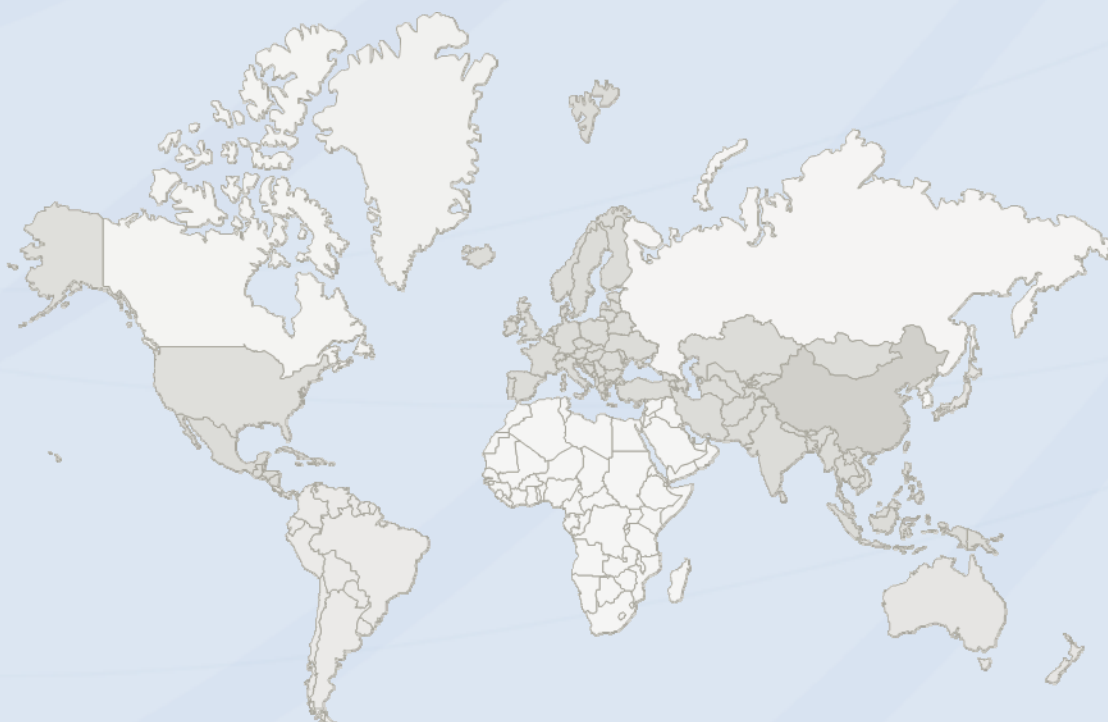


# FCC TEST REPORT

**Report No.** ..... : NTC-ER2308061

**Applicant's name** ..... : iGulu (Shanghai) Intelligent Technology Co., Ltd.

**Address** ..... : Room 109, 1st Floor, North District, 5599 Yanqian Road, Fengxian District, Shanghai.



## DONGGUAN NEW TESTING CENTRE CO., LTD

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## TEST REPORT DECLARE

|                             |   |                                                                                                                                 |
|-----------------------------|---|---------------------------------------------------------------------------------------------------------------------------------|
| <b>FCC ID</b>               | : | 2BDIO-IGULU-F1                                                                                                                  |
| <b>Equipment under Test</b> | : | Beer fermenter and cooler                                                                                                       |
| <b>Model /Type</b>          | : | iGulu F1                                                                                                                        |
| <b>Listed Models</b>        | : | N/A                                                                                                                             |
| <b>Trade Mark</b>           | : | N/A                                                                                                                             |
| <b>Applicant</b>            | : | iGulu (Shanghai) Intelligent Technology Co., Ltd.                                                                               |
| <b>Address</b>              | : | Room 109, 1st Floor, North District, 5599 Yanqian Road, Fengxian District, Shanghai.                                            |
| <b>Manufacturer</b>         | : | iGulu (Shenzhen) Intelligent Technology Co., Ltd.                                                                               |
| <b>Address</b>              | : | Room 612, Building B, Wanyuan Business Building, District 71, Xingdong Community, Xin'an Street, Bao'an District, Shenzhen City |
| <b>Factory</b>              | : | Zhongshan Qingniu Refrigeration Technology Co.,Ltd                                                                              |
| <b>Address</b>              | : | 6 Floor, 28 Guangming North Road, Nantou Town, Zhongshan 528427, China                                                          |
| <b>Test Laboratory</b>      | : | Dongguan New Testing Centre Co., Ltd                                                                                            |
| <b>Address</b>              | : | 1F & 3F, No. 1 the 1st North Industry Road Songshan Lake Science & Technology Park Dongguan, People' s Republic of China 523808 |

### Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C: 15.247, ANSI C63.10:2020.

### We Declare:

The equipment described above is tested by Dongguan New Testing Centre Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan New Testing Centre Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.**

|                      |                              |                         |              |
|----------------------|------------------------------|-------------------------|--------------|
| <b>Report No.:</b>   | NTC-ER2308061                |                         |              |
| <b>Date of Test:</b> | Sep.01, 2023 to Oct.24, 2023 | <b>Date of Report.:</b> | Oct.25, 2023 |

**Prepared By:**



**Jack Liu/Engineer**



**Dave Gao/LAB Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan New Testing Centre Co., Ltd

## 1. Summary of test results

| Description of Test Item      | Standard                   | Results |
|-------------------------------|----------------------------|---------|
| Antenna Requirement           | Section 15.247(c)          | PASS    |
| Conduction Emissions          | Section 15.207(a)          | PASS    |
| Radiated Emissions            | Section 15.247(d)          | PASS    |
| Carrier Frequencies Separated | Section 15.247(a)(1)       | PASS    |
| Dwell Time                    | Section 15.247(a)(1) (iii) | PASS    |
| Maximum Peak Output Power     | Section 15.247(b)          | PASS    |
| Band edge                     | Section 15.247(d)          | PASS    |
| Conducted Spurious Emissions  | Section 15.247(d)          | PASS    |

## 2. General test information

Description of EUT

|                          |   |                                                                                                                             |
|--------------------------|---|-----------------------------------------------------------------------------------------------------------------------------|
| EUT* Name                | : | Beer fermenter and cooler                                                                                                   |
| Test model               | : | iGulu F1                                                                                                                    |
| EUT function description | : | Please reference user manual of this device                                                                                 |
| Power supply             | : | INPUT: 100-240V ~ 50-60Hz 1.8A<br>OUTPUT: 12.0V DC 5.0A 60W                                                                 |
| Operation frequency:     | : | 2412 MHz to 2462 MHz for 802.11b/g/n(HT20)                                                                                  |
| Number of Channels:      | : | 11 Channels for 802.11b/g/n(HT20)                                                                                           |
| Modulation Technology:   | : | 802.11b: CCK/QPSK/BPSK<br>802.11g/n: BPSK/QPSK/16QAM/64QAM                                                                  |
| Transmit Data Rate:      | : | 802.11b :1/2/5.5/11 Mbps<br>802.11g :6/9/12/18/24/36/48/54 Mbps<br>802.11n(HT20): 7.2/14.4/21.7/28.9/43.3/57.8/65/72.2 Mbps |
| Channel Separation:      | : | 5 MHz                                                                                                                       |
| Antenna Type             | : | FPC Antenna                                                                                                                 |
| Gain:                    | : | Max 0dBi                                                                                                                    |
| Hardware Version:        | : | V1.0                                                                                                                        |
| Software Version:        | : | V1.0                                                                                                                        |

Note: 1, EUT is the ab. of equipment under test.

#### Frequency list:

- Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2412            | 7       | 2442            |
| 2       | 2417            | 8       | 2447            |
| 3       | 2422            | 9       | 2452            |
| 4       | 2427            | 10      | 2457            |
| 5       | 2432            | 11      | 2462            |
| 6       | 2437            |         |                 |

#### Description of test modes

| No.                                                                                                                                                                                                 | TEST Mode DESCRIPTION |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1                                                                                                                                                                                                   | Low channel TX        |
| 2                                                                                                                                                                                                   | Middle channel TX     |
| 3                                                                                                                                                                                                   | High channel TX       |
| 4                                                                                                                                                                                                   | Keeping TX mode       |
| Note:<br>Transmit by 802.11b with Data rate (1/2/5.5/11)<br>Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)<br>Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65) |                       |

#### Note:

- The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the EUT is operating at its maximum duty cycle>or equal 98%
- All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- For Radiated Emission, 3 axis were chosen for testing for each applicable mode.

### 2.1. Detail models

| Model    | Rating                                                    | Note |
|----------|-----------------------------------------------------------|------|
| iGulu F1 | INPUT:100-240V ~ 50-60Hz 1.8A<br>OUTPUT:12.0V DC 5.0A 60W | N/A  |

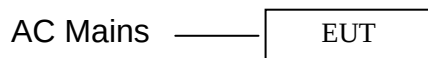
Note: All the same except model name.

## 2.2. Test Peripheral List

| No. | Equipment | Manufacturer | Model No.    | Serial No. | Note |
|-----|-----------|--------------|--------------|------------|------|
| 1   | Notebook  | Lenovo       | ThinkPadE450 | PF-0LRXDH  | --   |

## 2.3. Block diagram EUT configuration for test

For EUT Tx mode:



## 2.4. Test environment conditions

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

|                    |           |
|--------------------|-----------|
| Temperature range: | 21-24°C   |
| Humidity range:    | 40-75%    |
| Pressure range:    | 86-106kPa |

## 2.5. Measurement uncertainty

| Test Item                                                 | Uncertainty           |
|-----------------------------------------------------------|-----------------------|
| Uncertainty for Conduction emission test                  | 3.20 dB               |
| Uncertainty for Radiation Emission test<br>(30MHz – 1GHz) | 4.60 dB (Polarize: V) |
|                                                           | 4.60 dB (Polarize: H) |
| Uncertainty for Radiation Emission test<br>(1GHz – 18GHz) | 4.82 dB (Polarize: V) |
|                                                           | 4.52 dB (Polarize: H) |
| Bandwidth                                                 | ±1.2%                 |
| Stop Transmitting Time Test                               | ±0.5%                 |
| Uncertainty for frequency error                           | 5.8 x 10-8            |

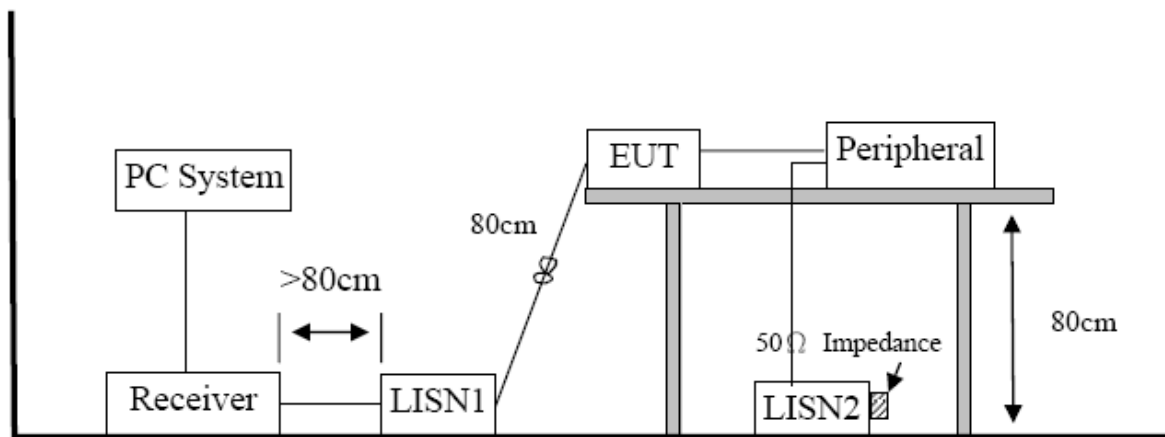
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3. Power Line Conducted Emission Test

#### 3.1. Test equipment

| Item | Equipment            | Manufacturer | Model No.           | Serial No.   | Last Cal.  | Cal. Interval |
|------|----------------------|--------------|---------------------|--------------|------------|---------------|
| 1    | Test Receiver        | R&S          | ESPI                | 100146       | 2023-05-20 | 1 Year        |
| 2    | LISN                 | R&S          | ENV216              | 3650.6550.06 | 2023-05-19 | 1 Year        |
| 3    | LISN                 | R&S          | ENV4200             | 1107.2387.04 | 2023-05-19 | 1 Year        |
| 4    | RF Cable             | HUBER        | SUCOFLEX100         | 30722/4E     | 2023-05-19 | 2 Year        |
| 5    | MEASUREMENT SOFTWARE | FARAD        | EZ-EMC(VER:1.1.4.2) | N/A          | N/A        | N/A           |

#### 3.2. BLOCK DIAGRAM OF TEST SETUP



#### 3.3. Power Line Conducted Emission Limits (Class B)

| Frequency       | Quasi-Peak Level<br>dB(μV) | Average Level<br>dB(μV) |
|-----------------|----------------------------|-------------------------|
| 150kHz ~ 500kHz | 66 ~ 56*                   | 56 ~ 46*                |
| 500kHz ~ 5MHz   | 56                         | 46                      |
| 5MHz ~ 30MHz    | 60                         | 50                      |

Note 1: \* Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

### 3.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 3.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

### 3.5. Test Result

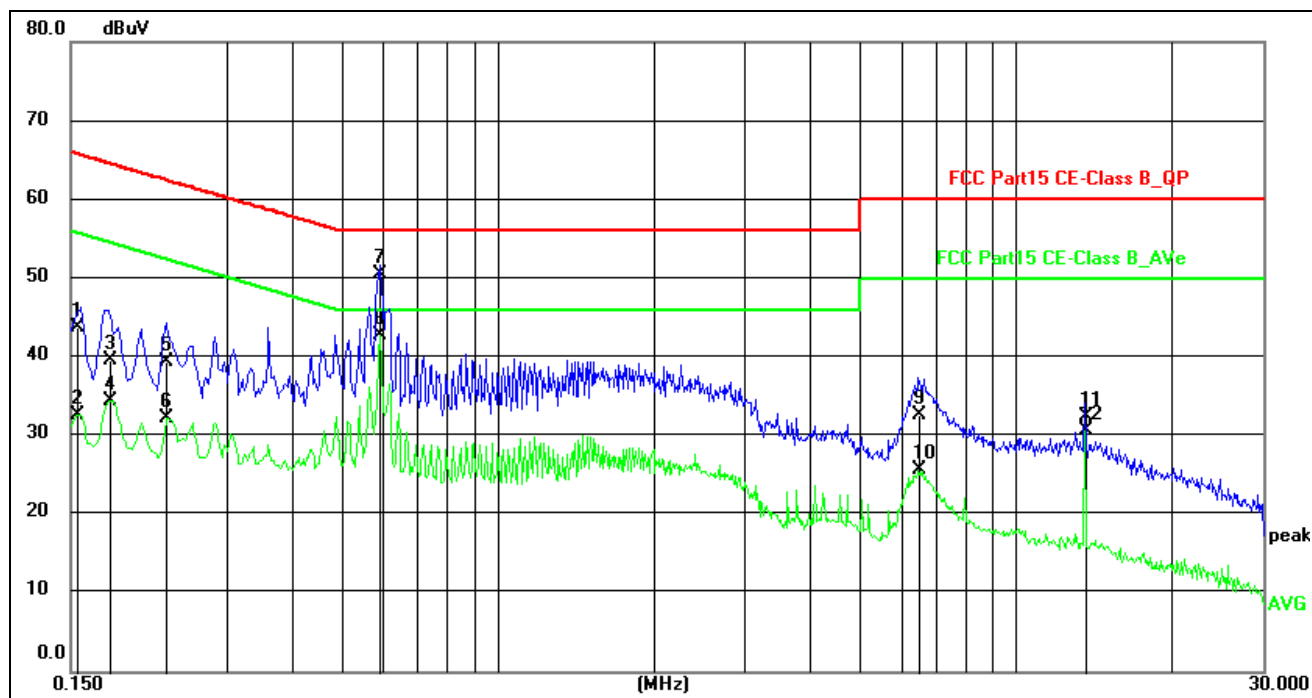
**PASS. (See below detailed test result)**

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: "-----" means Peak detection; "-----" means Average detection

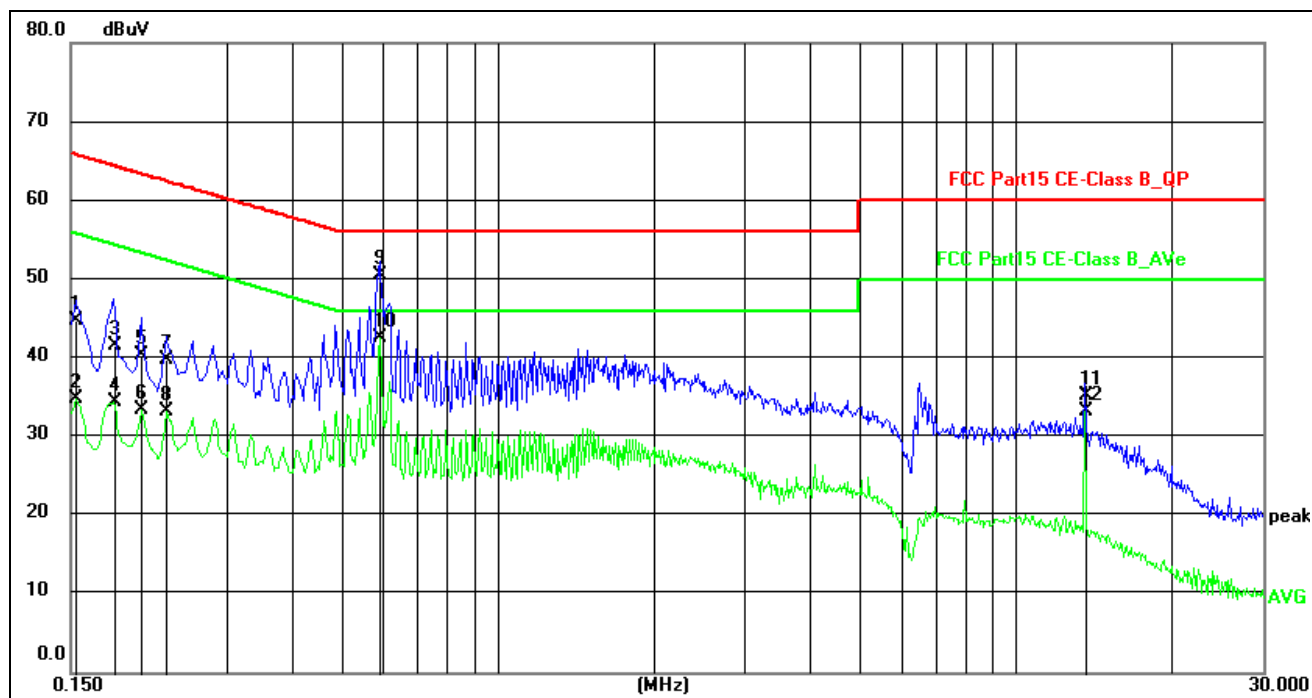
Note3: Measurement = Reading Level + Factor, Margin= Measurement-Limit

## Conducted Emission Test Result



|        |                           |                |                      |
|--------|---------------------------|----------------|----------------------|
| Site:  | 844 LAB                   | Phase:L1       | Temperature(C):24(C) |
| Limit: | FCC Part15 CE-Class B_QP  |                | Humidity(%):63%      |
| EUT:   | Beer fermenter and cooler | Test Time:     | 2023/9/21 14:04:10   |
| M/N.:  | iGulu F1                  | Power Rating:  | AC120/60Hz           |
| Mode:  | 2.4GWIFI                  | Test Engineer: |                      |
| Note:  |                           |                |                      |

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV) | Limit (dBuV) | Margin (dB) | Detector | Comment |
|-----|-----------------|---------------------|-------------|--------------------|--------------|-------------|----------|---------|
| 1   | 0.1548          | 32.60               | 11.14       | 43.74              | 65.74        | -22.00      | QP       |         |
| 2   | 0.1548          | 21.57               | 11.14       | 32.71              | 55.74        | -23.03      | AVG      |         |
| 3   | 0.1780          | 28.48               | 11.14       | 39.62              | 64.58        | -24.96      | QP       |         |
| 4   | 0.1780          | 23.33               | 11.14       | 34.47              | 54.58        | -20.11      | AVG      |         |
| 5   | 0.2300          | 28.26               | 11.14       | 39.40              | 62.45        | -23.05      | QP       |         |
| 6   | 0.2300          | 21.13               | 11.14       | 32.27              | 52.45        | -20.18      | AVG      |         |
| 7   | 0.5940          | 39.25               | 11.22       | 50.47              | 56.00        | -5.53       | QP       |         |
| 8 * | 0.5940          | 31.54               | 11.22       | 42.76              | 46.00        | -3.24       | AVG      |         |
| 9   | 6.4940          | 21.53               | 11.18       | 32.71              | 60.00        | -27.29      | QP       |         |
| 10  | 6.4940          | 14.49               | 11.18       | 25.67              | 50.00        | -24.33      | AVG      |         |
| 11  | 13.5620         | 21.13               | 11.33       | 32.46              | 60.00        | -27.54      | QP       |         |
| 12  | 13.5620         | 19.31               | 11.33       | 30.64              | 50.00        | -19.36      | AVG      |         |



|               |                           |                      |   |                        |       |
|---------------|---------------------------|----------------------|---|------------------------|-------|
| <b>Site:</b>  | 844 LAB                   | <b>Phase:</b>        | N | <b>Temperature(C):</b> | 24(C) |
| <b>Limit:</b> | FCC Part15 CE-Class B_QP  | <b>Test Time:</b>    |   | <b>Humidity(%):</b>    | 63%   |
| <b>EUT:</b>   | Beer fermenter and cooler | <b>Power Rating:</b> |   | <b>Test Engineer:</b>  |       |
| <b>M/N.:</b>  | iGulu F1                  |                      |   |                        |       |
| <b>Mode:</b>  | 2.4GWIFI                  |                      |   |                        |       |
| <b>Note:</b>  |                           |                      |   |                        |       |

