



# RF TEST REPORT

**Report No.:** SET2019-16349

**Product Name:** LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone

**FCC ID:** SRQ-ZTEA32020

**Model No. :** ZTE Blade A3 2020

**Marketing Name:** ZTE Blade A3 2020, Blade A3 2020

**Applicant:** ZTE Corporation.

**Address:** ZTE Plaza, Keji Road South, Shenzhen, China.

**Dates of Testing:** 10/10/2019 —11/11/2019

**Issued by:** CCIC Southern Testing Co., Ltd.

**Lab Location:** Electronic Testing Building, No. 43 Shahe Road, Xili Street,  
Nanshan District, Shenzhen, Guangdong, China.

**Tel:** 86 755 26627338    **Fax:** 86 755 26627238

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## Test Report

**Product Name**.....: LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone

**Brand Name**.....: ZTE

**Trade Name**.....: ZTE

**Applicant**.....: ZTE Corporation.

**Applicant Address**.....: ZTE Plaza, Keji Road South, Shenzhen, China

**Manufacturer**.....: ZTE Corporation.

**Manufacturer Address**.....: ZTE Plaza, Keji Road South, Shenzhen, China

**Test Standards**.....: 47 CFR Part 15 Subpart C  
ANSI C63.10-2013  
KDB558074 D01 DTS Meas Guidance v05r02

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

**Tested by**.....: Vincent  
2019.12.12  
Robin Luo, Test Engineer

**Reviewed by**.....: Chris You  
2019.12.12  
Chris You, Senior Engineer

**Approved by**.....: Shuangwen Zhang  
2019.12.12  
ShuangwenZhang, Manager

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| Change History |            |                   |
|----------------|------------|-------------------|
| Issue          | Date       | Reason for change |
| 1.0            | 2019.12.12 | First edition     |
|                |            |                   |
|                |            |                   |

## 1. General Information

### 1.1. EUT Description

|                                 |                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------|
| EUT Type                        | LTE/WCDMA/GSM(GPRS)Multi-Mode Digital Mobile Phone                                         |
| Hardware Version                | upuA                                                                                       |
| Software Version                | TEL_MX_ZTE_Blade_A3_2020V1.0                                                               |
| EUT supports Radios application | WLAN2.4GHz 802.11b/g/n (HT20)                                                              |
| Frequency Range                 | 802.11b/g/n-20MHz: 2.412GHz - 2.462GHz                                                     |
| Channel Number                  | 802.11b/g/n-20MHz: 11                                                                      |
| Bit Rate of Transmitter         | 802.11b: 11/5.5/2/1 Mbps<br>802.11g: 54/48/36/24/18/12/9/6 Mbps<br>802.11n : up to 75 Mbps |
| Modulation Type                 | DSSS (802.11b), OFDM (802.11g/n)                                                           |
| MIMO                            | Not support                                                                                |
| Antenna Type                    | Internal                                                                                   |
| Antenna Gain                    | 0.9dBi                                                                                     |

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

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

## 1.2. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C (WiFi, 2.4GHz ISM band radiators) for the EUT FCC Certification:

| No. | Identity                      | Document Title                                                     |
|-----|-------------------------------|--------------------------------------------------------------------|
| 1   | 47 CFR Part 15 Subpart C 2017 | Radio Frequency Devices                                            |
| 2   | ANSI C63.10 2013              | American National Standard for Testing Unlicensed Wireless Devices |

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

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

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10-2013.

These RF tests were performed according to the method of measurements prescribed in KDB558074 D01 v05r02.

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

There are two bandwidth systems:

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

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

| Test Items                                                                                                                                  | Mode            | Data Rate | Channel |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|---------|
| Peak Conducted Output Power<br>Power Spectral Density<br>6dB Bandwidth<br>Conducted and Spurious Emission<br>Radiated and Spurious Emission | 11b/DSSS        | 1 Mbps    | 1/6/11  |
|                                                                                                                                             | 11g/OFDM        | 6 Mbps    | 1/6/11  |
|                                                                                                                                             | 11n(20MHz)/OFDM | MCS 0     | 1/6/11  |
|                                                                                                                                             |                 |           |         |
| Band Edge                                                                                                                                   | 11b/DSSS        | 1 Mbps    | 1/11    |
|                                                                                                                                             | 11g/OFDM        | 6 Mbps    | 1/11    |
|                                                                                                                                             | 11n(20MHz)/OFDM | MCS 0     | 1/11    |
|                                                                                                                                             |                 |           |         |

### 1.3. Table for Supporting Units

| No. | Equipment | Brand Name | Model Name | Manufacturer | Serial No. | Note    |
|-----|-----------|------------|------------|--------------|------------|---------|
| 1   | Notebook  | DELL       | PP11L      | DELL         | H5914A03   | FCC DOC |

### 1.4. Facilities and Accreditations

#### 1.4.1. Facilities

##### FCC-Registration No.: CN5031

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN5031, valid time is until December 31, 2020.

##### ISED Registration: 11185A-1

##### CAB identifier: CN0064

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until December 31, 2020.

##### NVLAP Lab Code: 201008-0

CCIC Southern Testing Co., Ltd is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

#### 1.4.2. Test Environment Conditions

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

|                             |              |
|-----------------------------|--------------|
| Temperature (°C):           | 15°C - 35°C  |
| Relative Humidity (%):      | 30% -60%     |
| Atmospheric Pressure (kPa): | 86KPa-106KPa |

## 2. 47 CFR Part 15C Requirements

### 2.1. Antenna requirement

#### 2.1.1. Applicable Standard

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

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

#### 2.1.2. Antenna Information

**Antenna Category:** Internal Antenna

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

**Antenna General Information:**

| No. | EUT                                                    | Ant. Type | Ant. Gain |
|-----|--------------------------------------------------------|-----------|-----------|
| 1   | LTE/WCDMA/GSM(GPRS)<br>Multi-Mode Digital Mobile Phone | Internal  | 0.9dBi    |

#### 2.1.3. Result: comply

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

## 2.2. Maximum Conducted Output Power

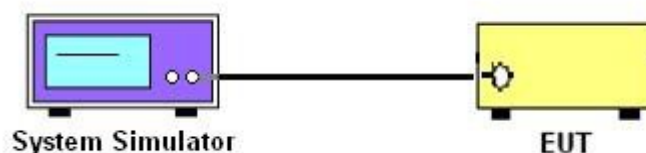
### 2.2.1. Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

### 2.2.2. Measuring Instruments

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

### 2.2.3. Test Setup



### 2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10:2013.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.



#### **2.2.5. Test Result**

Please refer to Appendix A for detail

## 2.3. 6dB Bandwidth

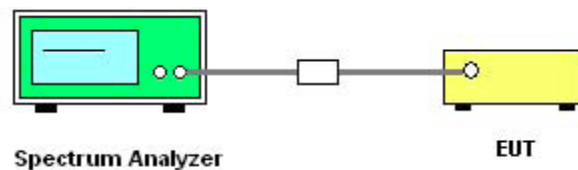
### 2.3.1. Limit of 6dB Bandwidth

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

### 2.3.2. Measuring Instruments

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

### 2.3.3. Test Setup



### 2.3.4. Test Procedures

1. The testing follows FCC KDB558074 D01 v05r02.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz.

Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.

5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 30 kHz and set the Video bandwidth (VBW) = 100 kHz.

6. Measure and record the results in the test report.



### **2.3.5. Test Results of 6dB Bandwidth**

Please refer to Appendix A for detail

## 2.4. Conducted Band Edges and Spurious Emissions

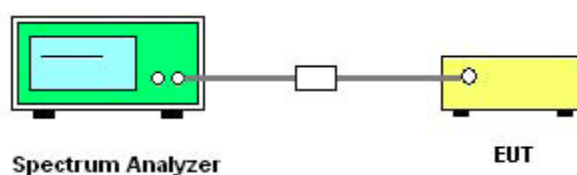
### 2.4.1. Limit of Conducted Band Edges and Spurious Emissions

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

### 2.4.2. Measuring Instruments

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

### 2.4.3. Test Setup



### 2.4.4. Test Procedure

1. The testing follows FCC KDB558074 D01 v05r02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.  
The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



#### **2.4.5. Test Results of Conducted Band Edges**

Please refer to Appendix A for detail

## 2.5. Power spectral density (PSD)

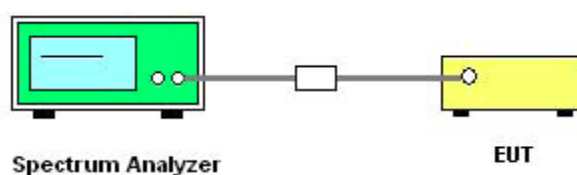
### 2.5.1. Limit of Power Spectral Density

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

### 2.5.2. Measuring Instruments

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

### 2.5.3. Test Setup



### 2.5.4. Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB558074 D01 v05r02.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz.

Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)

5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.

6. Measure and record the results in the test report.

7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

### **2.5.5. Test Results of Power spectral density**

Please refer to Appendix A for detail

## 2.6. Radiated Band Edge and Spurious Emission

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

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Note: Wireless charger configuration was evaluated.

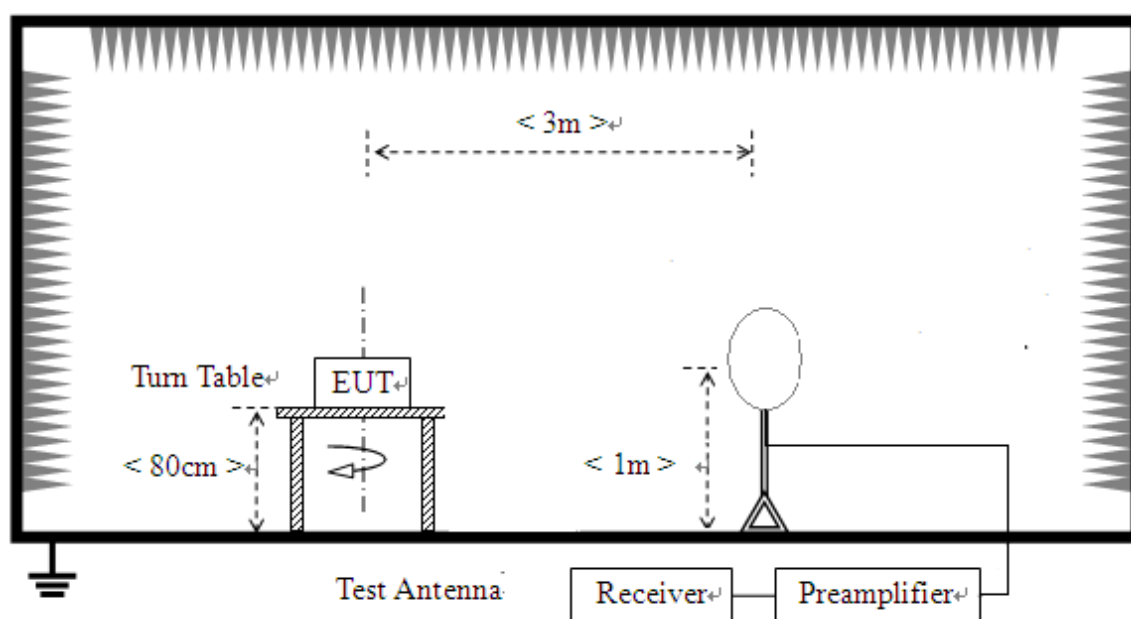
| Frequency (MHz) | Field Strength ( $\mu\text{V/m}$ ) | Measurement Distance (m) |
|-----------------|------------------------------------|--------------------------|
| 0.009 - 0.490   | $2400/F(\text{kHz})$               | 300                      |
| 0.490 - 1.705   | $24000/F(\text{kHz})$              | 30                       |
| 1.705 - 30.0    | 30                                 | 30                       |
| 30 - 88         | 100                                | 3                        |
| 88 - 216        | 150                                | 3                        |
| 216 - 960       | 200                                | 3                        |
| Above 960       | 500                                | 3                        |

### 2.6.2. Measuring Instruments

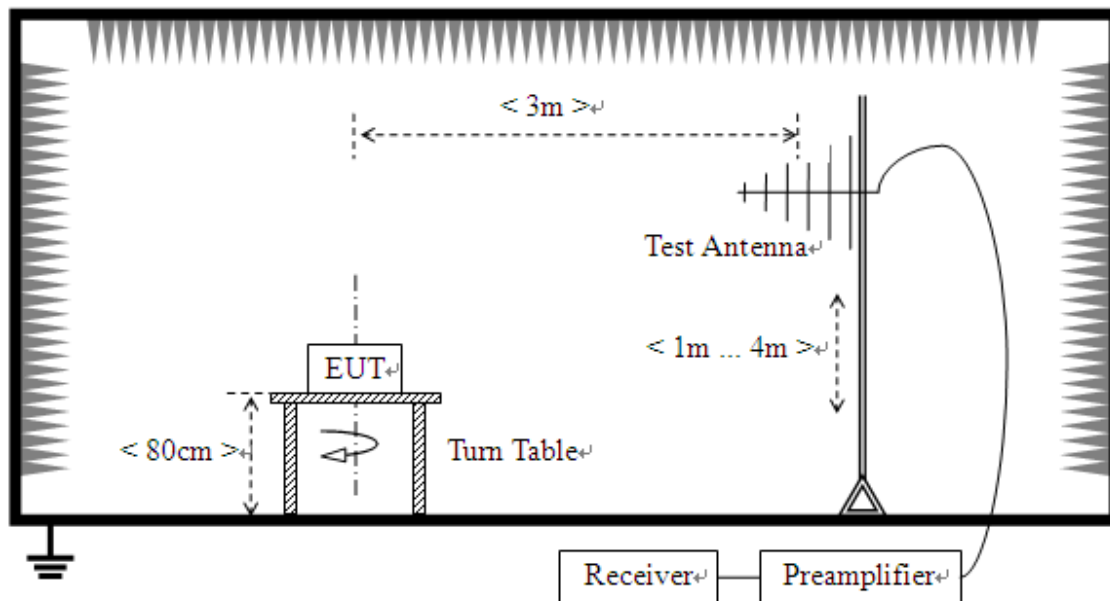
The measuring equipment is listed in the section 3 of this test report.

