

# FCC TEST REPORT

## FCC ID: 2AID7EC3F03

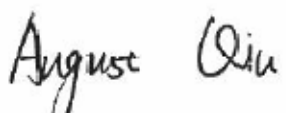
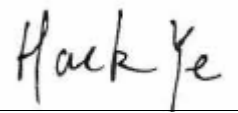

|  |   |                      |
|--|---|----------------------|
| Product  | : | Wireless USB Adapter |
| Model Name   | : | EC3F03               |
| Brand  | : | N/A                  |
| Report No.   | : | PT800330160429E-FC01 |
| <b>Prepared for</b>  |   |                      |
| eCELL electronics co.Ltd   |   |                      |
| (1506-A,Gwangmyeong TechnoPark)60,Haan-ro,Gwangmyeong-si,                  |   |                      |
| Gyeonggi-do,Rep.of KOREA   |   |                      |
| <b>Prepared by</b>   |   |                      |
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| Building D, Baoding Technology Park, Guangming Road 2, Guangming Community |   |                      |
| Dongcheng District, Dongguan, Guangdong, China                             |   |                      |

**TEST RESULT CERTIFICATION**

|                    |   |   |
|--------------------|---|---|
| Applicant's name   | : | eCELL electronics co.Ltd  |
| Address            | : | (1506-A,Gwangmyeong TechnoPark)60,Haan-ro,Gwangmyeong-si,<br>Gyeonggi-do,Rep.of KOREA |
| Manufacture's name | : | eCELL electronics co.Ltd  |
| Address            | : | (1506-A,Gwangmyeong TechnoPark)60,Haan-ro,Gwangmyeong-si,<br>Gyeonggi-do,Rep.of KOREA |
| Product name       | : | Wireless USB Adapter  |
| Model name         | : | EC3F03  |
| Standards          | : | FCC CFR47 Part 15 Section 15.247  |
| Test procedure     | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE<br>V03R05                          |
| Test Date          | : | May. 03, 2016 ~ May.16, 2016  |
| Date of Issue      | : | May.17, 2016  |
| Test Result        | : | Pass  |
|                    |   |   |

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

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|                      |   |
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| Testing Engineer     |  |
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| Authorized Signatory |  |
| Chris Du             |   |

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|           |                                 |           |
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## 2 Test Summary

| Test Items                  | Test Requirement                 | Result |
|-----------------------------|----------------------------------|--------|
| Conduct Emission            | 15.207                           | PASS   |
| Radiated Spurious Emissions | 15.205(a)<br>15.209<br>15.247(d) | PASS   |
| Band edge                   | 15.247(d)<br>15.205(a)           | PASS   |
| 6dB Bandwidth               | 15.247(a)(2)                     | PASS   |
| Maximum Peak Output Power   | 15.247(b)(1)                     | PASS   |
| Power Spectral Density      | 15.247(e)                        | PASS   |
| Antenna Requirement         | 15.203                           | PASS   |

Remark:

N/A: Not Applicable

### 3 General Information

#### 3.1 General Description of E.U.T.

|                       |   |  |
|-----------------------|---|--|
| Product Name          | : | Wireless USB Adapter   |
| Model Name            | : | EC3F03   |
| Model Description     | : | N/A  |
| Operating frequency   | : | 802.11b/g/n-HT20:2412-2462MHz, 11 channels<br>802.11n-HT40: 2422-2452MHz:7 channels                              |
| Antenna installation  | : | PCB Print Antenna  |
| Max Antenna Gain      | : | -1.2 dBi   |
| The lowest oscillator | : | 40MHz  |
| Type of Modulation    | : | IEEE 802.11b CCK/QPSK/BPSK<br>IEEE 802.11g BPSK/QPSK/16QAM/64QAM<br>IEEE 802.11n-HT20/HT40 BPSK/QPSK/16QAM/64QAM |
| Power supply          | : | DC 5V power by USB port  |



### 3.2 Channel List

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

### 3.3 Test Mode

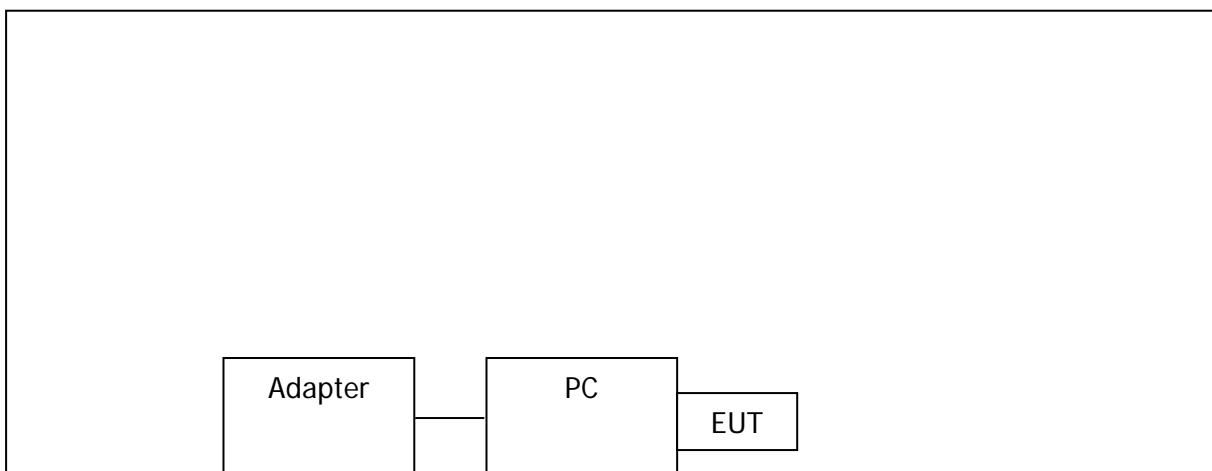
All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

| Modulation                                       | Test mode    | Low channel        | Middle channel | High channel |
|--|--------------|--------------------|----------------|--------------|
| 802.11b/g/n-HT20                                 | Transmitting | 2412MHz            | 2437MHz        | 2462MHz      |
| 802.11n-HT40                                     | Transmitting | 2422MHz            | 2437MHz        | 2452MHz      |
| Tests Carried Out Under FCC part 15.207 & 15.209 |              |                    |                |              |
| Test Item  |              | Test Mode          |                |              |
| Conduction Emission, 0.15MHz to 30MHz            |              | WIFI Communication |                |              |

### 3.4 Test Voltage

| Normal Test Voltage   | Item                                   |
|---|--|
| 120V 60Hz   | Conducted Emission & Radiated Emission |
| 240V 60Hz   | Conducted Emission & Radiated Emission |
| Remark: Only the worst case (120V 60Hz) was recorded in the report. |  |

### 3.5 Configuration of System



### 3.6 Test site

Dongguan Precise Testing Service Co., Ltd.  
 Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan,  
 Guangdong, China, Dongguan, 523129  
 China  
 FCC Registration Number: 371540



## 4 Equipment During Test

### 4.1 Equipments List

| RF Conducted Test   |                           |               |            |                                |                  |                  |                    |
|---------------------|---------------------------|---------------|------------|--------------------------------|------------------|------------------|--------------------|
| Item                | Kind of Equipment         | Manufacturer  | Type No.   | Serial No.                     | Last calibration | Calibrated until | Calibration period |
| 1                   | EMC Analyzer (9k~26.5GHz) | Agilent       | E4407B     | MY45109572                     | Aug.04, 2015     | Aug.03, 2016     | 1 year             |
| 2                   | EXA Signal Analyzer       | Keysight      | N9010A     | MY50520207<br>526B25MPB<br>W7X | Aug.04, 2015     | Aug.03, 2016     | 1 year             |
| 3                   | EMI Test Receiver         | R&S           | ESCI       | 101155                         | July 15, 2015    | July 14, 2016    | 1 year             |
| 4.                  | Power Sensor              | Keysight      | U2021XA    | SG5440003                      | Aug.04, 2015     | Aug.03, 2016     | 1 year             |
| Radiated Emissions  |                           |               |            |                                |                  |                  |                    |
| Item                | Kind of Equipment         | Manufacturer  | Type No.   | Serial No.                     | Last calibration | Calibrated until | Calibration period |
| 1                   | EMI Test Receiver         | Rohde&Schwarz | ESCI       | 101417                         | July 15, 2015    | July 14, 2016    | 1 year             |
| 2                   | Trilog Broadband Antenna  | SCHWARZB ECK  | VULB9160   | 9160-3355                      | July 15, 2015    | July 14, 2016    | 1 year             |
| 3                   | Amplifier                 | EM            | EM-30180   | 060538                         | July 15, 2015    | July 14, 2016    | 1 year             |
| 4                   | Horn Antenna              | SCHWARZB ECK  | BBHA9120 D | 9120D-1246                     | July 15, 2015    | July 14, 2016    | 1 year             |
| Conducted Emissions |                           |               |            |                                |                  |                  |                    |
| Item                | Kind of Equipment         | Manufacturer  | Type No.   | Serial No.                     | Last calibration | Calibrated until | Calibration period |
| 1                   | EMI Test Receiver         | R&S           | ESCI       | 101155                         | July 15, 2015    | July 14, 2016    | 1 year             |
| 2                   | LISN                      | SCHWARZB ECK  | NSLK 8128  | 8128-289                       | July 15, 2015    | July 14, 2016    | 1 year             |
| 3                   | Cable                     | LARGE         | RF300      | -                              | July 15, 2015    | July 14, 2016    | 1 year             |



#### 4.2 Description of Support Units

| Equipment            | Manufacturer | Model No. | Series No. |
|----------------------|--------------|-----------|------------|
| TV                   | WanJia       | CF-48H-18 | CF754816   |
| HDMI(shielding,0.8m) | Viaip        | C1016     | HSC112     |
| AC power line(1.0m)  | WanJia       | CF-18     | CF0001     |
| U-Disk               | Kingston     | DTSE9     | UD001      |

#### 4.3 Measurement Uncertainty

| Parameter                          | Uncertainty              |
|------------------------------------|--------------------------|
| RF output power, conducted         | $\pm 1.0\text{dB}$       |
| Power Spectral Density, conducted  | $\pm 2.2\text{dB}$       |
| Radio Frequency                    | $\pm 1 \times 10^{-6}$   |
| Bandwidth                          | $\pm 1.5 \times 10^{-6}$ |
| Time                               | $\pm 2\%$                |
| Duty Cycle                         | $\pm 2\%$                |
| Temperature                        | $\pm 1^{\circ}\text{C}$  |
| Humidity                           | $\pm 5\%$                |
| DC and low frequency voltages      | $\pm 3\%$                |
| Conducted Emissions (150kHz~30MHz) | $\pm 3.64\text{dB}$      |
| Radiated Emission(30MHz~1GHz)      | $\pm 5.03\text{dB}$      |
| Radiated Emission(1GHz~25GHz)      | $\pm 4.74\text{dB}$      |

## 5 Conducted Emission

Test Requirement: : FCC CFR 47 Part 15 Section 15.207

Test Method: : ANSI C63.4:2014

Test Result: : PASS

Frequency Range: : 150kHz to 30MHz

Class/Severity: : Class B

Limit: : 66-56 dB $\mu$ V between 0.15MHz & 0.5MHz  
: 56 dB $\mu$ V between 0.5MHz & 5MHz  
: 60 dB $\mu$ V between 5MHz & 30MHz

Detector: : Peak for pre-scan (9kHz Resolution Bandwidth)

### 5.1 E.U.T. Operation

Operating Environment :

Temperature: : 25.5 °C

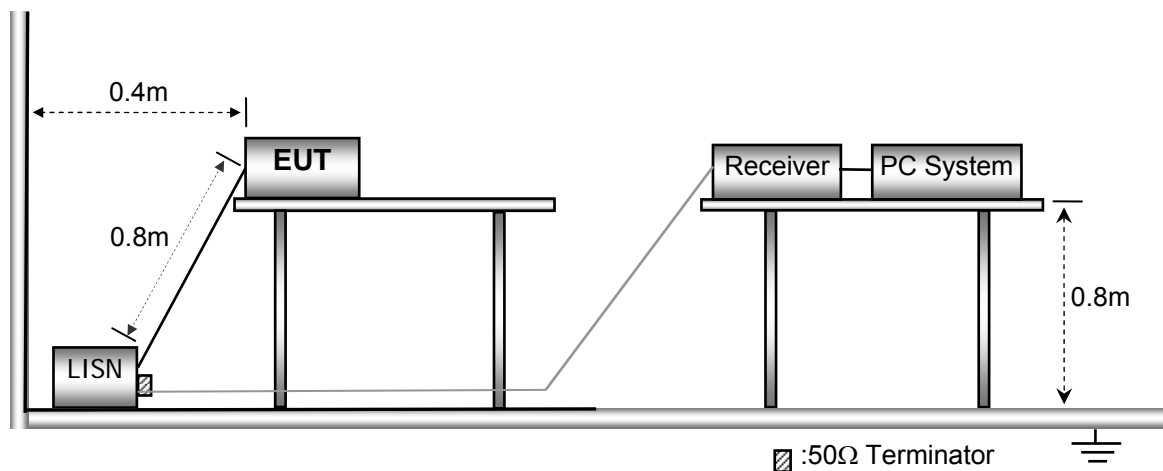
Humidity: : 51 % RH

Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

### 5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003.

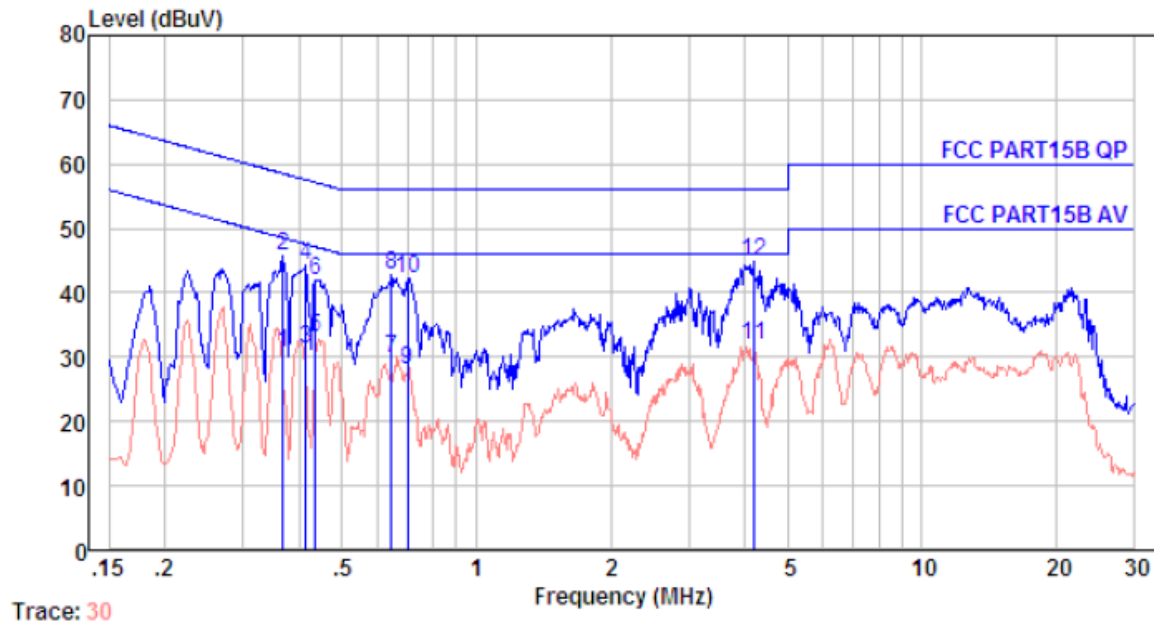


### 5.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 5.4 Conducted Emission Test Result

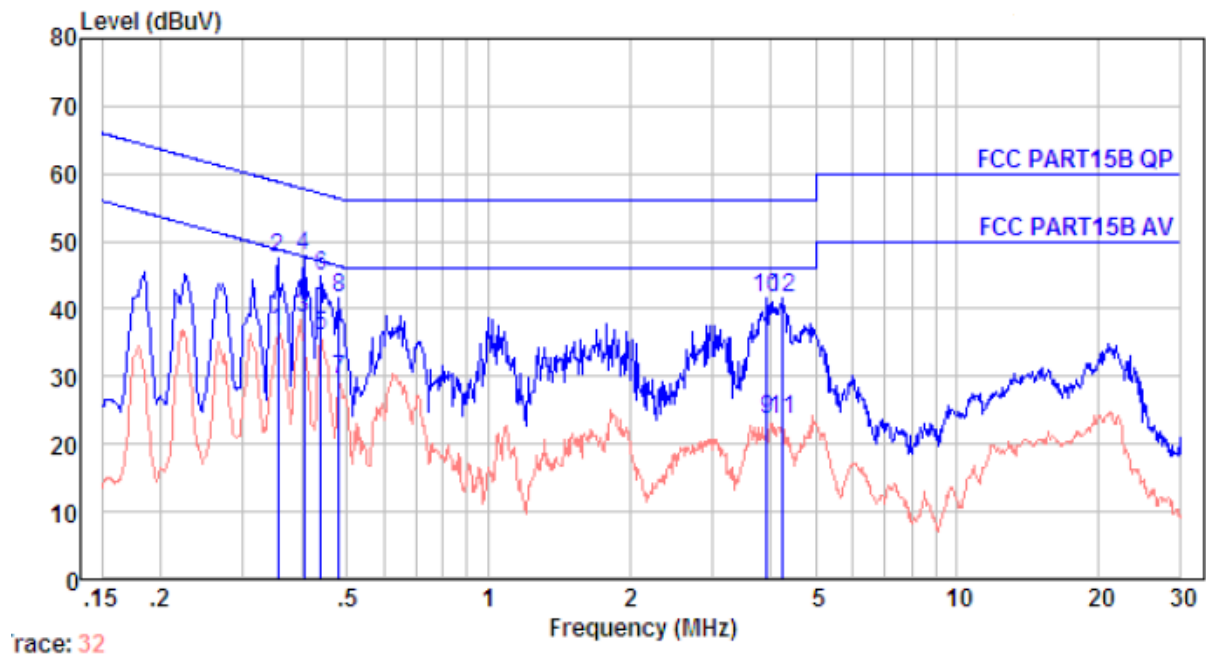
Live line:



| No. | Freq<br>MHz | Cable<br>Loss<br>dB | AMN<br>Factor<br>dB | Receiver<br>Reading<br>dBuV | Emission<br>Level<br>dBuV | Limit<br>dBuV | Over<br>Limit<br>dB | Remark  |
|-----|-------------|---------------------|---------------------|-----------------------------|---------------------------|---------------|---------------------|---------|
| 1.  | 0.369       | 10.63               | 0.60                | 19.42                       | 30.65                     | 48.52         | -17.87              | Average |
| 2.  | 0.369       | 10.63               | 0.60                | 34.42                       | 45.65                     | 58.52         | -12.87              | QP      |
| 3.  | 0.415       | 10.64               | 0.60                | 20.05                       | 31.29                     | 47.55         | -16.26              | Average |
| 4.  | 0.415       | 10.64               | 0.60                | 33.05                       | 44.29                     | 57.55         | -13.26              | QP      |
| 5.  | 0.435       | 10.64               | 0.60                | 21.75                       | 32.99                     | 47.15         | -14.16              | Average |
| 6.  | 0.435       | 10.64               | 0.60                | 30.75                       | 41.99                     | 57.15         | -15.16              | QP      |
| 7.  | 0.644       | 10.66               | 0.60                | 18.51                       | 29.77                     | 46.00         | -16.23              | Average |
| 8.  | 0.644       | 10.66               | 0.60                | 31.51                       | 42.77                     | 56.00         | -13.23              | QP      |
| 9.  | 0.701       | 10.66               | 0.60                | 16.87                       | 28.13                     | 46.00         | -17.87              | Average |
| 10. | 0.701       | 10.66               | 0.60                | 30.87                       | 42.13                     | 56.00         | -13.87              | QP      |
| 11. | 4.180       | 10.73               | 0.60                | 20.66                       | 31.99                     | 46.00         | -14.01              | Average |
| 12. | 4.180       | 10.73               | 0.60                | 33.66                       | 44.99                     | 56.00         | -11.01              | QP      |



Neutral line:



| No. | Freq<br>MHz | Cable<br>Loss<br>dB | AMN<br>Factor<br>dB | Receiver<br>Reading<br>dBUV | Emission<br>Level<br>dBUV | Limit<br>dBUV | Over<br>Limit<br>dB | Remark  |
|-----|-------------|---------------------|---------------------|-----------------------------|---------------------------|---------------|---------------------|---------|
| 1.  | 0.356       | 10.63               | 0.60                | 25.33                       | 36.56                     | 48.83         | -12.27              | Average |
| 2.  | 0.356       | 10.63               | 0.60                | 36.33                       | 47.56                     | 58.83         | -11.27              | QP      |
| 3.  | 0.404       | 10.64               | 0.60                | 27.55                       | 38.79                     | 47.77         | -8.98               | Average |
| 4.  | 0.404       | 10.64               | 0.60                | 36.55                       | 47.79                     | 57.77         | -9.98               | QP      |
| 5.  | 0.440       | 10.64               | 0.60                | 24.69                       | 35.93                     | 47.07         | -11.14              | Average |
| 6.  | 0.440       | 10.64               | 0.60                | 33.69                       | 44.93                     | 57.07         | -12.14              | QP      |
| 7.  | 0.481       | 10.64               | 0.60                | 18.33                       | 29.57                     | 46.32         | -16.75              | Average |
| 8.  | 0.481       | 10.64               | 0.60                | 30.33                       | 41.57                     | 56.32         | -14.75              | QP      |
| 9.  | 3.922       | 10.72               | 0.60                | 12.29                       | 23.61                     | 46.00         | -22.39              | Average |
| 10. | 3.922       | 10.72               | 0.60                | 30.29                       | 41.61                     | 56.00         | -14.39              | QP      |
| 11. | 4.224       | 10.73               | 0.60                | 12.18                       | 23.51                     | 46.00         | -22.49              | Average |
| 12. | 4.224       | 10.73               | 0.60                | 30.18                       | 41.51                     | 56.00         | -14.49              | QP      |



## 6 Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R05

Test Result: : PASS

Measurement Distance: : 3m

Limit: : See the follow table

| Frequency (MHz) | Field Strength        |              | Field Strength Limit at 3m Measurement Dist |                                       |
|-----------------|-----------------------|--------------|---|---------------------------------------|
|                 | uV/m                  | Distance (m) | uV/m  | dBuV/m                                |
| 0.009 ~ 0.490   | $2400/F(\text{kHz})$  | 300          | $10000 * 2400/F(\text{kHz})$                | $20\log^{(2400/F(\text{kHz}))} + 80$  |
| 0.490 ~ 1.705   | $24000/F(\text{kHz})$ | 30           | $100 * 24000/F(\text{kHz})$                 | $20\log^{(24000/F(\text{kHz}))} + 40$ |
| 1.705 ~ 30      | 30                    | 30           | $100 * 30$                                  | $20\log^{(30)} + 40$                  |
| 30 ~ 88         | 100                   | 3            | 100   | $20\log^{(100)}$                      |
| 88 ~ 216        | 150                   | 3            | 150   | $20\log^{(150)}$                      |
| 216 ~ 960       | 200                   | 3            | 200   | $20\log^{(200)}$                      |
| Above 960       | 500                   | 3            | 500   | $20\log^{(500)}$                      |

### 6.1 EUT Operation

Operating Environment :

Temperature: : 23.5 °C

Humidity: : 51.1 % RH

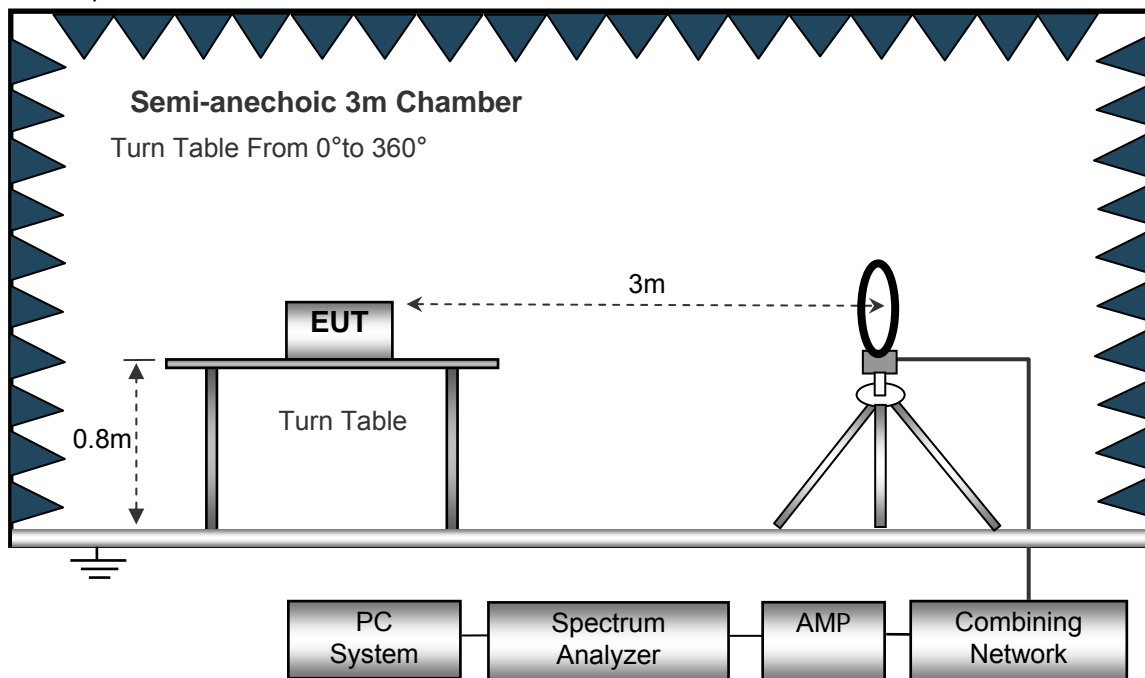
Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

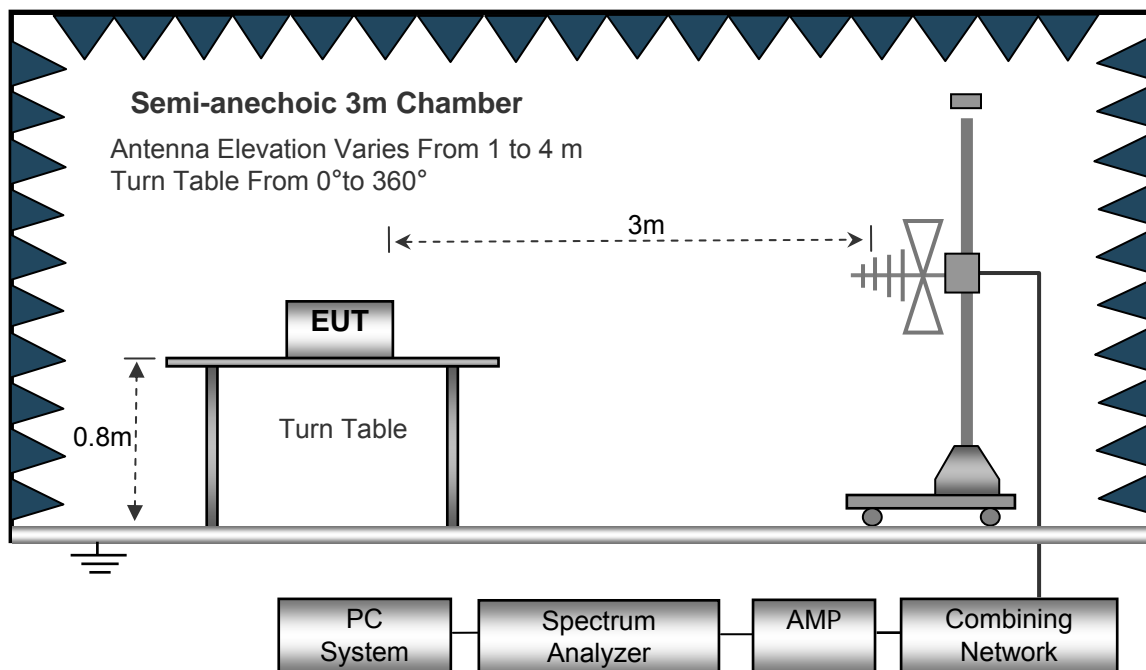
## 6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

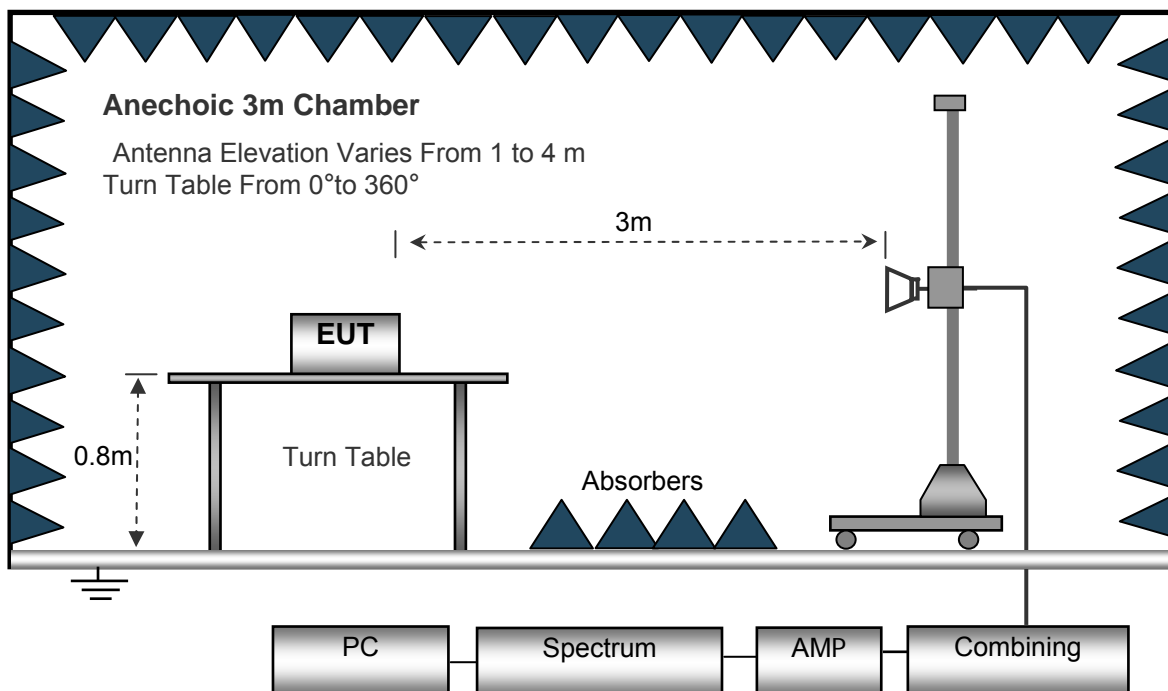
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



### 6.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto  
IF Bandwidth ..... 10kHz  
Video Bandwidth ..... 10kHz  
Resolution Bandwidth ..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth ..... 100kHz  
Video Bandwidth ..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth ..... 1MHz  
Video Bandwidth ..... 3MHz  
Detector ..... Ave.  
Resolution Bandwidth ..... 1MHz  
Video Bandwidth ..... 10Hz



## **6.4 Test Procedure**

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

## 6.5 Summary of Test Results

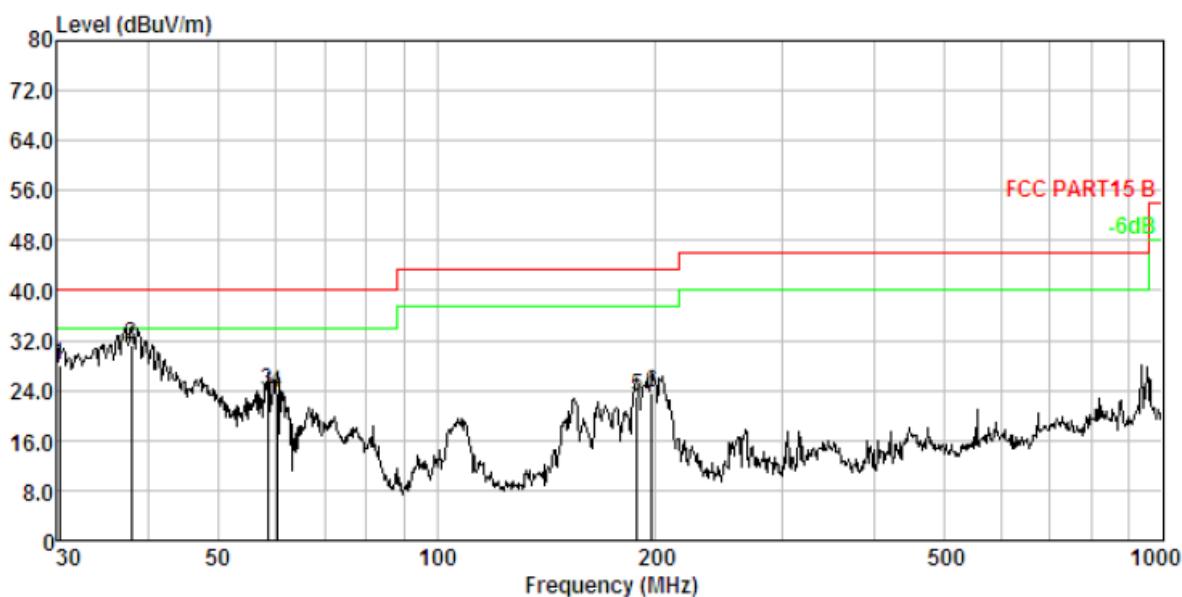
### Test Frequency: Below 30MHz

The lowest oscillator is 32MHz, This test is not applicable.

### Test Frequency: 30MHz ~ 1GHz

All applicable test modes have been tested and only the worst case (802.11b TX in middle channel) is recorded.