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measurement(dBuV) | Limit (dBuV) | Margin (dB) | Detector | Comment |
|-----|-----------------|---------------------|-------------|-------------------|--------------|-------------|----------|---------|
| 1   | 0.1539          | 33.61               | 11.15       | 44.76             | 65.79        | -21.03      | QP       |         |
| 2   | 0.1539          | 23.73               | 11.15       | 34.88             | 55.79        | -20.91      | AVG      |         |
| 3   | 0.1819          | 30.43               | 11.16       | 41.59             | 64.40        | -22.81      | QP       |         |
| 4   | 0.1819          | 23.20               | 11.16       | 34.36             | 54.40        | -20.04      | AVG      |         |
| 5   | 0.2060          | 29.23               | 11.17       | 40.40             | 63.37        | -22.97      | QP       |         |
| 6   | 0.2060          | 22.35               | 11.17       | 33.52             | 53.37        | -19.85      | AVG      |         |
| 7   | 0.2300          | 28.58               | 11.19       | 39.77             | 62.45        | -22.68      | QP       |         |
| 8   | 0.2300          | 22.12               | 11.19       | 33.31             | 52.45        | -19.14      | AVG      |         |
| 9   | 0.5940          | 39.26               | 11.29       | 50.55             | 56.00        | -5.45       | QP       |         |
| 10* | 0.5940          | 31.21               | 11.29       | 42.50             | 46.00        | -3.50       | AVG      |         |
| 11  | 13.5618         | 23.97               | 11.29       | 35.26             | 60.00        | -24.74      | QP       |         |
| 12  | 13.5618         | 22.02               | 11.29       | 33.31             | 50.00        | -16.69      | AVG      |         |

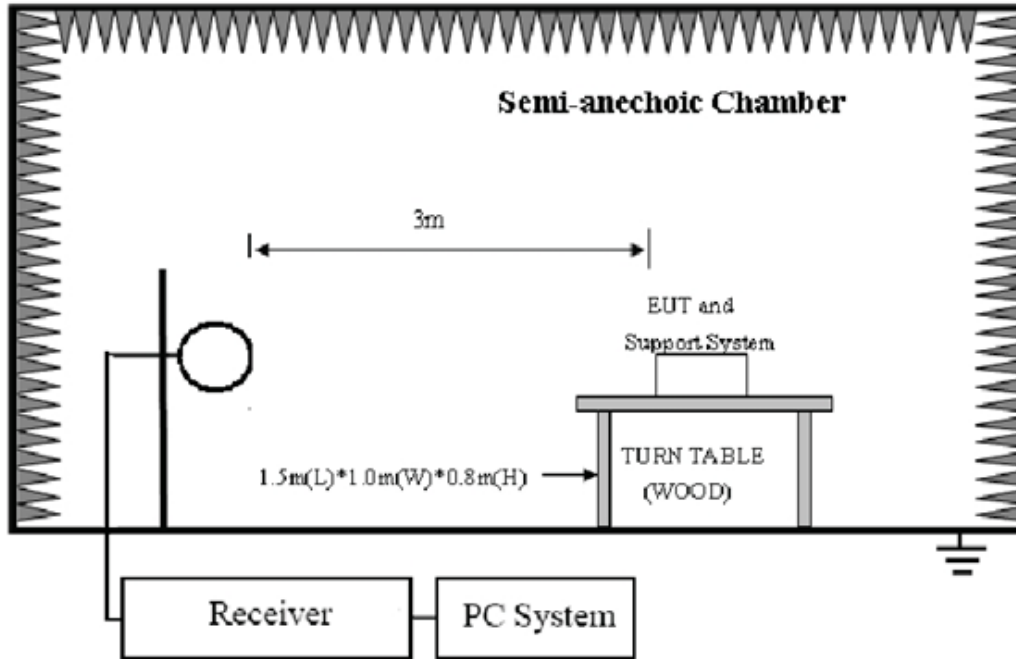
## 4. Radiated emission test

### 4.1. Test equipment

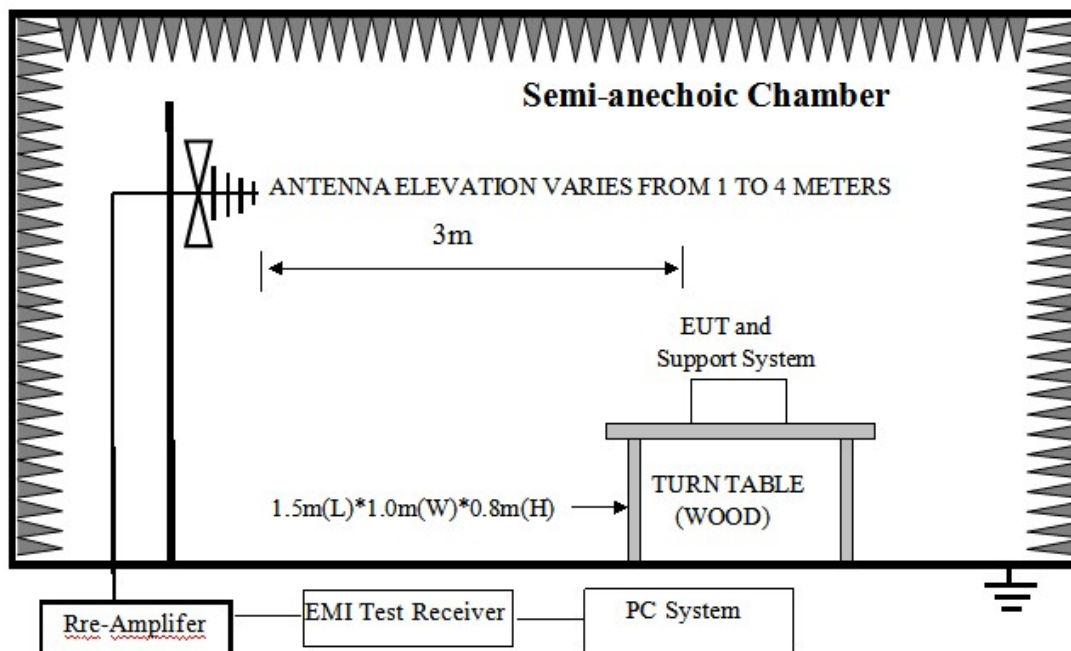
| Item | Equipment                  | Manufacturer | Model No.               | Serial No.                     | Last Cal.  | Cal. Interval |
|------|----------------------------|--------------|-------------------------|--------------------------------|------------|---------------|
| 1    | EMI Test Receiver          | R&S          | ESR                     | 7250-30406<br>7528             | 2023-05-20 | 1 Year        |
| 2    | Trilog Broadband Antenna   | Schwarzbeck  | VULB9168                | 00969                          | 2023-05-22 | 2 Year        |
| 3    | Pre-amplifier              | R&S          | 8449B                   | 3113A04553                     | 2023-05-19 | 1 Year        |
| 4    | Active Loop antenna        | Schwarzbeck  | FMZB-1519               | 1519-038                       | 2023-05-19 | 1 Year        |
| 5    | Horn antenna               | Schwarzbeck  | BBHA9120D               | 453                            | 2023-05-19 | 2 Year        |
| 6    | Double Ridged Horn Antenna | A.H. System  | SAS-574                 | 584                            | 2023-05-19 | 1 Year        |
| 7    | Pre-amplifier              | R&S          | SCU18                   | 105326                         | 2023-05-19 | 1 Year        |
| 8    | RF Cable                   | GORE         | OSQ01Q010<br>78.7       | SN1545847<br>3                 | 2023-05-19 | 1 Year        |
| 9    | RF Cable                   | GORE         | OSQ01Q010<br>78.7       | SN1545847<br>4                 | 2023-05-19 | 1 Year        |
| 10   | RF Cable                   | ESCO         | ETS-LINGR<br>EN         | RFC-SMS-1<br>00-SMS-340<br>-IN | 2023-05-19 | 1 Year        |
| 11   | Measurement software       | Farad        | EZ-EMC(VE<br>R:1.1.4.2) | N/A                            | N/A        | N/A           |

## 4.2. Block diagram of test setup

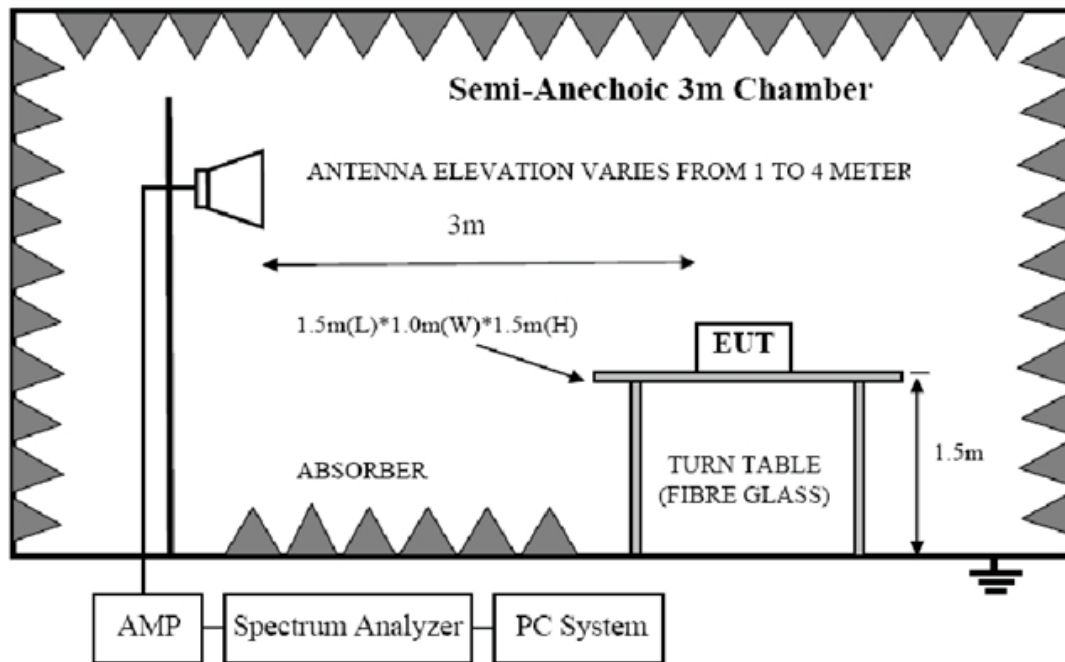
In 3m Anechoic Chamber Test Setup Diagram for 9KHz to 30MHz:



In 3m Anechoic Chamber Test Setup Diagram for 30MHz to 1GHz:



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



### 4.3. Limit

FCC 15.205 Restricted frequency band:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 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     | ( <sup>2</sup> ) |

FCC 15.109 Limit

| Frequency (MHz) | Distance (Meters) | Field Strengths Limits dB(μV)/m |
|-----------------|-------------------|---------------------------------|
| 30--88          | 3                 | 40.0                            |
| 88--216         | 3                 | 43.5                            |
| 216--960        | 3                 | 46.0                            |
| 960--1000       | 3                 | 54.0                            |
| Above 1GHz      | 3                 | Peak: 74.0                      |
|                 | 3                 | Average: 54.0                   |

Note: (1) The smaller limit shall apply at the cross point between two frequency bands.

(2) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(3) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(4) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit } 3\text{m(dBuV/m)} = \text{Limit } 30\text{m(dBuV/m)} + 40\text{Log}(30\text{m}/3\text{m})$$

(5) All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.109, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.109 limits.

#### 4.4. Test Procedure

##### Procedure of Preliminary Test

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 4.2 of this report.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

EUT height should be 0.8m for below 1GHz and 1.5m for above 1GHz at ground with absorbers.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.10. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 18GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The X, Y, Z three axial are tested and the report only the worst case.

The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW:

| Frequency band | RBW    |
|----------------|--------|
| 9KHz-150KHz    | 200Hz  |
| 150KHz-30MHz   | 9KHz   |
| 30MHz-1GHz     | 120KHz |

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

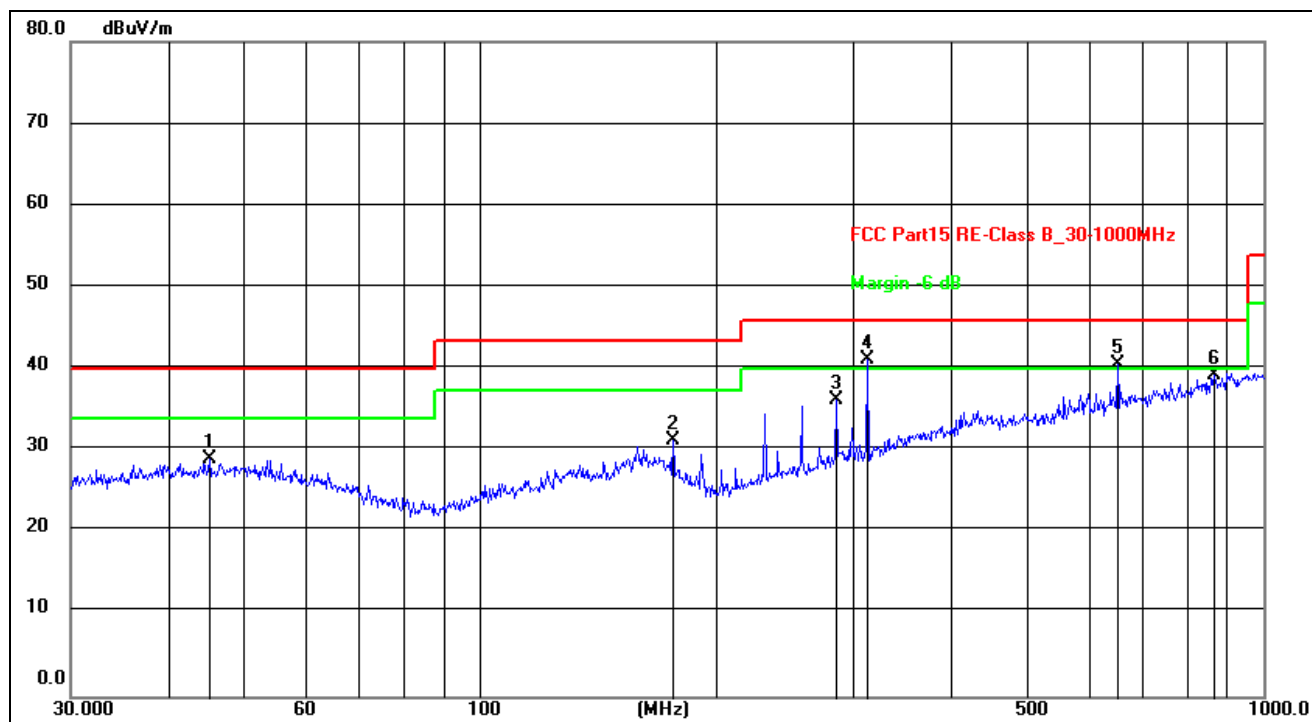
#### 4.5. Test result

##### **PASS. (See below detailed test result)**

Radiated Emissions Test Data Below 30MHz:

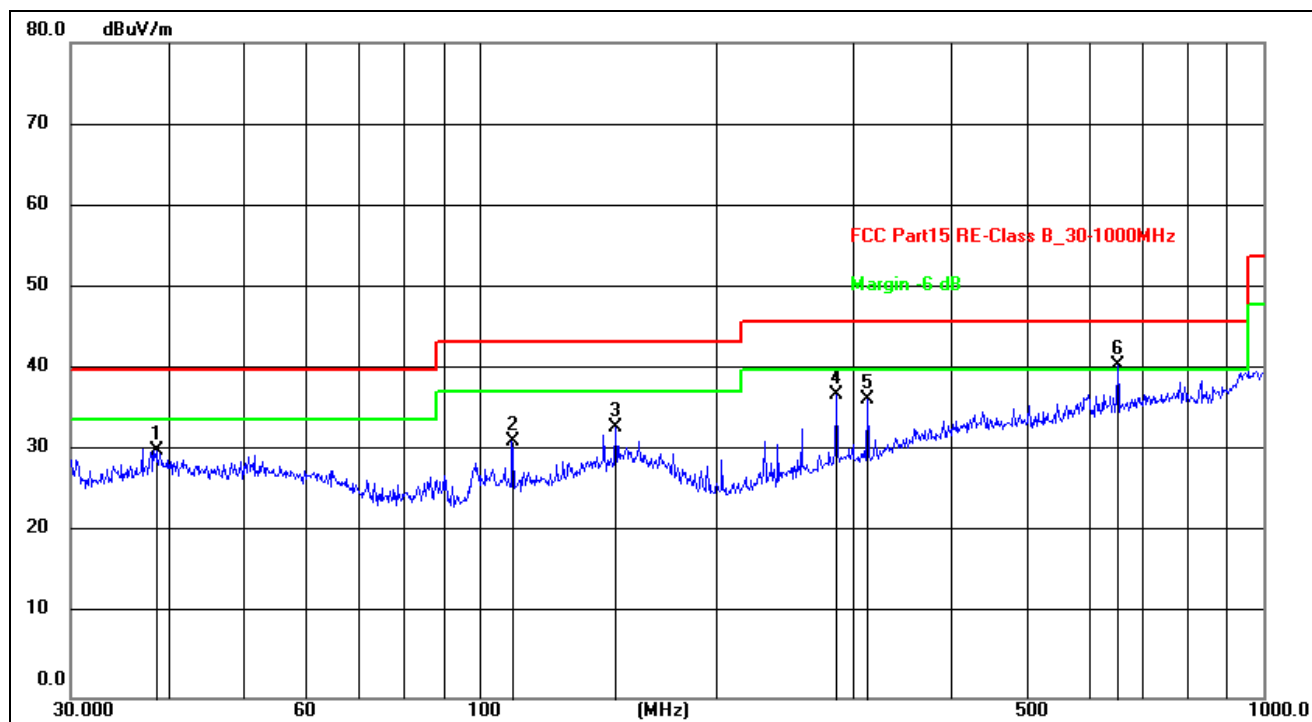
No emission found between lowest internal used/generated frequencies to 30MHz.

