

# FCC TEST REPORT

## FCC ID:2A8HE-DOORBELL

**Report Number**..... : ZKT-220728L5276-03

**Date of Test**..... : Aug. 03, 2022 to Aug. 23, 2022

**Date of issue**..... : Aug. 23, 2022

**Total number of pages** ..... : 50

**Test Result**..... : PASS

**Testing Laboratory** ..... : **Shenzhen ZKT Technology Co., Ltd.**

**Address** ..... : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

**Applicant's name** ..... : **Shenzhen Joyfa Electronics Co.,Ltd**

**Address** ..... : 501 Hengtai cloud Valley Creative Park, No.77-1 Shangwei New Village, Songyuan xia Community, Guanhu Street, Longhua District, Shenzhen City

**Manufacturer's name** ..... : **Shenzhen Joyfa Electronics Co.,Ltd**

**Address** ..... : 501 Hengtai cloud Valley Creative Park, No.77-1 Shangwei New Village, Songyuan xia Community, Guanhu Street, Longhua District, Shenzhen City

**Test specification:**

**Standard** ..... : FCC CFR Title 47 Part 15 Subpart C Section 15.247  
ANSI C63.10:2013  
KDB558074 D0115.247 Meas Guidance v 05r02

**Test procedure**..... : /

**Non-standard test method** ..... : N/A

**Test Report Form No.** ..... : TRF-EL-110\_V0

**Test Report Form(s) Originator** .... : ZKT Testing

**Master TRF** ..... : Dated: 2020-01-06

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

This report shall not be reproduced except in full, without the written approval of ZKT, this document may be altered or revised by ZKT, personal only, and shall be noted in the revision of the document.

**Product name**..... : **JY-DoorBell**

**Trademark** ..... : /

**Model/Type reference** ..... : JY-DoorBell

**Ratings** ..... : DC 4.5V from battery

**Testing procedure and testing location:**

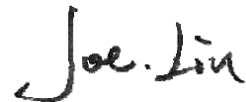
**Testing Laboratory .....** **Shenzhen ZKT Technology Co., Ltd.**

**Address .....** 1/F, No. 101, Building B, No. 6, Tangwei Community  
Industrial Avenue, Fuhai Street, Bao'an District,  
Shenzhen, China

**Tested by (name + signature) .....** Alen He



**Reviewer (name + signature) .....** Joe Liu



**Approved (name + signature) .....** Lake Xie



## Table of Contents

|                                                             | Page      |
|-------------------------------------------------------------|-----------|
| <b>1. VERSION</b>                                           | <b>5</b>  |
| <b>2. SUMMARY OF TEST RESULTS</b>                           | <b>6</b>  |
| 2.1 TEST FACILITY                                           | 6         |
| 2.2 MEASUREMENT UNCERTAINTY                                 | 6         |
| <b>3. GENERAL INFORMATION</b>                               | <b>7</b>  |
| 3.1 GENERAL DESCRIPTION OF EUT                              | 7         |
| 3.2 DESCRIPTION OF TEST MODES                               | 8         |
| 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED | 9         |
| 3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)            | 9         |
| <b>4. EMC EMISSION TEST</b>                                 | <b>11</b> |
| 4.1 CONDUCTED EMISSION MEASUREMENT                          | 11        |
| 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS                  | 11        |
| 4.1.2 TEST PROCEDURE                                        | 11        |
| 4.1.3 DEVIATION FROM TEST STANDARD                          | 11        |
| 4.1.4 TEST SETUP                                            | 12        |
| 4.1.5 EUT OPERATING CONDITIONS                              | 12        |
| 4.1.6 TEST RESULT                                           | 12        |
| 4.2 RADIATED EMISSION MEASUREMENT                           | 13        |
| 4.2.1 RADIATED EMISSION LIMITS                              | 13        |
| 4.2.2 TEST PROCEDURE                                        | 13        |
| 4.2.3 DEVIATION FROM TEST STANDARD                          | 14        |
| 4.2.4 TEST SETUP                                            | 14        |
| 4.2.5 EUT OPERATING CONDITIONS                              | 15        |
| 4.2.6 TEST RESULTS                                          | 15        |
| <b>5.RADIATED BAND EMISSIONMEASUREMENT</b>                  | <b>22</b> |
| 5.1 TEST REQUIREMENT:                                       | 22        |
| 5.2 TEST PROCEDURE                                          | 22        |
| 5.3 DEVIATION FROM TEST STANDARD                            | 22        |
| 5.4 TEST SETUP                                              | 23        |
| 5.5 EUT OPERATING CONDITIONS                                | 23        |
| 5.6 TEST RESULT                                             | 24        |
| <b>6.POWER SPECTRAL DENSITY TEST</b>                        | <b>26</b> |
| 6.1 APPLIED PROCEDURES / LIMIT                              | 26        |
| 6.2 TEST PROCEDURE                                          | 26        |
| 6.3 DEVIATION FROM STANDARD                                 | 26        |
| 6.4 TEST SETUP                                              | 26        |
| 6.5 EUT OPERATION CONDITIONS                                | 26        |
| 6.6 TEST RESULT                                             | 27        |

|                                                     |           |
|-----------------------------------------------------|-----------|
| <b>7. CHANNEL BANDWIDTH</b>                         | <b>30</b> |
| 7.1 APPLIED PROCEDURES / LIMIT                      | 30        |
| 7.2 TEST PROCEDURE                                  | 30        |
| 7.3 DEVIATION FROM STANDARD                         | 30        |
| 7.4 TEST SETUP                                      | 30        |
| 7.5 EUT OPERATION CONDITIONS                        | 30        |
| 7.6 TEST RESULT                                     | 31        |
| <b>8. OUTPUT POWER TEST</b>                         | <b>34</b> |
| 8.1 APPLIED PROCEDURES/LIMIT                        | 34        |
| 8.2 TEST PROCEDURE                                  | 34        |
| 8.3 DEVIATION FROM STANDARD                         | 34        |
| 8.4 TEST SETUP                                      | 34        |
| 8.5 EUT OPERATION CONDITIONS                        | 34        |
| 8.6 TEST RESULT                                     | 35        |
| <b>9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION</b> | <b>36</b> |
| 9.1 APPLICABLE STANDARD                             | 36        |
| 9.2 TEST PROCEDURE                                  | 36        |
| 9.3 DEVIATION FROM STANDARD                         | 36        |
| 9.4 TEST SETUP                                      | 36        |
| 9.5 EUT OPERATION CONDITIONS                        | 36        |
| 9.6 TEST RESULTS                                    | 36        |
| <b>10. ANTENNA REQUIREMENT</b>                      | <b>49</b> |
| <b>11. TEST SETUP PHOTO</b>                         | <b>50</b> |
| <b>12. EUT CONSTRUCTIONAL DETAILS</b>               | <b>50</b> |

**1. VERSION**

| Report No.         | Version | Description             | Approved      |
|--------------------|---------|-------------------------|---------------|
| ZKT-220728L5276-03 | Rev.01  | Initial issue of report | Aug. 23, 2022 |
|                    |         |                         |               |
|                    |         |                         |               |

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C |                                  |        |        |
|---------------------------------|----------------------------------|--------|--------|
| Standard Section                | Test Item                        | Result | Remark |
| FCC part 15.203/15.247 (c)      | Antenna requirement              | PASS   |        |
| FCC part 15.207                 | AC Power Line Conducted Emission | N/A    |        |
| FCC part 15.247 (b)(3)          | Conducted Peak Output Power      | PASS   |        |
| FCC part 15.247 (a)(2)          | Channel Bandwidth& 99% OCB       | PASS   |        |
| FCC part 15.247 (e)             | Power Spectral Density           | PASS   |        |
| FCC part 15.247(d)              | Band Edge                        | PASS   |        |
| FCC part 15.205/15.209          | Spurious Emission                | PASS   |        |

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

### 2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225

Designation Number: CN1299

IC Registered No.: 27033

### 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                         | Uncertainty               |
|-----|------------------------------|---------------------------|
| 1   | Conducted Emission Test      | $\pm 1.38\text{dB}$       |
| 2   | RF power conducted           | $\pm 0.16\text{dB}$       |
| 3   | Spurious emissions conducted | $\pm 0.21\text{dB}$       |
| 4   | All emissions radiated(<1G)  | $\pm 4.68\text{dB}$       |
| 5   | All emissions radiated(>1G)  | $\pm 4.89\text{dB}$       |
| 6   | Temperature                  | $\pm 0.5^{\circ}\text{C}$ |
| 7   | Humidity                     | $\pm 2\%$                 |

**3. GENERAL INFORMATION****3.1 GENERAL DESCRIPTION OF EUT**

|                        |                                                                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:          | JY-DoorBell                                                                                                                               |
| Model No.:             | JY-DoorBell                                                                                                                               |
| Serial No.:            | /                                                                                                                                         |
| Hardware Version:      | V1.7                                                                                                                                      |
| Software Version:      | V1.0                                                                                                                                      |
| Sample(s) Status:      | Engineer sample                                                                                                                           |
| Channel numbers:       | 802.11b/802.11g /802.11n(HT20):11<br>802.11n(HT40):7                                                                                      |
| Channel separation:    | 5MHz                                                                                                                                      |
| Modulation technology: | 802.11b: Direct Sequence Spread Spectrum(DSSS)<br>802.11g/802.11n(H20)/802.11n(HT40):<br>Orthogonal Frequency Division Multiplexing(OFDM) |
| Antenna Type:          | FPC antenna                                                                                                                               |
| Antenna gain:          | 1.5dBi                                                                                                                                    |
| Power supply:          | DC 4.5V from battery                                                                                                                      |

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

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Test channel    | Frequency (MHz)                |
|-----------------|--------------------------------|
|                 | 802.11b/802.11g /802.11n(HT20) |
| Lowest channel  | 2412MHz                        |
| Middle channel  | 2437MHz                        |
| Highest channel | 2462MHz                        |

| Test channel   | Frequency (MHz) |
|----------------|-----------------|
|                | 802.11n(HT40)   |
| Lowest channel | 2422MHz         |
| Middle channel | 2437MHz         |

|                 |         |
|-----------------|---------|
| Highest channel | 2452MHz |
|-----------------|---------|

### 3.2 DESCRIPTION OF TEST MODES

|                                                                                                                                                                                                                                                                                                                                                          |                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Transmitting mode                                                                                                                                                                                                                                                                                                                                        | Keep the EUT in continuously transmitting mode |
| <p>Remark: During the test, the duty cycle &gt;98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</p>  |                                                |

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

| Mode      | 802.11b | 802.11g | 802.11n<br>(HT20) | 802.11n<br>(HT40) |
|-----------|---------|---------|-------------------|-------------------|
| Data rate | 11Mbps  | 54Mbps  | MCS7              | MCS7              |

|                   |           |
|-------------------|-----------|
| Test Software     | SecureCRT |
| Power level setup | <30dBm    |

### 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

/

Radiated Emission

EUT

Conducted Spurious

EUT

### 3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|-----------|-----------|----------------|------------|------|
| 1    | /         | /         | /              | /          | /    |
| 2    |           |           |                |            |      |
|      |           |           |                |            |      |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |

- Note: 1. The support equipment was authorized by Declaration of Confirmation.
2. For detachable type I/O cable should be specified the length in cm in 『Length』 column.

### 3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

#### Radiation Test equipment

| Item | Equipment                           | Manufacturer    | Type No.           | Serial No. | Last calibration | Calibrated until |
|------|-------------------------------------|-----------------|--------------------|------------|------------------|------------------|
| 1    | Spectrum Analyzer<br>(9kHz-26.5GHz) | KEYSIGHT        | 9020A              | MY45109572 | Sep. 21, 2021    | Sep. 20, 2022    |
| 2    | Spectrum Analyzer<br>(1GHz-40GHz)   | Agilent         | E4446A             | 100363     | Sep. 21, 2021    | Sep. 20, 2022    |
| 3    | Test Receiver<br>(9kHz-7GHz)        | R&S             | ESC17              | 101169     | Sep. 21, 2021    | Sep. 20, 2022    |
| 4    | Bilog Antenna<br>(30MHz-1400MHz)    | Schwarzbeck     | VULB9168           | 00877      | Sep. 21, 2021    | Sep. 20, 2022    |
| 5    | Horn Antenna<br>(1GHz-18GHz)        | SCHWARZBEC<br>K | BBHA9120D          | 1541       | Sep. 21, 2021    | Sep. 20, 2022    |
| 6    | Horn Antenna<br>(18GHz-40GHz)       | A.H. System     | SAS-574            | 588        | Sep. 21, 2021    | Sep. 20, 2022    |
| 7    | Amplifier<br>(30-1000MHz)           | EM Electronics  | EM330<br>Amplifier | N/A        | Sep. 21, 2021    | Sep. 20, 2022    |
| 8    | Amplifier<br>(1GHz-40GHz)           | QUANJUDA        | DLE-161            | 097        | Sep. 21, 2021    | Sep. 20, 2022    |
| 9    | Loop Antenna<br>(9KHz-30MHz)        | SCHWARZBEC<br>K | FMZB1519B          | 014        | Sep. 21, 2021    | Sep. 20, 2022    |
| 10   | RF cables1<br>(9kHz-30MHz)          | N/A             | 9kHz-30MHz         | N/A        | Sep. 21, 2021    | Sep. 20, 2022    |
| 11   | RF cables2<br>(30MHz-1GHz)          | N/A             | 30MHz-1GHz         | N/A        | Sep. 21, 2021    | Sep. 20, 2022    |
| 12   | RF cables3<br>(1GHz-40GHz)          | N/A             | 1GHz-40GHz         | N/A        | Sep. 21, 2021    | Sep. 20, 2022    |
| 13   | CMW500 Test                         | R&S             | CMW500             | 106504     | Sep. 21, 2021    | Sep. 20, 2022    |
| 14   | ESG Signal<br>Generator             | Agilent         | E4421B             | GB40051203 | Sep. 21, 2021    | Sep. 20, 2022    |
| 15   | Signal Generator                    | Agilent         | N5182A             | MY47420215 | Sep. 21, 2021    | Sep. 20, 2022    |
| 16   | D.C. Power Supply                   | LongWei         | TPR-6405D          | \          | \                | \                |
| 17   | Software                            | Frad            | EZ-EMC             | FA-03A2 RE | \                | \                |

#### Conduction Test equipment

| Item | Kind of<br>Equipment | Manufacturer | Type No. | Serial No.      | Last calibration | Calibrated until |
|------|----------------------|--------------|----------|-----------------|------------------|------------------|
| 1    | LISN                 | R&S          | ENV216   | 101471          | Sep. 21, 2021    | Sep. 20, 2022    |
| 2    | LISN                 | CYBERTEK     | EM5040A  | E185040014<br>9 | Sep. 21, 2021    | Sep. 20, 2022    |
| 3    | Test Cable           | N/A          | C01      | N/A             | Sep. 21, 2021    | Sep. 20, 2022    |
| 4    | Test Cable           | N/A          | C02      | N/A             | Sep. 21, 2021    | Sep. 20, 2022    |
| 5    | EMI Test<br>Receiver | R&S          | ESRP3    | 101946          | Sep. 21, 2021    | Sep. 20, 2022    |
| 6    | Absorbing Clamp      | DZ           | ZN23201  | N/A             | Sep. 21, 2021    | Sep. 20, 2022    |

#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

|                       |                                      |
|-----------------------|--------------------------------------|
| Test Requirement:     | FCC Part15 C Section 15.207          |
| Test Method:          | ANSI C63.10:2013                     |
| Test Frequency Range: | 150KHz to 30MHz                      |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto |

##### 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS

| FREQUENCY (MHz) | Limit (dBuV) |           | Standard |
|-----------------|--------------|-----------|----------|
|                 | Quasi-peak   | Average   |          |
| 0.15 -0.5       | 66 - 56 *    | 56 - 46 * | FCC      |
| 0.50 -5.0       | 56.00        | 46.00     | FCC      |
| 5.0 -30.0       | 60.00        | 50.00     | FCC      |

Note:

(1) \*Decreases with the logarithm of the frequency.