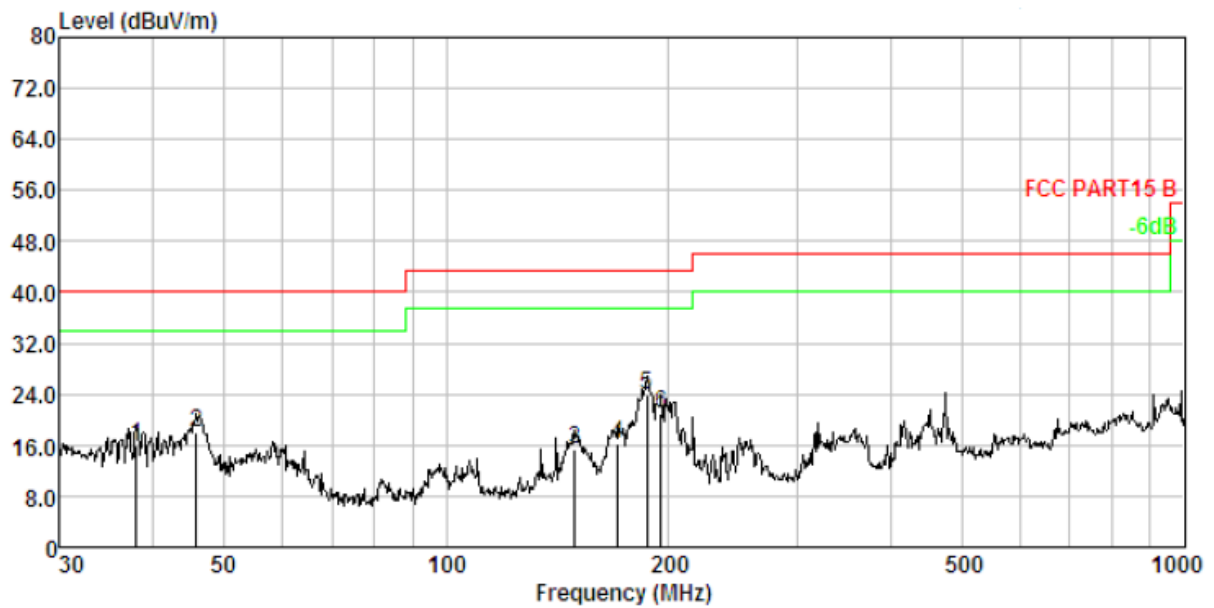
Antenna Polarization: Horizontal



| No. | Freq<br>MHz | Cable<br>Loss<br>dB | ANT<br>Factor<br>dB/m | Receiver<br>Reading<br>dBuV | Preamp<br>Factor<br>dB | Emission<br>Level<br>dBuV/m | Limit<br>dBuV/m | Over<br>Limit<br>dB | Remark |
|-----|-------------|---------------------|-----------------------|-----------------------------|------------------------|-----------------------------|-----------------|---------------------|--------|
| 1.  | 30.211      | 1.06                | 13.24                 | 43.72                       | 29.97                  | 28.05                       | 40.00           | -11.95              | QP     |
| 2.  | 37.945      | 1.27                | 13.55                 | 46.49                       | 30.05                  | 31.26                       | 40.00           | -8.74               | QP     |
| 3.  | 58.407      | 1.66                | 12.09                 | 40.25                       | 30.20                  | 23.80                       | 40.00           | -16.20              | QP     |
| 4.  | 60.280      | 1.69                | 12.15                 | 39.98                       | 30.21                  | 23.61                       | 40.00           | -16.39              | QP     |
| 5.  | 189.074     | 2.72                | 11.22                 | 39.74                       | 30.61                  | 23.07                       | 43.50           | -20.43              | QP     |
| 6.  | 197.893     | 2.76                | 10.53                 | 41.08                       | 30.63                  | 23.74                       | 43.50           | -19.76              | QP     |



Antenna Polarization: Vertical



| No. | Freq<br>MHz | Cable<br>Loss<br>dB | ANT<br>Factor<br>dB/m | Receiver<br>Reading<br>dBuV | Preamplifier<br>Factor<br>dB | Emission<br>Level<br>dBuV/m | Limit<br>dBuV/m | Over<br>Limit<br>dB | Remark |
|-----|-------------|---------------------|-----------------------|-----------------------------|------------------------------|-----------------------------|-----------------|---------------------|--------|
| 1.  | 38.078      | 1.27                | 13.56                 | 31.13                       | 30.05                        | 15.97                       | 40.00           | -24.03              | QP     |
| 2.  | 45.855      | 1.44                | 13.07                 | 33.53                       | 30.12                        | 17.98                       | 40.00           | -22.02              | QP     |
| 3.  | 149.486     | 2.51                | 13.87                 | 29.42                       | 30.53                        | 15.27                       | 43.50           | -28.23              | QP     |
| 4.  | 170.793     | 2.63                | 13.26                 | 30.80                       | 30.53                        | 16.11                       | 43.50           | -27.39              | QP     |
| 5.  | 187.096     | 2.71                | 11.48                 | 40.35                       | 30.61                        | 23.93                       | 43.50           | -19.57              | QP     |
| 6.  | 195.822     | 2.75                | 10.68                 | 38.13                       | 30.62                        | 20.94                       | 43.50           | -22.56              | QP     |



**Test Frequency: 1GHz ~ 18GHz**

| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11b Low Channel                                      |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 45.23            | QP          | -17.57           | 27.66               | 43.50    | -15.84 |
| 1354.62  | 44.96            | QP          | -17.57           | 27.39               | 43.50    | -16.11 |
| 4824.00  | 48.83            | PK          | -1.06            | 47.77               | 74.00    | -26.23 |
| 4824.00  | 45.55            | Ave         | -1.06            | 44.49               | 54.00    | -9.51  |
| 7236.00  | 49.94            | PK          | 1.33             | 51.27               | 74.00    | -22.73 |
| 7236.00  | 43.47            | Ave         | 1.33             | 44.80               | 54.00    | -9.20  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2338.95  | 50.50            | PK          | -13.19           | 37.31               | 74.00    | -36.69 |
| 2338.95  | 41.18            | Ave         | -13.19           | 27.99               | 54.00    | -26.01 |
| 2709.87  | 52.65            | PK          | -12.54           | 40.11               | 74.00    | -33.89 |
| 2709.87  | 48.01            | Ave         | -12.54           | 35.47               | 54.00    | -18.53 |
| 3338.13  | 46.15            | PK          | -10.89           | 35.26               | 74.00    | -38.74 |
| 3338.13  | 43.44            | Ave         | -10.89           | 32.55               | 54.00    | -21.45 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11b Middle Channel                                   |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 44.91            | QP          | -17.57           | 27.34               | 43.50    | -16.16 |
| 1354.62  | 44.88            | QP          | -17.57           | 27.31               | 43.50    | -16.19 |
| 4874.00  | 49.72            | PK          | -0.93            | 48.79               | 74.00    | -25.21 |
| 4874.00  | 44.99            | Ave         | -0.93            | 44.06               | 54.00    | -9.94  |
| 7311.00  | 50.20            | PK          | 1.67             | 51.87               | 74.00    | -22.13 |
| 7311.00  | 42.83            | Ave         | 1.67             | 44.50               | 54.00    | -9.50  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2310.67  | 49.99            | PK          | -13.19           | 36.80               | 74.00    | -37.20 |
| 2310.67  | 42.12            | Ave         | -13.19           | 28.93               | 54.00    | -25.07 |
| 2711.64  | 52.28            | PK          | -12.54           | 39.74               | 74.00    | -34.26 |
| 2711.64  | 47.16            | Ave         | -12.54           | 34.62               | 54.00    | -19.38 |
| 3336.02  | 46.92            | PK          | -10.89           | 36.03               | 74.00    | -37.97 |
| 3336.02  | 44.40            | Ave         | -10.89           | 33.51               | 54.00    | -20.49 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11b High Channel                                     |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 45.42            | QP          | -17.57           | 27.85               | 43.50    | -15.65 |
| 1354.62  | 44.35            | QP          | -17.57           | 26.78               | 43.50    | -16.72 |
| 4924.00  | 50.52            | PK          | -0.87            | 49.65               | 74.00    | -24.35 |
| 4924.00  | 44.77            | Ave         | -0.87            | 43.90               | 54.00    | -10.10 |
| 7386.00  | 50.01            | PK          | 1.84             | 51.85               | 74.00    | -22.15 |
| 7386.00  | 42.46            | Ave         | 1.84             | 44.30               | 54.00    | -9.70  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2345.86  | 51.79            | PK          | -13.19           | 38.60               | 74.00    | -35.40 |
| 2345.86  | 42.04            | Ave         | -13.19           | 28.85               | 54.00    | -25.15 |
| 2718.69  | 51.40            | PK          | -12.54           | 38.86               | 74.00    | -35.14 |
| 2718.69  | 45.92            | Ave         | -12.54           | 33.38               | 54.00    | -20.62 |
| 3337.40  | 47.27            | PK          | -10.89           | 36.38               | 74.00    | -37.62 |
| 3337.40  | 43.99            | Ave         | -10.89           | 33.10               | 54.00    | -20.90 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11g Low Channel                                      |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 44.29            | QP          | -17.57           | 26.72               | 43.50    | -16.78 |
| 1354.62  | 45.69            | QP          | -17.57           | 28.12               | 43.50    | -15.38 |
| 4824.00  | 49.80            | PK          | -1.06            | 48.74               | 74.00    | -25.26 |
| 4824.00  | 45.73            | Ave         | -1.06            | 44.67               | 54.00    | -9.33  |
| 7236.00  | 49.89            | PK          | 1.33             | 51.22               | 74.00    | -22.78 |
| 7236.00  | 43.71            | Ave         | 1.33             | 45.04               | 54.00    | -8.96  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2339.00  | 49.51            | PK          | -13.19           | 36.32               | 74.00    | -37.68 |
| 2339.00  | 41.49            | Ave         | -13.19           | 28.30               | 54.00    | -25.70 |
| 2693.28  | 52.46            | PK          | -12.54           | 39.92               | 74.00    | -34.08 |
| 2693.28  | 48.54            | Ave         | -12.54           | 36.00               | 54.00    | -18.00 |
| 3335.75  | 46.15            | PK          | -10.89           | 35.26               | 74.00    | -38.74 |
| 3335.75  | 44.38            | Ave         | -10.89           | 33.49               | 54.00    | -20.51 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11g Middle Channel                                   |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 44.37            | QP          | -17.57           | 26.80               | 43.50    | -16.70 |
| 1354.62  | 46.06            | QP          | -17.57           | 28.49               | 43.50    | -15.01 |
| 4874.00  | 49.92            | PK          | -0.93            | 48.99               | 74.00    | -25.01 |
| 4874.00  | 45.56            | Ave         | -0.93            | 44.63               | 54.00    | -9.37  |
| 7311.00  | 50.63            | PK          | 1.67             | 52.30               | 74.00    | -21.70 |
| 7311.00  | 44.62            | Ave         | 1.67             | 46.29               | 54.00    | -7.71  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2338.20  | 49.99            | PK          | -13.19           | 36.80               | 74.00    | -37.20 |
| 2338.20  | 42.12            | Ave         | -13.19           | 28.93               | 54.00    | -25.07 |
| 2713.01  | 52.28            | PK          | -12.54           | 39.74               | 74.00    | -34.26 |
| 2713.01  | 47.16            | Ave         | -12.54           | 34.62               | 54.00    | -19.38 |
| 3334.15  | 46.92            | PK          | -10.89           | 36.03               | 74.00    | -37.97 |
| 3334.15  | 44.40            | Ave         | -10.89           | 33.51               | 54.00    | -20.49 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |





| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11g High Channel                                     |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1354.62  | 45.18            | QP          | -17.57           | 27.61               | 43.50    | -15.89 |
| 1354.62  | 46.65            | QP          | -17.57           | 29.08               | 43.50    | -14.42 |
| 4924.00  | 49.95            | PK          | -0.87            | 49.08               | 74.00    | -24.92 |
| 4924.00  | 46.29            | Ave         | -0.87            | 45.42               | 54.00    | -8.58  |
| 7386.00  | 50.98            | PK          | 1.84             | 52.82               | 74.00    | -21.18 |
| 7386.00  | 45.15            | Ave         | 1.84             | 46.99               | 54.00    | -7.01  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2347.37  | 51.79            | PK          | -13.19           | 38.60               | 74.00    | -35.40 |
| 2347.37  | 42.04            | Ave         | -13.19           | 28.85               | 54.00    | -25.15 |
| 2696.28  | 51.40            | PK          | -12.54           | 38.86               | 74.00    | -35.14 |
| 2696.28  | 45.92            | Ave         | -12.54           | 33.38               | 54.00    | -20.62 |
| 3338.69  | 47.27            | PK          | -10.89           | 36.38               | 74.00    | -37.62 |
| 3338.69  | 43.99            | Ave         | -10.89           | 33.10               | 54.00    | -20.90 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT20 Low Channel                                 |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1350.60  | 43.90            | QP          | -17.57           | 26.33               | 43.50    | -17.17 |
| 1350.60  | 45.95            | QP          | -17.57           | 28.38               | 43.50    | -15.12 |
| 4824.00  | 48.81            | PK          | -1.06            | 47.75               | 74.00    | -26.25 |
| 4824.00  | 45.46            | Ave         | -1.06            | 44.40               | 54.00    | -9.60  |
| 7236.00  | 50.58            | PK          | 1.33             | 51.91               | 74.00    | -22.09 |
| 7236.00  | 44.34            | Ave         | 1.33             | 45.67               | 54.00    | -8.33  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2314.18  | 49.67            | PK          | -13.19           | 36.48               | 74.00    | -37.52 |
| 2314.18  | 41.87            | Ave         | -13.19           | 28.68               | 54.00    | -25.32 |
| 2693.21  | 51.72            | PK          | -12.54           | 39.18               | 74.00    | -34.82 |
| 2693.21  | 47.87            | Ave         | -12.54           | 35.33               | 54.00    | -18.67 |
| 3334.73  | 45.66            | PK          | -10.89           | 34.77               | 74.00    | -39.23 |
| 3334.73  | 44.81            | Ave         | -10.89           | 33.92               | 54.00    | -20.08 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT20 Middle Channel                              |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1350.60  | 43.02            | QP          | -17.57           | 25.45               | 43.50    | -18.05 |
| 1350.60  | 45.62            | QP          | -17.57           | 28.05               | 43.50    | -15.45 |
| 4874.00  | 49.78            | PK          | -0.93            | 48.85               | 74.00    | -25.15 |
| 4874.00  | 44.95            | Ave         | -0.93            | 44.02               | 54.00    | -9.98  |
| 7311.00  | 51.25            | PK          | 1.67             | 52.92               | 74.00    | -21.08 |
| 7311.00  | 44.15            | Ave         | 1.67             | 45.82               | 54.00    | -8.18  |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2320.65  | 49.99            | PK          | -13.19           | 36.80               | 74.00    | -37.20 |
| 2320.65  | 42.12            | Ave         | -13.19           | 28.93               | 54.00    | -25.07 |
| 2710.80  | 52.28            | PK          | -12.54           | 39.74               | 74.00    | -34.26 |
| 2710.80  | 47.16            | Ave         | -12.54           | 34.62               | 54.00    | -19.38 |
| 3333.03  | 46.92            | PK          | -10.89           | 36.03               | 74.00    | -37.97 |
| 3333.03  | 44.40            | Ave         | -10.89           | 33.51               | 54.00    | -20.49 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT20 High Channel                              |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                           |                  |             |                  |                     |          |        |
| 1350.60  | 43.10            | QP          | -17.57           | 25.53               | 43.50    | -17.97 |
| 1350.60  | 46.12            | QP          | -17.57           | 28.55               | 43.50    | -14.95 |
| 4924.00  | 50.44            | PK          | -0.87            | 49.57               | 74.00    | -24.43 |
| 4924.00  | 45.65            | Ave         | -0.87            | 44.78               | 54.00    | -9.22  |
| 7386.00  | 51.74            | PK          | 1.84             | 53.58               | 74.00    | -20.42 |
| 7386.00  | 44.02            | Ave         | 1.84             | 45.86               | 54.00    | -8.14  |
| Restricted bands Emission                              |                  |             |                  |                     |          |        |
| 2324.45  | 51.79            | PK          | -13.19           | 38.60               | 74.00    | -35.40 |
| 2324.45  | 42.04            | Ave         | -13.19           | 28.85               | 54.00    | -25.15 |
| 2719.76  | 51.40            | PK          | -12.54           | 38.86               | 74.00    | -35.14 |
| 2719.76  | 45.92            | Ave         | -12.54           | 33.38               | 54.00    | -20.62 |
| 3336.24  | 47.27            | PK          | -10.89           | 36.38               | 74.00    | -37.62 |
| 3336.24  | 43.99            | Ave         | -10.89           | 33.10               | 54.00    | -20.90 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor=ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT40 Low Channel                                 |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1279.56  | 46.51            | QP          | -18.64           | 27.87               | 43.50    | -15.63 |
| 1279.56  | 45.60            | QP          | -18.64           | 26.96               | 43.50    | -16.54 |
| 4844.00  | 46.28            | PK          | -1.06            | 45.22               | 74.00    | -28.78 |
| 4844.00  | 43.65            | Ave         | -1.06            | 42.59               | 54.00    | -11.41 |
| 7266.00  | 46.91            | PK          | 1.33             | 48.24               | 74.00    | -25.76 |
| 7266.00  | 42.25            | Ave         | 1.33             | 43.58               | 54.00    | -10.42 |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2343.07  | 49.09            | PK          | -13.19           | 35.90               | 74.00    | -38.10 |
| 2343.07  | 42.35            | Ave         | -13.19           | 29.16               | 54.00    | -24.84 |
| 2691.21  | 52.07            | PK          | -12.54           | 39.53               | 74.00    | -34.47 |
| 2691.21  | 48.14            | Ave         | -12.54           | 35.60               | 54.00    | -18.40 |
| 3333.51  | 44.68            | PK          | -10.89           | 33.79               | 74.00    | -40.21 |
| 3333.51  | 44.61            | Ave         | -10.89           | 33.72               | 54.00    | -20.28 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT40 Middle Channel                              |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1279.56  | 46.64            | QP          | -18.64           | 28.00               | 43.50    | -15.50 |
| 1279.56  | 45.98            | QP          | -18.64           | 27.34               | 43.50    | -16.16 |
| 4874.00  | 46.58            | PK          | -0.93            | 45.65               | 74.00    | -28.35 |
| 4874.00  | 43.58            | Ave         | -0.93            | 42.65               | 54.00    | -11.35 |
| 7311.00  | 46.54            | PK          | 1.67             | 48.21               | 74.00    | -25.79 |
| 7311.00  | 41.99            | Ave         | 1.67             | 43.66               | 54.00    | -10.34 |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2315.45  | 49.99            | PK          | -13.19           | 36.80               | 74.00    | -37.20 |
| 2315.45  | 42.12            | Ave         | -13.19           | 28.93               | 54.00    | -25.07 |
| 2713.58  | 52.28            | PK          | -12.54           | 39.74               | 74.00    | -34.26 |
| 2713.58  | 47.16            | Ave         | -12.54           | 34.62               | 54.00    | -19.38 |
| 3335.74  | 46.92            | PK          | -10.89           | 36.03               | 74.00    | -37.97 |
| 3335.74  | 44.40            | Ave         | -10.89           | 33.51               | 54.00    | -20.49 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



| Frequency  | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)  | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11n HT40 High Channel                                |                  |             |                  |                     |          |        |
| Harmonic & Spurious Emission                             |                  |             |                  |                     |          |        |
| 1279.56  | 46.69            | QP          | -18.64           | 28.05               | 43.50    | -15.45 |
| 1279.56  | 45.85            | QP          | -18.64           | 27.21               | 43.50    | -16.29 |
| 4904.00  | 46.26            | PK          | -0.87            | 45.39               | 74.00    | -28.61 |
| 4904.00  | 42.98            | Ave         | -0.87            | 42.11               | 54.00    | -11.89 |
| 7356.00  | 46.22            | PK          | 1.84             | 48.06               | 74.00    | -25.94 |
| 7356.00  | 41.51            | Ave         | 1.84             | 43.35               | 54.00    | -10.65 |
| Restricted bands Emission                                |                  |             |                  |                     |          |        |
| 2314.49  | 51.79            | PK          | -13.19           | 38.60               | 74.00    | -35.40 |
| 2314.49  | 42.04            | Ave         | -13.19           | 28.85               | 54.00    | -25.15 |
| 2714.26  | 51.40            | PK          | -12.54           | 38.86               | 74.00    | -35.14 |
| 2714.26  | 45.92            | Ave         | -12.54           | 33.38               | 54.00    | -20.62 |
| 3333.22  | 47.27            | PK          | -10.89           | 36.38               | 74.00    | -37.62 |
| 3333.22  | 43.99            | Ave         | -10.89           | 33.10               | 54.00    | -20.90 |
| Remark:  |                  |             |                  |                     |          |        |
| 1. Corrected Factor = ANT Factor + Cable Loss – Amp Gain |                  |             |                  |                     |          |        |



