

# TEST REPORT

Report No.: BCTC2105423375-1E

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Applicant: Benison Tech USA, Inc

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Product Name: Nirad N100-I router High Performance Indoor  
Single SIM 4G LTE Cloud Managed Enterprise  
Router

---

Model/Type  
reference: N100-I

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Tested Date: 2021-05-12 to 2021-06-07

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Issued Date: 2021-06-07

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**Shenzhen BCTC Testing Co., Ltd.**



# FCC ID:2AXO3N100

Product Name: Nirad N100-I router High Performance Indoor Single SIM 4G LTE Cloud Managed Enterprise Router

Trademark: Nirad

Model/Type reference: N100-I

Prepared For: Benison Tech USA, Inc

Address: 2225 East Bayshore Road Suite 200, Palo Alto, CA 94303 US

Manufacturer: Benison Tech USA, Inc

Address: 2225 East Bayshore Road Suite 200, Palo Alto, CA 94303 US

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Sample Received Date: 2021-05-12

Sample tested Date: 2021-05-12 to 2021-06-07

Issue Date: 2021-06-07

Report No.: BCTC2105423375-1E

FCC Part15.247

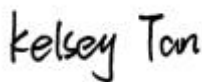
Test Standards ANSI C63.10:2013

KDB 662911 D01 v02r01

558074 D01 15.247 Meas Guidance v05r02

Test Results PASS

Tested by:



Kelsey Tan/ Project Handler

Approved by:



Zero Zhou/Reviewer

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## Table of Contents

|                                                             | Page      |
|-------------------------------------------------------------|-----------|
| <b>1 .VERSION</b>                                           | <b>6</b>  |
| <b>2 . SUMMARY OF TEST RESULTS</b>                          | <b>7</b>  |
| 2.1 MEASUREMENT UNCERTAINTY                                 | 8         |
| <b>3 . GENERAL INFORMATION</b>                              | <b>9</b>  |
| 3.1 GENERAL DESCRIPTION OF EUT                              | 9         |
| 3.2 DESCRIPTION OF TEST MODES                               | 11        |
| 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED | 11        |
| 3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)            | 12        |
| 3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS                      | 13        |
| 3.5.1TEST FACILITY                                          | 13        |
| 3.5.2 RADIATION TEST EQUIPMENT                              | 13        |
| <b>4 . EMC EMISSION TEST</b>                                | <b>15</b> |
| 4.1 CONDUCTED EMISSION MEASUREMENT                          | 15        |
| 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS                  | 15        |
| 4.1.2 TEST PROCEDURE                                        | 15        |
| 4.1.3 DEVIATION FROM TEST STANDARD                          | 15        |
| 4.1.4 TEST SETUP                                            | 16        |
| 4.1.5 EUT OPERATING CONDITIONS                              | 16        |
| 4.1.6 TEST RESULTS                                          | 17        |
| 4.2 RADIATED EMISSION MEASUREMENT                           | 19        |
| 4.2.1 RADIATED EMISSION LIMITS                              | 19        |
| 4.2.2 TEST PROCEDURE                                        | 20        |
| 4.2.3 DEVIATION FROM TEST STANDARD                          | 20        |
| 4.2.4 TEST SETUP                                            | 21        |
| 4.2.5 EUT OPERATING CONDITIONS                              | 22        |
| 4.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)                  | 23        |
| 4.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)                   | 24        |
| 4.2.8 TEST RESULTS                                          | 26        |
| 4.3 RADIATED BAND EMISSION MEASUREMENT                      | 30        |
| 4.3.1 TEST REQUIREMENT:                                     | 30        |
| 4.3.2 TEST PROCEDURE                                        | 30        |
| 4.3.3 DEVIATION FROM TEST STANDARD                          | 31        |
| 4.3.4 TEST SETUP                                            | 31        |
| 4.3.5 EUT OPERATING CONDITIONS                              | 31        |

## Table of Contents

|                                                     | Page      |
|-----------------------------------------------------|-----------|
| <b>5 . POWER SPECTRAL DENSITY TEST</b>              | <b>34</b> |
| <b>5.1 APPLIED PROCEDURES / LIMIT</b>               | <b>34</b> |
| 5.1.1 TEST PROCEDURE                                | 34        |
| 5.1.2 DEVIATION FROM STANDARD                       | 34        |
| 5.1.3 TEST SETUP                                    | 34        |
| 5.1.4 EUT OPERATION CONDITIONS                      | 34        |
| 5.1.5 TEST RESULTS                                  | 35        |
| <b>6 . BANDWIDTH TEST</b>                           | <b>43</b> |
| <b>6.1 APPLIED PROCEDURES / LIMIT</b>               | <b>43</b> |
| 6.1.1 TEST PROCEDURE                                | 43        |
| 6.1.2 DEVIATION FROM STANDARD                       | 43        |
| 6.1.3 TEST SETUP                                    | 43        |
| 6.1.4 EUT OPERATION CONDITIONS                      | 43        |
| 6.1.5 TEST RESULTS                                  | 44        |
| <b>7 . PEAK OUTPUT POWER TEST</b>                   | <b>52</b> |
| <b>7.1 APPLIED PROCEDURES/LIMIT</b>                 | <b>52</b> |
| 7.1.1 TEST PROCEDURE                                | 52        |
| 7.1.2 DEVIATION FROM STANDARD                       | 52        |
| 7.1.3 TEST SETUP                                    | 52        |
| 7.1.4 EUT OPERATION CONDITIONS                      | 52        |
| 7.1.5 TEST RESULTS                                  | 53        |
| <b>8 . 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE</b> | <b>54</b> |
| <b>8.1 APPLICABLE STANDARD</b>                      | <b>54</b> |
| <b>8.2 TEST PROCEDURE</b>                           | <b>54</b> |
| <b>8.3 DEVIATION FROM STANDARD</b>                  | <b>54</b> |
| <b>8.4 TEST SETUP</b>                               | <b>54</b> |
| <b>8.5 EUT OPERATION CONDITIONS</b>                 | <b>54</b> |
| <b>9 . DUTY CYCLE OF TEST SIGNAL</b>                | <b>63</b> |
| <b>9.1 STANDARD REQUIREMENT</b>                     | <b>63</b> |
| <b>9.2 FORMULA:</b>                                 | <b>63</b> |
| <b>10 . ANTENNA REQUIREMENT</b>                     | <b>66</b> |
| <b>10.1 STANDARD REQUIREMENT</b>                    | <b>66</b> |
| <b>10.2 EUT ANTENNA</b>                             | <b>66</b> |

**Table of Contents**

|                                                           | <b>Page</b> |
|-----------------------------------------------------------|-------------|
| <b>11 . EUT PHOTOGRAPHS</b>                               | <b>67</b>   |
| <b>12 . EUT TEST SETUP PHOTOGRAPHS</b>                    | <b>68</b>   |
| <b>APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS</b> |             |

**1.VERSION**

| Report No.        | Issue Date | Description | Approved |
|-------------------|------------|-------------|----------|
| BCTC2105423375-1E | 2021-06-07 | Original    | Valid    |
|                   |            |             |          |

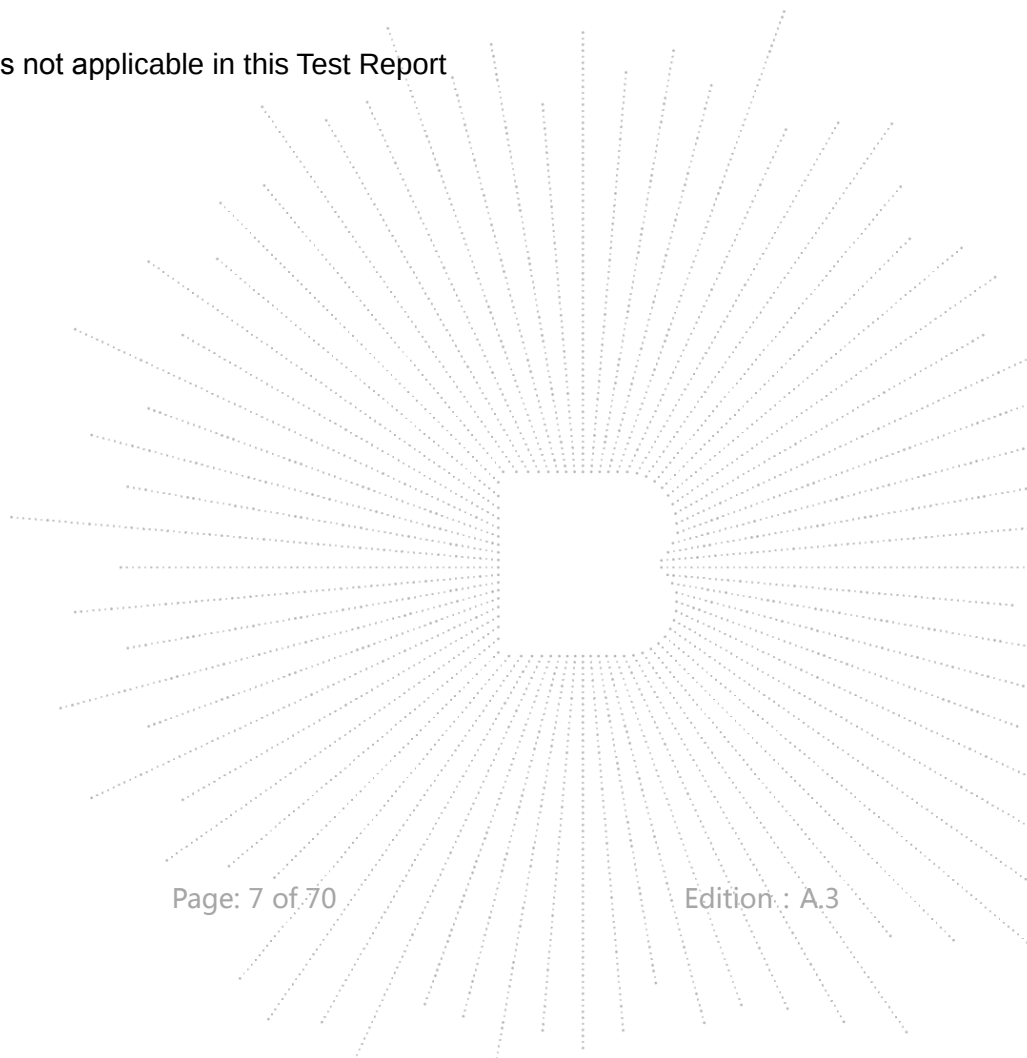
## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C |                                   |          |        |
|---------------------------------|-----------------------------------|----------|--------|
| Standard Section                | Test Item                         | Judgment | Remark |
| 15.207                          | Conducted Emission                | PASS     |        |
| 15.247 (a)(2)                   | 6dB Bandwidth                     | PASS     |        |
| 15.247 (b)                      | Peak Output Power                 | PASS     |        |
| 15.247 (d)                      | Radiated Spurious Emission        | PASS     |        |
| 15.247 (e)                      | Power Spectral Density            | PASS     |        |
| 15.205                          | Restricted Band of Operation      | PASS     |        |
| 15.247 (d)                      | Band Edge (Out of Band Emissions) | PASS     |        |
| 15.203                          | Antenna Requirement               | PASS     |        |

**NOTE:**

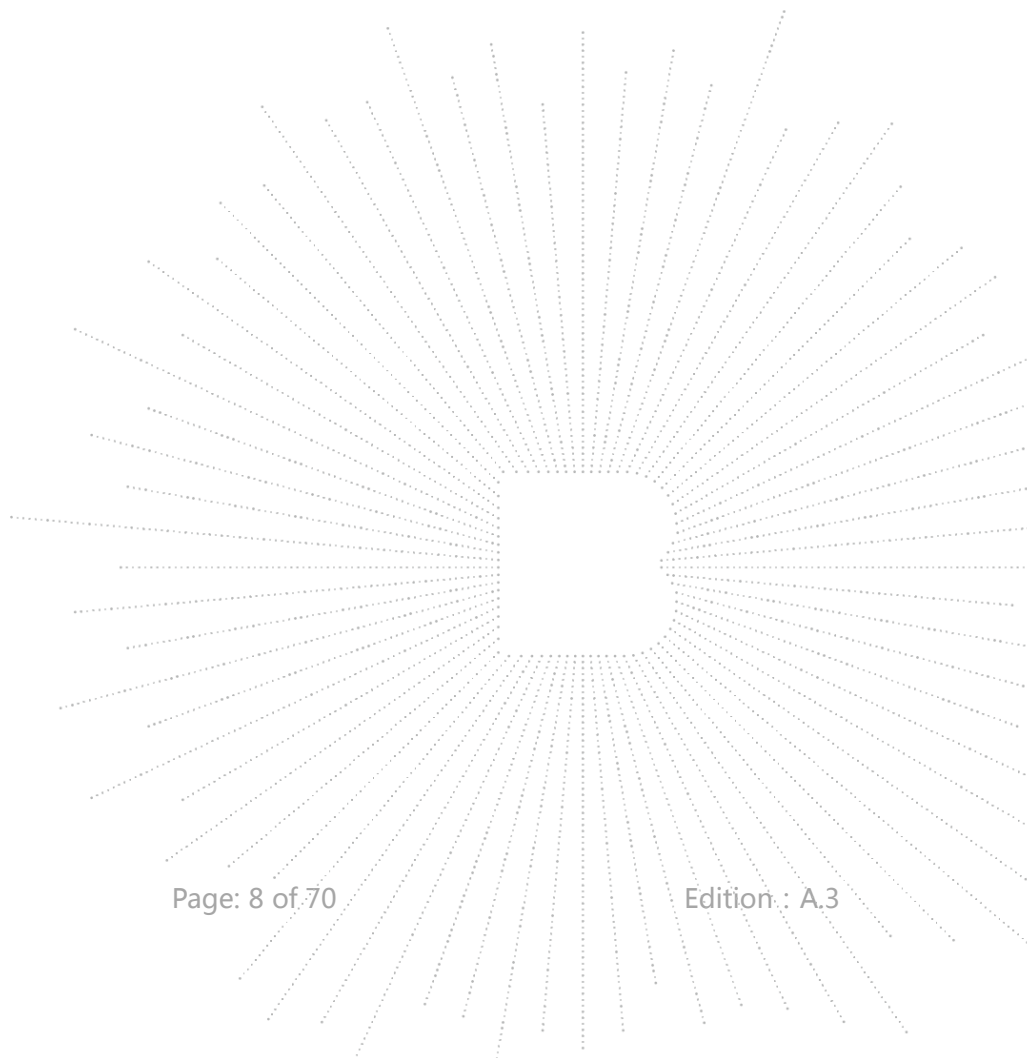
(1) "N/A" denotes test is not applicable in this Test Report



## 2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded 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   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.3dB     |
| 2   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.5dB     |
| 3   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=3.34dB    |
| 4   | Conducted Adjacent channel power                   | U=1.38dB    |
| 5   | Conducted output power uncertainty Above 1G        | U=1.576dB   |
| 6   | Conducted output power uncertainty below 1G        | U=1.28dB    |
| 7   | humidity uncertainty                               | U=5.3%      |
| 8   | Temperature uncertainty                            | U=0.59°C    |



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                         |                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------|
| Model/Type reference:   | N100-I                                                                                |
| Model differences:      | N/A                                                                                   |
| Hardware Version:       | N/A                                                                                   |
| Software Version:       | N/A                                                                                   |
| Operation Frequency:    | 802.11b/g/n20MHz:2412~2462 MHz<br>802.11n40MHz:2422~2452 MHz                          |
| Bit Rate of Transmitter | 802.11b:11/5.5/2/1 Mbps<br>802.11g:54/48/36/24/18/12/9/6Mbps<br>802.11n Up to 300Mbps |
| Type of Modulation:     | WIFI: OFDM/DSSS                                                                       |
| Number Of Channel       | 802.11b/g/n20MHz:11 CH<br>802.11n40MHz: 7 CH                                          |
| Antenna installation:   | WIFI: External antenna*2                                                              |
| Antenna Gain:           | WIFI: Antenna A:5dBi<br>Antenna B:5dBi                                                |
| Ratings:                | DC 12V 2.0A                                                                           |
| Adapter                 | Model No.:TAP25-120S200U1<br>Input: AC100-240V~ 50/60Hz, 0.6A<br>Output: DC 12V 2.0A  |

1.

| Channel List for 802.11b/g/n(20) |                     |         |                     |         |                     |         |                     |
|----------------------------------|---------------------|---------|---------------------|---------|---------------------|---------|---------------------|
| Channel                          | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) |
| 01                               | 2412                | 04      | 2427                | 07      | 2442                | 10      | 2457                |
| 02                               | 2417                | 05      | 2432                | 08      | 2447                | 11      | 2462                |
| 03                               | 2422                | 06      | 2437                | 09      | 2452                |         |                     |
| Channel List for 802.11n(40)     |                     |         |                     |         |                     |         |                     |
| Channel                          | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) | Channel | Frequen<br>cy (MHz) |
| 03                               | 2422                | 05      | 2432                | 07      | 2442                | 09      | 2452                |
| 04                               | 2427                | 06      | 2437                | 08      | 2447                |         |                     |

2

Table for External antenna

| Ant. | Brand | Model Name | Antenna Type     | Gain (dBi) | NOTE |
|------|-------|------------|------------------|------------|------|
| A    | N/A   | N/A        | External antenna | 5          | N/A  |
| B    | N/A   | N/A        | External antenna | 5          | N/A  |

EUT has two External antennas with Max gain GANT 5dBi on every antenna, CDD device with two spatial streams, also can operat with one spatial streams according to KDB662911 D01 v02r01,

Directional gain= GANT + Array Gain, where Array Gain is as follows.