### 2.6.3. Test Setup

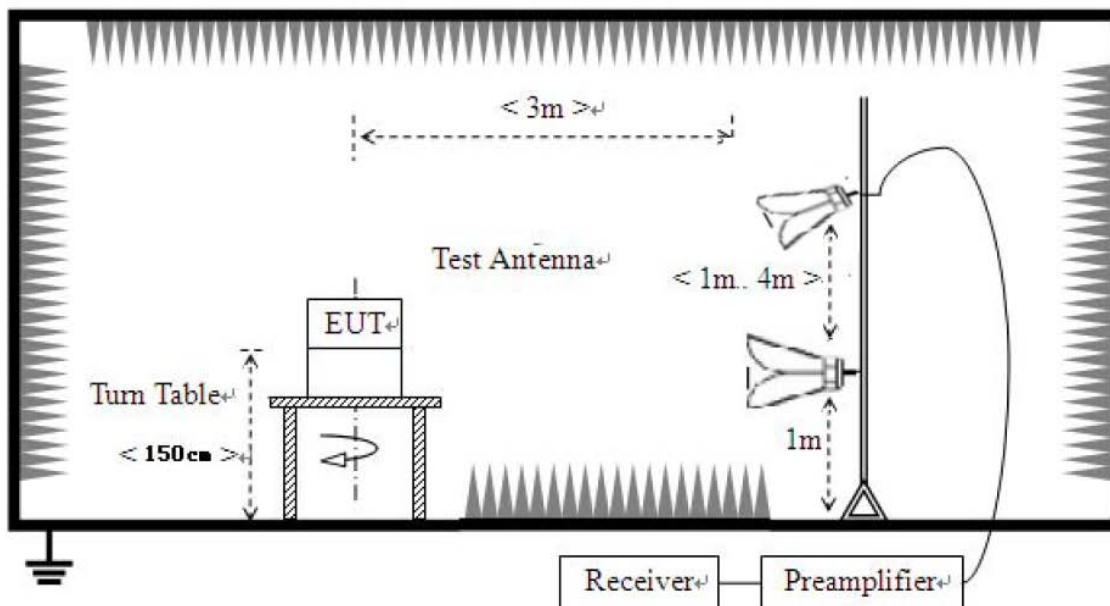
For radiated emissions from 9 KHz to 30 MHz



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



### For radiated emissions above 1GHz



#### 2.6.4. Test Procedures

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

## NOTE:

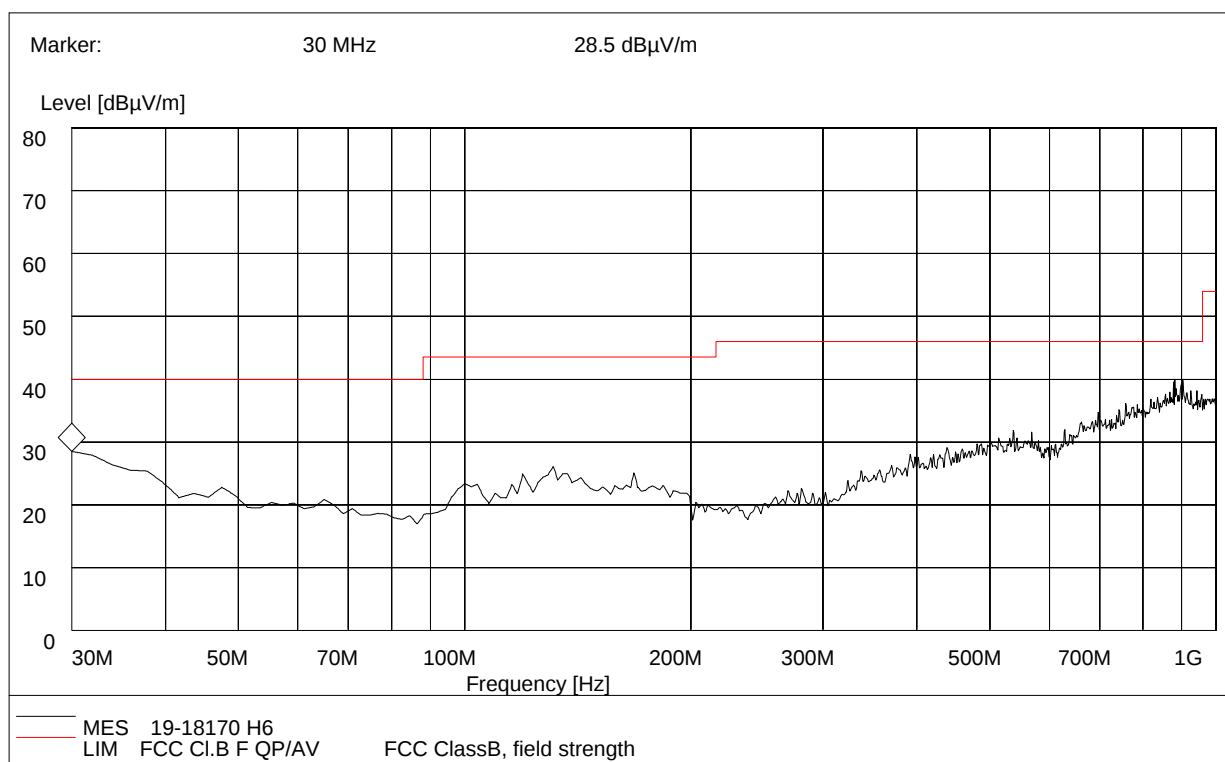
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

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

### For 9 kHz to 30MHz

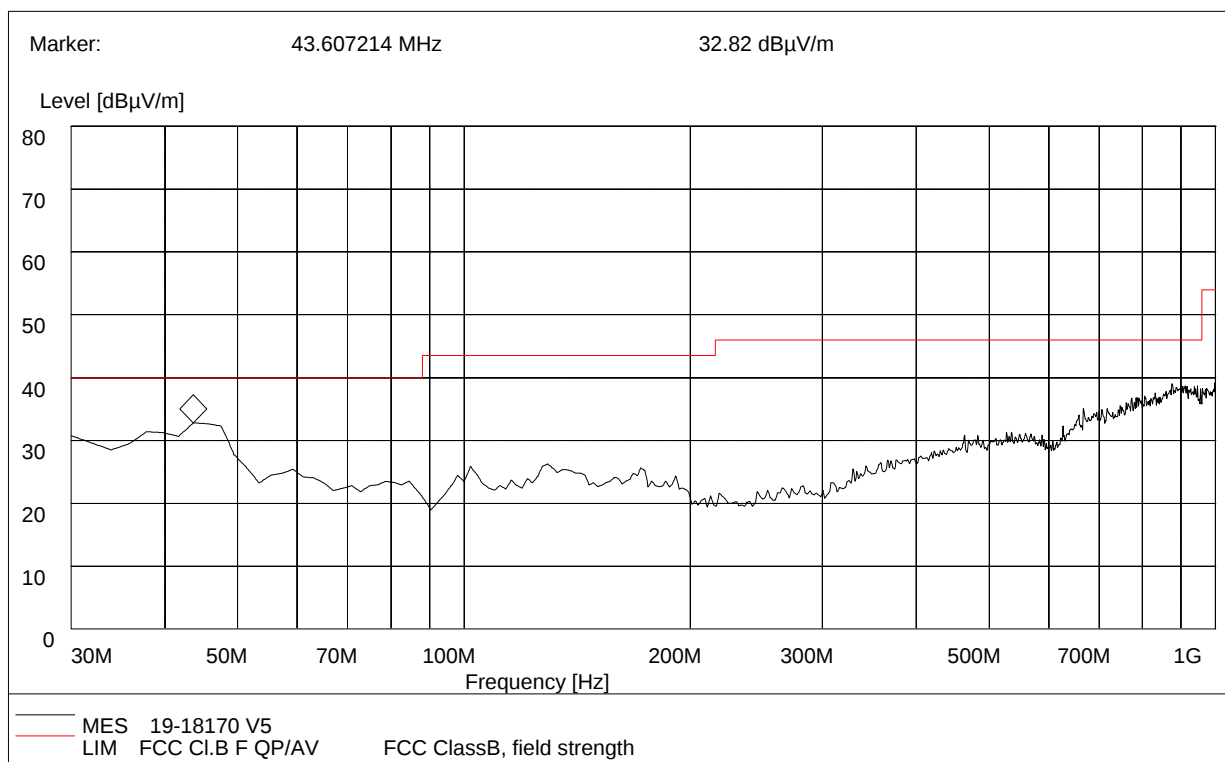
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

### For 30MHz to 1000 MHz



### 30MHz to 1GHz, Antenna Horizontal

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Bandwidth (kHz) | Antenna height (cm) | Corr. Factor (dB/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna    | Verdict |
|-----------------|--------------------------|-----------------|---------------------|---------------------|----------------------|-------------|------------|---------|
| 30              | 28.5                     | 120.000         | 100.0               | 17.9                | 40.0                 | 11.5        | Horizontal | Pass    |
| 56.74           | 22.43                    | 120.000         | 100.0               | 8.2                 | 40.0                 | 17.57       | Horizontal | Pass    |
| 138.48          | 24.48                    | 120.000         | 100.0               | 12.9                | 43.5                 | 19.02       | Horizontal | Pass    |
| 352.65          | 25.66                    | 120.000         | 100.0               | 15.8                | 46.0                 | 20.34       | Horizontal | Pass    |
| 501.74          | 32.18                    | 120.000         | 100.0               | 19.3                | 46.0                 | 13.82       | Horizontal | Pass    |
| 898.26          | 39.57                    | 120.000         | 100.0               | 24.8                | 46.0                 | 6.43        | Horizontal | Pass    |



### 30MHz to 1GHz, Antenna Vertical

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Bandwidth (kHz) | Antenna height (cm) | Corr. Factor (dB/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna  | Verdict |
|-----------------|--------------------------|-----------------|---------------------|---------------------|----------------------|-------------|----------|---------|
| 30.0            | 31.20                    | 120.000         | 100.0               | 17.9                | 40.0                 | 8.8         | Vertical | Pass    |
| 64.95           | 27.66                    | 120.000         | 100.0               | 8.2                 | 40.0                 | 12.34       | Vertical | Pass    |
| 147.95          | 25.34                    | 120.000         | 100.0               | 12.3                | 43.5                 | 18.16       | Vertical | Pass    |
| 439.85          | 28.97                    | 120.000         | 100.0               | 18.5                | 46.0                 | 17.03       | Vertical | Pass    |
| 569.27          | 31.22                    | 120.000         | 100.0               | 20.0                | 46.0                 | 14.78       | Vertical | Pass    |
| 899.74          | 38.95                    | 120.000         | 100.0               | 24.8                | 46.0                 | 7.05        | Vertical | Pass    |

**For 1GHz to 25 GHz**
**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b\_2412MHz)**

| No. | Fre.<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|---------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 2390.00       | 46.95                         | PK | 74.00             | -27.05         | 1.60                     | 200.00                     | 45.65                    | 5.20                 | 28.60                  | 32.50                | 1.30                     |
| 2   | 2390.00       | 34.63                         | AV | 54.00             | -19.37         | 1.60                     | 200.00                     | 33.33                    | 5.20                 | 28.60                  | 32.50                | 1.30                     |
| 3   | 4824.00       | 51.11                         | PK | 74.00             | -22.89         | 1.60                     | 200.00                     | 44.71                    | 7.40                 | 30.40                  | 31.40                | 6.40                     |
| 4   | 4824.00       | 40.22                         | AV | 54.00             | -13.78         | 1.60                     | 200.00                     | 33.82                    | 7.40                 | 30.40                  | 31.40                | 6.40                     |
| 5   | 7236.00       | 52.03                         | PK | 74.00             | -21.97         | 1.60                     | 200.00                     | 41.53                    | 11.50                | 31.20                  | 32.20                | 10.50                    |
| 6   | 7236.00       | 41.24                         | AV | 54.00             | -12.76         | 1.60                     | 200.00                     | 30.74                    | 11.50                | 31.20                  | 32.20                | 10.50                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b\_2412MHz)**

| No. | Frequency<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 2390.00            | 48.95                         | PK | 74.00             | -25.05         | 1.80                     | 109.00                     | 47.65                    | 5.20                 | 28.60                  | 32.50                | 1.30                     |
| 2   | 2390.00            | 38.72                         | AV | 54.00             | -15.28         | 1.80                     | 109.00                     | 37.42                    | 5.20                 | 28.60                  | 32.50                | 1.30                     |
| 3   | 4824.00            | 49.99                         | PK | 74.00             | -24.01         | 1.80                     | 109.00                     | 43.59                    | 7.40                 | 30.40                  | 31.40                | 6.40                     |
| 4   | 4824.00            | 39.79                         | AV | 54.00             | -14.21         | 1.80                     | 109.00                     | 33.39                    | 7.40                 | 30.40                  | 31.40                | 6.40                     |
| 5   | 7236.00            | 51.06                         | PK | 74.00             | -22.94         | 1.80                     | 109.00                     | 40.56                    | 11.50                | 31.20                  | 32.20                | 10.50                    |
| 6   | 7236.00            | 40.94                         | AV | 54.00             | -13.06         | 1.80                     | 109.00                     | 30.44                    | 11.50                | 31.20                  | 32.20                | 10.50                    |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b\_2437MHz)**

| No. | Fre.<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|---------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 4874.00       | 52.03                         | PK | 74.00             | -21.97         | 1.60                     | 210.00                     | 45.63                    | 6.70                 | 30.40                  | 31.30                | 6.40                     |
| 2   | 4874.00       | 41.98                         | AV | 54.00             | -12.02         | 1.60                     | 210.00                     | 35.58                    | 6.70                 | 30.40                  | 31.30                | 6.40                     |
| 3   | 7311.00       | 52.97                         | PK | 74.00             | -21.03         | 1.60                     | 210.00                     | 42.17                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 4   | 7311.00       | 43.27                         | AV | 54.00             | -10.73         | 1.60                     | 210.00                     | 32.47                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b\_2437MHz)**