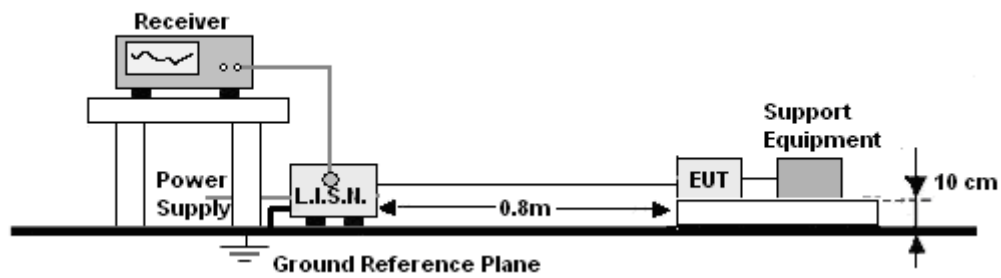
##### 4.1.2 TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.e.
8. For the actual test configuration, please refer to the related Item –EUT Test Photos.

##### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



#### 4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

#### 4.1.6 TEST RESULT

N/A (not applicable in this device, which powered by DC4.5V battery)

## 4.2 RADIATED EMISSION MEASUREMENT

|                       |                             |            |        |        |            |
|-----------------------|-----------------------------|------------|--------|--------|------------|
| Test Requirement:     | FCC Part15 C Section 15.209 |            |        |        |            |
| Test Method:          | ANSI C63.10:2013            |            |        |        |            |
| Test Frequency Range: | 9kHz to 25GHz               |            |        |        |            |
| Test site:            | Measurement Distance: 3m    |            |        |        |            |
| Receiver setup:       | Frequency                   | Detector   | RBW    | VBW    | Value      |
|                       | 9KHz-150KHz                 | Quasi-peak | 200Hz  | 600Hz  | Quasi-peak |
|                       | 150KHz-30MHz                | Quasi-peak | 9KHz   | 30KHz  | Quasi-peak |
|                       | 30MHz-1GHz                  | Quasi-peak | 120KHz | 300KHz | Quasi-peak |
|                       | Above 1GHz                  | Peak       | 1MHz   | 3MHz   | Peak       |
|                       |                             | Peak       | 1MHz   | 10Hz   | Average    |

## 4.2.1 RADIATED EMISSION LIMITS

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

## LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) |         |
|-----------------|------------------------|---------|
|                 | PEAK                   | AVERAGE |
| Above 1000      | 74                     | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

## 4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.

- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from table 0.8 metre to 1.5 metre (Above 18GHz the distance is 1 meter and table is 1.5 metre).
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

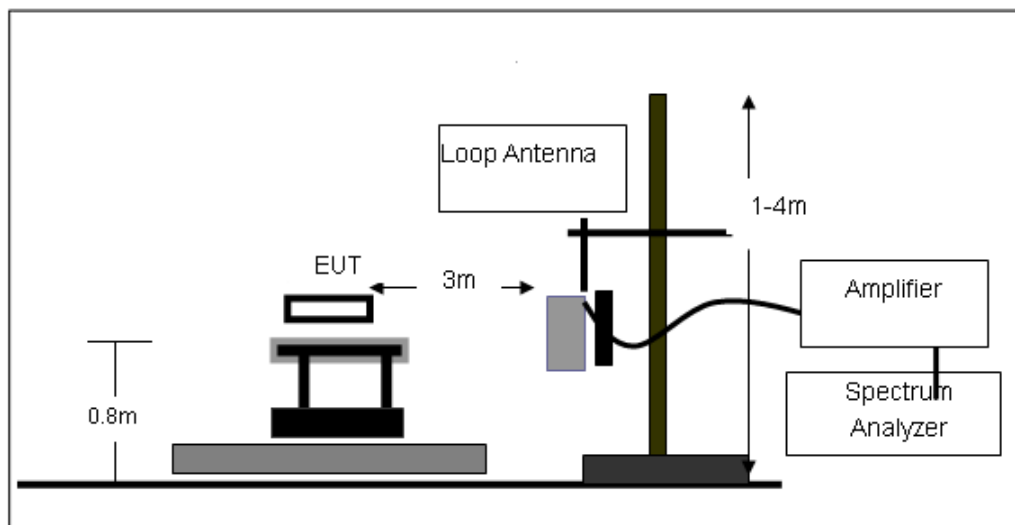
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

#### 4.2.3 DEVIATION FROM TEST STANDARD

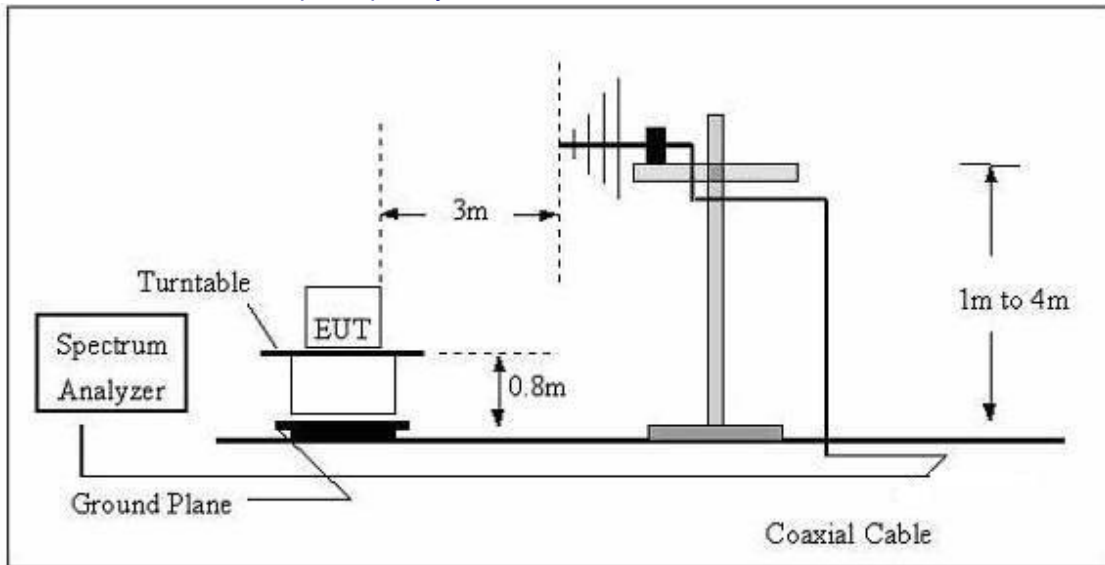
No deviation

#### 4.2.4 TEST SETUP

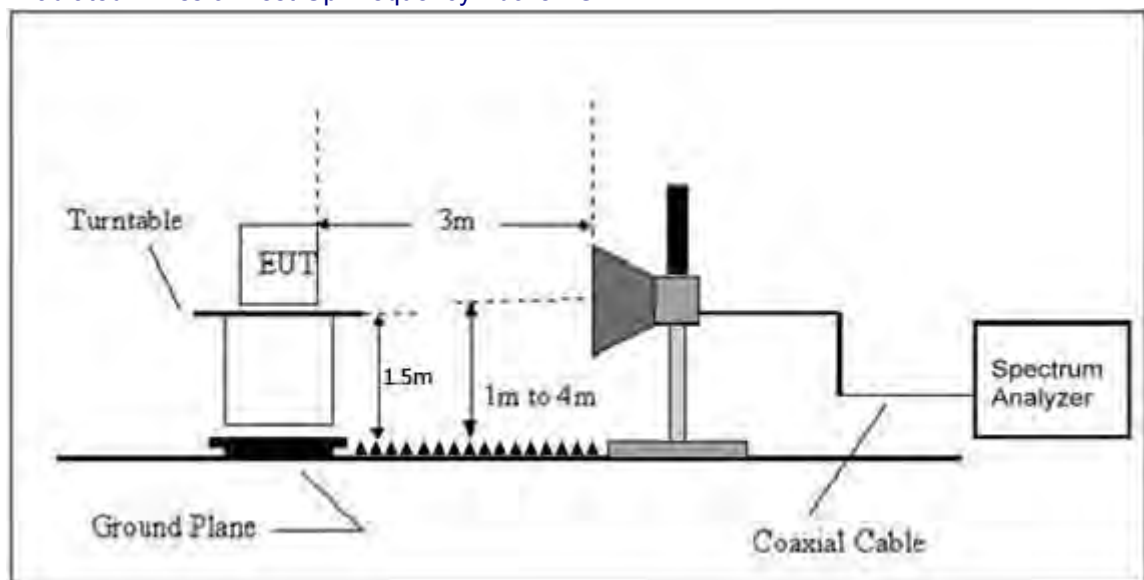
(A) Radiated Emission Test-Up Frequency Below 30MHz



## (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

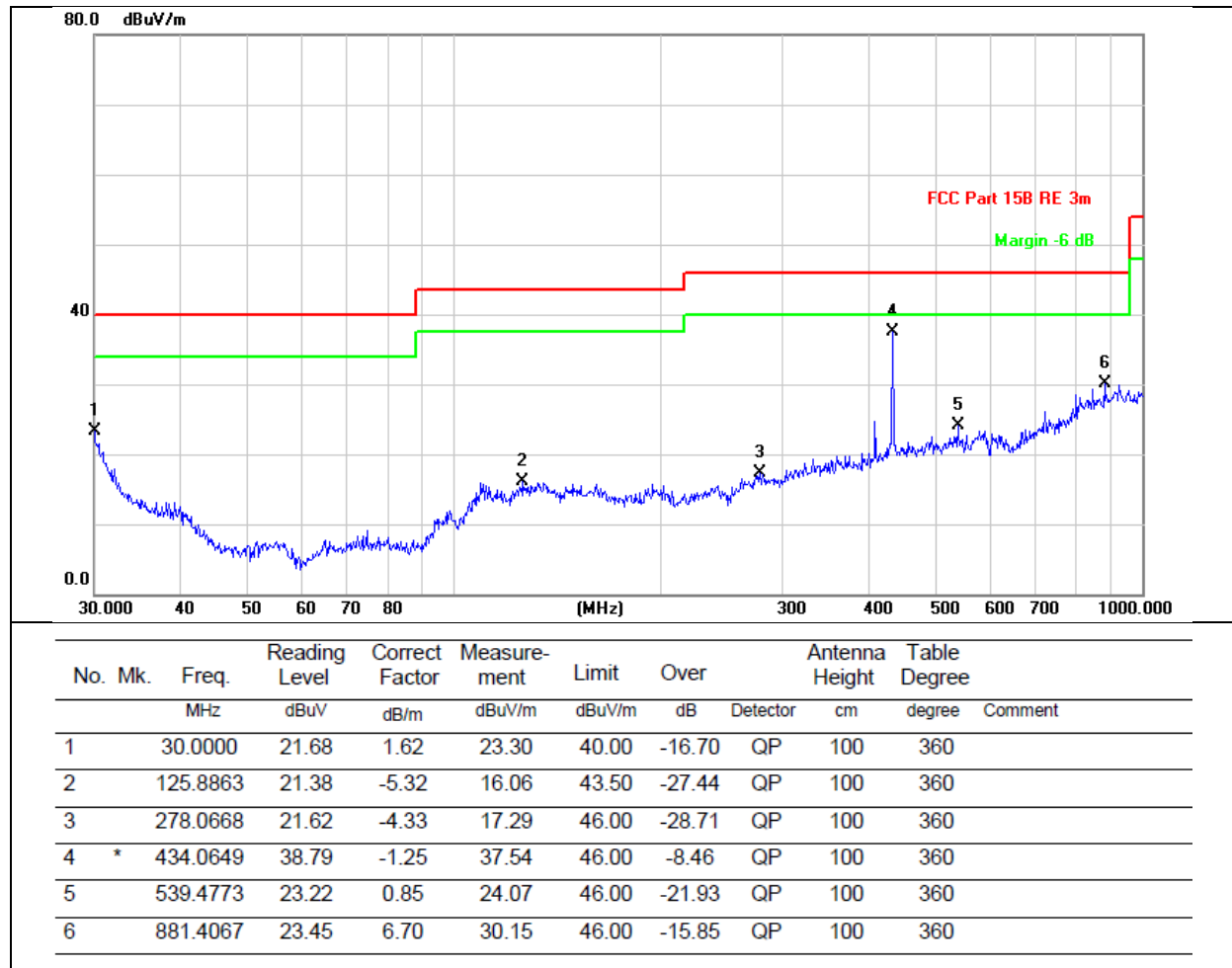
## 4.2.6 TEST RESULTS

Between 9KHz – 30MHz

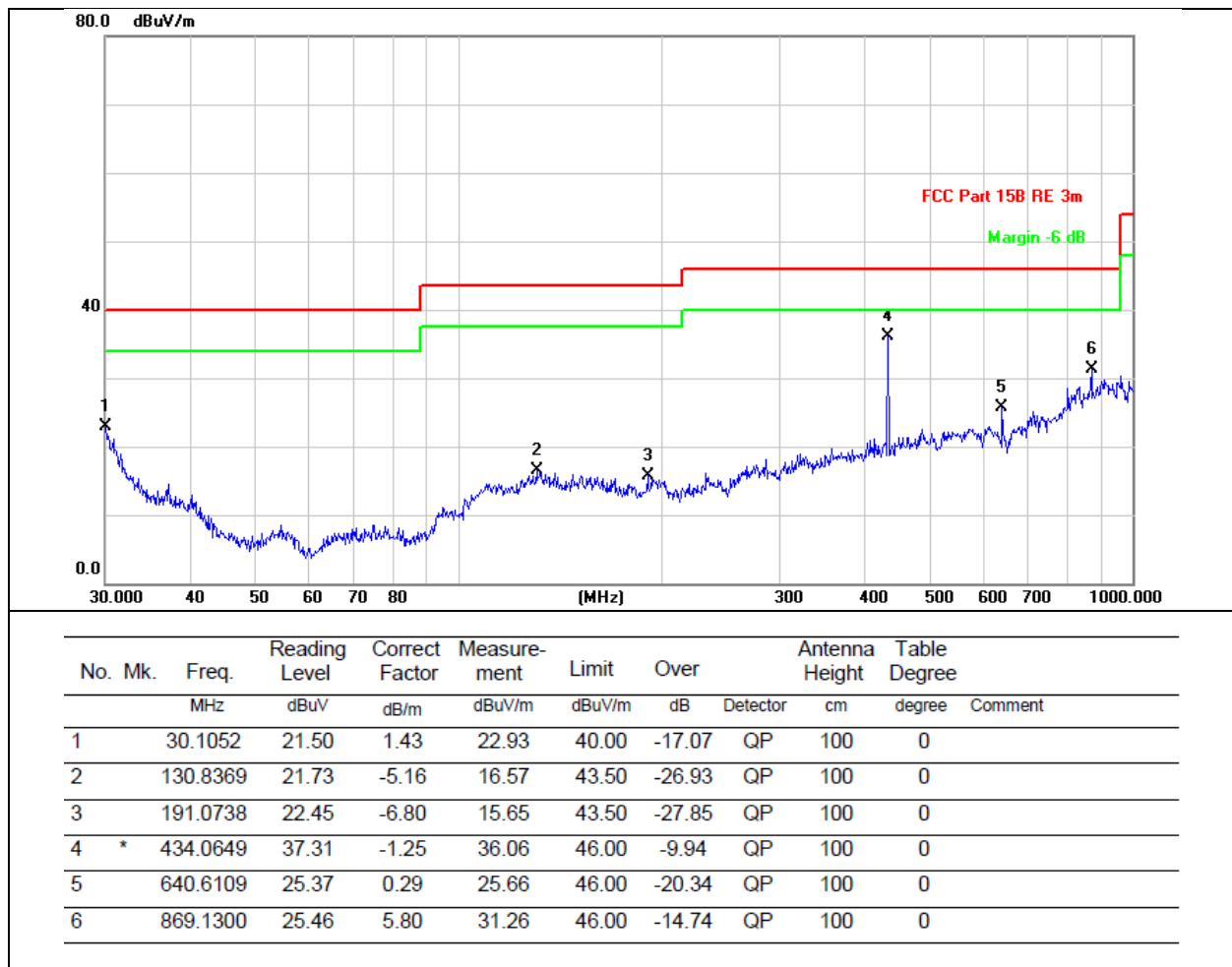
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Between 30MHz – 1GHz

|               |         |                    |            |
|---------------|---------|--------------------|------------|
| Temperature:  | 26°C    | Relative Humidity: | 54%        |
| Pressure:     | 101 kPa | Polarization:      | Horizontal |
| Test Voltage: | DC 4.5V |                    |            |



|               |         |                    |          |
|---------------|---------|--------------------|----------|
| Temperature:  | 26°C    | Relative Humidity: | 54%      |
| Pressure:     | 101kPa  | Polarization:      | Vertical |
| Test Voltage: | DC 4.5V |                    |          |



## Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The test data shows only the worst case- MIMO (802.11N-HT20 middle channel)

1GHz~25GHz

802.11b

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2412MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4824      | 48.23            | 30.55             | 5.77          | 24.66             | 48.11             | 74.00        | -25.89 | PK                   |
| V                   | 4824      | 35.78            | 30.55             | 5.77          | 24.66             | 35.66             | 54.00        | -18.34 | AV                   |
| V                   | 7236      | 47.43            | 30.33             | 6.32          | 24.55             | 47.97             | 74.00        | -26.03 | PK                   |
| V                   | 7236      | 32.99            | 30.33             | 6.32          | 24.55             | 33.53             | 54.00        | -20.47 | AV                   |
| V                   | 9648      | 46.56            | 30.85             | 7.45          | 24.69             | 47.85             | 74.00        | -26.15 | PK                   |
| V                   | 9648      | 34.41            | 30.85             | 7.45          | 24.69             | 35.70             | 54.00        | -18.30 | AV                   |
| H                   | 4824      | 46.64            | 30.55             | 5.77          | 24.66             | 46.52             | 74.00        | -27.48 | PK                   |
| H                   | 4824      | 37.35            | 30.55             | 5.77          | 24.66             | 37.23             | 54.00        | -16.77 | AV                   |
| H                   | 7236      | 47.50            | 30.33             | 6.32          | 24.55             | 48.04             | 74.00        | -25.96 | PK                   |
| H                   | 7236      | 32.83            | 30.33             | 6.32          | 24.55             | 33.37             | 54.00        | -20.63 | AV                   |
| H                   | 9648      | 45.14            | 30.85             | 7.45          | 24.69             | 46.43             | 74.00        | -27.57 | PK                   |
| H                   | 9648      | 33.82            | 30.85             | 7.45          | 24.69             | 35.11             | 54.00        | -18.89 | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874      | 46.83            | 30.55             | 5.77          | 24.66             | 46.71             | 74.00        | -27.29 | PK                   |
| V                      | 4874      | 36.77            | 30.55             | 5.77          | 24.66             | 36.65             | 54.00        | -17.35 | AV                   |
| V                      | 7311      | 47.60            | 30.33             | 6.32          | 24.55             | 48.14             | 74.00        | -25.86 | PK                   |
| V                      | 7311      | 35.34            | 30.33             | 6.32          | 24.55             | 35.88             | 54.00        | -18.12 | AV                   |
| V                      | 9748      | 46.37            | 30.85             | 7.45          | 24.69             | 47.66             | 74.00        | -26.34 | PK                   |
| V                      | 9748      | 34.86            | 30.85             | 7.45          | 24.69             | 36.15             | 54.00        | -17.85 | AV                   |
| H                      | 4874      | 47.04            | 30.55             | 5.77          | 24.66             | 46.92             | 74.00        | -27.08 | PK                   |
| H                      | 4874      | 35.95            | 30.55             | 5.77          | 24.66             | 35.83             | 54.00        | -18.17 | AV                   |
| H                      | 7311      | 47.29            | 30.33             | 6.32          | 24.55             | 47.83             | 74.00        | -26.17 | PK                   |
| H                      | 7311      | 34.39            | 30.33             | 6.32          | 24.55             | 34.93             | 54.00        | -19.07 | AV                   |
| H                      | 9748      | 47.30            | 30.85             | 7.45          | 24.69             | 48.59             | 74.00        | -25.41 | PK                   |
| H                      | 9748      | 34.74            | 30.85             | 7.45          | 24.69             | 36.03             | 54.00        | -17.97 | AV                   |

| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2462MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4924      | 46.34            | 30.55             | 5.77          | 24.66             | 46.22             | 74.00        | -27.78 | PK                   |
| V                    | 4924      | 35.63            | 30.55             | 5.77          | 24.66             | 35.51             | 54.00        | -18.49 | AV                   |
| V                    | 7386      | 46.38            | 30.33             | 6.32          | 24.55             | 46.92             | 74.00        | -27.08 | PK                   |
| V                    | 7386      | 34.46            | 30.33             | 6.32          | 24.55             | 35.00             | 54.00        | -19.00 | AV                   |
| V                    | 9848      | 46.98            | 30.85             | 7.45          | 24.69             | 48.27             | 74.00        | -25.73 | PK                   |
| V                    | 9848      | 33.42            | 30.85             | 7.45          | 24.69             | 34.71             | 54.00        | -19.29 | AV                   |
| H                    | 4924      | 45.94            | 30.55             | 5.77          | 24.66             | 45.82             | 74.00        | -28.18 | PK                   |
| H                    | 4924      | 35.64            | 30.55             | 5.77          | 24.66             | 35.52             | 54.00        | -18.48 | AV                   |
| H                    | 7386      | 47.33            | 30.33             | 6.32          | 24.55             | 47.87             | 74.00        | -26.13 | PK                   |
| H                    | 7386      | 34.89            | 30.33             | 6.32          | 24.55             | 35.43             | 54.00        | -18.57 | AV                   |
| H                    | 9848      | 46.77            | 30.85             | 7.45          | 24.69             | 48.06             | 74.00        | -25.94 | PK                   |
| H                    | 9848      | 34.31            | 30.85             | 7.45          | 24.69             | 35.60             | 54.00        | -18.40 | AV                   |

## 802.11g

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2412MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4824      | 47.75            | 30.55             | 5.77          | 24.66             | 47.63             | 74.00        | -26.37 | PK                   |
| V                   | 4824      | 36.29            | 30.55             | 5.77          | 24.66             | 36.17             | 54.00        | -17.83 | AV                   |
| V                   | 7236      | 46.45            | 30.33             | 6.32          | 24.55             | 46.99             | 74.00        | -27.01 | PK                   |
| V                   | 7236      | 33.87            | 30.33             | 6.32          | 24.55             | 34.41             | 54.00        | -19.59 | AV                   |
| V                   | 9648      | 47.76            | 30.85             | 7.45          | 24.69             | 49.05             | 74.00        | -24.95 | PK                   |
| V                   | 9648      | 33.76            | 30.85             | 7.45          | 24.69             | 35.05             | 54.00        | -18.95 | AV                   |
| H                   | 4824      | 48.50            | 30.55             | 5.77          | 24.66             | 48.38             | 74.00        | -25.62 | PK                   |
| H                   | 4824      | 35.77            | 30.55             | 5.77          | 24.66             | 35.65             | 54.00        | -18.35 | AV                   |
| H                   | 7236      | 47.37            | 30.33             | 6.32          | 24.55             | 47.91             | 74.00        | -26.09 | PK                   |
| H                   | 7236      | 33.22            | 30.33             | 6.32          | 24.55             | 33.76             | 54.00        | -20.24 | AV                   |
| H                   | 9648      | 45.10            | 30.85             | 7.45          | 24.69             | 46.39             | 74.00        | -27.61 | PK                   |
| H                   | 9648      | 32.83            | 30.85             | 7.45          | 24.69             | 34.12             | 54.00        | -19.88 | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-amp<br>lifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874      | 46.41            | 30.55             | 5.77          | 24.66             | 46.29             | 74.00        | -27.71 | PK                   |
| V                      | 4874      | 37.98            | 30.55             | 5.77          | 24.66             | 37.86             | 54.00        | -16.14 | AV                   |
| V                      | 7311      | 46.67            | 30.33             | 6.32          | 24.55             | 47.21             | 74.00        | -26.79 | PK                   |
| V                      | 7311      | 35.30            | 30.33             | 6.32          | 24.55             | 35.84             | 54.00        | -18.16 | AV                   |
| V                      | 9748      | 46.73            | 30.85             | 7.45          | 24.69             | 48.02             | 74.00        | -25.98 | PK                   |
| V                      | 9748      | 32.66            | 30.85             | 7.45          | 24.69             | 33.95             | 54.00        | -20.05 | AV                   |
| H                      | 4874      | 46.06            | 30.55             | 5.77          | 24.66             | 45.94             | 74.00        | -28.06 | PK                   |
| H                      | 4874      | 35.67            | 30.55             | 5.77          | 24.66             | 35.55             | 54.00        | -18.45 | AV                   |
| H                      | 7311      | 47.13            | 30.33             | 6.32          | 24.55             | 47.67             | 74.00        | -26.33 | PK                   |
| H                      | 7311      | 34.07            | 30.33             | 6.32          | 24.55             | 34.61             | 54.00        | -19.39 | AV                   |
| H                      | 9748      | 44.92            | 30.85             | 7.45          | 24.69             | 46.21             | 74.00        | -27.79 | PK                   |
| H                      | 9748      | 35.04            | 30.85             | 7.45          | 24.69             | 36.33             | 54.00        | -17.67 | AV                   |

| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2462MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4924      | 46.07            | 30.55             | 5.77          | 24.66             | 45.95             | 74.00        | -28.05 | PK                   |
| V                    | 4924      | 37.12            | 30.55             | 5.77          | 24.66             | 37.00             | 54.00        | -17.00 | AV                   |
| V                    | 7386      | 46.49            | 30.33             | 6.32          | 24.55             | 47.03             | 74.00        | -26.97 | PK                   |
| V                    | 7386      | 33.21            | 30.33             | 6.32          | 24.55             | 33.75             | 54.00        | -20.25 | AV                   |
| V                    | 9848      | 46.40            | 30.85             | 7.45          | 24.69             | 47.69             | 74.00        | -26.31 | PK                   |
| V                    | 9848      | 33.72            | 30.85             | 7.45          | 24.69             | 35.01             | 54.00        | -18.99 | AV                   |
| H                    | 4924      | 47.80            | 30.55             | 5.77          | 24.66             | 47.68             | 74.00        | -26.32 | PK                   |
| H                    | 4924      | 36.14            | 30.55             | 5.77          | 24.66             | 36.02             | 54.00        | -17.98 | AV                   |
| H                    | 7386      | 46.75            | 30.33             | 6.32          | 24.55             | 47.29             | 74.00        | -26.71 | PK                   |
| H                    | 7386      | 32.84            | 30.33             | 6.32          | 24.55             | 33.38             | 54.00        | -20.62 | AV                   |
| H                    | 9848      | 45.73            | 30.85             | 7.45          | 24.69             | 47.02             | 74.00        | -26.98 | PK                   |
| H                    | 9848      | 34.33            | 30.85             | 7.45          | 24.69             | 35.62             | 54.00        | -18.38 | AV                   |

## 802.11n20

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2412MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4824      | 46.77            | 30.55             | 5.77          | 24.66             | 46.65             | 74.00        | -27.35 | PK                   |
| V                   | 4824      | 37.11            | 30.55             | 5.77          | 24.66             | 36.99             | 54.00        | -17.01 | AV                   |
| V                   | 7236      | 47.59            | 30.33             | 6.32          | 24.55             | 48.13             | 74.00        | -25.87 | PK                   |
| V                   | 7236      | 33.68            | 30.33             | 6.32          | 24.55             | 34.22             | 54.00        | -19.78 | AV                   |
| V                   | 9648      | 46.32            | 30.85             | 7.45          | 24.69             | 47.61             | 74.00        | -26.39 | PK                   |
| V                   | 9648      | 32.97            | 30.85             | 7.45          | 24.69             | 34.26             | 54.00        | -19.74 | AV                   |
| H                   | 4824      | 46.69            | 30.55             | 5.77          | 24.66             | 46.57             | 74.00        | -27.43 | PK                   |
| H                   | 4824      | 36.23            | 30.55             | 5.77          | 24.66             | 36.11             | 54.00        | -17.89 | AV                   |
| H                   | 7236      | 47.48            | 30.33             | 6.32          | 24.55             | 48.02             | 74.00        | -25.98 | PK                   |
| H                   | 7236      | 35.65            | 30.33             | 6.32          | 24.55             | 36.19             | 54.00        | -17.81 | AV                   |
| H                   | 9648      | 47.72            | 30.85             | 7.45          | 24.69             | 49.01             | 74.00        | -24.99 | PK                   |
| H                   | 9648      | 32.61            | 30.85             | 7.45          | 24.69             | 33.90             | 54.00        | -20.10 | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874      | 45.99            | 30.55             | 5.77          | 24.66             | 45.87             | 74.00        | -28.13 | PK                   |
| V                      | 4874      | 35.52            | 30.55             | 5.77          | 24.66             | 35.40             | 54.00        | -18.60 | AV                   |
| V                      | 7311      | 46.95            | 30.33             | 6.32          | 24.55             | 47.49             | 74.00        | -26.51 | PK                   |
| V                      | 7311      | 34.54            | 30.33             | 6.32          | 24.55             | 35.08             | 54.00        | -18.92 | AV                   |
| V                      | 9748      | 45.48            | 30.85             | 7.45          | 24.69             | 46.77             | 74.00        | -27.23 | PK                   |
| V                      | 9748      | 32.79            | 30.85             | 7.45          | 24.69             | 34.08             | 54.00        | -19.92 | AV                   |
| H                      | 4874      | 47.93            | 30.55             | 5.77          | 24.66             | 47.81             | 74.00        | -26.19 | PK                   |
| H                      | 4874      | 37.44            | 30.55             | 5.77          | 24.66             | 37.32             | 54.00        | -16.68 | AV                   |
| H                      | 7311      | 46.88            | 30.33             | 6.32          | 24.55             | 47.42             | 74.00        | -26.58 | PK                   |
| H                      | 7311      | 33.80            | 30.33             | 6.32          | 24.55             | 34.34             | 54.00        | -19.66 | AV                   |
| H                      | 9748      | 45.32            | 30.85             | 7.45          | 24.69             | 46.61             | 74.00        | -27.39 | PK                   |
| H                      | 9748      | 33.28            | 30.85             | 7.45          | 24.69             | 34.57             | 54.00        | -19.43 | AV                   |

| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2462MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4924      | 47.88            | 30.55             | 5.77          | 24.66             | 47.76             | 74.00        | -26.24 | PK                   |
| V                    | 4924      | 36.03            | 30.55             | 5.77          | 24.66             | 35.91             | 54.00        | -18.09 | AV                   |
| V                    | 7386      | 46.92            | 30.33             | 6.32          | 24.55             | 47.46             | 74.00        | -26.54 | PK                   |
| V                    | 7386      | 32.88            | 30.33             | 6.32          | 24.55             | 33.42             | 54.00        | -20.58 | AV                   |
| V                    | 9848      | 46.61            | 30.85             | 7.45          | 24.69             | 47.90             | 74.00        | -26.10 | PK                   |
| V                    | 9848      | 32.66            | 30.85             | 7.45          | 24.69             | 33.95             | 54.00        | -20.05 | AV                   |
| H                    | 4924      | 46.37            | 30.55             | 5.77          | 24.66             | 46.25             | 74.00        | -27.75 | PK                   |
| H                    | 4924      | 35.58            | 30.55             | 5.77          | 24.66             | 35.46             | 54.00        | -18.54 | AV                   |
| H                    | 7386      | 47.33            | 30.33             | 6.32          | 24.55             | 47.87             | 74.00        | -26.13 | PK                   |
| H                    | 7386      | 34.39            | 30.33             | 6.32          | 24.55             | 34.93             | 54.00        | -19.07 | AV                   |
| H                    | 9848      | 47.50            | 30.85             | 7.45          | 24.69             | 48.79             | 74.00        | -25.21 | PK                   |
| H                    | 9848      | 32.41            | 30.85             | 7.45          | 24.69             | 33.70             | 54.00        | -20.30 | AV                   |