## Radiated Emission Test Result



|               |                                  |                       |                   |                        |       |
|---------------|----------------------------------|-----------------------|-------------------|------------------------|-------|
| <b>Site:</b>  | 966LAB                           | <b>Antenna::</b>      | Horizontal        | <b>Temperature(C):</b> | 24(C) |
| <b>Limit:</b> | FCC Part15 RE-Class B_30-1000MHz |                       |                   | <b>Humidity(%):</b>    | 60%   |
| <b>EUT:</b>   | Beer fermenter and cooler        | <b>Test Time:</b>     | 2023/9/22 2:37:56 |                        |       |
| <b>M/N.:</b>  | iGulu F1                         | <b>Power Rating:</b>  | AC 120V/60Hz      |                        |       |
| <b>Mode:</b>  | High gears with Tx mode          | <b>Test Engineer:</b> |                   |                        |       |
| <b>Note:</b>  | (802.11 b 2412MHz-Worst case)    |                       |                   |                        |       |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. | Height (cm) | Azimuth (deg) | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|------|-------------|---------------|--------|
| 1   | 45.2166         | 14.82          | 14.34         | 29.16          | 40.00          | -10.84      | peak | 100         | 7             |        |
| 2   | 176.2686        | 17.82          | 13.56         | 31.38          | 43.50          | -12.12      | peak | 200         | 299           |        |
| 3   | 284.9767        | 22.01          | 14.25         | 36.26          | 46.00          | -9.74       | peak | 200         | 338           |        |
| 4 * | 312.1794        | 26.33          | 14.87         | 41.20          | 46.00          | -4.80       | peak | 200         | 356           |        |
| 5 ! | 651.9417        | 18.66          | 21.93         | 40.59          | 46.00          | -5.41       | peak | 200         | 341           |        |
| 6   | 866.0879        | 15.15          | 24.18         | 39.33          | 46.00          | -6.67       | peak | 200         | 109           |        |



|        |                                  |                   |                      |
|--------|----------------------------------|-------------------|----------------------|
| Site:  | 966LAB                           | Antenna::Vertical | Temperature(C):24(C) |
| Limit: | FCC Part15 RE-Class B_30-1000MHz |                   | Humidity(%):60%      |
| EUT:   | Beer fermenter and cooler        | Test Time:        | 2023/9/22 2:40:31    |
| M/N.:  | iGulu F1                         | Power Rating:     | AC 120V/60Hz         |
| Mode:  | High gears with Tx mode          | Test Engineer:    |                      |
| Note:  | (802.11 b 2412MHz-Worst case)    |                   |                      |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Det. | Height (cm) | Azimuth (deg) | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|------|-------------|---------------|--------|
| 1   | 38.6160         | 15.73          | 14.50         | 30.23          | 40.00          | -9.77       | peak | 200         | 168           |        |
| 2   | 109.7960        | 19.15          | 12.26         | 31.41          | 43.50          | -12.09      | peak | 200         | 272           |        |
| 3   | 148.9624        | 17.62          | 15.38         | 33.00          | 43.50          | -10.50      | peak | 100         | 245           |        |
| 4   | 284.9767        | 22.94          | 14.18         | 37.12          | 46.00          | -8.88       | peak | 200         | 268           |        |
| 5   | 312.1794        | 21.54          | 14.87         | 36.41          | 46.00          | -9.59       | peak | 200         | 250           |        |
| 6 * | 651.9417        | 18.77          | 21.93         | 40.70          | 46.00          | -5.30       | peak | 100         | 353           |        |

|                                       |  |  |  |  |                        |  |                              |  |  |
|---------------------------------------|--|--|--|--|------------------------|--|------------------------------|--|--|
| <b>Site:</b> 966 LAB                  |  |  |  |  | <b>Antenna::</b> H / V |  | <b>Temperature(C):</b> 24(C) |  |  |
| <b>Limit:</b> FCC Part 15.247         |  |  |  |  |                        |  | <b>Humidity(%):</b> 60%      |  |  |
| <b>EUT:</b> Beer fermenter and cooler |  |  |  |  | <b>Test Time:</b>      |  | <b>2023/10/22</b>            |  |  |
| <b>M/N.:</b> iGulu F1                 |  |  |  |  | <b>Power Rating:</b>   |  | <b>AC 120V/60Hz</b>          |  |  |
| <b>Mode:</b> Tx mode (2412MHz)        |  |  |  |  | <b>Test Engineer:</b>  |  |                              |  |  |
| <b>Note:</b> 802.11 b 11M             |  |  |  |  |                        |  |                              |  |  |

| Frequency | Reading | Factor | Pre-amp | Cable lost | Result   | Limit    | Margin | Detect | Antenna polarization |
|-----------|---------|--------|---------|------------|----------|----------|--------|--------|----------------------|
| (MHz)     | (dBuV)  | (dB/m) | (dB)    | (dB)       | (dBuV/m) | (dBuV/m) | (dB)   |        |                      |
| 2390.00   | 58.87   | 26.33  | 40.23   | 8.46       | 53.43    | 74.00    | -20.57 | peak   | H                    |
| 2390.00   | 44.97   | 26.33  | 40.23   | 8.46       | 39.53    | 54.00    | -14.47 | AVG    | H                    |
| 2400.00   | 55.64   | 26.38  | 40.20   | 8.49       | 50.31    | 74.00    | -23.69 | peak   | H                    |
| 2400.00   | 45.97   | 26.38  | 40.20   | 8.49       | 40.64    | 54.00    | -13.36 | AVG    | H                    |
| 4824.00   | 63.66   | 26.41  | 40.21   | 8.51       | 58.37    | 74.00    | -15.63 | peak   | H                    |
| 4824.00   | 49.31   | 26.41  | 40.21   | 8.51       | 44.02    | 54.00    | -9.98  | AVG    | H                    |
| 7236.00   | 57.41   | 31.01  | 40.19   | 9.53       | 57.76    | 74.00    | -16.24 | peak   | H                    |
| 7236.00   | 43.72   | 31.01  | 40.19   | 9.53       | 44.07    | 54.00    | -9.93  | AVG    | H                    |
| 2390.00   | 58.34   | 26.33  | 40.23   | 8.46       | 52.90    | 74.00    | -21.10 | peak   | V                    |
| 2390.00   | 45.31   | 26.33  | 40.23   | 8.46       | 39.87    | 54.00    | -14.13 | AVG    | V                    |
| 2400.00   | 55.62   | 26.38  | 40.20   | 8.49       | 50.29    | 74.00    | -23.71 | peak   | V                    |
| 2400.00   | 46.06   | 26.38  | 40.20   | 8.49       | 40.73    | 54.00    | -13.27 | AVG    | V                    |
| 4824.00   | 63.75   | 26.41  | 40.21   | 8.51       | 58.46    | 74.00    | -15.54 | peak   | V                    |
| 4824.00   | 48.41   | 26.41  | 40.21   | 8.51       | 43.12    | 54.00    | -10.88 | AVG    | V                    |
| 7236.00   | 57.03   | 31.01  | 40.19   | 9.53       | 57.38    | 74.00    | -16.62 | peak   | V                    |
| 7236.00   | 44.27   | 31.01  | 40.19   | 9.53       | 44.62    | 54.00    | -9.38  | AVG    | V                    |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

| <b>Site:</b> 966 LAB                  |                       |                      |                     |                        | <b>Antenna::</b> H / V |                       | <b>Temperature(C):</b> 24(C) |        |                         |
|---------------------------------------|-----------------------|----------------------|---------------------|------------------------|------------------------|-----------------------|------------------------------|--------|-------------------------|
| <b>Limit:</b> FCC Part 15.247         |                       |                      |                     |                        |                        |                       | <b>Humidity(%):</b> 60%      |        |                         |
| <b>EUT:</b> Beer fermenter and cooler |                       |                      |                     |                        | <b>Test Time:</b>      |                       | 2023/10/22                   |        |                         |
| <b>M/N.:</b> iGulu F1                 |                       |                      |                     |                        | <b>Power Rating:</b>   |                       | AC 120V/60Hz                 |        |                         |
| <b>Mode:</b> Tx mode (2437MHz)        |                       |                      |                     |                        | <b>Test Engineer:</b>  |                       |                              |        |                         |
| <b>Note:</b> 802.11 b 11M             |                       |                      |                     |                        |                        |                       |                              |        |                         |
| Frequency<br><br>(MHz)                | Reading<br><br>(dBuV) | Factor<br><br>(dB/m) | Pre-amp<br><br>(dB) | Cable lost<br><br>(dB) | Result<br><br>(dBuV/m) | Limit<br><br>(dBuV/m) | Margin<br><br>(dB)           | Detect | Antenna<br>polarization |
| 4874.00                               | 62.25                 | 31.04                | 40.19               | 9.59                   | 62.69                  | 74.00                 | -11.31                       | peak   | H                       |
| 4874.00                               | 38.69                 | 31.04                | 40.19               | 9.59                   | 39.13                  | 54.00                 | -14.87                       | AVG    | H                       |
| 7311.00                               | 53.52                 | 35.25                | 40.47               | 12.22                  | 60.52                  | 74.00                 | -13.48                       | peak   | H                       |
| 7311.00                               | 41.28                 | 35.25                | 40.47               | 12.22                  | 48.28                  | 54.00                 | -5.72                        | AVG    | H                       |
| 4874.00                               | 54.20                 | 31.04                | 40.19               | 9.59                   | 54.64                  | 74.00                 | -19.36                       | peak   | V                       |
| 4874.00                               | 37.85                 | 31.04                | 40.19               | 9.59                   | 38.29                  | 54.00                 | -15.71                       | AVG    | V                       |
| 7311.00                               | 52.26                 | 35.25                | 40.47               | 12.22                  | 59.26                  | 74.00                 | -14.74                       | peak   | V                       |
| 7311.00                               | 40.39                 | 35.25                | 40.47               | 12.22                  | 47.39                  | 54.00                 | -6.61                        | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

| <b>Site:</b> 966 LAB                  |                   |                  |                 |                    | <b>Antenna::</b> H / V |                   | <b>Temperature(C):</b> 24(C) |        |                         |
|---------------------------------------|-------------------|------------------|-----------------|--------------------|------------------------|-------------------|------------------------------|--------|-------------------------|
| <b>Limit:</b> FCC Part 15.247         |                   |                  |                 |                    |                        |                   | <b>Humidity(%)</b> :60%      |        |                         |
| <b>EUT:</b> Beer fermenter and cooler |                   |                  |                 |                    | <b>Test Time:</b>      |                   | 2023/10/22                   |        |                         |
| <b>M/N.:</b> F1                       |                   |                  |                 |                    | <b>Power Rating:</b>   |                   | AC 120V/60Hz                 |        |                         |
| <b>Mode:</b> Tx mode (2462MHz)        |                   |                  |                 |                    | <b>Test Engineer:</b>  |                   |                              |        |                         |
| <b>Note:</b> 802.11 b 11M             |                   |                  |                 |                    |                        |                   |                              |        |                         |
| Frequency<br>(MHz)                    | Reading<br>(dBuV) | Factor<br>(dB/m) | Pre-amp<br>(dB) | Cable lost<br>(dB) | Result<br>(dBuV/m)     | Limit<br>(dBuV/m) | Margin<br>(dB)               | Detect | Antenna<br>polarization |
| 2483.50                               | 41.94             | 26.56            | 40.29           | 8.65               | 36.86                  | 74.00             | -37.14                       | peak   | H                       |
| 2483.50                               | 34.76             | 26.56            | 40.29           | 8.65               | 29.68                  | 54.00             | -24.32                       | AVG    | H                       |
| 4924.00                               | 59.72             | 26.51            | 40.21           | 8.54               | 54.56                  | 74.00             | -19.44                       | peak   | H                       |
| 4924.00                               | 49.48             | 26.51            | 40.21           | 8.54               | 44.32                  | 54.00             | -9.68                        | AVG    | H                       |
| 7386.00                               | 51.92             | 31.04            | 40.19           | 9.62               | 52.39                  | 74.00             | -21.61                       | peak   | H                       |
| 7386.00                               | 39.23             | 31.04            | 40.19           | 9.62               | 39.70                  | 54.00             | -14.30                       | AVG    | H                       |
| 2483.50                               | 61.00             | 26.56            | 40.29           | 8.65               | 55.92                  | 74.00             | -18.08                       | peak   | V                       |
| 2483.50                               | 46.39             | 26.56            | 40.29           | 8.65               | 41.31                  | 54.00             | -12.69                       | AVG    | V                       |
| 4924.00                               | 57.33             | 26.51            | 40.21           | 8.54               | 52.17                  | 55.00             | -2.83                        | peak   | V                       |
| 4924.00                               | 45.87             | 26.51            | 40.21           | 8.54               | 40.71                  | 56.00             | -15.29                       | AVG    | V                       |
| 7386.00                               | 46.84             | 31.04            | 40.19           | 9.62               | 47.31                  | 57.00             | -9.69                        | peak   | V                       |
| 7386.00                               | 38.42             | 31.04            | 40.19           | 9.62               | 38.89                  | 58.00             | -19.11                       | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

| <b>Site:</b> 966 LAB                  |         |        |         |            | <b>Antenna::</b> H / V |          | <b>Temperature(C):</b> 24(C) |        |                      |
|---------------------------------------|---------|--------|---------|------------|------------------------|----------|------------------------------|--------|----------------------|
| <b>Limit:</b> FCC Part 15.247         |         |        |         |            |                        |          | <b>Humidity(%):</b> 60%      |        |                      |
| <b>EUT:</b> Beer fermenter and cooler |         |        |         |            | <b>Test Time:</b>      |          | 2023/10/22                   |        |                      |
| <b>M/N.:</b> iGulu F1                 |         |        |         |            | <b>Power Rating:</b>   |          | AC 120V/60Hz                 |        |                      |
| <b>Mode:</b> Tx mode (2412MHz)        |         |        |         |            | <b>Test Engineer:</b>  |          |                              |        |                      |
| <b>Note:</b> 802.11 g 54M             |         |        |         |            |                        |          |                              |        |                      |
| Frequency                             | Reading | Factor | Pre-amp | Cable lost | Result                 | Limit    | Margin                       | Detect | Antenna polarization |
| (MHz)                                 | (dBuV)  | (dB/m) | (dB)    | (dB)       | (dBuV/m)               | (dBuV/m) | (dB)                         |        |                      |
| 2390.00                               | 58.86   | 26.33  | 40.23   | 8.46       | 53.42                  | 74.00    | -20.58                       | peak   | H                    |
| 2390.00                               | 45.62   | 26.33  | 40.23   | 8.46       | 40.18                  | 54.00    | -13.82                       | AVG    | H                    |
| 2400.00                               | 55.88   | 26.38  | 40.20   | 8.49       | 50.55                  | 74.00    | -23.45                       | peak   | H                    |
| 2400.00                               | 45.92   | 26.38  | 40.20   | 8.49       | 40.59                  | 54.00    | -13.41                       | AVG    | H                    |
| 4824.00                               | 63.12   | 26.41  | 40.21   | 8.51       | 57.83                  | 74.00    | -16.17                       | peak   | H                    |
| 4824.00                               | 48.86   | 26.41  | 40.21   | 8.51       | 43.57                  | 54.00    | -10.43                       | AVG    | H                    |
| 7236.00                               | 57.39   | 31.01  | 40.19   | 9.53       | 57.74                  | 74.00    | -16.26                       | peak   | H                    |
| 7236.00                               | 44.45   | 31.01  | 40.19   | 9.53       | 44.80                  | 54.00    | -9.20                        | AVG    | H                    |
| 2390.00                               | 57.72   | 26.33  | 40.23   | 8.46       | 52.28                  | 74.00    | -21.72                       | peak   | V                    |
| 2390.00                               | 45.94   | 26.33  | 40.23   | 8.46       | 40.50                  | 54.00    | -13.50                       | AVG    | V                    |
| 2400.00                               | 54.68   | 26.38  | 40.20   | 8.49       | 49.35                  | 74.00    | -24.65                       | peak   | V                    |
| 2400.00                               | 46.37   | 26.38  | 40.20   | 8.49       | 41.04                  | 54.00    | -12.96                       | AVG    | V                    |
| 4824.00                               | 64.96   | 26.41  | 40.21   | 8.51       | 59.67                  | 74.00    | -14.33                       | peak   | V                    |
| 4824.00                               | 48.34   | 26.41  | 40.21   | 8.51       | 43.05                  | 54.00    | -10.95                       | AVG    | V                    |
| 7236.00                               | 58.22   | 31.01  | 40.19   | 9.53       | 58.57                  | 74.00    | -15.43                       | peak   | V                    |
| 7236.00                               | 43.98   | 31.01  | 40.19   | 9.53       | 44.33                  | 54.00    | -9.67                        | AVG    | V                    |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: "H" means Horizontal, "V" means Vertical.

| <b>Site:</b> 966 LAB                  |         |        |         |            | <b>Antenna::</b> H / V |          | <b>Temperature(C):</b> 24(C) |        |                      |
|---------------------------------------|---------|--------|---------|------------|------------------------|----------|------------------------------|--------|----------------------|
| <b>Limit:</b> FCC Part 15.247         |         |        |         |            |                        |          | <b>Humidity(%):</b> 60%      |        |                      |
| <b>EUT:</b> Beer fermenter and cooler |         |        |         |            | <b>Test Time:</b>      |          | 2023/10/22                   |        |                      |
| <b>M/N.:</b> F1                       |         |        |         |            | <b>Power Rating:</b>   |          | AC 120V/60Hz                 |        |                      |
| <b>Mode:</b> Tx mode (2437MHz)        |         |        |         |            | <b>Test Engineer:</b>  |          |                              |        |                      |
| <b>Note:</b> 802.11 g 54M             |         |        |         |            |                        |          |                              |        |                      |
| Frequency                             | Reading | Factor | Pre-amp | Cable lost | Result                 | Limit    | Margin                       | Detect | Antenna polarization |
| (MHz)                                 | (dBuV)  | (dB/m) | (dB)    | (dB)       | (dBuV/m)               | (dBuV/m) | (dB)                         |        |                      |
| 4874.00                               | 60.96   | 31.04  | 40.19   | 9.59       | 61.40                  | 74.00    | -12.60                       | peak   | H                    |
| 4874.00                               | 39.55   | 31.04  | 40.19   | 9.59       | 39.99                  | 54.00    | -14.01                       | AVG    | H                    |
| 7311.00                               | 54.40   | 35.25  | 40.47   | 12.22      | 61.40                  | 74.00    | -12.60                       | peak   | H                    |
| 7311.00                               | 40.94   | 35.25  | 40.47   | 12.22      | 47.94                  | 54.00    | -6.06                        | AVG    | H                    |
| 4874.00                               | 54.61   | 31.04  | 40.19   | 9.59       | 55.05                  | 74.00    | -18.95                       | peak   | V                    |
| 4874.00                               | 36.59   | 31.04  | 40.19   | 9.59       | 37.03                  | 54.00    | -16.97                       | AVG    | V                    |
| 7311.00                               | 51.61   | 35.25  | 40.47   | 12.22      | 58.61                  | 74.00    | -15.39                       | peak   | V                    |
| 7311.00                               | 40.32   | 35.25  | 40.47   | 12.22      | 47.32                  | 54.00    | -6.68                        | AVG    | V                    |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: "H" means Horizontal, "V" means Vertical.

|               |                                  |                       |                             |
|---------------|----------------------------------|-----------------------|-----------------------------|
| <b>Site:</b>  | <b>966 LAB</b>                   | <b>Antenna::H / V</b> | <b>Temperature(C):24(C)</b> |
| <b>Limit:</b> | <b>FCC Part 15.247</b>           |                       | <b>Humidity(%):60%</b>      |
| <b>EUT:</b>   | <b>Beer fermenter and cooler</b> | <b>Test Time:</b>     | <b>2023/10/22</b>           |
| <b>M/N.:</b>  | <b>iGulu F1</b>                  | <b>Power Rating:</b>  | <b>AC 120V/60Hz</b>         |
| <b>Mode:</b>  | <b>Tx mode (2462MHz)</b>         | <b>Test Engineer:</b> |                             |
| <b>Note:</b>  | <b>802.11 g 54M</b>              |                       |                             |

| Frequency<br>(MHz) | Reading<br>(dBuV) | Factor<br>(dB/m) | Pre-amp<br>(dB) | Cable lost<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detect | Antenna<br>polarization |
|--------------------|-------------------|------------------|-----------------|--------------------|--------------------|-------------------|----------------|--------|-------------------------|
| 2483.50            | 41.91             | 26.56            | 40.29           | 8.65               | 36.83              | 74.00             | -37.17         | peak   | H                       |
| 2483.50            | 35.90             | 26.56            | 40.29           | 8.65               | 30.82              | 54.00             | -23.18         | AVG    | H                       |
| 4924.00            | 59.61             | 26.51            | 40.21           | 8.54               | 54.45              | 74.00             | -19.55         | peak   | H                       |
| 4924.00            | 48.19             | 26.51            | 40.21           | 8.54               | 43.03              | 54.00             | -10.97         | AVG    | H                       |
| 7386.00            | 51.68             | 31.04            | 40.19           | 9.62               | 52.15              | 74.00             | -21.85         | peak   | H                       |
| 7386.00            | 40.76             | 31.04            | 40.19           | 9.62               | 41.23              | 54.00             | -12.77         | AVG    | H                       |
| 2483.50            | 60.94             | 26.56            | 40.29           | 8.65               | 55.86              | 74.00             | -18.14         | peak   | V                       |
| 2483.50            | 45.61             | 26.56            | 40.29           | 8.65               | 40.53              | 54.00             | -13.47         | AVG    | V                       |
| 4924.00            | 56.80             | 26.51            | 40.21           | 8.54               | 51.64              | 55.00             | -3.36          | peak   | V                       |
| 4924.00            | 46.74             | 26.51            | 40.21           | 8.54               | 41.58              | 56.00             | -14.42         | AVG    | V                       |
| 7386.00            | 46.79             | 31.04            | 40.19           | 9.62               | 47.26              | 57.00             | -9.74          | peak   | V                       |
| 7386.00            | 38.68             | 31.04            | 40.19           | 9.62               | 39.15              | 58.00             | -18.85         | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: "H" means Horizontal, "V" means Vertical.

