.42 | 46.0 |
| 939.72000 | 29.76 | 120.000 | 100.0 | H | 29.7 | 16.24 | 46.0 |

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).
3. Margin value = Limit value - Emission Level.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.

| Test site: | 3M anechoic chamber | Environment: | Temp: 23℃; Humi:48%;101kPa |
|---|---|---|---|
| Operator: | Huang Chaoming | Test Date: | 2024.06.25 |
| Test Mode: | WIFI - TX | Test Result: | Pass |




| Frequency (MHz) | QuasiPeak (dBµV/m) | Bandwidth (kHz) | Height (cm) | Polarity | Corr. (dB/m) | Margin - QPK | Limit - QPK |
|---|---|---|---|---|---|---|---|
| 30.000000 | 25.30 | 120.000 | 100.0 | V | 24.2 | 14.70 | 40.0 |
| 31.960000 | 26.70 | 120.000 | 100.0 | V | 23.5 | 13.30 | 40.0 |
| 103.880000 | 19.46 | 120.000 | 100.0 | V | 15.7 | 24.04 | 43.5 |
| 142.760000 | 18.19 | 120.000 | 100.0 | V | 17.1 | 25.31 | 43.5 |
| 648.160000 | 26.41 | 120.000 | 100.0 | V | 26.6 | 19.59 | 46.0 |
| 928.080000 | 29.00 | 120.000 | 100.0 | V | 30.0 | 17.00 | 46.0 |

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).
3. Margin value = Limit value - Emission Level.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.

**For 1GHz to 25GHz**

| 2.4G Wi-Fi 802.11b_2412MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 2390.00 | 52.72 | 74.00 | -21.28 | 1.40 | 170 | 55.81 | -3.09 | Horizontal | Peak |
| 2390.00 | 42.89 | 54.00 | -11.11 | 1.40 | 170 | 45.98 | -3.09 | Horizontal | Average |
| 4824.00 | 46.41 | 74.00 | -27.59 | 1.40 | 170 | 45.24 | 1.17 | Horizontal | Peak |
| 4824.00 | 36.32 | 54.00 | -17.68 | 1.40 | 170 | 35.15 | 1.17 | Horizontal | Average |
| 7236.00 | 49.51 | 74.00 | -24.49 | 1.40 | 170 | 43.56 | 5.95 | Horizontal | Peak |
| 7236.00 | 40.28 | 54.00 | -13.72 | 1.40 | 170 | 34.33 | 5.95 | Horizontal | Average |
| 2390.00 | 53.37 | 74.00 | -20.63 | 1.50 | 210 | 56.46 | -3.09 | Vertical | Peak |
| 2390.00 | 42.98 | 54.00 | -11.02 | 1.50 | 210 | 46.07 | -3.09 | Vertical | Average |
| 4824.00 | 46.82 | 74.00 | -27.18 | 1.50 | 210 | 45.65 | 1.17 | Vertical | Peak |
| 4824.00 | 36.17 | 54.00 | -17.83 | 1.50 | 210 | 35.00 | 1.17 | Vertical | Average |
| 7236.00 | 50.81 | 74.00 | -23.19 | 1.50 | 210 | 44.86 | 5.95 | Vertical | Peak |
| 7236.00 | 40.94 | 54.00 | -13.06 | 1.50 | 210 | 34.99 | 5.95 | Vertical | Average |
| **2.4G Wi-Fi 802.11b_2437MHz** | | | | | | | | | |
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 4874.00 | 46.58 | 74.00 | -27.42 | 1.40 | 170 | 45.62 | 0.96 | Horizontal | Peak |
| 4874.00 | 36.54 | 54.00 | -17.46 | 1.40 | 170 | 35.58 | 0.96 | Horizontal | Average |
| 7311.00 | 49.46 | 74.00 | -24.54 | 1.40 | 170 | 43.92 | 5.54 | Horizontal | Peak |
| 7311.00 | 40.21 | 54.00 | -13.79 | 1.40 | 170 | 34.67 | 5.54 | Horizontal | Average |
| 4874.00 | 46.86 | 74.00 | -27.14 | 1.50 | 210 | 45.90 | 0.96 | Vertical | Peak |
| 4874.00 | 35.87 | 54.00 | -18.13 | 1.50 | 210 | 34.91 | 0.96 | Vertical | Average |
| 7311.00 | 50.42 | 74.00 | -23.58 | 1.50 | 210 | 44.88 | 5.54 | Vertical | Peak |
| 7311.00 | 40.94 | 54.00 | -13.06 | 1.50 | 210 | 35.40 | 5.54 | Vertical | Average |

*Remark:*

*1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)*

*2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)*

*3. Margin value = Emission Level – Limit value*

*4.The emission levels of other frequencies are very lower than the limit and not show in test report.*

*5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.*

| 2.4G Wi-Fi 802.11b_2462MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 2483.50 | 53.15 | 74.00 | -20.85 | 1.40 | 170 | 57.90 | -4.75 | Horizontal | Peak |
| 2483.50 | 43.82 | 54.00 | -10.18 | 1.40 | 170 | 48.57 | -4.75 | Horizontal | Average |
| 4924.00 | 44.49 | 74.00 | -29.51 | 1.40 | 170 | 43.89 | 0.60 | Horizontal | Peak |
| 4924.00 | 35.65 | 54.00 | -18.35 | 1.40 | 170 | 35.05 | 0.60 | Horizontal | Average |
| 7386.00 | 49.85 | 74.00 | -24.15 | 1.40 | 170 | 43.92 | 5.93 | Horizontal | Peak |
| 7386.00 | 40.28 | 54.00 | -13.72 | 1.40 | 170 | 34.35 | 5.93 | Horizontal | Average |
| 2483.50 | 53.78 | 74.00 | -20.22 | 1.50 | 210 | 58.53 | -4.75 | Vertical | Peak |
| 2483.50 | 43.62 | 54.00 | -10.38 | 1.50 | 210 | 48.37 | -4.75 | Vertical | Average |
| 4924.00 | 45.02 | 74.00 | -28.98 | 1.50 | 210 | 44.42 | 0.60 | Vertical | Peak |
| 4924.00 | 35.70 | 54.00 | -18.30 | 1.50 | 210 | 35.10 | 0.60 | Vertical | Average |
| 7386.00 | 50.22 | 74.00 | -23.78 | 1.50 | 210 | 44.29 | 5.93 | Vertical | Peak |
| 7386.00 | 40.88 | 54.00 | -13.12 | 1.50 | 210 | 34.95 | 5.93 | Vertical | Average |

*Remark:*

*1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)*

*2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)*

*3. Margin value = Emission Level – Limit value*

*4.The emission levels of other frequencies are very lower than the limit and not show in test report.*

*5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.*

| 2.4G Wi-Fi 802.11n-HT40_2422MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 2390.00 | 52.28 | 74.00 | -21.72 | 1.40 | 170 | 55.37 | -3.09 | Horizontal | Peak |
| 2390.00 | 43.27 | 54.00 | -10.73 | 1.40 | 170 | 46.36 | -3.09 | Horizontal | Average |
| 4844.00 | 46.74 | 74.00 | -27.26 | 1.40 | 170 | 45.66 | 1.08 | Horizontal | Peak |
| 4844.00 | 36.45 | 54.00 | -17.55 | 1.40 | 170 | 35.37 | 1.08 | Horizontal | Average |
| 7266.00 | 49.64 | 74.00 | -24.36 | 1.40 | 170 | 43.92 | 5.72 | Horizontal | Peak |
| 7266.00 | 40.13 | 54.00 | -13.87 | 1.40 | 170 | 34.41 | 5.72 | Horizontal | Average |
| 2390.00 | 52.89 | 74.00 | -21.11 | 1.50 | 210 | 55.98 | -3.09 | Vertical | Peak |
| 2390.00 | 42.61 | 54.00 | -11.39 | 1.50 | 210 | 45.70 | -3.09 | Vertical | Average |
| 4844.00 | 47.30 | 74.00 | -26.70 | 1.50 | 210 | 46.22 | 1.08 | Vertical | Peak |
| 4844.00 | 36.05 | 54.00 | -17.95 | 1.50 | 210 | 34.97 | 1.08 | Vertical | Average |
| 7266.00 | 50.35 | 74.00 | -23.65 | 1.50 | 210 | 44.63 | 5.72 | Vertical | Peak |
| 7266.00 | 40.62 | 54.00 | -13.38 | 1.50 | 210 | 34.90 | 5.72 | Vertical | Average |
| **2.4G Wi-Fi 802.11n-HT40_2437MHz** | | | | | | | | | |
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 4874.00 | 46.38 | 74.00 | -27.62 | 1.40 | 170 | 45.42 | 0.96 | Horizontal | Peak |
| 4874.00 | 36.16 | 54.00 | -17.84 | 1.40 | 170 | 35.20 | 0.96 | Horizontal | Average |
| 7311.00 | 49.03 | 74.00 | -24.97 | 1.40 | 170 | 43.49 | 5.54 | Horizontal | Peak |
| 7311.00 | 40.32 | 54.00 | -13.68 | 1.40 | 170 | 34.78 | 5.54 | Horizontal | Average |
| 4874.00 | 46.70 | 74.00 | -27.30 | 1.50 | 210 | 45.74 | 0.96 | Vertical | Peak |
| 4874.00 | 35.94 | 54.00 | -18.06 | 1.50 | 210 | 34.98 | 0.96 | Vertical | Average |
| 7311.00 | 49.92 | 74.00 | -24.08 | 1.50 | 210 | 44.38 | 5.54 | Vertical | Peak |
| 7311.00 | 40.55 | 54.00 | -13.45 | 1.50 | 210 | 35.01 | 5.54 | Vertical | Average |

*Remark:*

*1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)*

*2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)*

*3. Margin value = Emission Level – Limit value*

*4.The emission levels of other frequencies are very lower than the limit and not show in test report.*

*5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.*

| 2.4G Wi-Fi 802.11n-HT40_2452MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Emssion Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) | Polarity | Detector |
| 2483.50 | 53.01 | 74.00 | -20.99 | 1.40 | 170 | 57.76 | -4.75 | Horizontal | Peak |
| 2483.50 | 43.52 | 54.00 | -10.48 | 1.40 | 170 | 48.27 | -4.75 | Horizontal | Average |
| 4904.00 | 44.33 | 74.00 | -29.67 | 1.40 | 170 | 43.52 | 0.81 | Horizontal | Peak |
| 4904.00 | 35.95 | 54.00 | -18.05 | 1.40 | 170 | 35.14 | 0.81 | Horizontal | Average |
| 7356.00 | 50.20 | 74.00 | -23.80 | 1.40 | 170 | 44.42 | 5.78 | Horizontal | Peak |
| 7356.00 | 39.87 | 54.00 | -14.13 | 1.40 | 170 | 34.09 | 5.78 | Horizontal | Average |
| 2483.50 | 53.50 | 74.00 | -20.50 | 1.50 | 210 | 58.25 | -4.75 | Vertical | Peak |
| 2483.50 | 43.33 | 54.00 | -10.67 | 1.50 | 210 | 48.08 | -4.75 | Vertical | Average |
| 4904.00 | 45.41 | 74.00 | -28.59 | 1.50 | 210 | 44.60 | 0.81 | Vertical | Peak |
| 4904.00 | 35.26 | 54.00 | -18.74 | 1.50 | 210 | 34.45 | 0.81 | Vertical | Average |
| 7356.00 | 49.91 | 74.00 | -24.09 | 1.50 | 210 | 44.13 | 5.78 | Vertical | Peak |
| 7356.00 | 40.62 | 54.00 | -13.38 | 1.50 | 210 | 34.84 | 5.78 | Vertical | Average |

*Remark:*

*1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)*

*2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) - Pre-Amplifier Factor(dB)*

*3. Margin value = Emission Level – Limit value*

*4.The emission levels of other frequencies are very lower than the limit and not show in test report.*