## 802.11n40

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2422MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4844      | 47.19            | 30.55             | 5.77          | 24.66             | 47.07             | 74.00        | -26.93 | PK                   |
| V                   | 4844      | 36.84            | 30.55             | 5.77          | 24.66             | 36.72             | 54.00        | -17.28 | AV                   |
| V                   | 7266      | 47.13            | 30.33             | 6.32          | 24.55             | 47.67             | 74.00        | -26.33 | PK                   |
| V                   | 7266      | 34.74            | 30.33             | 6.32          | 24.55             | 35.28             | 54.00        | -18.72 | AV                   |
| V                   | 9688      | 46.68            | 30.85             | 7.45          | 24.69             | 47.97             | 74.00        | -26.03 | PK                   |
| V                   | 9688      | 33.37            | 30.85             | 7.45          | 24.69             | 34.66             | 54.00        | -19.34 | AV                   |
| H                   | 4844      | 46.16            | 30.55             | 5.77          | 24.66             | 46.04             | 74.00        | -27.96 | PK                   |
| H                   | 4844      | 37.53            | 30.55             | 5.77          | 24.66             | 37.41             | 54.00        | -16.59 | AV                   |
| H                   | 7266      | 46.70            | 30.33             | 6.32          | 24.55             | 47.24             | 74.00        | -26.76 | PK                   |
| H                   | 7266      | 33.51            | 30.33             | 6.32          | 24.55             | 34.05             | 54.00        | -19.95 | AV                   |
| H                   | 9688      | 46.46            | 30.85             | 7.45          | 24.69             | 47.75             | 74.00        | -26.25 | PK                   |
| H                   | 9688      | 34.95            | 30.85             | 7.45          | 24.69             | 36.24             | 54.00        | -17.76 | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874      | 48.48            | 30.55             | 5.77          | 24.66             | 48.36             | 74.00        | -25.64 | PK                   |
| V                      | 4874      | 38.15            | 30.55             | 5.77          | 24.66             | 38.03             | 54.00        | -15.97 | AV                   |
| V                      | 7311      | 47.63            | 30.33             | 6.32          | 24.55             | 48.17             | 74.00        | -25.83 | PK                   |
| V                      | 7311      | 33.68            | 30.33             | 6.32          | 24.55             | 34.22             | 54.00        | -19.78 | AV                   |
| V                      | 9748      | 47.38            | 30.85             | 7.45          | 24.69             | 48.67             | 74.00        | -25.33 | PK                   |
| V                      | 9748      | 32.30            | 30.85             | 7.45          | 24.69             | 33.59             | 54.00        | -20.41 | AV                   |
| H                      | 4874      | 48.67            | 30.55             | 5.77          | 24.66             | 48.55             | 74.00        | -25.45 | PK                   |
| H                      | 4874      | 37.09            | 30.55             | 5.77          | 24.66             | 36.97             | 54.00        | -17.03 | AV                   |
| H                      | 7311      | 45.87            | 30.33             | 6.32          | 24.55             | 46.41             | 74.00        | -27.59 | PK                   |
| H                      | 7311      | 33.97            | 30.33             | 6.32          | 24.55             | 34.51             | 54.00        | -19.49 | AV                   |
| H                      | 9748      | 46.05            | 30.85             | 7.45          | 24.69             | 47.34             | 74.00        | -26.66 | PK                   |
| H                      | 9748      | 35.16            | 30.85             | 7.45          | 24.69             | 36.45             | 54.00        | -17.55 | AV                   |

| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2452MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4904      | 47.82            | 30.55             | 5.77          | 24.66             | 47.70             | 74.00        | -26.30 | PK                   |
| V                    | 4904      | 35.99            | 30.55             | 5.77          | 24.66             | 35.87             | 54.00        | -18.13 | AV                   |
| V                    | 7356      | 46.18            | 30.33             | 6.32          | 24.55             | 46.72             | 74.00        | -27.28 | PK                   |
| V                    | 7356      | 33.29            | 30.33             | 6.32          | 24.55             | 33.83             | 54.00        | -20.17 | AV                   |
| V                    | 9808      | 45.91            | 30.85             | 7.45          | 24.69             | 47.20             | 74.00        | -26.80 | PK                   |
| V                    | 9808      | 34.27            | 30.85             | 7.45          | 24.69             | 35.56             | 54.00        | -18.44 | AV                   |
| H                    | 4904      | 46.13            | 30.55             | 5.77          | 24.66             | 46.01             | 74.00        | -27.99 | PK                   |
| H                    | 4904      | 35.87            | 30.55             | 5.77          | 24.66             | 35.75             | 54.00        | -18.25 | AV                   |
| H                    | 7356      | 46.56            | 30.33             | 6.32          | 24.55             | 47.10             | 74.00        | -26.90 | PK                   |
| H                    | 7356      | 33.67            | 30.33             | 6.32          | 24.55             | 34.21             | 54.00        | -19.79 | AV                   |
| H                    | 9808      | 47.65            | 30.85             | 7.45          | 24.69             | 48.94             | 74.00        | -25.06 | PK                   |
| H                    | 9808      | 33.23            | 30.85             | 7.45          | 24.69             | 34.52             | 54.00        | -19.48 | AV                   |

## 5. RADIATED BAND EMISSION MEASUREMENT

### 5.1 TEST REQUIREMENT:

|                       |                                                                                                    |          |      |      |         |
|-----------------------|----------------------------------------------------------------------------------------------------|----------|------|------|---------|
| Test Requirement:     | FCC Part 15 C Section 15.209 and 15.205                                                            |          |      |      |         |
| Test Method:          | ANSI C63.10: 2013                                                                                  |          |      |      |         |
| Test Frequency Range: | All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed. |          |      |      |         |
| Test site:            | Measurement Distance: 3m                                                                           |          |      |      |         |
| Receiver setup:       | Frequency                                                                                          | Detector | RBW  | VBW  | Value   |
|                       | Above                                                                                              | Peak     | 1MHz | 3MHz | Peak    |
|                       | 1GHz                                                                                               | Average  | 1MHz | 3MHz | Average |

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3M) |         |
|-----------------|--------------------------|---------|
|                 | PEAK                     | AVERAGE |
| Above 1000      | 74                       | 54      |

#### Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m).

### 5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the Highest channel

#### Note:

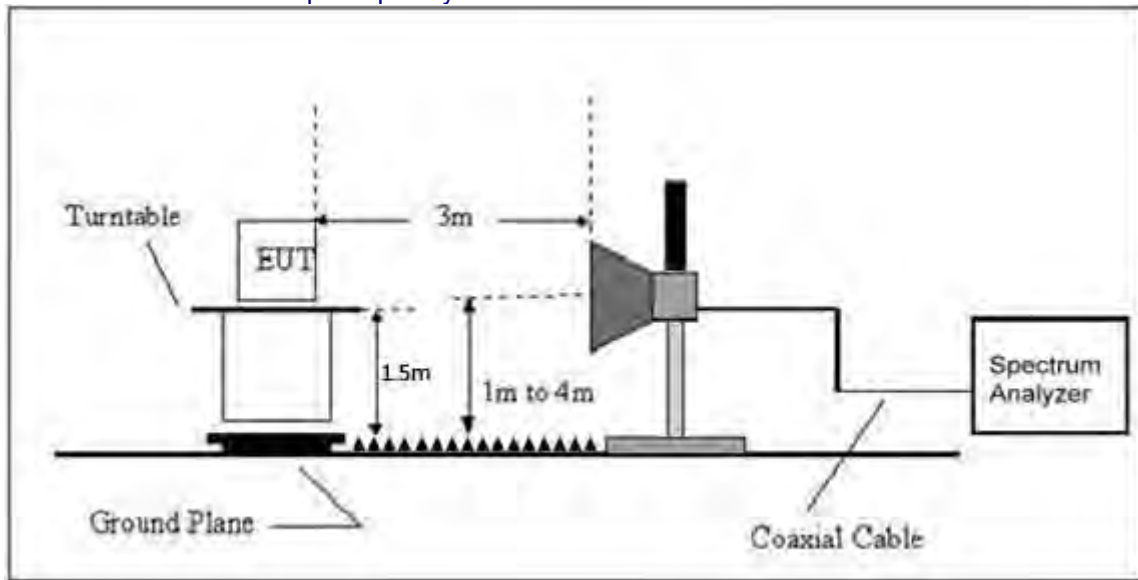
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

### 5.3 DEVIATION FROM TEST STANDARD

No deviation

## 5.4 TEST SETUP

### Radiated Emission Test-Up Frequency Above 1GHz



## 5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

## 5.6 TEST RESULT

|           | Polar<br>(H/V)       | Frequenc<br>y<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Emission<br>level<br>(dBuV/m) | Limit<br>(dBuV<br>/m) | Detec<br>tor<br>Type | Result |
|-----------|----------------------|------------------------|----------------------------|---------------------------|-----------------------|-----------------------------|-------------------------------|-----------------------|----------------------|--------|
| 802.11b   | Low Channel 2412MHz  |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2390.00                | 53.13                      | 30.22                     | 4.85                  | 23.98                       | 51.74                         | 74                    | PK                   | PASS   |
|           | H                    | 2390.00                | 38.21                      | 30.22                     | 4.85                  | 23.98                       | 36.82                         | 54                    | AV                   | PASS   |
|           | H                    | 2400.00                | 52.53                      | 30.22                     | 4.85                  | 23.98                       | 51.14                         | 74                    | PK                   | PASS   |
|           | H                    | 2400.00                | 40.69                      | 30.22                     | 4.85                  | 23.98                       | 39.30                         | 54                    | AV                   | PASS   |
|           | V                    | 2390.00                | 53.14                      | 30.22                     | 4.85                  | 23.98                       | 51.75                         | 74                    | PK                   | PASS   |
|           | V                    | 2390.00                | 39.84                      | 30.22                     | 4.85                  | 23.98                       | 38.45                         | 54                    | AV                   | PASS   |
|           | V                    | 2400.00                | 51.98                      | 30.22                     | 4.85                  | 23.98                       | 50.59                         | 74                    | PK                   | PASS   |
|           | V                    | 2400.00                | 38.41                      | 30.22                     | 4.85                  | 23.98                       | 37.02                         | 54                    | AV                   | PASS   |
|           | High Channel 2462MHz |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2483.50                | 49.11                      | 30.22                     | 4.85                  | 23.98                       | 47.72                         | 74                    | PK                   | PASS   |
|           | H                    | 2485.50                | 40.12                      | 30.22                     | 4.85                  | 23.98                       | 38.73                         | 54                    | AV                   | PASS   |
|           | H                    | 2500.00                | 52.00                      | 30.22                     | 4.85                  | 23.98                       | 50.61                         | 74                    | PK                   | PASS   |
|           | H                    | 2500.00                | 39.29                      | 30.22                     | 4.85                  | 23.98                       | 37.90                         | 54                    | AV                   | PASS   |
|           | V                    | 2483.50                | 52.82                      | 30.22                     | 4.85                  | 23.98                       | 51.43                         | 74                    | PK                   | PASS   |
|           | V                    | 2485.50                | 43.16                      | 30.22                     | 4.85                  | 23.98                       | 41.77                         | 54                    | AV                   | PASS   |
|           | V                    | 2500.00                | 55.72                      | 30.22                     | 4.85                  | 23.98                       | 54.33                         | 74                    | PK                   | PASS   |
|           | V                    | 2500.00                | 40.55                      | 30.22                     | 4.85                  | 23.98                       | 39.16                         | 54                    | AV                   | PASS   |
| 802.11g   | Low Channel 2412MHz  |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2390.00                | 53.27                      | 30.22                     | 4.85                  | 23.98                       | 51.88                         | 74                    | PK                   | PASS   |
|           | H                    | 2390.00                | 37.62                      | 30.22                     | 4.85                  | 23.98                       | 36.23                         | 54                    | AV                   | PASS   |
|           | H                    | 2400.00                | 54.68                      | 30.22                     | 4.85                  | 23.98                       | 53.29                         | 74                    | PK                   | PASS   |
|           | H                    | 2400.00                | 38.56                      | 30.22                     | 4.85                  | 23.98                       | 37.17                         | 54                    | AV                   | PASS   |
|           | V                    | 2390.00                | 51.63                      | 30.22                     | 4.85                  | 23.98                       | 50.24                         | 74                    | PK                   | PASS   |
|           | V                    | 2390.00                | 42.00                      | 30.22                     | 4.85                  | 23.98                       | 40.61                         | 54                    | AV                   | PASS   |
|           | V                    | 2400.00                | 52.16                      | 30.22                     | 4.85                  | 23.98                       | 50.77                         | 74                    | PK                   | PASS   |
|           | V                    | 2400.00                | 38.56                      | 30.22                     | 4.85                  | 23.98                       | 37.17                         | 54                    | AV                   | PASS   |
|           | High Channel 2462MHz |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2483.50                | 50.02                      | 30.22                     | 4.85                  | 23.98                       | 48.63                         | 74                    | PK                   | PASS   |
|           | H                    | 2485.50                | 39.56                      | 30.22                     | 4.85                  | 23.98                       | 38.17                         | 54                    | AV                   | PASS   |
|           | H                    | 2500.00                | 48.83                      | 30.22                     | 4.85                  | 23.98                       | 47.44                         | 74                    | PK                   | PASS   |
|           | H                    | 2500.00                | 36.07                      | 30.22                     | 4.85                  | 23.98                       | 34.68                         | 54                    | AV                   | PASS   |
|           | V                    | 2483.50                | 57.46                      | 30.22                     | 4.85                  | 23.98                       | 56.07                         | 74                    | PK                   | PASS   |
|           | V                    | 2485.50                | 38.61                      | 30.22                     | 4.85                  | 23.98                       | 37.22                         | 54                    | AV                   | PASS   |
|           | V                    | 2500.00                | 57.35                      | 30.22                     | 4.85                  | 23.98                       | 55.96                         | 74                    | PK                   | PASS   |
|           | V                    | 2500.00                | 42.97                      | 30.22                     | 4.85                  | 23.98                       | 41.58                         | 54                    | AV                   | PASS   |
| 802.11n20 | Low Channel 2412MHz  |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2390.00                | 55.90                      | 30.22                     | 4.85                  | 23.98                       | 54.51                         | 74                    | PK                   | PASS   |
|           | H                    | 2390.00                | 37.45                      | 30.22                     | 4.85                  | 23.98                       | 36.06                         | 54                    | AV                   | PASS   |
|           | H                    | 2400.00                | 54.60                      | 30.22                     | 4.85                  | 23.98                       | 53.21                         | 74                    | PK                   | PASS   |
|           | H                    | 2400.00                | 38.75                      | 30.22                     | 4.85                  | 23.98                       | 37.36                         | 54                    | AV                   | PASS   |
|           | V                    | 2390.00                | 51.00                      | 30.22                     | 4.85                  | 23.98                       | 49.61                         | 74                    | PK                   | PASS   |
|           | V                    | 2390.00                | 41.72                      | 30.22                     | 4.85                  | 23.98                       | 40.33                         | 54                    | AV                   | PASS   |
|           | V                    | 2400.00                | 52.10                      | 30.22                     | 4.85                  | 23.98                       | 50.71                         | 74                    | PK                   | PASS   |
|           | V                    | 2400.00                | 39.06                      | 30.22                     | 4.85                  | 23.98                       | 37.67                         | 54                    | AV                   | PASS   |
|           | High Channel 2462MHz |                        |                            |                           |                       |                             |                               |                       |                      |        |
|           | H                    | 2483.50                | 47.22                      | 30.22                     | 4.85                  | 23.98                       | 45.83                         | 74                    | PK                   | PASS   |
|           | H                    | 2485.50                | 38.77                      | 30.22                     | 4.85                  | 23.98                       | 37.38                         | 54                    | AV                   | PASS   |
|           | H                    | 2500.00                | 50.31                      | 30.22                     | 4.85                  | 23.98                       | 48.92                         | 74                    | PK                   | PASS   |
|           | H                    | 2500.00                | 34.56                      | 30.22                     | 4.85                  | 23.98                       | 33.17                         | 54                    | AV                   | PASS   |
|           | V                    | 2483.50                | 53.89                      | 30.22                     | 4.85                  | 23.98                       | 52.50                         | 74                    | PK                   | PASS   |

|  |   |         |       |       |      |       |       |    |    |      |
|--|---|---------|-------|-------|------|-------|-------|----|----|------|
|  | V | 2485.50 | 38.68 | 30.22 | 4.85 | 23.98 | 37.29 | 54 | AV | PASS |
|  | V | 2500.00 | 53.90 | 30.22 | 4.85 | 23.98 | 52.51 | 74 | PK | PASS |
|  | V | 2500.00 | 37.44 | 30.22 | 4.85 | 23.98 | 36.05 | 54 | AV | PASS |