| No. | Frequency<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 4874.00            | 51.33                         | PK | 74.00             | -22.67         | 1.80                     | 170.00                     | 44.93                    | 6.70                 | 30.40                  | 31.30                | 6.40                     |
| 2   | 4874.00            | 41.12                         | AV | 54.00             | -12.88         | 1.80                     | 170.00                     | 34.72                    | 6.70                 | 30.40                  | 31.30                | 6.40                     |
| 3   | 7311.00            | 51.98                         | PK | 74.00             | -22.02         | 1.80                     | 170.00                     | 41.18                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 4   | 7311.00            | 42.18                         | AV | 54.00             | -11.82         | 1.80                     | 170.00                     | 31.38                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b\_2462MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2483.50         | 52.06                  | PK | 74.00          | -21.94      | 1.60               | 310.00               | 50.46              | 5.30           | 28.70            | 32.40          | 1.60               |
| 2   | 2483.50         | 41.94                  | AV | 54.00          | -12.06      | 1.60               | 310.00               | 40.34              | 5.30           | 28.70            | 32.40          | 1.60               |
| 3   | 4924.00         | 53.24                  | PK | 74.00          | -20.76      | 1.60               | 310.00               | 47.54              | 6.70           | 30.50            | 31.50          | 5.70               |
| 4   | 4924.00         | 43.42                  | AV | 54.00          | -10.58      | 1.60               | 310.00               | 37.72              | 6.70           | 30.50            | 31.50          | 5.70               |
| 5   | 7386.00         | 53.33                  | PK | 74.00          | -20.67      | 1.60               | 310.00               | 42.53              | 11.80          | 31.20            | 32.20          | 10.80              |
| 6   | 7386.00         | 43.38                  | AV | 54.00          | -10.62      | 1.60               | 310.00               | 32.58              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b\_2462MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2483.50         | 48.95                  | PK | 74.00          | -25.05      | 1.80               | 300.00               | 47.35              | 5.30           | 28.70            | 32.40          | 1.60               |
| 2   | 2483.50         | 38.63                  | AV | 54.00          | -15.37      | 1.80               | 300.00               | 37.03              | 5.30           | 28.70            | 32.40          | 1.60               |
| 3   | 4924.00         | 50.16                  | PK | 74.00          | -23.84      | 1.80               | 300.00               | 44.46              | 6.70           | 30.50            | 31.50          | 5.70               |
| 4   | 4924.00         | 40.02                  | AV | 54.00          | -13.98      | 1.80               | 300.00               | 34.32              | 6.70           | 30.50            | 31.50          | 5.70               |
| 5   | 7386.00         | 51.87                  | PK | 74.00          | -22.13      | 1.80               | 300.00               | 41.07              | 11.80          | 31.20            | 32.20          | 10.80              |
| 6   | 7386.00         | 42.09                  | AV | 54.00          | -11.91      | 1.80               | 300.00               | 31.29              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g\_2412MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2390.00         | 49.35                  | PK | 74.00          | -24.65      | 1.70               | 290.00               | 48.05              | 5.20           | 28.60            | 32.50          | 1.30               |
| 2   | 2390.00         | 39.43                  | AV | 54.00          | -14.57      | 1.70               | 290.00               | 38.13              | 5.20           | 28.60            | 32.50          | 1.30               |
| 3   | 4824.00         | 51.34                  | PK | 74.00          | -22.66      | 1.70               | 290.00               | 44.94              | 7.40           | 30.40            | 31.40          | 6.40               |
| 4   | 4824.00         | 41.59                  | AV | 54.00          | -12.41      | 1.70               | 290.00               | 35.19              | 7.40           | 30.40            | 31.40          | 6.40               |
| 5   | 7236.00         | 52.06                  | PK | 74.00          | -21.94      | 1.70               | 290.00               | 41.56              | 11.50          | 31.20            | 32.20          | 10.50              |
| 6   | 7236.00         | 42.24                  | AV | 54.00          | -11.76      | 1.70               | 290.00               | 31.74              | 11.50          | 31.20            | 32.20          | 10.50              |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g\_2412MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2390.00         | 48.95                  | PK | 74.00          | -25.05      | 2.00               | 120.00               | 47.65              | 5.20           | 28.60            | 32.50          | 1.30               |
| 2   | 2390.00         | 38.63                  | AV | 54.00          | -15.37      | 2.00               | 120.00               | 37.33              | 5.20           | 28.60            | 32.50          | 1.30               |
| 3   | 4824.00         | 51.34                  | PK | 74.00          | -22.66      | 2.00               | 120.00               | 44.94              | 7.40           | 30.40            | 31.40          | 6.40               |
| 4   | 4824.00         | 41.70                  | AV | 54.00          | -12.30      | 2.00               | 120.00               | 35.30              | 7.40           | 30.40            | 31.40          | 6.40               |
| 5   | 7236.00         | 51.88                  | PK | 74.00          | -22.12      | 2.00               | 120.00               | 41.68              | 11.50          | 31.20            | 32.20          | 10.20              |
| 6   | 7236.00         | 41.90                  | AV | 54.00          | -12.10      | 2.00               | 120.00               | 31.70              | 11.50          | 31.20            | 32.20          | 10.20              |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g\_2437MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 4874.00         | 50.00                  | PK | 74.00          | -24.00      | 1.80               | 240.00               | 44.20              | 6.70           | 30.40            | 31.30          | 5.80               |
| 2   | 4874.00         | 40.93                  | AV | 54.00          | -13.07      | 1.80               | 240.00               | 35.13              | 6.70           | 30.40            | 31.30          | 5.80               |
| 3   | 7311.00         | 51.68                  | PK | 74.00          | -22.32      | 1.80               | 240.00               | 40.88              | 11.80          | 31.20            | 32.20          | 10.80              |
| 4   | 7311.00         | 42.51                  | AV | 54.00          | -11.49      | 1.80               | 240.00               | 31.71              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g\_2437MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 4874.00         | 52.16                  | PK | 74.00          | -21.84      | 1.70               | 300.00               | 46.36              | 6.70           | 30.40            | 31.30          | 5.80               |
| 2   | 4874.00         | 44.01                  | AV | 54.00          | -9.99       | 1.70               | 300.00               | 38.21              | 6.70           | 30.40            | 31.30          | 5.80               |
| 3   | 7311.00         | 53.32                  | PK | 74.00          | -20.68      | 1.70               | 300.00               | 42.52              | 11.80          | 31.20            | 32.20          | 10.80              |
| 4   | 7311.00         | 44.07                  | AV | 54.00          | -9.93       | 1.70               | 300.00               | 33.27              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g\_2462MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2483.50         | 52.16                  | PK | 74.00          | -21.84      | 1.80               | 280.00               | 50.56              | 5.30           | 28.70            | 32.40          | 1.60               |
| 2   | 2483.50         | 42.11                  | AV | 54.00          | -11.89      | 1.80               | 280.00               | 40.51              | 5.30           | 28.70            | 32.40          | 1.60               |
| 3   | 4924.00         | 52.66                  | PK | 74.00          | -21.34      | 1.80               | 280.00               | 46.96              | 6.70           | 30.50            | 31.50          | 5.70               |
| 4   | 4924.00         | 43.56                  | AV | 54.00          | -10.44      | 1.80               | 280.00               | 37.86              | 6.70           | 30.50            | 31.50          | 5.70               |
| 5   | 7386.00         | 52.09                  | PK | 74.00          | -21.91      | 1.80               | 280.00               | 41.29              | 11.80          | 31.20            | 32.20          | 10.80              |
| 6   | 7386.00         | 43.64                  | AV | 54.00          | -10.36      | 1.80               | 280.00               | 32.84              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g\_2462MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2483.50         | 48.65                  | PK | 74.00          | -25.35      | 1.70               | 109.00               | 47.05              | 5.30           | 28.70            | 32.40          | 1.60               |
| 2   | 2483.50         | 38.44                  | AV | 54.00          | -15.56      | 1.70               | 109.00               | 36.84              | 5.30           | 28.70            | 32.40          | 1.60               |
| 3   | 4924.00         | 51.22                  | PK | 74.00          | -22.78      | 1.70               | 109.00               | 45.52              | 6.70           | 30.50            | 31.50          | 5.70               |
| 4   | 4924.00         | 40.92                  | AV | 54.00          | -13.08      | 1.70               | 109.00               | 35.22              | 6.70           | 30.50            | 31.50          | 5.70               |
| 5   | 7386.00         | 52.64                  | PK | 74.00          | -21.36      | 1.70               | 109.00               | 41.84              | 11.80          | 31.20            | 32.20          | 10.80              |
| 6   | 7386.00         | 43.44                  | AV | 54.00          | -10.56      | 1.70               | 109.00               | 32.64              | 11.80          | 31.20            | 32.20          | 10.80              |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20\_2412MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2390.00         | 57.36                  | PK | 74.00          | -16.64      | 1.70               | 120.00               | 56.06              | 5.20           | 28.60            | 32.50          | 1.30               |
| 2   | 2390.00         | 45.25                  | AV | 54.00          | -8.75       | 1.70               | 120.00               | 43.95              | 5.20           | 28.60            | 32.50          | 1.30               |
| 3   | 4824.00         | 48.95                  | PK | 74.00          | -25.05      | 1.70               | 120.00               | 42.55              | 7.40           | 30.40            | 31.40          | 6.40               |
| 4   | 4824.00         | 38.96                  | AV | 54.00          | -15.04      | 1.70               | 120.00               | 32.56              | 7.40           | 30.40            | 31.40          | 6.40               |
| 5   | 7236.00         | 51.37                  | PK | 74.00          | -22.63      | 1.70               | 120.00               | 40.87              | 11.50          | 31.20            | 32.20          | 10.50              |
| 6   | 7236.00         | 41.36                  | AV | 54.00          | -12.64      | 1.70               | 120.00               | 30.86              | 11.50          | 31.20            | 32.20          | 10.50              |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20\_2412MHz)**

| No. | Frequency (MHz) | Emssion Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Cab. Loss (dB) | Ant. Factor (dB) | Pre. Amp. (dB) | Cor. Factor (dB/m) |
|-----|-----------------|------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|----------------|------------------|----------------|--------------------|
| 1   | 2390.00         | 55.80                  | PK | 74.00          | -18.20      | 1.70               | 110.00               | 54.50              | 5.20           | 28.60            | 32.50          | 1.30               |
| 2   | 2390.00         | 42.42                  | AV | 54.00          | -11.58      | 1.70               | 110.00               | 41.12              | 5.20           | 28.60            | 32.50          | 1.30               |
| 3   | 4824.00         | 48.74                  | PK | 74.00          | -25.26      | 1.70               | 110.00               | 42.34              | 7.40           | 30.40            | 31.40          | 6.40               |
| 4   | 4824.00         | 40.39                  | AV | 54.00          | -13.61      | 1.70               | 110.00               | 33.99              | 7.40           | 30.40            | 31.40          | 6.40               |
| 5   | 7236.00         | 51.63                  | PK | 74.00          | -22.37      | 1.70               | 110.00               | 41.13              | 11.50          | 31.20            | 32.20          | 10.50              |
| 6   | 7236.00         | 41.60                  | AV | 54.00          | -12.40      | 1.70               | 110.00               | 31.10              | 11.50          | 31.20            | 32.20          | 10.50              |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20\_2437MHz)**

| No. | Frequency<br>(MHz) | Emssion<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 4874.00            | 51.36                        | PK | 74.00             | -22.64         | 1.70                     | 200.00                     | 45.56                    | 6.70                 | 30.40                  | 31.30                | 5.80                     |
| 2   | 4874.00            | 41.11                        | AV | 54.00             | -12.89         | 1.70                     | 200.00                     | 35.31                    | 6.70                 | 30.40                  | 31.30                | 5.80                     |
| 3   | 7311.00            | 52.09                        | PK | 74.00             | -21.91         | 1.70                     | 200.00                     | 41.29                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 4   | 7311.00            | 41.77                        | AV | 54.00             | -12.23         | 1.70                     | 200.00                     | 30.97                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20\_2437MHz)**

| No. | Frequency<br>(MHz) | Emssion<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 4874.00            | 52.11                        | PK | 74.00             | -21.89         | 1.60                     | 110.00                     | 45.71                    | 6.70                 | 31.20                  | 31.50                | 6.40                     |
| 2   | 4874.00            | 43.84                        | AV | 54.00             | -10.16         | 1.60                     | 110.00                     | 37.44                    | 6.70                 | 31.20                  | 31.50                | 6.40                     |
| 3   | 7311.00            | 53.62                        | PK | 74.00             | -20.38         | 1.60                     | 110.00                     | 42.82                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 4   | 7311.00            | 44.04                        | AV | 54.00             | -9.96          | 1.60                     | 110.00                     | 33.24                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20\_2462MHz)**

| No. | Frequency<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 2483.50            | 59.94                         | PK | 74.00             | -14.06         | 1.80                     | 300.00                     | 58.34                    | 5.30                 | 28.70                  | 32.40                | 1.60                     |
| 2   | 2483.50            | 46.59                         | AV | 54.00             | -7.41          | 1.80                     | 300.00                     | 44.99                    | 5.30                 | 28.70                  | 32.40                | 1.60                     |
| 3   | 4924.00            | 51.62                         | PK | 74.00             | -22.38         | 1.80                     | 300.00                     | 45.92                    | 6.70                 | 30.50                  | 31.50                | 5.70                     |
| 4   | 4924.00            | 40.27                         | AV | 54.00             | -13.73         | 1.80                     | 300.00                     | 34.57                    | 6.70                 | 30.50                  | 31.50                | 5.70                     |
| 5   | 7386.00            | 52.19                         | PK | 74.00             | -21.81         | 1.80                     | 300.00                     | 41.39                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 6   | 7386.00            | 43.94                         | AV | 54.00             | -10.06         | 1.80                     | 300.00                     | 33.14                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20\_2462MHz)**

| No. | Frequency<br>(MHz) | Emission<br>Level<br>(dBuV/m) |    | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV/m) | Cab.<br>Loss<br>(dB) | Ant.<br>Factor<br>(dB) | Pre.<br>Amp.<br>(dB) | Cor.<br>Factor<br>(dB/m) |
|-----|--------------------|-------------------------------|----|-------------------|----------------|--------------------------|----------------------------|--------------------------|----------------------|------------------------|----------------------|--------------------------|
| 1   | 2483.50            | 59.71                         | PK | 74.00             | -14.29         | 1.60                     | 350.00                     | 58.11                    | 5.30                 | 28.70                  | 32.40                | 1.60                     |
| 2   | 2483.50            | 50.06                         | AV | 54.00             | -3.94          | 1.60                     | 350.00                     | 48.46                    | 5.30                 | 28.70                  | 32.40                | 1.60                     |
| 3   | 4924.00            | 50.68                         | PK | 74.00             | -23.32         | 1.60                     | 350.00                     | 44.98                    | 6.70                 | 30.50                  | 31.50                | 5.70                     |
| 4   | 4924.00            | 42.29                         | AV | 54.00             | -11.71         | 1.60                     | 350.00                     | 36.59                    | 6.70                 | 30.50                  | 31.50                | 5.70                     |
| 5   | 7386.00            | 51.00                         | PK | 74.00             | -23.00         | 1.60                     | 350.00                     | 40.20                    | 11.80                | 31.20                  | 32.20                | 10.80                    |
| 6   | 7386.00            | 42.18                         | AV | 54.00             | -11.82         | 1.60                     | 350.00                     | 31.38                    | 11.80                | 31.20                  | 32.20                | 10.80                    |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
- Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level - Limit value