1)For power spectral density(PSD) measurements,  
 $\text{Array Gain} = 10\log(\text{NANT}/\text{NSS})\text{dB} = 10\log(2/1) = 3.01\text{dB}$ ,  
 So the directional gain for PSD is 8.01dBi

2)For power measurements,  
 The Array gain=0 dB for  $\text{NANT} \leq 4$ ,  
 So the directional gain for Power measurements is 5dBi

### 3.2 DESCRIPTION OF TEST MODES

| Pretest Mode | Description              |
|--------------|--------------------------|
| Mode 1       | 802.11b CH1/ CH6/ CH11   |
| Mode 2       | 802.11g CH1/ CH6/ CH11   |
| Mode 3       | 802.11n20 CH1/ CH6/ CH11 |
| Mode 4       | 802.11n40 CH3/ CH6/ CH9  |
| Mode 5       | Link Mode                |

| Conducted Emission |             |
|--------------------|-------------|
| Final Test Mode    | Description |
| Mode 5             | Link Mode   |

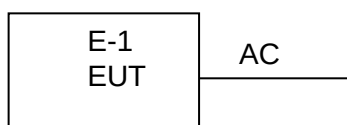
| For Radiated Emission |                          |
|-----------------------|--------------------------|
| Final Test Mode       | Description              |
| Mode 1                | 802.11b CH1/ CH6/ CH11   |
| Mode 2                | 802.11g CH1/ CH6/ CH11   |
| Mode 3                | 802.11n20 CH1/ CH6/ CH11 |
| Mode 4                | 802.11n40 CH3/ CH6/ CH9  |

Note:

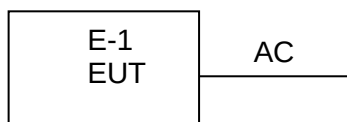
(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

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

Conducted Emission Test



Radiated Spurious Emission



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

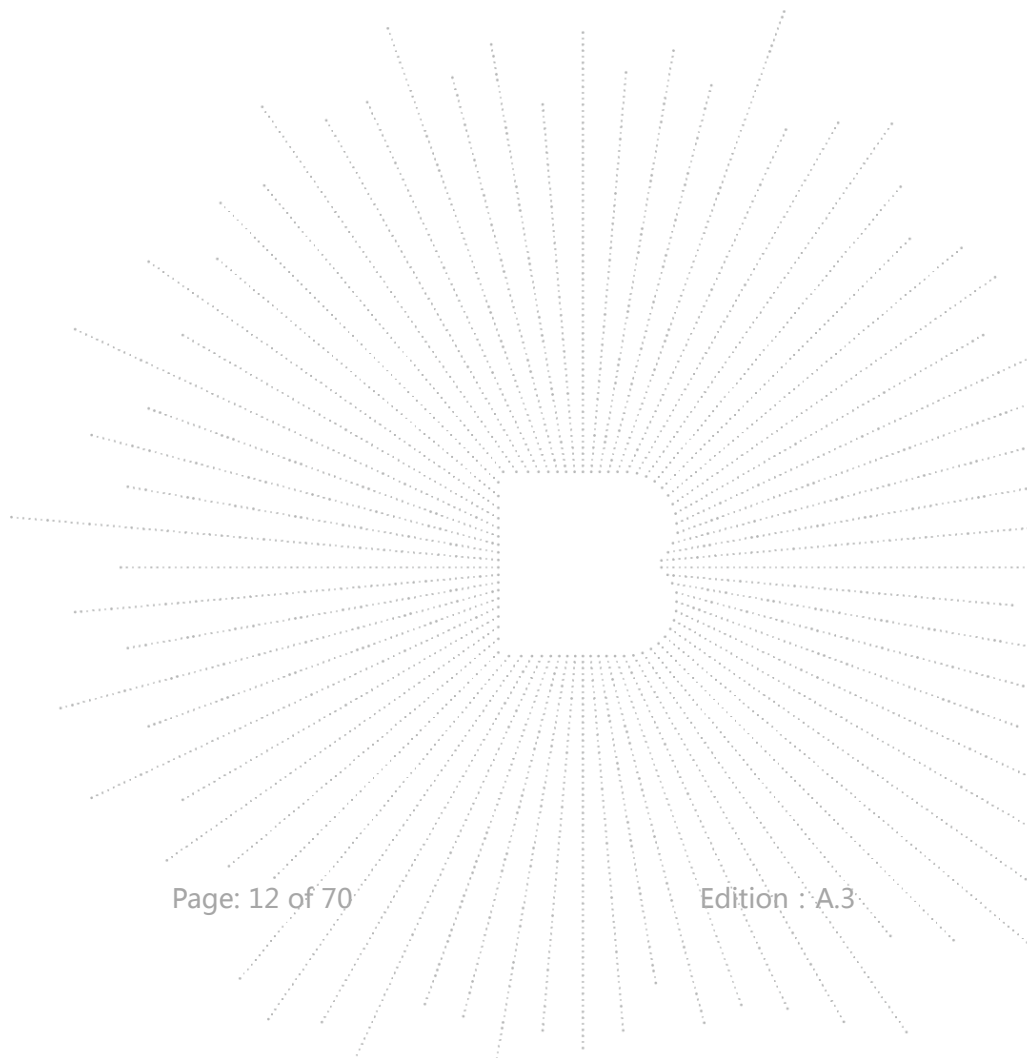
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Device Type                                                                                   | Brand | Model  | Series No. | Note |
|-----|-----------------------------------------------------------------------------------------------|-------|--------|------------|------|
| E-1 | Nirad N100-I router High Performance Indoor Single SIM 4G LTE Cloud Managed Enterprise Router | Nirad | N100-I | N/A        | EUT  |

| 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.



### 3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

#### 3.5.1 TEST FACILITY

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

#### 3.5.2 RADIATION TEST EQUIPMENT

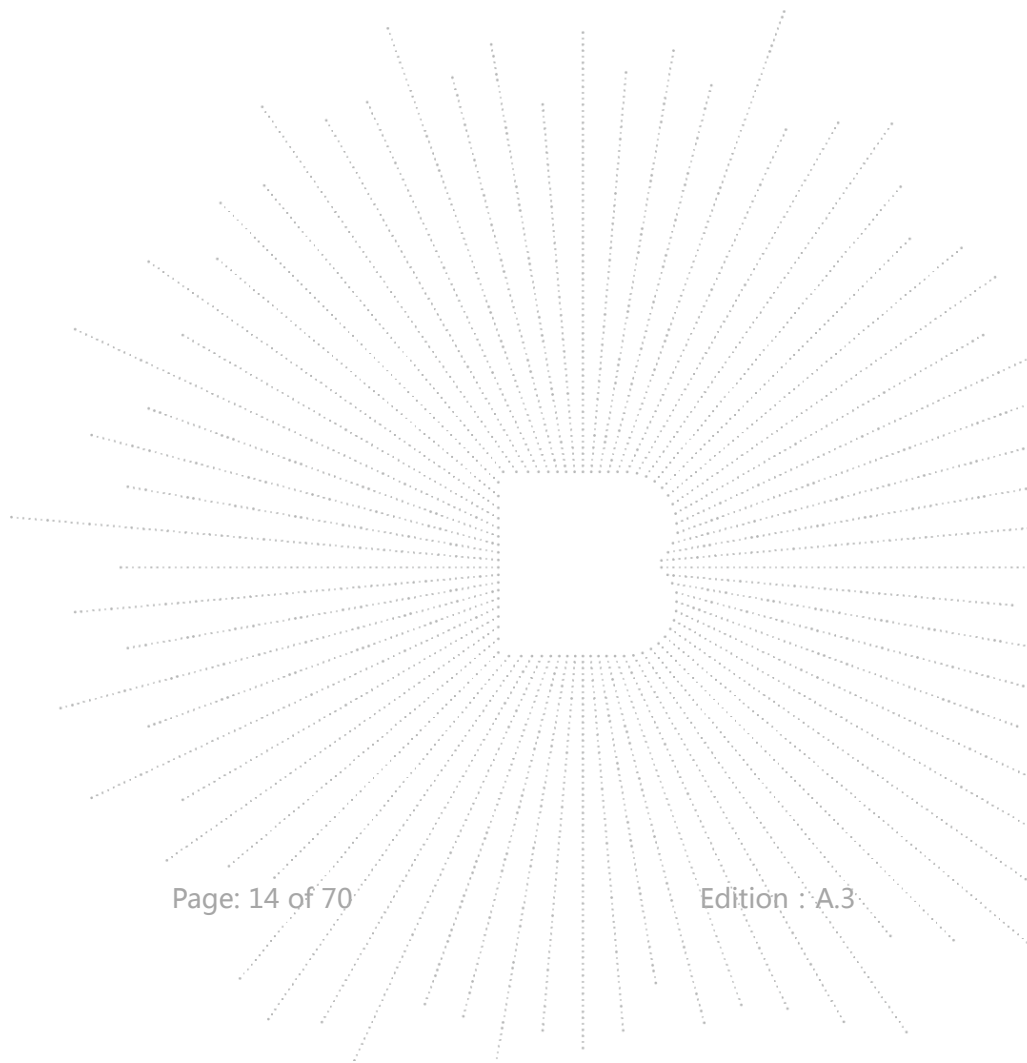
| Item | Equipment                        | Manufacturer | Type No.         | Serial No.    | Last calibration | Calibrated until |
|------|----------------------------------|--------------|------------------|---------------|------------------|------------------|
| 1    | Spectrum Analyzer (9kHz-26.5GHz) | Agilent      | E4407B           | MY45109572    | May 28, 2021     | May 27, 2022     |
| 2    | Test Receiver (9kHz-7GHz)        | R&S          | ESRP             | 101154        | May 28, 2021     | May 27, 2022     |
| 3    | Bilog Antenna (30MHz-3GHz)       | SCHWARZBECK  | VULB9163         | VULB9163-942  | Jun. 01, 2021    | May 31, 2022     |
| 4    | Horn Antenna (1GHz-18GHz)        | SCHWARZBECK  | BBHA9120D        | 1541          | Jun. 02, 2021    | Jun. 01, 2022    |
| 5    | Horn Antenna (18GHz-40GHz)       | SCHWARZBECK  | BBHA9170         | 00822         | Jun. 10, 2020    | Jun. 09, 2021    |
| 6    | Amplifier (9KHz-6GHz)            | SCHWARZBECK  | BBV9744          | 9744-0037     | May 28, 2021     | May 27, 2022     |
| 7    | Amplifier                        | SKET         | LAPA_01G18G-45dB | \             | May 28, 2021     | May 27, 2022     |
| 8    | Amplifier (18GHz-40GHz)          | MITEQ        | TTA1840-35-HG    | 2034381       | May 28, 2021     | May 27, 2022     |
| 9    | Loop Antenna (9KHz-30MHz)        | SCHWARZBECK  | FMZB1519B        | 00014         | Jun. 02, 2021    | Jun. 01, 2022    |
| 10   | RF cables1 (9kHz-30MHz)          | Huber+Suhnar | 9kHz-30MHz       | B1702988-0008 | May 28, 2021     | May 27, 2022     |
| 11   | RF cables2 (30MHz-1GHz)          | Huber+Suhnar | 30MHz-1GHz       | 1486150       | May 28, 2021     | May 27, 2022     |
| 12   | RF cables3 (1GHz-40GHz)          | Huber+Suhnar | 1GHz-40GHz       | 1607106       | May 28, 2021     | May 27, 2022     |
| 13   | Power Metter                     | Keysight     | E4419B           | \             | May 28, 2021     | May 27, 2022     |
| 14   | Power Sensor (AV)                | Keysight     | E9 300A          | \             | May 28, 2021     | May 27, 2022     |
| 15   | Signal Analyzer 20kHz-26.5GHz    | KEYSIGHT     | N9020A           | MY49100060    | May 28, 2021     | May 27, 2022     |
| 16   | Spectrum Analyzer 9kHz-40GHz     | Agilent      | FSP40            | 100363        | May 28, 2021     | May 27, 2022     |
| 17   | D.C. Power Supply                | LongWei      | TPR-6405D        | \             | \                | \                |
| 18   | Software                         | Frad         | EZ-EMC           | FA-03A2 RE    | \                | \                |

### Conduction Test equipment

| Item | Equipment     | Manufacturer    | Type No.   | Serial No.    | Last calibration | Calibrated until |
|------|---------------|-----------------|------------|---------------|------------------|------------------|
| 1    | Test Receiver | R&S             | ESR3       | 102075        | May 28, 2021     | May 27, 2022     |
| 2    | LISN          | SCHWARZBEC<br>K | NSLK8127   | 8127739       | Jun. 13, 2020    | Jun. 12, 2021    |
| 3    | LISN          | R&S             | ENV216     | 101375        | May 28, 2021     | May 27, 2022     |
| 4    | RF cables     | Huber+Suhnar    | 9kHz-30MHz | B1702988-0008 | May 28, 2021     | May 27, 2022     |
| 5    | Software      | Frad            | EZ-EMC     | EMC-CON 3A1   | \                | \                |

### RF conducted test

| Item | Equipment                          | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|------|------------------------------------|--------------|----------|------------|------------------|------------------|
| 1    | Power Metter                       | Keysight     | E4419B   | \          | May 28, 2021     | May 27, 2022     |
| 2    | Power Sensor<br>(AV)               | Keysight     | E9 300A  | \          | May 28, 2021     | May 27, 2022     |
| 3    | Signal Analyzer<br>20kHz-26.5GHz   | KEYSIGHT     | N9020A   | MY49100060 | May 28, 2021     | May 27, 2022     |
| 4    | Spectrum<br>Analyzer<br>9kHz-40GHz | Agilent      | FSP40    | 100363     | May 28, 2021     | May 27, 2022     |



## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

| 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) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |

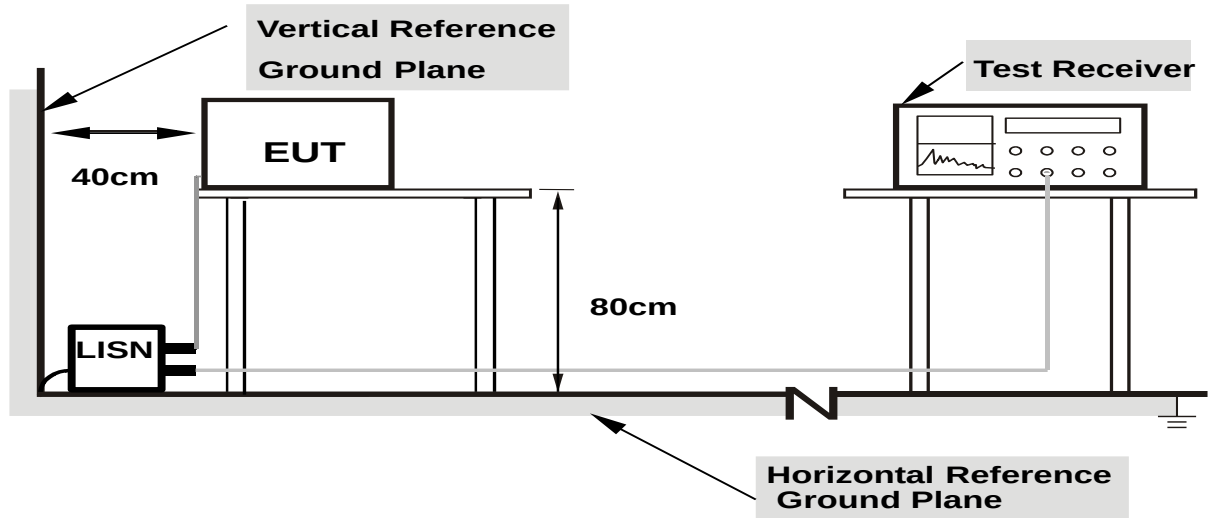
#### 4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. 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



- Note:**
- 1.Support units were connected to second LISN.
  - 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

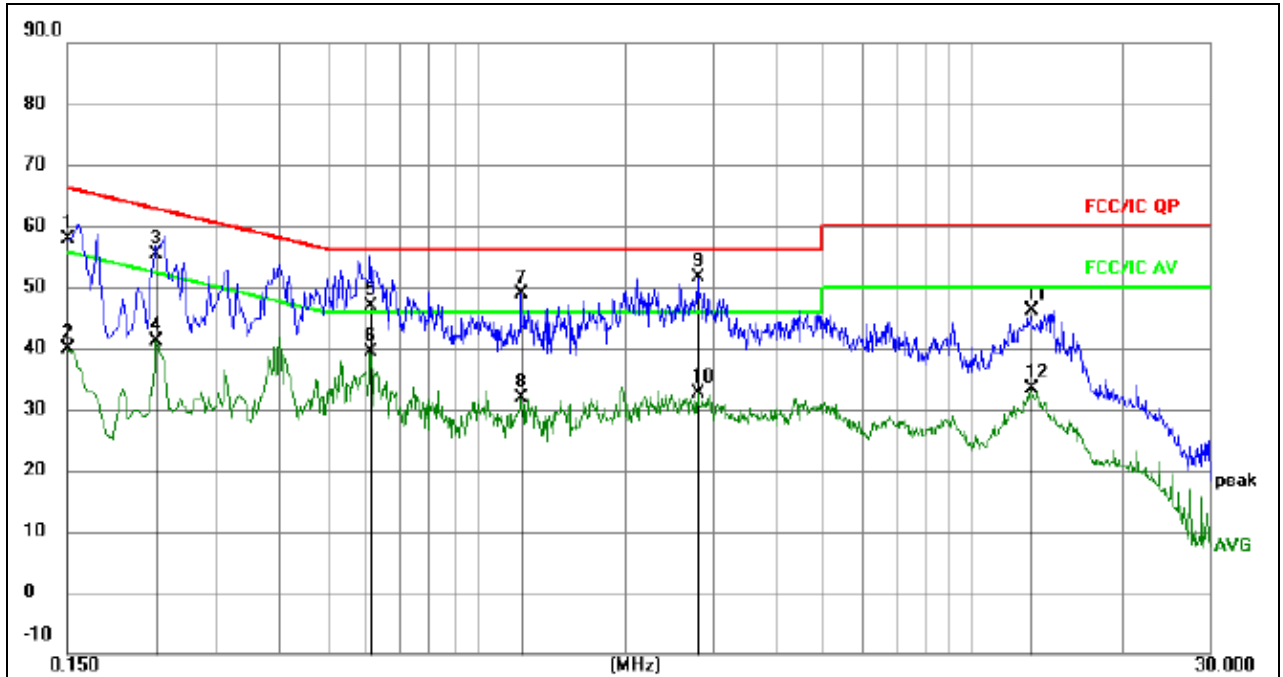
#### 4.1.5 EUT OPERATING CONDITIONS

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.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

#### 4.1.6 TEST RESULTS

|                |              |                     |        |
|----------------|--------------|---------------------|--------|
| Temperature :  | 26 °C        | Relative Humidity : | 54%    |
| Pressure :     | 101kPa       | Phase :             | L      |
| Test Voltage : | AC 120V/60Hz | Test Mode :         | Mode 5 |

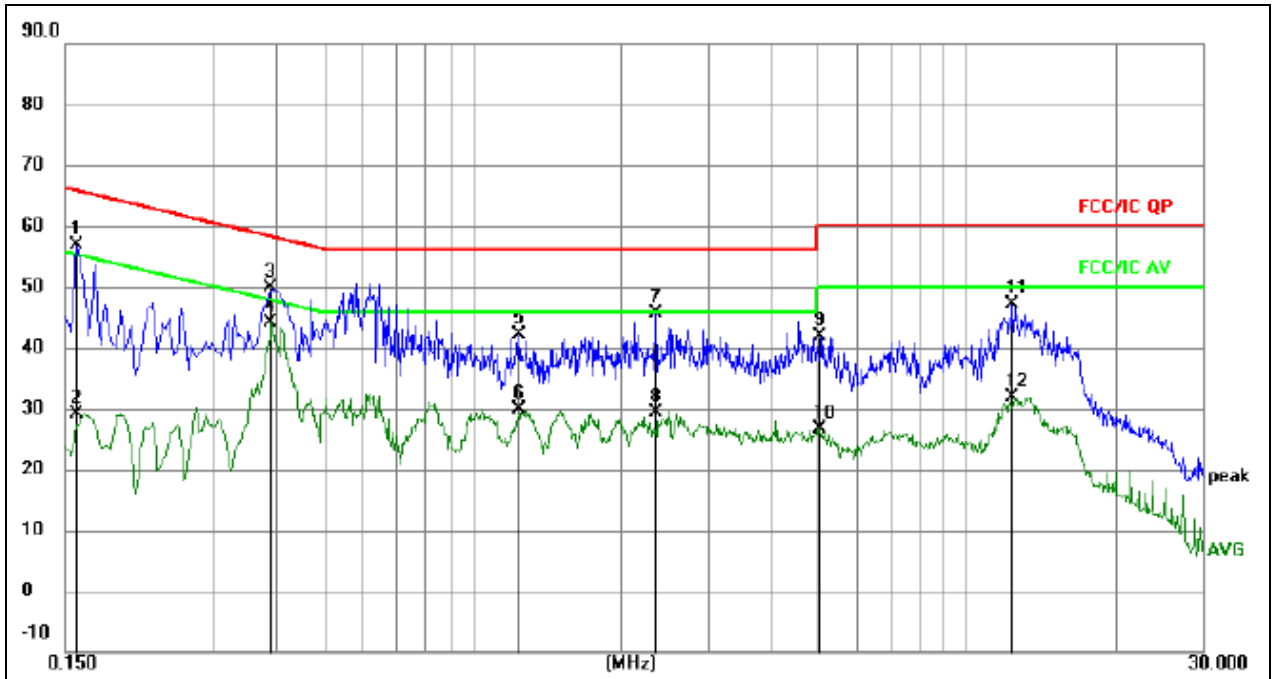


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dB | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector |
|-----|-----|--------------|------------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1   |     | 0.1500       | 48.42                  | 9.52                    | 57.94                    | 66.00         | -8.06      | QP       |
| 2   |     | 0.1500       | 30.36                  | 9.52                    | 39.88                    | 56.00         | -16.12     | AVG      |
| 3   |     | 0.2265       | 45.90                  | 9.49                    | 55.39                    | 62.58         | -7.19      | QP       |
| 4   |     | 0.2265       | 31.68                  | 9.49                    | 41.17                    | 52.58         | -11.41     | AVG      |
| 5   |     | 0.6134       | 36.92                  | 9.95                    | 46.87                    | 56.00         | -9.13      | QP       |
| 6   |     | 0.6134       | 29.39                  | 9.95                    | 39.34                    | 46.00         | -6.66      | AVG      |
| 7   |     | 1.2345       | 39.31                  | 9.57                    | 48.88                    | 56.00         | -7.12      | QP       |
| 8   |     | 1.2345       | 22.26                  | 9.57                    | 31.83                    | 46.00         | -14.17     | AVG      |
| 9   | *   | 2.7960       | 41.98                  | 9.65                    | 51.63                    | 56.00         | -4.37      | QP       |
| 10  |     | 2.7960       | 22.86                  | 9.65                    | 32.51                    | 46.00         | -13.49     | AVG      |
| 11  |     | 13.1235      | 36.46                  | 9.70                    | 46.16                    | 60.00         | -13.84     | QP       |
| 12  |     | 13.1235      | 23.57                  | 9.70                    | 33.27                    | 50.00         | -16.73     | AVG      |

|                |              |                     |        |
|----------------|--------------|---------------------|--------|
| Temperature :  | 26 °C        | Relative Humidity : | 54%    |
| Pressure :     | 101kPa       | Phase :             | N      |
| Test Voltage : | AC 120V/60Hz | Test Mode :         | Mode 5 |