**Remark:**

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

|           |                      |         |       |       |      |       |       |    |    |      |
|-----------|----------------------|---------|-------|-------|------|-------|-------|----|----|------|
| 802.11n40 | Low Channel 2422MHz  |         |       |       |      |       |       |    |    |      |
|           | H                    | 2390.00 | 55.76 | 30.22 | 4.85 | 23.98 | 54.37 | 74 | PK | PASS |
|           | H                    | 2390.00 | 38.71 | 30.22 | 4.85 | 23.98 | 37.32 | 54 | AV | PASS |
|           | H                    | 2400.00 | 54.18 | 30.22 | 4.85 | 23.98 | 52.79 | 74 | PK | PASS |
|           | H                    | 2400.00 | 38.89 | 30.22 | 4.85 | 23.98 | 37.50 | 54 | AV | PASS |
|           | V                    | 2390.00 | 51.87 | 30.22 | 4.85 | 23.98 | 50.48 | 74 | PK | PASS |
|           | V                    | 2390.00 | 40.68 | 30.22 | 4.85 | 23.98 | 39.29 | 54 | AV | PASS |
|           | V                    | 2400.00 | 52.42 | 30.22 | 4.85 | 23.98 | 51.03 | 74 | PK | PASS |
|           | V                    | 2400.00 | 39.68 | 30.22 | 4.85 | 23.98 | 38.29 | 54 | AV | PASS |
|           | High Channel 2452MHz |         |       |       |      |       |       |    |    |      |
|           | H                    | 2483.50 | 48.08 | 30.22 | 4.85 | 23.98 | 46.69 | 74 | PK | PASS |
|           | H                    | 2485.50 | 37.75 | 30.22 | 4.85 | 23.98 | 36.36 | 54 | AV | PASS |
|           | H                    | 2500.00 | 54.13 | 30.22 | 4.85 | 23.98 | 52.74 | 74 | PK | PASS |
|           | H                    | 2500.00 | 38.46 | 30.22 | 4.85 | 23.98 | 37.07 | 54 | AV | PASS |
|           | V                    | 2483.50 | 54.84 | 30.22 | 4.85 | 23.98 | 53.45 | 74 | PK | PASS |
|           | V                    | 2485.50 | 41.03 | 30.22 | 4.85 | 23.98 | 39.64 | 54 | AV | PASS |
|           | V                    | 2500.00 | 55.63 | 30.22 | 4.85 | 23.98 | 54.24 | 74 | PK | PASS |
|           | V                    | 2500.00 | 39.03 | 30.22 | 4.85 | 23.98 | 37.64 | 54 | AV | PASS |

**Remark:**

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

**6.POWER SPECTRAL DENSITY TEST**

|                   |                                           |
|-------------------|-------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (e)           |
| Test Method:      | KDB558074 D0115.247 Meas Guidance v 05r02 |

**6.1 APPLIED PROCEDURES / LIMIT**

| FCC Part15 (15.247) , Subpart C |                        |           |                       |        |
|---------------------------------|------------------------|-----------|-----------------------|--------|
| Section                         | Test Item              | Limit     | Frequency Range (MHz) | Result |
| 15.247                          | Power Spectral Density | 8dBm/3kHz | 2400-2483.5           | PASS   |

**6.2 TEST PROCEDURE**

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
4. Set the VBW  $\geq 3 \times \text{RBW}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**6.3 DEVIATION FROM STANDARD**

No deviation.

**6.4 TEST SETUP****6.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

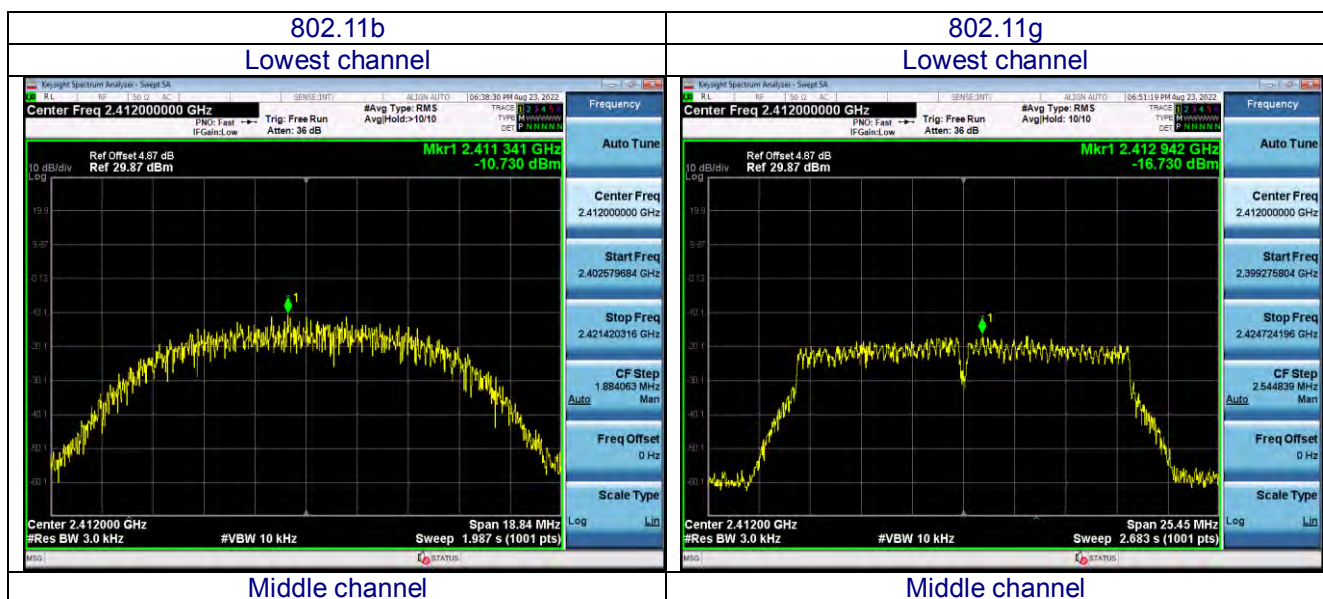
## 6.6 TEST RESULT

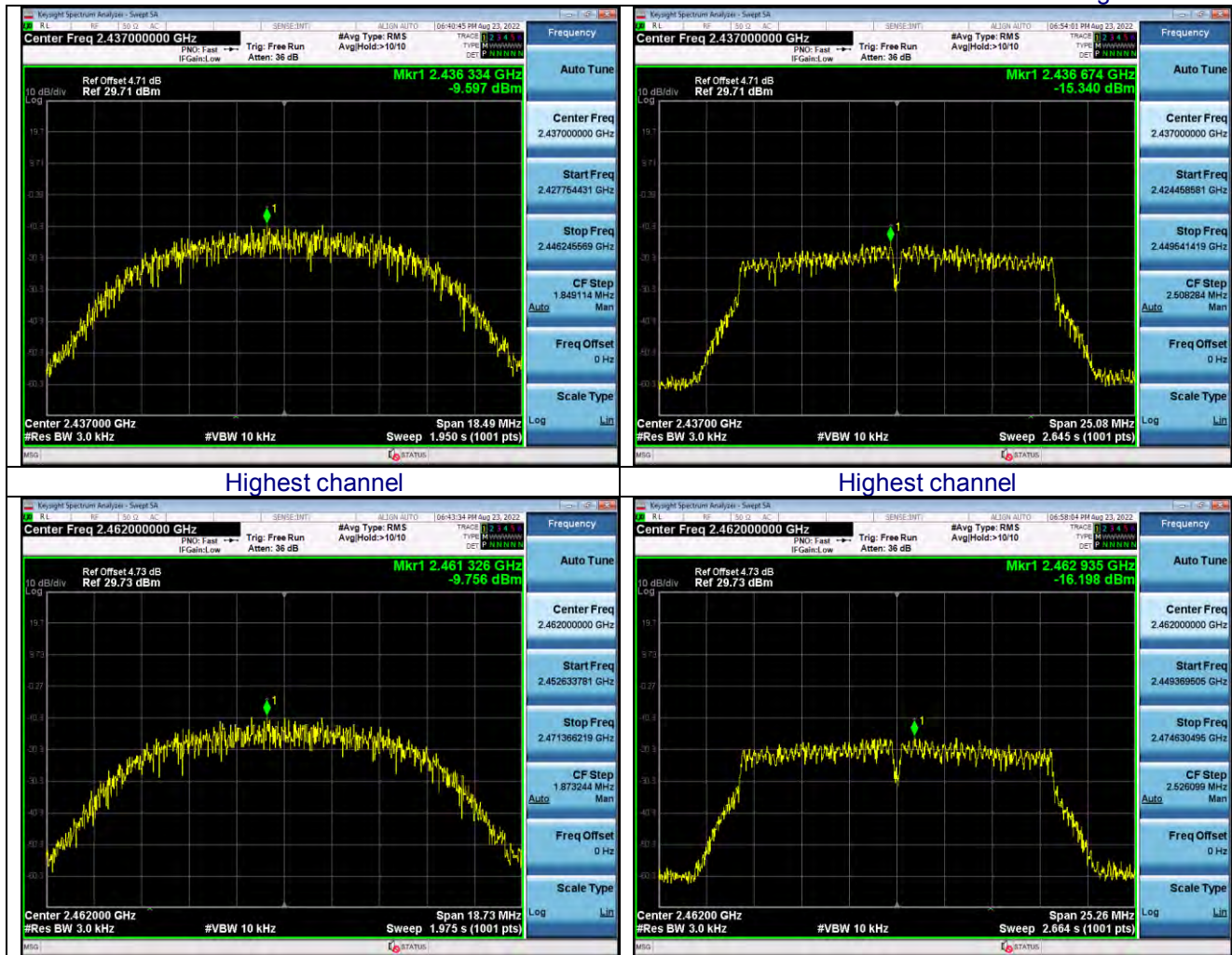
|               |        |                     |        |
|---------------|--------|---------------------|--------|
| Temperature : | 26°C   | Relative Humidity : | 54%    |
| Pressure :    | 101kPa | Test Voltage :      | DC4.5V |

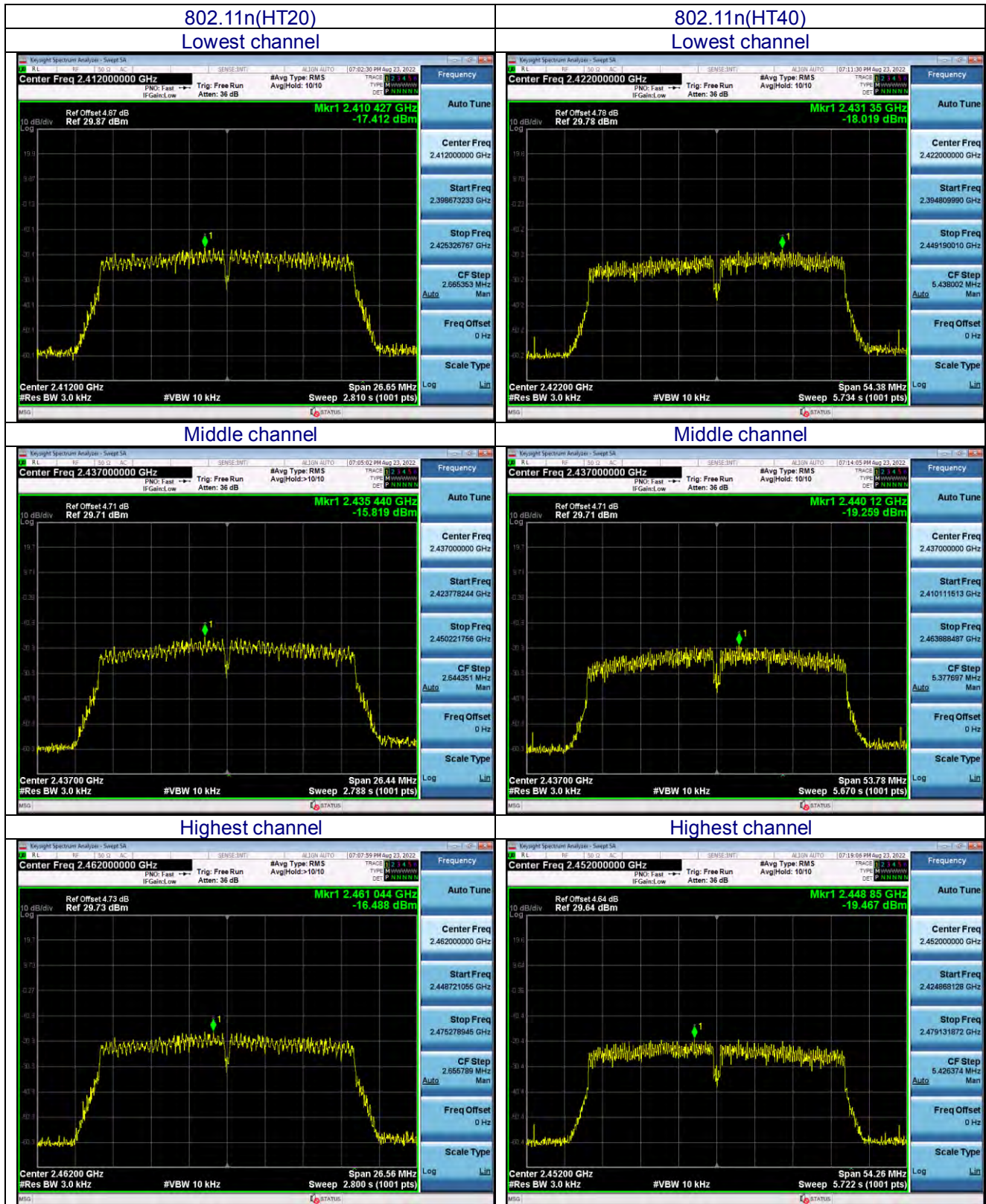
| Test mode     | Test channel | Power Spectral Density (dBm/3kHz) | Limit:    | Result |
|---------------|--------------|-----------------------------------|-----------|--------|
| 802.11b       | Lowest       | -10.730                           | 8dBm/3kHz | PASS   |
|               | Middle       | -9.597                            |           |        |
|               | Highest      | -9.756                            |           |        |
| 802.11g       | Lowest       | -16.730                           | 8dBm/3kHz | PASS   |
|               | Middle       | -15.340                           |           |        |
|               | Highest      | -16.198                           |           |        |
| 802.11n(HT20) | Lowest       | -17.412                           | 8dBm/3kHz | PASS   |
|               | Middle       | -15.819                           |           |        |
|               | Highest      | -16.488                           |           |        |
| 802.11n(HT40) | Lowest       | -18.019                           | 8dBm/3kHz | PASS   |
|               | Middle       | -19.259                           |           |        |
|               | Highest      | -19.457                           |           |        |

## Remark:

1. Measured peak power spectrum density at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Please refer to following plots;







## 7. CHANNEL BANDWIDTH

|                   |                                          |
|-------------------|------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (a)(2)       |
| Test Method:      | KDB558074 D0115.247 Meas Guidance v05r02 |

### 7.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |           |                                         |                       |        |
|---------------------------------|-----------|-----------------------------------------|-----------------------|--------|
| Section                         | Test Item | Limit                                   | Frequency Range (MHz) | Result |
| 15.247(a)(2)                    | Bandwidth | $\geq 500\text{KHz}$<br>(6dB bandwidth) | 2400-2483.5           | PASS   |

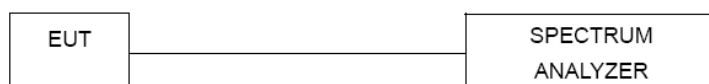
### 7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$ .
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.3 DEVIATION FROM STANDARD

No deviation.