| <b>Site:</b> 966 LAB                  |                   |                  |                 |                    | <b>Antenna::</b> H / V |                   | <b>Temperature(C):</b> 24(C) |        |                         |
|---------------------------------------|-------------------|------------------|-----------------|--------------------|------------------------|-------------------|------------------------------|--------|-------------------------|
| <b>Limit:</b> FCC Part 15.247         |                   |                  |                 |                    |                        |                   | <b>Humidity(%):</b> 60%      |        |                         |
| <b>EUT:</b> Beer fermenter and cooler |                   |                  |                 |                    | <b>Test Time:</b>      |                   | <b>2023/10/22</b>            |        |                         |
| <b>M/N.:</b> iGulu F1                 |                   |                  |                 |                    | <b>Power Rating:</b>   |                   | <b>AC 120V/60Hz</b>          |        |                         |
| <b>Mode:</b> Tx mode (2412MHz)        |                   |                  |                 |                    | <b>Test Engineer:</b>  |                   |                              |        |                         |
| <b>Note:</b> 802.11 n20               |                   |                  |                 |                    |                        |                   |                              |        |                         |
| Frequency<br>(MHz)                    | Reading<br>(dBuV) | Factor<br>(dB/m) | Pre-amp<br>(dB) | Cable lost<br>(dB) | Result<br>(dBuV/m)     | Limit<br>(dBuV/m) | Margin<br>(dB)               | Detect | Antenna<br>polarization |
| 2390.00                               | 57.55             | 26.33            | 40.23           | 8.46               | 52.11                  | 74.00             | -21.89                       | peak   | H                       |
| 2390.00                               | 46.29             | 26.33            | 40.23           | 8.46               | 40.85                  | 54.00             | -13.15                       | AVG    | H                       |
| 2400.00                               | 55.68             | 26.38            | 40.20           | 8.49               | 50.35                  | 74.00             | -23.65                       | peak   | H                       |
| 2400.00                               | 46.26             | 26.38            | 40.20           | 8.49               | 40.93                  | 54.00             | -13.07                       | AVG    | H                       |
| 4824.00                               | 64.31             | 26.41            | 40.21           | 8.51               | 59.02                  | 74.00             | -14.98                       | peak   | H                       |
| 4824.00                               | 48.84             | 26.41            | 40.21           | 8.51               | 43.55                  | 54.00             | -10.45                       | AVG    | H                       |
| 7236.00                               | 57.91             | 31.01            | 40.19           | 9.53               | 58.26                  | 74.00             | -15.74                       | peak   | H                       |
| 7236.00                               | 44.61             | 31.01            | 40.19           | 9.53               | 44.96                  | 54.00             | -9.04                        | AVG    | H                       |
| 2390.00                               | 57.69             | 26.33            | 40.23           | 8.46               | 52.25                  | 74.00             | -21.75                       | peak   | V                       |
| 2390.00                               | 45.40             | 26.33            | 40.23           | 8.46               | 39.96                  | 54.00             | -14.04                       | AVG    | V                       |
| 2400.00                               | 55.76             | 26.38            | 40.20           | 8.49               | 50.43                  | 74.00             | -23.57                       | peak   | V                       |
| 2400.00                               | 45.72             | 26.38            | 40.20           | 8.49               | 40.39                  | 54.00             | -13.61                       | AVG    | V                       |
| 4824.00                               | 64.80             | 26.41            | 40.21           | 8.51               | 59.51                  | 74.00             | -14.49                       | peak   | V                       |
| 4824.00                               | 49.44             | 26.41            | 40.21           | 8.51               | 44.15                  | 54.00             | -9.85                        | AVG    | V                       |
| 7236.00                               | 57.10             | 31.01            | 40.19           | 9.53               | 57.45                  | 74.00             | -16.55                       | peak   | V                       |
| 7236.00                               | 45.05             | 31.01            | 40.19           | 9.53               | 45.40                  | 54.00             | -8.60                        | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

| <b>Site:</b> 966 LAB                  |                       |                      |                 |                        | <b>Antenna::</b> H / V |                       | <b>Temperature(C):</b> 24(C) |        |                         |
|---------------------------------------|-----------------------|----------------------|-----------------|------------------------|------------------------|-----------------------|------------------------------|--------|-------------------------|
| <b>Limit:</b> FCC Part 15.247         |                       |                      |                 |                        |                        |                       | <b>Humidity(%):</b> 60%      |        |                         |
| <b>EUT:</b> Beer fermenter and cooler |                       |                      |                 |                        | <b>Test Time:</b>      |                       | <b>2023/10/22</b>            |        |                         |
| <b>M/N.:</b> iGulu F1                 |                       |                      |                 |                        | <b>Power Rating:</b>   |                       | <b>AC 120V/60Hz</b>          |        |                         |
| <b>Mode:</b> Tx mode (2437MHz)        |                       |                      |                 |                        | <b>Test Engineer:</b>  |                       |                              |        |                         |
| <b>Note:</b> 802.11 n20               |                       |                      |                 |                        |                        |                       |                              |        |                         |
| Frequency<br><br>(MHz)                | Reading<br><br>(dBuV) | Factor<br><br>(dB/m) | Pre-amp<br>(dB) | Cable lost<br><br>(dB) | Result<br><br>(dBuV/m) | Limit<br><br>(dBuV/m) | Margin<br><br>(dB)           | Detect | Antenna<br>polarization |
| 4874.00                               | 61.47                 | 31.04                | 40.19           | 9.59                   | 61.91                  | 74.00                 | -12.09                       | peak   | H                       |
| 4874.00                               | 38.99                 | 31.04                | 40.19           | 9.59                   | 39.43                  | 54.00                 | -14.57                       | AVG    | H                       |
| 7311.00                               | 55.03                 | 35.25                | 40.47           | 12.22                  | 62.03                  | 74.00                 | -11.97                       | peak   | H                       |
| 7311.00                               | 41.65                 | 35.25                | 40.47           | 12.22                  | 48.65                  | 54.00                 | -5.35                        | AVG    | H                       |
| 4874.00                               | 53.89                 | 31.04                | 40.19           | 9.59                   | 54.33                  | 74.00                 | -19.67                       | peak   | V                       |
| 4874.00                               | 37.79                 | 31.04                | 40.19           | 9.59                   | 38.23                  | 54.00                 | -15.77                       | AVG    | V                       |
| 7311.00                               | 52.17                 | 35.25                | 40.47           | 12.22                  | 59.17                  | 74.00                 | -14.83                       | peak   | V                       |
| 7311.00                               | 41.60                 | 35.25                | 40.47           | 12.22                  | 48.60                  | 54.00                 | -5.40                        | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

| Site: 966 LAB                  |                   |                  |                 |                    | Antenna::H / V     |                   | Temperature(C):24(C) |        |                         |
|--------------------------------|-------------------|------------------|-----------------|--------------------|--------------------|-------------------|----------------------|--------|-------------------------|
| Limit: FCC Part 15.247         |                   |                  |                 |                    |                    |                   | Humidity(%):60%      |        |                         |
| EUT: Beer fermenter and cooler |                   |                  |                 |                    | Test Time:         |                   | 2023/10/22           |        |                         |
| M/N.: F1                       |                   |                  |                 |                    | Power Rating:      |                   | AC 120V/60Hz         |        |                         |
| Mode: Tx mode (2462MHz)        |                   |                  |                 |                    | Test Engineer:     |                   |                      |        |                         |
| Note: 802.11 n20               |                   |                  |                 |                    |                    |                   |                      |        |                         |
| Frequency<br>(MHz)             | Reading<br>(dBuV) | Factor<br>(dB/m) | Pre-amp<br>(dB) | Cable lost<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB)       | Detect | Antenna<br>polarization |
| 2483.50                        | 42.32             | 26.56            | 40.29           | 8.65               | 37.24              | 74.00             | -36.76               | peak   | H                       |
| 2483.50                        | 35.65             | 26.56            | 40.29           | 8.65               | 30.57              | 54.00             | -23.43               | AVG    | H                       |
| 4924.00                        | 58.75             | 26.51            | 40.21           | 8.54               | 53.59              | 74.00             | -20.41               | peak   | H                       |
| 4924.00                        | 48.47             | 26.51            | 40.21           | 8.54               | 43.31              | 54.00             | -10.69               | AVG    | H                       |
| 7386.00                        | 50.66             | 31.04            | 40.19           | 9.62               | 51.13              | 74.00             | -22.87               | peak   | H                       |
| 7386.00                        | 39.75             | 31.04            | 40.19           | 9.62               | 40.22              | 54.00             | -13.78               | AVG    | H                       |
| 2483.50                        | 60.57             | 26.56            | 40.29           | 8.65               | 55.49              | 74.00             | -18.51               | peak   | V                       |
| 2483.50                        | 46.97             | 26.56            | 40.29           | 8.65               | 41.89              | 54.00             | -12.11               | AVG    | V                       |
| 4924.00                        | 56.98             | 26.51            | 40.21           | 8.54               | 51.82              | 55.00             | -3.18                | peak   | V                       |
| 4924.00                        | 45.18             | 26.51            | 40.21           | 8.54               | 40.02              | 56.00             | -15.98               | AVG    | V                       |
| 7386.00                        | 46.20             | 31.04            | 40.19           | 9.62               | 46.67              | 57.00             | -10.33               | peak   | V                       |
| 7386.00                        | 39.01             | 31.04            | 40.19           | 9.62               | 39.48              | 58.00             | -18.52               | AVG    | V                       |

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

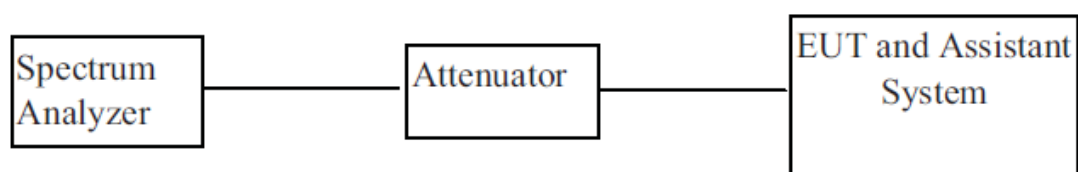
2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

## 5. Output Power

### 5.1. Test equipment

| Item | Equipment           | Manufacturer | Model No. | Serial No.     | Last Cal.  | Cal. Interval |
|------|---------------------|--------------|-----------|----------------|------------|---------------|
| 1    | MXA Signal Analyzer | KEYSIGHT     | N9020A    | MY5451047<br>6 | 2023/05/19 | 1 Year        |

### 5.2. BLOCK DIAGRAM OF TEST SETUP



### 5.3. Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt (30dBm).

### 5.4. Test Procedure

For output power test:

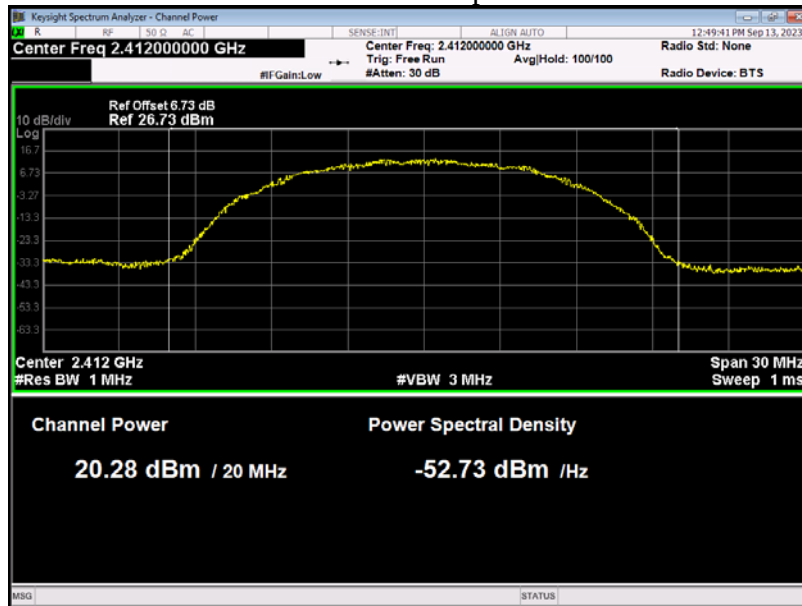
1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note : The EUT was tested according to KDB 558074v03r04 for compliance to FCC 47CFR 15.247 requirements.

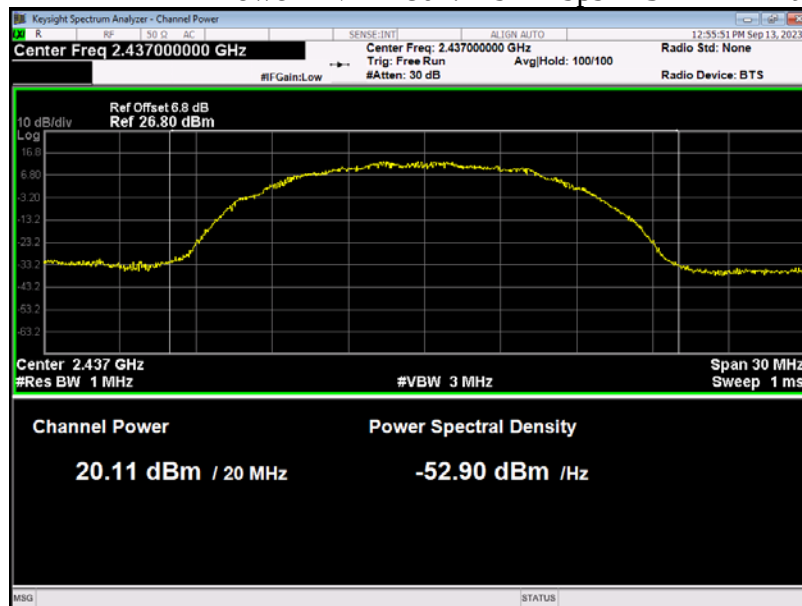
## 5.5. Test result

| Condition | Mode          | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|---------------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| NVNT      | 802.11b 1Mbps | 2412            | Ant 1   | 20.277                | 0                | 20.277            | 30          | Pass    |
| NVNT      | 802.11b 1Mbps | 2437            | Ant 1   | 20.106                | 0                | 20.106            | 30          | Pass    |
| NVNT      | 802.11b 1Mbps | 2462            | Ant 1   | 20.2                  | 0                | 20.2              | 30          | Pass    |

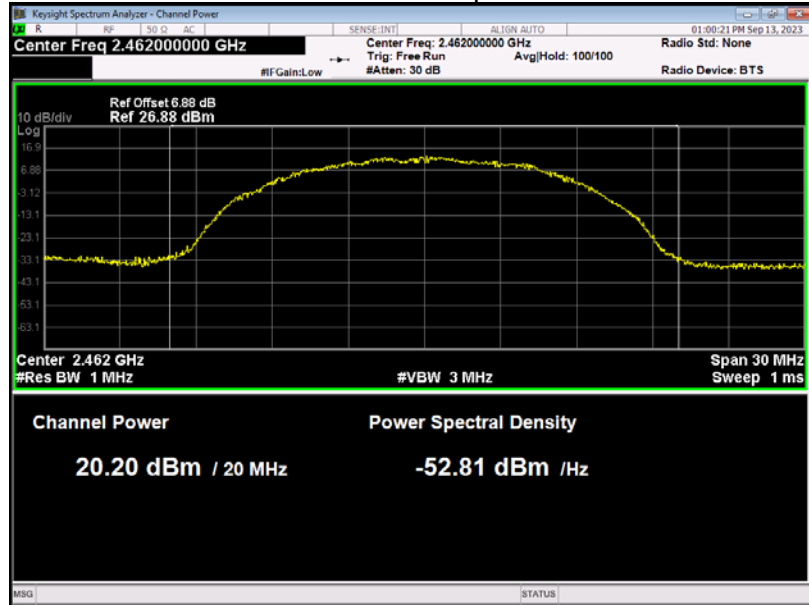
Power NVNT 802.11b 1Mbps 2412MHz Ant1



Power NVNT 802.11b 1Mbps 2437MHz Ant1

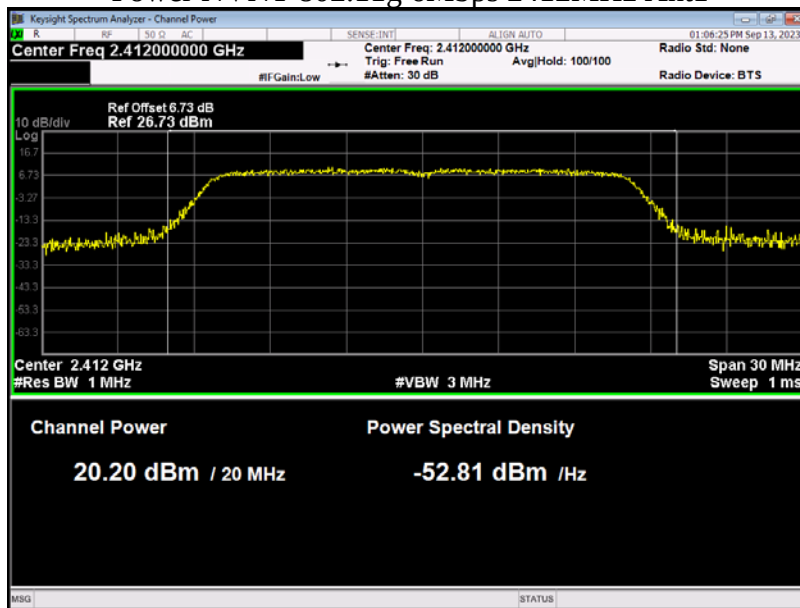


Power NVNT 802.11b 1Mbps 2462MHz Ant1

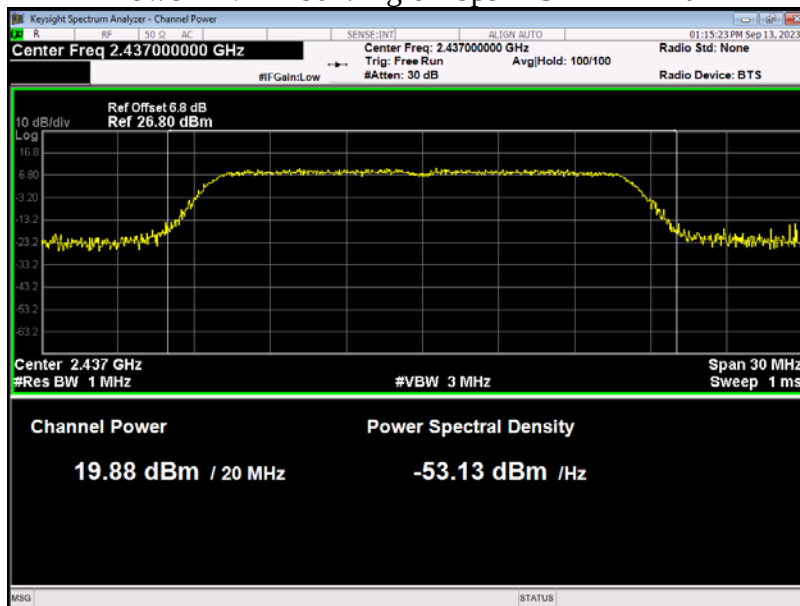


| Condition | Mode          | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|---------------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| NVNT      | 802.11g 6Mbps | 2412            | Ant 1   | 20.197                | 0.01             | 20.207            | 30          | Pass    |
| NVNT      | 802.11g 6Mbps | 2437            | Ant 1   | 19.882                | 0.01             | 19.892            | 30          | Pass    |
| NVNT      | 802.11g 6Mbps | 2462            | Ant 1   | 19.773                | 0.01             | 19.783            | 30          | Pass    |