**Radiated band edge:**

| Frequency    | Receiver Reading | Detector    | Corrected Factor | Corrected Amplitude | Limit    | Margin |
|--------------|------------------|-------------|------------------|---------------------|----------|--------|
| (MHz)        | (dBμV)           | (PK/QP/Ave) | (dB)             | (dBμV/m)            | (dBμV/m) | (dB)   |
| 802.11b      |                  |             |                  |                     |          |        |
| 2400.00      | 49.57            | PK          | -13.12           | 36.45               | 74.00    | -37.55 |
| 2400.00      | 41.49            | PK          | -13.12           | 28.37               | 74.00    | -45.63 |
| 2483.50      | 48.77            | PK          | -13.06           | 35.71               | 74.00    | -38.29 |
| 2483.50      | 42.53            | PK          | -13.06           | 29.47               | 74.00    | -44.53 |
| 802.11g      |                  |             |                  |                     |          |        |
| 2400.00      | 48.52            | PK          | -13.12           | 35.40               | 74.00    | -38.60 |
| 2400.00      | 41.86            | PK          | -13.12           | 28.74               | 74.00    | -45.26 |
| 2483.50      | 47.28            | PK          | -13.06           | 34.22               | 74.00    | -39.78 |
| 2483.50      | 42.65            | PK          | -13.06           | 29.59               | 74.00    | -44.41 |
| 802.11n HT20 |                  |             |                  |                     |          |        |
| 2400.00      | 48.80            | PK          | -13.12           | 35.68               | 74.00    | -38.32 |
| 2400.00      | 43.13            | PK          | -13.12           | 30.01               | 74.00    | -43.99 |
| 2483.50      | 47.88            | PK          | -13.06           | 34.82               | 74.00    | -39.18 |
| 2483.50      | 42.25            | PK          | -13.06           | 29.19               | 74.00    | -44.81 |
| 802.11n HT40 |                  |             |                  |                     |          |        |
| 2400.00      | 50.04            | PK          | -13.12           | 36.92               | 74.00    | -37.08 |
| 2400.00      | 42.84            | PK          | -13.12           | 29.72               | 74.00    | -44.28 |
| 2483.50      | 47.40            | PK          | -13.06           | 34.34               | 74.00    | -39.66 |
| 2483.50      | 42.58            | PK          | -13.06           | 29.52               | 74.00    | -44.48 |

**Test Frequency: Above 18GHz**

The measurements were more than 20 dB below the limit and not reported

Remark : 1. The testing has been conformed to 10\*2472 =24720MHz.  
2. All other emissions more than 20dB below the limit



## 7 Band Edge Measurement

- Test Requirement : Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
- Test Method : ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05
- Test Limit : Regulation 15.247 (d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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 in §15.209(a) (see §15.205(c)).
- Test Mode : Refer to section 3.3

### 7.1 Test Procedure

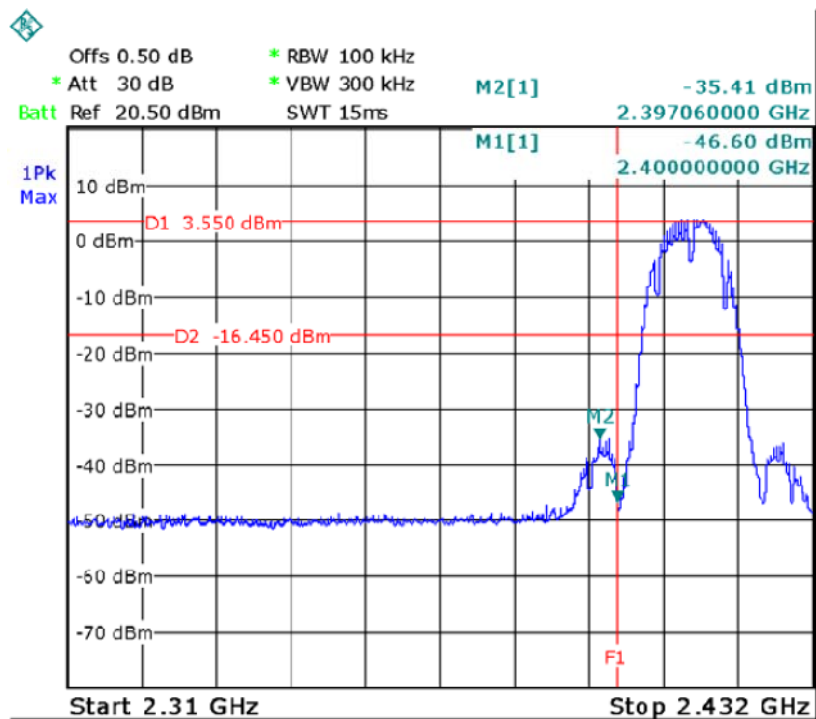
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto

Detector function = peak, Trace = max hold

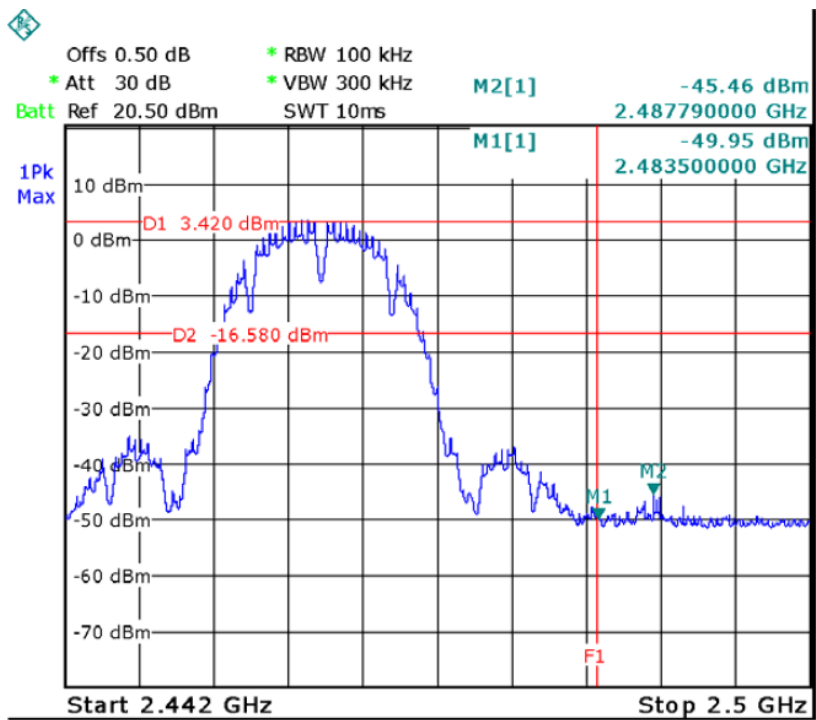
| Mode  | Band edge | Value  | Limit  | Result |
|---|-----------|--------|--------|--------|
| 802.11b   | Left      | -44.30 | -24.07 | Pass   |
|   | Right     | 57.67  | -24.00 | Pass   |
| 802.11g   | Left      | -47.05 | -31.97 | Pass   |
|   | Right     | -56.55 | -32.90 | Pass   |
| 802.11n HT20  | Left      | -48.60 | -32.87 | Pass   |
|   | Right     | -54.74 | -32.95 | Pass   |
| 802.11n HT40  | Left      | -44.43 | -36.09 | Pass   |
|   | Right     | -53.73 | -36.00 | Pass   |
| Remark:   |           |        |        |        |
| The limit is 20dB below the maximum peak level, please refer to the display line of the follow plot |           |        |        |        |