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

| No. | Mk. | Freq.<br>MHz | Reading<br>Level | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector |
|-----|-----|--------------|------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1   |     | 0.1581       | 47.29            | 9.51                    | 56.80                    | 65.56         | -8.76      | QP       |
| 2   |     | 0.1581       | 19.55            | 9.51                    | 29.06                    | 55.56         | -26.50     | AVG      |
| 3   |     | 0.3913       | 40.38            | 9.51                    | 49.89                    | 58.04         | -8.15      | QP       |
| 4   | *   | 0.3913       | 34.69            | 9.51                    | 44.20                    | 48.04         | -3.84      | AVG      |
| 5   |     | 1.2422       | 32.55            | 9.57                    | 42.12                    | 56.00         | -13.88     | QP       |
| 6   |     | 1.2422       | 20.38            | 9.57                    | 29.95                    | 46.00         | -16.05     | AVG      |
| 7   |     | 2.3459       | 35.97            | 9.61                    | 45.58                    | 56.00         | -10.42     | QP       |
| 8   |     | 2.3459       | 19.89            | 9.61                    | 29.50                    | 46.00         | -16.50     | AVG      |
| 9   |     | 5.0312       | 32.15            | 9.80                    | 41.95                    | 60.00         | -18.05     | QP       |
| 10  |     | 5.0312       | 16.86            | 9.80                    | 26.66                    | 50.00         | -23.34     | AVG      |
| 11  |     | 12.3836      | 37.43            | 9.69                    | 47.12                    | 60.00         | -12.88     | QP       |
| 12  |     | 12.3836      | 22.23            | 9.69                    | 31.92                    | 50.00         | -18.08     | AVG      |

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (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 (Above 1000MHz)

| 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).

| Spectrum Parameter                    | Setting                                          |
|---------------------------------------|--------------------------------------------------|
| Attenuation                           | Auto                                             |
| Start Frequency                       | 1000 MHz                                         |
| Stop Frequency                        | 25GHz                                            |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average |

| Receiver Parameter     | Setting                          |
|------------------------|----------------------------------|
| Attenuation            | Auto                             |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP    |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP    |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

#### 4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 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 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 (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:

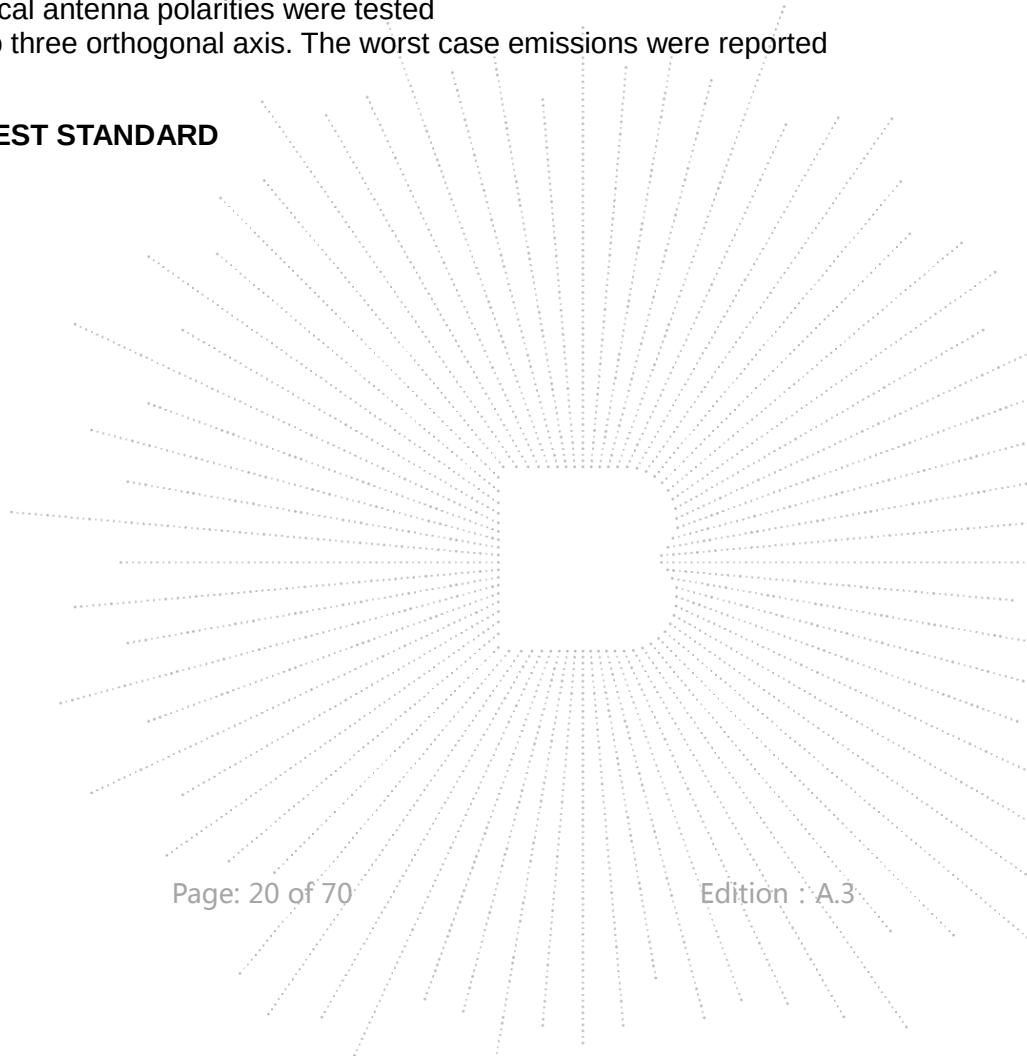
- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre( Above 18GHz the distance is 1 meter and table is 1.5 metre).
- h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

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

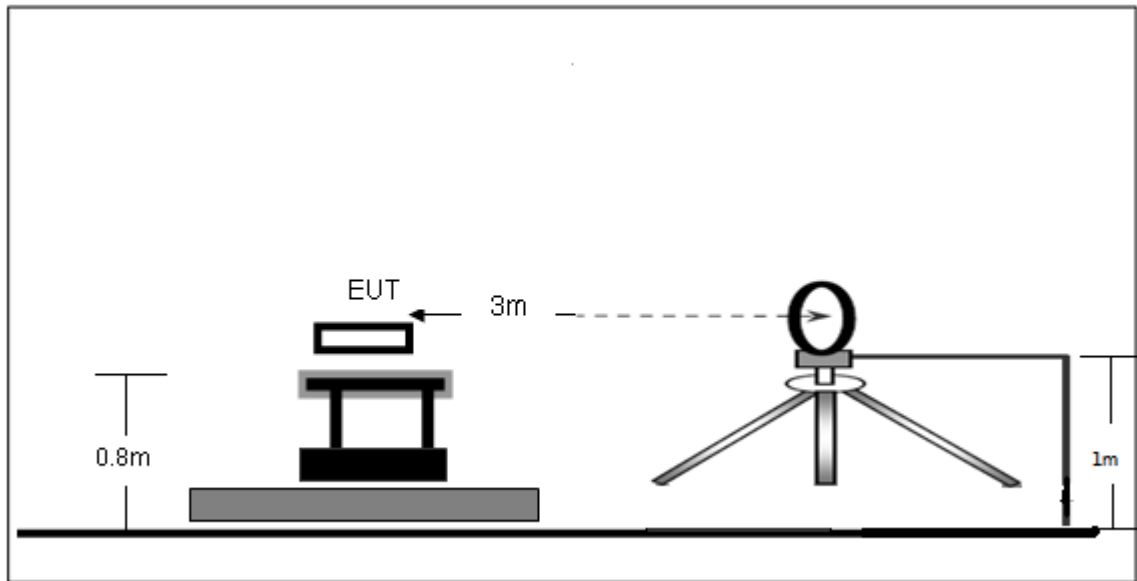
#### 4.2.3 DEVIATION FROM TEST STANDARD

No deviation

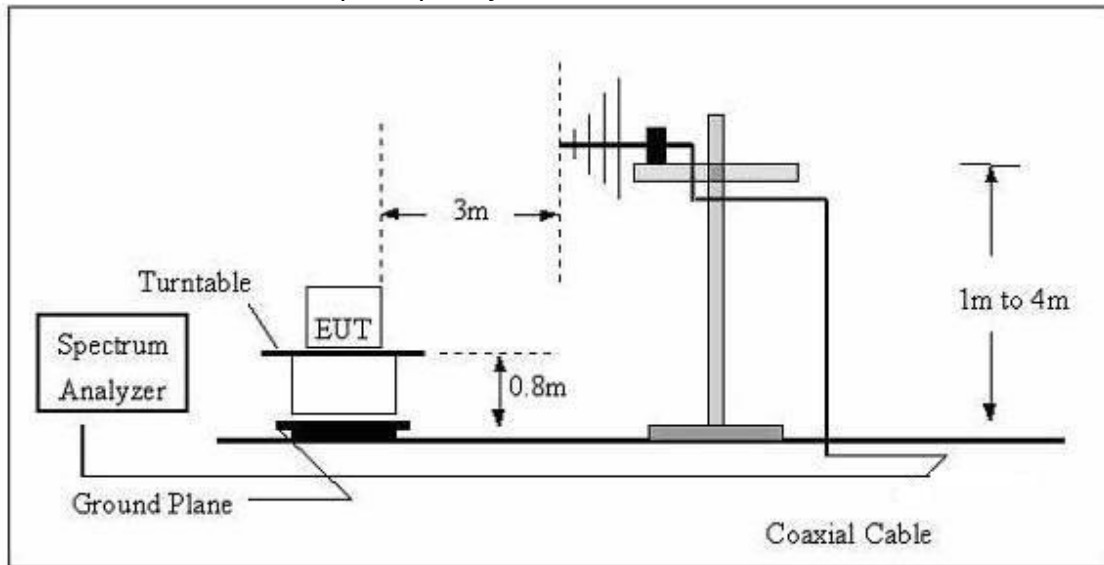


**4.2.4 TEST SETUP**

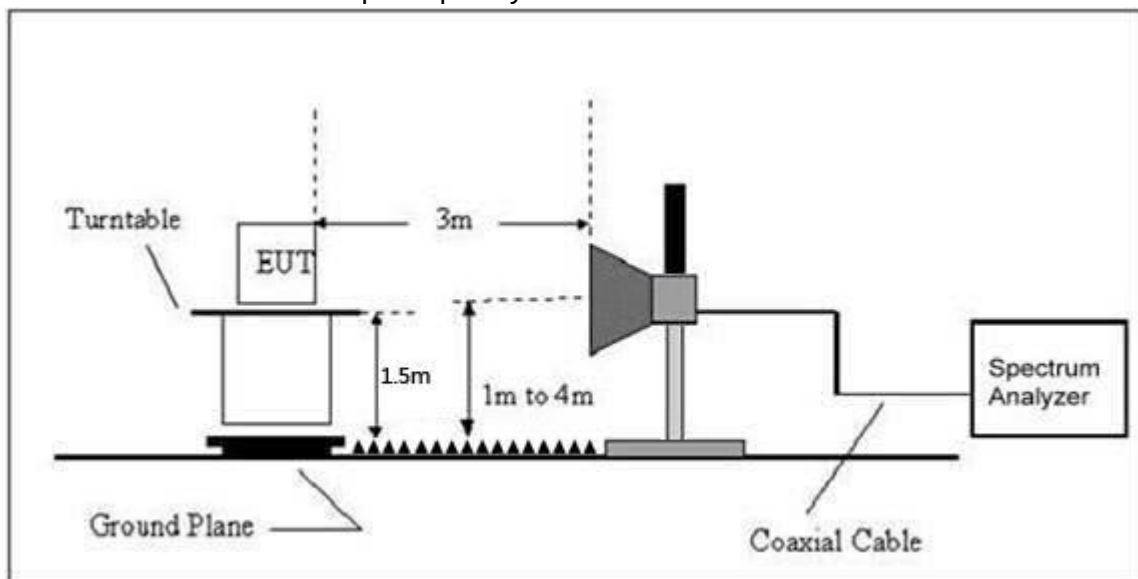
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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 – 30 MHZ)

|              |        |                     |              |
|--------------|--------|---------------------|--------------|
| Temperature: | 26 °C  | Relative Humidity : | 54%          |
| Pressure:    | 101kPa | Test Voltage :      | AC 120V/60Hz |
| Test Mode :  | Mode 5 | Polarization :      | --           |

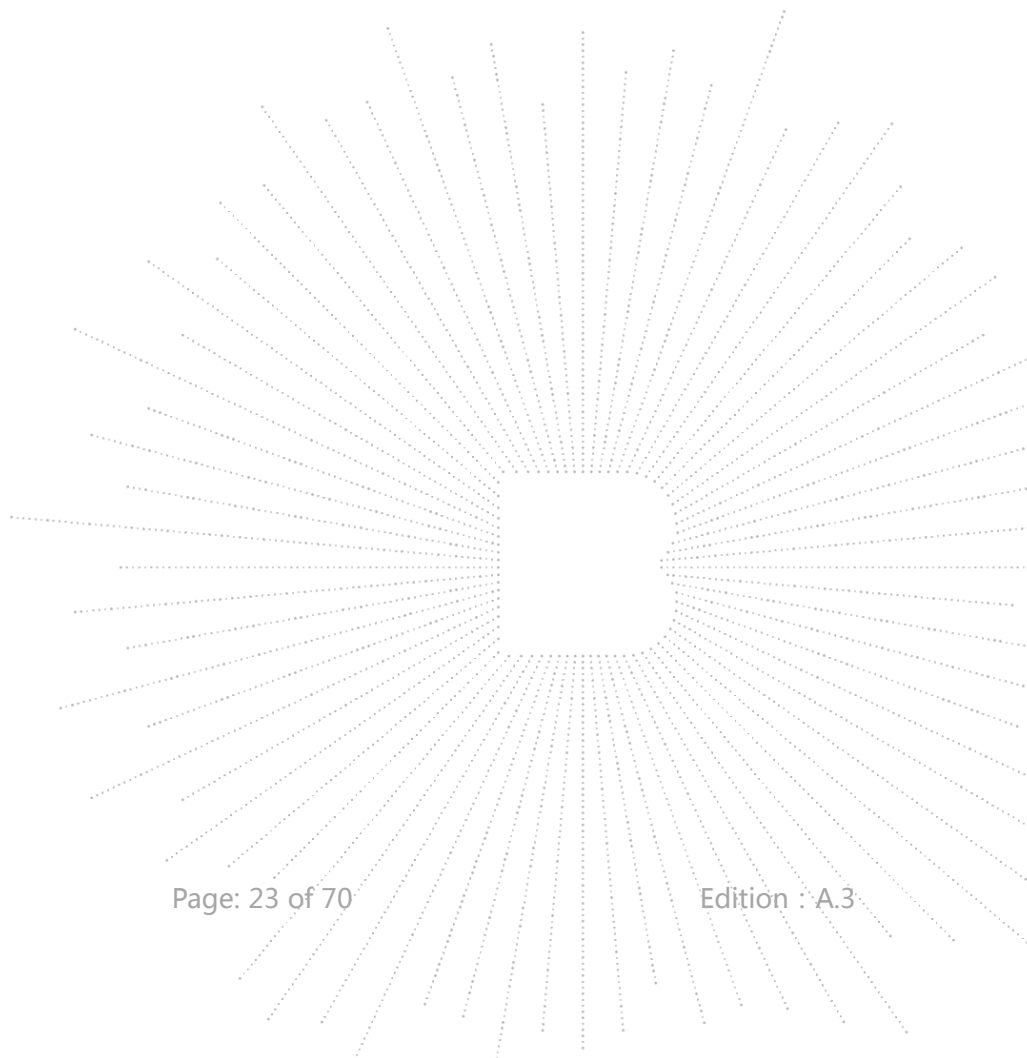
| Freq. | Reading  | Limit    | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F   |
| --    | --       | --       | --     | PASS  |
| --    | --       | --       | --     | PASS  |

#### NOTE:

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

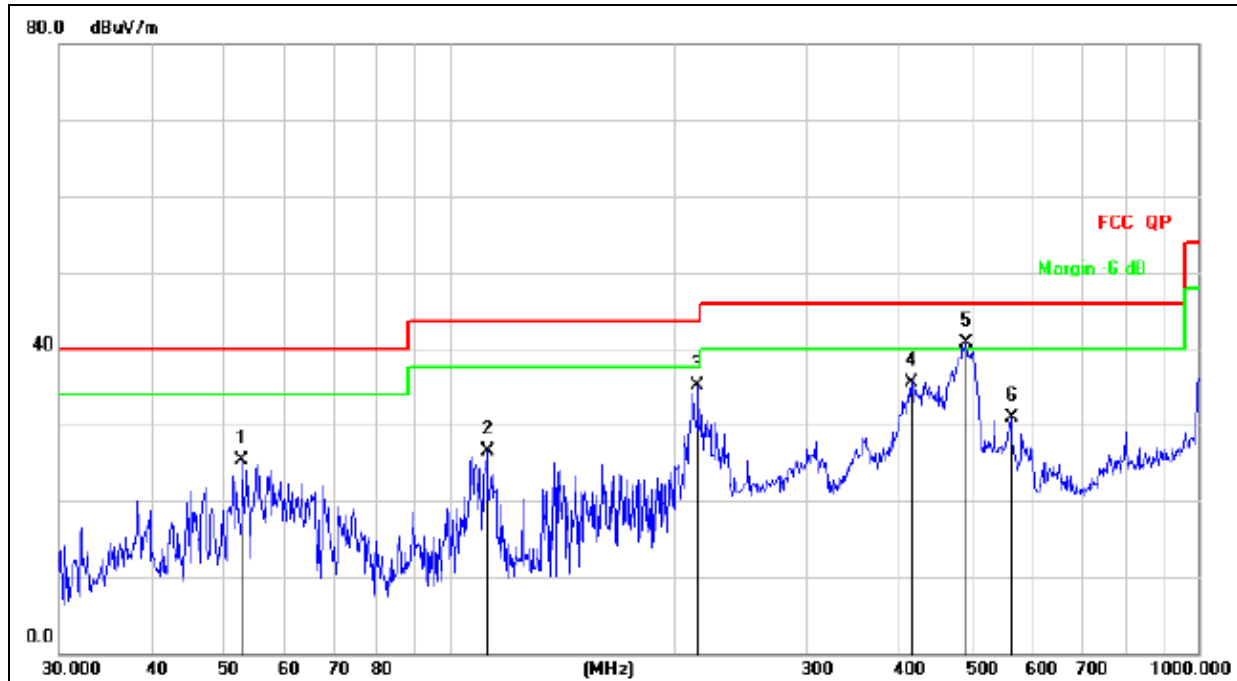
Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



#### 4.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

|                |              |                     |            |
|----------------|--------------|---------------------|------------|
| Temperature :  | 26 °C        | Relative Humidity : | 54%        |
| Pressure :     | 101 kPa      | Polarization :      | Horizontal |
| Test Voltage : | AC 120V/60Hz | Test Mode :         | Mode 5     |