## 2.7. Conducted Emission

### 2.7.1. Limit of Conducted Emission

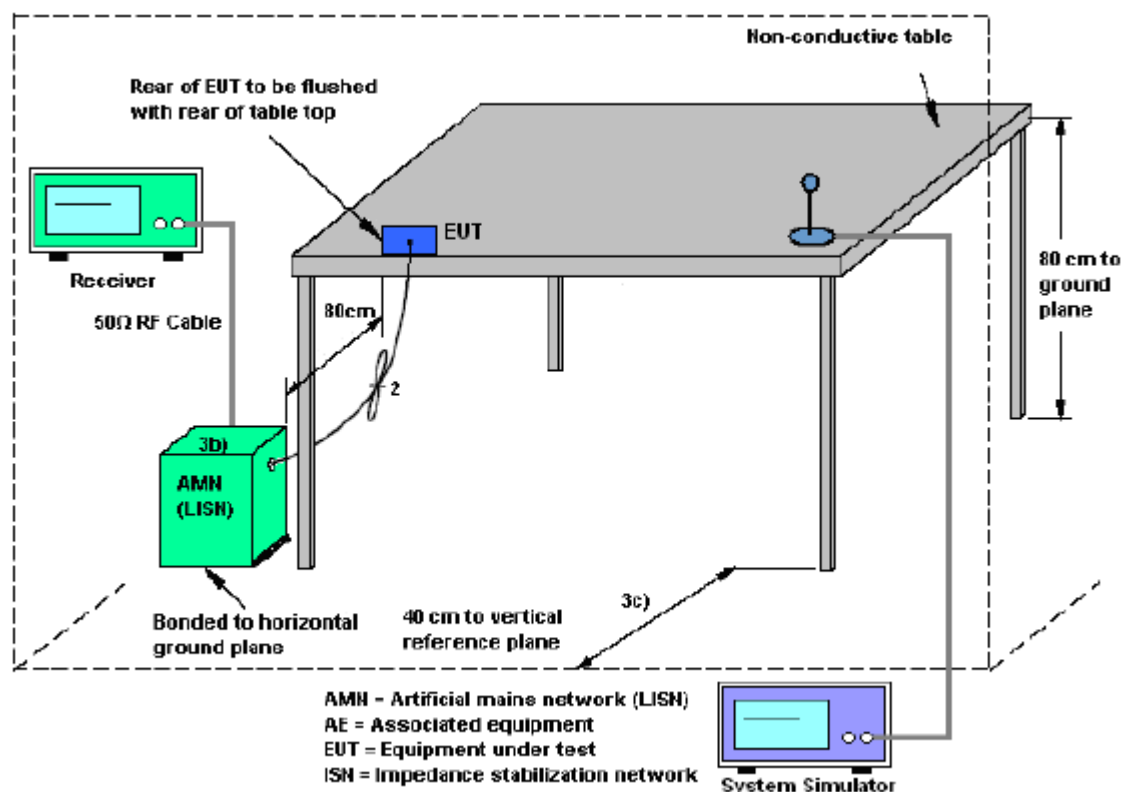
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency range (MHz) | Conducted Limit (dB $\mu$ V) |          |
|-----------------------|------------------------------|----------|
|                       | Quai-peak                    | Average  |
| 0.15 - 0.50           | 66 to 56                     | 56 to 46 |
| 0.50 - 5              | 56                           | 46       |
| 5 - 30                | 60                           | 50       |

### 2.7.2. Measuring Instruments

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

### 2.7.3. Test Setup

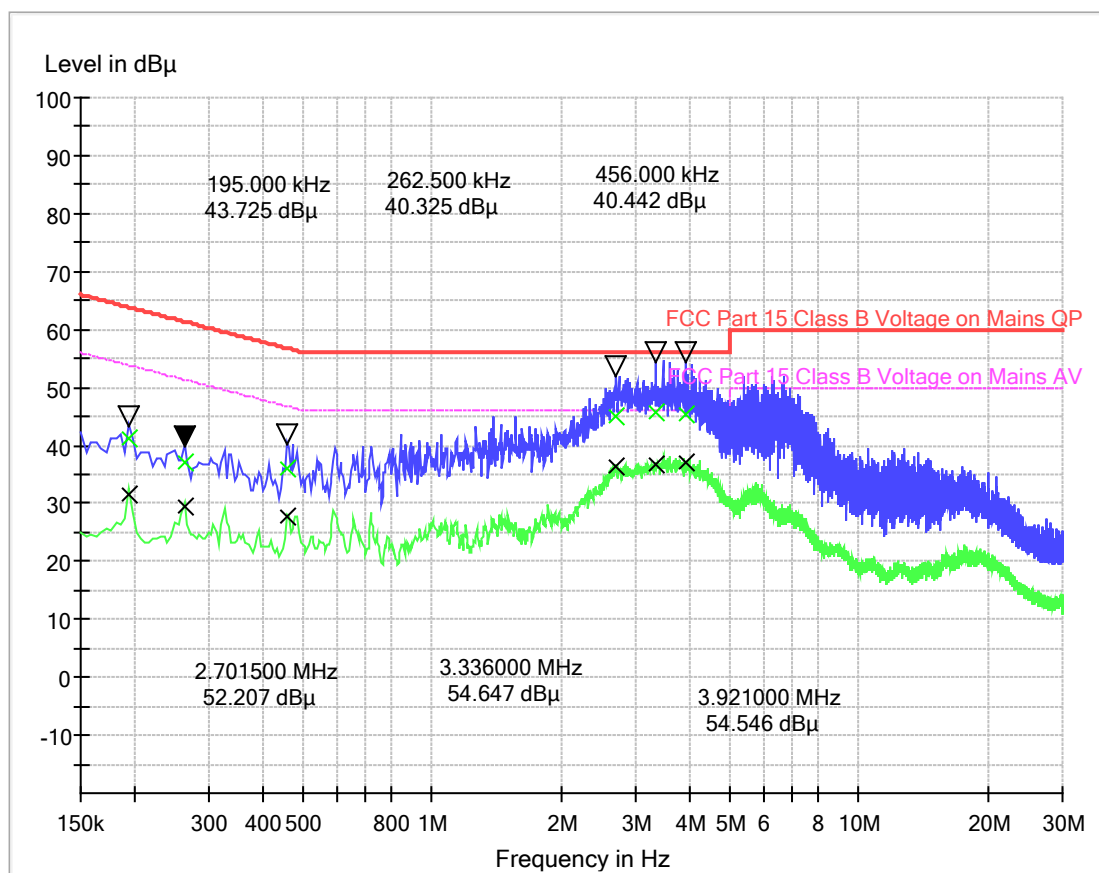


#### **2.7.4. Test Procedures**

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

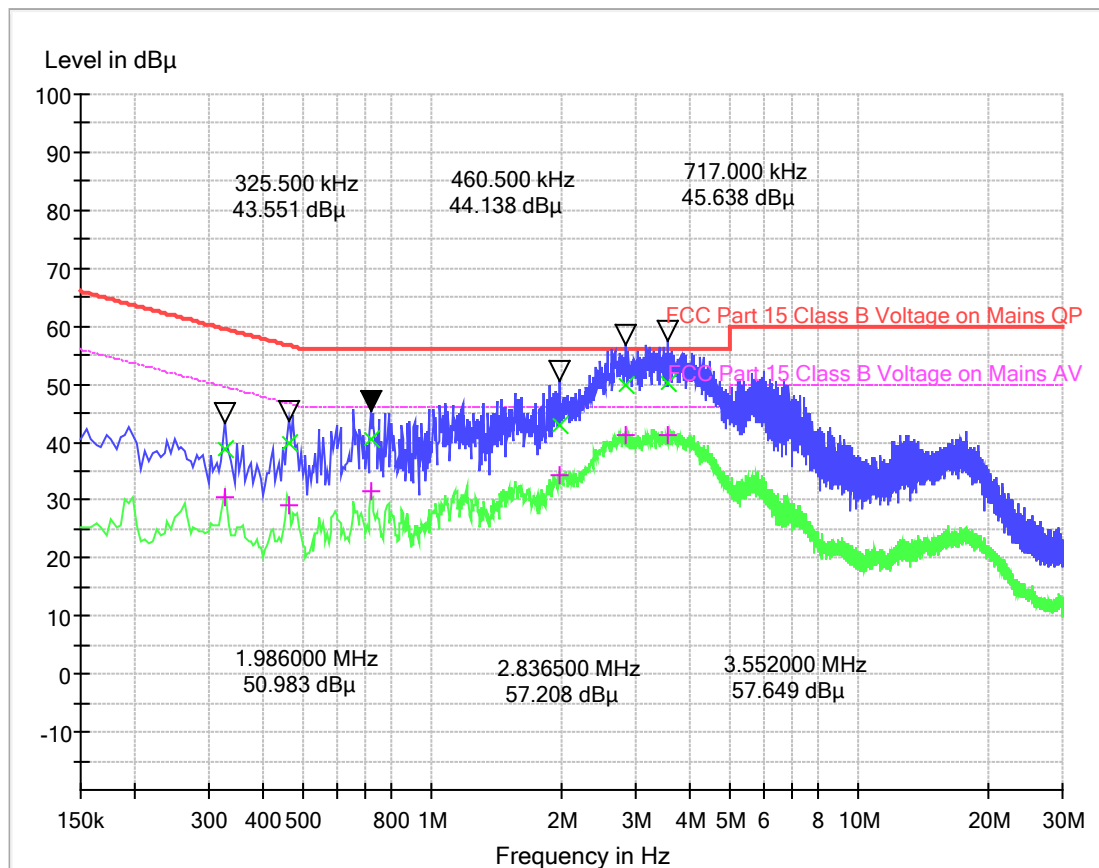
#### **2.7.5. Test Results of Conducted Emission**

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



(Plot A: L Phase)

| Frequency (MHz) | QuasiPeak (dB μ V) | CAverage (dB μ V) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dB μ V) |
|-----------------|--------------------|-------------------|-----------------|------------|--------------|-------------|-------------|---------------------|
| 0.195000        | 41.21              | 31.70             | 0.1             | 10.1       | 22.61        | 63.8        | 22.12       | 53.8                |
| 0.262500        | 36.94              | 29.34             | 0.1             | 10.1       | 24.41        | 61.4        | 22.01       | 51.4                |
| 0.456000        | 36.03              | 27.85             | 0.6             | 10.6       | 20.74        | 56.8        | 18.92       | 46.8                |
| 2.701500        | 45.09              | 36.20             | 0.6             | 10.6       | 10.91        | 56.0        | 9.80        | 46.0                |
| 3.336000        | 45.81              | 36.61             | 0.6             | 10.6       | 10.19        | 56.0        | 9.39        | 46.0                |
| 3.921000        | 45.33              | 37.04             | 0.7             | 10.7       | 10.67        | 56.0        | 8.96        | 46.0                |



(Plot B: N Phase)

| Frequency (MHz) | QuasiPeak (dB μ V) | CAverage (dB μ V) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dB μ V) |
|-----------------|--------------------|-------------------|-----------------|------------|--------------|-------------|-------------|---------------------|
| 0.325500        | 38.65              | 30.64             | 0.1             | 10.1       | 20.92        | 59.6        | 18.93       | 49.6                |
| 0.460500        | 39.93              | 29.22             | 0.1             | 10.1       | 16.75        | 56.7        | 17.46       | 46.7                |
| 0.717000        | 40.62              | 31.65             | 0.1             | 10.1       | 15.38        | 56.0        | 14.35       | 46.0                |
| 1.986000        | 43.04              | 34.31             | 0.1             | 10.1       | 12.96        | 56.0        | 11.69       | 46.0                |
| 2.836500        | 49.80              | 41.18             | 0.2             | 10.2       | 6.20         | 56.0        | 4.82        | 46.0                |
| 3.552000        | 50.08              | 41.09             | 0.2             | 10.2       | 5.92         | 56.0        | 4.91        | 46.0                |

**Test Result: PASS**

**Note: Correction factor=Cabel loss+ attenuation factor**  
**attenuation factor=10dB**

### 3. List of measuring equipment

| Item | Test Equipment               | Manufacturer                     | Model No.    | Serial No. | Cal Date   | Due Date   |
|------|------------------------------|----------------------------------|--------------|------------|------------|------------|
| 1    | EMI TEST RECEIVER            | R&S                              | ESIB7        | A0501375   | 2019.07.30 | 2020.07.29 |
| 2    | Power Meter                  | R&S                              | NRP-Z31      | 102872     | 2019.5.5   | 2020.05.04 |
| 3    | TURNTABLE                    | ETS                              | 2088         | 2149       | N/A        | N/A        |
| 4    | ANTENNA MAST                 | ETS                              | 2075         | 2346       | N/A        | N/A        |
| 5    | EMI TEST Software            | R&S                              | ESK1         | N/A        | N/A        | N/A        |
| 6    | Horn antenna (18GHz~26.5GHz) | AR                               | AT4002A      | 305753     | 2017.11.10 | 2020.11.09 |
| 7    | Amplifier                    | MILMEGA                          | 80RF1000-250 | A140901925 | 2017.10.09 | 2020.10.08 |
| 8    | JS amplifier                 | AR                               | 25S1G4AM1    | A0304248   | 2017.10.09 | 2020.10.08 |
| 9    | High pass filter             | Compliance Direction systems     | BSU-6        | 34202      | 2019.11.10 | 2020.11.09 |
| 13   | Horn Antenna                 | AR                               | AT4002A      | 305753     | 2017.07.12 | 2020.07.11 |
| 14   | Horn Antenna                 | AR                               | AT4510       | 325306     | 2018.07.14 | 2020.07.13 |
| 15   | ULTRA-BROADBAND ANTENNA      | R&S                              | HL562        | A0304224   | 2017.07.14 | 2020.07.13 |
| 16   | Passive Loop Antenna         | R&S                              | HFH2-Z2      | 100047     | 2019.04.26 | 2022.04.25 |
| 17   | Temperature chamber          | Dongguan gaoda instrument CO.LTD | GD-7005-100  | 130130101  | 2019.04.22 | 2020.04.21 |
| 18   | Spectrum Analyzer            | KEYSIGHT                         | N9030A       | A160702554 | 2019.06.05 | 2020.06.04 |
| 19   | Power Supply                 | R&S                              | NGMO1        | 101037     | 2019.08.03 | 2020.08.02 |
| 20   | EMI TEST RECEIVER            | KEYSIGHT                         | ESIB26       | A0304218   | 2019.05.20 | 2020.05.19 |
| 21   | LISN                         | R&S                              | ESH2-Z5      | A0304221   | 2019.04.30 | 2020.04.29 |
| 22   | Cable                        | MATCHING PAD                     | W7           | /          | 2019.01.02 | 2020.01.01 |

#### 4. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150KHz~30MHz)

|                                                                       |       |
|-----------------------------------------------------------------------|-------|
| Measuring Uncertainty for a level of confidence of 95%( $U=2U_c(y)$ ) | 2.6dB |
|-----------------------------------------------------------------------|-------|

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

|                                                                       |       |
|-----------------------------------------------------------------------|-------|
| Measuring Uncertainty for a level of confidence of 95%( $U=2U_c(y)$ ) | 2.4dB |
|-----------------------------------------------------------------------|-------|

Uncertainty of Radiated Emission Measurement (1GHz~40GHz)