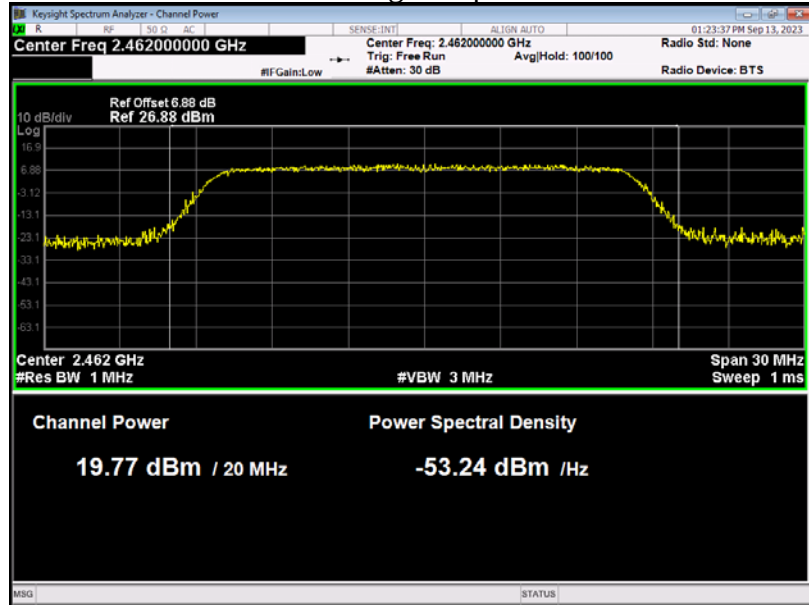
Power NVNT 802.11g 6Mbps 2412MHz Ant1



Power NVNT 802.11g 6Mbps 2437MHz Ant1

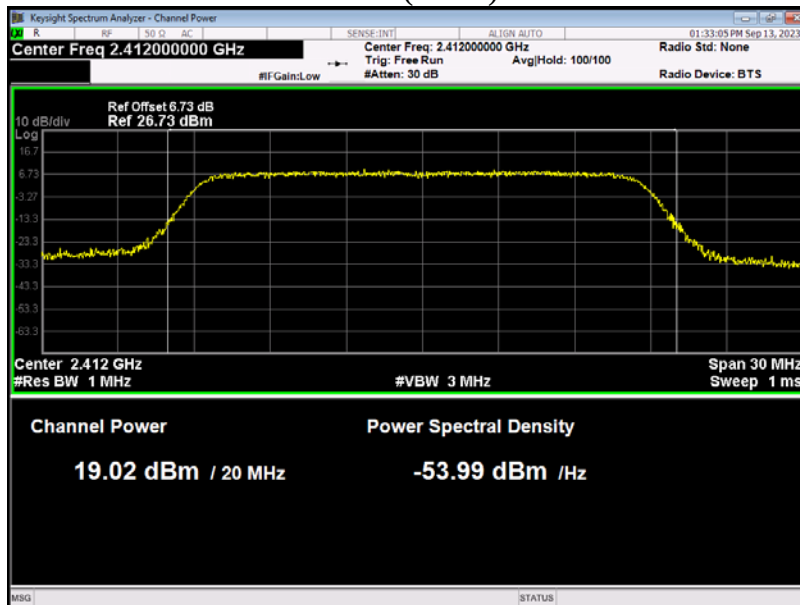


Power NVNT 802.11g 6Mbps 2462MHz Ant1

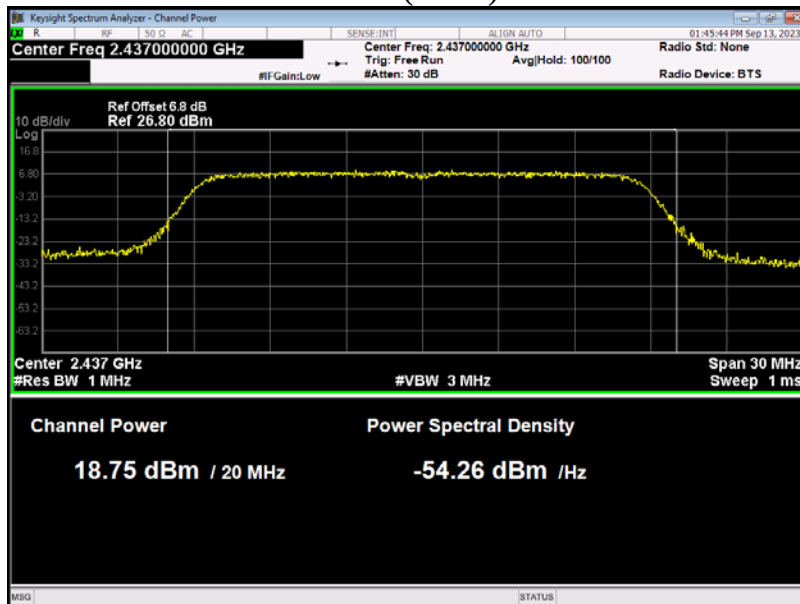


| Condition | Mode          | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|---------------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| NVNT      | 802.11n(HT20) | 2412            | Ant 1   | 19.021                | 0.01             | 19.031            | 30          | Pass    |
| NVNT      | 802.11n(HT20) | 2437            | Ant 1   | 18.746                | 0.01             | 18.756            | 30          | Pass    |
| NVNT      | 802.11n(HT20) | 2462            | Ant 1   | 18.669                | 0.01             | 18.679            | 30          | Pass    |

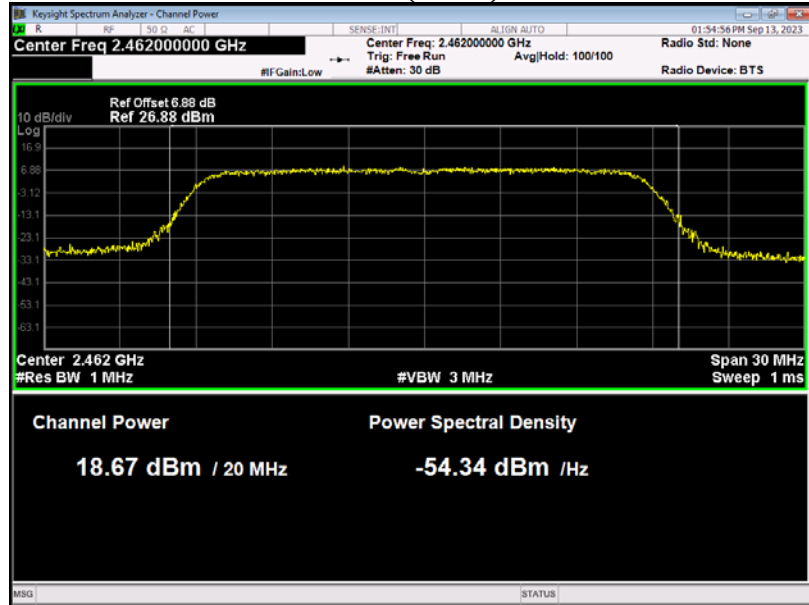
Power NVNT 802.11n(HT20) 2412MHz Ant1



Power NVNT 802.11n(HT20) 2437MHz Ant1



Power NVNT 802.11n(HT20) 2462MHz Ant1

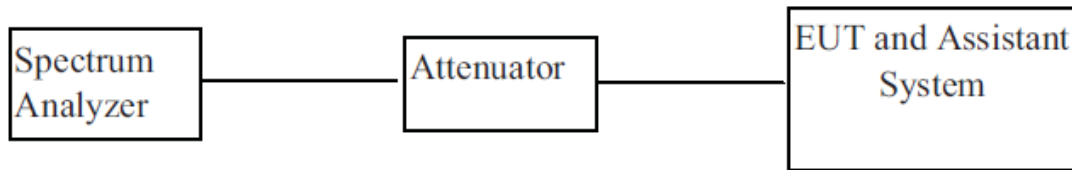


## 6. -6dB Bandwidth

### 6.1. Test equipment

| Item | Equipment           | Manufacturer | Model No. | Serial No.     | Last Cal.  | Cal. Interval |
|------|---------------------|--------------|-----------|----------------|------------|---------------|
| 1    | MXA Signal Analyzer | KEYSIGHT     | N9020A    | MY5451047<br>6 | 2023/05/19 | 1 Year        |

### 6.2. BLOCK DIAGRAM OF TEST SETUP



### 6.3. 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.

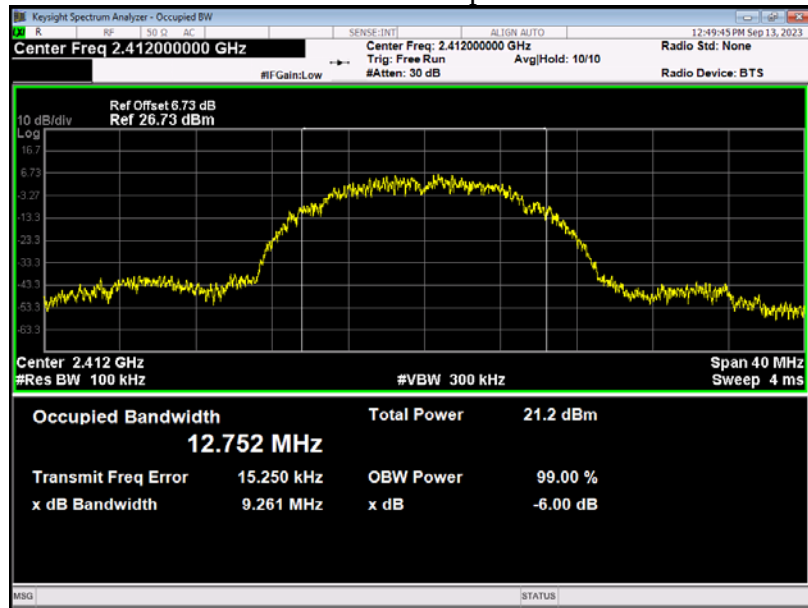
### 6.4. Test Procedure

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
  2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
  3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq$ 3 $\times$ RBW.
  4. Set SPA Trace 1 Max hold, then View.
- Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

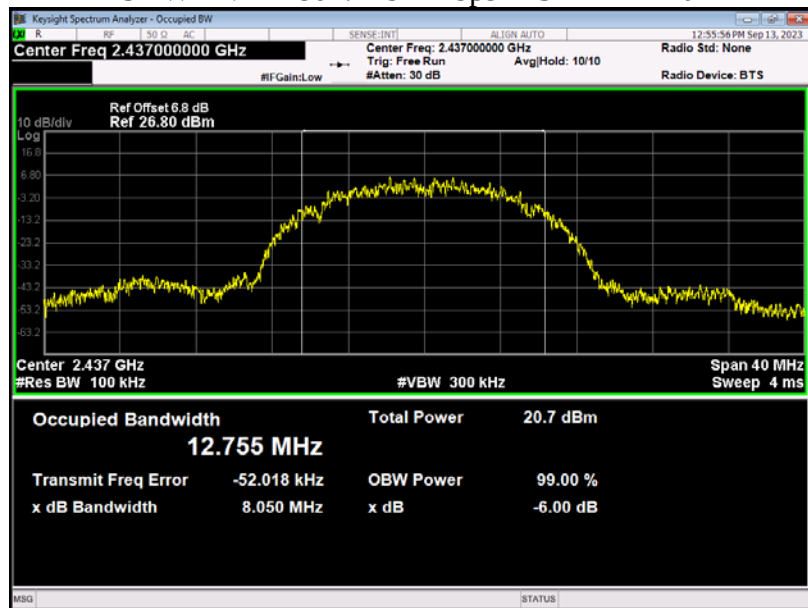
## 6.5. Test result

| Condition | Mode          | Frequency (MHz) | Antenna | 99% OBW (MHz) | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|---------------|-----------------|---------|---------------|-----------------------|-----------------------------|---------|
| NVNT      | 802.11b 1Mbps | 2412            | Ant 1   | 12.7515       | 9.261                 | 0.5                         | Pass    |
| NVNT      | 802.11b 1Mbps | 2437            | Ant 1   | 12.7546       | 8.050                 | 0.5                         | Pass    |
| NVNT      | 802.11b 1Mbps | 2462            | Ant 1   | 12.7797       | 8.662                 | 0.5                         | Pass    |

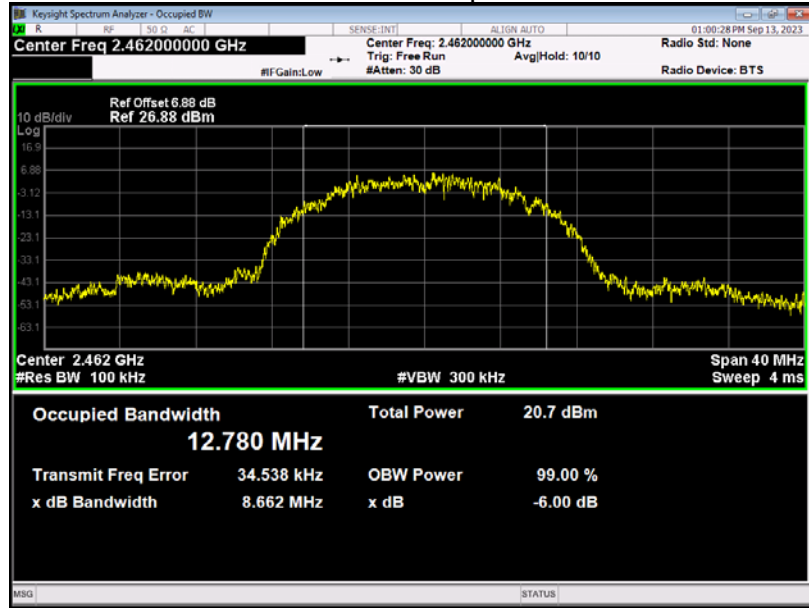
OBW NVNT 802.11b 1Mbps 2412MHz Ant1



OBW NVNT 802.11b 1Mbps 2437MHz Ant1

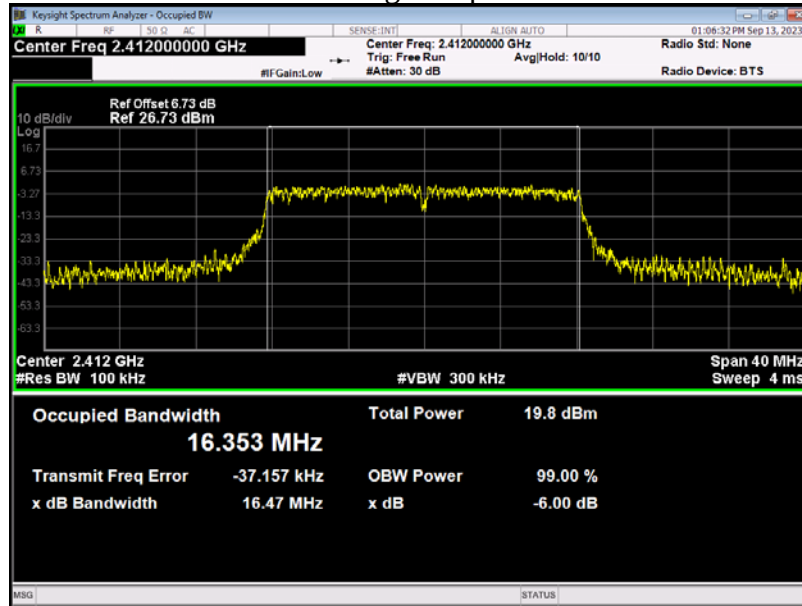


OBW NVNT 802.11b 1Mbps 2462MHz Ant1

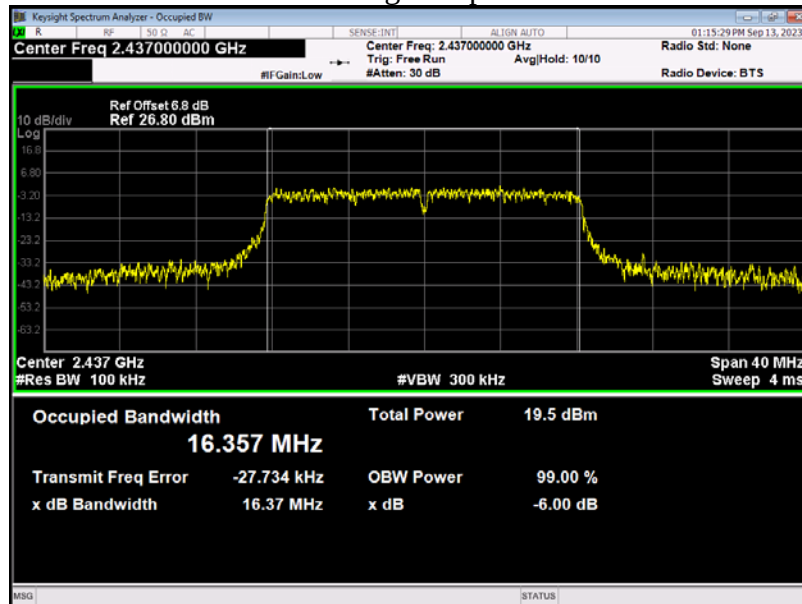


| Condition | Mode          | Frequency (MHz) | Antenna | 99% OBW (MHz) | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|---------------|-----------------|---------|---------------|-----------------------|-----------------------------|---------|
| NVNT      | 802.11g 6Mbps | 2412            | Ant 1   | 16.3525       | 16.4653               | 0.5                         | Pass    |
| NVNT      | 802.11g 6Mbps | 2437            | Ant 1   | 16.3574       | 16.3706               | 0.5                         | Pass    |
| NVNT      | 802.11g 6Mbps | 2462            | Ant 1   | 16.3355       | 16.4012               | 0.5                         | Pass    |

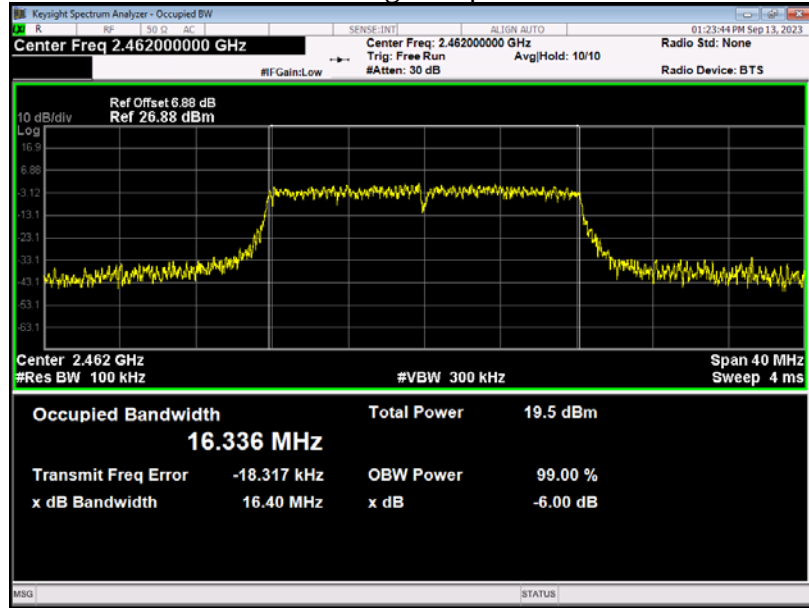
OBW NVNT 802.11g 6Mbps 2412MHz Ant1



OBW NVNT 802.11g 6Mbps 2437MHz Ant1

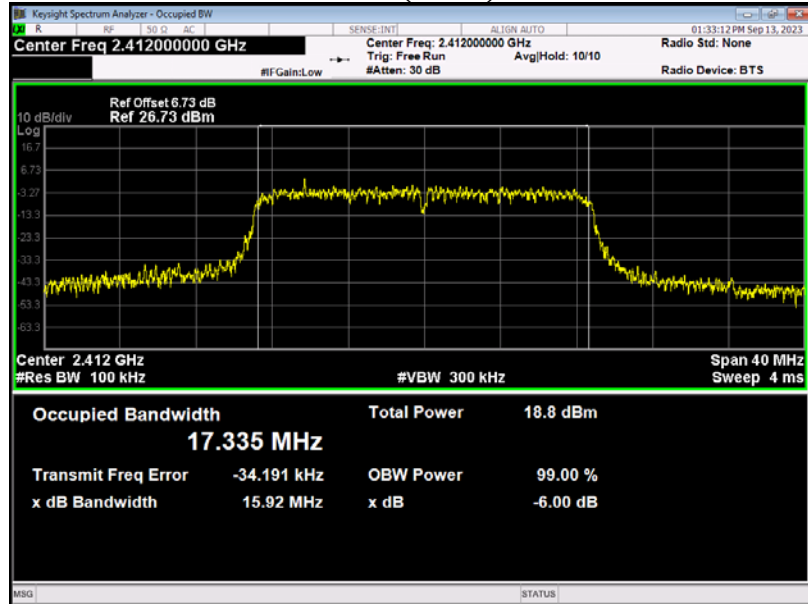


OBW NVNT 802.11g 6Mbps 2462MHz Ant1

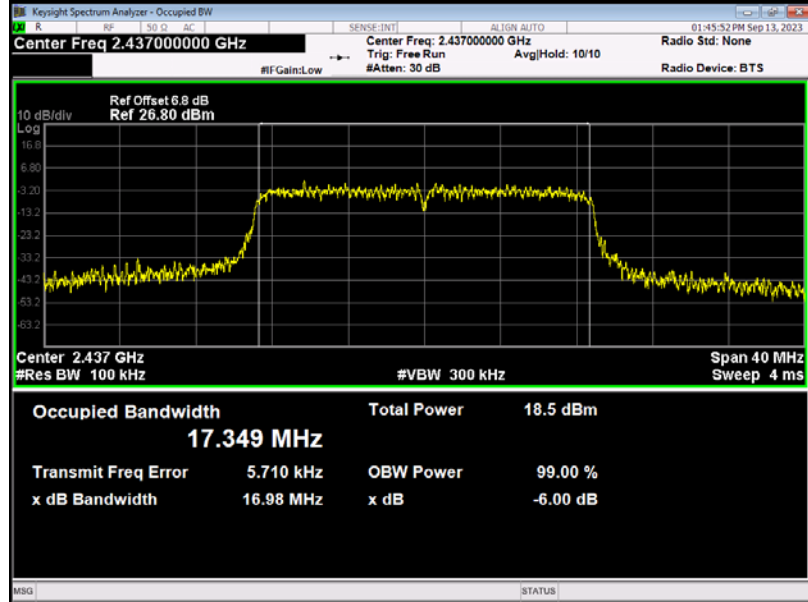


| Condition | Mode          | Frequency (MHz) | Antenna | 99% OBW (MHz) | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|---------------|-----------------|---------|---------------|-----------------------|-----------------------------|---------|
| NVNT      | 802.11n(HT20) | 2412            | Ant 1   | 17.3349       | 15.9174               | 0.5                         | Pass    |
| NVNT      | 802.11n(HT20) | 2437            | Ant 1   | 17.3493       | 16.9771               | 0.5                         | Pass    |
| NVNT      | 802.11n(HT20) | 2462            | Ant 1   | 17.3235       | 16.9507               | 0.5                         | Pass    |