### 7.4 TEST SETUP



### 7.5 EUT OPERATION CONDITIONS

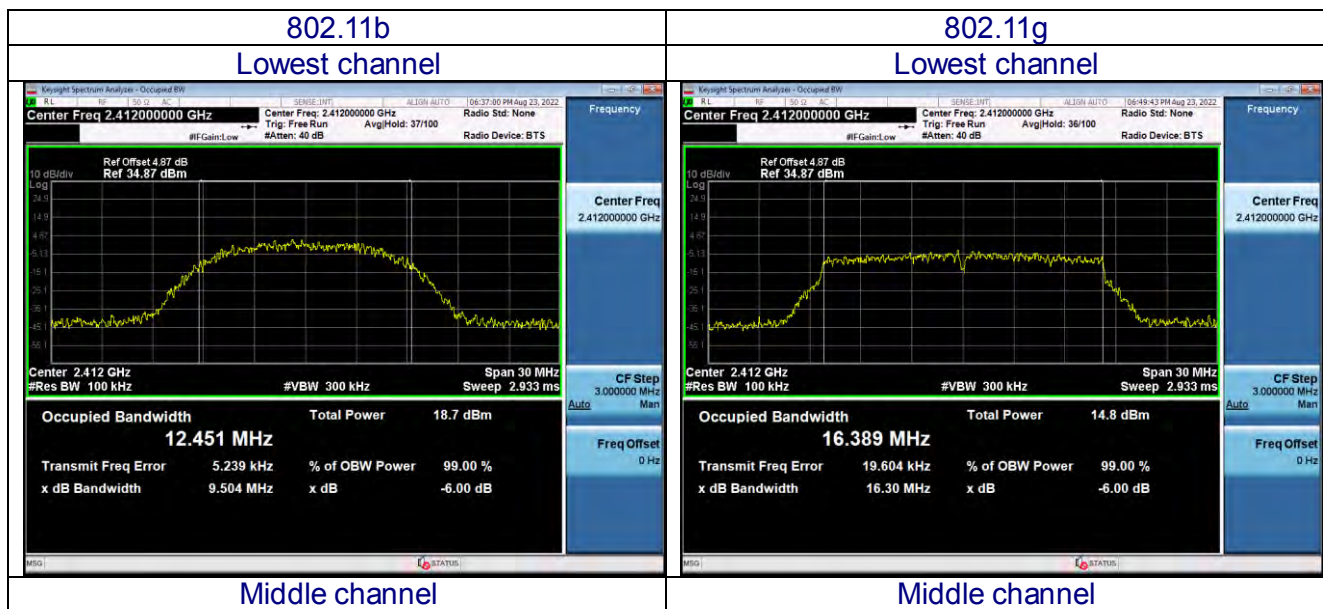
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

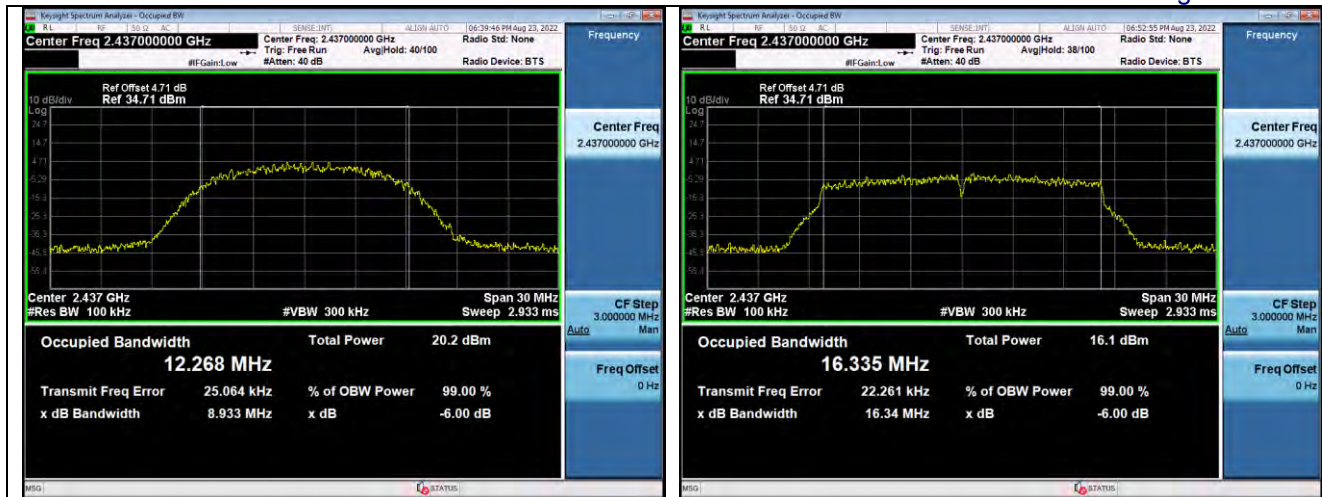
## 7.6 TEST RESULT

|               |         |                     |        |
|---------------|---------|---------------------|--------|
| Temperature : | 26°C    | Relative Humidity : | 54%    |
| Pressure :    | 101kPa  | Test Voltage :      | DC4.5V |
| Test Mode :   | TX Mode |                     |        |

| Test mode     | Test channel | 6dB Emission Bandwidth (MHz) | Limit:  | Test Result: |
|---------------|--------------|------------------------------|---------|--------------|
| 802.11b       | Lowest       | 9.504                        | >500kHz | PASS         |
|               | Middle       | 8.933                        |         |              |
|               | Highest      | 9.503                        |         |              |
| 802.11g       | Lowest       | 16.30                        | >500kHz | PASS         |
|               | Middle       | 16.34                        |         |              |
|               | Highest      | 16.47                        |         |              |
| 802.11n(HT20) | Lowest       | 17.65                        | >500kHz | PASS         |
|               | Middle       | 17.24                        |         |              |
|               | Highest      | 17.65                        |         |              |
| 802.11n(HT40) | Lowest       | 35.47                        | >500kHz | PASS         |
|               | Middle       | 34.17                        |         |              |
|               | Highest      | 36.31                        |         |              |

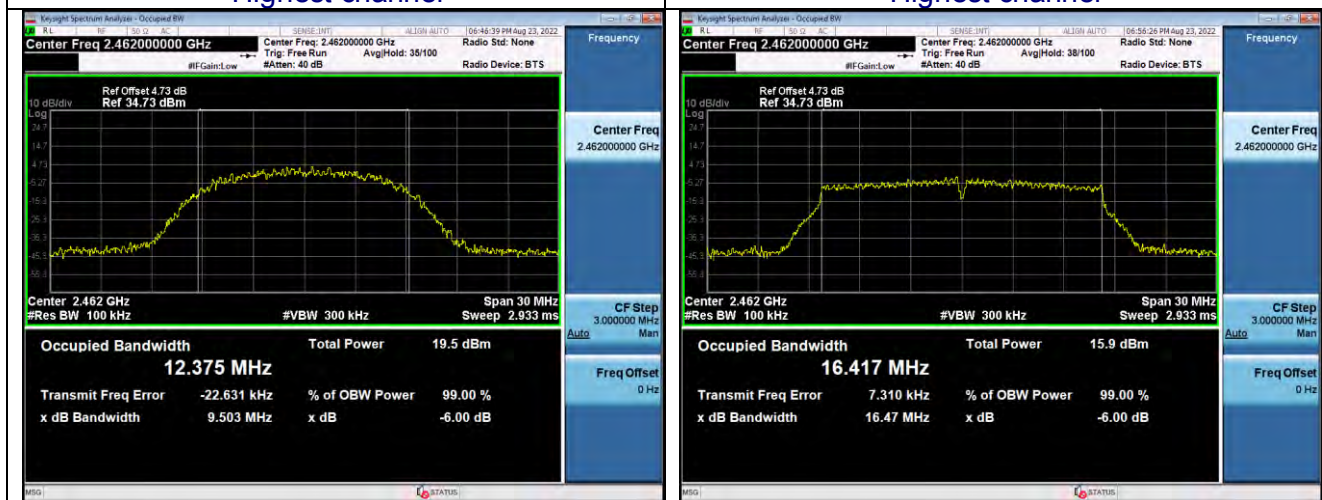
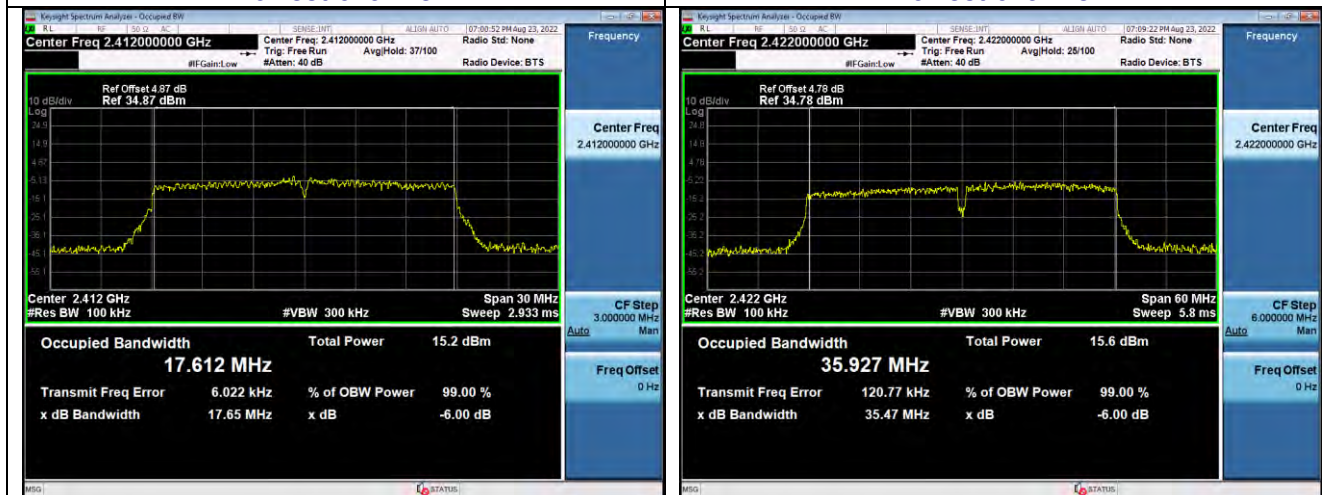
Test plot as follows:





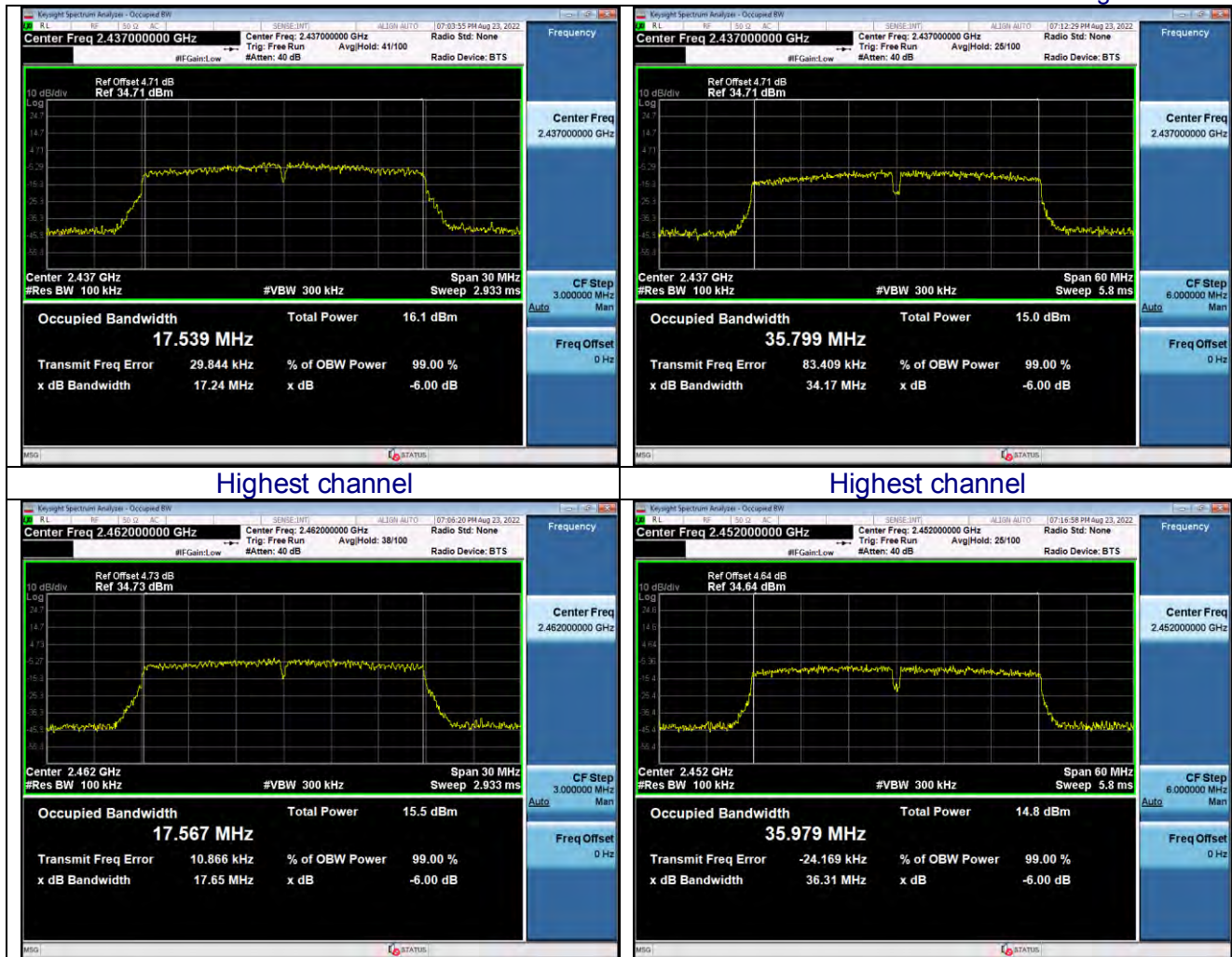
Highest channel

Highest channel

802.11n(HT20)  
Lowest channel802.11n(HT40)  
Lowest channel

Middle channel

Middle channel



## 8. OUTPUT POWER TEST

|                   |                                          |
|-------------------|------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (b)(3)       |
| Test Method:      | KDB558074 D0115.247 Meas Guidance v05r02 |

### 8.1 APPLIED PROCEDURES/LIMIT

| FCC Part15 (15.247) , Subpart C |                   |                 |                       |        |
|---------------------------------|-------------------|-----------------|-----------------------|--------|
| Section                         | Test Item         | Limit           | Frequency Range (MHz) | Result |
| 15.247(b)(3)                    | Peak Output Power | 1 watt or 30dBm | 2400-2483.5           | PASS   |

### 8.2 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP



### 8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

## 8.6 TEST RESULT

|               |        |                     |        |
|---------------|--------|---------------------|--------|
| Temperature : | 26℃    | Relative Humidity : | 54%    |
| Pressure :    | 101kPa | Test Voltage :      | DC4.5V |

| Condition<br>NVNT | Modulation    | Frequency (MHz) | Conducted<br>Power(dBm) | Limit<br>(dBm) | Result |
|-------------------|---------------|-----------------|-------------------------|----------------|--------|
| NVNT              | 802.11b       | 2412.00         | 18.45                   | 30             | Pass   |
| NVNT              | 802.11b       | 2437.00         | 18.10                   | 30             | Pass   |
| NVNT              | 802.11b       | 2462.00         | 18.00                   | 30             | Pass   |
| NVNT              | 802.11g       | 2412.00         | 15.37                   | 30             | Pass   |
| NVNT              | 802.11g       | 2437.00         | 15.93                   | 30             | Pass   |
| NVNT              | 802.11g       | 2462.00         | 16.01                   | 30             | Pass   |
| NVNT              | 802.11n(HT20) | 2412.00         | 15.01                   | 30             | Pass   |
| NVNT              | 802.11n(HT20) | 2437.00         | 15.86                   | 30             | Pass   |
| NVNT              | 802.11n(HT20) | 2462.00         | 15.75                   | 30             | Pass   |
| NVNT              | 802.11n(HT40) | 2422.00         | 15.53                   | 30             | Pass   |
| NVNT              | 802.11n(HT40) | 2437.00         | 14.98                   | 30             | Pass   |
| NVNT              | 802.11n(HT40) | 2452.00         | 14.81                   | 30             | Pass   |

## 9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

|                   |                                          |
|-------------------|------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (d)          |
| Test Method:      | KDB558074 D0115.247 Meas Guidance v05r02 |

### 9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

### 9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

### 9.3 DEVIATION FROM STANDARD

No deviation.