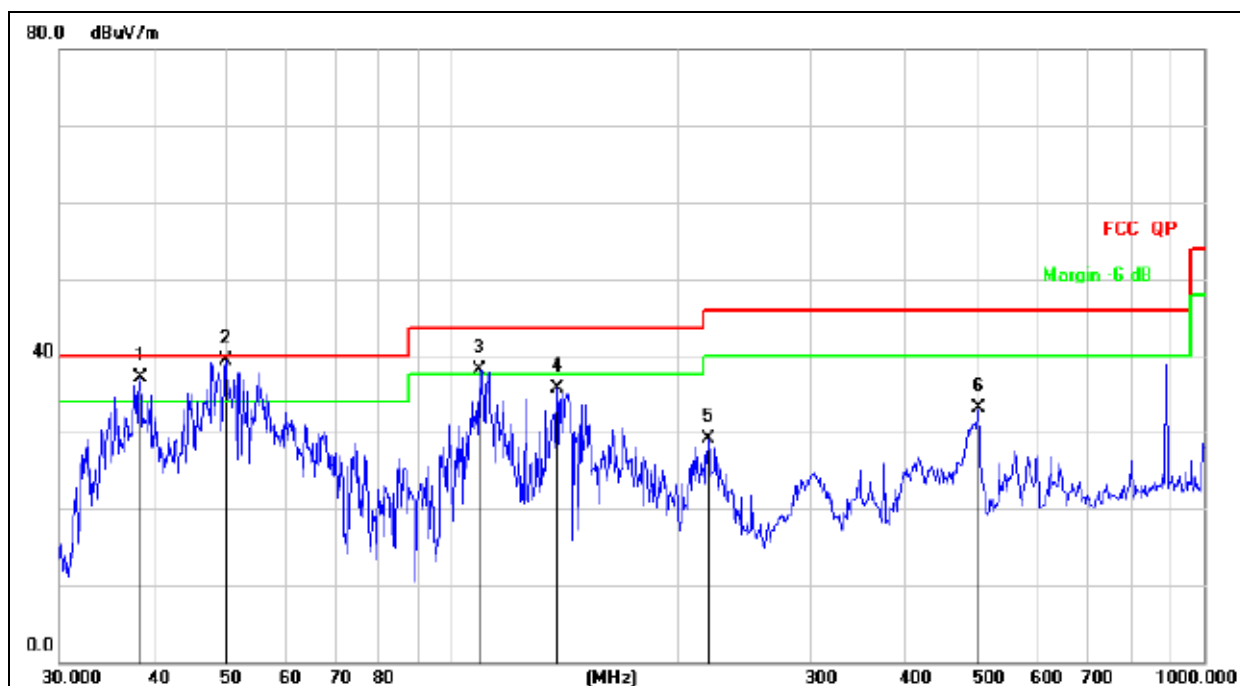


Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dB/m | Over<br>dB | Detector |
|---------|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1       | 52.7600      | 39.62                    | -14.24                  | 25.38                      | 40.00         | -14.62     | QP       |
| 2       | 112.1305     | 42.78                    | -16.26                  | 26.52                      | 43.50         | -16.98     | QP       |
| 3       | 214.5143     | 49.98                    | -14.96                  | 35.02                      | 43.50         | -8.48      | QP       |
| 4       | 413.2706     | 45.00                    | -9.40                   | 35.60                      | 46.00         | -10.40     | QP       |
| 5 *     | 490.7447     | 48.53                    | -7.76                   | 40.77                      | 46.00         | -5.23      | QP       |
| 6       | 562.6624     | 36.80                    | -5.99                   | 30.81                      | 46.00         | -15.19     | QP       |

|                |              |                     |          |
|----------------|--------------|---------------------|----------|
| Temperature :  | 26 °C        | Relative Humidity : | 54%      |
| Pressure :     | 101kPa       | Polarization :      | Vertical |
| Test Voltage : | AC 120V/60Hz | Test Mode :         | Mode 5   |



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measure-ment | Limit | Over   |          |
|-----|-----|----------|---------------|----------------|--------------|-------|--------|----------|
|     |     | MHz      | dBuV          | dB             | dBuV/m       | dB/m  | dB     | Detector |
| 1   | !   | 38.4809  | 52.15         | -15.12         | 37.03        | 40.00 | -2.97  | QP       |
| 2   | *   | 50.0566  | 53.44         | -14.08         | 39.36        | 40.00 | -0.64  | QP       |
| 3   | !   | 108.6470 | 54.21         | -16.03         | 38.18        | 43.50 | -5.32  | QP       |
| 4   |     | 137.9028 | 53.66         | -17.93         | 35.73        | 43.50 | -7.77  | QP       |
| 5   |     | 219.0753 | 43.99         | -14.87         | 29.12        | 46.00 | -16.88 | QP       |
| 6   |     | 501.1790 | 40.67         | -7.54          | 33.13        | 46.00 | -12.87 | QP       |

## 4.2.8 TEST RESULTS

Between 1GHz – 25GHz

802.11b

| Polar<br>(H/V)         | Frequency | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limits       | Over   | Detector<br>Type |
|------------------------|-----------|------------------|-------------------|------------------|--------------|--------|------------------|
|                        | (MHz)     | (dBuV/m)         | (dB)              | (dBuV/m)         | (dBuV/<br>m) | (dB)   |                  |
| Low channel:2412MHz    |           |                  |                   |                  |              |        |                  |
| V                      | 4824.00   | 53.12            | -0.43             | 52.69            | 74.00        | -21.31 | PK               |
| V                      | 4824.00   | 43.54            | -0.43             | 43.11            | 54.00        | -10.89 | AV               |
| V                      | 7236.00   | 42.29            | 8.31              | 50.60            | 74.00        | -23.40 | PK               |
| V                      | 7236.00   | 31.68            | 8.31              | 39.99            | 54.00        | -14.01 | AV               |
| H                      | 4804.00   | 52.09            | -0.43             | 51.66            | 74.00        | -22.34 | PK               |
| H                      | 4804.00   | 41.44            | -0.43             | 41.01            | 54.00        | -12.99 | AV               |
| H                      | 7236.00   | 39.79            | 8.31              | 48.10            | 74.00        | -25.90 | PK               |
| H                      | 7236.00   | 31.52            | 8.31              | 39.83            | 54.00        | -14.17 | AV               |
| Middle channel:2437MHz |           |                  |                   |                  |              |        |                  |
| V                      | 4874.00   | 49.73            | -0.38             | 49.35            | 74.00        | -24.65 | PK               |
| V                      | 4874.00   | 42.56            | -0.38             | 42.18            | 54.00        | -11.82 | AV               |
| V                      | 7311.00   | 40.55            | 8.83              | 49.38            | 74.00        | -24.62 | PK               |
| V                      | 7311.00   | 31.05            | 8.83              | 39.88            | 54.00        | -14.12 | AV               |
| H                      | 4874.00   | 47.81            | -0.38             | 47.43            | 74.00        | -26.57 | PK               |
| H                      | 4874.00   | 38.58            | -0.38             | 38.20            | 54.00        | -15.80 | AV               |
| H                      | 7311.00   | 37.94            | 8.83              | 46.77            | 74.00        | -27.23 | PK               |
| H                      | 7311.00   | 29.11            | 8.83              | 37.94            | 54.00        | -16.06 | AV               |
| High channel:2462MHz   |           |                  |                   |                  |              |        |                  |
| V                      | 4924.00   | 51.26            | -0.32             | 50.94            | 74.00        | -23.06 | PK               |
| V                      | 4924.00   | 40.56            | -0.32             | 40.24            | 54.00        | -13.76 | AV               |
| V                      | 7386.00   | 44.43            | 9.35              | 53.78            | 74.00        | -20.22 | PK               |
| V                      | 7386.00   | 35.38            | 9.35              | 44.73            | 54.00        | -9.27  | AV               |
| H                      | 4924.00   | 49.03            | -0.32             | 48.71            | 74.00        | -25.29 | PK               |
| H                      | 4924.00   | 39.25            | -0.32             | 38.93            | 54.00        | -15.07 | AV               |
| H                      | 7386.00   | 43.21            | 9.35              | 52.56            | 74.00        | -21.44 | PK               |
| H                      | 7386.00   | 34.57            | 9.35              | 43.92            | 54.00        | -10.08 | AV               |

Remark:

1.Emission Level = Meter Reading + Factor,

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Over= Emission Level - Limit

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

3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB

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

5. The Worst mode is Antenna A.

**802.11g**

| Polar<br>(H/V)         | Frequency | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limits       | Over   | Detector<br>Type |
|------------------------|-----------|------------------|-------------------|------------------|--------------|--------|------------------|
|                        | (MHz)     | (dBuV/m)         | (dB)              | (dBuV/m)         | (dBuV/<br>m) | (dB)   |                  |
| Low channel:2412MHz    |           |                  |                   |                  |              |        |                  |
| V                      | 4824.00   | 53.28            | -0.43             | 52.85            | 74.00        | -21.15 | PK               |
| V                      | 4824.00   | 44.56            | -0.43             | 44.13            | 54.00        | -9.87  | AV               |
| V                      | 7236.00   | 43.70            | 8.31              | 52.01            | 74.00        | -21.99 | PK               |
| V                      | 7236.00   | 33.22            | 8.31              | 41.53            | 54.00        | -12.47 | AV               |
| H                      | 4804.00   | 48.89            | -0.43             | 48.46            | 74.00        | -25.54 | PK               |
| H                      | 4804.00   | 38.88            | -0.43             | 38.45            | 54.00        | -15.55 | AV               |
| H                      | 7236.00   | 42.32            | 8.31              | 50.63            | 74.00        | -23.37 | PK               |
| H                      | 7236.00   | 35.21            | 8.31              | 43.52            | 54.00        | -10.48 | AV               |
| Middle channel:2437MHz |           |                  |                   |                  |              |        |                  |
| V                      | 4874.00   | 51.43            | -0.38             | 51.05            | 74.00        | -22.95 | PK               |
| V                      | 4874.00   | 44.37            | -0.38             | 43.99            | 54.00        | -10.01 | AV               |
| V                      | 7311.00   | 42.27            | 8.83              | 51.10            | 74.00        | -22.90 | PK               |
| V                      | 7311.00   | 32.64            | 8.83              | 41.47            | 54.00        | -12.53 | AV               |
| H                      | 4874.00   | 49.74            | -0.38             | 49.36            | 74.00        | -24.64 | PK               |
| H                      | 4874.00   | 39.88            | -0.38             | 39.50            | 54.00        | -14.50 | AV               |
| H                      | 7311.00   | 40.52            | 8.83              | 49.35            | 74.00        | -24.65 | PK               |
| H                      | 7311.00   | 33.39            | 8.83              | 42.22            | 54.00        | -11.78 | AV               |
| High channel:2462MHz   |           |                  |                   |                  |              |        |                  |
| V                      | 4924.00   | 53.24            | -0.32             | 52.92            | 74.00        | -21.08 | PK               |
| V                      | 4924.00   | 45.12            | -0.32             | 44.80            | 54.00        | -9.20  | AV               |
| V                      | 7386.00   | 44.52            | 9.35              | 53.87            | 74.00        | -20.13 | PK               |
| V                      | 7386.00   | 35.38            | 9.35              | 44.73            | 54.00        | -9.27  | AV               |
| H                      | 4924.00   | 51.38            | -0.32             | 51.06            | 74.00        | -22.94 | PK               |
| H                      | 4924.00   | 41.37            | -0.32             | 41.05            | 54.00        | -12.95 | AV               |
| H                      | 7386.00   | 41.55            | 9.35              | 50.90            | 74.00        | -23.10 | PK               |
| H                      | 7386.00   | 34.04            | 9.35              | 43.39            | 54.00        | -10.61 | AV               |

Remark:

1.Emission Level = Meter Reading + Factor,

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Over= Emission Level - Limit

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

3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB

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

5. The Worst mode is Antenna A.

**802.11n20**

| Polar<br>(H/V)         | Frequency | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limits       | Over   | Detector<br>Type |
|------------------------|-----------|------------------|-------------------|------------------|--------------|--------|------------------|
|                        | (MHz)     | (dBuV/m)         | (dB)              | (dBuV/m)         | (dBuV/<br>m) | (dB)   |                  |
| Low channel:2412MHz    |           |                  |                   |                  |              |        |                  |
| V                      | 4824.00   | 53.11            | -0.43             | 52.68            | 74.00        | -21.32 | PK               |
| V                      | 4824.00   | 42.56            | -0.43             | 42.13            | 54.00        | -11.87 | AV               |
| V                      | 7236.00   | 43.33            | 8.31              | 51.64            | 74.00        | -22.36 | PK               |
| V                      | 7236.00   | 33.51            | 8.31              | 41.82            | 54.00        | -12.18 | AV               |
| H                      | 4804.00   | 49.28            | -0.43             | 48.85            | 74.00        | -25.15 | PK               |
| H                      | 4804.00   | 38.96            | -0.43             | 38.53            | 54.00        | -15.47 | AV               |
| H                      | 7236.00   | 41.66            | 8.31              | 49.97            | 74.00        | -24.03 | PK               |
| H                      | 7236.00   | 34.29            | 8.31              | 42.60            | 54.00        | -11.40 | AV               |
| Middle channel:2437MHz |           |                  |                   |                  |              |        |                  |
| V                      | 4874.00   | 50.70            | -0.38             | 50.32            | 74.00        | -23.68 | PK               |
| V                      | 4874.00   | 43.23            | -0.38             | 42.85            | 54.00        | -11.15 | AV               |
| V                      | 7311.00   | 40.45            | 8.83              | 49.28            | 74.00        | -24.72 | PK               |
| V                      | 7311.00   | 31.97            | 8.83              | 40.80            | 54.00        | -13.20 | AV               |
| H                      | 4874.00   | 46.09            | -0.38             | 45.71            | 74.00        | -28.29 | PK               |
| H                      | 4874.00   | 35.49            | -0.38             | 35.11            | 54.00        | -18.89 | AV               |
| H                      | 7311.00   | 38.52            | 8.83              | 47.35            | 74.00        | -26.65 | PK               |
| H                      | 7311.00   | 31.08            | 8.83              | 39.91            | 54.00        | -14.09 | AV               |
| High channel:2462MHz   |           |                  |                   |                  |              |        |                  |
| V                      | 4924.00   | 52.85            | -0.32             | 52.53            | 74.00        | -21.47 | PK               |
| V                      | 4924.00   | 44.06            | -0.32             | 43.74            | 54.00        | -10.26 | AV               |
| V                      | 7386.00   | 45.30            | 9.35              | 54.65            | 74.00        | -19.35 | PK               |
| V                      | 7386.00   | 35.15            | 9.35              | 44.50            | 54.00        | -9.50  | AV               |
| H                      | 4924.00   | 51.51            | -0.32             | 51.19            | 74.00        | -22.81 | PK               |
| H                      | 4924.00   | 40.89            | -0.32             | 40.57            | 54.00        | -13.43 | AV               |
| H                      | 7386.00   | 43.97            | 9.35              | 53.32            | 74.00        | -20.68 | PK               |
| H                      | 7386.00   | 35.76            | 9.35              | 45.11            | 54.00        | -8.89  | AV               |

Remark:

1.Emission Level = Meter Reading + Factor,

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Over= Emission Level - Limit

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

3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB

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

5. Test Mode is MIMO Mode.

**802.11n40**

| Polar<br>(H/V)         | Frequency | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limits       | Over   | Detector<br>Type |
|------------------------|-----------|------------------|-------------------|------------------|--------------|--------|------------------|
|                        | (MHz)     | (dBuV/m)         | (dB)              | (dBuV/m)         | (dBuV/<br>m) | (dB)   |                  |
| Low channel:2422MHz    |           |                  |                   |                  |              |        |                  |
| V                      | 4844.00   | 54.82            | -0.43             | 54.39            | 74.00        | -19.61 | PK               |
| V                      | 4844.00   | 45.96            | -0.43             | 45.53            | 54.00        | -8.47  | AV               |
| V                      | 7266.00   | 46.30            | 8.31              | 54.61            | 74.00        | -19.39 | PK               |
| V                      | 7266.00   | 37.12            | 8.31              | 45.43            | 54.00        | -8.57  | AV               |
| H                      | 4844.00   | 50.40            | -0.43             | 49.97            | 74.00        | -24.03 | PK               |
| H                      | 4844.00   | 39.96            | -0.43             | 39.53            | 54.00        | -14.47 | AV               |
| H                      | 7266.00   | 43.76            | 8.31              | 52.07            | 74.00        | -21.93 | PK               |
| H                      | 7266.00   | 36.46            | 8.31              | 44.77            | 54.00        | -9.23  | AV               |
| Middle channel:2437MHz |           |                  |                   |                  |              |        |                  |
| V                      | 4874.00   | 50.89            | -0.38             | 50.51            | 74.00        | -23.49 | PK               |
| V                      | 4874.00   | 44.20            | -0.38             | 43.82            | 54.00        | -10.18 | AV               |
| V                      | 7311.00   | 43.59            | 8.83              | 52.42            | 74.00        | -21.58 | PK               |
| V                      | 7311.00   | 34.72            | 8.83              | 43.55            | 54.00        | -10.45 | AV               |
| H                      | 4874.00   | 49.39            | -0.38             | 49.01            | 74.00        | -24.99 | PK               |
| H                      | 4874.00   | 38.95            | -0.38             | 38.57            | 54.00        | -15.43 | AV               |
| H                      | 7311.00   | 41.04            | 8.83              | 49.87            | 74.00        | -24.13 | PK               |
| H                      | 7311.00   | 33.31            | 8.83              | 42.14            | 54.00        | -11.86 | AV               |
| High channel:2452MHz   |           |                  |                   |                  |              |        |                  |
| V                      | 4904.00   | 52.68            | -0.32             | 52.36            | 74.00        | -21.64 | PK               |
| V                      | 4904.00   | 41.82            | -0.32             | 41.50            | 54.00        | -12.50 | AV               |
| V                      | 7356.00   | 44.02            | 9.35              | 53.37            | 74.00        | -20.63 | PK               |
| V                      | 7356.00   | 34.75            | 9.35              | 44.10            | 54.00        | -9.90  | AV               |
| H                      | 4904.00   | 51.59            | -0.32             | 51.27            | 74.00        | -22.73 | PK               |
| H                      | 4904.00   | 42.01            | -0.32             | 41.69            | 54.00        | -12.31 | AV               |
| H                      | 7356.00   | 41.27            | 9.35              | 50.62            | 74.00        | -23.38 | PK               |
| H                      | 7356.00   | 33.75            | 9.35              | 43.10            | 54.00        | -10.90 | AV               |

Remark:

1.Emission Level = Meter Reading + Factor,

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Over= Emission Level - Limit

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

3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB

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

5. Test Mode is MIMO Mode.

### 4.3 RADIATED BAND EMISSION MEASUREMENT

#### 4.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

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

#### 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).

| Spectrum Parameter                    | Setting                                          |
|---------------------------------------|--------------------------------------------------|
| Attenuation                           | Auto                                             |
| Start Frequency                       | 2300MHz                                          |
| Stop Frequency                        | 2520                                             |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average |

#### 4.3.2 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:

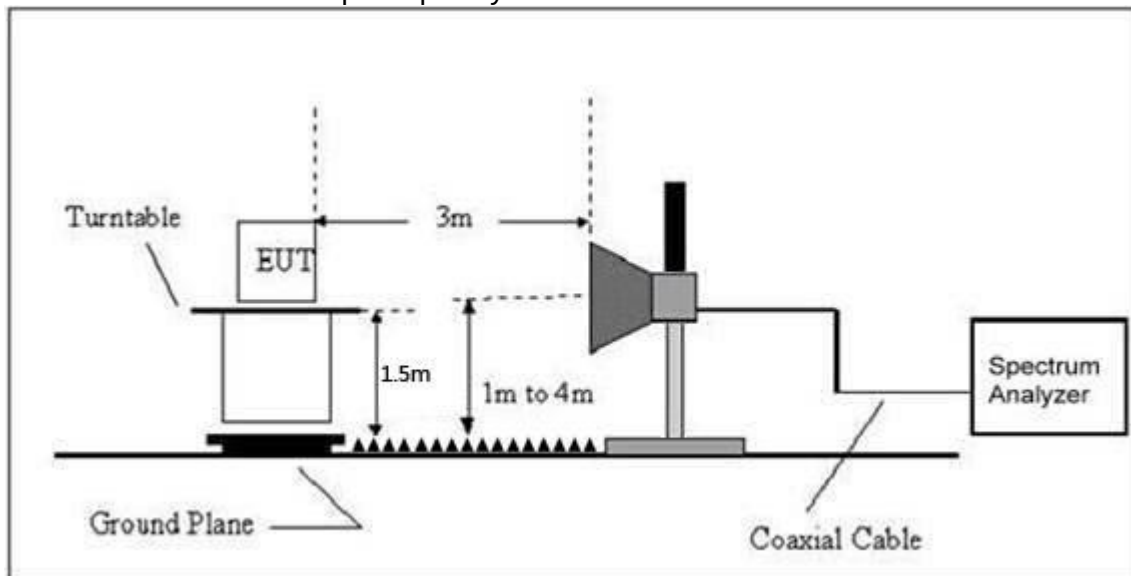
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