*5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.*

## 2.7. AC Power Line Conducted Emission

### 2.7.1. Limit of AC Power Line Conducted Emission

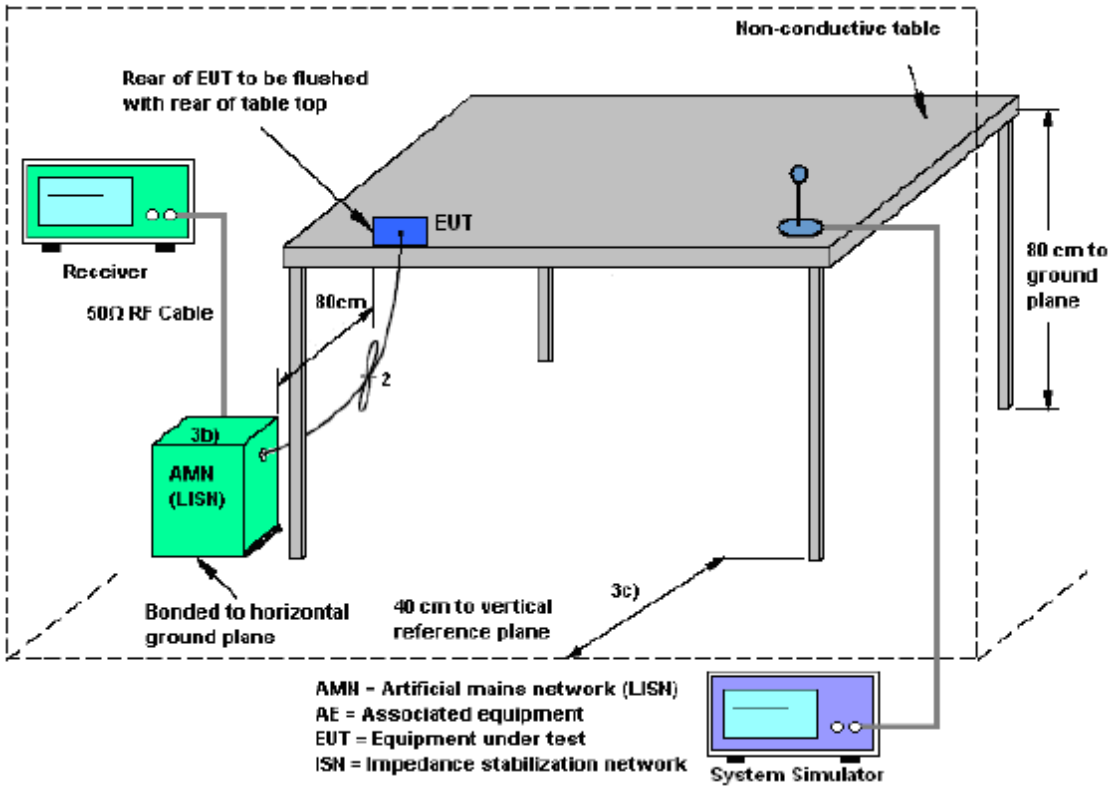
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

### 2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.7.3. Test Setup



### 2.7.4. Test Procedures

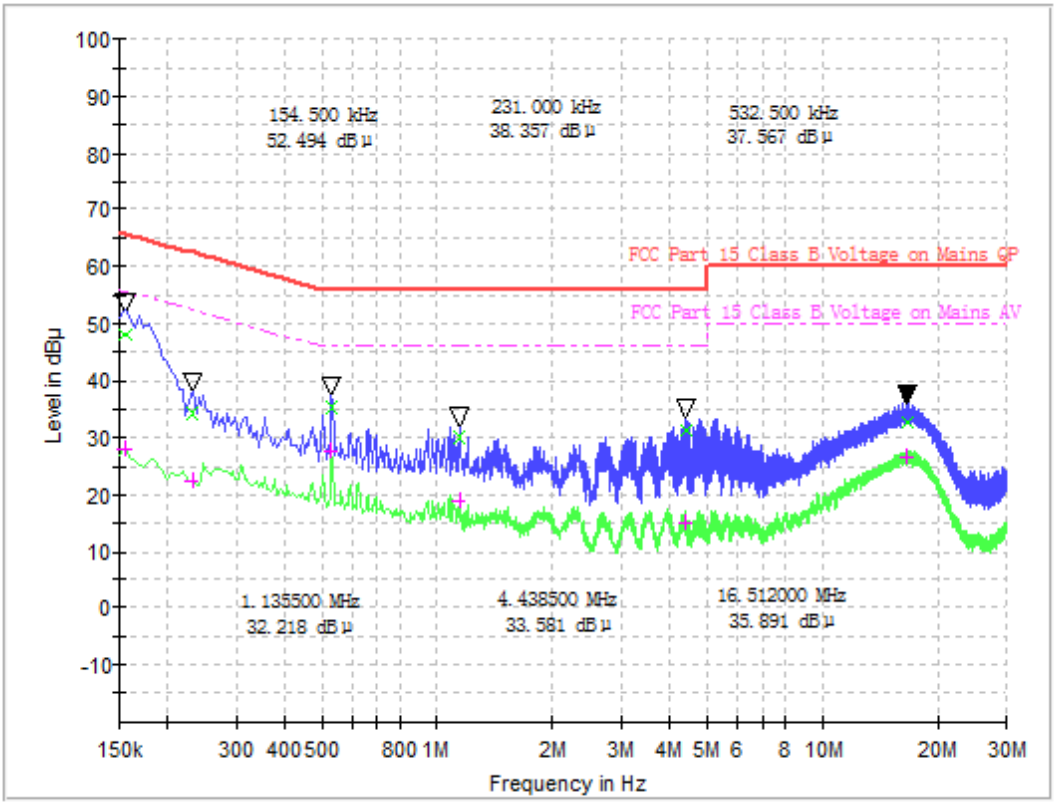
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 micrometry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 2.7.5. Test Results of Conducted Emission

The EUT configuration of the emission tests is 2.4G WLAN Link + USB Cable (Charging from Adapter).

All of the EUT Configure mode were tested and found 802.11b_2462MHz channel is the worst mode, the worst case is recorded in this report.

| Project Information | | | |
|---|---|---|---|
| Test site: | Shield ROOM 1 | Environment: | Temp: 23℃; Humi:53%;101kPa |
| Operator: | LIQINGLONG | Test Date: | 2024.06.25 |
| Test Mode: | 2.4G WIFI - TX | Test Part: | L |

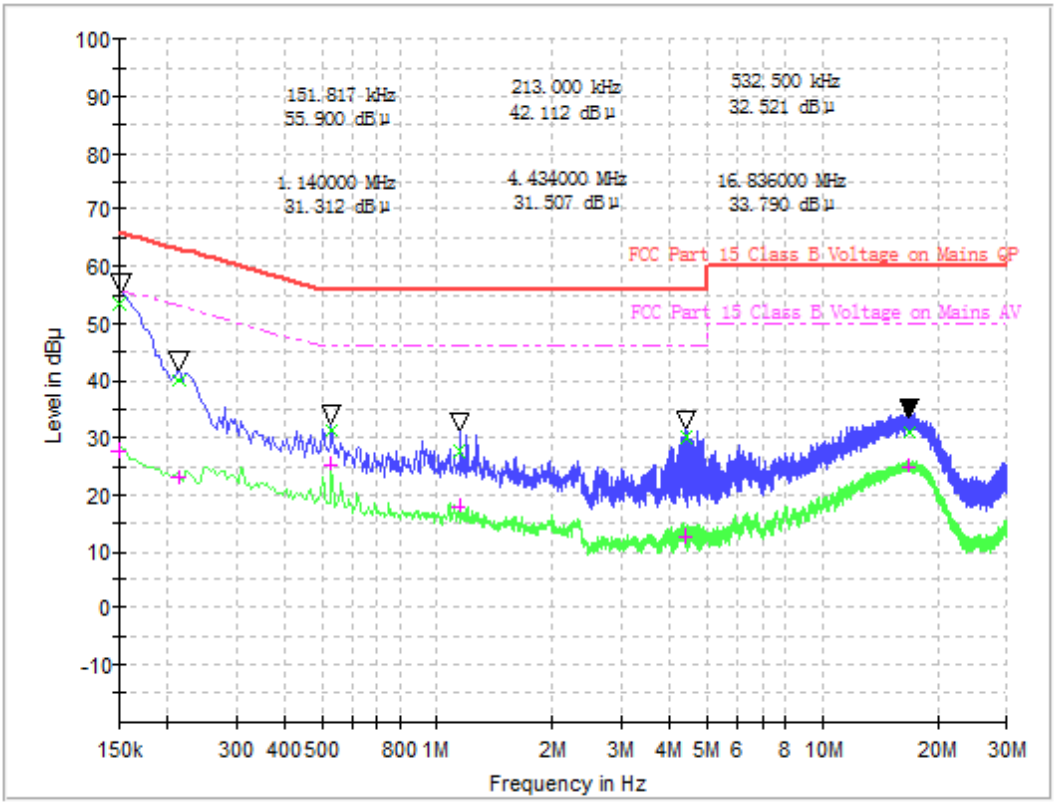



| Frequency (MHz) | QuasiPeak (dBµV) | Average (dBµV) | Corr.Factor (dB) | Margin - QPK | Limit - QPK (dBµV) | Margin - AV (dB) | Limit - AV (dBµV) |
|---|---|---|---|---|---|---|---|
| 0.154500 | 48.21 | 27.91 | 20.1 | 17.54 | 65.8 | 27.84 | 55.8 |
| 0.231000 | 34.40 | 22.35 | 19.9 | 28.01 | 62.4 | 30.06 | 52.4 |
| 0.532500 | 35.20 | 27.60 | 19.9 | 20.80 | 56.0 | 18.40 | 46.0 |
| 1.135500 | 30.03 | 18.90 | 19.8 | 25.97 | 56.0 | 27.10 | 46.0 |
| 4.438500 | 31.42 | 14.78 | 19.8 | 24.58 | 56.0 | 31.22 | 46.0 |
| 16.512000 | 32.65 | 26.64 | 20.0 | 27.35 | 60.0 | 23.36 | 50.0 |

**Test Result : Pass**

Note: Final Level = Receiver Read level + Correction factor.

| Project Information | | | |
|---|---|---|---|
| Test site: | Shield ROOM 1 | Environment: | Temp: 23℃; Humi:53%;101kPa |
| Operator: | LIQINGLONG | Test Date: | 2024.06.25 |
| Test Mode: | 2.4G WIFI - TX | Test Part: | N |




| Frequency (MHz) | QuasiPeak (dBµV) | Average (dBµV) | Corr.Factor (dB) | Margin - QPK | Limit - QPK (dBµV) | Margin - AV (dB) | Limit - AV (dBµV) |
|---|---|---|---|---|---|---|---|
| 0.150000 | 53.33 | 27.62 | 20.0 | 12.67 | 66.0 | 28.38 | 56.0 |
| 0.213000 | 40.02 | 23.06 | 19.8 | 23.07 | 63.1 | 30.03 | 53.1 |
| 0.532500 | 31.16 | 25.33 | 19.8 | 24.84 | 56.0 | 20.67 | 46.0 |
| 1.140000 | 27.52 | 18.02 | 19.9 | 28.48 | 56.0 | 27.98 | 46.0 |
| 4.434000 | 29.79 | 12.64 | 19.8 | 26.21 | 56.0 | 33.36 | 46.0 |
| 16.836000 | 30.99 | 25.05 | 20.0 | 29.01 | 60.0 | 24.95 | 50.0 |

**Test Result : Pass**

Note: Final Level = Receiver Read level + Correction factor.