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

## Appendix A

### RF Output Power

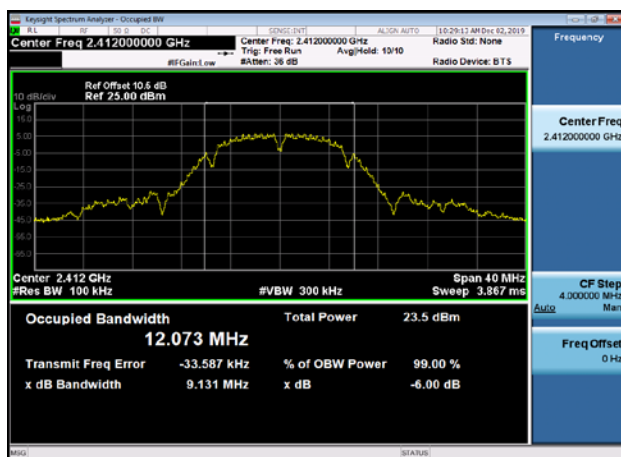
#### Test Result and Data

| Conducted Output Power |                      |                                  |             |        |
|------------------------|----------------------|----------------------------------|-------------|--------|
| Mode                   | Test Frequency (MHz) | Max Conducted Output Power (dBm) | Limit (dBm) | Result |
| 802.11b                | 2412                 | 16.56                            | 30          | Pass   |
| 802.11b                | 2437                 | 17.21                            | 30          | Pass   |
| 802.11b                | 2462                 | 16.76                            | 30          | Pass   |
| 802.11g                | 2412                 | 12.45                            | 30          | Pass   |
| 802.11g                | 2437                 | 12.88                            | 30          | Pass   |
| 802.11g                | 2462                 | 12.43                            | 30          | Pass   |
| 802.11n (HT20)         | 2412                 | 12.21                            | 30          | Pass   |
| 802.11n (HT20)         | 2437                 | 11.92                            | 30          | Pass   |
| 802.11n (HT20)         | 2462                 | 12.24                            | 30          | Pass   |

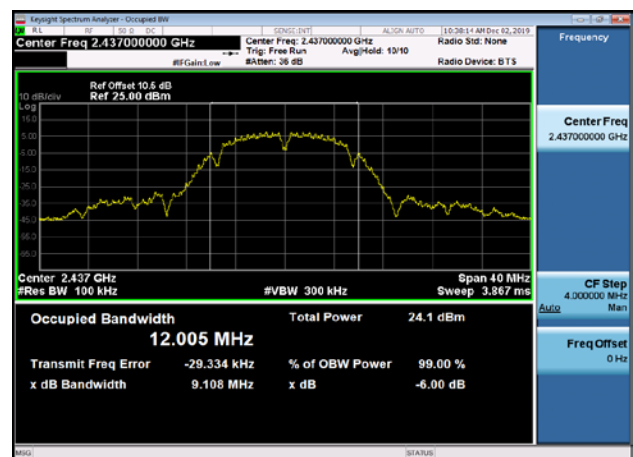
**6dB Bandwidth****Test Result and Data**

|                | WLAN Occupied 6dB Bandwidth |                          |             |        |
|----------------|-----------------------------|--------------------------|-------------|--------|
| Mode           | Test Frequency (MHz)        | Occupied Bandwidth (MHz) | Limit (KHz) | Result |
| 802.11b        | 2412                        | 9.13                     | 500         | Pass   |
| 802.11b        | 2437                        | 9.11                     | 500         | Pass   |
| 802.11b        | 2462                        | 9.12                     | 500         | Pass   |
| 802.11g        | 2412                        | 16.38                    | 500         | Pass   |
| 802.11g        | 2437                        | 16.38                    | 500         | Pass   |
| 802.11g        | 2462                        | 16.37                    | 500         | Pass   |
| 802.11n (HT20) | 2412                        | 17.60                    | 500         | Pass   |
| 802.11n (HT20) | 2437                        | 17.61                    | 500         | Pass   |
| 802.11n (HT20) | 2462                        | 17.59                    | 500         | Pass   |

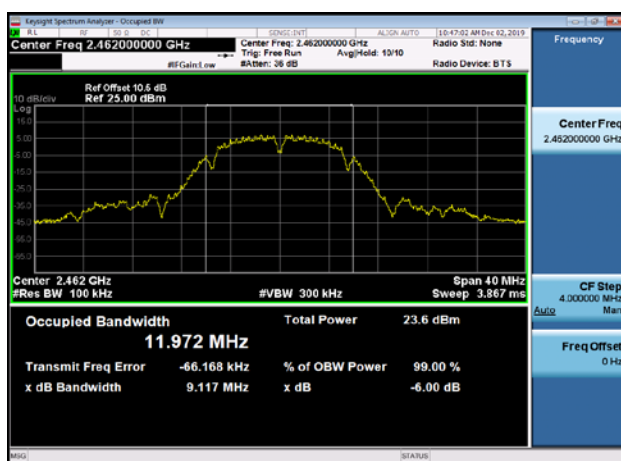
6dB Bandwidth-802.11b,2412MHz



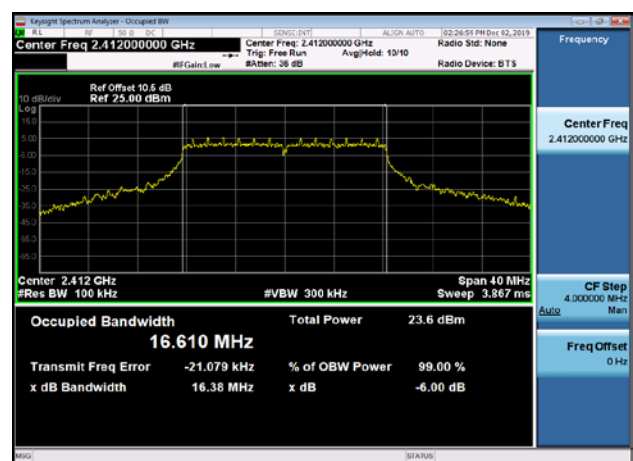
6dB Bandwidth-802.11b,2437MHz



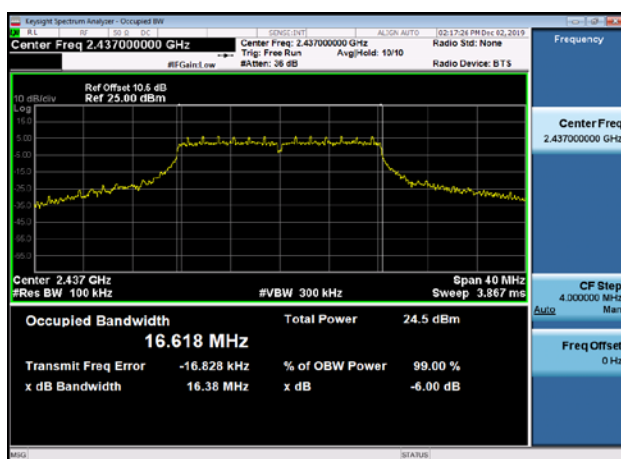
6dB Bandwidth-802.11b,2462MHz



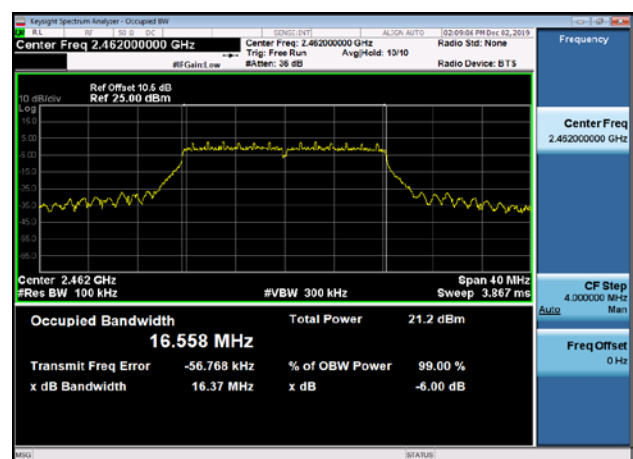
6dB Bandwidth-802.11g,2412MHz



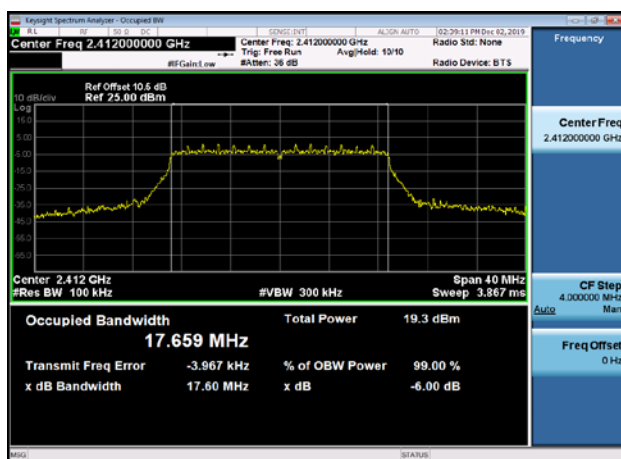
6dB Bandwidth-802.11g,2437MHz



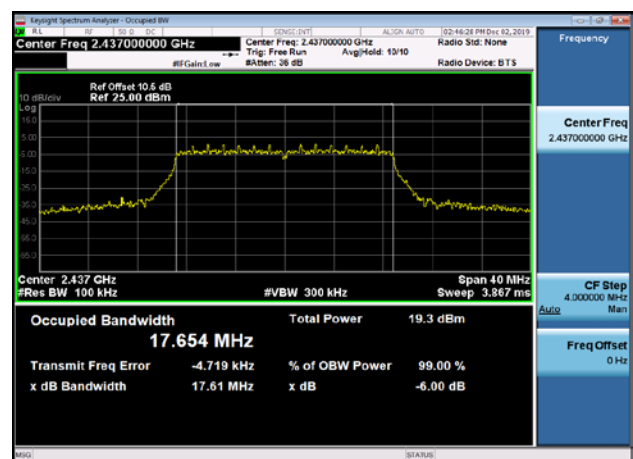
6dB Bandwidth-802.11g,2462MHz



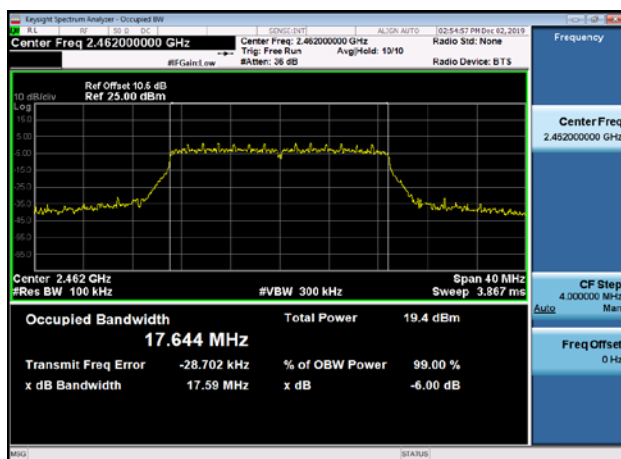
6dB Bandwidth-802.11n(HT20),2412MHz



6dB Bandwidth-802.11n(HT20),2437MHz



6dB Bandwidth-802.11n(HT20),2462MHz



## Power Spectral Density

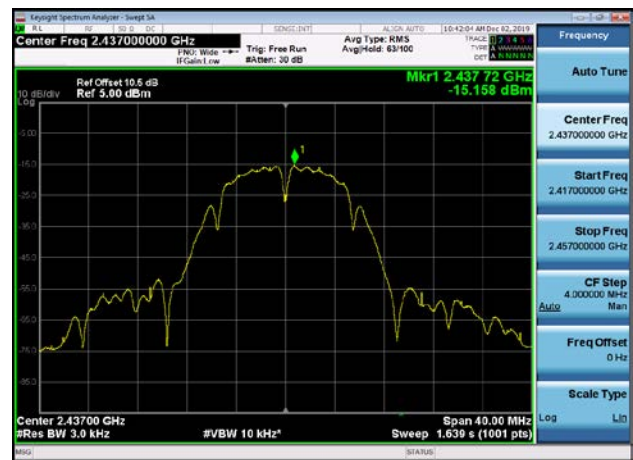
### Test Result and Data

| Power Spectral Density |                      |                |           |                  |        |
|------------------------|----------------------|----------------|-----------|------------------|--------|
| Mode                   | Test Frequency (MHz) | PSD (dBm/3KHz) | RBW (kHz) | Limit (dBm/3KHz) | Result |
| 802.11b                | 2412                 | -15.666        | 3         | 8                | Pass   |
| 802.11b                | 2437                 | -15.159        | 3         | 8                | Pass   |
| 802.11b                | 2462                 | -15.585        | 3         | 8                | Pass   |
| 802.11g                | 2412                 | -18.672        | 3         | 8                | Pass   |
| 802.11g                | 2437                 | -17.595        | 3         | 8                | Pass   |
| 802.11g                | 2462                 | -20.872        | 3         | 8                | Pass   |
| 802.11n (HT20)         | 2412                 | -22.433        | 3         | 8                | Pass   |
| 802.11n (HT20)         | 2437                 | -23.135        | 3         | 8                | Pass   |
| 802.11n (HT20)         | 2462                 | -22.958        | 3         | 8                | Pass   |

Power spectral density-802.11b  
,2412MHz



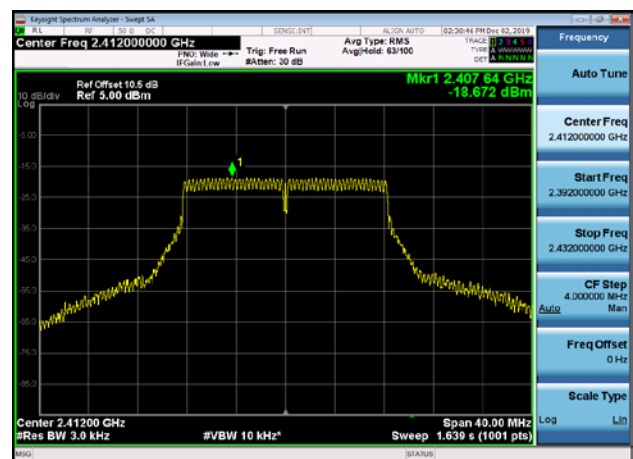
Power spectral density-802.11b  
,2437MHz



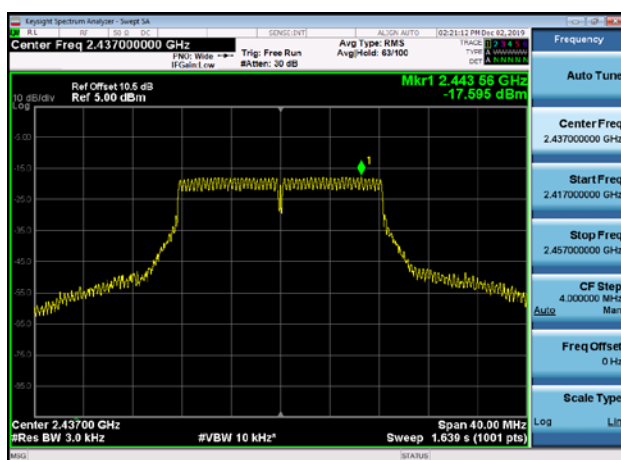
Power spectral density-802.11b  
,2462MHz