#### 4.3.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



#### 4.3.5 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.

### 4.3.6 TEST RESULT

|         | Polar<br>(H/V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Frequency<br>(MHz)   | Reading<br>Level<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Measure-<br>ment<br>(dBuV/m) | Limits<br>(dBuV/m) |       | Over<br>(dBuV/<br>m) | Result |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------|---------------------------|------------------------------|--------------------|-------|----------------------|--------|
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                      |                              |                           | PK                           | PK                 | AV    | PK                   |        |
| 802.11b |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Low Channel 2412MHz  |                              |                           |                              |                    |       |                      |        |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 57.13                        | -6.70                     | 50.43                        | 74.00              | 54.00 | -23.57               | PASS   |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 48.60                        | -6.71                     | 41.89                        | 74.00              | 54.00 | -32.11               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 57.14                        | -6.70                     | 50.44                        | 74.00              | 54.00 | -23.56               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 49.62                        | -6.71                     | 42.91                        | 74.00              | 54.00 | -31.09               | PASS   |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | High Channel 2462MHz |                              |                           |                              |                    |       |                      |        |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 57.36                        | -6.79                     | 50.57                        | 74.00              | 54.00 | -23.43               | PASS   |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2485.00              | 49.79                        | -6.81                     | 42.98                        | 74.00              | 54.00 | -31.02               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 55.20                        | -6.79                     | 48.41                        | 74.00              | 54.00 | -25.59               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2485.00              | 46.37                        | -6.81                     | 39.56                        | 74.00              | 54.00 | -34.44               | PASS   |
| 802.11g |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Low Channel 2412MHz  |                              |                           |                              |                    |       |                      |        |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 57.22                        | -6.70                     | 50.52                        | 74.00              | 54.00 | -23.48               | PASS   |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 49.21                        | -6.71                     | 42.50                        | 74.00              | 54.00 | -31.5                | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 56.96                        | -6.70                     | 50.26                        | 74.00              | 54.00 | -23.74               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 48.29                        | -6.71                     | 41.58                        | 74.00              | 54.00 | -32.42               | PASS   |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | High Channel 2462MHz |                              |                           |                              |                    |       |                      |        |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 55.89                        | -6.79                     | 49.10                        | 74.00              | 54.00 | -24.9                | PASS   |
|         | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2485.00              | 48.82                        | -6.81                     | 42.01                        | 74.00              | 54.00 | -31.99               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 55.97                        | -6.79                     | 49.18                        | 74.00              | 54.00 | -24.82               | PASS   |
|         | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2485.00              | 48.02                        | -6.81                     | 41.21                        | 74.00              | 54.00 | -32.79               | PASS   |
|         | <b>Remark:</b><br>1. Emission Level = Meter Reading + Factor,<br>Factor = Antenna Factor + Cable Loss – Pre-amplifier.<br>Over= Emission Level - Limit<br>2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.<br>3 In restricted bands of operation, The spurious emissions below the permissible value more than 20dB<br>4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. |                      |                              |                           |                              |                    |       |                      |        |

|               | Polar<br>(H/V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Frequency<br>(MHz)   | Reading<br>Level<br>(dBuV/m) | Correct<br>Factor<br>(dB) | Measure-<br>ment<br>(dBuV/m) | Limits<br>(dBuV/m) |       | Over<br>(dBuV/m) | Result |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------|---------------------------|------------------------------|--------------------|-------|------------------|--------|
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                      |                              |                           | PK                           | PK                 | AV    | PK               |        |
| 802.11<br>n20 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Low Channel 2412MHz  |                              |                           |                              |                    |       |                  |        |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 56.94                        | -6.70                     | 50.24                        | 74.00              | 54.00 | -23.76           | PASS   |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 49.75                        | -6.71                     | 43.04                        | 74.00              | 54.00 | -30.96           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 57.57                        | -6.70                     | 50.87                        | 74.00              | 54.00 | -23.13           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 49.62                        | -6.71                     | 42.91                        | 74.00              | 54.00 | -31.09           | PASS   |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | High Channel 2462MHz |                              |                           |                              |                    |       |                  |        |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 56.34                        | -6.79                     | 49.55                        | 74.00              | 54.00 | -24.45           | PASS   |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2500.00              | 48.49                        | -6.81                     | 41.68                        | 74.00              | 54.00 | -32.32           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 55.99                        | -6.79                     | 49.20                        | 74.00              | 54.00 | -24.8            | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2500.00              | 48.36                        | -6.81                     | 41.55                        | 74.00              | 54.00 | -32.45           | PASS   |
| 802.11<br>n40 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Low Channel 2422MHz  |                              |                           |                              |                    |       |                  |        |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 56.52                        | -6.70                     | 49.82                        | 74.00              | 54.00 | -24.18           | PASS   |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 49.18                        | -6.71                     | 42.47                        | 74.00              | 54.00 | -31.53           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2390.00              | 55.53                        | -6.70                     | 48.83                        | 74.00              | 54.00 | -25.17           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400.00              | 47.10                        | -6.71                     | 40.39                        | 74.00              | 54.00 | -33.61           | PASS   |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | High Channel 2452MHz |                              |                           |                              |                    |       |                  |        |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 54.76                        | -6.79                     | 47.97                        | 74.00              | 54.00 | -26.03           | PASS   |
|               | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2500.00              | 48.61                        | -6.81                     | 41.80                        | 74.00              | 54.00 | -32.2            | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2483.50              | 53.95                        | -6.79                     | 47.16                        | 74.00              | 54.00 | -26.84           | PASS   |
|               | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2500.00              | 45.40                        | -6.81                     | 38.59                        | 74.00              | 54.00 | -35.41           | PASS   |
|               | <b>Remark:</b><br>1. Emission Level = Meter Reading + Factor,<br>Factor = Antenna Factor + Cable Loss – Pre-amplifier.<br>Over= Emission Level - Limit<br>2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.<br>3 In restricted bands of operation, The spurious emissions below the permissible value more than 20dB<br>4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. |                      |                              |                           |                              |                    |       |                  |        |

## 5. POWER SPECTRAL DENSITY TEST

### 5.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                        |                        |                       |        |
|---------------------------------|------------------------|------------------------|-----------------------|--------|
| Section                         | Test Item              | Limit                  | Frequency Range (MHz) | Result |
| 15.247                          | Power Spectral Density | 8 dBm<br>(in any 3KHz) | 2400-2483.5           | PASS   |

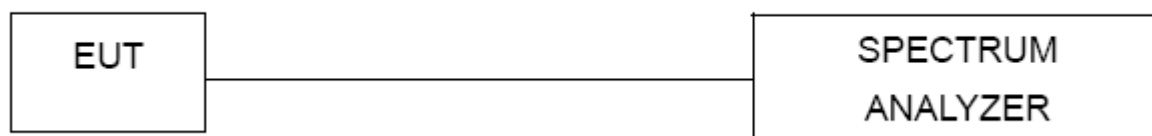
#### 5.1.1 TEST PROCEDURE

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.

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



#### 5.1.4 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.  
 Note: Power Spectral Density(dBm)=Reading+Cable Loss

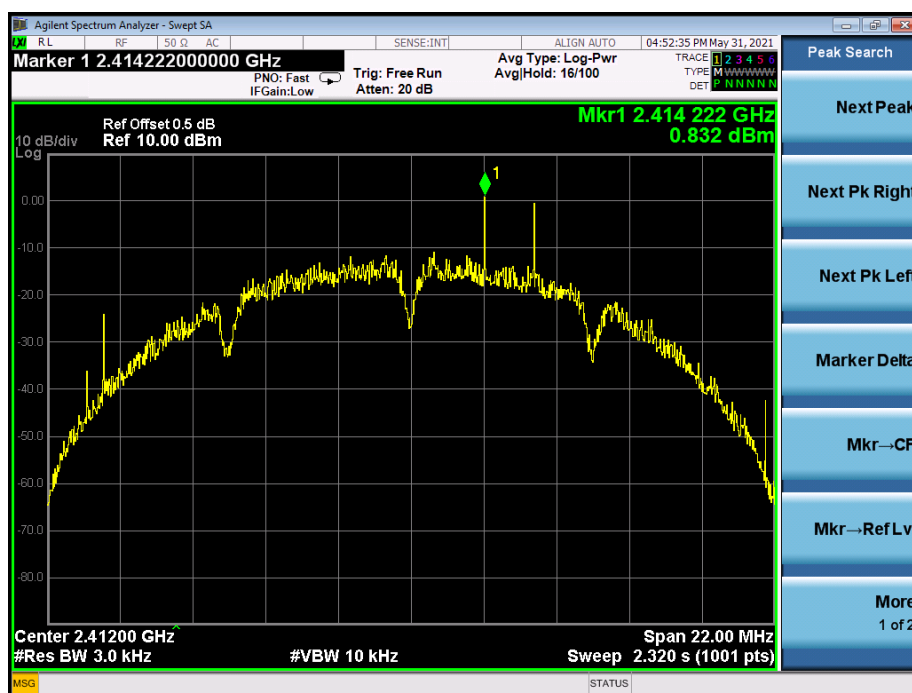
### 5.1.5 TEST RESULTS

|               |           |                     |             |
|---------------|-----------|---------------------|-------------|
| Temperature : | 26 °C     | Relative Humidity : | 54%         |
| Pressure :    | 101kPa    | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX b Mode |                     |             |

| Frequency | Power Spectral Density (dBm/3KHz) ANTA | Power Spectral Density (dBm/3KHz) ANTB | Total power density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|-----------|----------------------------------------|----------------------------------------|--------------------------------|------------------|--------|
| 2412 MHz  | 0.832                                  | 1.452                                  | /                              | 8                | PASS   |
| 2437 MHz  | 0.629                                  | 1.584                                  | /                              | 8                | PASS   |
| 2462 MHz  | 1.638                                  | 1.051                                  | /                              | 8                | PASS   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

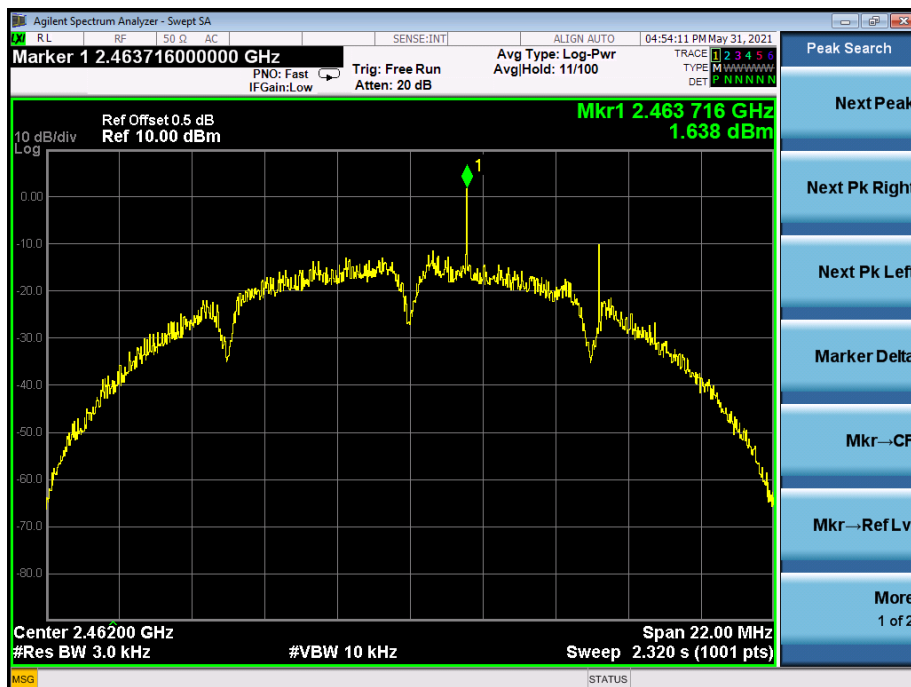
#### TX CH01



### TX CH06



### TX CH11

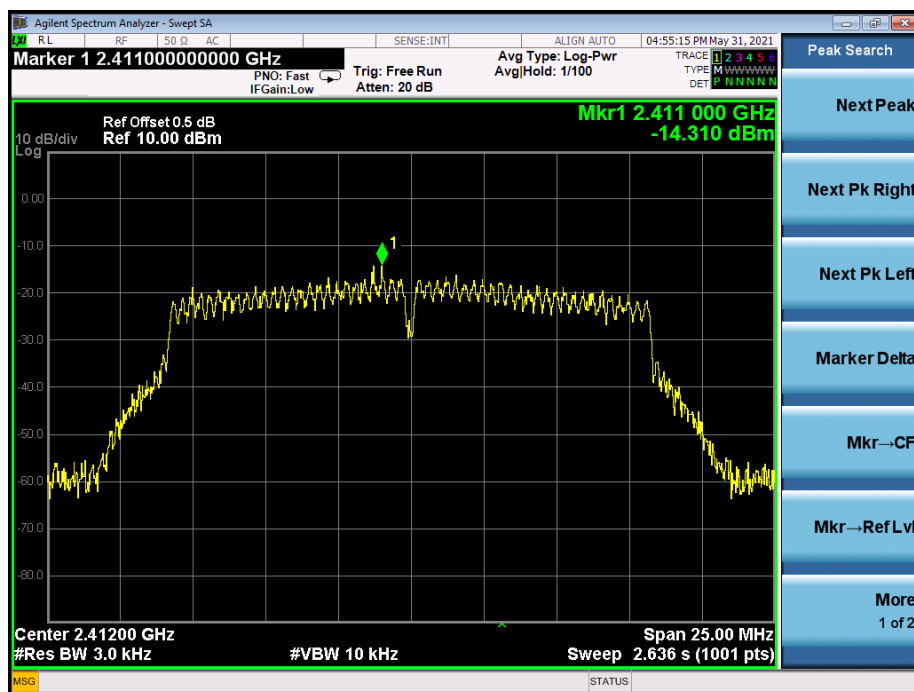


|               |           |                     |             |
|---------------|-----------|---------------------|-------------|
| Temperature : | 26 °C     | Relative Humidity : | 54%         |
| Pressure :    | 101kPa    | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX g Mode |                     |             |

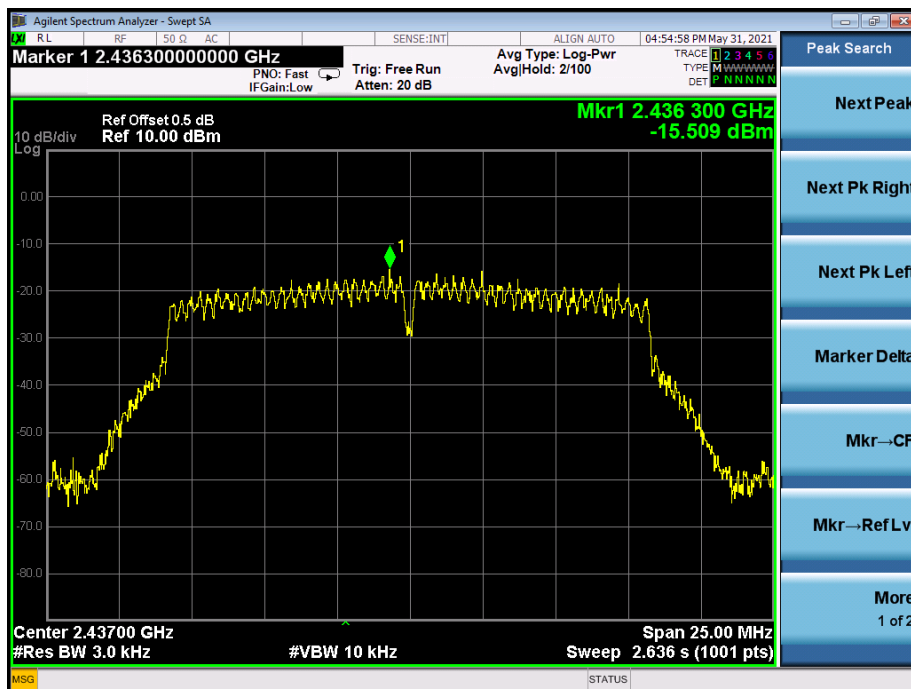
| Frequency | Power Spectral Density (dBm/3KHz) ANTA | Power Spectral Density (dBm/3KHz) ANTB | Total power density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|-----------|----------------------------------------|----------------------------------------|--------------------------------|------------------|--------|
| 2412 MHz  | -14.310                                | -15.970                                | /                              | 8                | PASS   |
| 2437 MHz  | -15.509                                | -15.890                                | /                              | 8                | PASS   |
| 2462 MHz  | -15.341                                | -15.750                                | /                              | 8                | PASS   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

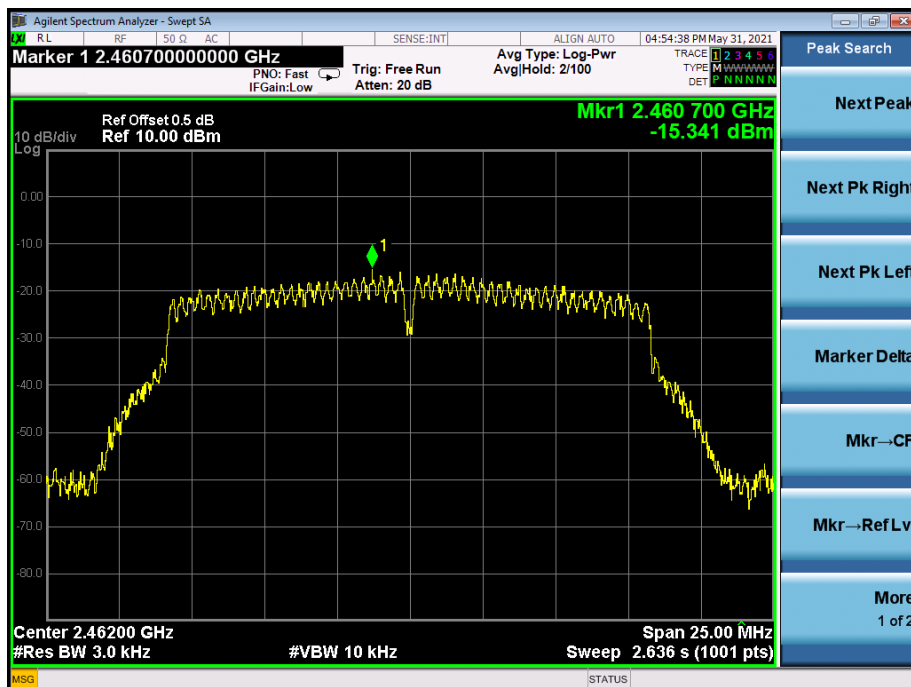
### TX CH01



### TX CH06



### TX CH11

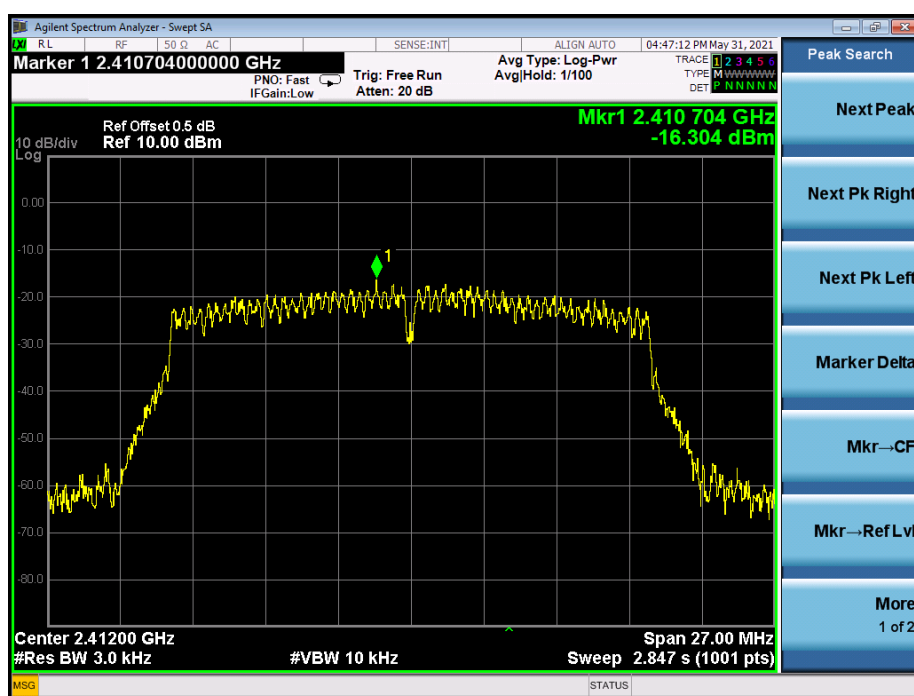


|               |                |                     |             |
|---------------|----------------|---------------------|-------------|
| Temperature : | 26 °C          | Relative Humidity : | 54%         |
| Pressure :    | 101kPa         | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX n Mode(20M) |                     |             |