# 3. List of measuring equipment

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 1 | 5M Anechoic Chamber | Albatross | SAC-5MAC 12.8x6.8x6.4m | A0304210 | 2022.06.09 | 2025.06.08 |
| 2 | EMI Test Receiver | ROHDE&SCHWARZ | ESW26 | A180502935 | 2024.05.23 | 2025.05.22 |
| 3 | Loop Antenna | Schwarz beck | HFH2-Z2 | A0304220 | 2022.05.02 | 2025.05.01 |
| 4 | Broadband antenna (30MHz~1GHz) | R&S | HL562 | A0304224 | 2023.06.08 | 2026.06.07 |
| 5 | EMI Horn Ant. (1-18G) | ETC | MCTD-1209 | A150402241 | 2023.05.16 | 2026.05.15 |
| 6 | Horn antenna (18GHz~26.5GHz) | AR | AT4510 | A0804450 | 2023.06.01 | 2026.05.31 |
| 7 | Amplifier 30M~1GHz | MILMEGA | 80RF1000-10004 | A140101634 | 2023.10.20 | 2024.10.19 |
| 8 | Amplifier 1G~18GHz | MILMEGA | AS0104R-800/400 | A160302517 | 2023.10.20 | 2024.10.19 |
| 9 | Spectrum Analyzer | KEYSIGHT | N9030A | A160702554 | 2024.01.18 | 2025.01.17 |
| 10 | Test Receiver | R&S | ESIB7 | A0501375 | 2024.02.28 | 2025.02.27 |
| 11 | Broadband Ant. | ETC | MCTD 2786 | A150402240 | 2023.05.22 | 2026.05.21 |
| 12 | 3M Anechoic Chamber | Albatross | SAC-3MAC 9*6*6m | A0412375 | 2024.02.27 | 2027.02.26 |
| 13 | Temperature chamber | ESPEC | SU-642 | A150802409 | 2024.02.22 | 2025.02.21 |
| 14 | Test Receiver | KEYSIGHT | N9038A | A141202036 | 2024.06.05 | 2025.06.04 |
| 15 | LISN | ROHDE&SCHWARZ | ENV216 | A140701847 | 2024.05.23 | 2025.05.22 |

# 4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence . The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of AC Power Line Conducted Emission Measurement (150kHz~30MHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 2.8dB |

Uncertainty of Radiated Emission Measurement (9kHz~30MHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 3.5dB |

Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 3.91dB |

Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 4.5dB |

Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 4.9dB |

Uncertainty of RF Conducted Measurement (9kHz~40GHz)

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 1.2dB |

Uncertainty of Occupied Bandwidth Measurement

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 1.2% |

# Appendix A

## Duty Cycle

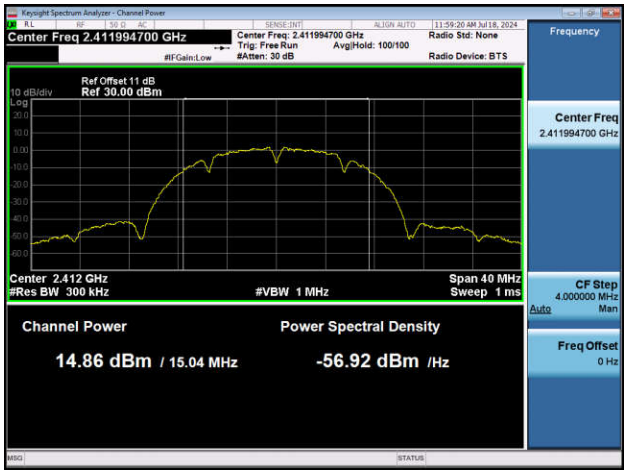
### Test Result and Data

| TestMode | Antenna | Frequency[MHz] | Transmission Duration [ms] | Transmission Period [ms] | Duty Cycle [%] | Factor |
|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 12.42 | 12.58 | 98.73 | 0.06 |
| 11G | Ant1 | 2412 | 2.06 | 2.21 | 93.21 | 0.31 |
| 11N20SISO | Ant1 | 2412 | 1.92 | 2.04 | 94.12 | 0.26 |
| 11N40SISO | Ant1 | 2422 | 0.95 | 1.10 | 86.36 | 0.64 |

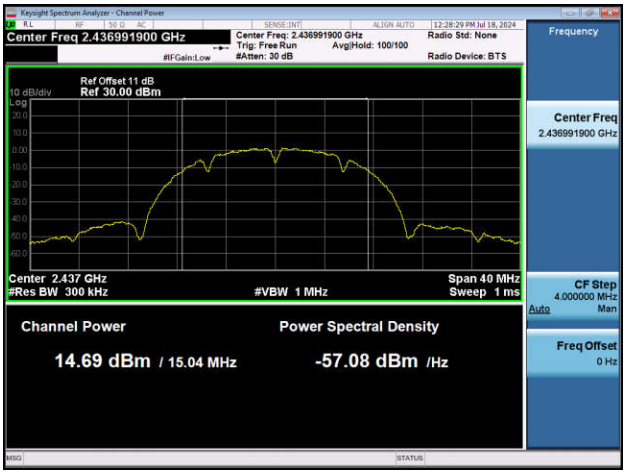
## Maximum conducted output power

### Test Result and Data

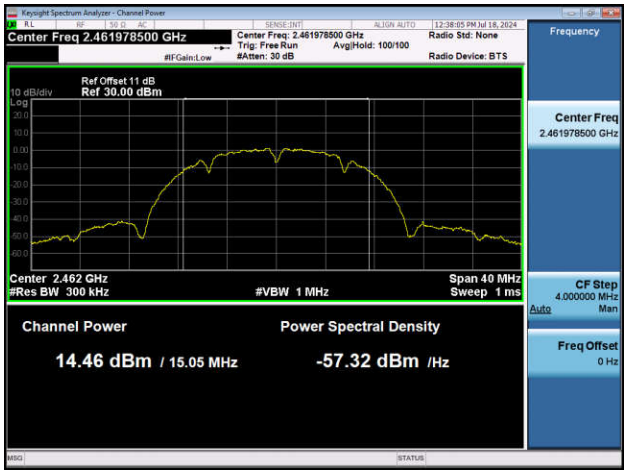
| Test Mode | Antenna | Frequency[MHz] | Average Power[dBm] | DC Factor [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 14.86 | 0.06 | 14.92 | ≤30.00 | PASS |
| 11B | Ant1 | 2437 | 14.69 | 0.06 | 14.75 | ≤30.00 | PASS |
| 11B | Ant1 | 2462 | 14.46 | 0.06 | 14.52 | ≤30.00 | PASS |
| 11G | Ant1 | 2412 | 13.19 | 0.31 | 13.50 | ≤30.00 | PASS |
| 11G | Ant1 | 2437 | 13.49 | 0.31 | 13.80 | ≤30.00 | PASS |
| 11G | Ant1 | 2462 | 13.10 | 0.31 | 13.41 | ≤30.00 | PASS |
| 11N20SISO | Ant1 | 2412 | 12.76 | 0.26 | 13.02 | ≤30.00 | PASS |
| 11N20SISO | Ant1 | 2437 | 13.15 | 0.26 | 13.41 | ≤30.00 | PASS |
| 11N20SISO | Ant1 | 2462 | 12.97 | 0.26 | 13.23 | ≤30.00 | PASS |
| 11N40SISO | Ant1 | 2422 | 13.17 | 0.64 | 13.81 | ≤30.00 | PASS |
| 11N40SISO | Ant1 | 2437 | 13.06 | 0.64 | 13.70 | ≤30.00 | PASS |
| 11N40SISO | Ant1 | 2452 | 13.01 | 0.64 | 13.65 | ≤30.00 | PASS |