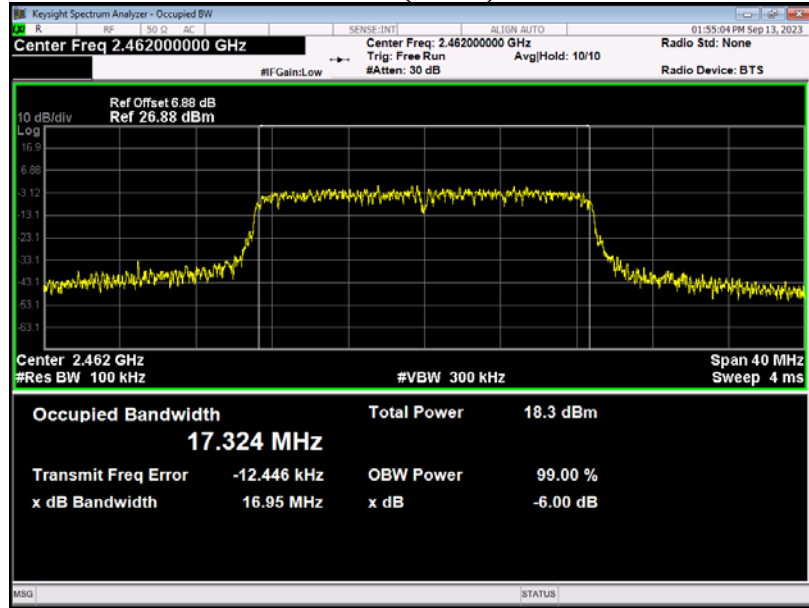
OBW NVNT 802.11n(HT20) 2412MHz Ant1



OBW NVNT 802.11n(HT20) 2437MHz Ant1



OBW NVNT 802.11n(HT20) 2462MHz Ant1

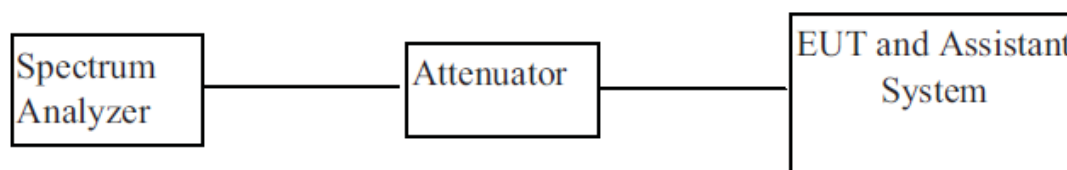


## 7. Band Edges Measurement

### 7.1. Test equipment

| Item | Equipment           | Manufacturer | Model No. | Serial No. | Last Cal.  | Cal. Interval |
|------|---------------------|--------------|-----------|------------|------------|---------------|
| 1    | MXA Signal Analyzer | KEYSIGHT     | N9020A    | MY54510476 | 2023/05/19 | 1 Year        |

### 7.2. BLOCK DIAGRAM OF TEST SETUP



### 7.3. Limit

Below –30dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

### 7.4. Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable.

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

Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 30dB relative to the maximum measured in-band peak PSD level.

The band edges was measured and recorded.

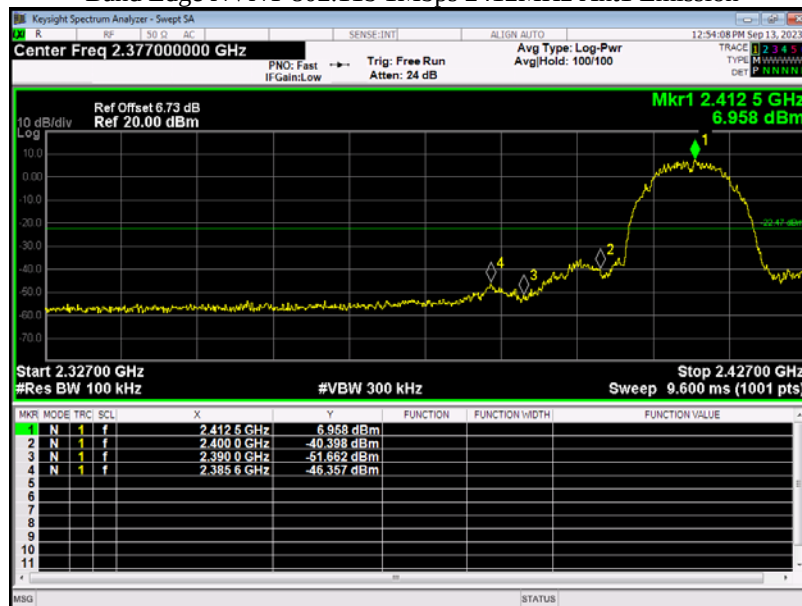
## 7.5. Test result

| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11b 1Mbps | 2412            | Ant 1   | -53.882         | -30         | Pass    |
| NVNT      | 802.11b 1Mbps | 2462            | Ant 1   | -53.958         | -30         | Pass    |

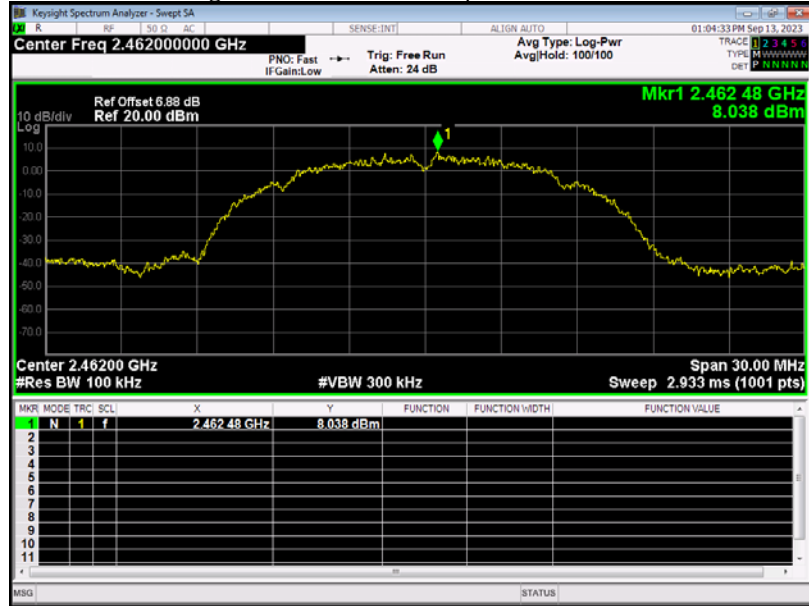
Band Edge NVNT 802.11b 1Mbps 2412MHz Ant1 Ref



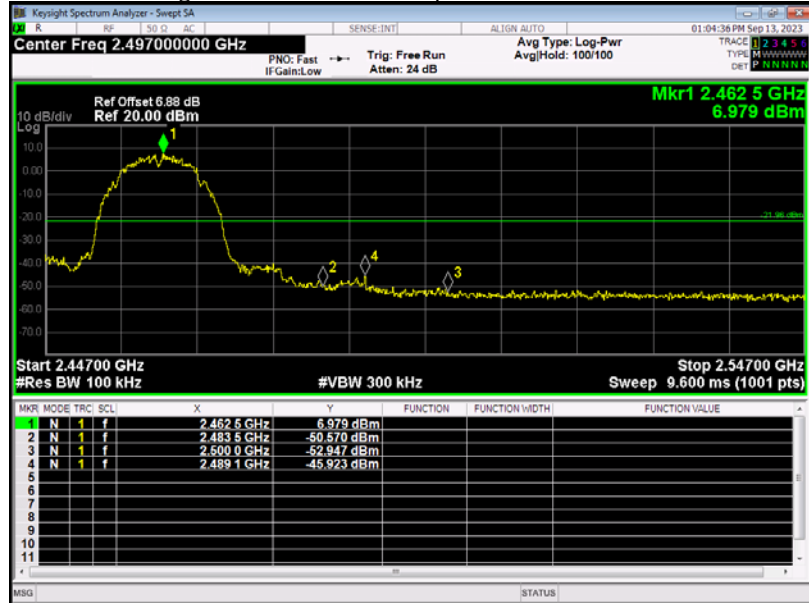
Band Edge NVNT 802.11b 1Mbps 2412MHz Ant1 Emission



Band Edge NVNT 802.11b 1Mbps 2462MHz Ant1 Ref

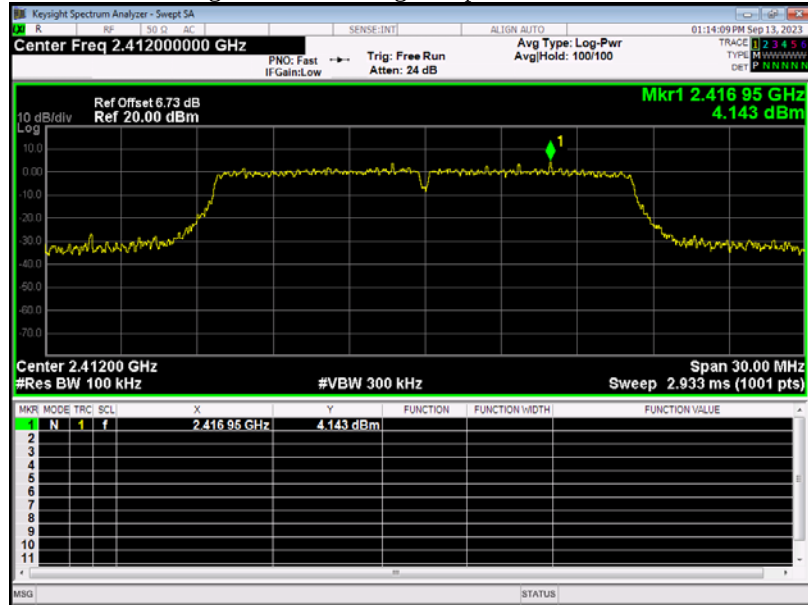


Band Edge NVNT 802.11b 1Mbps 2462MHz Ant1 Emission

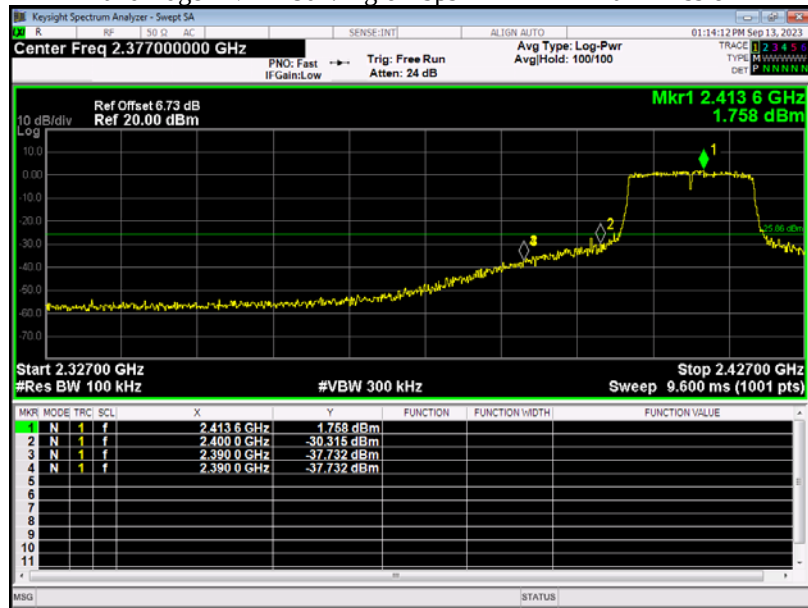


| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11g 6Mbps | 2412            | Ant 1   | -41.873         | -30         | Pass    |
| NVNT      | 802.11g 6Mbps | 2462            | Ant 1   | -36.639         | -30         | Pass    |

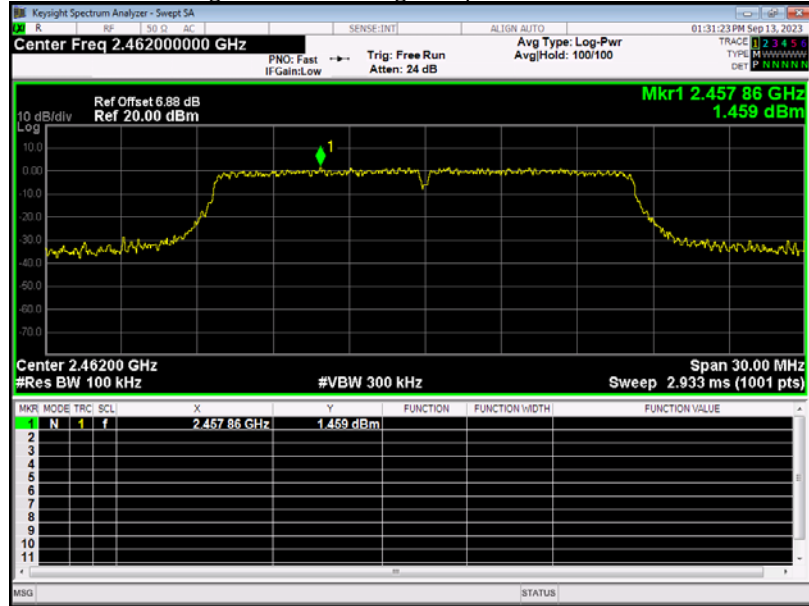
Band Edge NVNT 802.11g 6Mbps 2412MHz Ant1 Ref



Band Edge NVNT 802.11g 6Mbps 2412MHz Ant1 Emission



Band Edge NVNT 802.11g 6Mbps 2462MHz Ant1 Ref

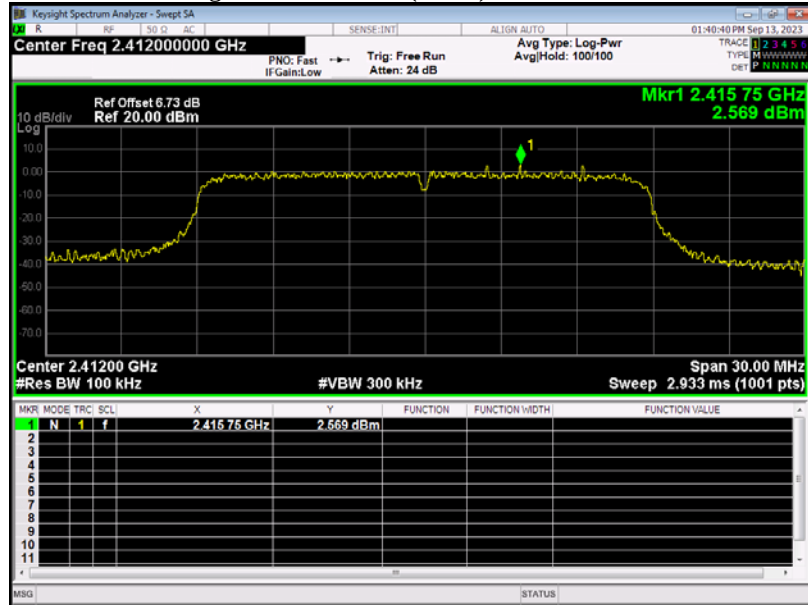


Band Edge NVNT 802.11g 6Mbps 2462MHz Ant1 Emission

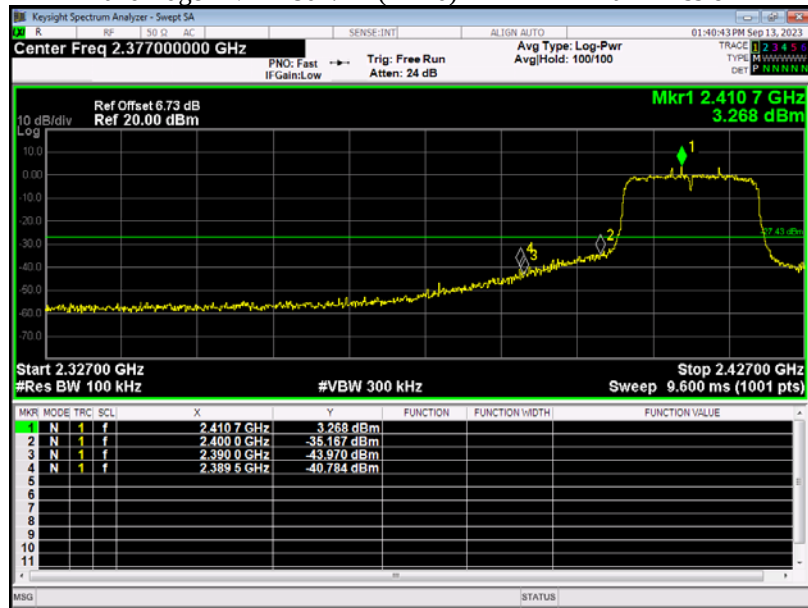


| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11n(HT20) | 2412            | Ant 1   | -43.349         | -30         | Pass    |
| NVNT      | 802.11n(HT20) | 2462            | Ant 1   | -44.154         | -30         | Pass    |

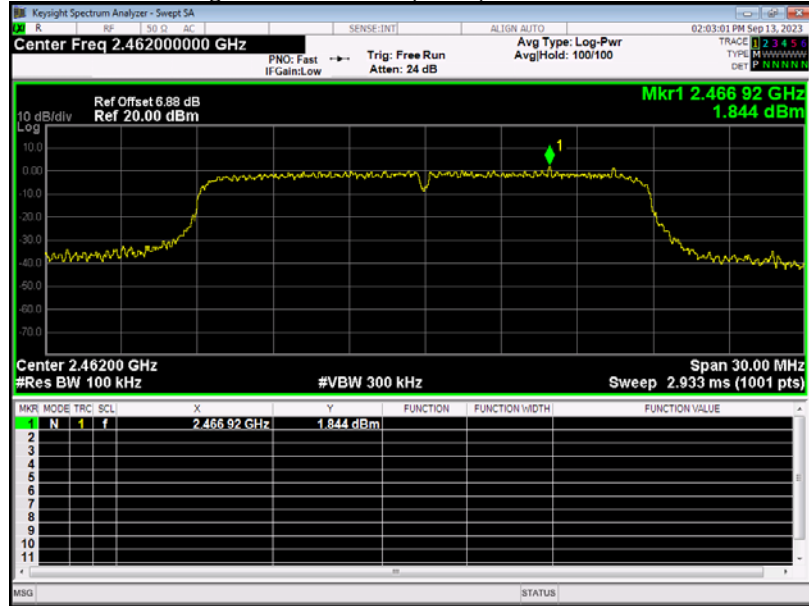
Band Edge NVNT 802.11n(HT20) 2412MHz Ant1 Ref



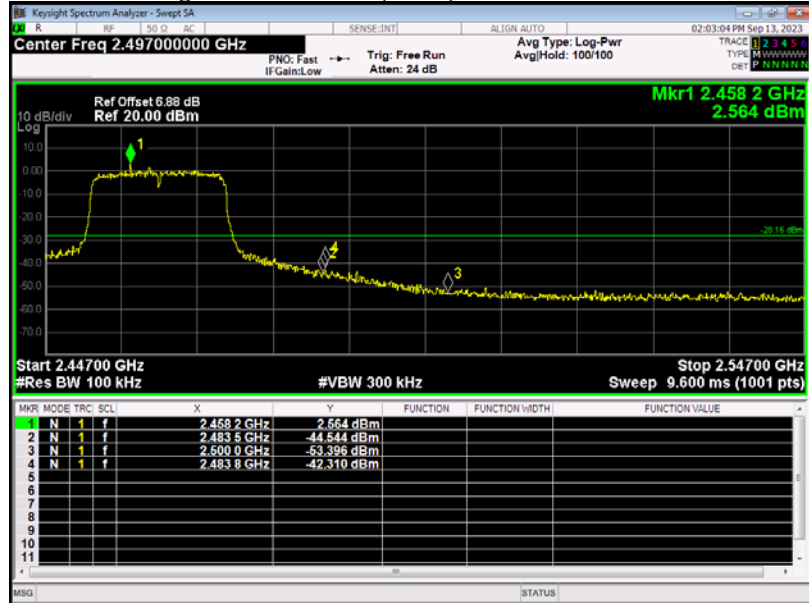
Band Edge NVNT 802.11n(HT20) 2412MHz Ant1 Emission



Band Edge NVNT 802.11n(HT20) 2462MHz Ant1 Ref



Band Edge NVNT 802.11n(HT20) 2462MHz Ant1 Emission

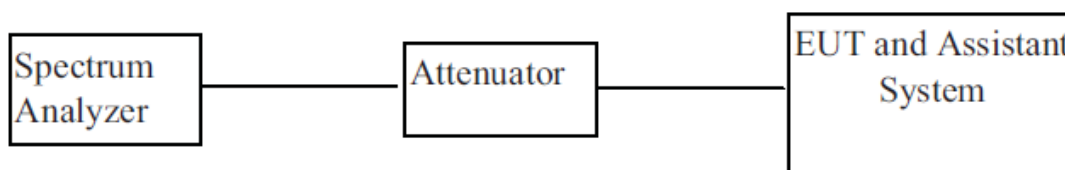


## 8. Conducted Spurious Emission

### 8.1. Test equipment

| Item | Equipment           | Manufacturer | Model No. | Serial No.     | Last Cal.  | Cal. Interval |
|------|---------------------|--------------|-----------|----------------|------------|---------------|
| 1    | MXA Signal Analyzer | KEYSIGHT     | N9020A    | MY5451047<br>6 | 2023/05/19 | 1 Year        |

### 8.2. BLOCK DIAGRAM OF TEST SETUP



### 8.3. Limit

In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.