## 7.2 Test Result

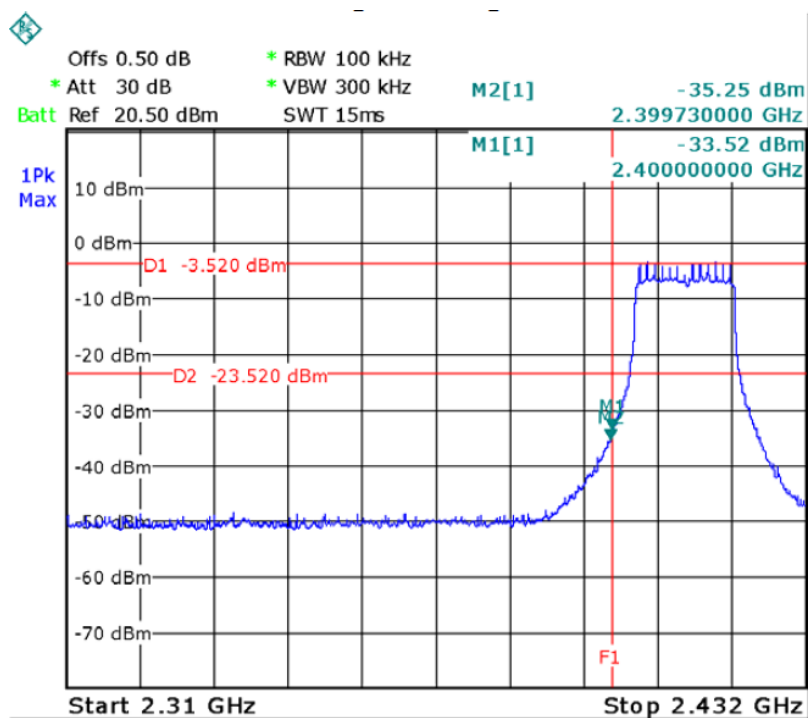
802.11b Band edge-left side



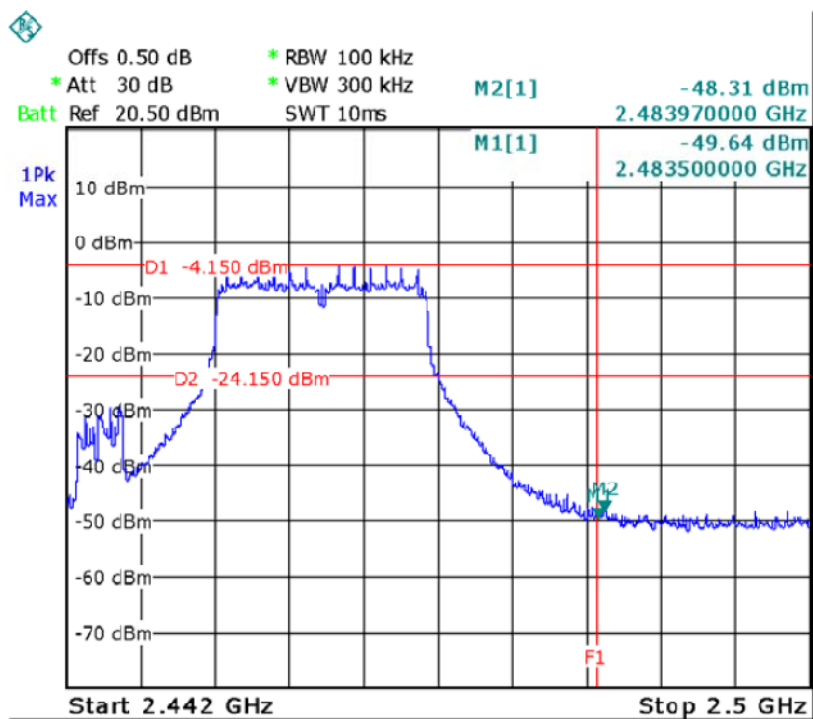
802.11b Band edge-right side



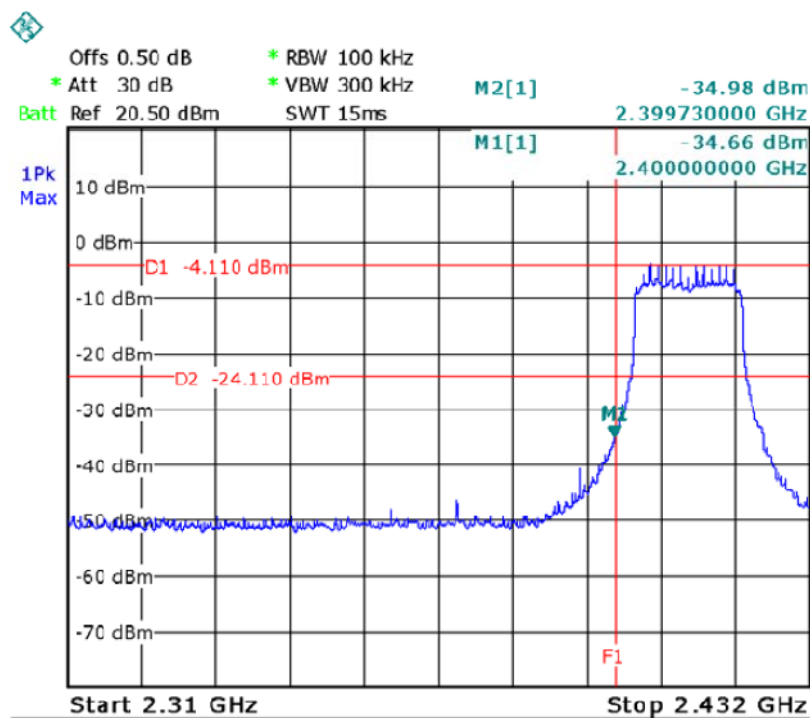
802.11g Band edge-left side



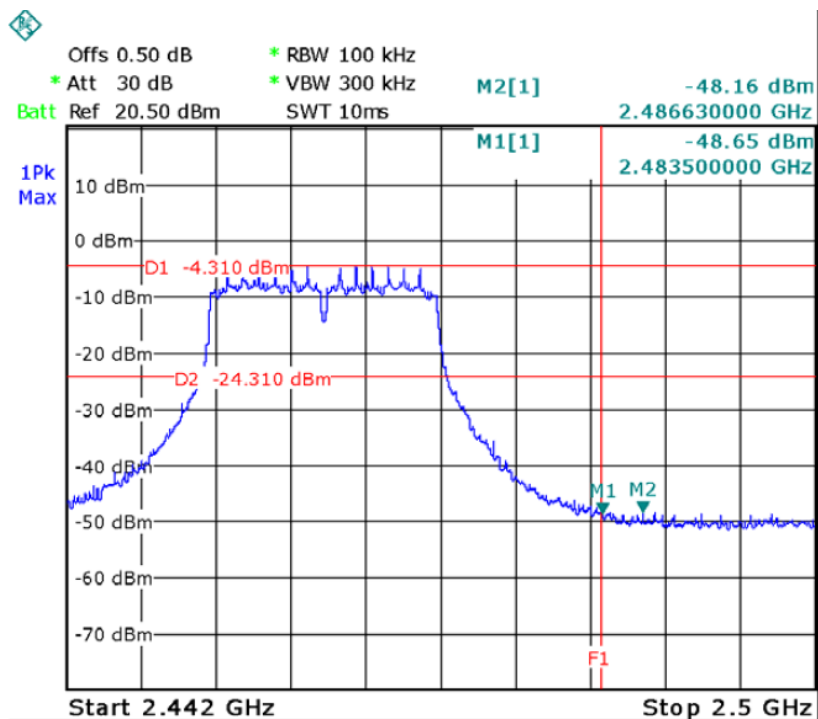
802.11g Band edge-right side



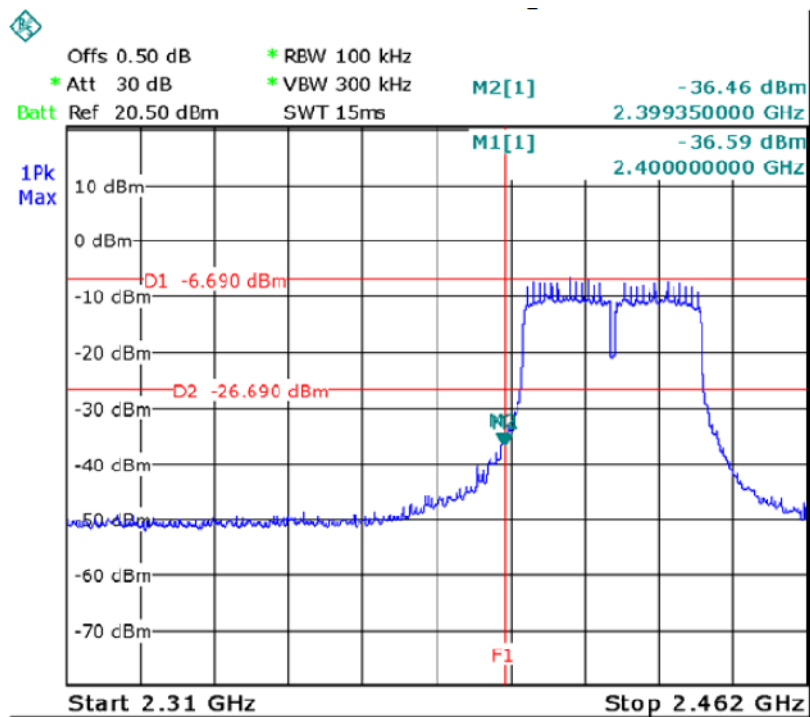
802.11n-HT20 Band edge-left side



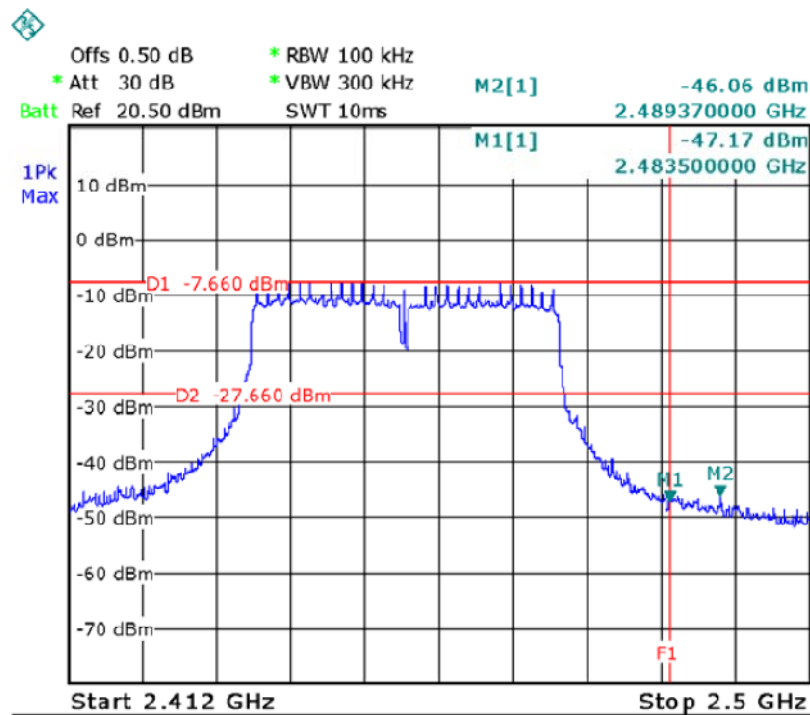
802.11n-HT20 Band edge-right side



802.11n-HT40 Band edge-left side



802.11n-HT40 Band edge-right side



## 8 6dB Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.247

Test Method : ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05

Test Limit : Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Mode : Refer to section 3.3

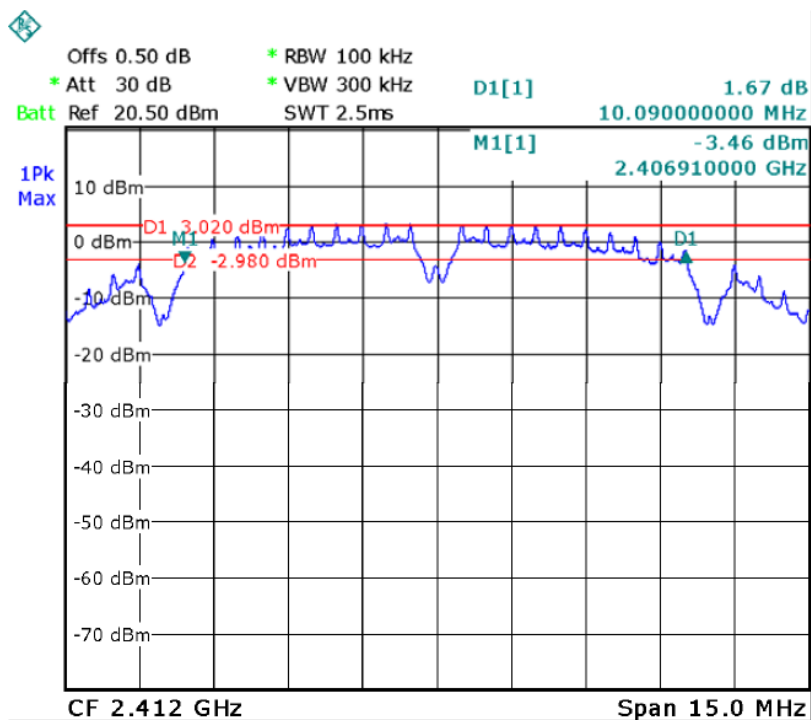
### 8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: For BLE, RBW = 100kHz, VBW = 300kHz, For WIFI, RBW = 100kHz, VBW = 300kHz,

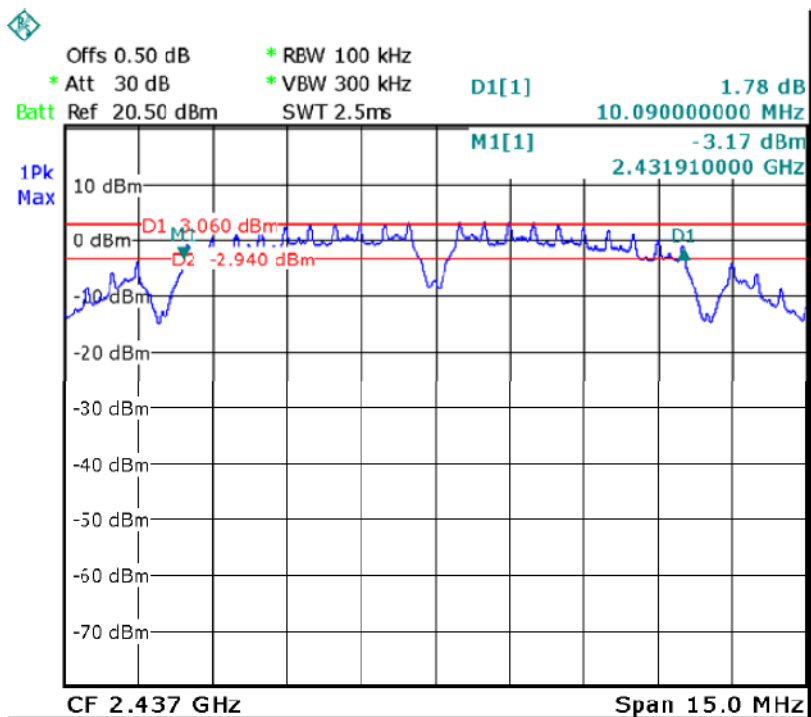
### 8.2 Test Result

| Modulation   | Bandwidth(MHz) |                |              | Limit   |
|--------------|----------------|----------------|--------------|---------|
|              | Low Channel    | Middle Channel | High Channel |         |
| 802.11b      | 10.09          | 10.09          | 10.09        | ≥500kHz |
| 802.11g      | 16.42          | 16.42          | 16.42        | ≥500kHz |
| 802.11n-HT20 | 17.57          | 17.57          | 17.57        | ≥500kHz |
| 802.11n-HT40 | 36.11          | 36.11          | 36.11        | ≥500kHz |