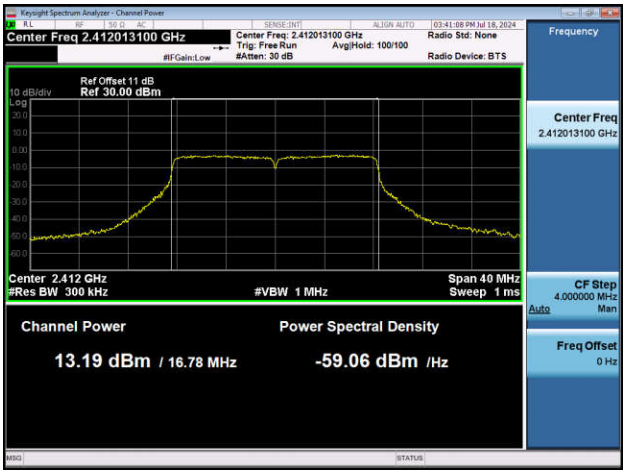

11B-Ant1-2412-PASS



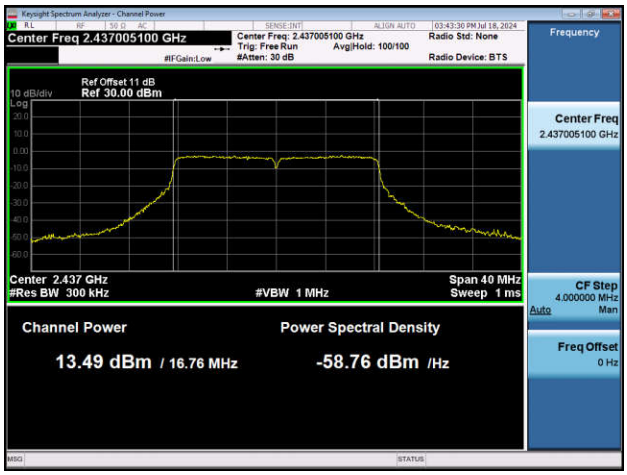

11B-Ant1-2437-PASS



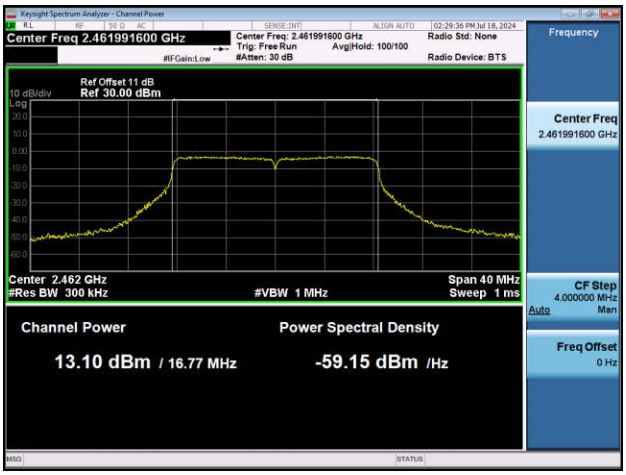

11B-Ant1-2462-PASS



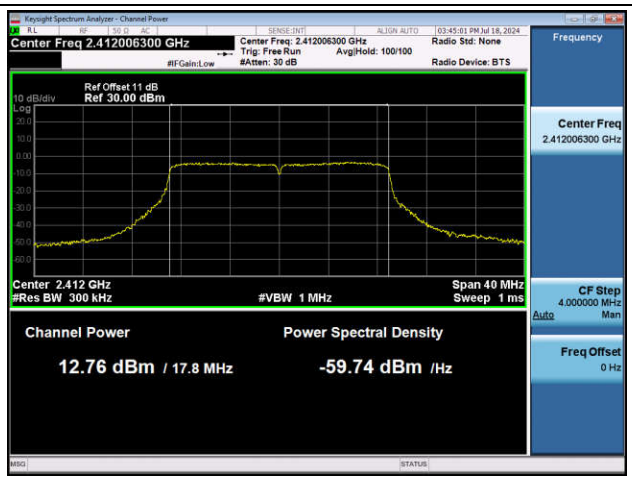

11G-Ant1-2412-PASS



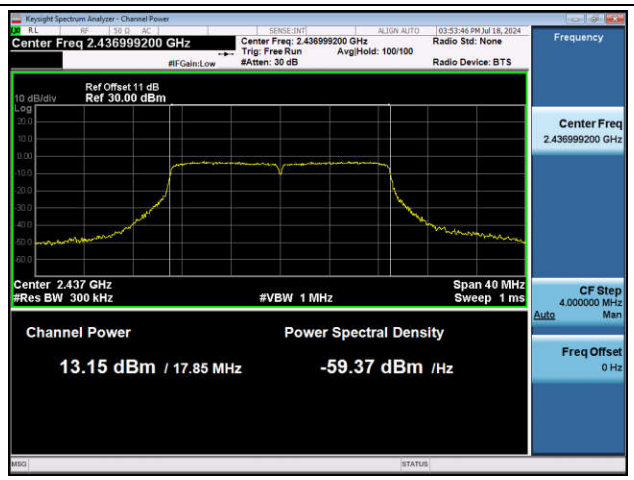

11G-Ant1-2437-PASS



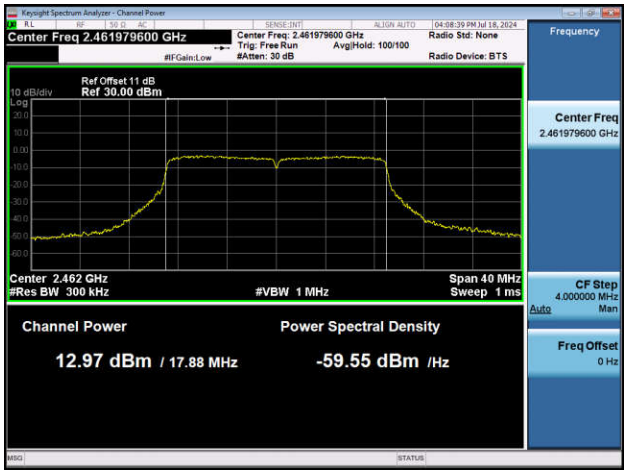

11G-Ant1-2462-PASS



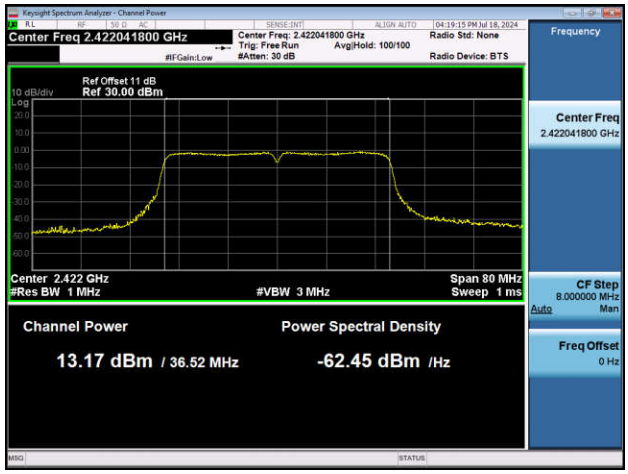

11N20SISO-Ant1-2412-PASS



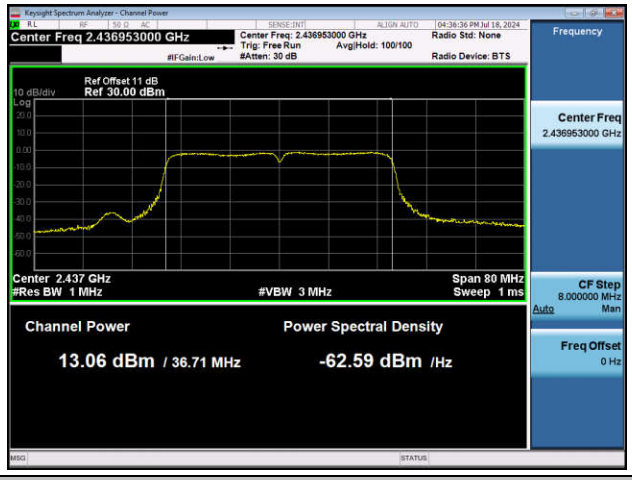

11N20SISO-Ant1-2437-PASS



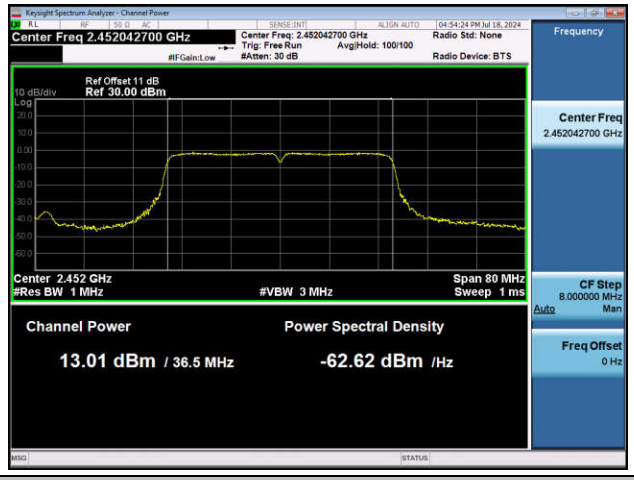

11N20SISO-Ant1-2462-PASS




11N40SISO-Ant1-2422-PASS




11N40SISO-Ant1-2437-PASS

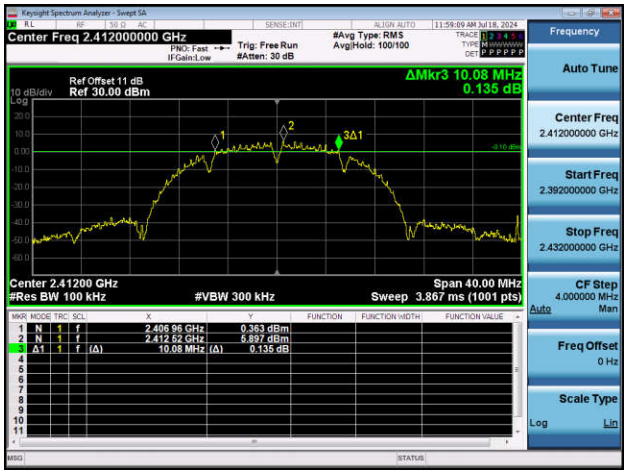



11N40SISO-Ant1-2452-PASS

## 6dB Bandwidth

### Test Result and Data

| Test Mode | Antenna | Frequency[MHz] | DTS BW [MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 10.080 | 0.5 | PASS |
| 11B | Ant1 | 2437 | 10.080 | 0.5 | PASS |
| 11B | Ant1 | 2462 | 10.040 | 0.5 | PASS |
| 11G | Ant1 | 2412 | 16.320 | 0.5 | PASS |
| 11G | Ant1 | 2437 | 16.320 | 0.5 | PASS |
| 11G | Ant1 | 2462 | 16.320 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2412 | 17.280 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2437 | 17.520 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2462 | 17.280 | 0.5 | PASS |
| 11N40SISO | Ant1 | 2422 | 35.280 | 0.5 | PASS |
| 11N40SISO | Ant1 | 2437 | 35.680 | 0.5 | PASS |
| 11N40SISO | Ant1 | 2452 | 35.680 | 0.5 | PASS |