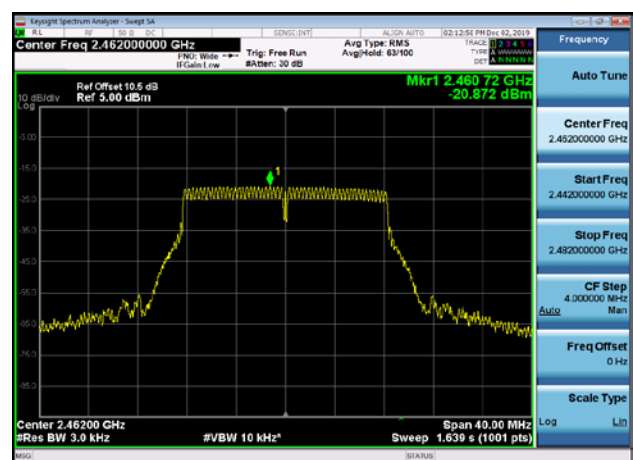
Power spectral density-802.11g  
,2412MHz



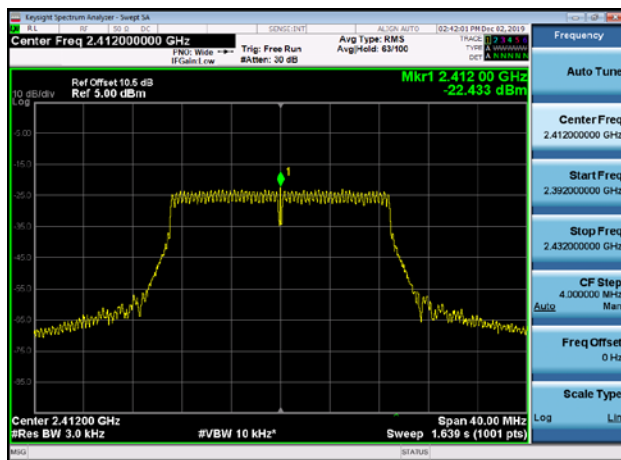
Power spectral density-802.11g  
,2437MHz



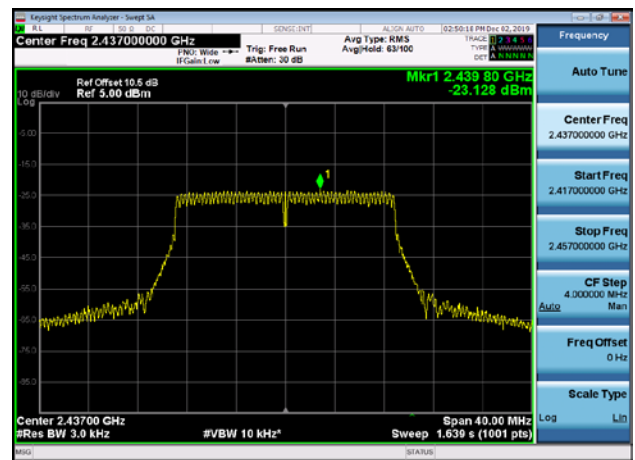
Power spectral density-802.11g  
,2462MHz



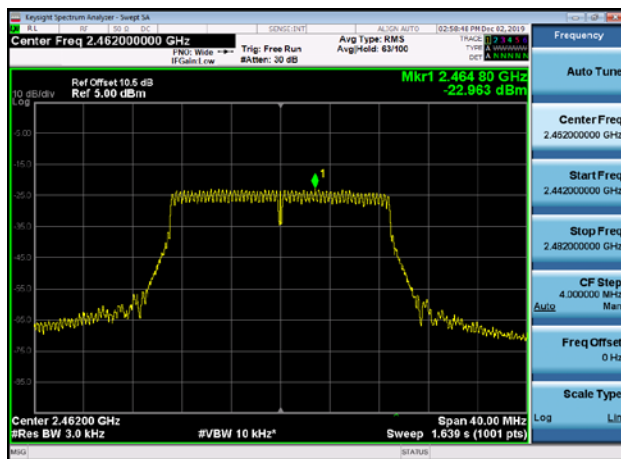
Power spectral density-802.11n(HT20)  
,2412MHz



Power spectral density-802.11n(HT20)  
,2437MHz



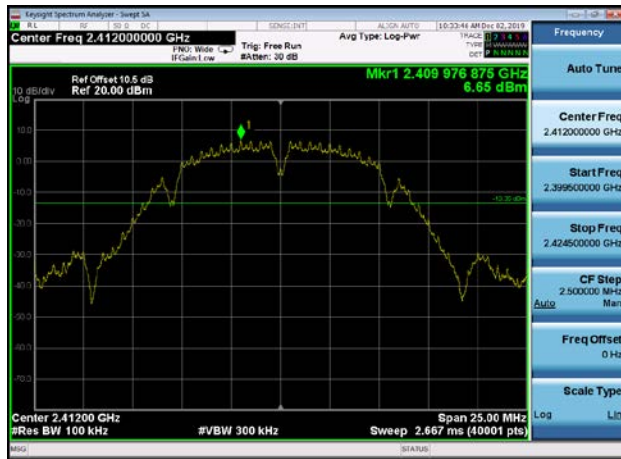
Power spectral density-802.11n(HT20)  
,2462MHz



# Conducted Band Edges and Spurious Emissions

## Test Result and Data

,Plot 1,Reference Level-802.11b  
,2412MHz



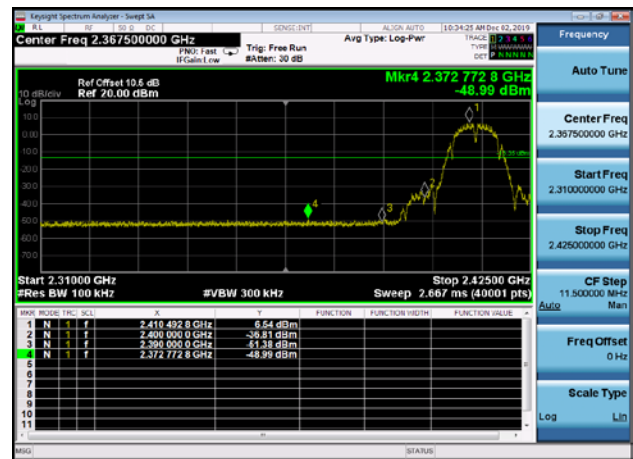
,Plot 1,Reference Level-802.11b  
,2437MHz



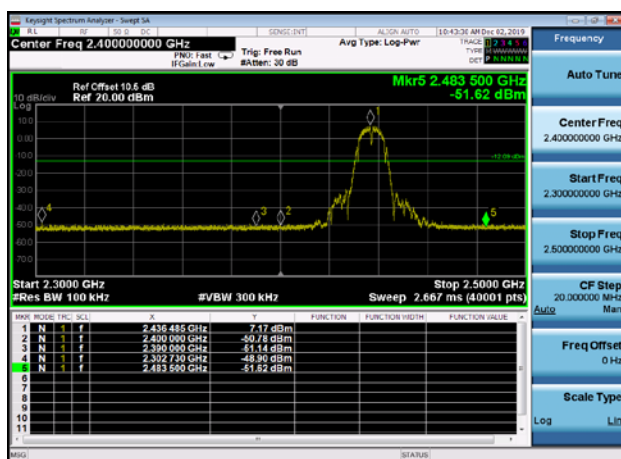
,Plot 1,Reference Level-802.11b  
,2462MHz



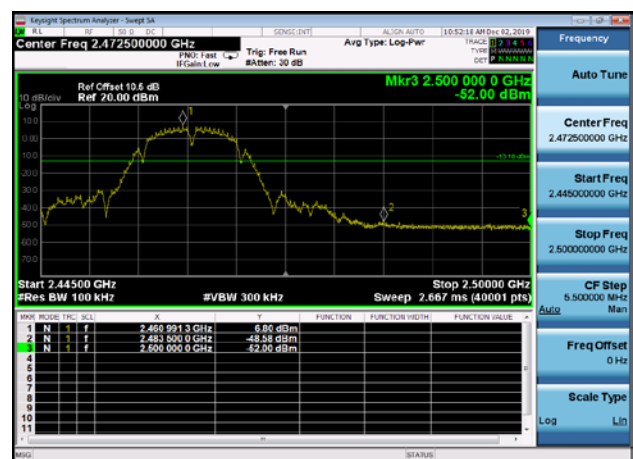
,Plot 2,Band Edge-802.11b,2412MHz



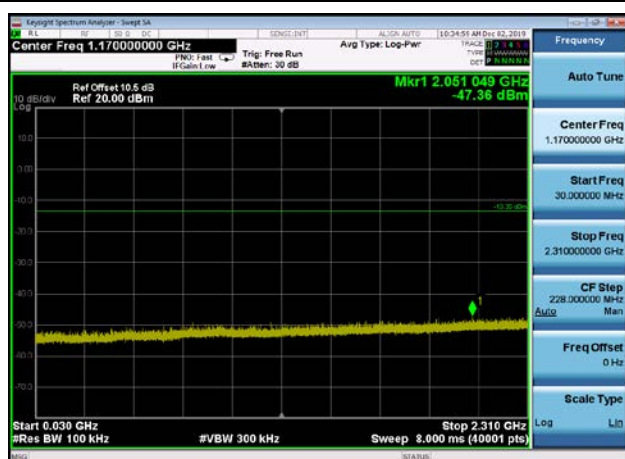
,Plot 2,Band Edge-802.11b,2437MHz



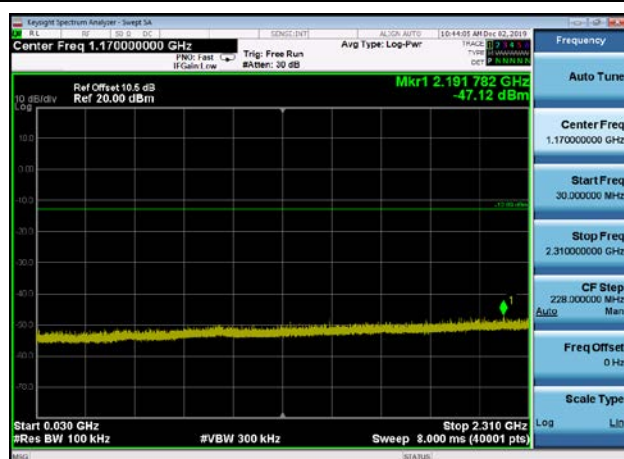
,Plot 2,Band Edge-802.11b,2462MHz



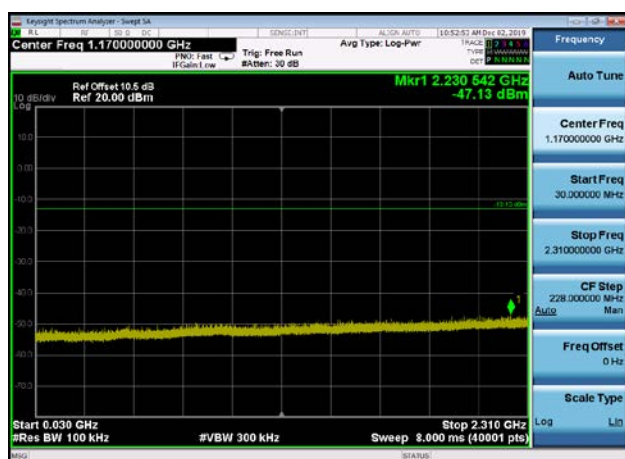
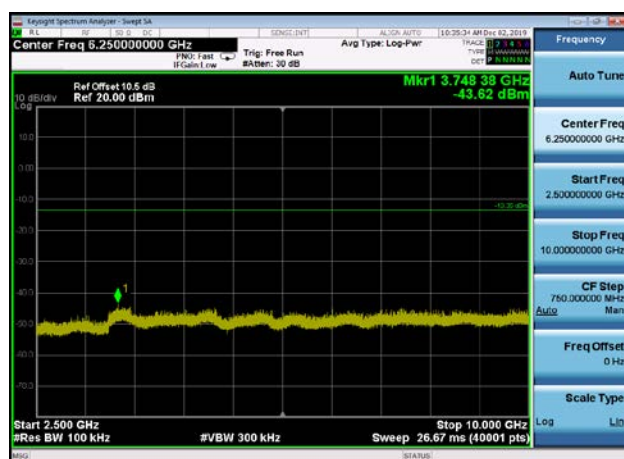
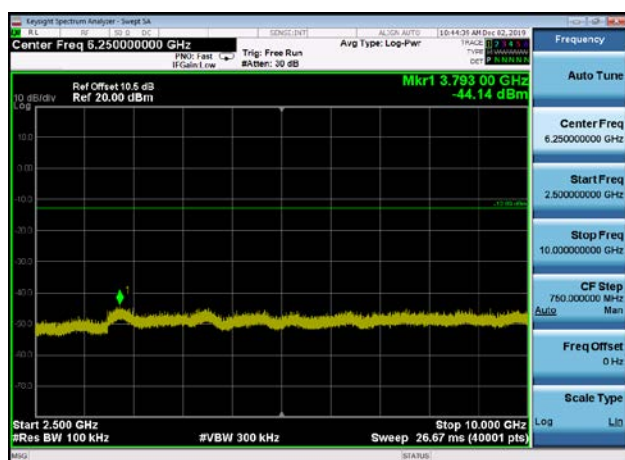
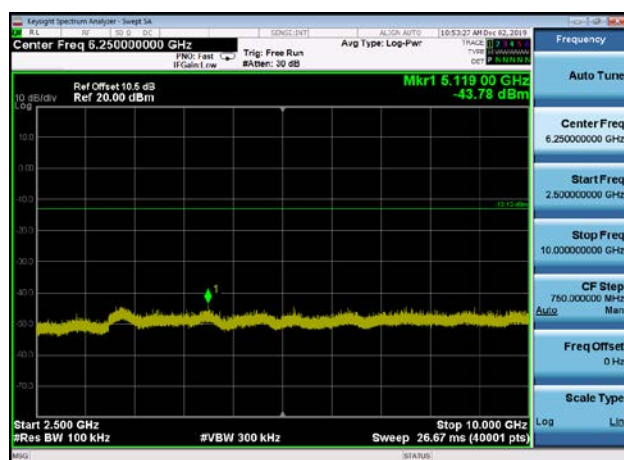
,Plot 3,30MHz~2310MHz-802.11b,2412MHz