In addition, radiation 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)

### 8.4. Test Procedure

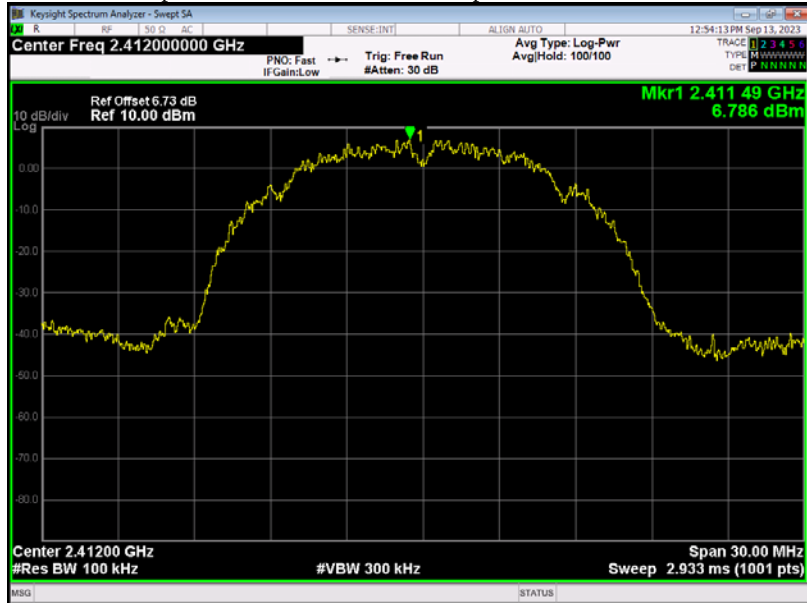
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

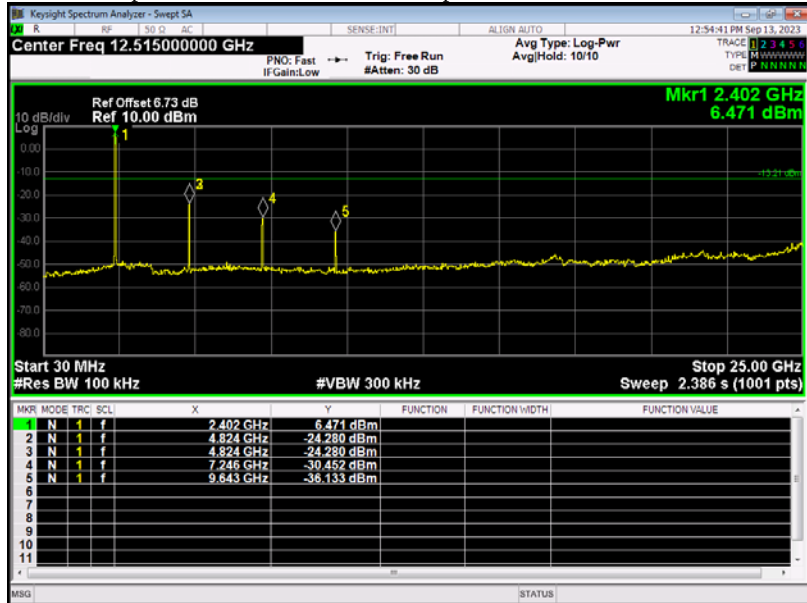
## 8.5. Test result

| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11b 1Mbps | 2412            | Ant 1   | -31.056         | -20         | Pass    |
| NVNT      | 802.11b 1Mbps | 2437            | Ant 1   | -30.848         | -20         | Pass    |
| NVNT      | 802.11b 1Mbps | 2462            | Ant 1   | -29.653         | -20         | Pass    |

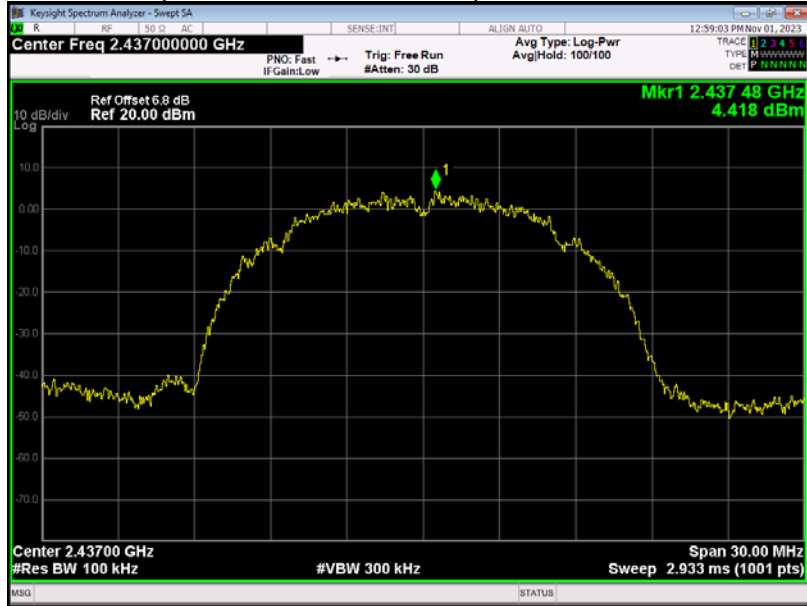
Tx. Spurious NVNT 802.11b 1Mbps 2412MHz Ant1 Ref



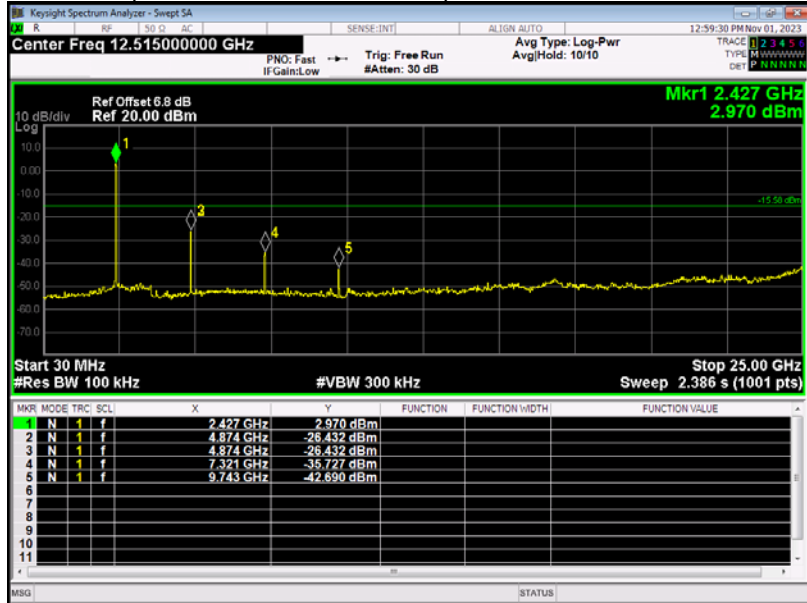
Tx. Spurious NVNT 802.11b 1Mbps 2412MHz Ant1 Emission



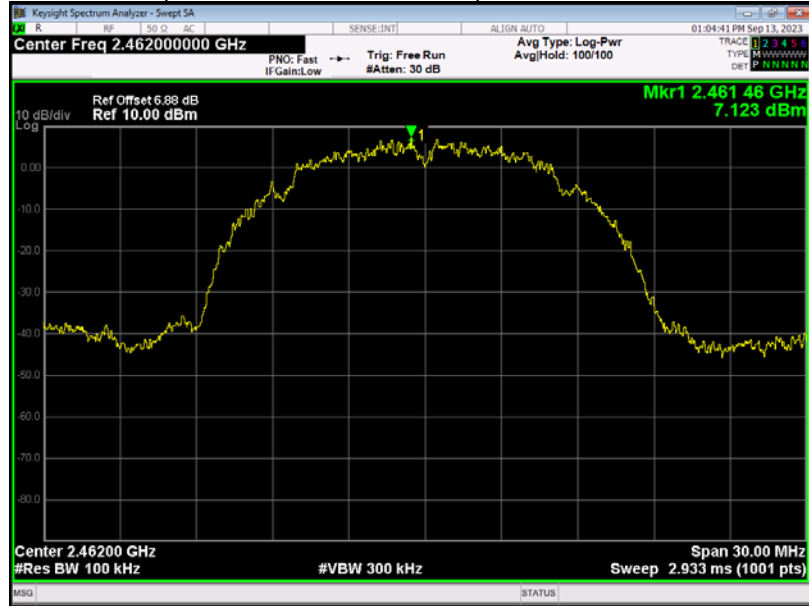
Tx. Spurious NVNT 802.11b 1Mbps 2437MHz Ant1 Ref



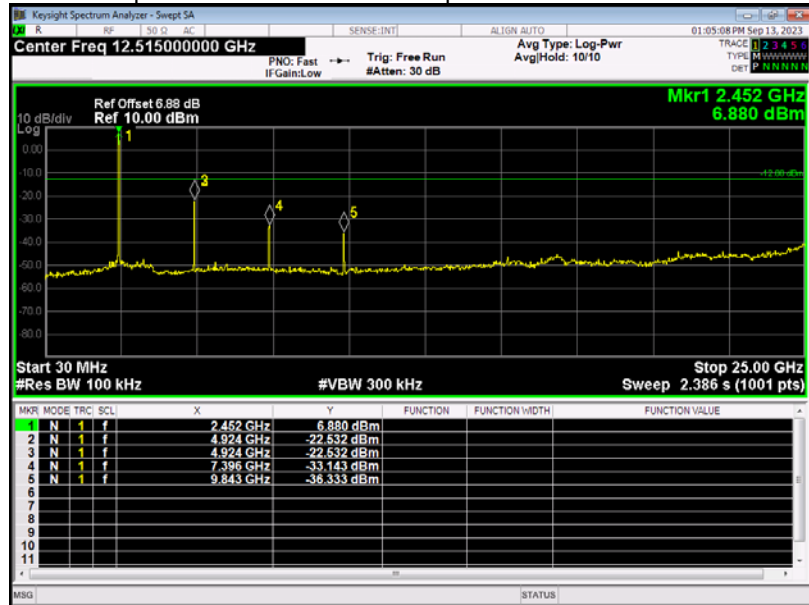
Tx. Spurious NVNT 802.11b 1Mbps 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11b 1Mbps 2462MHz Ant1 Ref

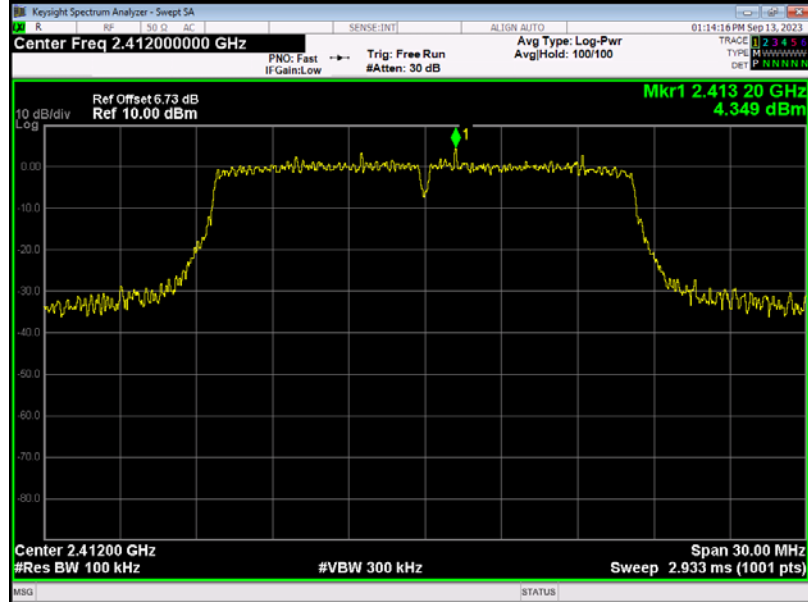


Tx. Spurious NVNT 802.11b 1Mbps 2462MHz Ant1 Emission

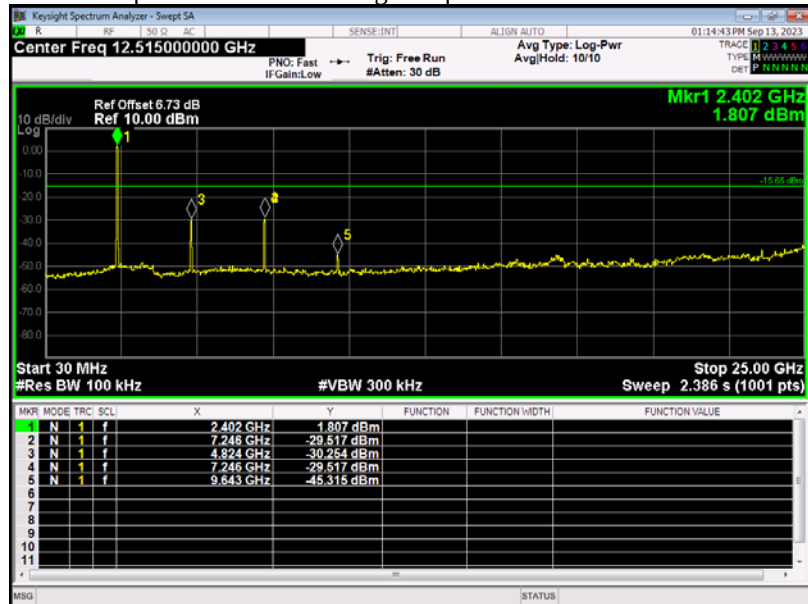


| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11g 6Mbps | 2412            | Ant 1   | -33.859         | -20         | Pass    |
| NVNT      | 802.11g 6Mbps | 2437            | Ant 1   | -34.66          | -20         | Pass    |
| NVNT      | 802.11g 6Mbps | 2462            | Ant 1   | -32.434         | -20         | Pass    |

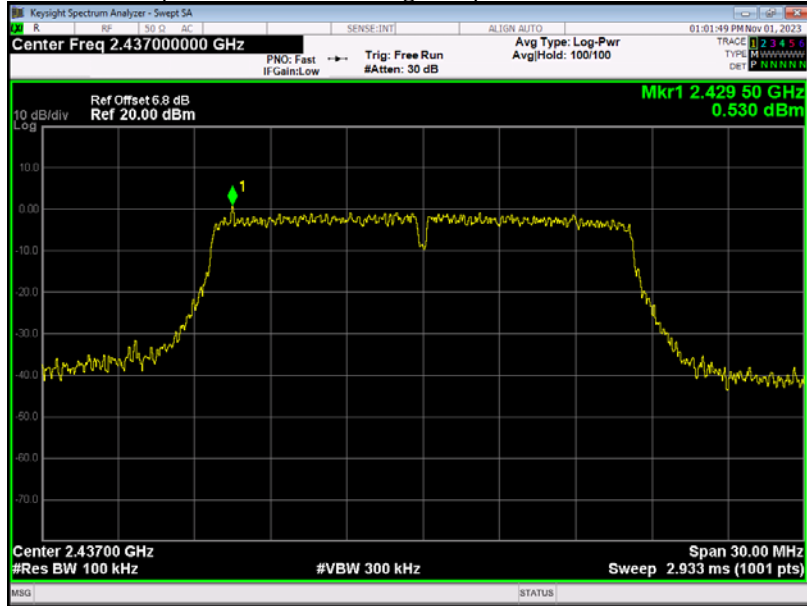
Tx. Spurious NVNT 802.11g 6Mbps 2412MHz Ant1 Ref



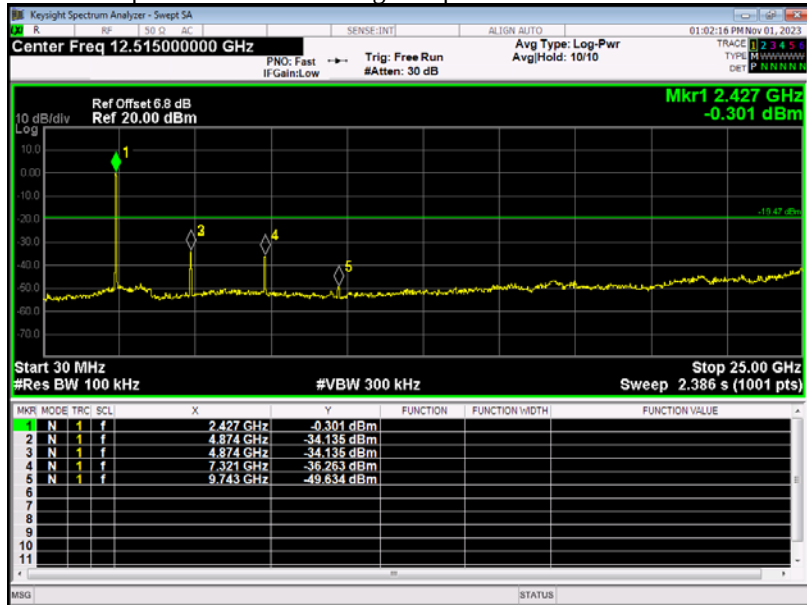
Tx. Spurious NVNT 802.11g 6Mbps 2412MHz Ant1 Emission



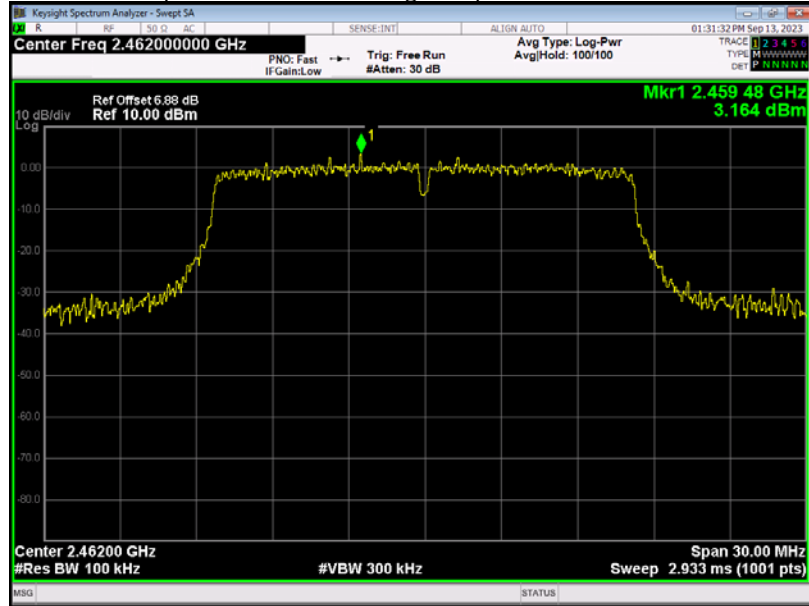
Tx. Spurious NVNT 802.11g 6Mbps 2437MHz Ant1 Ref



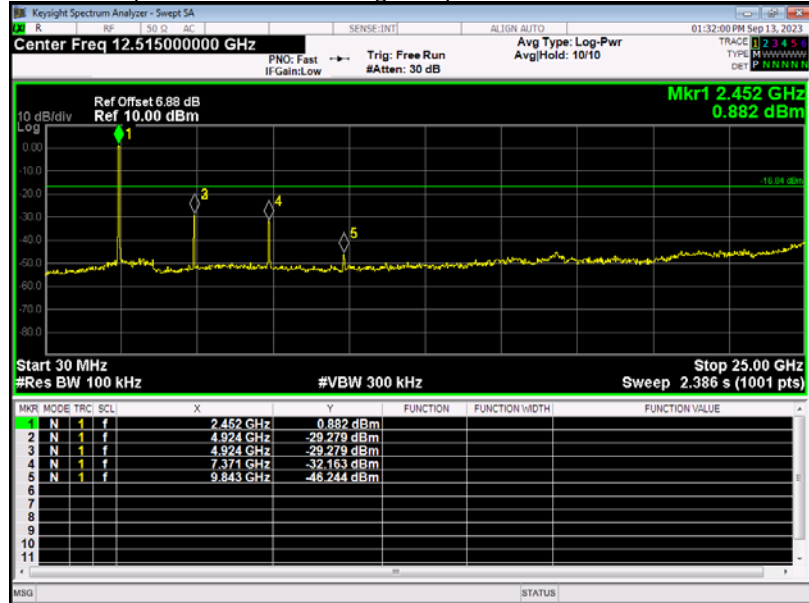
Tx. Spurious NVNT 802.11g 6Mbps 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11g 6Mbps 2462MHz Ant1 Ref