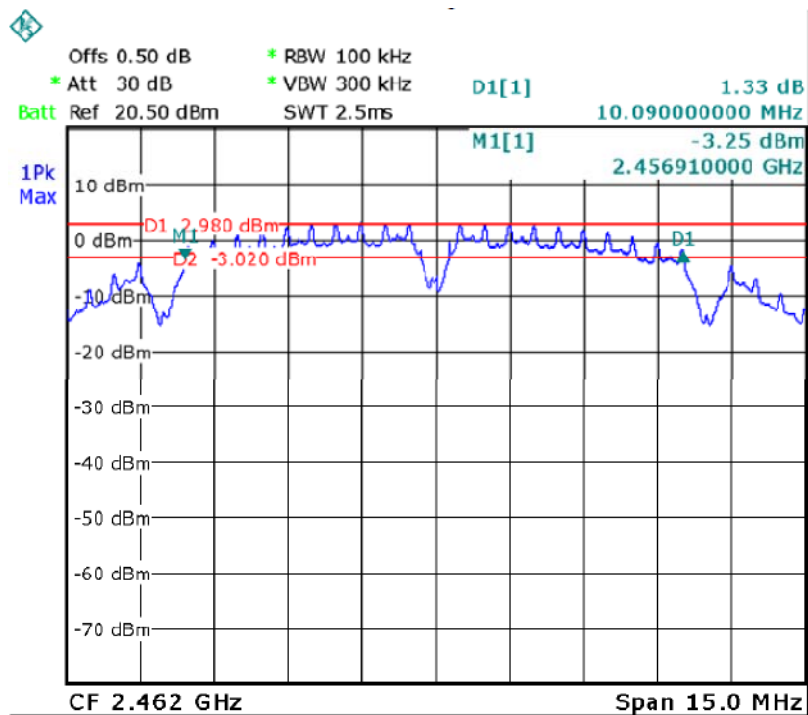
### 802.11b Low Channel



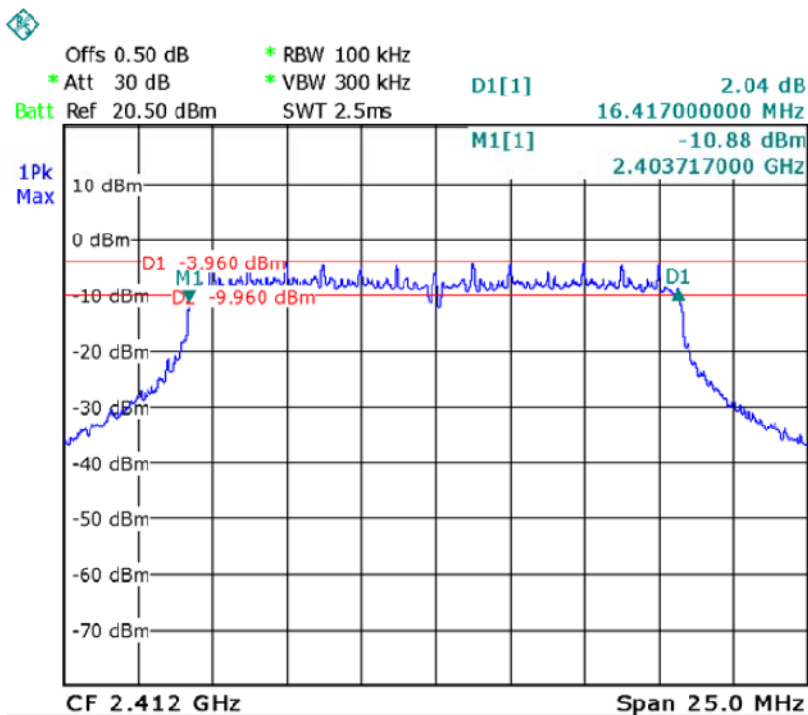
### 802.11b Middle Channel



### 802.11b High Channel

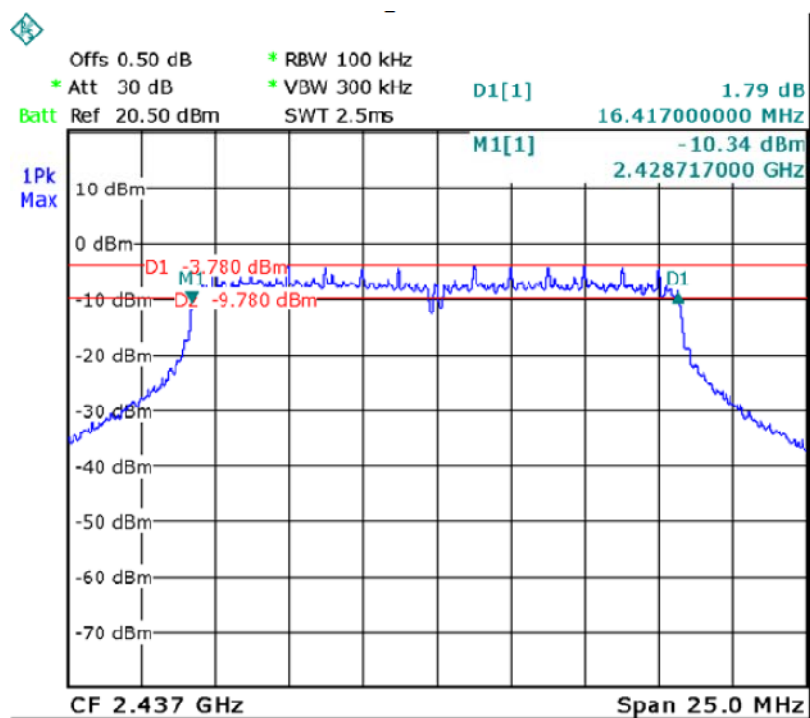


### 802.11g Low Channel

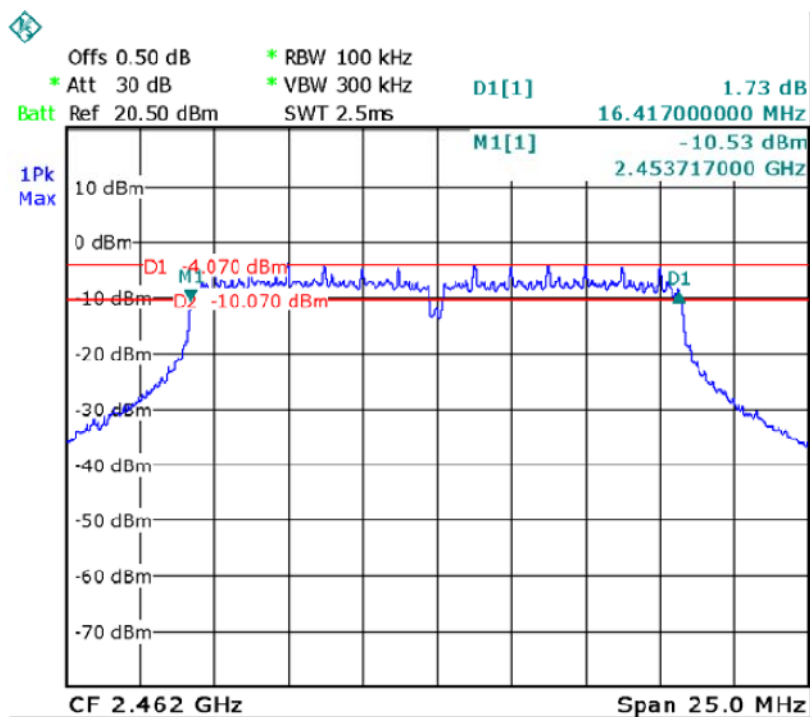




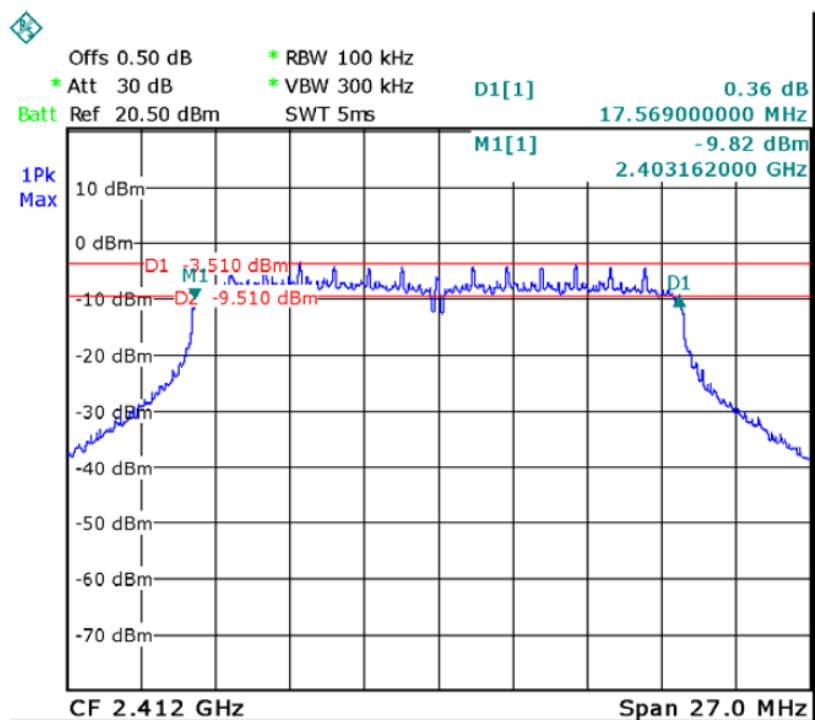
### 802.11g Middle Channel



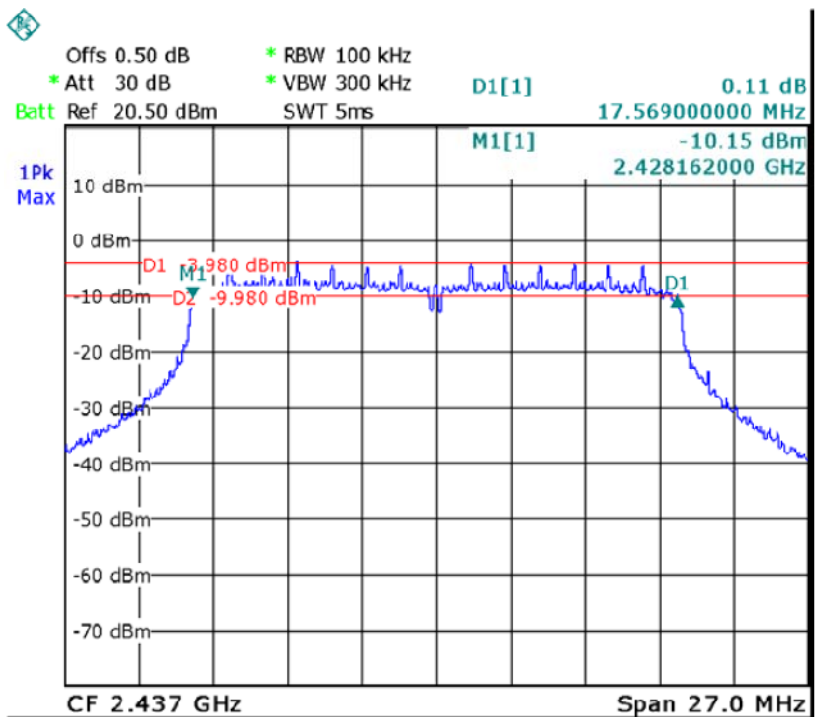
### 802.11g High Channel



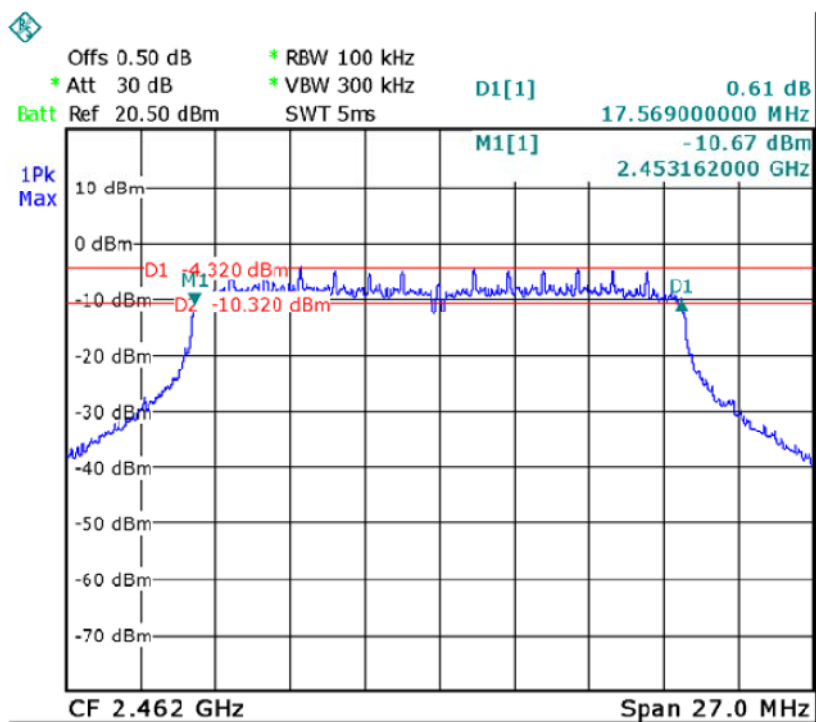
### 802.11n-HT20 Low Channel



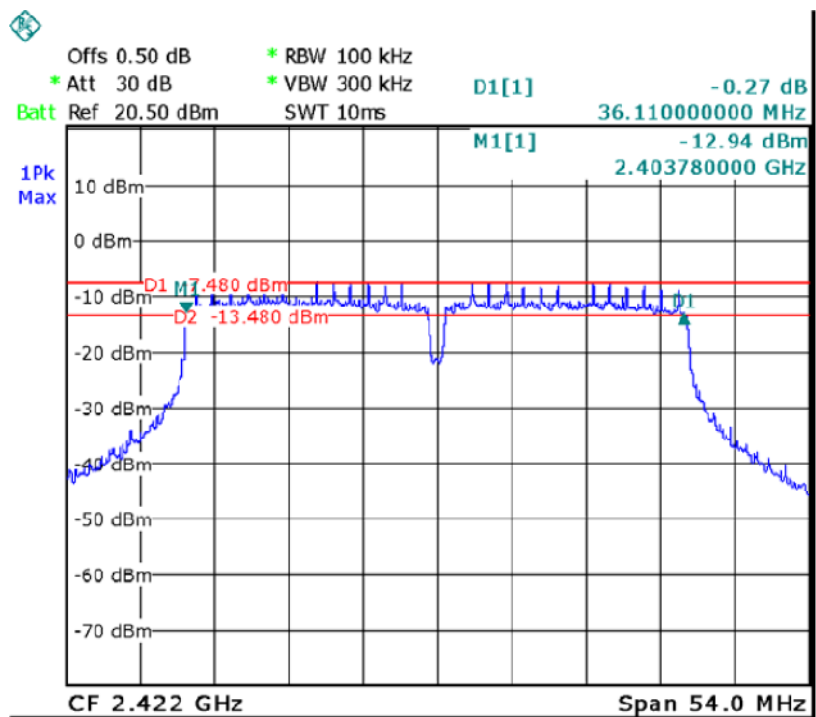
### 802.11n-HT20 Middle Channel



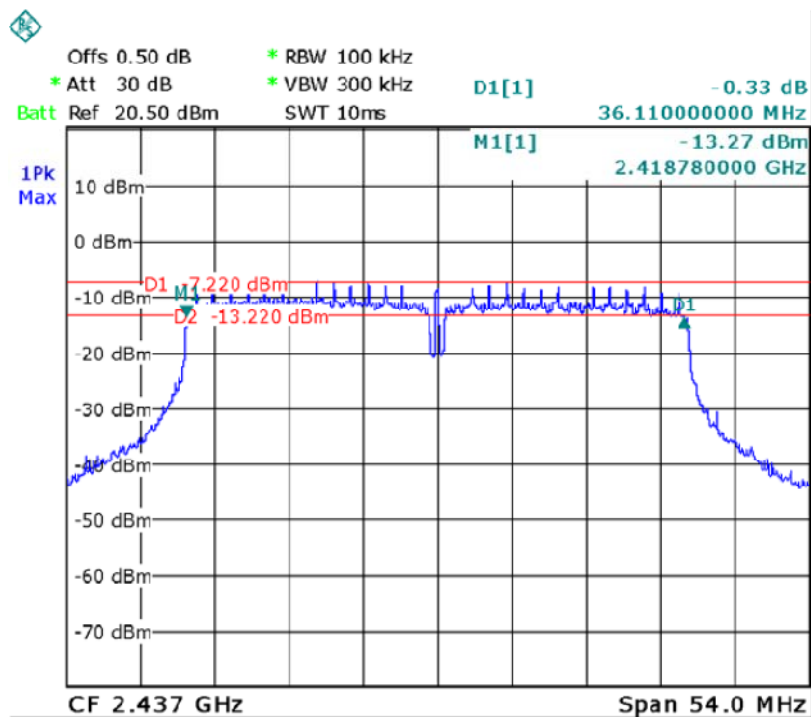
### 802.11n-HT20 High Channel



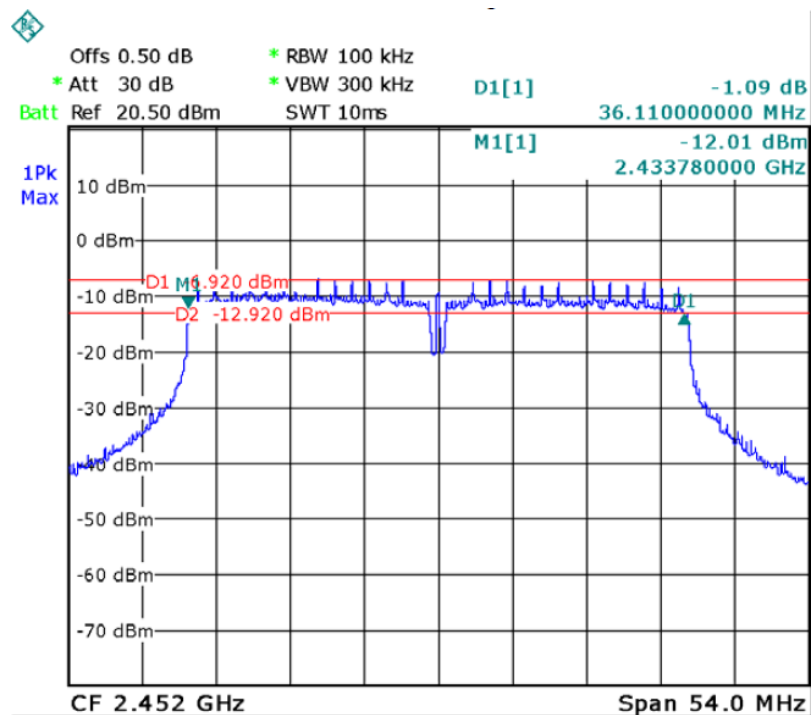
### 802.11n-HT40 Low Channel



### 802.11n-HT40 Middle Channel



### 802.11n-HT40 High Channel





## 9 Maximum Peak Output Power

|                  |   |   |
|------------------|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247  |
| Test Method      | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05   |
| Test Limit       | : | Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. |
| Test Mode        | : | Refer to section 3.3  |

### 9.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v03r05

section 9.1.2 (For WIFI)

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.



## 9.2 Test Result

| Modulation   | Maximum Peak Output Power (dBm) |                |              | Limit     |
|--------------|---------------------------------|----------------|--------------|-----------|
|              | Low Channel                     | Middle Channel | High Channel |           |
| 802.11b      | 15.45                           | 15.4           | 15.43        | 1W(30dBm) |
| 802.11g      | 15.29                           | 15.38          | 15.20        | 1W(30dBm) |
| 802.11n-HT20 | 15.35                           | 15.41          | 15.29        | 1W(30dBm) |
| 802.11n-HT40 | 15.34                           | 15.39          | 15.29        | 1W(30dBm) |

## 10 Power Spectral density

|                  |  |
|------------------|--|
| Test Requirement | : FCC CFR47 Part 15 Section 15.247   |
| Test Method      | : ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05  |
| Test Limit       | : Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. |
| Test Mode        | : Refer to section 3.3   |

### 10.1 Test Procedure

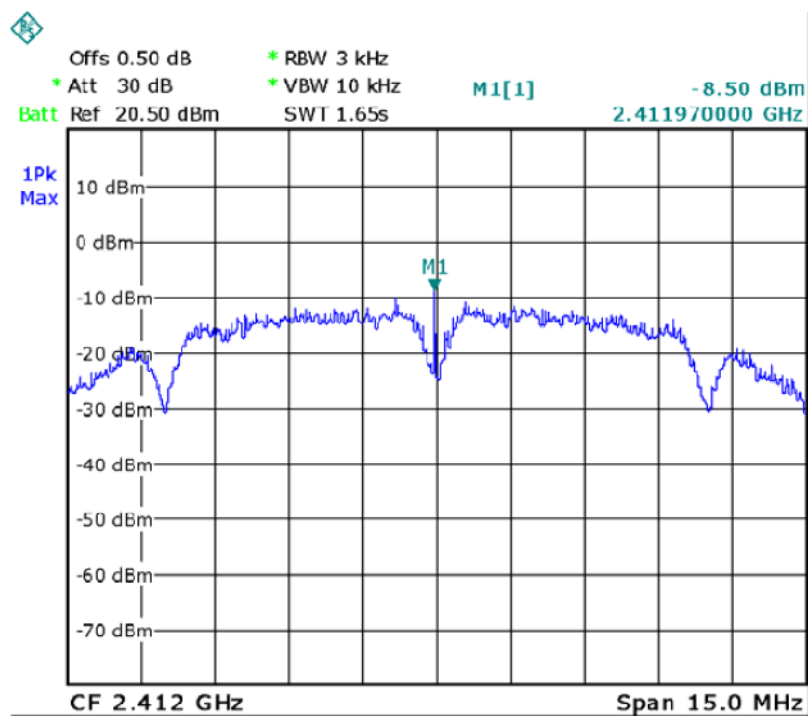
KDB 558074 D01 DTS Meas Guidance v03r05

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

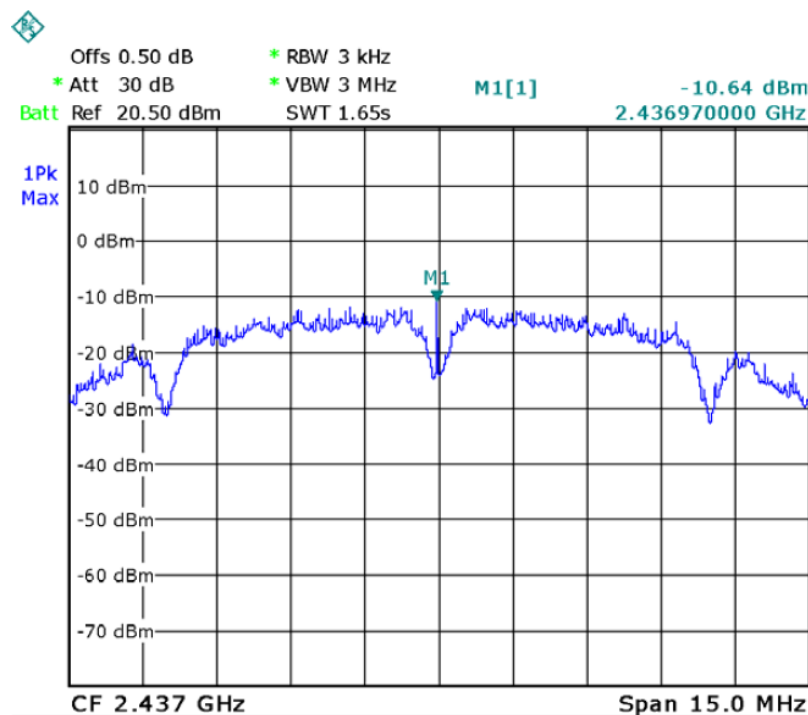
### 10.2 Test Result

| Modulation   | Power Spectral density ( dBm/3kHz ) |                |              | Limit     |
|--------------|-------------------------------------|----------------|--------------|-----------|
|              | Low Channel                         | Middle Channel | High Channel |           |
| 802.11b      | -8.50                               | -10.64         | -10.81       | 8dBm/3kHz |
| 802.11g      | -8.24                               | -10.95         | -10.82       | 8dBm/3kHz |
| 802.11n-HT20 | -9.80                               | -11.30         | -11.04       | 8dBm/3kHz |
| 802.11n-HT40 | -21.84                              | -11.73         | -21.47       | 8dBm/3kHz |