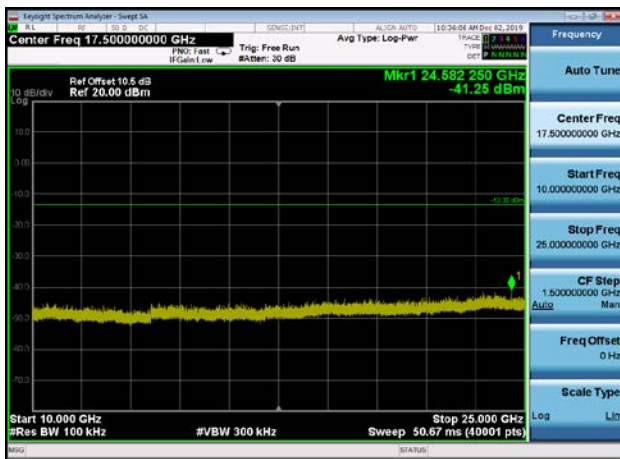
,Plot 3,30MHz~2310MHz-802.11b,2437MHz



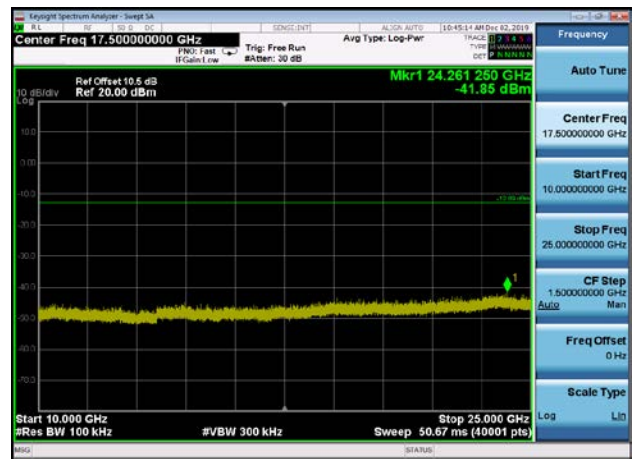
,Plot 3,30MHz~2310MHz-802.11b,2462MHz


,Plot 4,2500MHz~10000MHz-802.11b  
,2412MHz

,Plot 4,2500MHz~10000MHz-802.11b  
,2437MHz

,Plot 4,2500MHz~10000MHz-802.11b  
,2462MHz


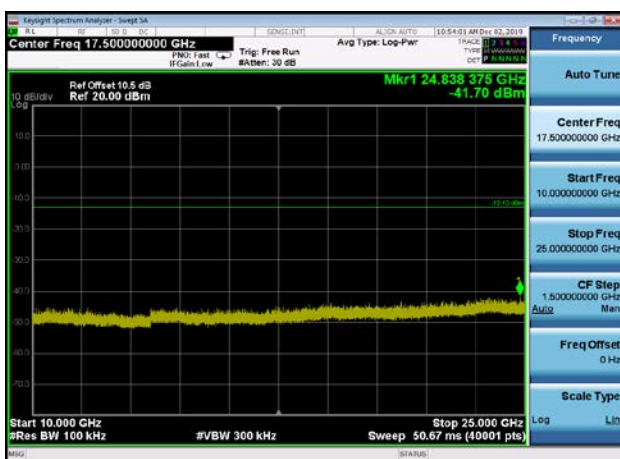
,Plot 5,10000MHz~25000MHz-802.11b  
,2412MHz



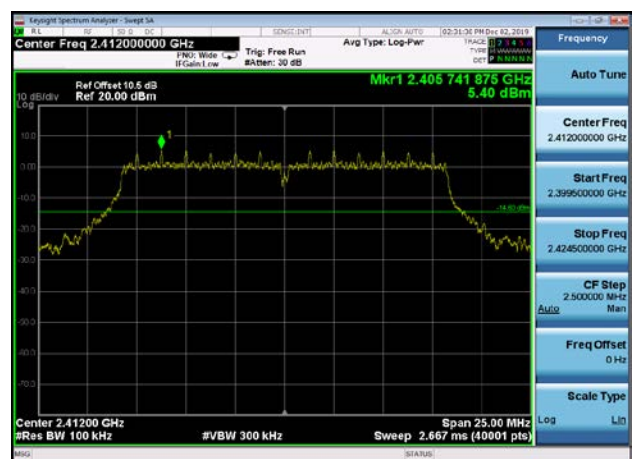
,Plot 5,10000MHz~25000MHz-802.11b  
,2437MHz



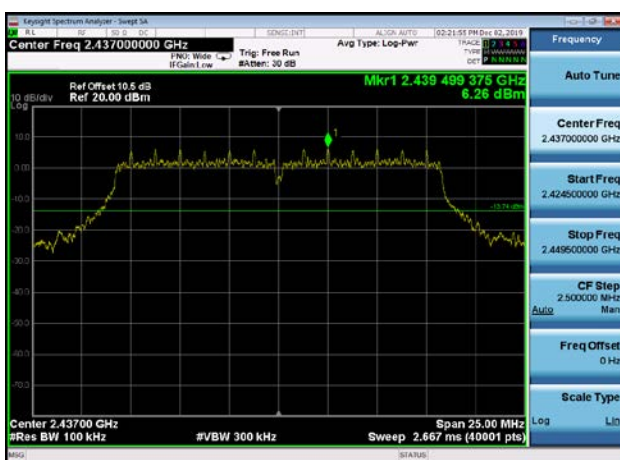
,Plot 5,10000MHz~25000MHz-802.11b  
,2462MHz



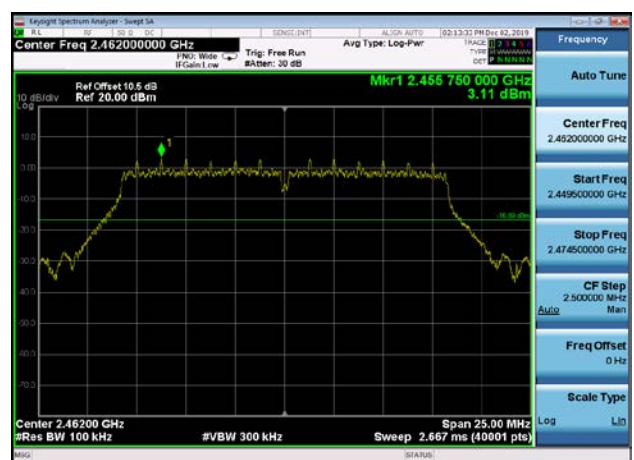
,Plot 1,Reference Level-802.11g  
,2412MHz



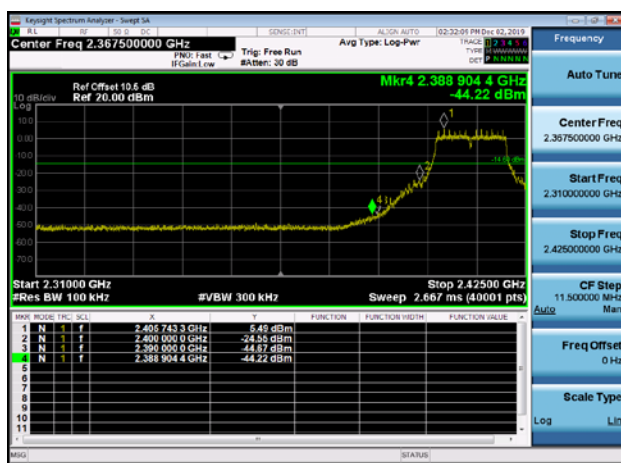
,Plot 1,Reference Level-802.11g  
,2437MHz



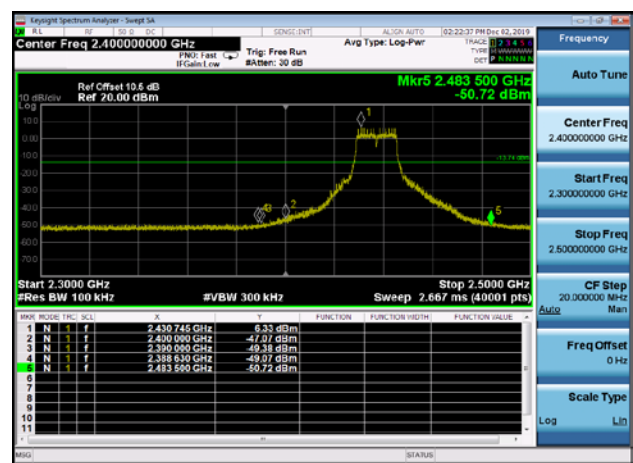
,Plot 1,Reference Level-802.11g  
,2462MHz



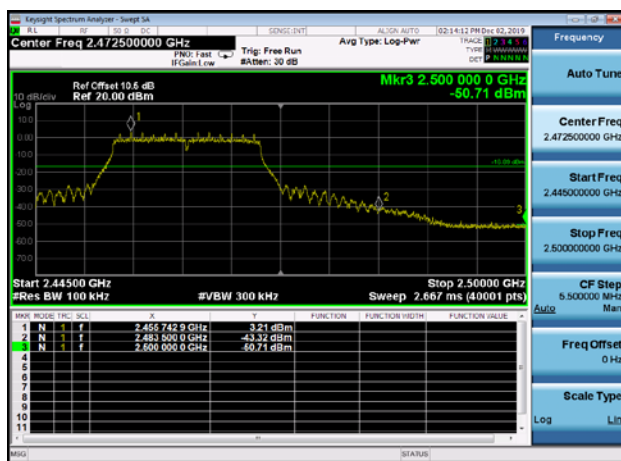
,Plot 2,Band Edge-802.11g,2412MHz



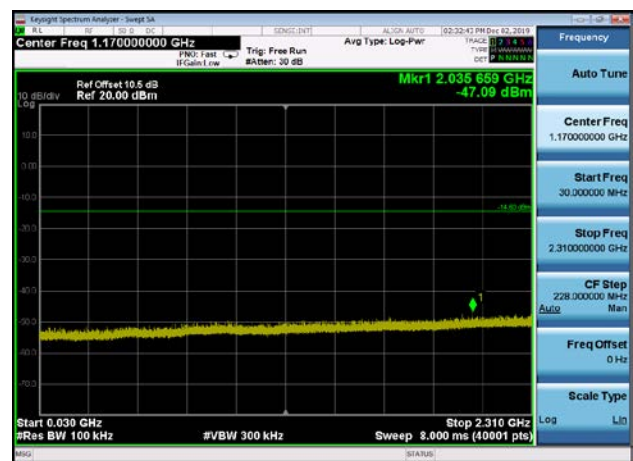
,Plot 2,Band Edge-802.11g,2437MHz



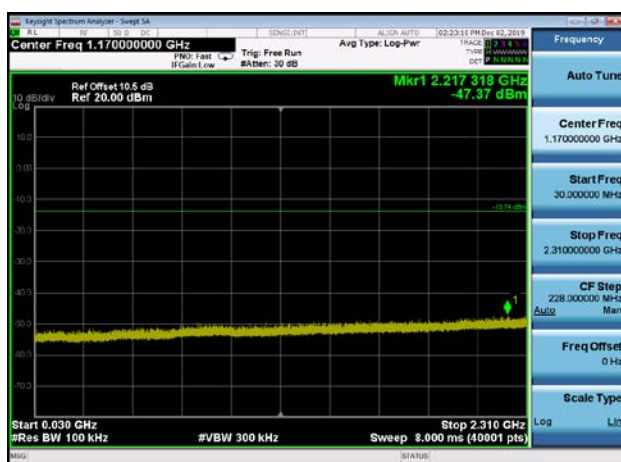
,Plot 2,Band Edge-802.11g,2462MHz



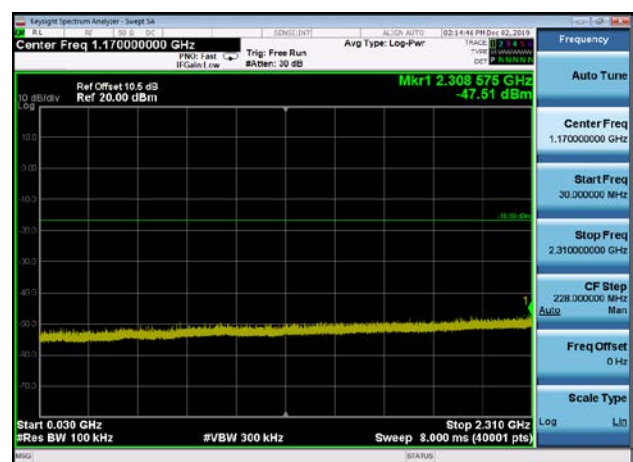
,Plot 3,30MHz~2310MHz-802.11g,2412MHz



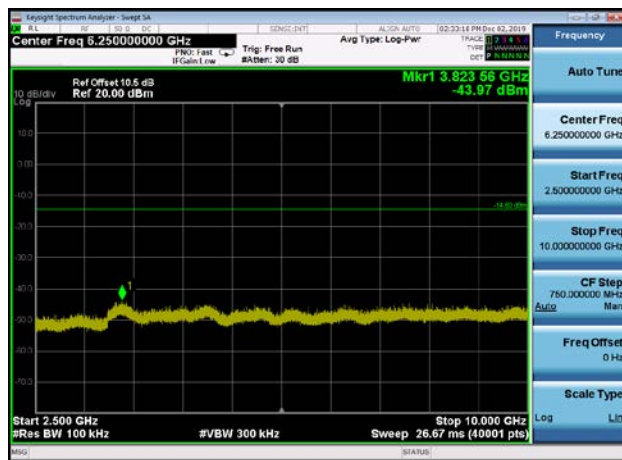
,Plot 3,30MHz~2310MHz-802.11g,2437MHz



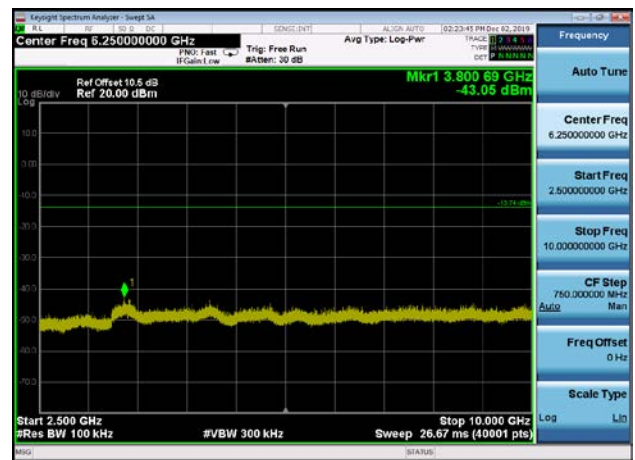
,Plot 3,30MHz~2310MHz-802.11g,2462MHz



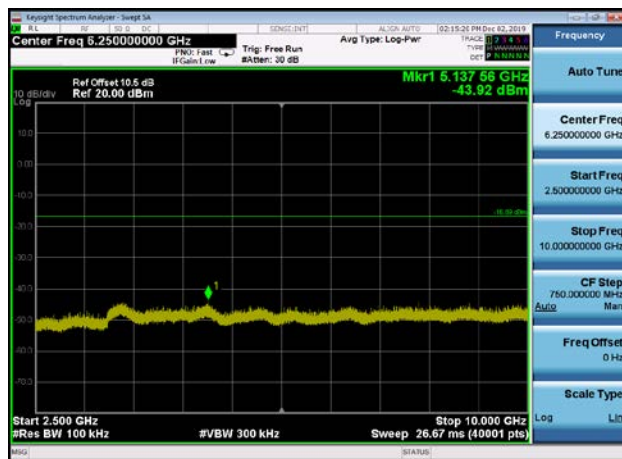
,Plot 4,2500MHz~10000MHz-802.11g  
,2412MHz