11B-Ant1-2412-PASS

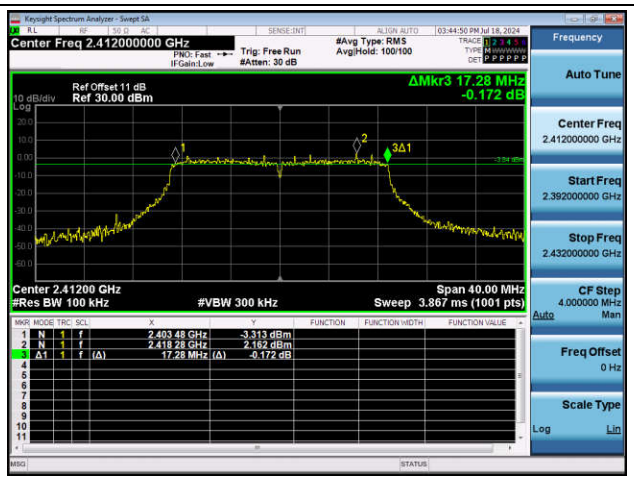

11B-Ant1-2437-PASS


11B-Ant1-2462-PASS

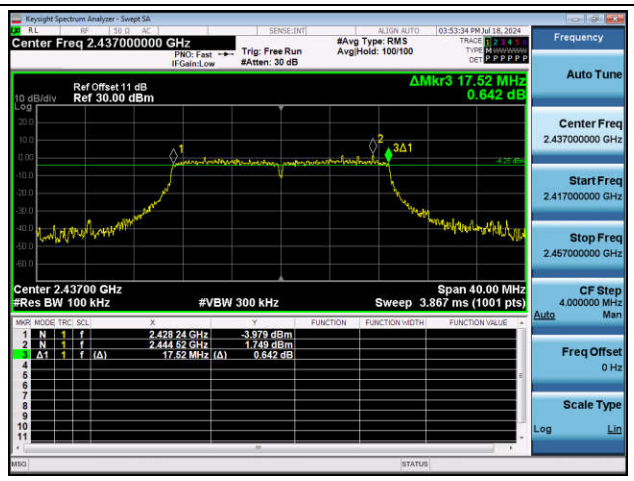

11G-Ant1-2412-PASS


11G-Ant1-2437-PASS

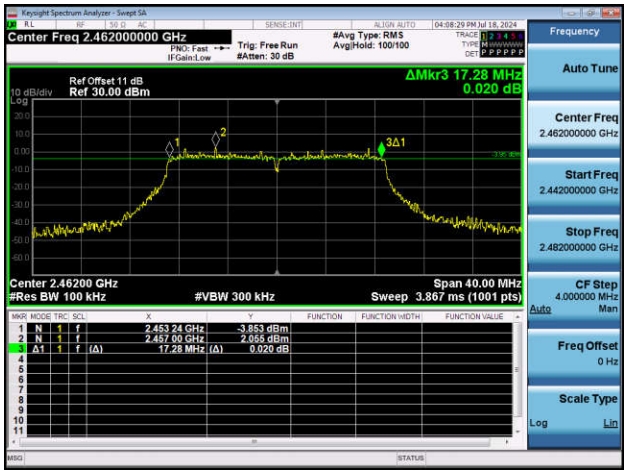

11G-Ant1-2462-PASS



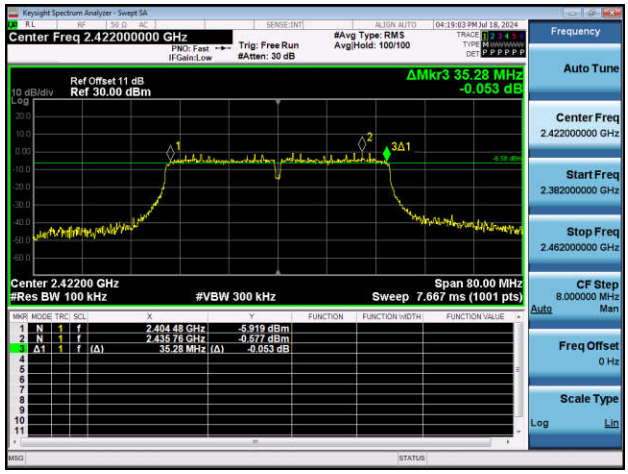

11N20SISO-Ant1-2412-PASS



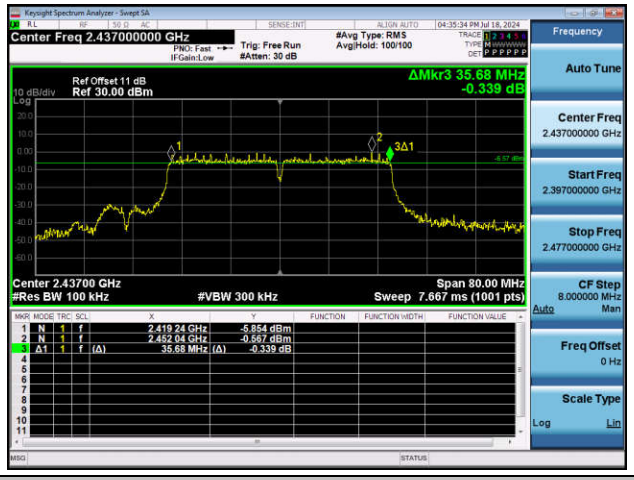

11N20SISO-Ant1-2437-PASS



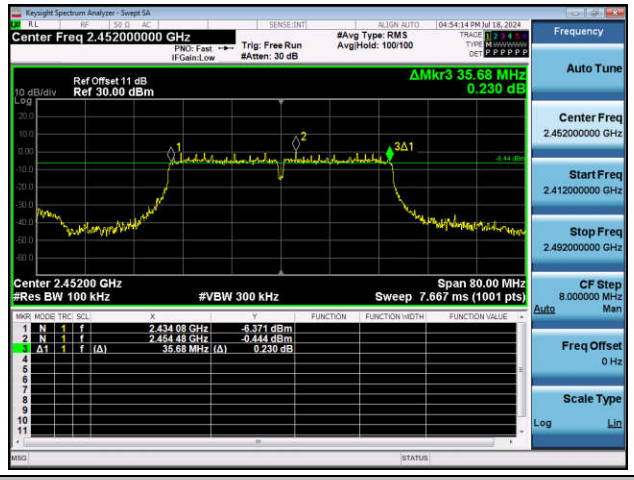

11N20SISO-Ant1-2462-PASS




11N40SISO-Ant1-2422-PASS




11N40SISO-Ant1-2437-PASS

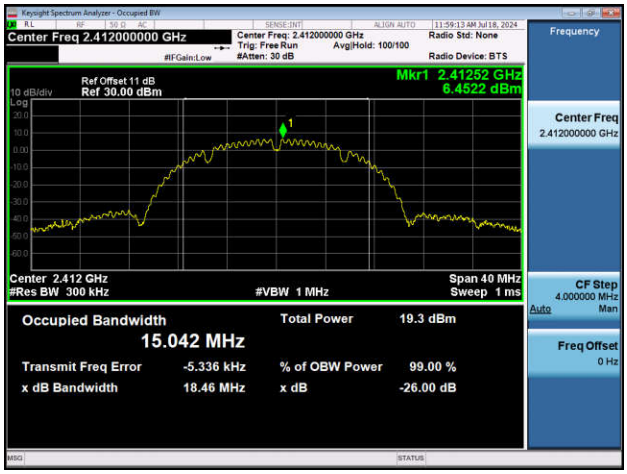



11N40SISO-Ant1-2452-PASS

## 99% Occupied Channel Bandwidth

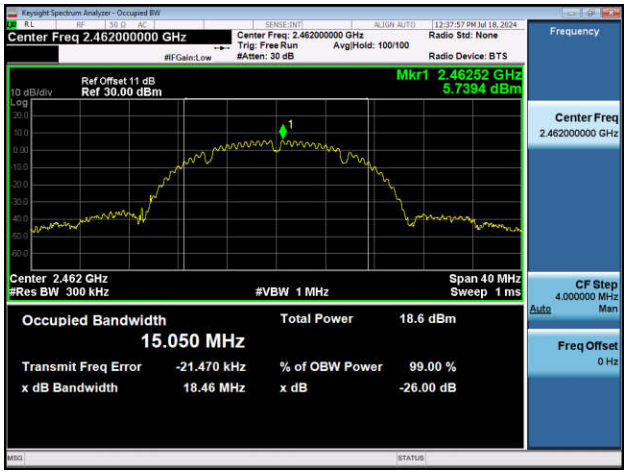
### Test Result and Data

| Test Mode | Antenna | Frequency[MHz] | 99% OBW[MHz] | Verdict |
|---|---|---|---|---|
| 11B | Ant1 | 2412 | 15.042 | PASS |
| 11B | Ant1 | 2437 | 15.041 | PASS |
| 11B | Ant1 | 2462 | 15.050 | PASS |
| 11G | Ant1 | 2412 | 16.781 | PASS |
| 11G | Ant1 | 2437 | 16.764 | PASS |
| 11G | Ant1 | 2462 | 16.772 | PASS |
| 11N20SISO | Ant1 | 2412 | 17.797 | PASS |
| 11N20SISO | Ant1 | 2437 | 17.850 | PASS |
| 11N20SISO | Ant1 | 2462 | 17.881 | PASS |
| 11N40SISO | Ant1 | 2422 | 36.523 | PASS |
| 11N40SISO | Ant1 | 2437 | 36.712 | PASS |
| 11N40SISO | Ant1 | 2452 | 36.498 | PASS |




11B-Ant1-2412

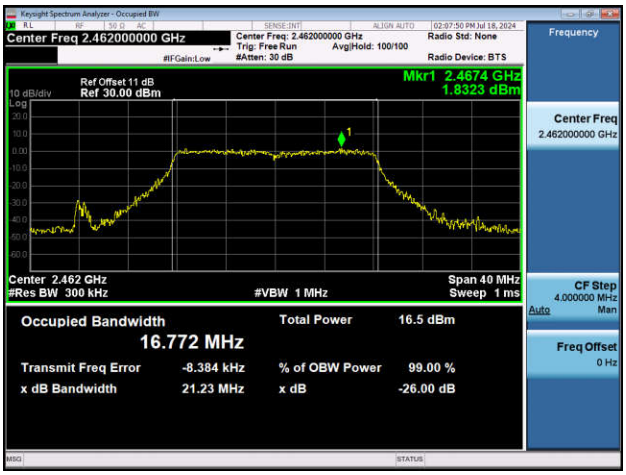

11B-Ant1-2437



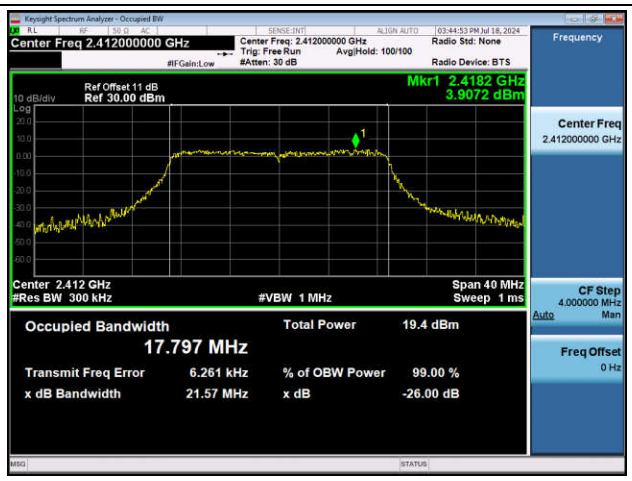

11B-Ant1-2462


11G-Ant1-2412

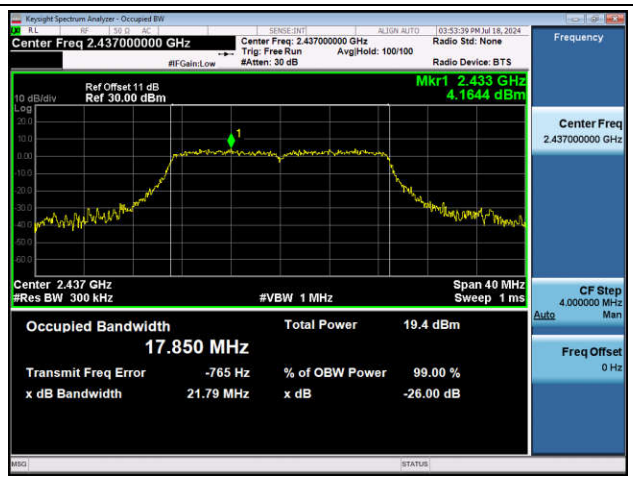

11G-Ant1-2437



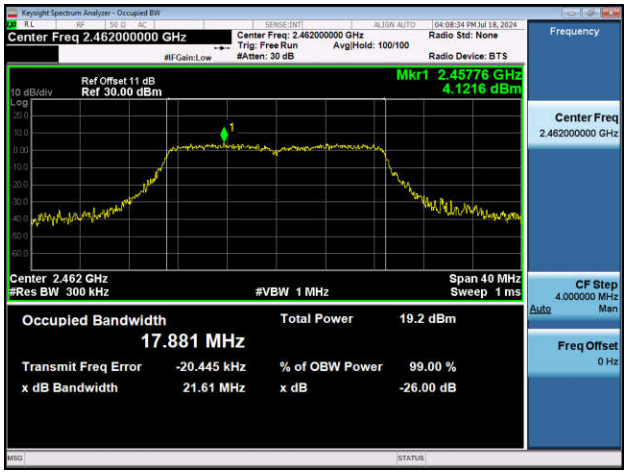

11G-Ant1-2462



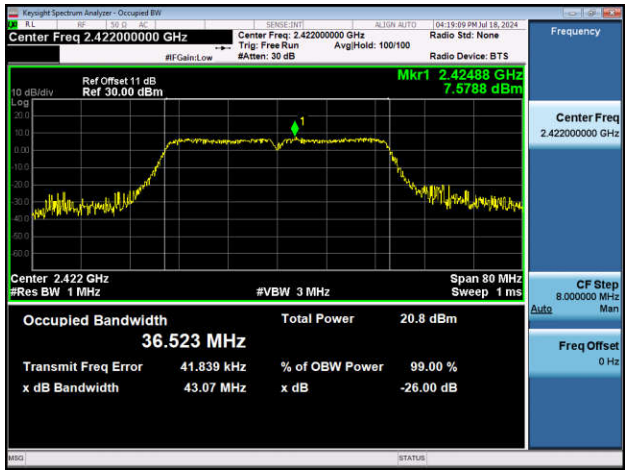

11N20SISO-Ant1-2412



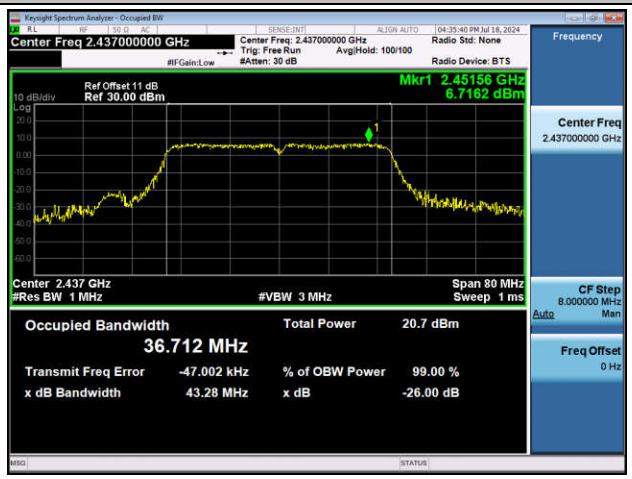

11N20SISO-Ant1-2437



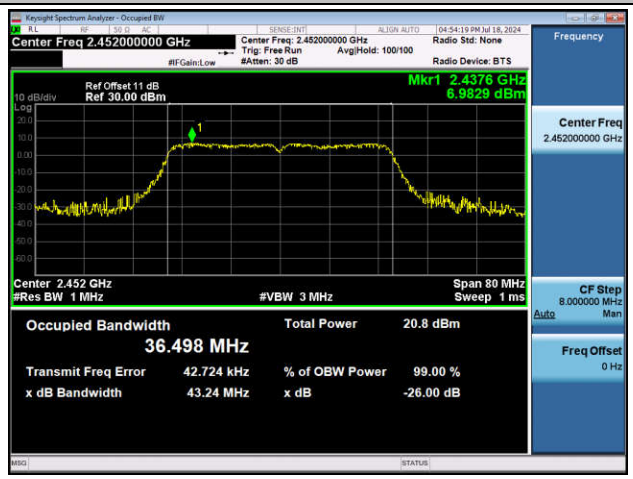

11N20SISO-Ant1-2462




11N40SISO-Ant1-2422




11N40SISO-Ant1-2437




11N40SISO-Ant1-2452

## Maximum power spectral density

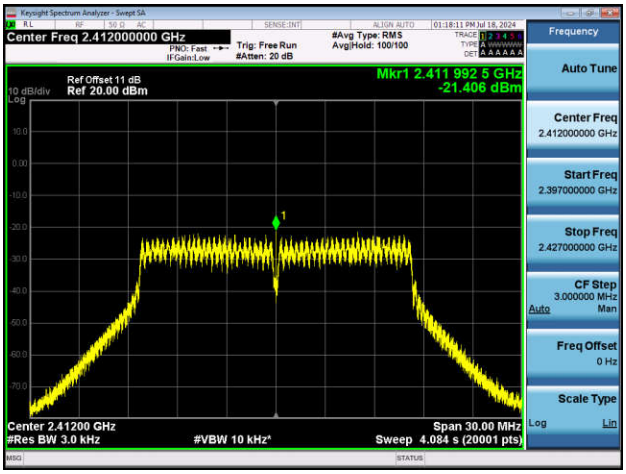
## Test Result and Data

| Test Mode | Antenna | Frequency [MHz] | PSD [dBm/3kHz] | DC Factor [dBm] | Result [dBm/3kHz] | Limit [dBm/3kHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | -17.74 | 0.06 | -17.68 | ≤8.00 | PASS |
| 11B | Ant1 | 2437 | -17.58 | 0.06 | -17.52 | ≤8.00 | PASS |
| 11B | Ant1 | 2462 | -17.71 | 0.06 | -17.65 | ≤8.00 | PASS |
| 11G | Ant1 | 2412 | -21.41 | 0.31 | -21.10 | ≤8.00 | PASS |
| 11G | Ant1 | 2437 | -21.29 | 0.31 | -20.98 | ≤8.00 | PASS |
| 11G | Ant1 | 2462 | -18.22 | 0.31 | -17.91 | ≤8.00 | PASS |
| 11N20SISO | Ant1 | 2412 | -19.04 | 0.26 | -18.78 | ≤8.00 | PASS |
| 11N20SISO | Ant1 | 2437 | -18.96 | 0.26 | -18.70 | ≤8.00 | PASS |
| 11N20SISO | Ant1 | 2462 | -18.51 | 0.26 | -18.25 | ≤8.00 | PASS |
| 11N40SISO | Ant1 | 2422 | -19.88 | 0.64 | -19.24 | ≤8.00 | PASS |
| 11N40SISO | Ant1 | 2437 | -20.43 | 0.64 | -19.79 | ≤8.00 | PASS |
| 11N40SISO | Ant1 | 2452 | -20.30 | 0.64 | -19.66 | ≤8.00 | PASS |