### 802.11b Low Channel

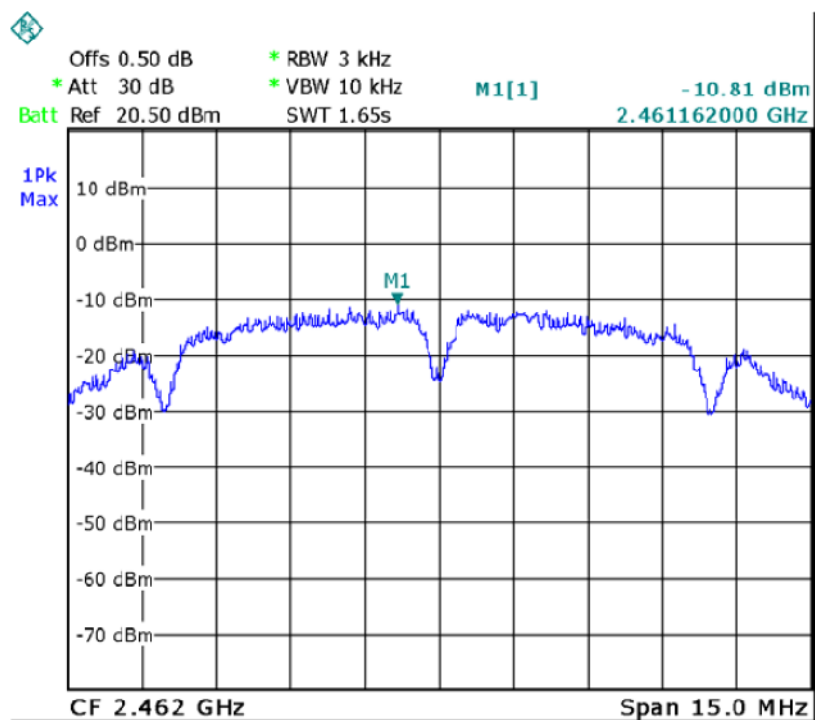


### 802.11b Middle Channel

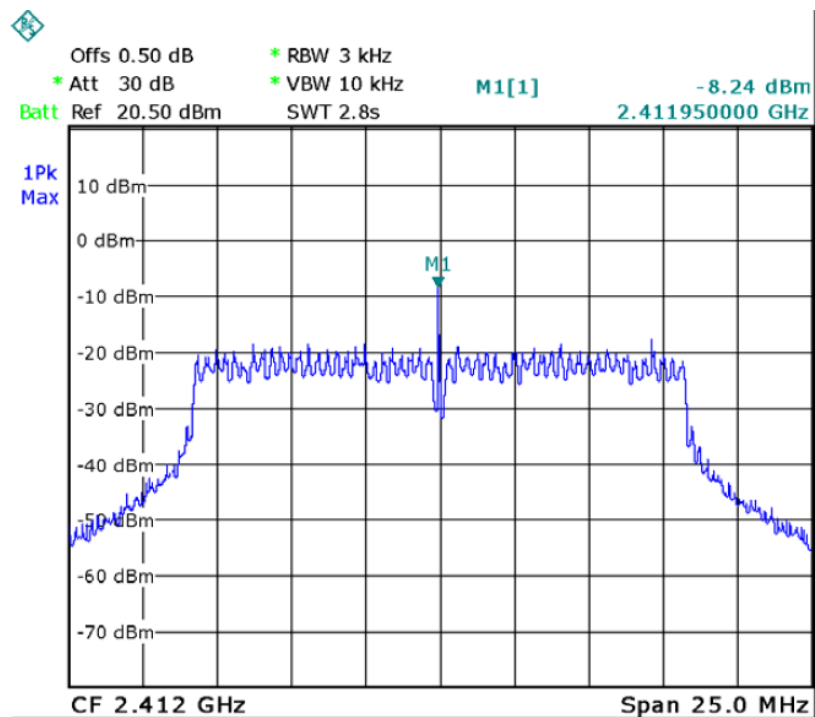




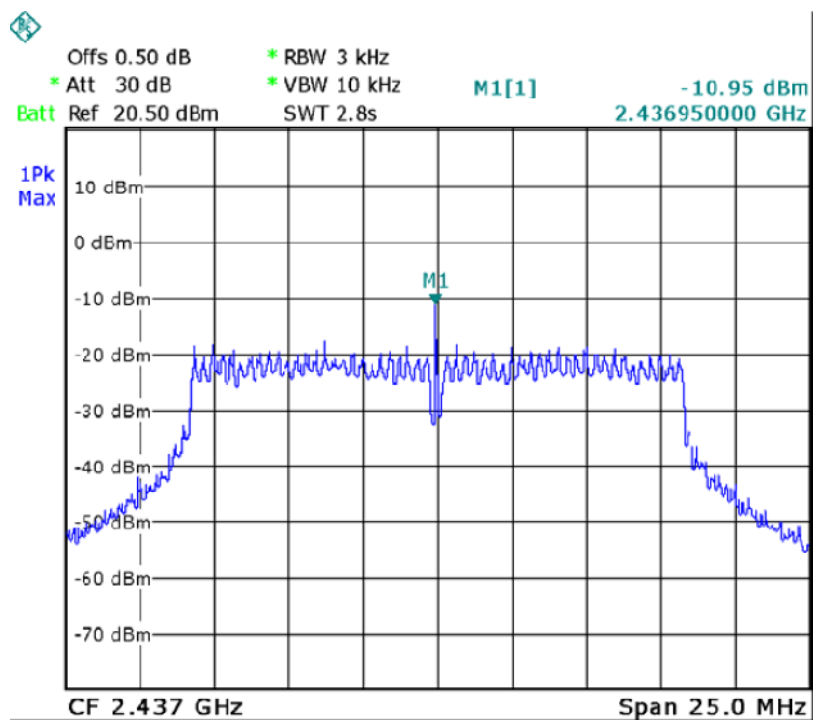
### 802.11b High Channel



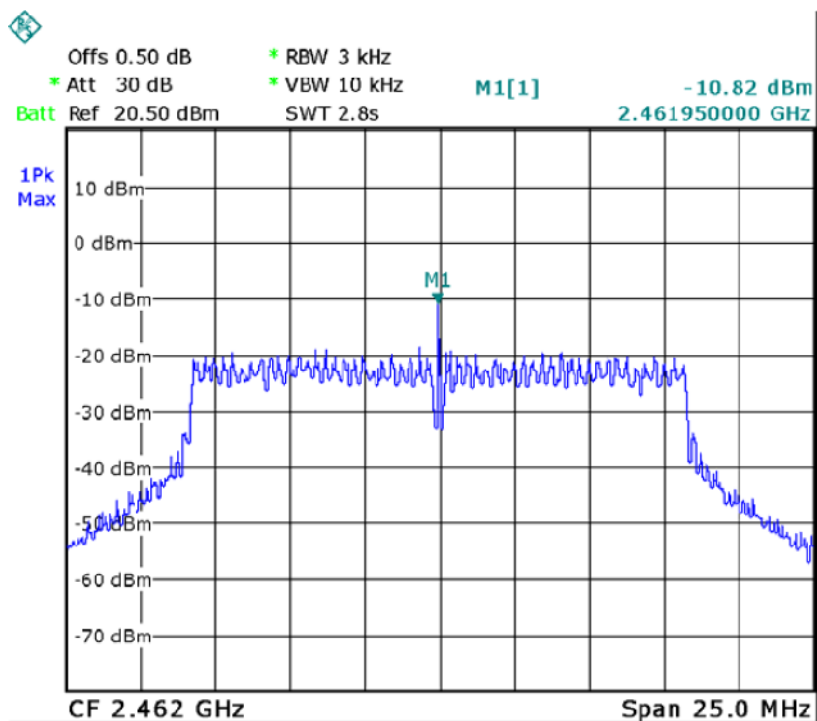
### 802.11g Low Channel



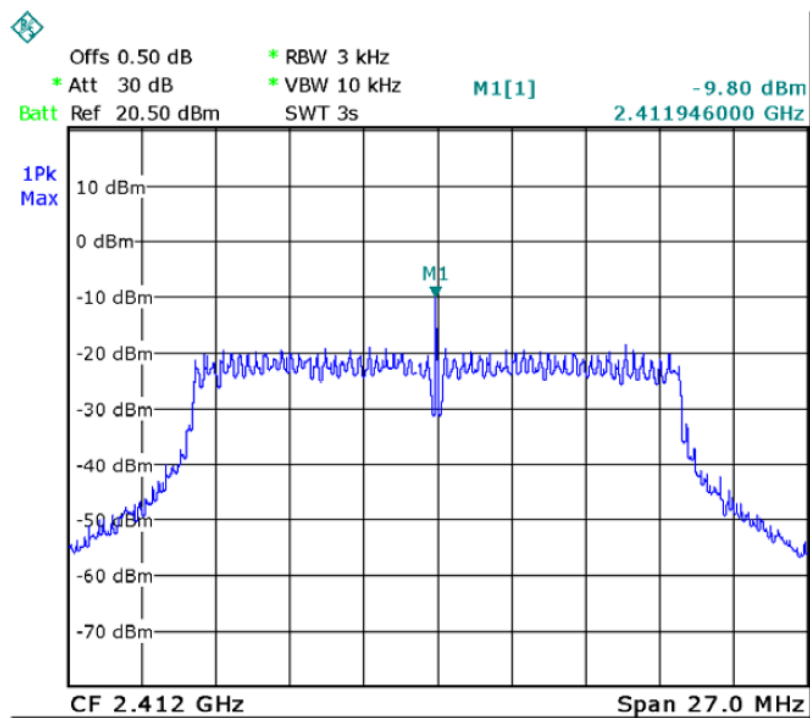
### 802.11g Middle Channel



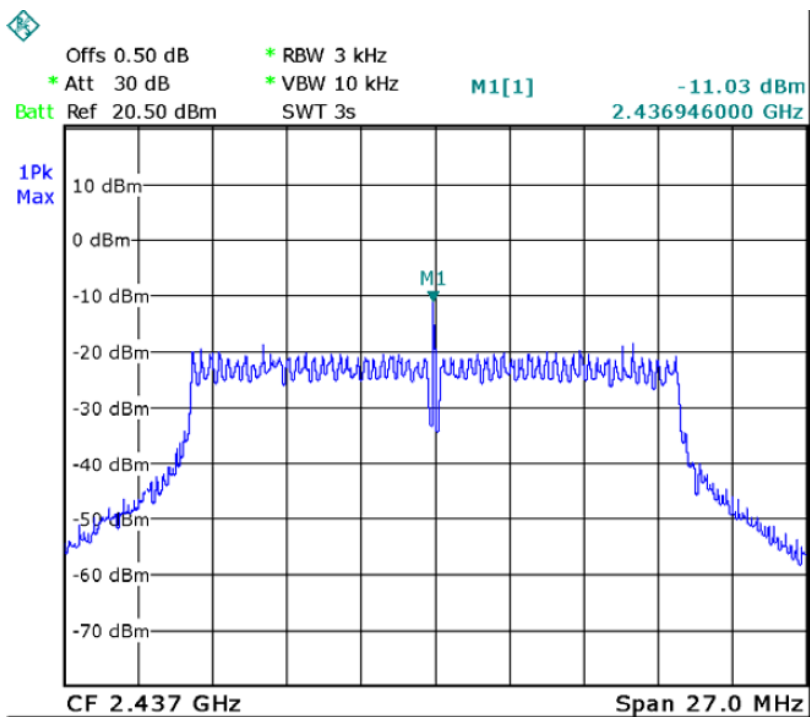
### 802.11g High Channel



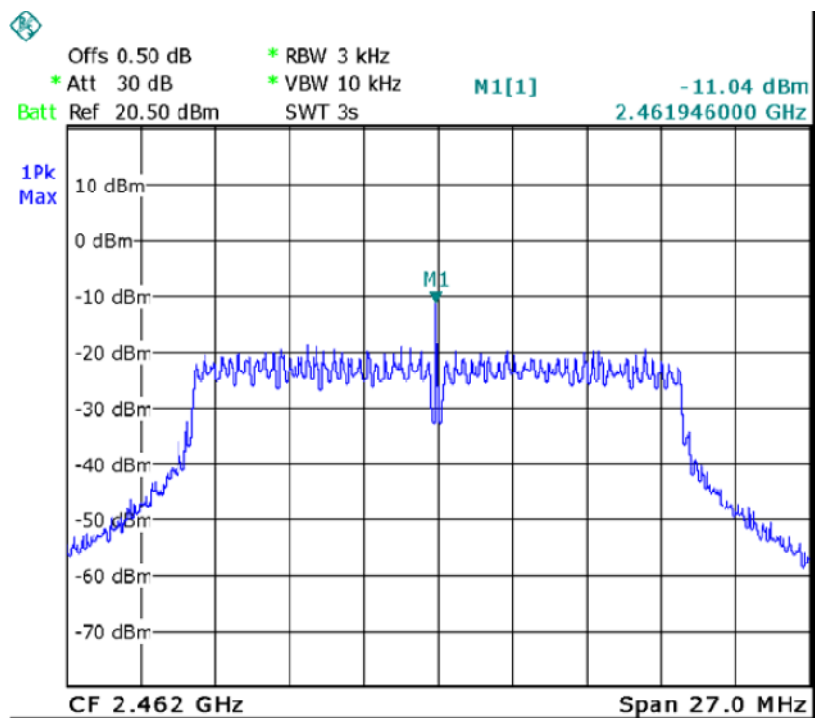
### 802.11n-HT20 Low Channel



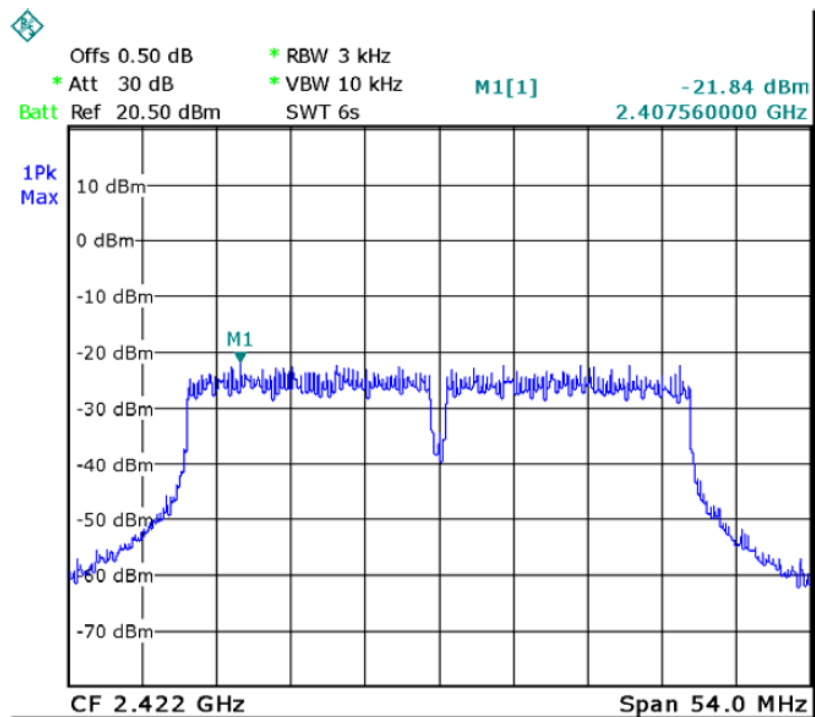
### 802.11n-HT20 Middle Channel



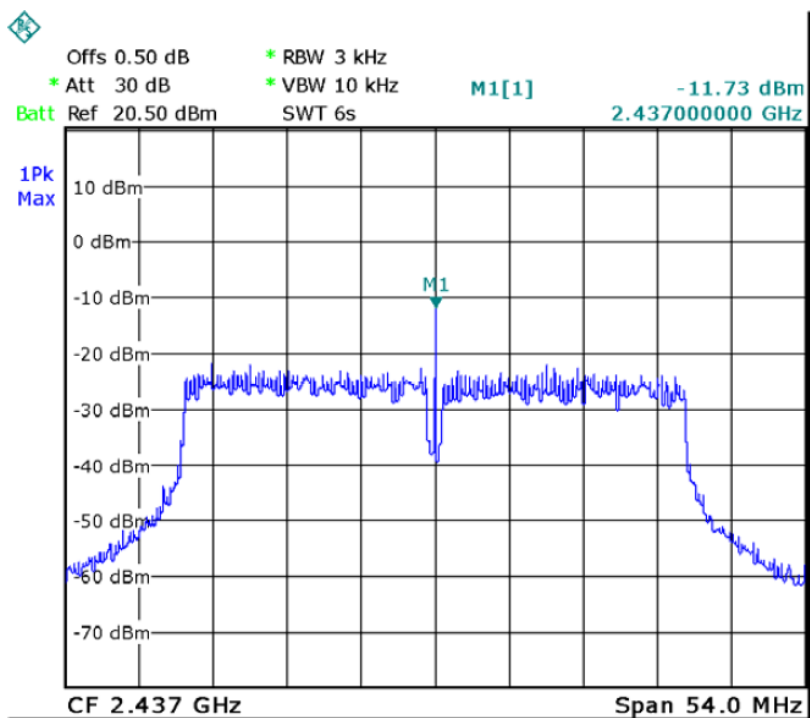
### 802.11n-HT20 High Channel



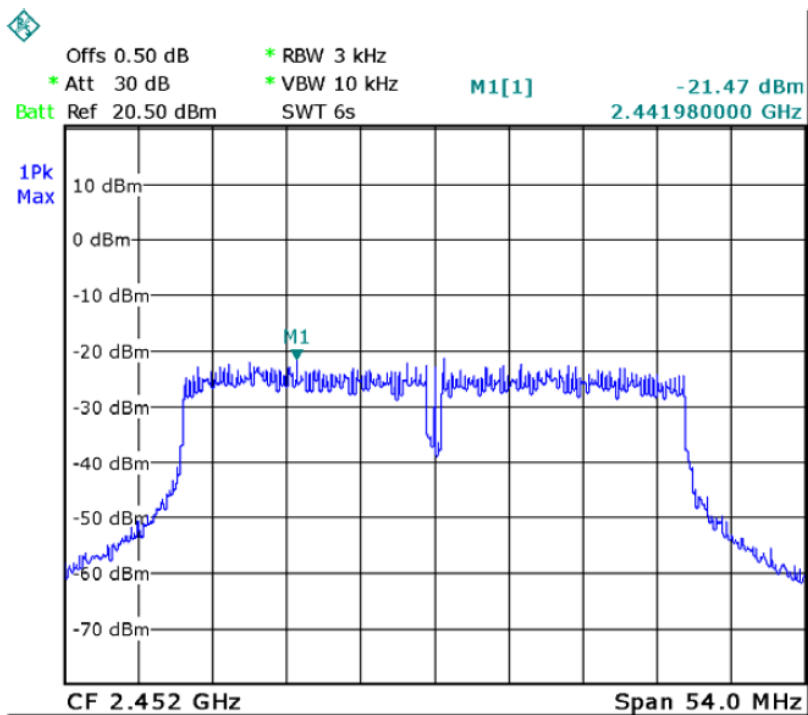
