# FCC RF Test Report

| | | |
|---|---|---|
| APPLICANT | : | Motorola Mobility LLC |
| EQUIPMENT | : | Mobile Cellular Phone |
| BRAND NAME | : | Motorola |
| MODEL NAME | : | XT2127-2 |
| FCC ID | : | IHDT56ZM2 |
| STANDARD | : | FCC Part 15 Subpart E §15.407 |
| CLASSIFICATION | : | (NII) Unlicensed National Information Infrastructure |

**The product was received on Oct. 20, 2020 and testing was completed on Nov. 29, 2020. We, Sporton International (ShenZhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (ShenZhen) Inc., the test report shall not be reproduced except in full.**

**Reviewed by: Derreck Chen / Supervisor**

**Approved by: Eric Shih / Manager**

ACCREDITED Cert #5145.01

***Sporton International (ShenZhen) Inc.***
***1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055***
***People's Republic of China***

# TABLE OF CONTENTS

# REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FR0O2013F | Rev. 01 | Initial issue of report | Dec. 08, 2020 |
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# SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|---|---|---|---|---|---|
| 3.1 | 15.403(i) | 6dB, 26dB and 99% Occupied Bandwidth | > 500kHz | Pass | - |
| 3.2 | 15.407(a) | Maximum Conducted Output Power | ≤ 30 dBm | Pass | - |
| 3.3 | 15.407(a) | Power Spectral Density | ≤ 30 dBm/500kHz | Pass | - |
| 3.4 | 15.407(b) | Unwanted Emissions | 15.407(b)(4)(i) &15.209(a) | Pass | Under limit 7.25 dB at 41.640 MHz |
| 3.5 | 15.207 | AC Conducted Emission | 15.207(a) | Pass | Under limit 8.83 dB at 0.66 MHz |
| 3.6 | 15.407(c) | Automatically Discontinue Transmission | Discontinue Transmission | Pass | - |
| 3.7 | 15.203 & 15.407(a) | Antenna Requirement | N/A | Pass | - |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Applicant

**Motorola Mobility LLC**
222 W,Merchandise Mart Plaza,Chicago,IL60654 USA

## 1.2 Manufacturer

**Motorola Mobility LLC**
222 W,Merchandise Mart Plaza,Chicago,IL60654 USA

## 1.3 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Mobile Cellular Phone |
| **Brand Name** | Motorola |
| **Model Name** | XT2127-2 |
| **FCC ID** | IHDT56ZM2 |
| **EUT supports Radios application** | GSM/WCDMA/LTE/NFC<br>WLAN 2.4GHz 802.11b/g/n HT20<br>WLAN 5GHz 802.11a/n HT20/HT40<br>WLAN 5GHz 802.11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE<br>FM Receiver and GNSS |
| **IMEI Code** | Conducted: 351546360020959/351546360020967<br>Conduction: 351546360021650/351546360021668<br>Radiation: 351546360021890/351546360021908 |
| **HW Version** | DVT2 |
| **SW Version** | RRB31.30 |
| **EUT Stage** | Production Unit |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification | |
|---|---|
| **Tx/Rx Channel Frequency Range** | 5745 MHz ~ 5825 MHz |
| **Maximum Output Power** | **<5745 MHz ~ 5825 MHz>**<br>802.11a : 12.63 dBm / 0.0183 W<br>802.11n HT20 : 12.46 dBm / 0.0176 W<br>802.11n HT40 : 12.18 dBm / 0.0165 W<br>802.11ac VHT20: 12.43 dBm / 0.0175 W<br>802.11ac VHT40: 12.16 dBm / 0.0164 W<br>802.11ac VHT80: 12.25 dBm / 0.0168 W |
| **99% Occupied Bandwidth** | 802.11a : 16.78 MHz<br>802.11n HT20 : 18.03 MHz<br>802.11n HT40 : 36.86 MHz<br>802.11ac VHT80 : 76.36 MHz |
| **Type of Modulation** | 802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) |
| **Antenna Type / Gain** | PIFA Antenna with gain -4.50 dBi |

**Remark:** For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11n HT20/ HT40 by referring to the higher output power.

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

| | | | |
|---|---|---|---|
| **Test Firm** | Sporton International (Shenzhen) Inc. | | |
| **Test Site Location** | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China<br>TEL: +86-755-86379589<br>FAX: +86-755-86379595 | | |
| **Test Site No.** | **Sporton Site No.** | **FCC Designation No.** | **FCC Test Firm Registration No.** |
| | CO01-SZ<br>TH01-SZ | CN1256 | 421272 |

| | | | |
|---|---|---|---|
| **Test Firm** | Sporton International (Shenzhen) Inc. | | |
| **Test Site Location** | 101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103<br>TEL: +86-755-33202398 | | |
| **Test Site No.** | **Sporton Site No.** | **FCC Designation No.** | **FCC Test Firm Registration No.** |
| | 03CH04-SZ | CN1256 | 421272 |

## 1.7 Test Software

| Item | Site | Manufacture | Name | Version |
|---|---|---|---|---|
| 1. | 03CH04-SZ | AUDIX | E3 | 6.2009-8-24 |
| 2. | CO01-SZ | AUDIX | E3 | 6.120613b |