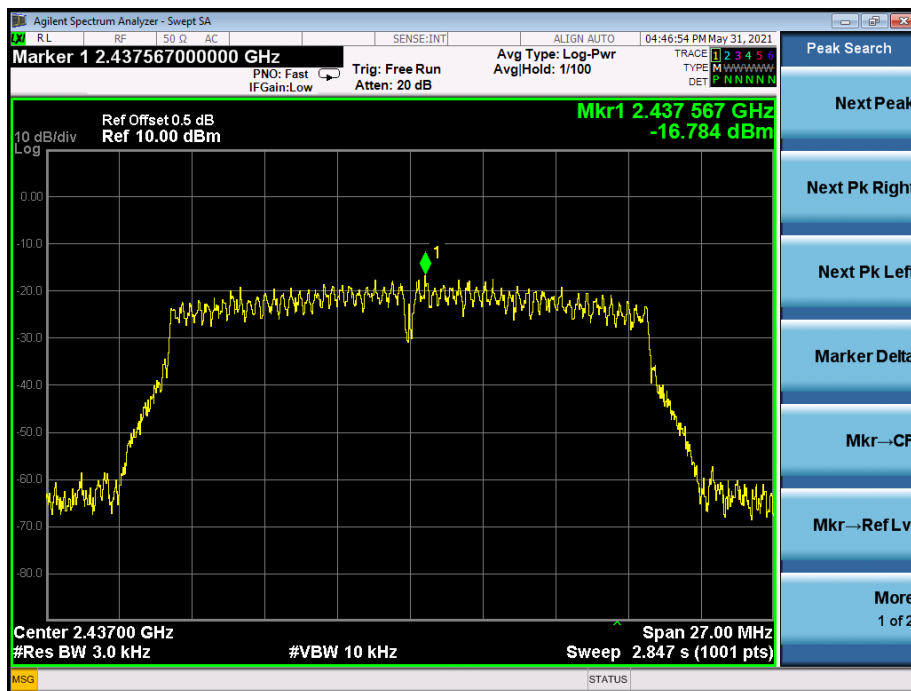
| Frequency | Power Spectral Density (dBm/3KHz) ANTA | Power Spectral Density (dBm/3KHz) ANTB | Total power density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|-----------|----------------------------------------|----------------------------------------|--------------------------------|------------------|--------|
| 2412 MHz  | -16.908                                | -16.304                                | -13.585                        | 5.99             | PASS   |
| 2437 MHz  | -17.473                                | -16.784                                | -14.105                        | 5.99             | PASS   |
| 2462 MHz  | -16.759                                | -17.238                                | -13.982                        | 5.99             | PASS   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

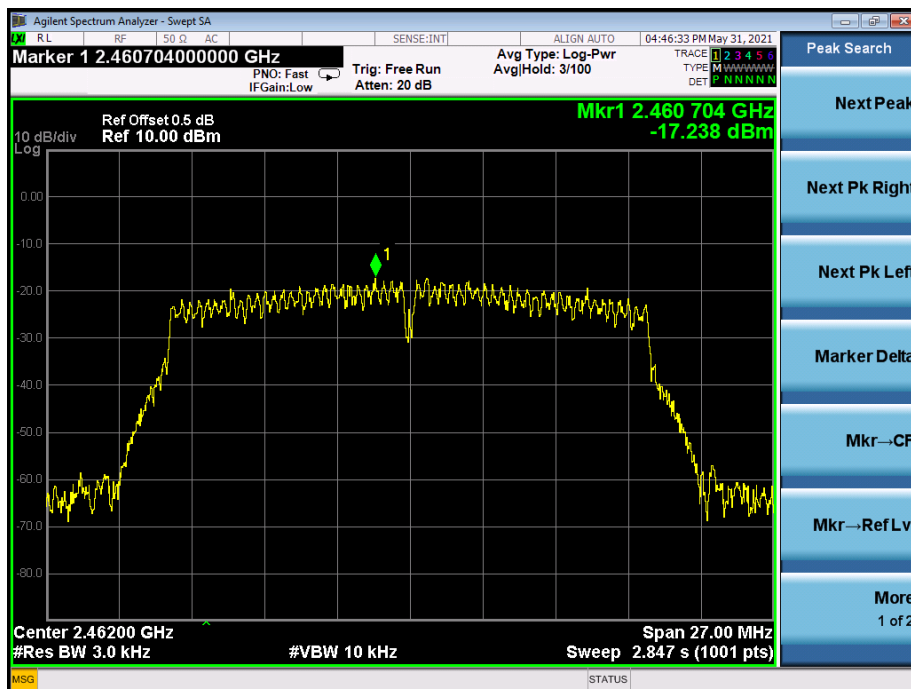
### TX CH01



### TX CH06



### TX CH11

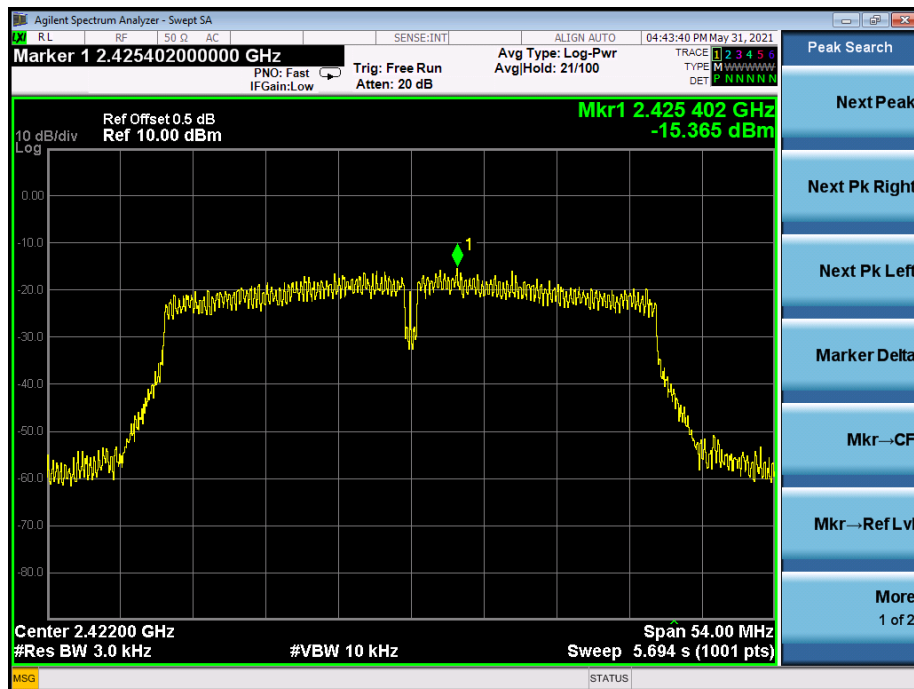


|               |                |                     |             |
|---------------|----------------|---------------------|-------------|
| Temperature : | 26 °C          | Relative Humidity : | 54%         |
| Pressure :    | 101kPa         | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX n Mode(40M) |                     |             |

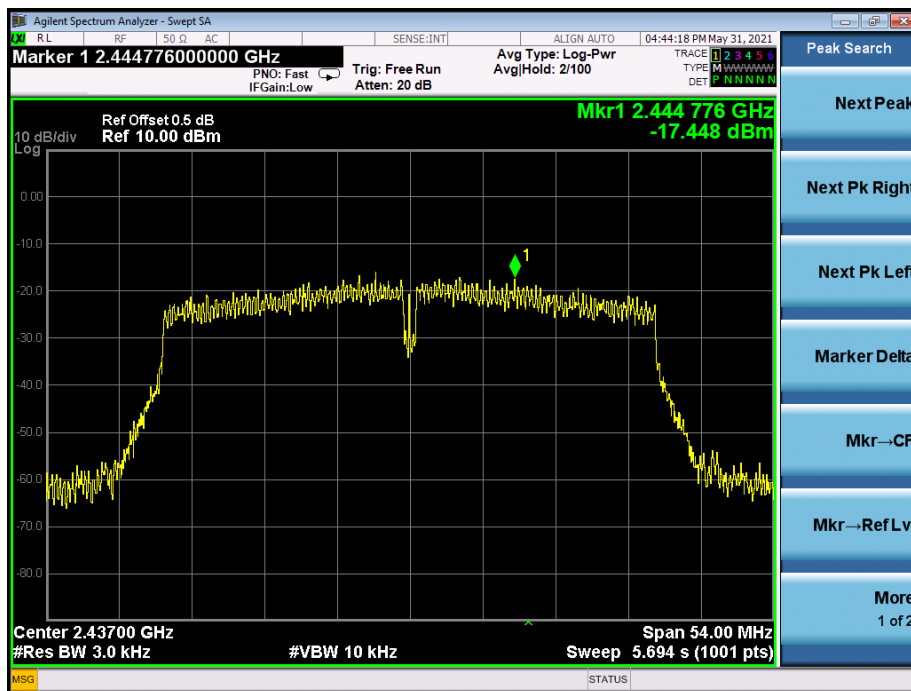
| Frequency | Power Spectral Density (dBm/3KHz) ANTA | Power Spectral Density (dBm/3KHz) ANTB | Total power density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|-----------|----------------------------------------|----------------------------------------|--------------------------------|------------------|--------|
| 2422 MHz  | -17.443                                | -15.365                                | -13.271                        | 5.99             | PASS   |
| 2437 MHz  | -16.790                                | -17.448                                | -14.096                        | 5.99             | PASS   |
| 2452 MHz  | -17.659                                | -17.095                                | -14.358                        | 5.99             | PASS   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.

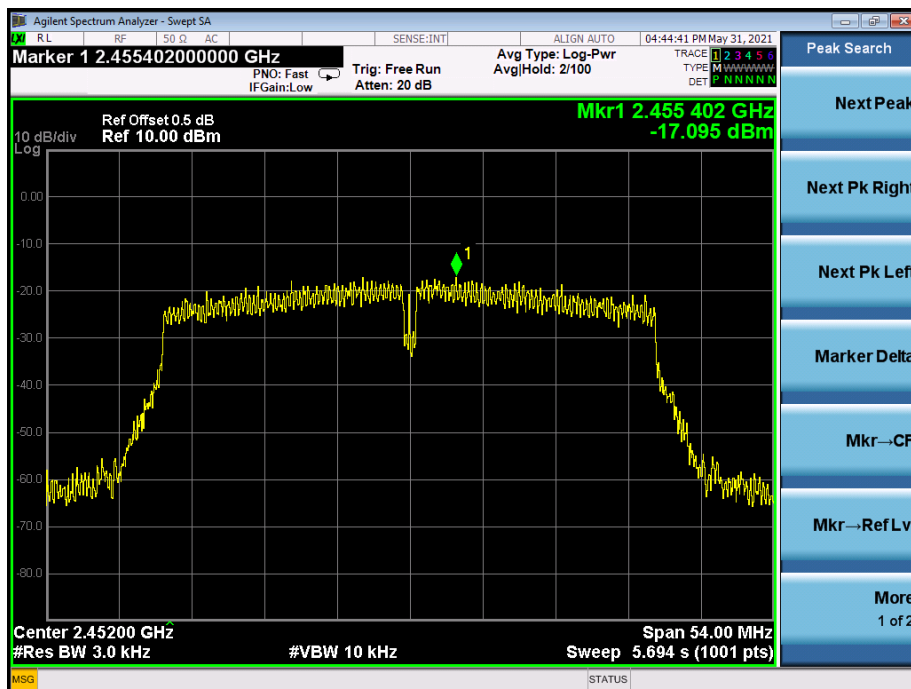
### TX CH03



### TX CH06



### TX CH09



## 6. BANDWIDTH TEST

### 6.1 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   |

#### 6.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  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.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 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.

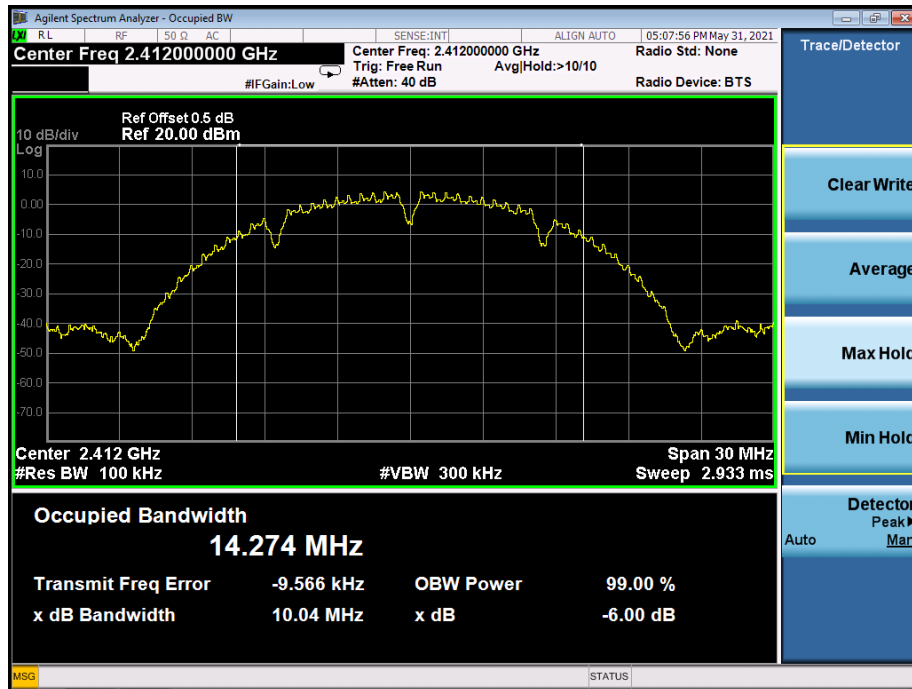
### 6.1.5 TEST RESULTS

|               |           |                     |             |
|---------------|-----------|---------------------|-------------|
| Temperature : | 26 °C     | Relative Humidity : | 54%         |
| Pressure :    | 101kPa    | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX b Mode |                     |             |

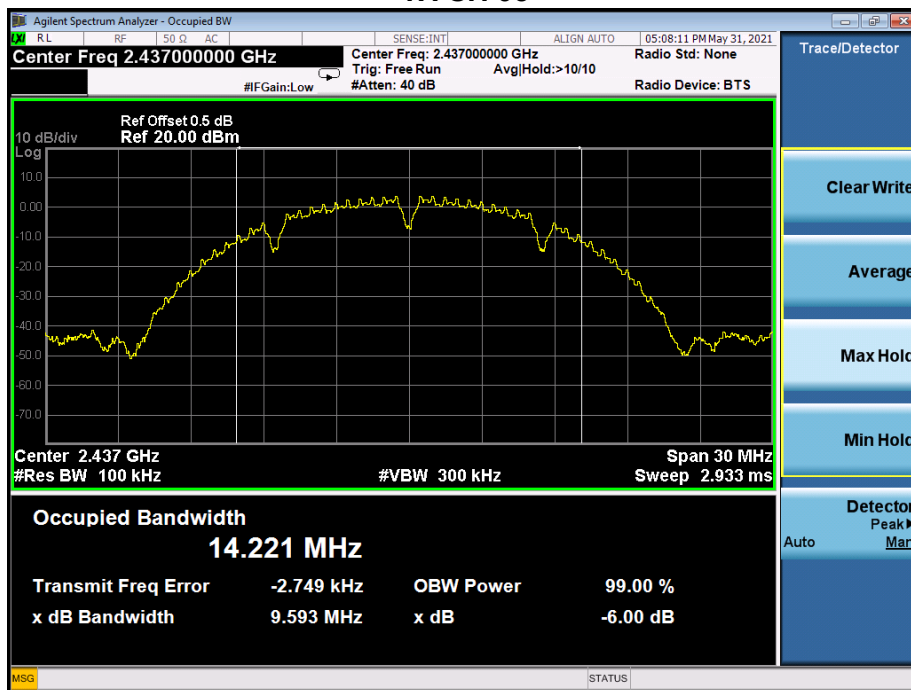
| Frequency (MHz) | 6dB bandwidth (MHz) ANTA | 6dB bandwidth (MHz) ANTB | Limit (kHz) | Result |
|-----------------|--------------------------|--------------------------|-------------|--------|
| 2412            | 10.04                    | 10.02                    | 500         | Pass   |
| 2437            | 9.59                     | 9.59                     | 500         | Pass   |
| 2462            | 10.03                    | 10.02                    | 500         | Pass   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

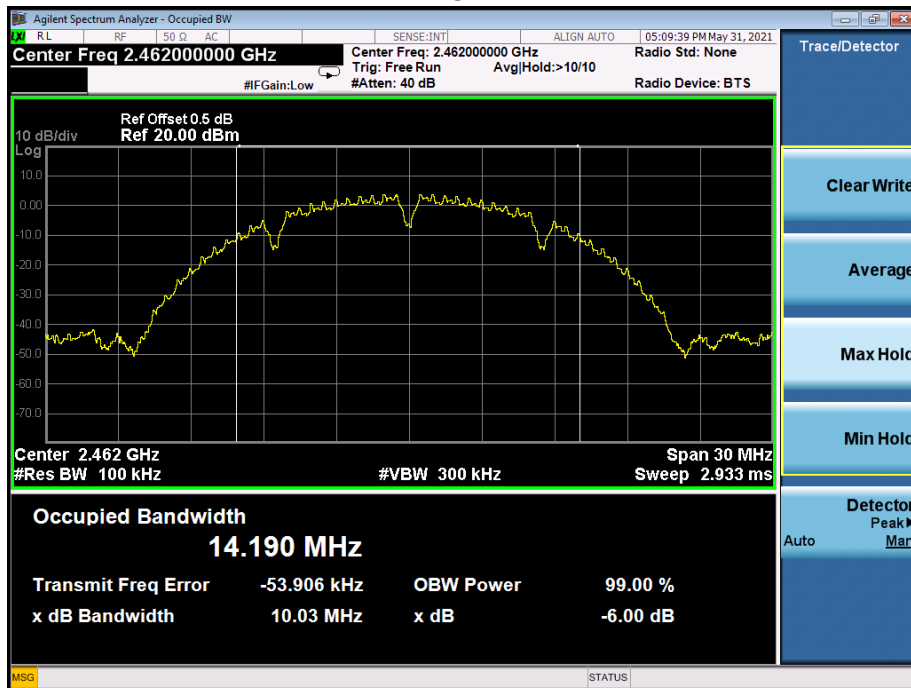
#### TX CH 01



### TX CH 06



### TX CH 11

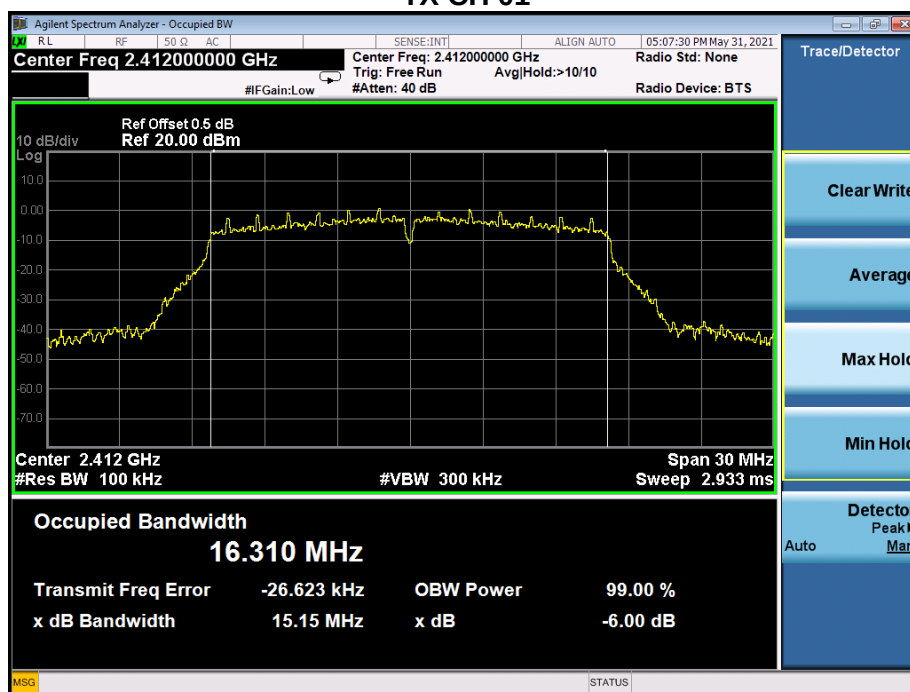


|               |           |                     |             |
|---------------|-----------|---------------------|-------------|
| Temperature : | 26 °C     | Relative Humidity : | 54%         |
| Pressure :    | 101kPa    | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX g Mode |                     |             |