### 802.11n-HT40 Low Channel



### 802.11n-HT40 Middle Channel



### 802.11n-HT40 High Channel



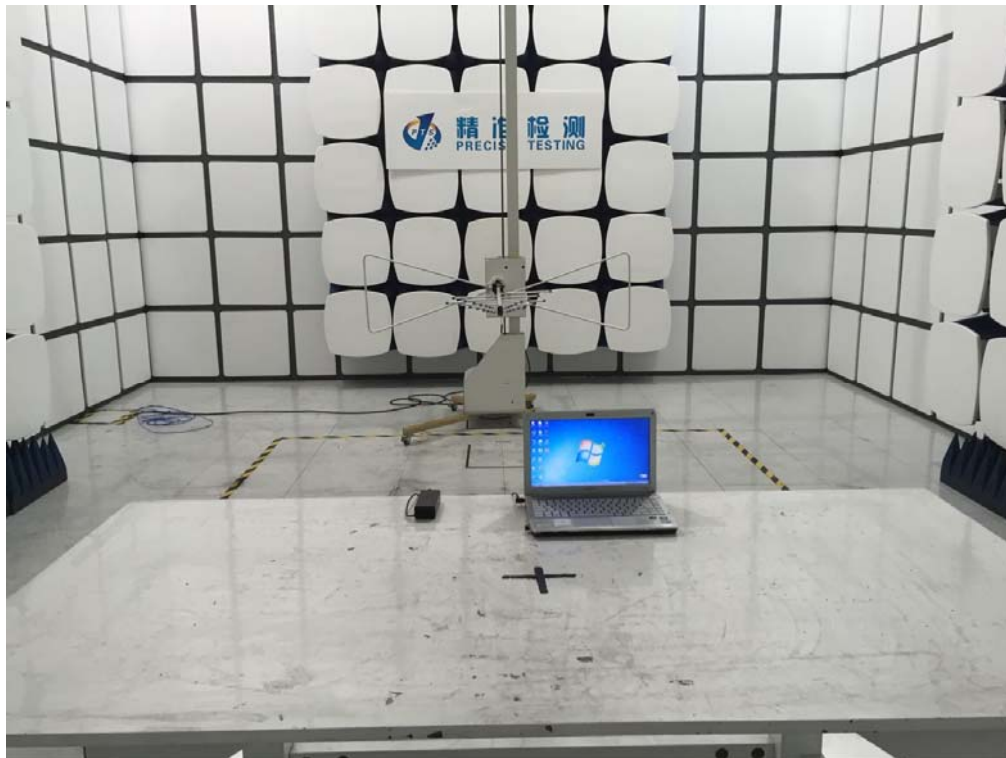


## 11 Antenna Requirement

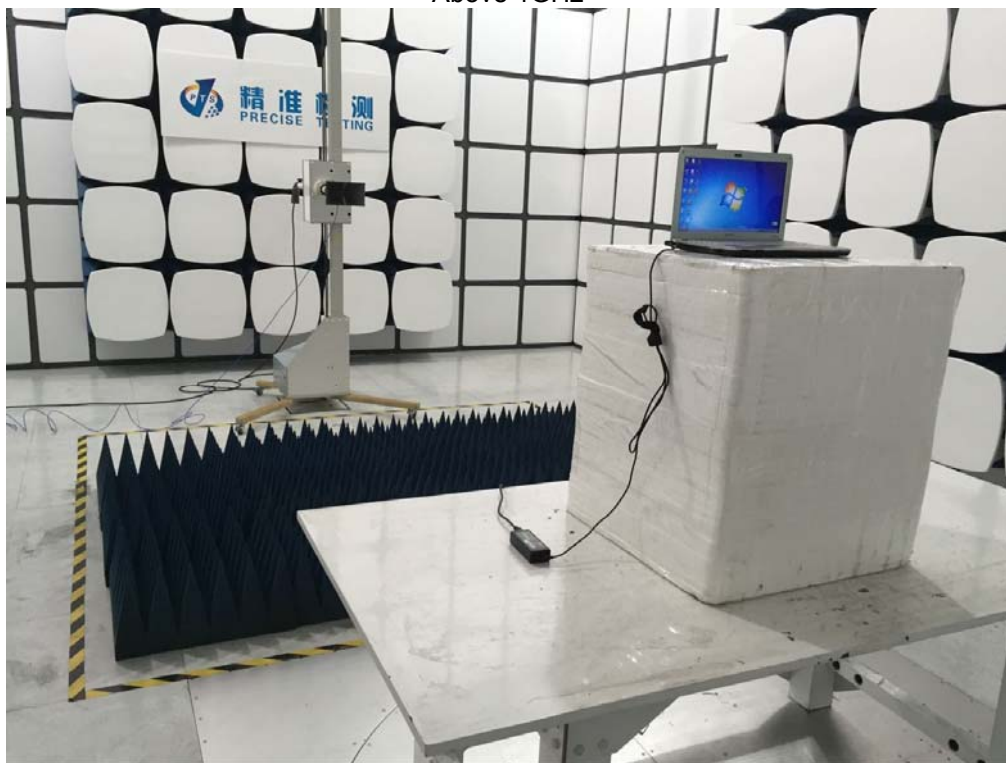
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has a PCB printed antenna , this antenna is fixed and cannot be removed and changed. it meet the requirement of this section.

## 12 Test Setup

Spurious Emissions  
From 30MHz-1000MHz



Above 1GHz



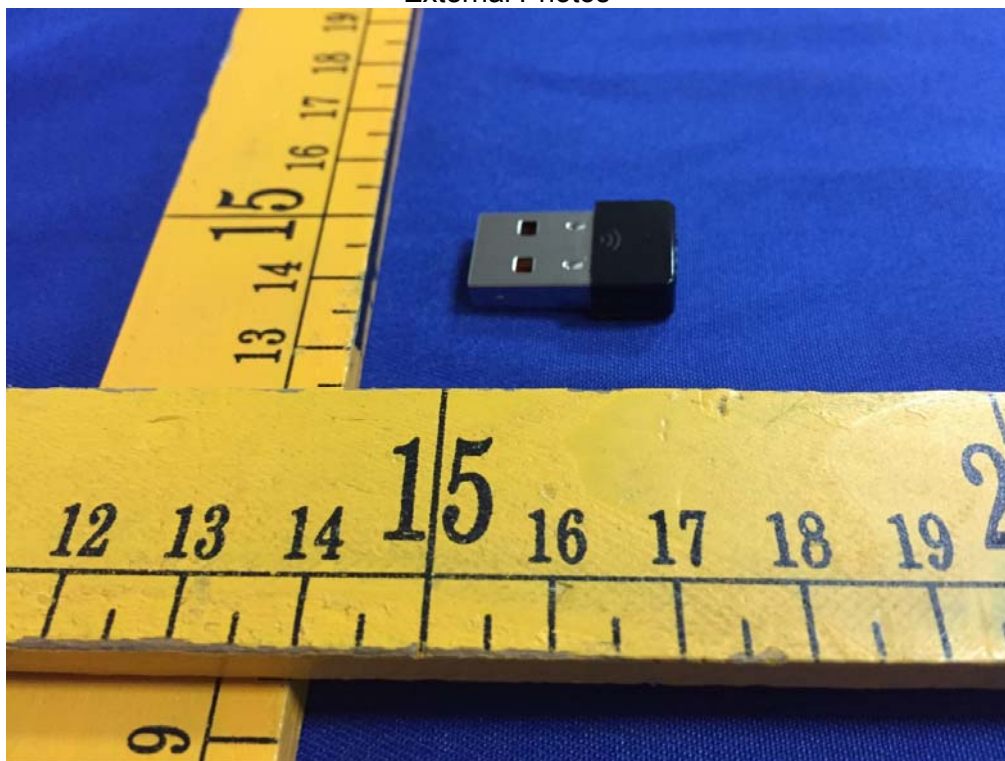
### Conducted Emissions

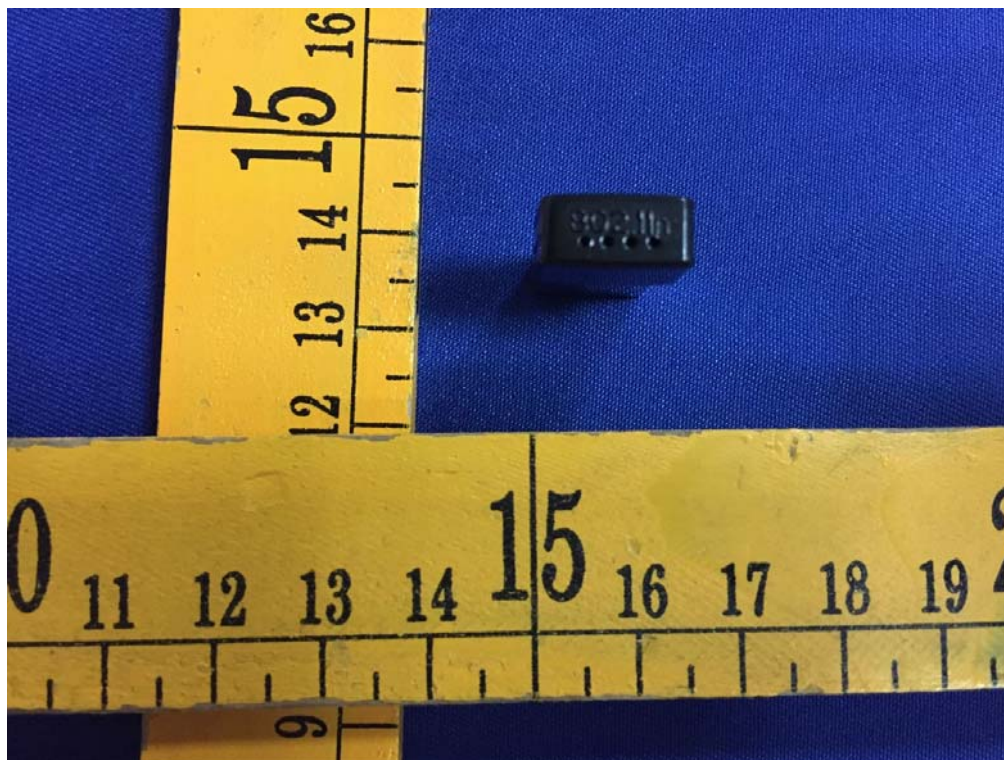




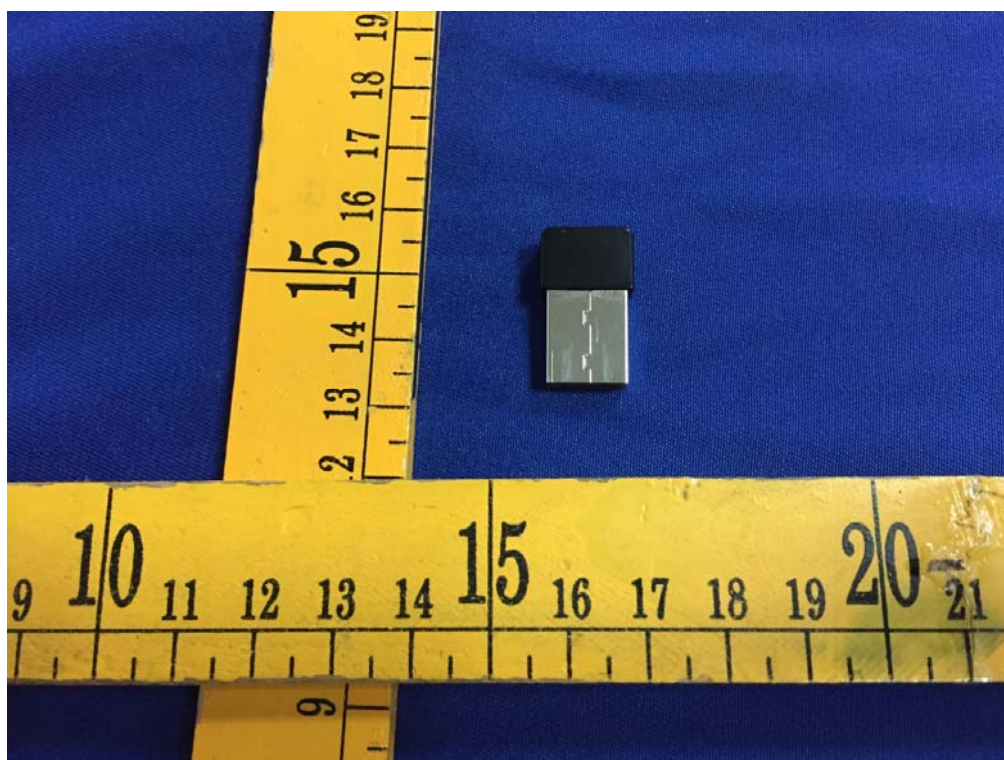
## 13 EUT Photos

External Photos

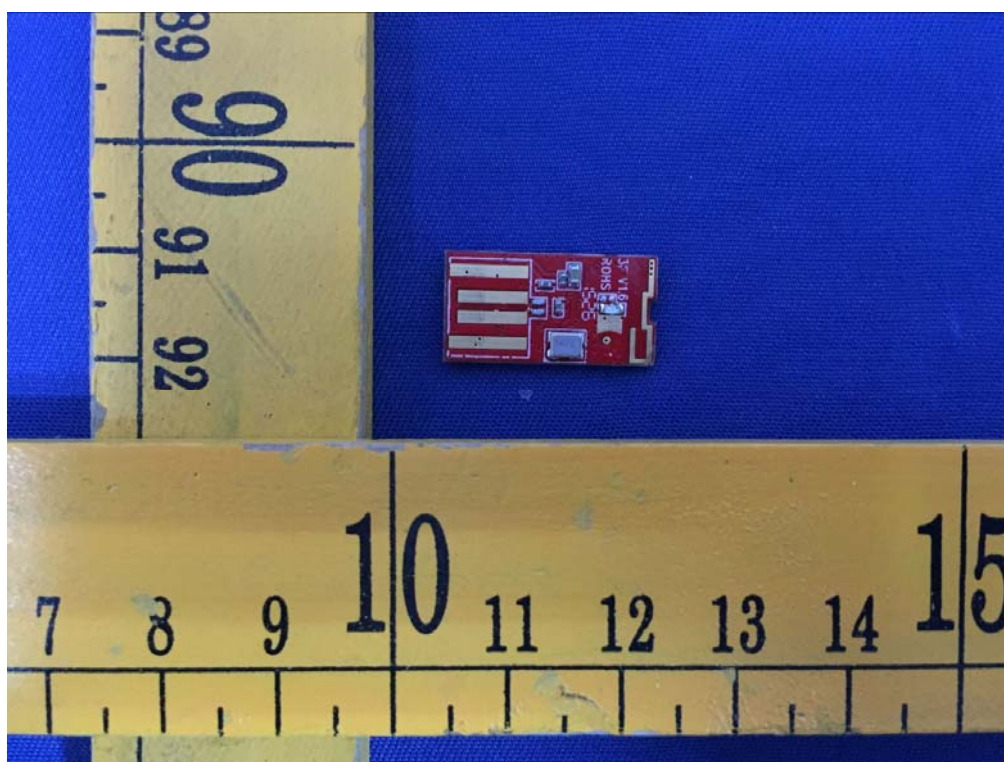
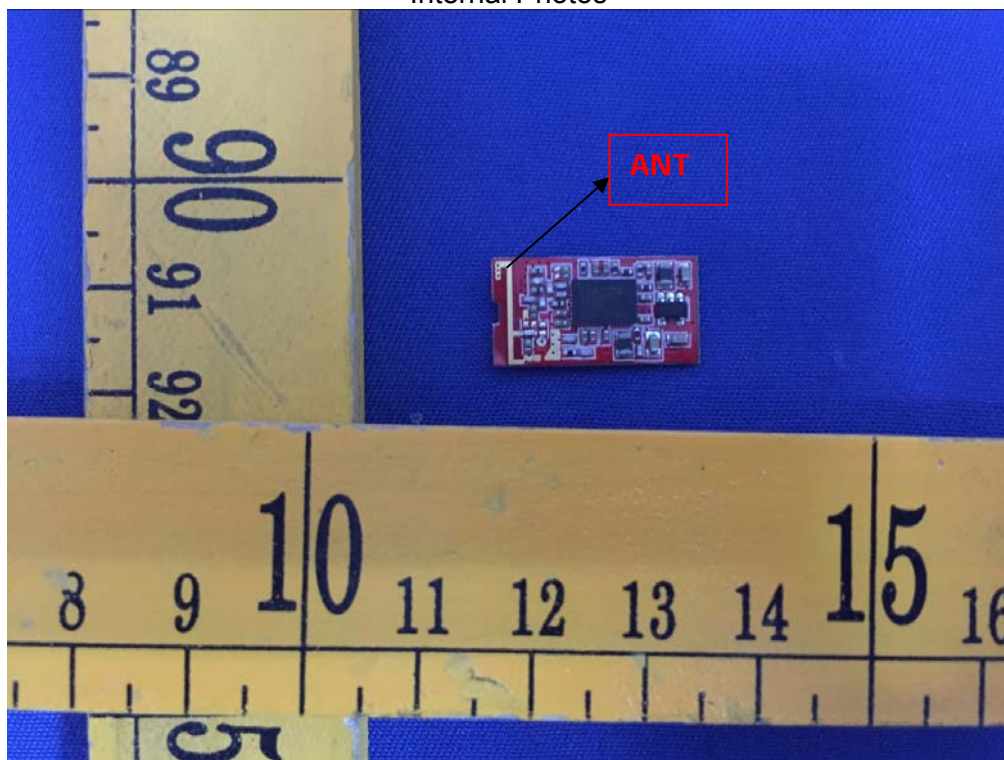








Internal Photos



\*\*\*\*\*THE END REPORT\*\*\*\*\*