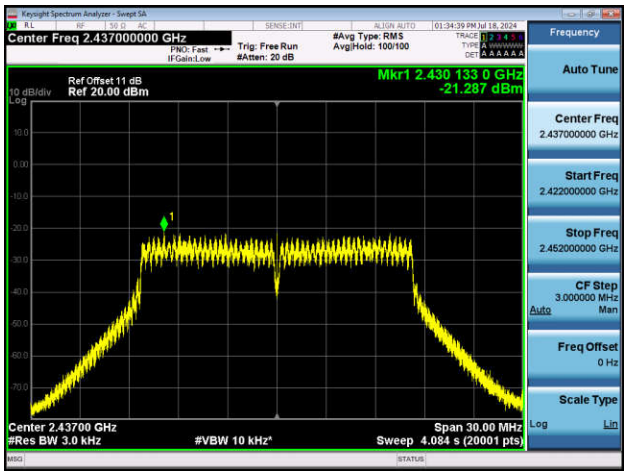

11B-Ant1-2412-PASS


11B-Ant1-2437-PASS

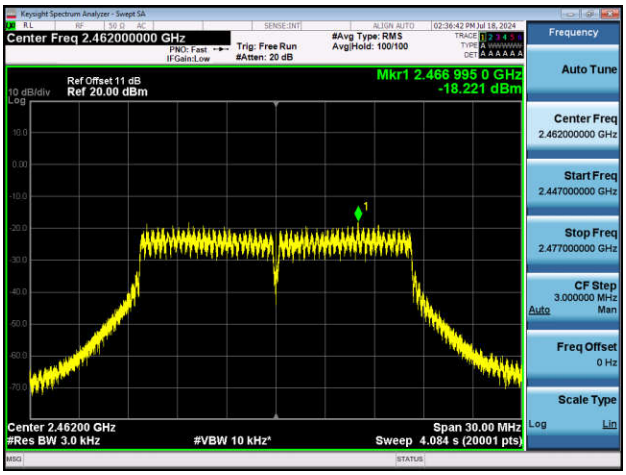

11B-Ant1-2462-PASS



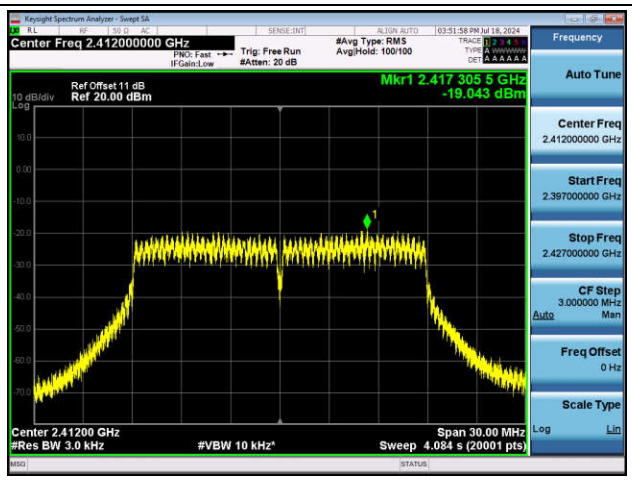

11G-Ant1-2412-PASS



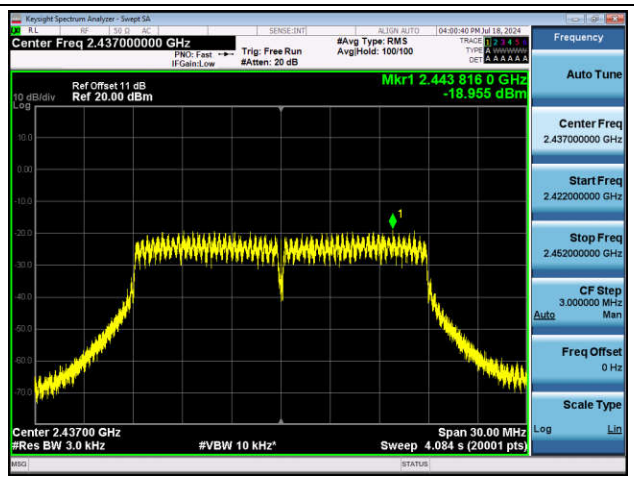

11G-Ant1-2437-PASS



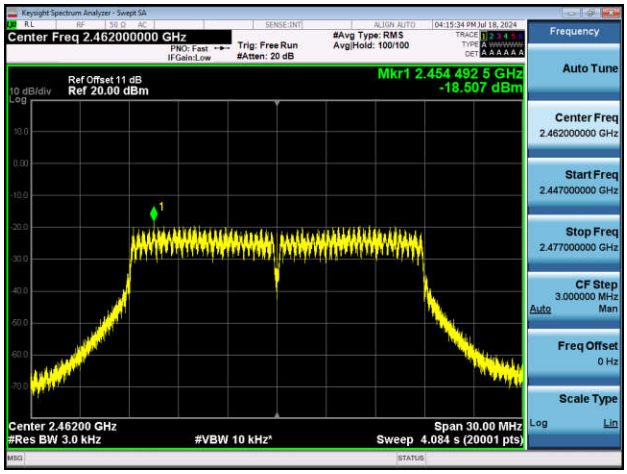

11G-Ant1-2462-PASS



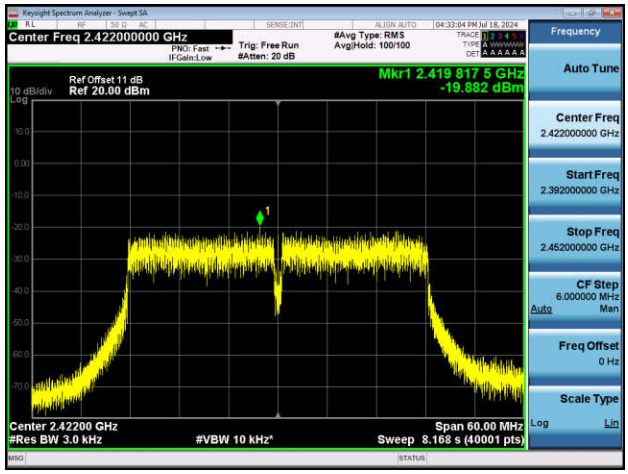

11N20SISO-Ant1-2412-PASS



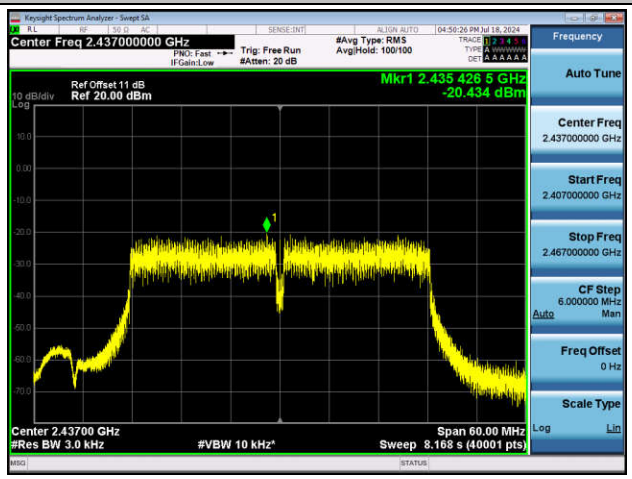

11N20SISO-Ant1-2437-PASS



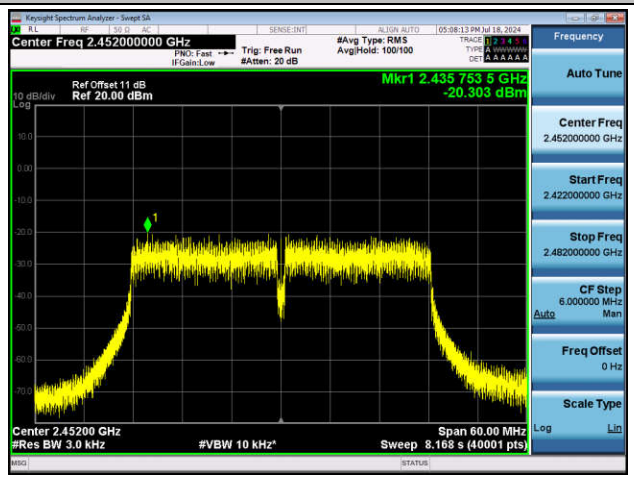

11N20SISO-Ant1-2462-PASS




11N40SISO-Ant1-2422-PASS




11N40SISO-Ant1-2437-PASS

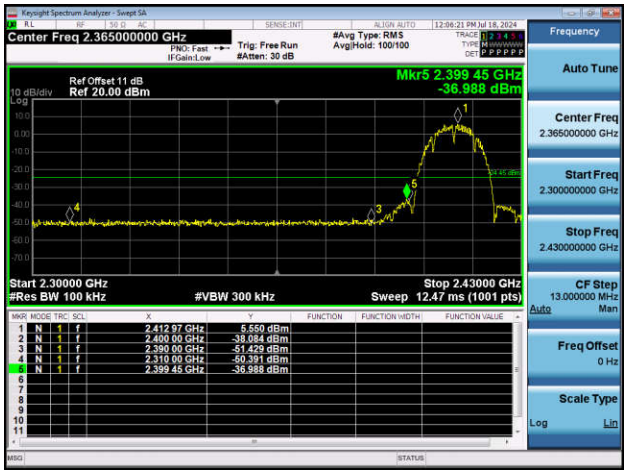



11N40SISO-Ant1-2452-PASS

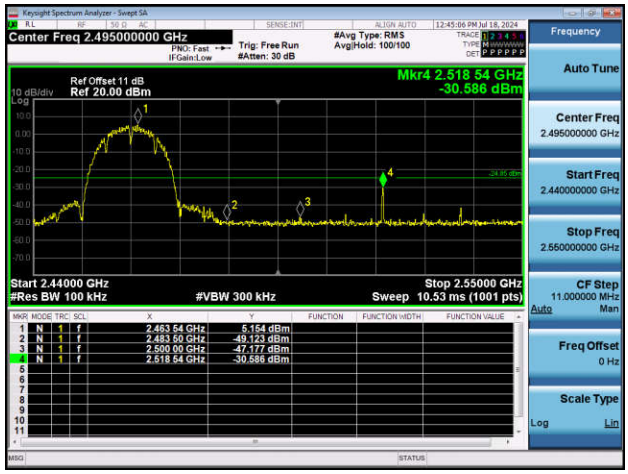
## Band edge measurements

## Test Result and Data

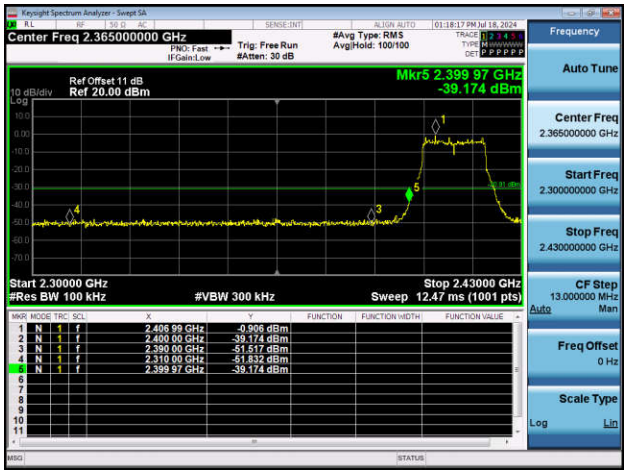
| Test Mode | Antenna | ChName | Frequency[MHz] | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | Low | 2412 | 5.55 | -36.99 | ≤-24.45 | PASS |
| 11B | Ant1 | High | 2462 | 5.15 | -30.59 | ≤-24.85 | PASS |
| 11G | Ant1 | Low | 2412 | -0.91 | -39.17 | ≤-30.91 | PASS |
| 11G | Ant1 | High | 2462 | 2.07 | -43.58 | ≤-27.93 | PASS |
| 11N20SISO | Ant1 | Low | 2412 | 0.98 | -34.85 | ≤-29.03 | PASS |
| 11N20SISO | Ant1 | High | 2462 | 1.48 | -33.76 | ≤-28.52 | PASS |
| 11N40SISO | Ant1 | Low | 2422 | -0.36 | -36.24 | ≤-30.36 | PASS |
| 11N40SISO | Ant1 | High | 2452 | -0.62 | -38.62 | ≤-30.62 | PASS |