### 9.4 TEST SETUP



### 9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

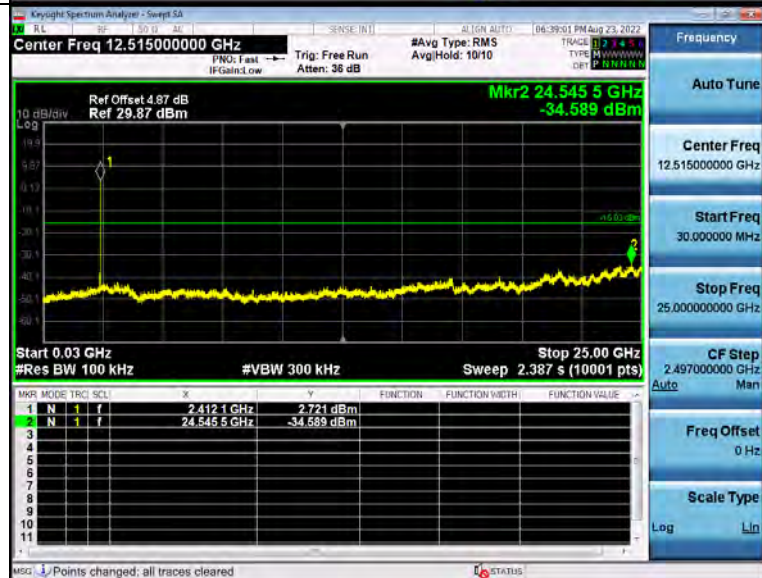
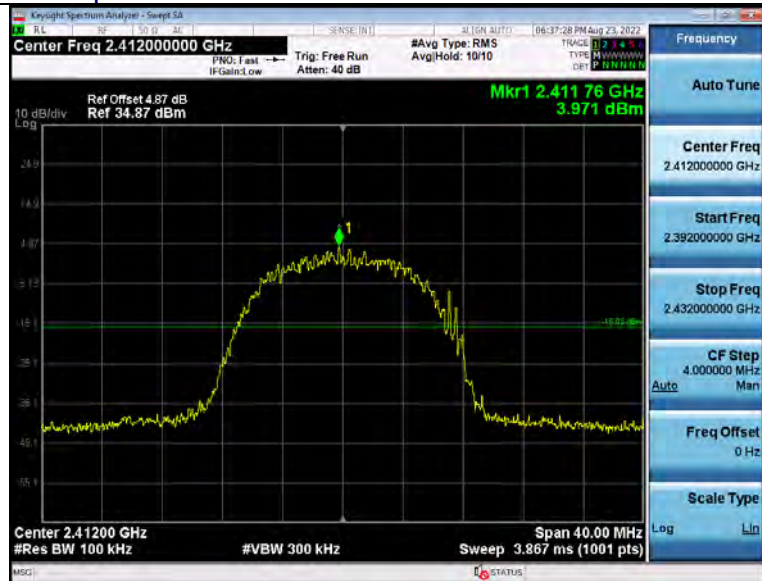
### 9.6 TEST RESULTS

Test plot as follows:

802.11b Modulation

Spurious emission

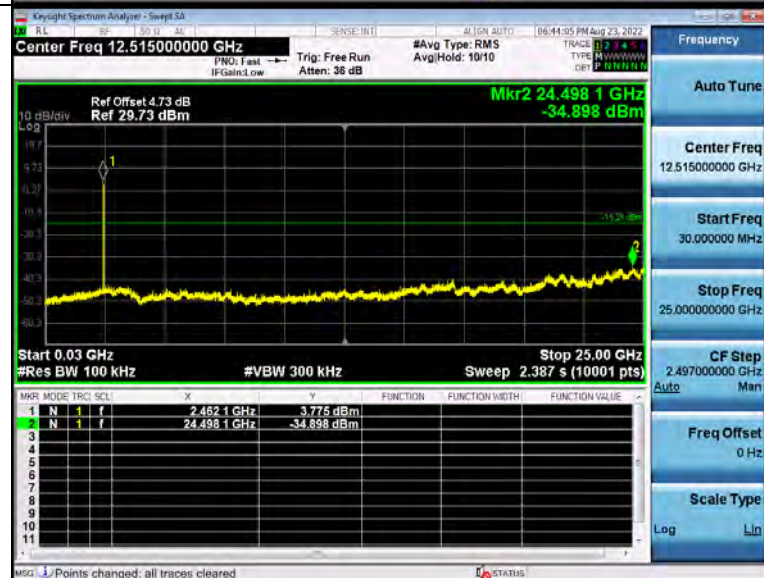
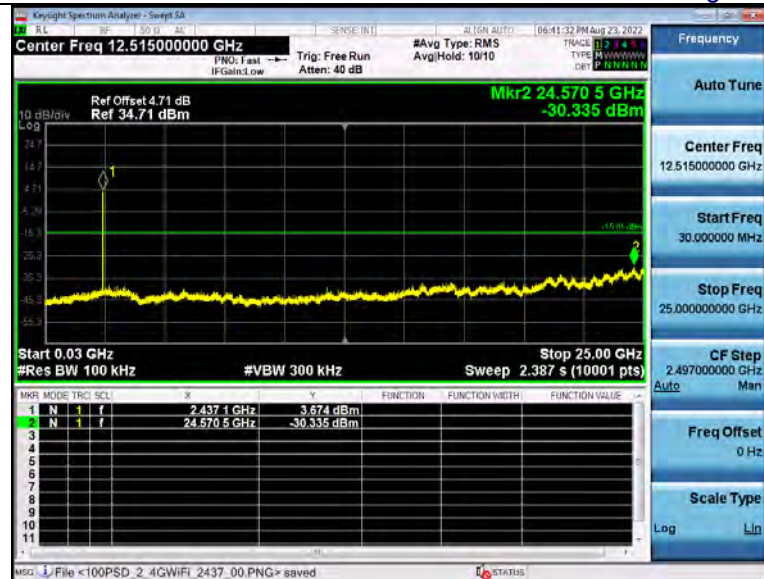
Low Channel