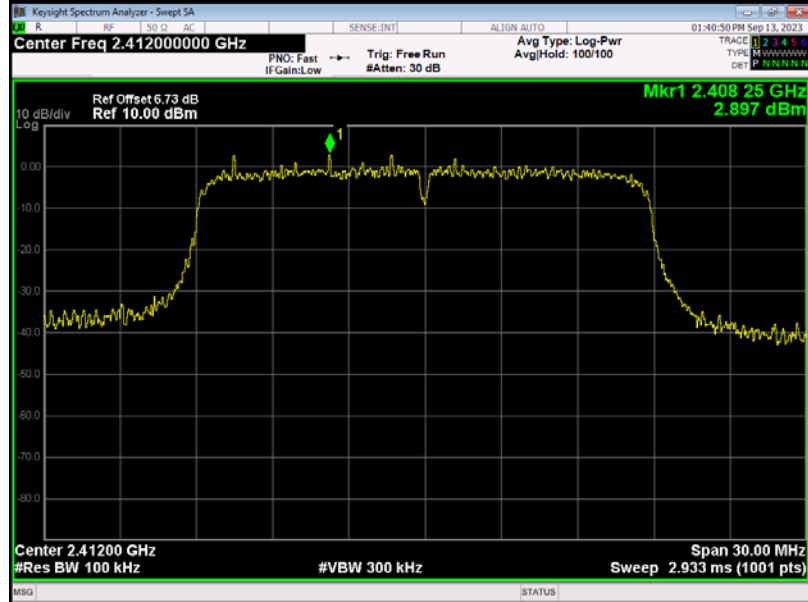


Tx. Spurious NVNT 802.11g 6Mbps 2462MHz Ant1 Emission

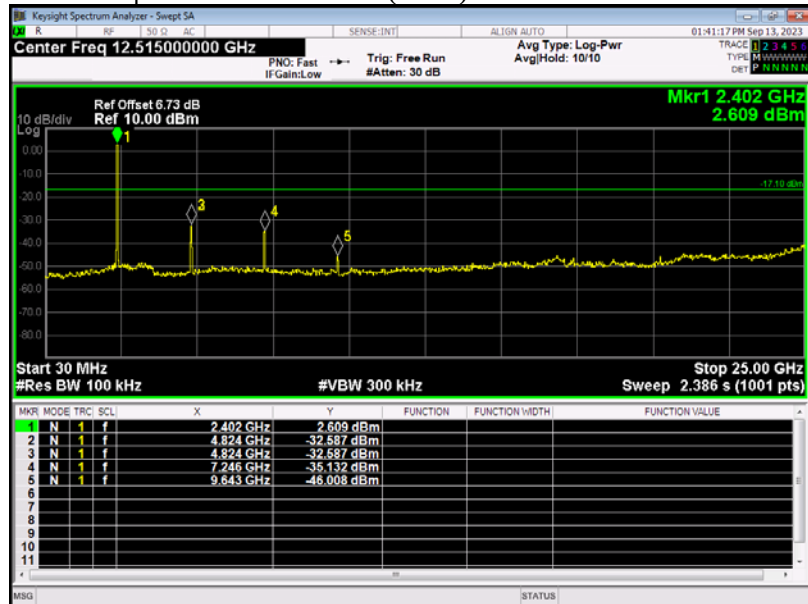


| Condition | Mode          | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|---------------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 802.11n(HT20) | 2412            | Ant 1   | -35.477         | -20         | Pass    |
| NVNT      | 802.11n(HT20) | 2437            | Ant 1   | -34.709         | -20         | Pass    |
| NVNT      | 802.11n(HT20) | 2462            | Ant 1   | -33.991         | -20         | Pass    |

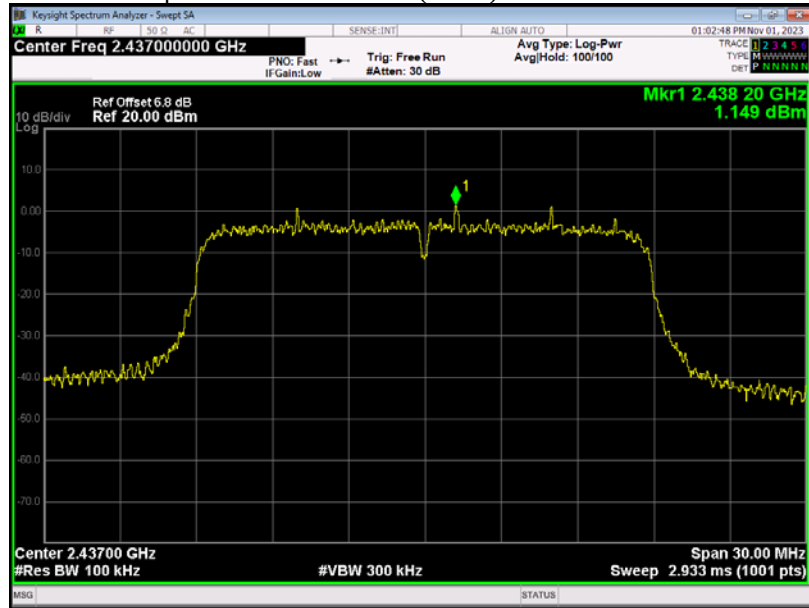
Tx. Spurious NVNT 802.11n(HT20) 2412MHz Ant1 Ref



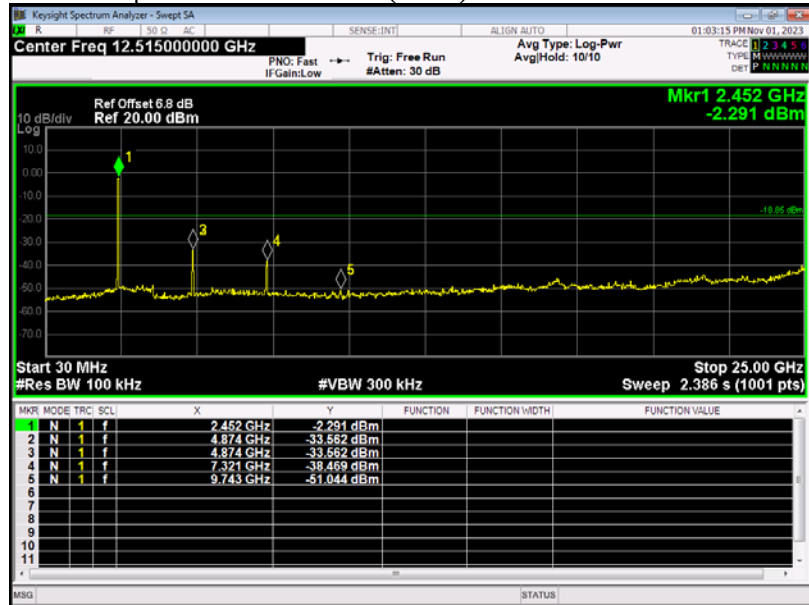
Tx. Spurious NVNT 802.11n(HT20) 2412MHz Ant1 Emission



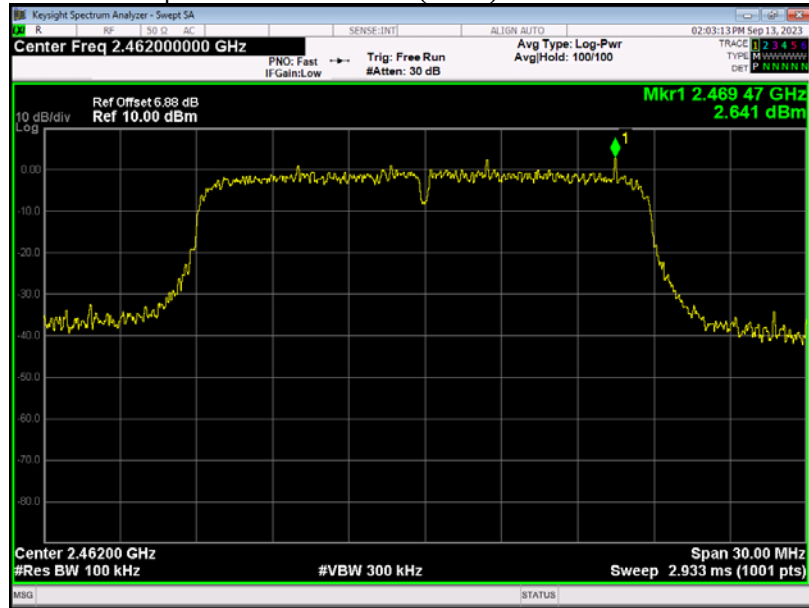
Tx. Spurious NVNT 802.11n(HT20) 2437MHz Ant1 Ref



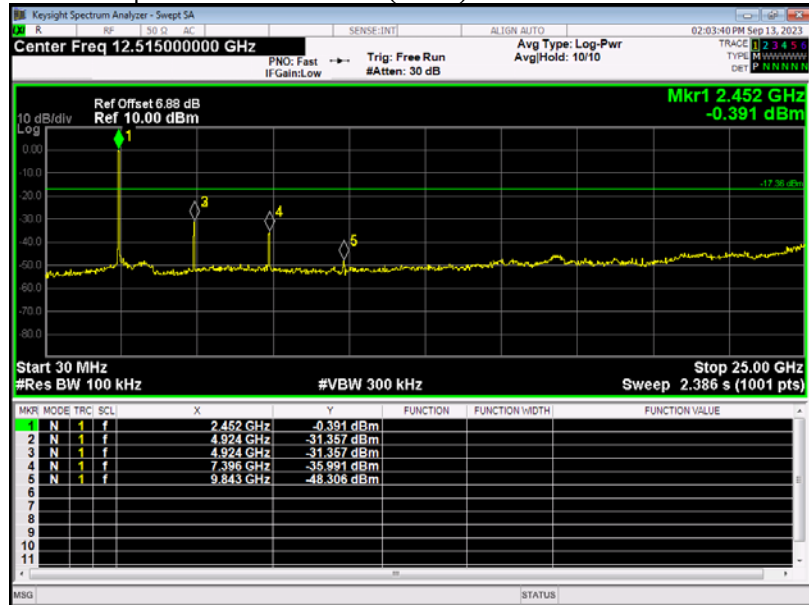
Tx. Spurious NVNT 802.11n(HT20) 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11n(HT20) 2462MHz Ant1 Ref



Tx. Spurious NVNT 802.11n(HT20) 2462MHz Ant1 Emission

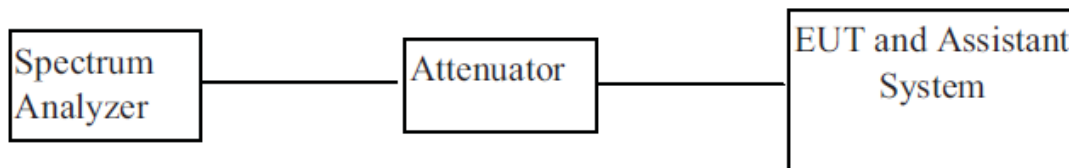


## 9. Conducted Output Power Spectral Density

### 9.1. Test equipment

| Item | Equipment           | Manufacturer | Model No. | Serial No.     | Last Cal.  | Cal. Interval |
|------|---------------------|--------------|-----------|----------------|------------|---------------|
| 1    | MXA Signal Analyzer | KEYSIGHT     | N9020A    | MY5451047<br>6 | 2023/05/19 | 1 Year        |

### 9.2. Block diagram of test setup



### 9.3. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

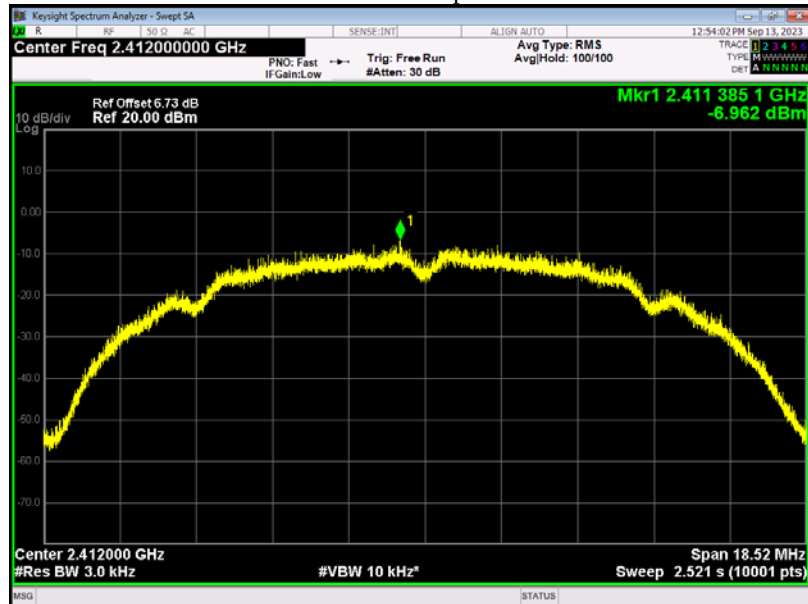
### 9.4. Test Procedure

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

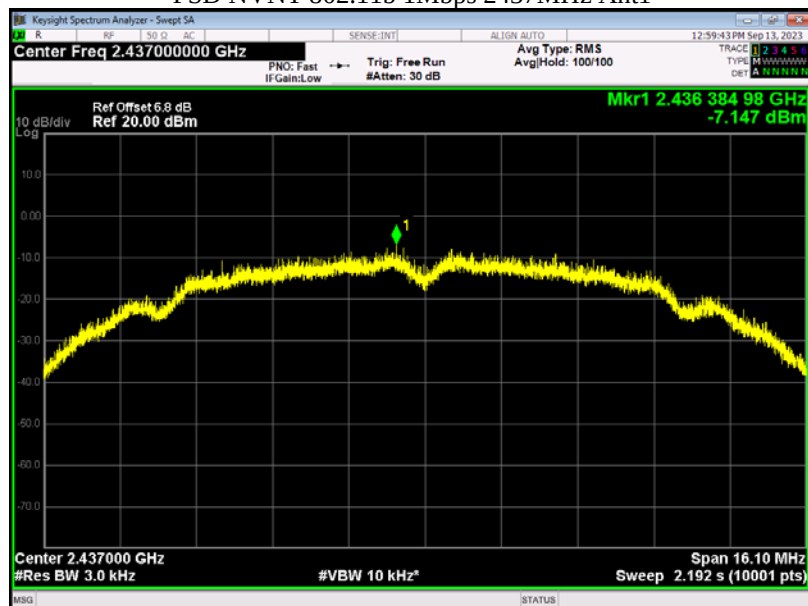
## 9.5. Test result

| Condition | Mode          | Frequency (MHz) | Antenna | Max PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|---------------|-----------------|---------|--------------------|------------------|---------|
| NVNT      | 802.11b 1Mbps | 2412            | Ant 1   | -6.962             | 8                | Pass    |
| NVNT      | 802.11b 1Mbps | 2437            | Ant 1   | -7.147             | 8                | Pass    |
| NVNT      | 802.11b 1Mbps | 2462            | Ant 1   | -7.288             | 8                | Pass    |

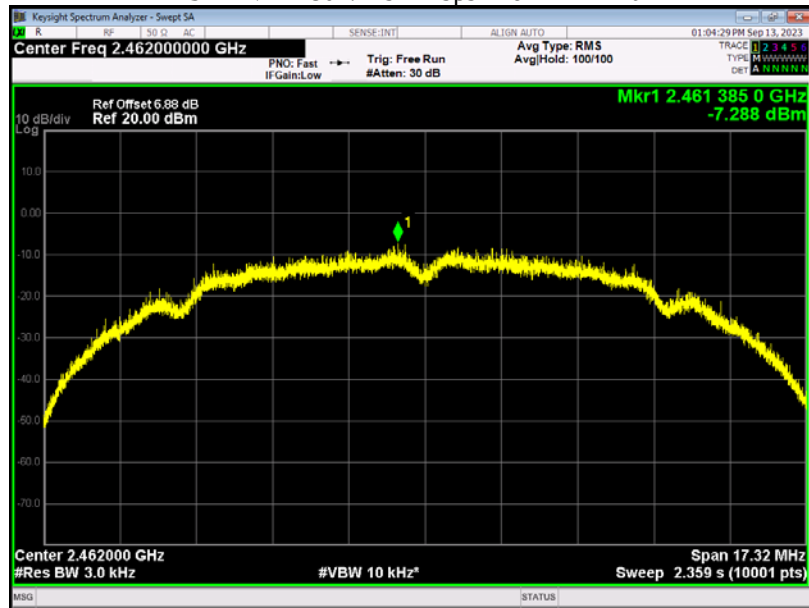
PSD NVNT 802.11b 1Mbps 2412MHz Ant1



PSD NVNT 802.11b 1Mbps 2437MHz Ant1

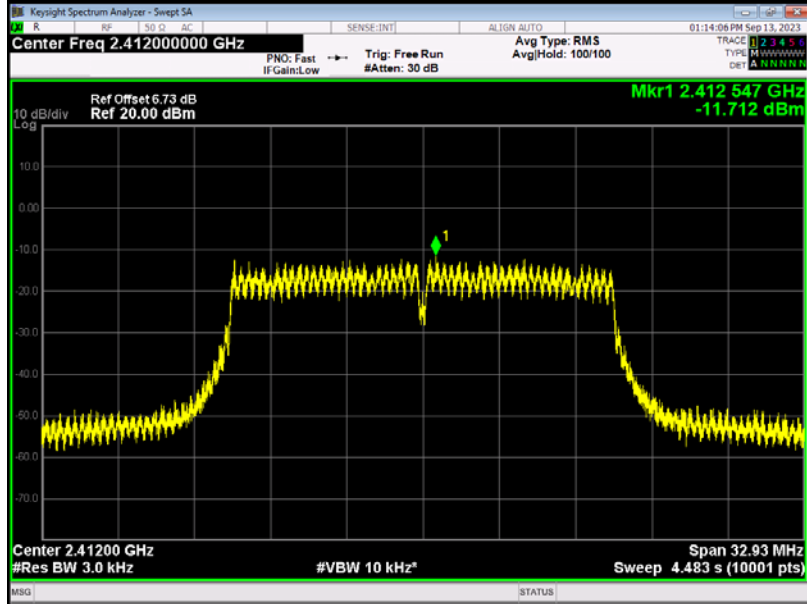


PSD NVNT 802.11b 1Mbps 2462MHz Ant1

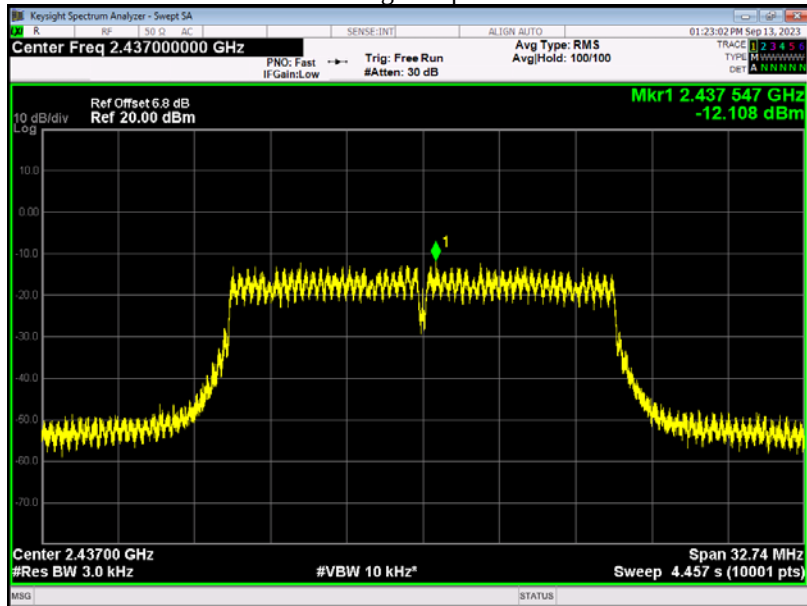


| Condition | Mode          | Frequency (MHz) | Antenna | Max PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|---------------|-----------------|---------|--------------------|------------------|---------|
| NVNT      | 802.11g 6Mbps | 2412            | Ant 1   | -11.712            | 8                | Pass    |
| NVNT      | 802.11g 6Mbps | 2437            | Ant 1   | -12.108            | 8                | Pass    |
| NVNT      | 802.11g 6Mbps | 2462            | Ant 1   | -12.36             | 8                | Pass    |

PSD NVNT 802.11g 6Mbps 2412MHz Ant1



PSD NVNT 802.11g 6Mbps 2437MHz Ant1



PSD NVNT 802.11g 6Mbps 2462MHz Ant1