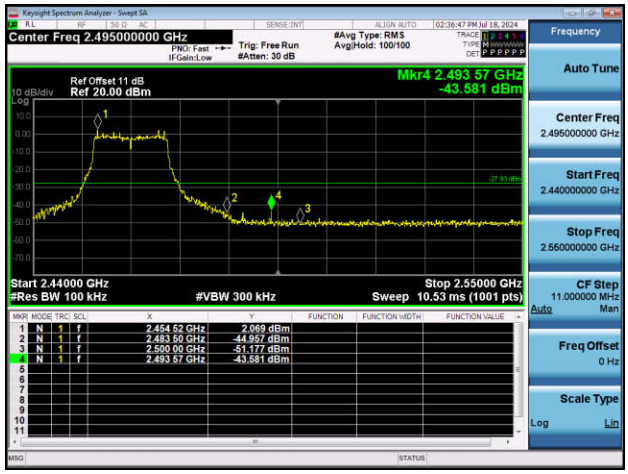

11B-Ant1-2412-PASS




11B-Ant1-2462-PASS




11G-Ant1-2412-PASS

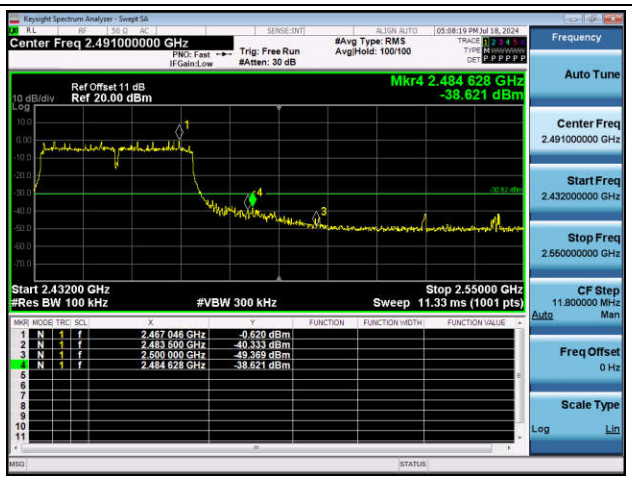



11G-Ant1-2462-PASS


11N20SISO-Ant1-2412-PASS


11N20SISO-Ant1-2462-PASS

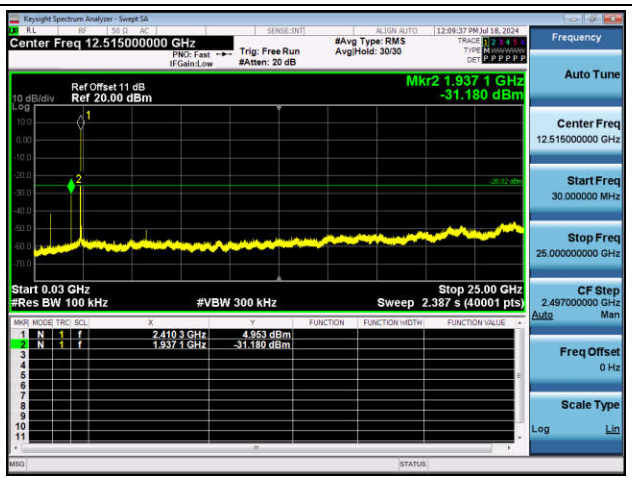

11N40SISO-Ant1-2422-PASS




11N40SISO-Ant1-2452-PASS

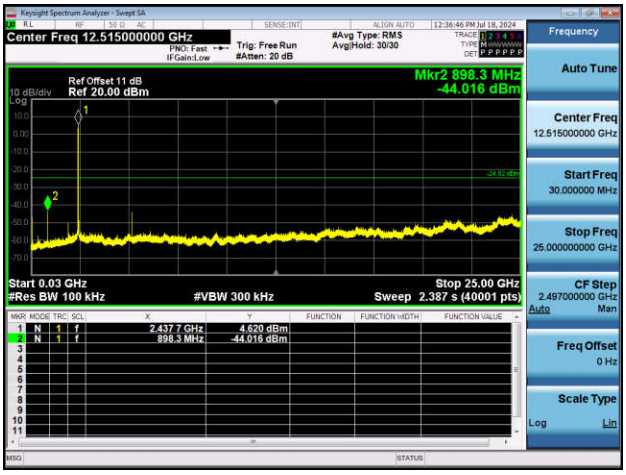
## Band edge measurements
## Test Result and Data