Middle Channel



High Channel



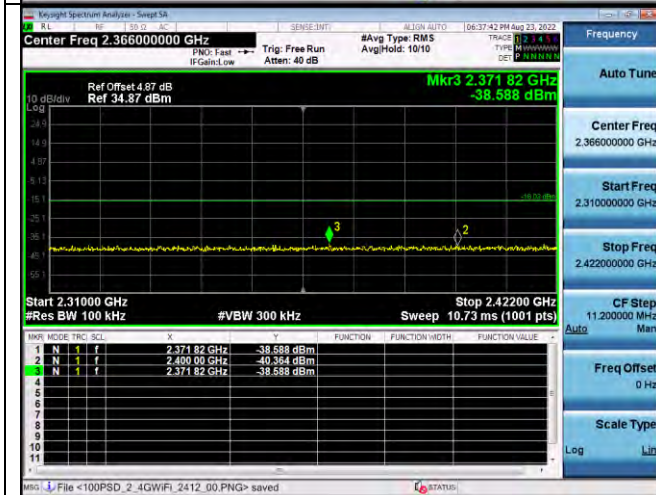
Lowest Channel



Highest Channel



Left Band Edge



Right Band Edge



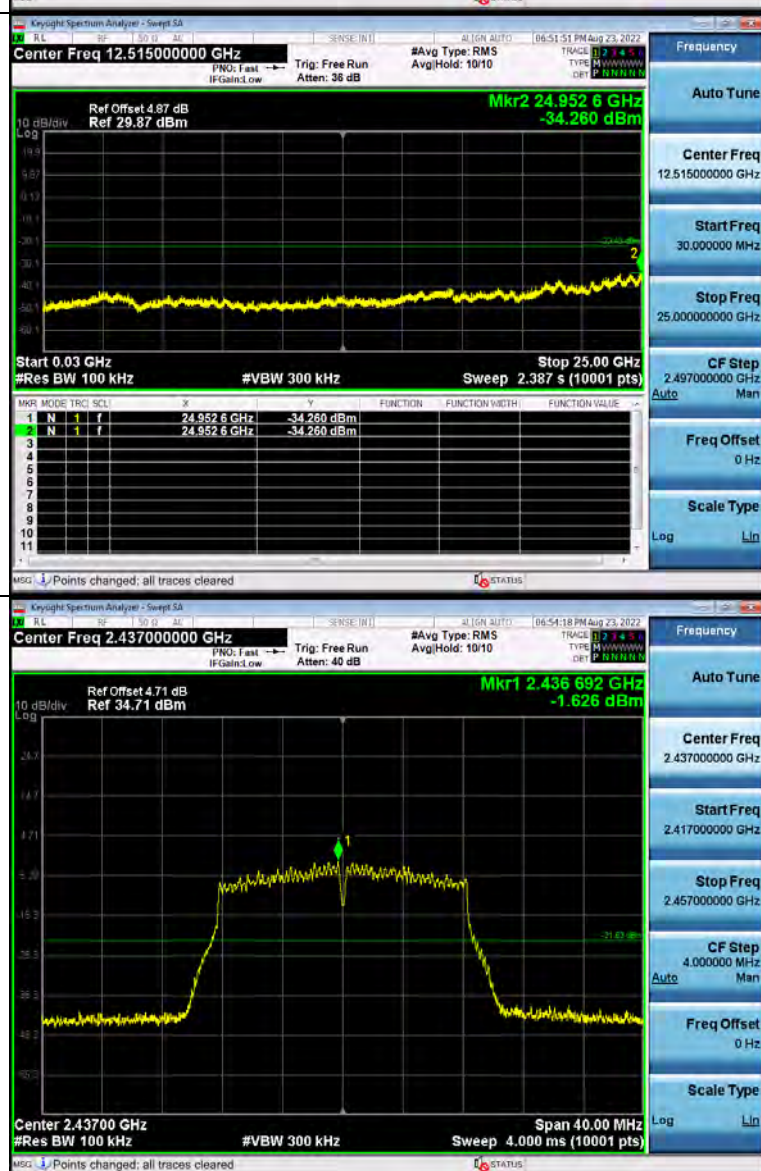
## 802.11g Modulation

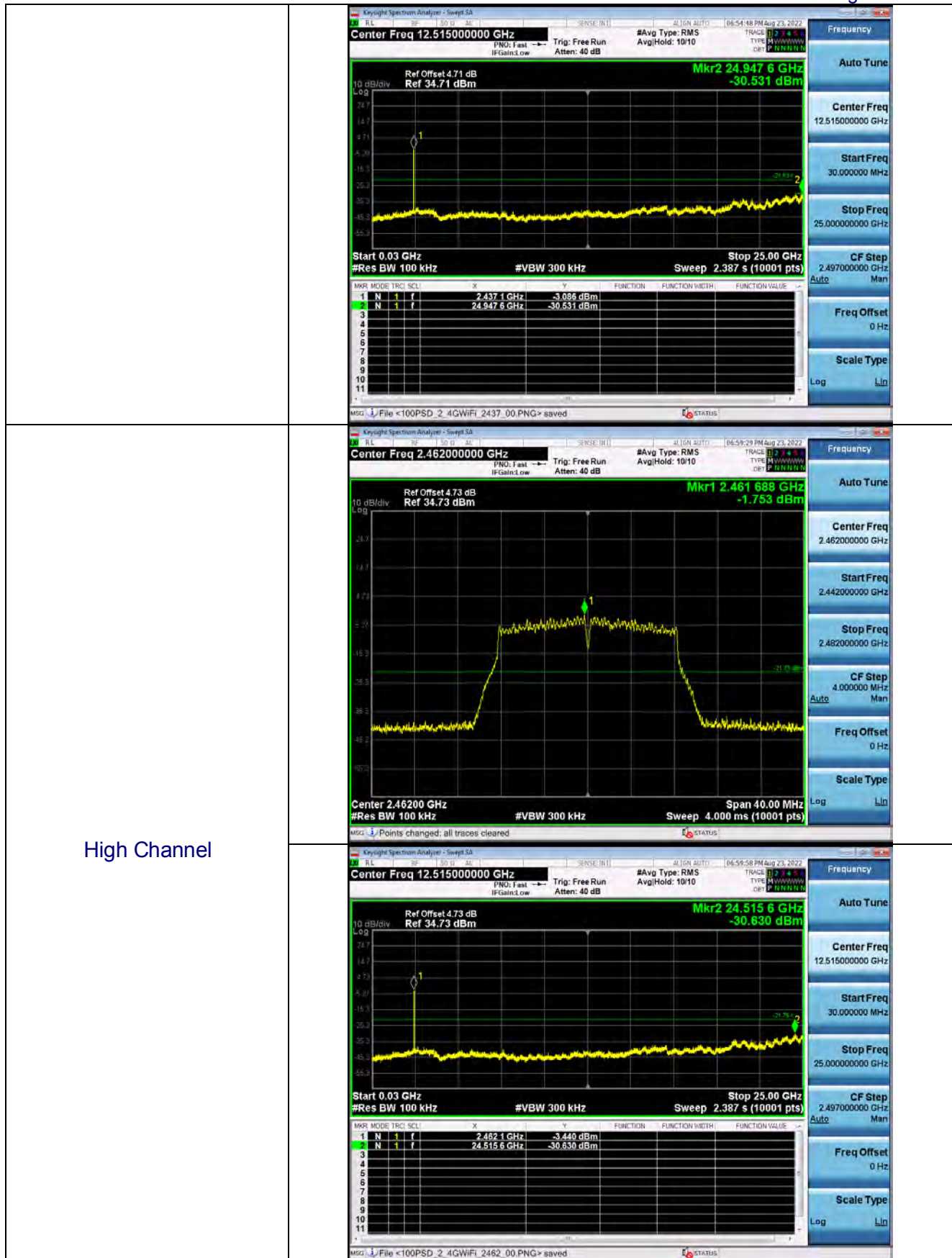
## Spurious emission

Low Channel

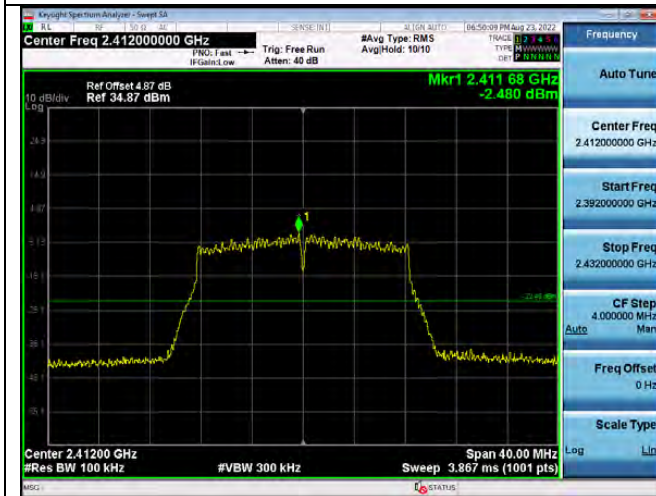


Middle Channel





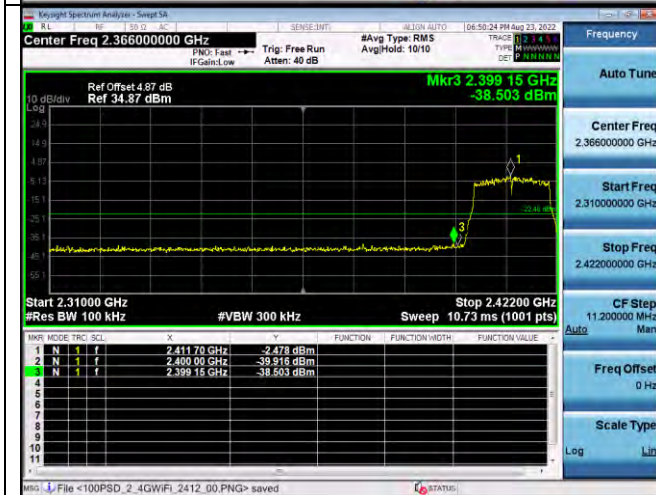
Lowest Channel



Highest Channel



Left Band Edge



Right Band Edge



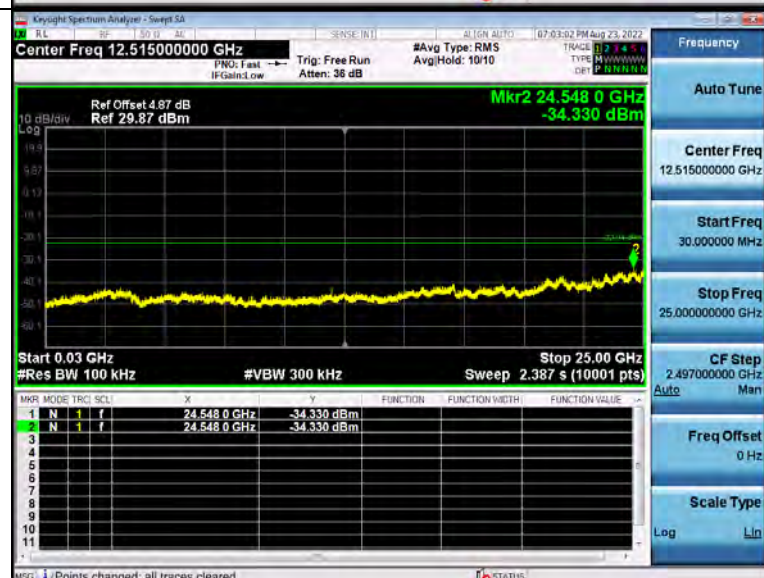
802.11n20 Modulation

Spurious emission

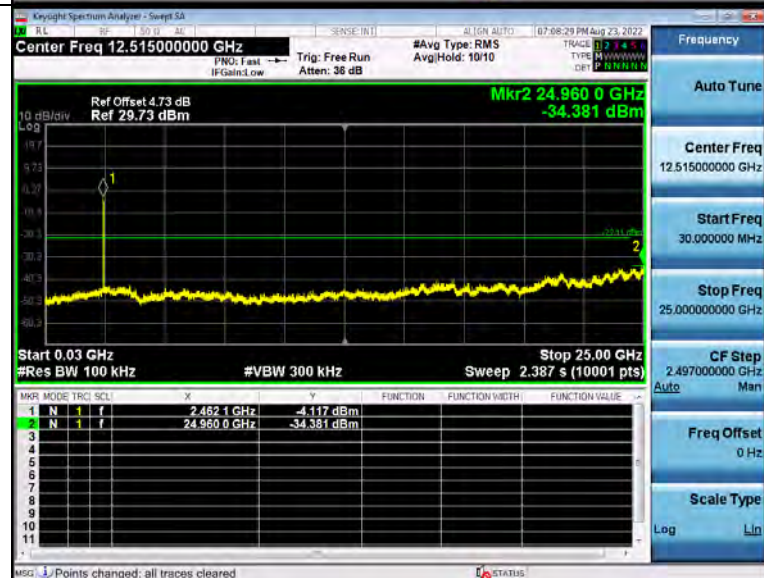
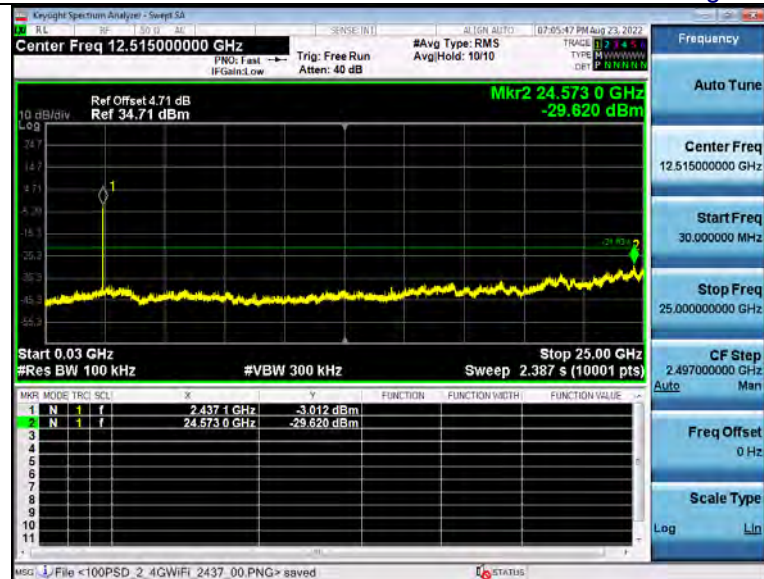
Low Channel



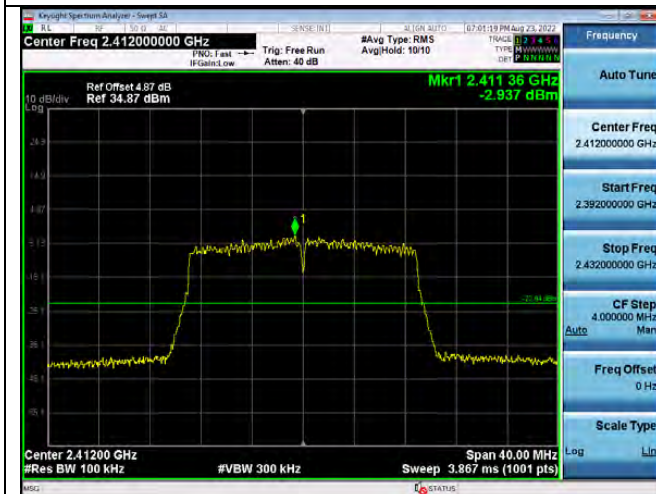
Middle Channel



High Channel



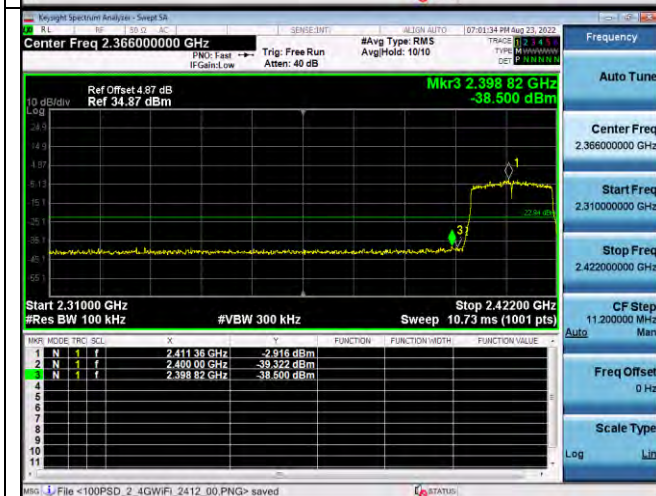
Lowest Channel



Highest Channel



Left Band Edge



Right Band Edge



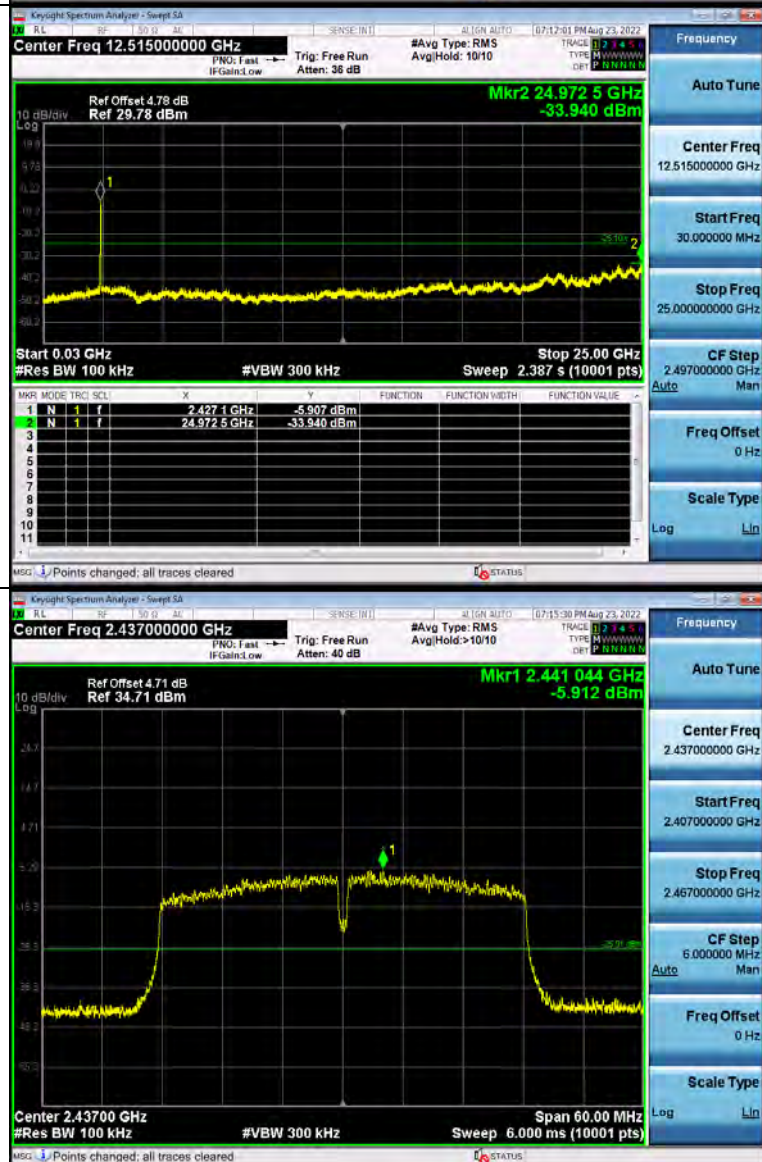
802.11n40 Modulation

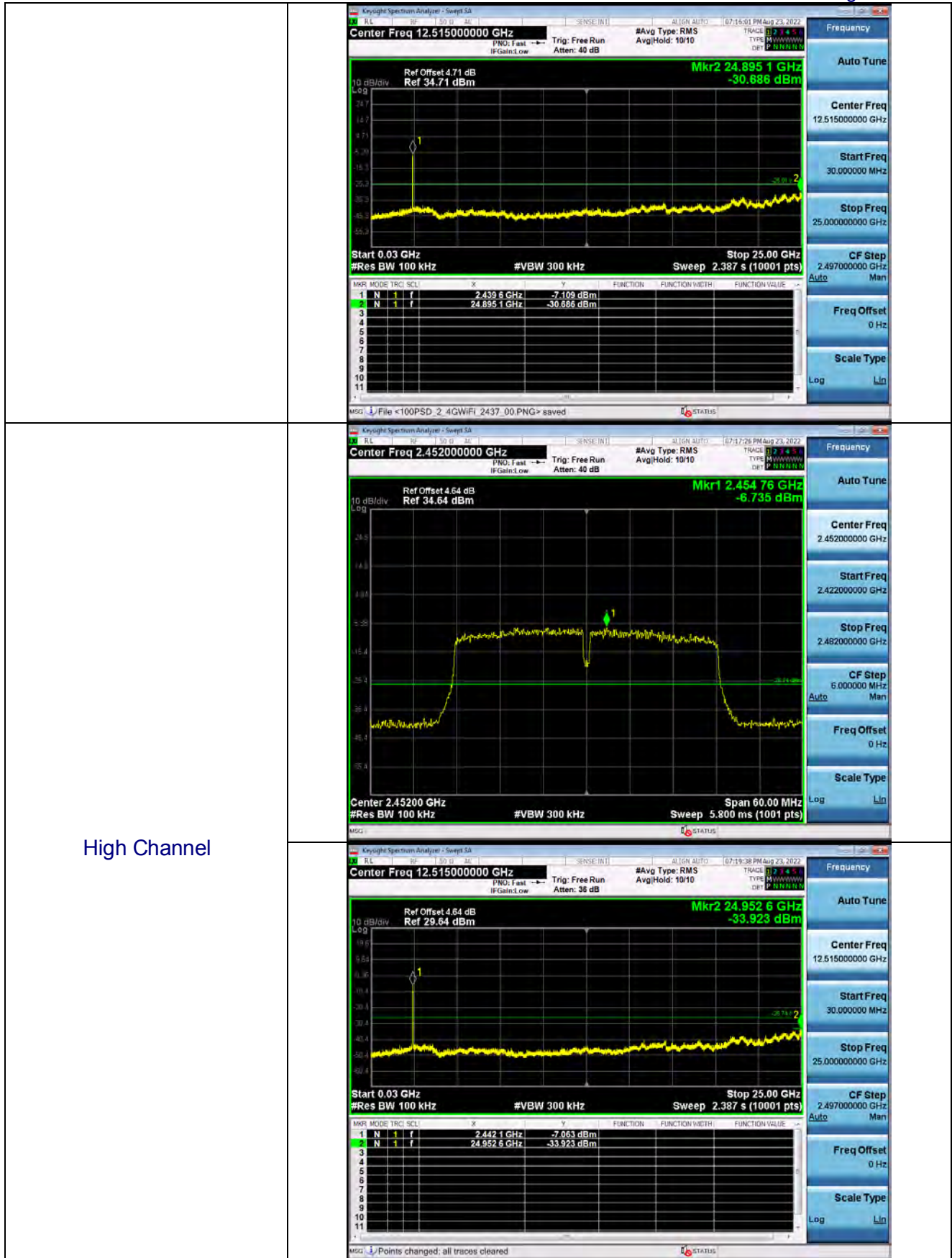
Spurious emission

Low Channel

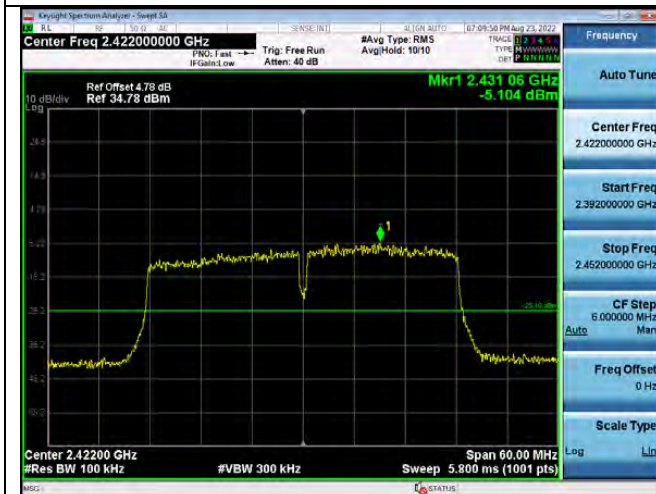


Middle Channel





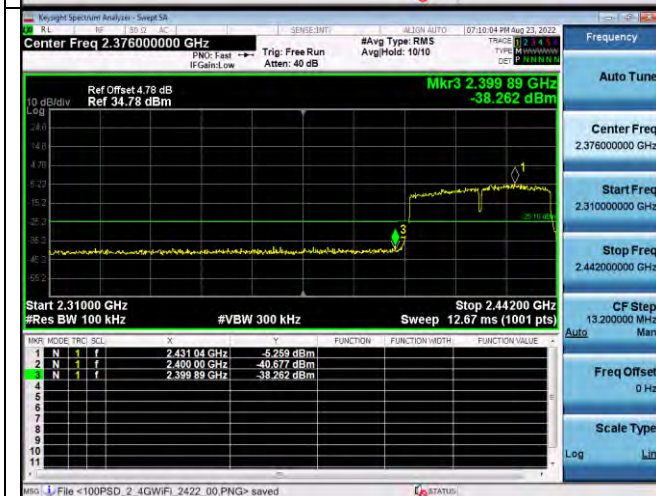
Lowest Channel



Highest Channel



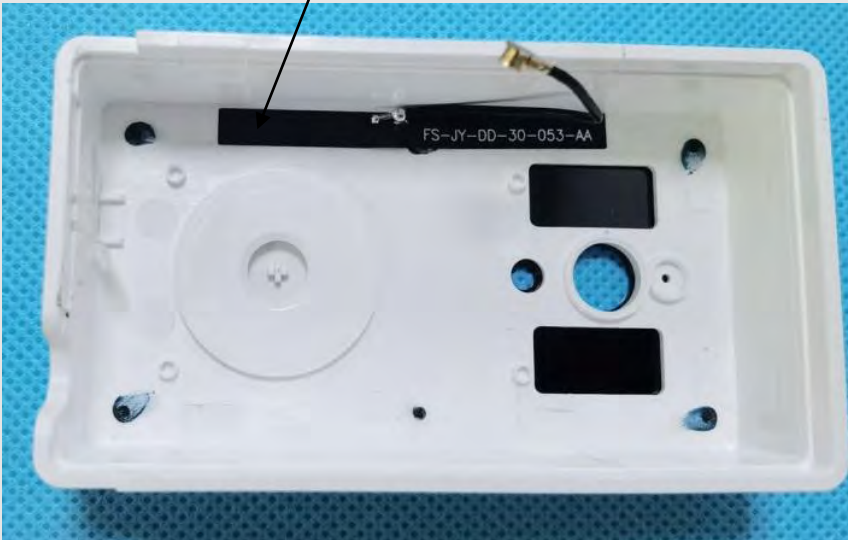
Left Band Edge



Right Band Edge



## 10. ANTENNA REQUIREMENT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Standard requirement:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | FCC Part15 C Section 15.203 /247(c) |
| <p>For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.</p> <p>Refer to statement below for compliance.</p> <p>The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.</p> <p>Antenna Connected Construction</p> <p>The antenna used in this product are FPC antenna, and the best case gain of the antenna is antenna port 1: 1.5dBi</p> |                                     |
| <p>EUT Antenna:</p> <p>2.4GWIFI ANT</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                     |

## **11. TEST SETUP PHOTO**

Reference to the Test setup file for details.

## **12. EUT CONSTRUCTIONAL DETAILS**

Reference to the external photos file and internal photos file for details.

**\*\*\*\*\* END OF REPORT \*\*\*\*\***