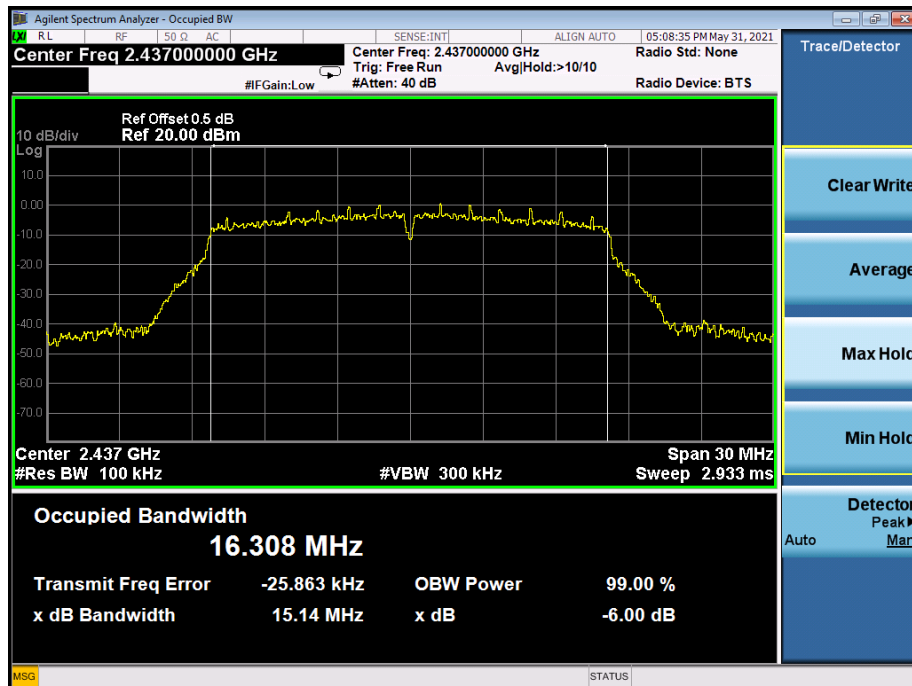
| Frequency (MHz) | 6dB bandwidth (MHz) ANTA | 6dB bandwidth (MHz) ANTB | Limit (kHz) | Result |
|-----------------|--------------------------|--------------------------|-------------|--------|
| 2412            | 15.15                    | 15.11                    | 500         | Pass   |
| 2437            | 15.14                    | 15.11                    | 500         | Pass   |
| 2462            | 15.13                    | 15.14                    | 500         | Pass   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

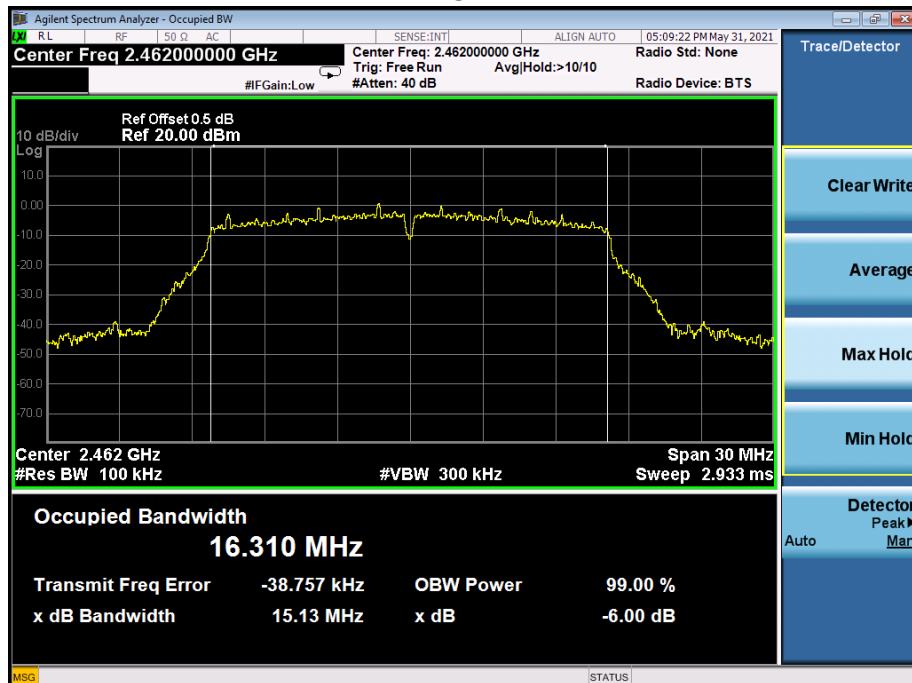
### TX CH 01



### TX CH 06



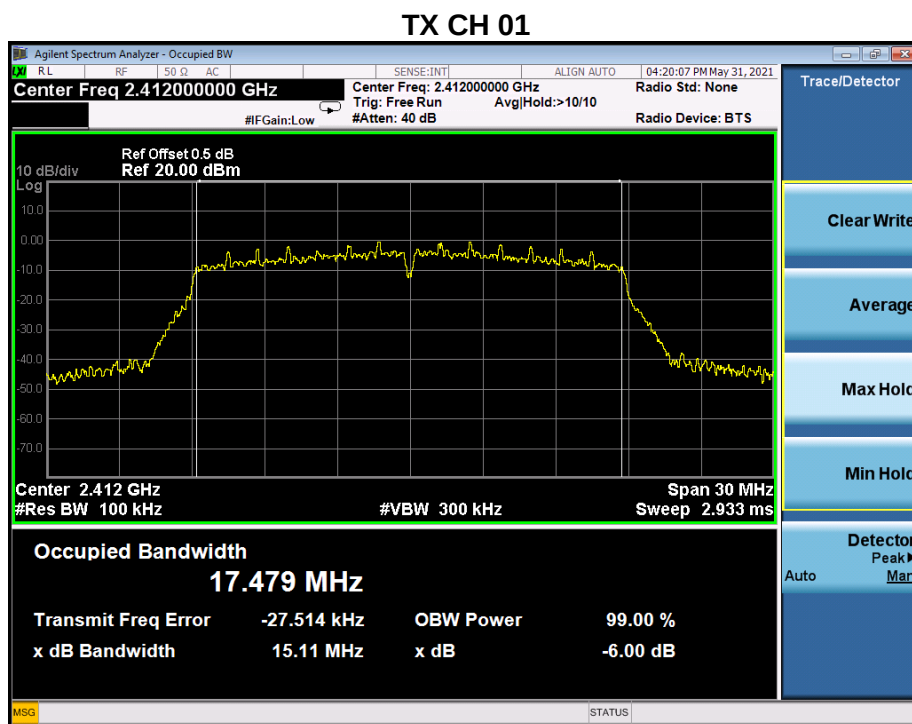
### TX CH 11



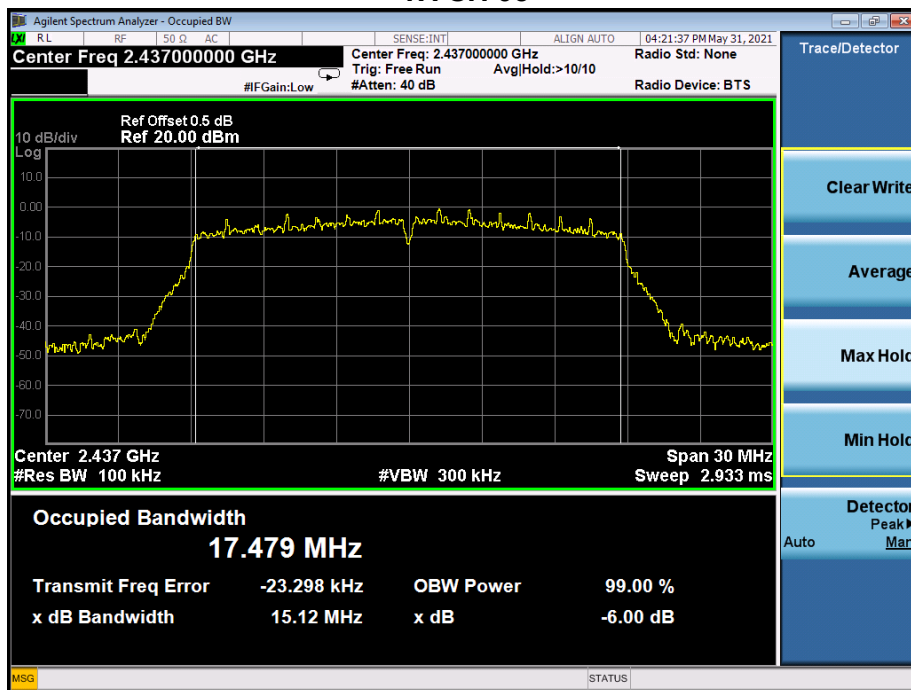
|               |                |                     |             |
|---------------|----------------|---------------------|-------------|
| Temperature : | 26 °C          | Relative Humidity : | 54%         |
| Pressure :    | 101kPa         | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX n Mode(20M) |                     |             |

| Frequency (MHz) | 6dB bandwidth (MHz) ANTA | 6dB bandwidth (MHz) ANTB | Limit (kHz) | Result |
|-----------------|--------------------------|--------------------------|-------------|--------|
| 2412            | 15.11                    | 15.11                    | 500         | Pass   |
| 2437            | 15.08                    | 15.12                    | 500         | Pass   |
| 2462            | 15.13                    | 13.13                    | 500         | Pass   |

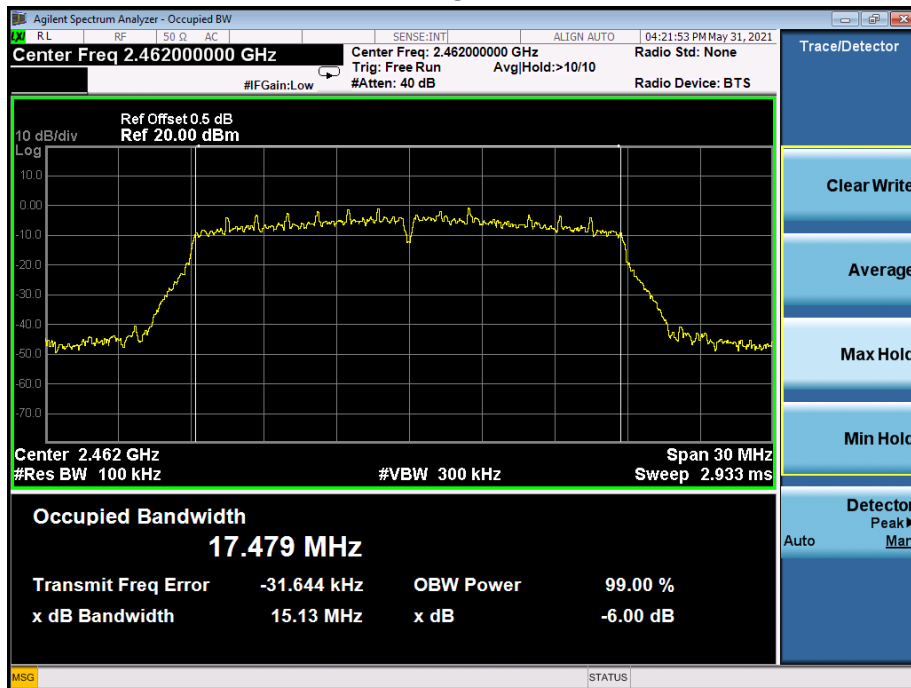
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna B, only shown Antenna B Plot.



### TX CH 06



### TX CH 11

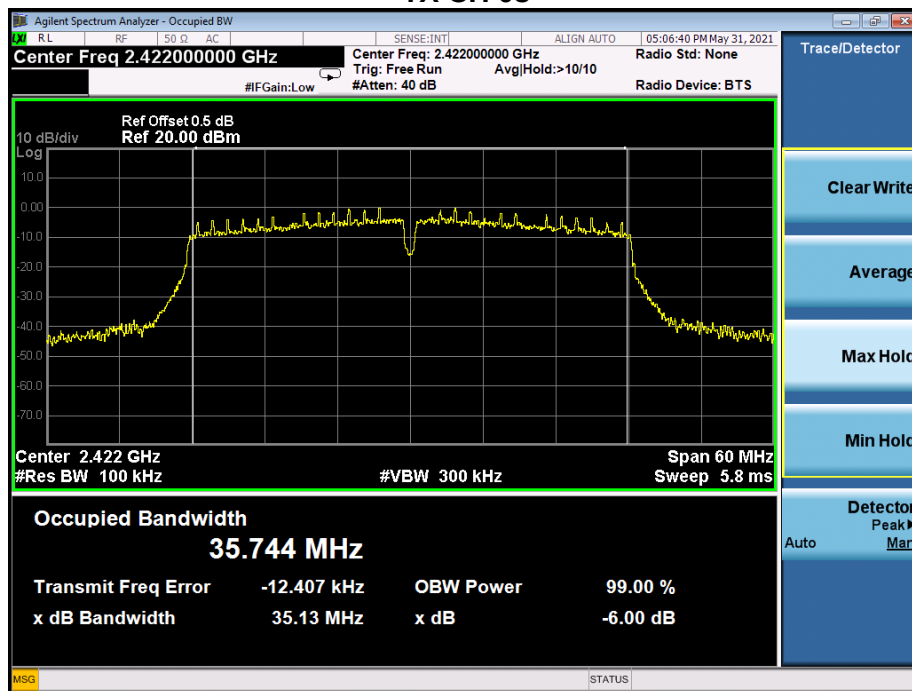


|               |                |                     |             |
|---------------|----------------|---------------------|-------------|
| Temperature : | 26 °C          | Relative Humidity : | 54%         |
| Pressure :    | 101kPa         | Test Voltage :      | AC120V/60Hz |
| Test Mode :   | TX n Mode(40M) |                     |             |

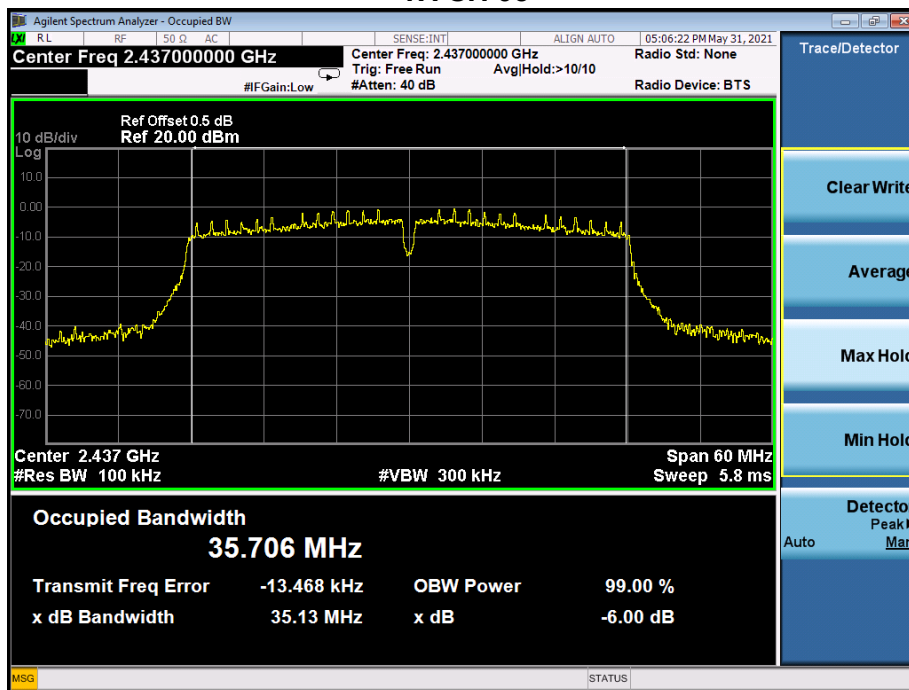
| Frequency (MHz) | 6dB bandwidth (MHz) ANTA | 6dB bandwidth (MHz) ANTB | Limit (kHz) | Result |
|-----------------|--------------------------|--------------------------|-------------|--------|
| 2422            | 35.13                    | 35.13                    | 500         | Pass   |
| 2437            | 35.13                    | 35.04                    | 500         | Pass   |
| 2452            | 35.12                    | 35.13                    | 500         | Pass   |

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

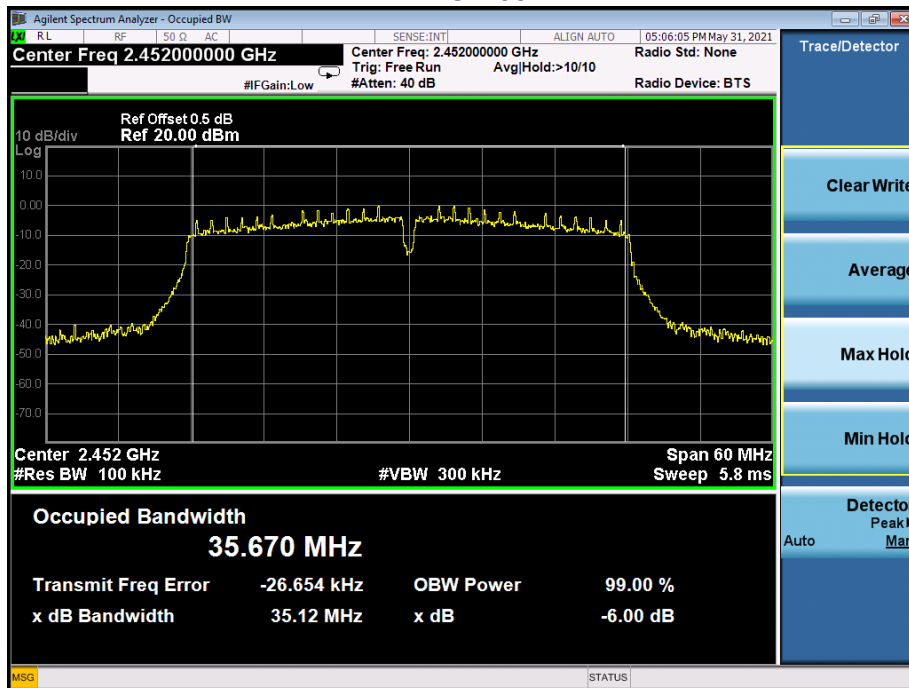
### TX CH 03



### TX CH 06



### TX CH 09



## 7. PEAK OUTPUT POWER TEST

### 7.1 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   |

#### 7.1.1 TEST PROCEDURE

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

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



#### 7.1.4 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.

### 7.1.5 TEST RESULTS

|               |        |                     |             |
|---------------|--------|---------------------|-------------|
| Temperature : | 26 °C  | Relative Humidity : | 54%         |
| Pressure :    | 101kPa | Test Voltage :      | AC120V/60Hz |