11B-Ant1-2412-0~Reference-PASS



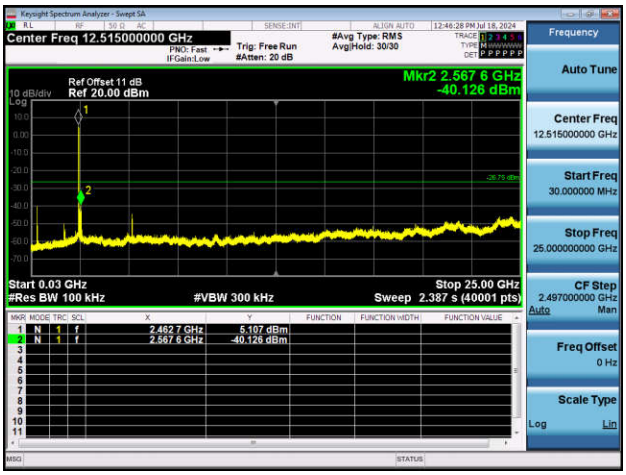

11B-Ant1-2412-30~25000-PASS


11B-Ant1-2437-0~Reference-PASS

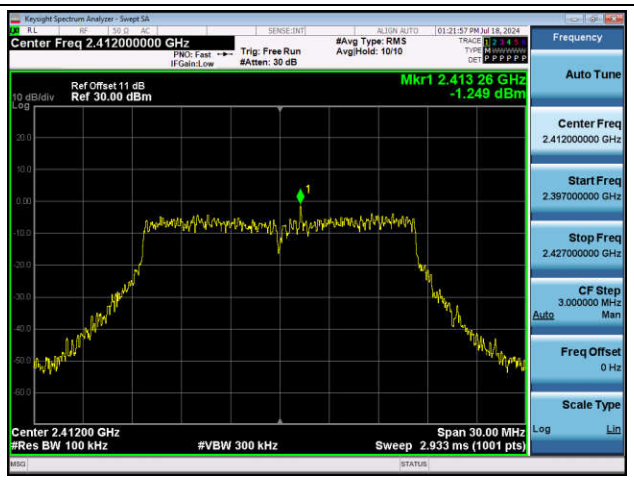



11B-Ant1-2437-30~25000-PASS

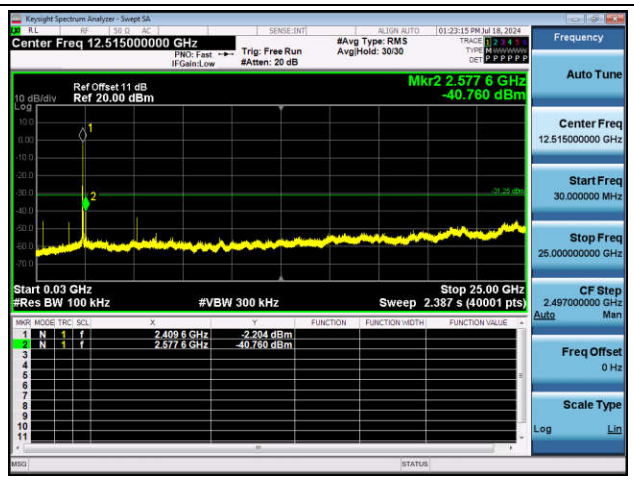

11B-Ant1-2462-0~Reference-PASS




11B-Ant1-2462-30~25000-PASS

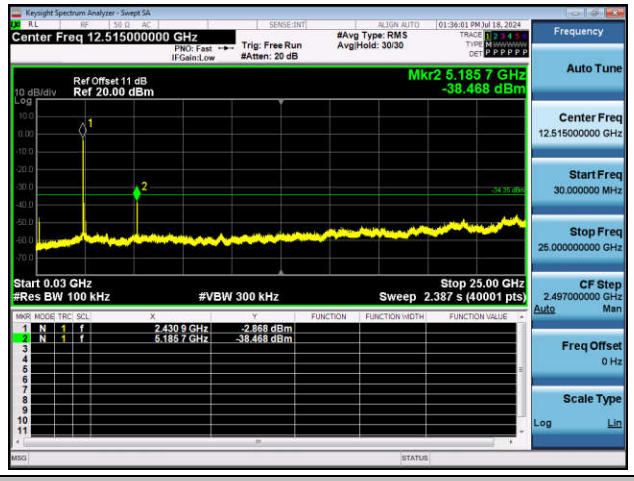



11G-Ant1-2412-0~Reference-PASS

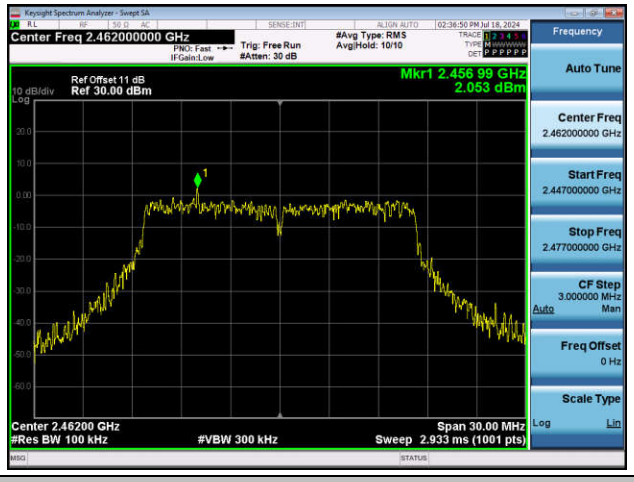



11G-Ant1-2412-30~25000-PASS

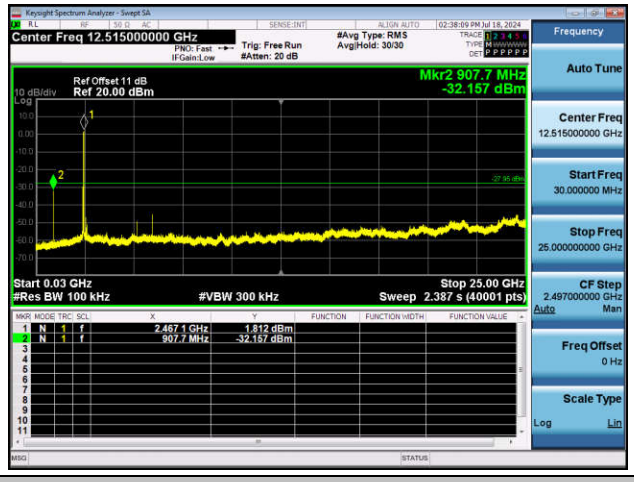

11G-Ant1-2437-0~Reference-PASS



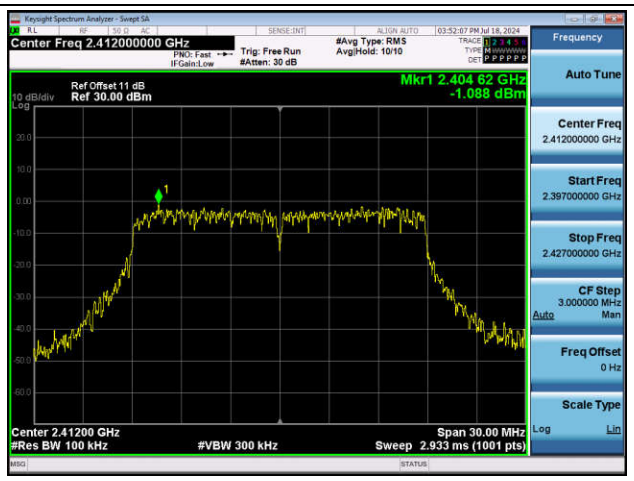

11G-Ant1-2437-30~25000-PASS



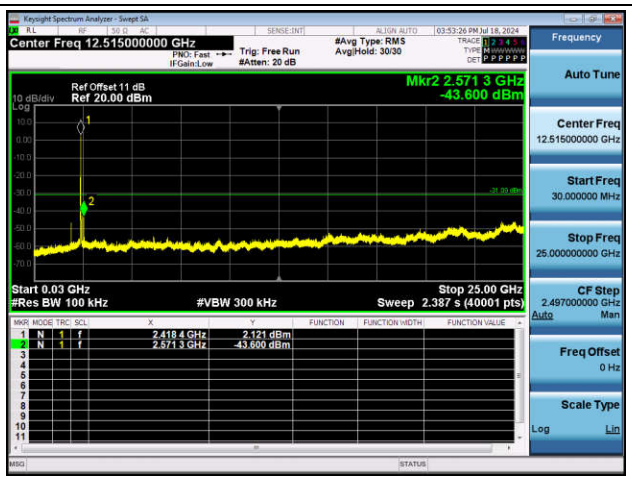

11G-Ant1-2462-0~Reference-PASS



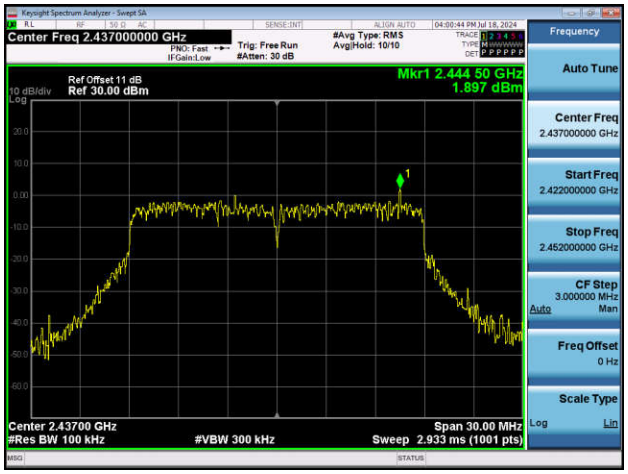

11G-Ant1-2462-30~25000-PASS



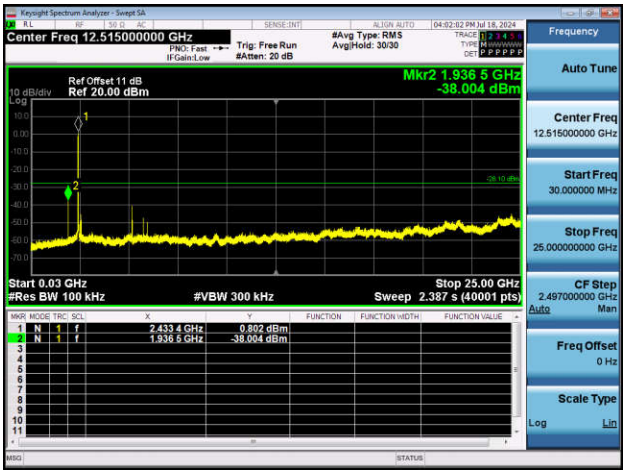

11N20SISO-Ant1-2412-0~Reference-PASS




11N20SISO-Ant1-2412-30~25000-PASS




11N20SISO-Ant1-2437-0~Reference-PASS

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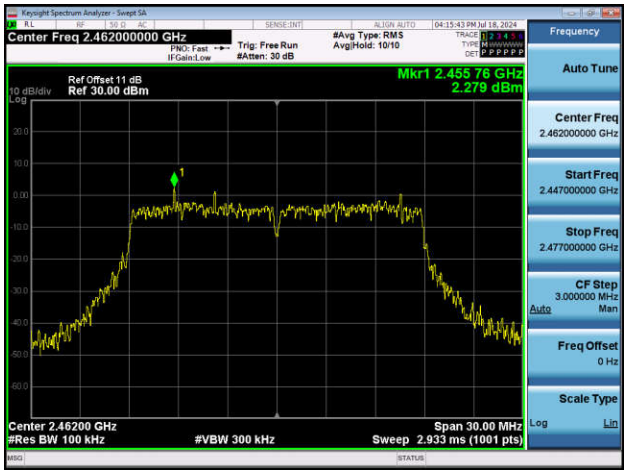


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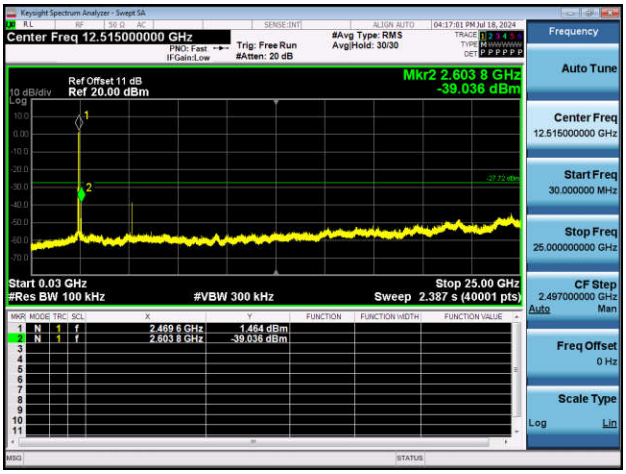
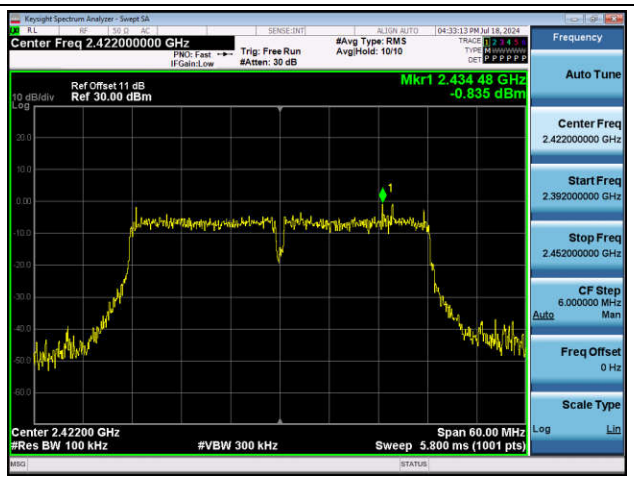
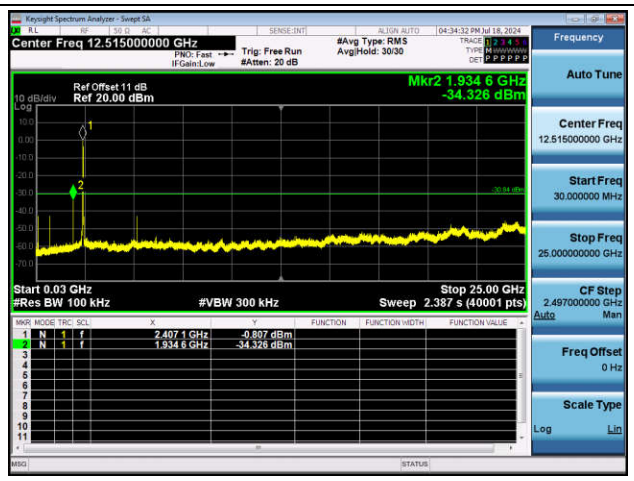



11N20SISO-Ant1-2462-30~25000-PASS

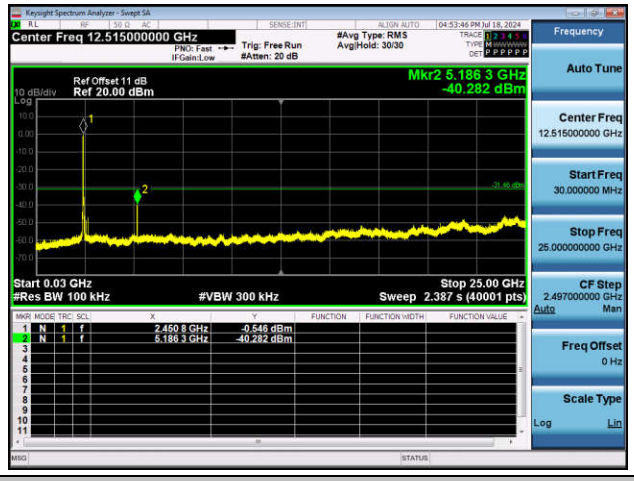



11N40SISO-Ant1-2422-0~Reference-PASS

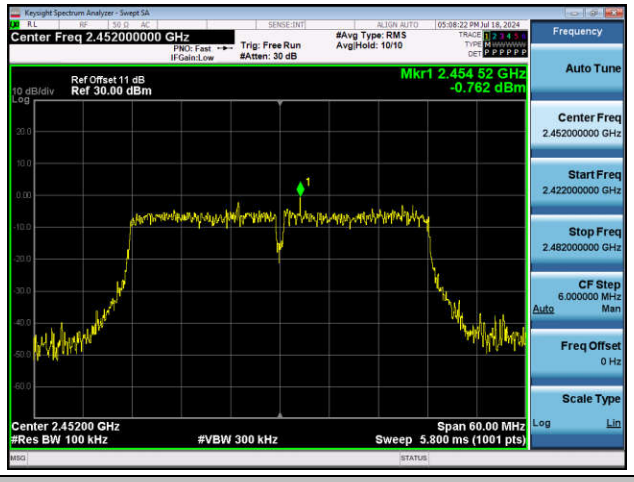



11N40SISO-Ant1-2422-30~25000-PASS

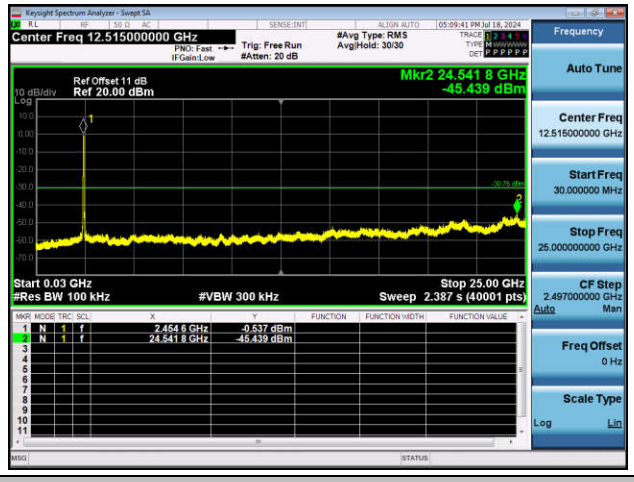

11N40SISO-Ant1-2437-0~Reference-PASS




11N40SISO-Ant1-2437-30~25000-PASS




11N40SISO-Ant1-2452-0~Reference-PASS




11N40SISO-Ant1-2452-30~25000-PASS

**END OF REPORT**