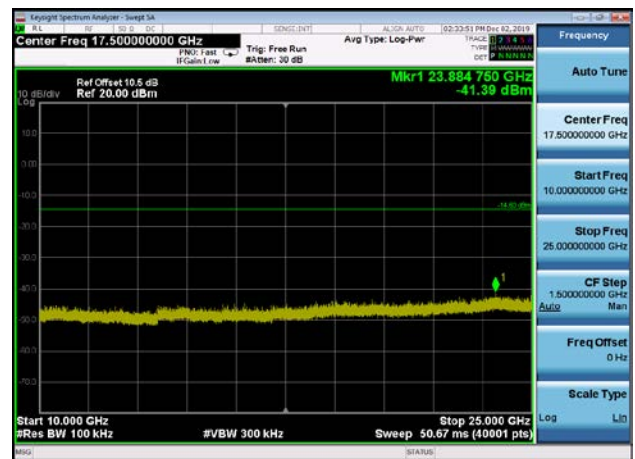
,Plot 4,2500MHz~10000MHz-802.11g  
,2437MHz



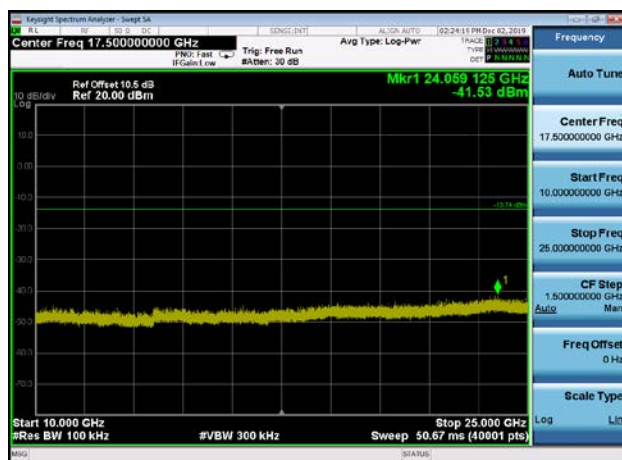
,Plot 4,2500MHz~10000MHz-802.11g  
,2462MHz



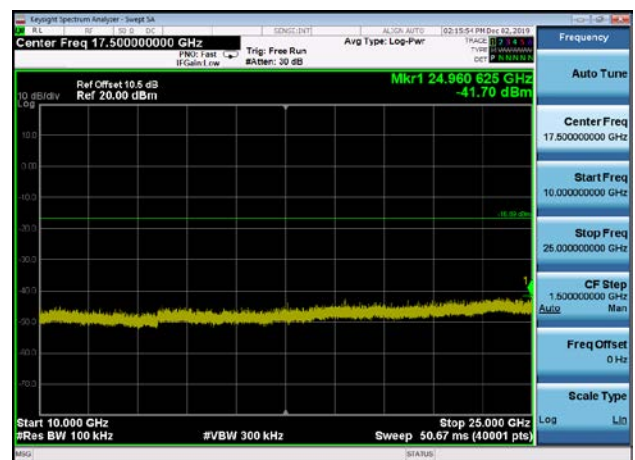
,Plot 5,10000MHz~25000MHz-802.11g  
,2412MHz



,Plot 5,10000MHz~25000MHz-802.11g  
,2437MHz



,Plot 5,10000MHz~25000MHz-802.11g  
,2462MHz



,Plot 1,Reference Level-802.11n(HT20)  
,2412MHz



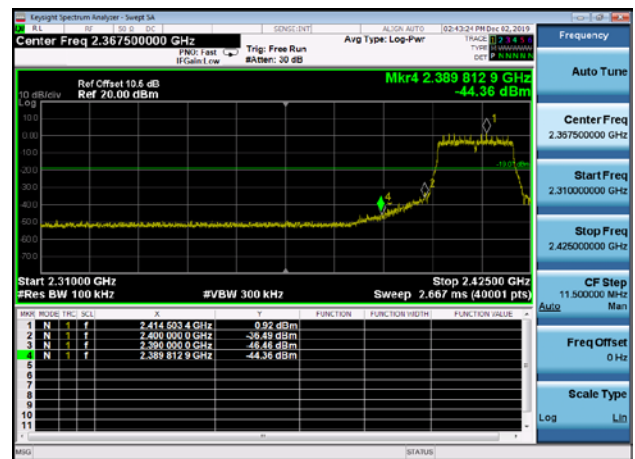
,Plot 1,Reference Level-802.11n(HT20)  
,2437MHz



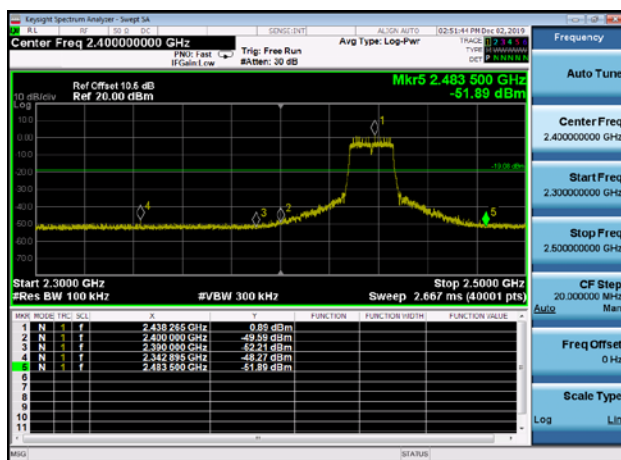
,Plot 1,Reference Level-802.11n(HT20)  
,2462MHz



,Plot 2,Band Edge-802.11n(HT20)  
,2412MHz



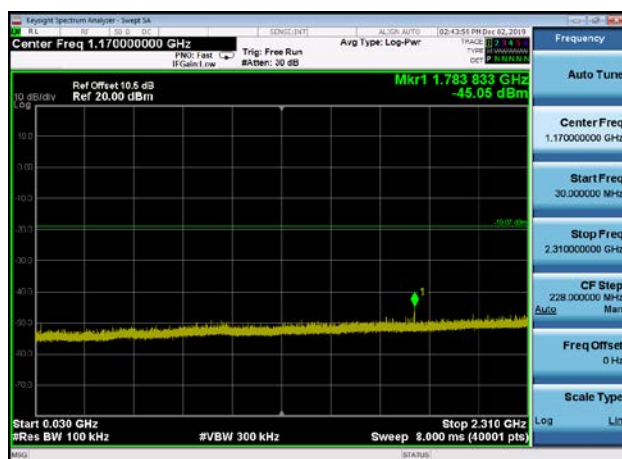
,Plot 2,Band Edge-802.11n(HT20)  
,2437MHz



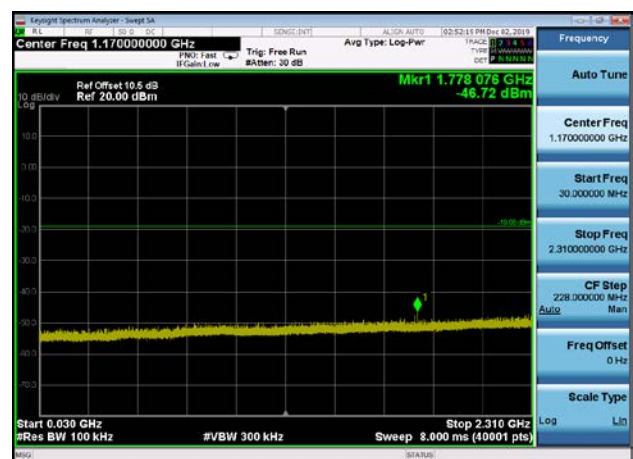
,Plot 2,Band Edge-802.11n(HT20)  
,2462MHz



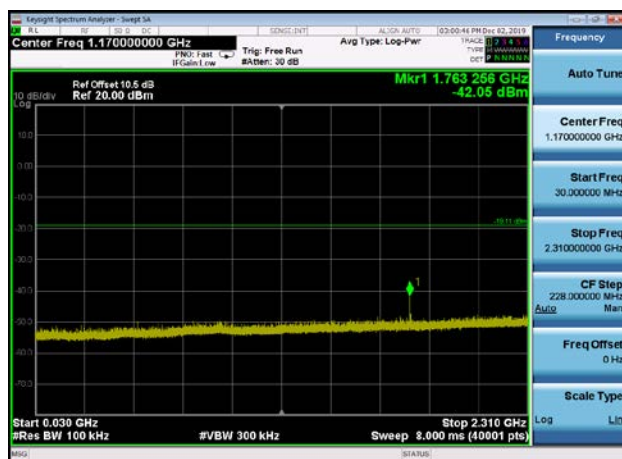
,Plot 3,30MHz~2310MHz-802.11n(HT20)  
,2412MHz



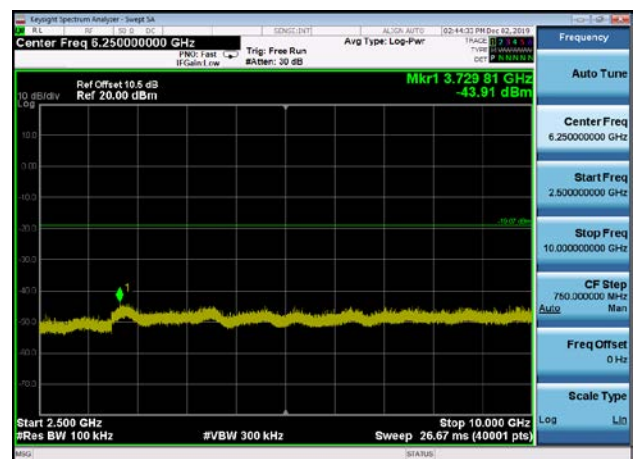
,Plot 3,30MHz~2310MHz-802.11n(HT20)  
,2437MHz



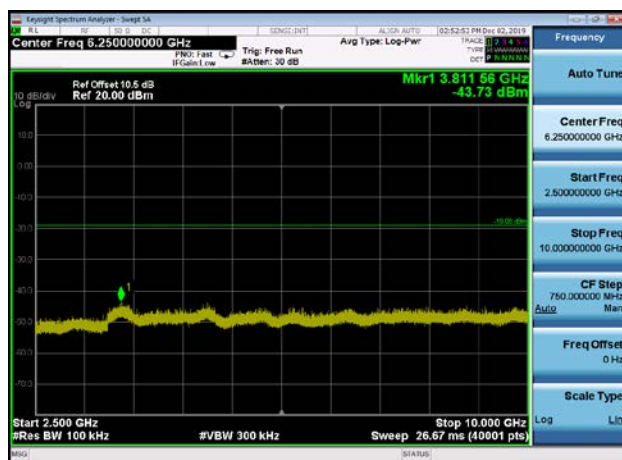
,Plot 3,30MHz~2310MHz-802.11n(HT20)  
,2462MHz



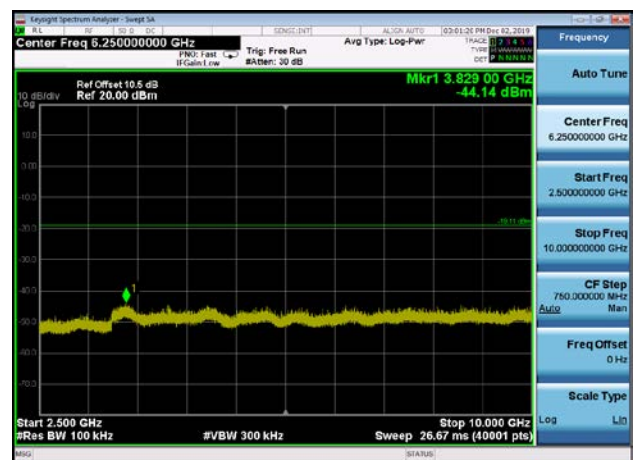
,Plot 4,2500MHz~10000MHz-802.11n(HT20)  
,2412MHz



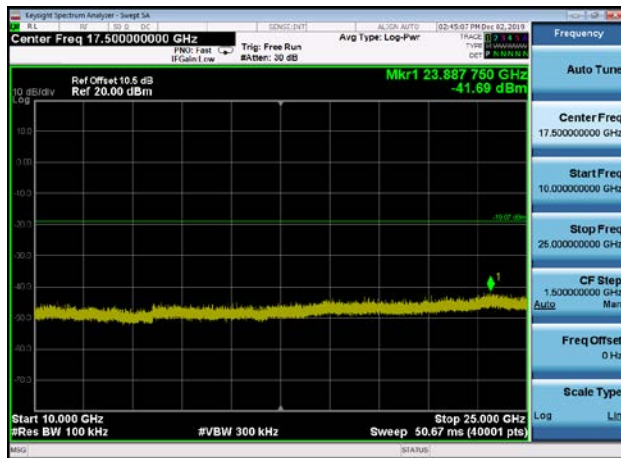
,Plot 4,2500MHz~10000MHz-802.11n(HT20)  
,2437MHz



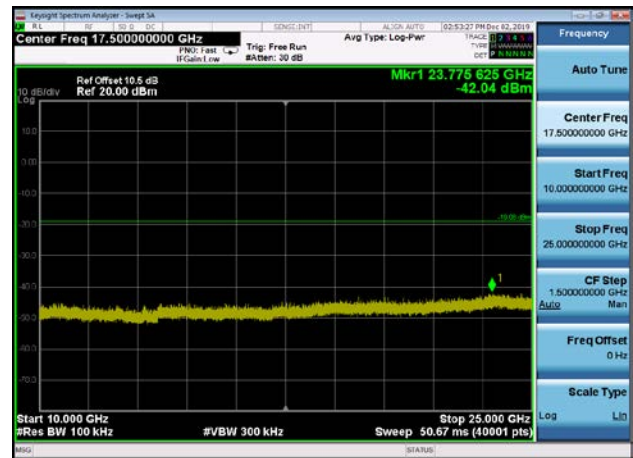
,Plot 4,2500MHz~10000MHz-802.11n(HT20)  
,2462MHz



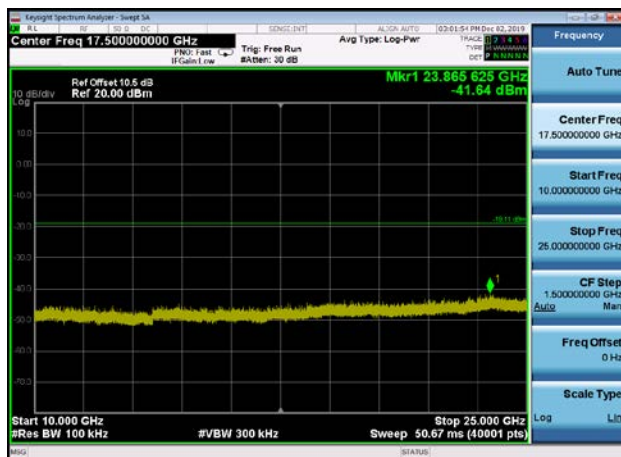
,Plot 5,10000MHz~25000MHz-802.11n(HT2  
0),2412MHz



,Plot 5,10000MHz~25000MHz-802.11n(HT2  
0),2437MHz



,Plot 5,10000MHz~25000MHz-802.11n(HT2  
0),2462MHz



\*\*END OF REPORT\*\*