Note:Antenna A gain: 5Bi, Antenna B gain: 5dBi, The Array gain=0 dB for NANT≤4,  
So the directional gain for Power measurements is 5dBi

| Test Mode | Frequency | Maximum<br>Conducted Output<br>Power(PK)<br>ANTA | Maximum<br>Conducted Output<br>Power(PK)<br>ANTB | Total Power<br>Conducted<br>Output<br>Power(PK) | LIMIT |
|-----------|-----------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------|
|           | (MHz)     | (dBm)                                            | (dBm)                                            | (dBm)                                           | dBm   |
| 802.11b   | 2412      | 15.782                                           | 15.368                                           | /                                               | 30    |
|           | 2437      | 16.005                                           | 15.152                                           | /                                               | 30    |
|           | 2462      | 15.441                                           | 15.630                                           | /                                               | 30    |
| 802.11g   | 2412      | 15.508                                           | 14.982                                           | /                                               | 30    |
|           | 2437      | 14.695                                           | 14.656                                           | /                                               | 30    |
|           | 2462      | 14.698                                           | 14.317                                           | /                                               | 30    |
| 802.11n20 | 2412      | 13.416                                           | 13.702                                           | 16.572                                          | 30    |
|           | 2437      | 13.162                                           | 13.195                                           | 16.189                                          | 30    |
|           | 2462      | 13.613                                           | 13.230                                           | 16.436                                          | 30    |
| 802.11n40 | 2422      | 12.841                                           | 14.071                                           | 16.510                                          | 30    |
|           | 2437      | 12.636                                           | 13.492                                           | 16.095                                          | 30    |
|           | 2452      | 12.746                                           | 13.198                                           | 15.988                                          | 30    |

## 8. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

### 8.1 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).

### 8.2 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.

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP



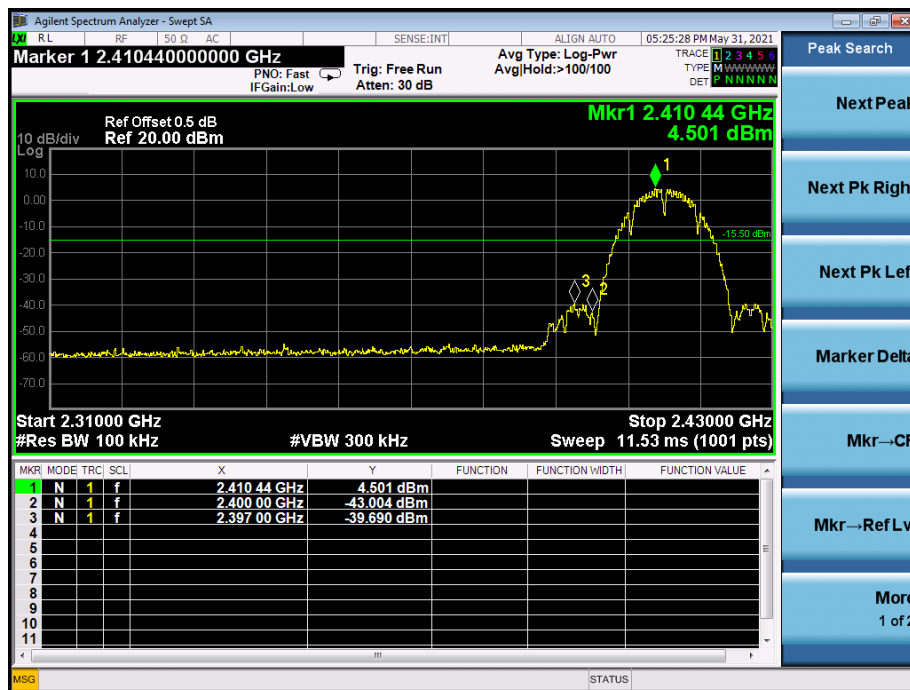
### 8.5 EUT OPERATION CONDITIONS

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.

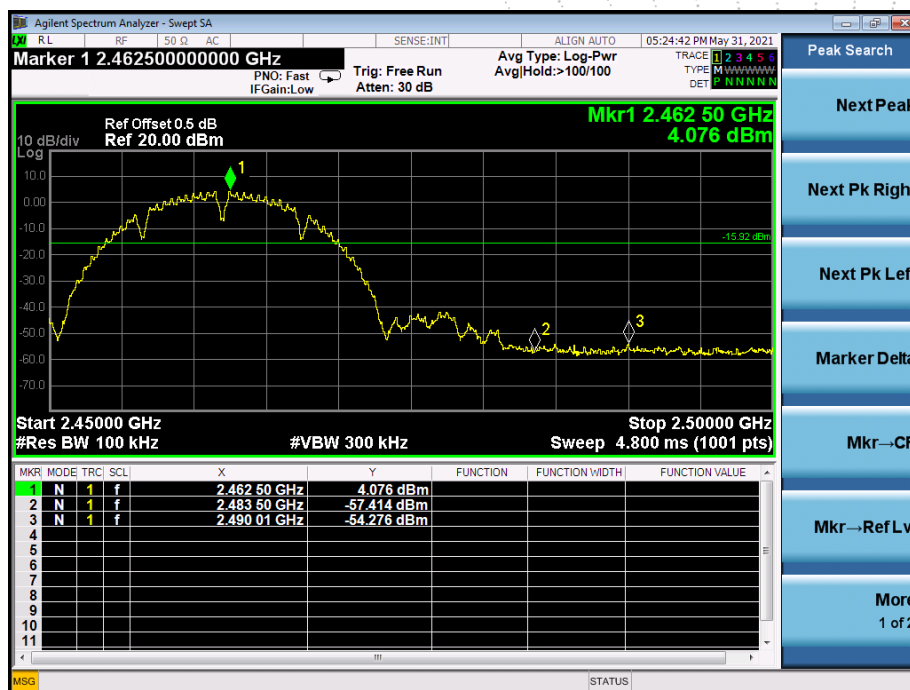
## 8.6 TEST RESULTS

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

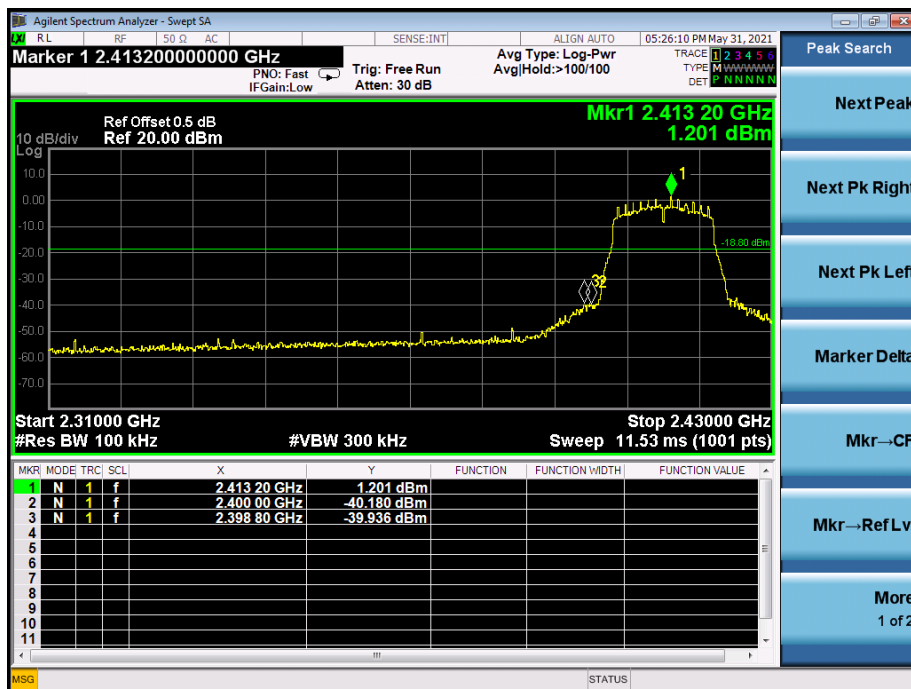
802.11b: Band Edge, Left Side



802.11b: Band Edge, Right Side



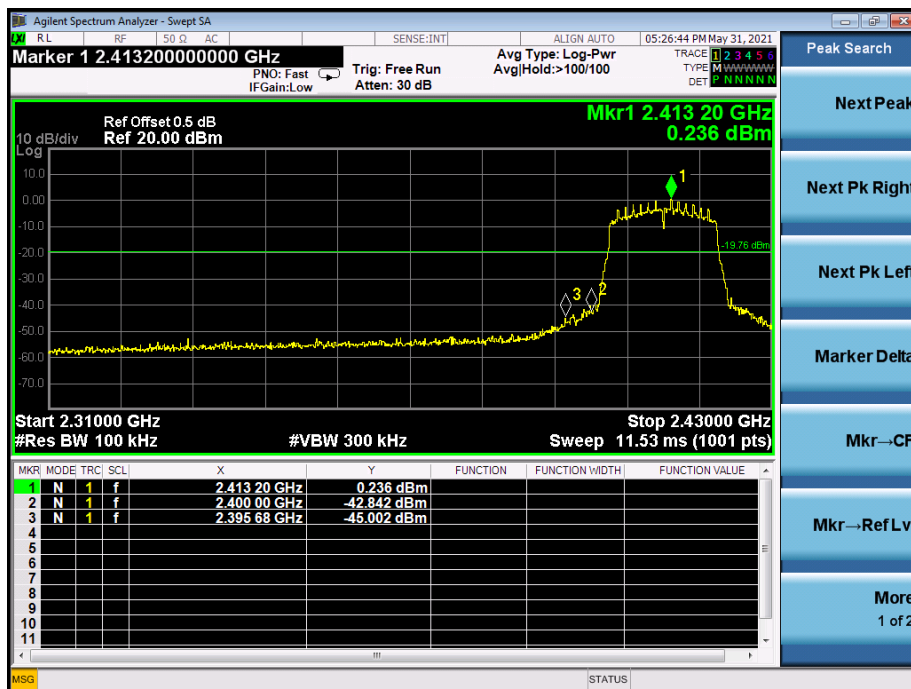
## 802.11g: Band Edge, Left Side



## 802.11g: Band Edge, Right Side



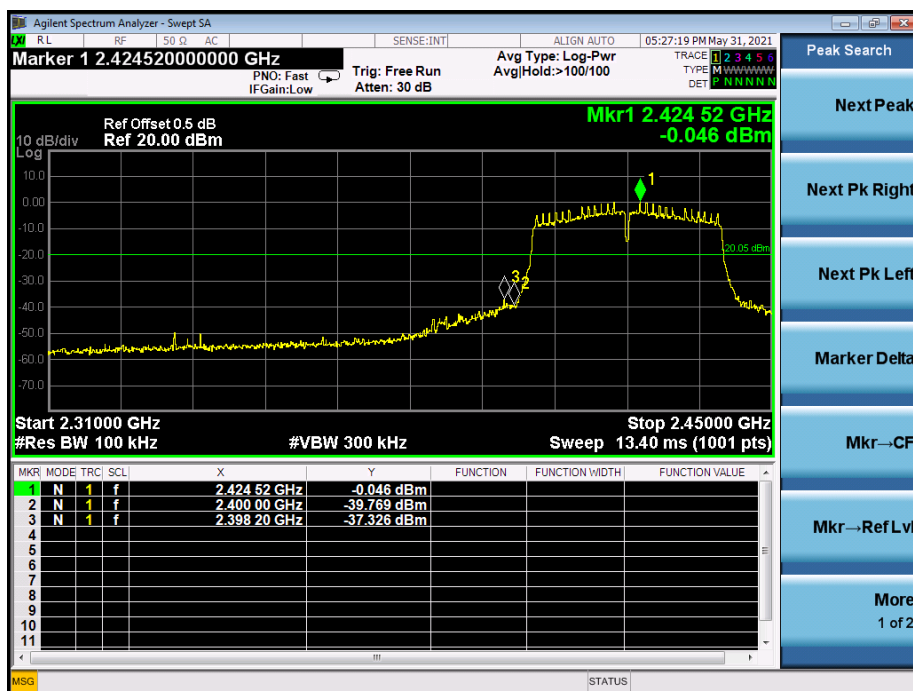
## 802.11n-HT20: Band Edge, Left Side



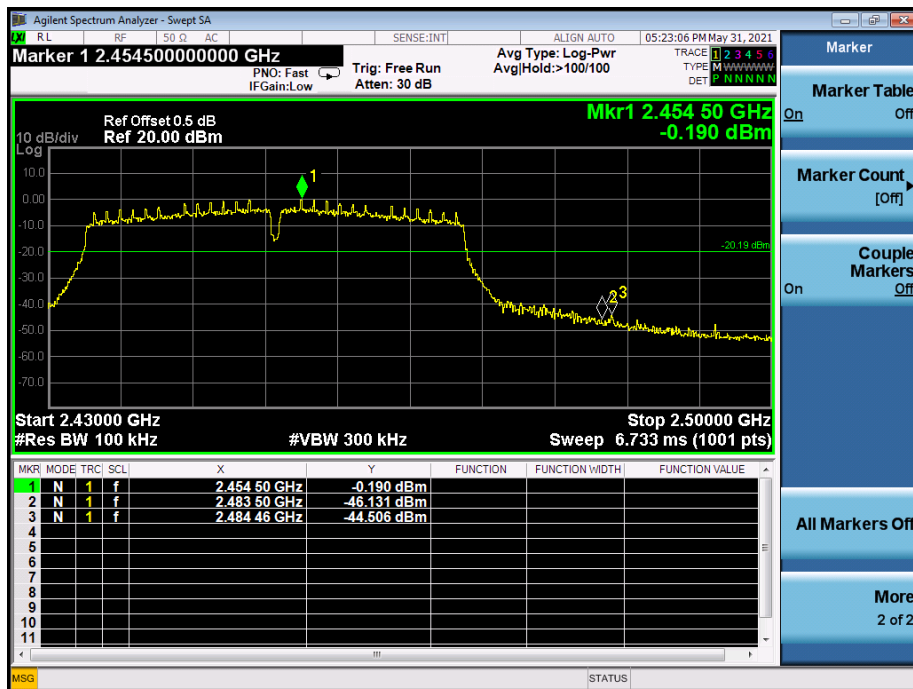
## 802.11n-HT20: Band Edge, Right Side



## 802.11n-HT40: Band Edge, Left Side



## 802.11n-HT40: Band Edge, Right Side

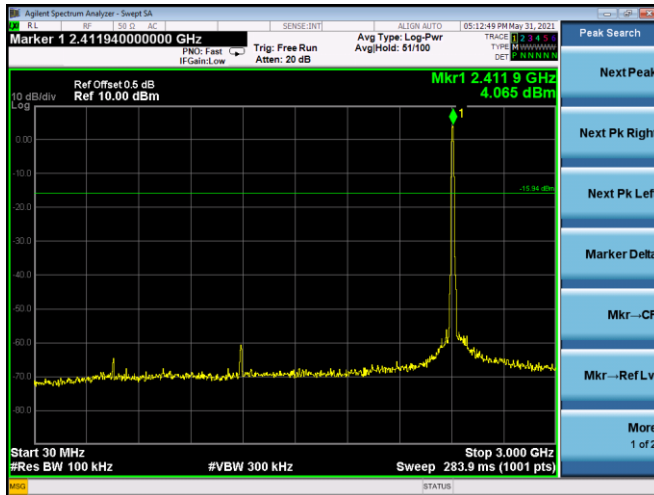


## CONDUCTED EMISSION MEASUREMENT

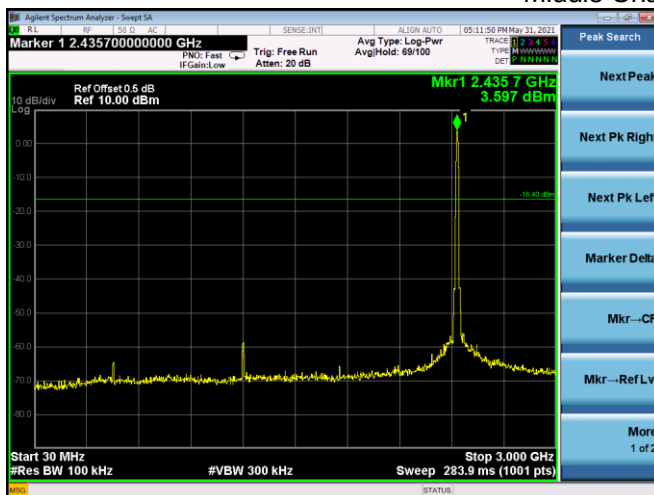
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A Plot.

802.11b

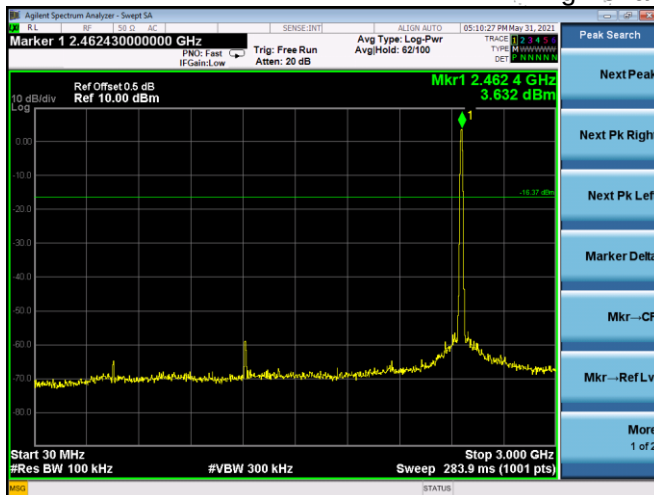
Low Channel 2412MHz



Middle Channel 2437MHz

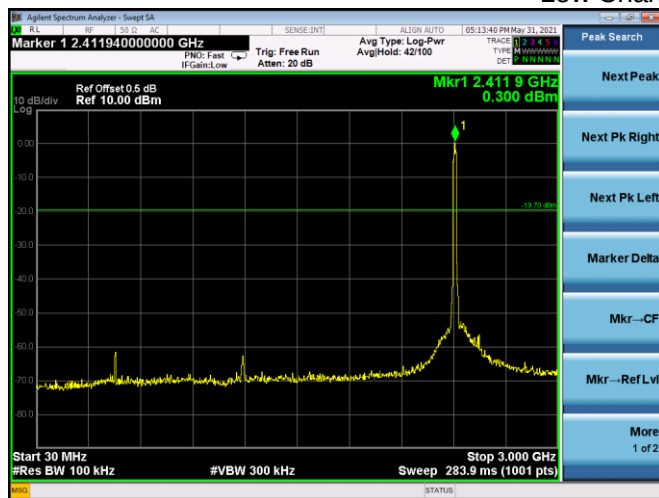


High Channel 2462MHz

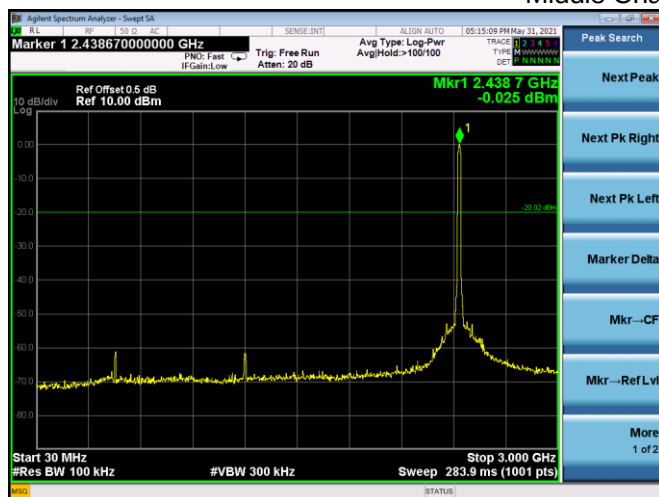


802.11g

### Low Channel 2412MHz



### Middle Channel 2437MHz



### High Channel 2462MHz