## 1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ANSI C63.10-2013
- FCC RSS-247 Issue 2
- FCC RSS-Gen Issue 5

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 1.9 Specification of Accessory

| Specification of Accessory | | | | |
|---|---|---|---|---|
| **AC Adapter 1(US)** | **Brand Name** | Motorola (Chenyang) | **Model Name** | MC-101 |
| **AC Adapter 1(EU)** | **Brand Name** | Motorola (Chenyang) | **Model Name** | MC-102 |
| **AC Adapter 1(UK)** | **Brand Name** | Motorola (Chenyang) | **Model Name** | MC-103 |
| **AC Adapter 1(AU)** | **Brand Name** | Motorola (Chenyang) | **Model Name** | MC-105 |
| **AC Adapter 2(US)** | **Brand Name** | Motorola (Salcomp) | **Model Name** | MC-101 |
| **AC Adapter 2(EU)** | **Brand Name** | Motorola (Salcomp) | **Model Name** | MC-102 |
| **AC Adapter 2(UK)** | **Brand Name** | Motorola (Salcomp) | **Model Name** | MC-103 |
| **AC Adapter 2(AU)** | **Brand Name** | Motorola (Salcomp) | **Model Name** | MC-105 |
| **AC Adapter 3(US)** | **Brand Name** | Motorola (Aohai) | **Model Name** | MC-101 |
| **AC Adapter 3(EU)** | **Brand Name** | Motorola (Aohai) | **Model Name** | MC-102 |
| **Battery** | **Brand Name** | Motorola (Sunwoda) | **Model Name** | JK50 |
| **Earphone 1** | **Brand Name** | Motorola (New Leader) | **Model Name** | EM301K-11SF |
| **Earphone 2** | **Brand Name** | Motorola (Juwei) | **Model Name** | JWEP1182-T03H |
| **Earphone 3** | **Brand Name** | Motorola (New Leader) | **Model Name** | NLD-EM313A-11SF |
| **Earphone 4** | **Brand Name** | Motorola (LIANYUN) | **Model Name** | SH38C81577 |
| **Earphone 5** | **Brand Name** | Motorola (Lianchuang) | **Model Name** | SH38C81576 |
| **USB Cable 1** | **Brand Name** | Motorola (Chuangyitong) | **Model Name** | 88806-025 |
| **USB Cable 2** | **Brand Name** | Motorola (Yihuaxing) | **Model Name** | T365-011B |

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

## 2.1 Carrier Frequency and Channel

| Frequency Band | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|---|---|---|---|---|
| 5725-5850 MHz Band 4 (U-NII-3) | 149 | 5745 | 157 | 5785 |
| | 151* | 5755 | 159* | 5795 |
| | 153 | 5765 | 161 | 5805 |
| | 155# | 5775 | 165 | 5825 |

**Note:**

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

## 2.2 Test Mode

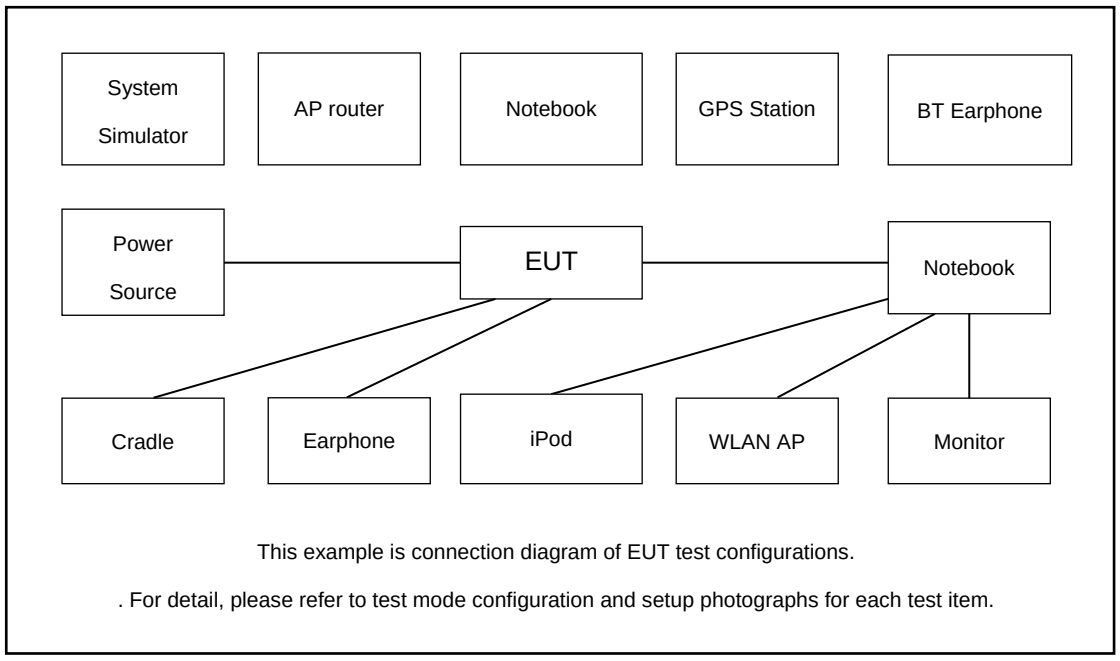
**Final test modes are considering the modulation and worse data rates as below table.**

| Modulation | Data Rate |
|---|---|
| 802.11a | 6 Mbps |
| 802.11n HT20 | MCS0 |
| 802.11n HT40 | MCS0 |
| 802.11ac VHT80 | MCS0 |

| | |
|---|---|
| **AC Conducted Emission** | Mode 1 : GSM 850 Idle + Bluetooth Link + WLAN Link(5G) + USB Cable 1(Charging from Adapter 3) + Earphone 4 + Battery |
| **Remark:** | For Radiated Test Cases, The tests were performance with Adapter 3, Battery, Earphone 4 and USB Cable1 |

| Ch. # | | Band IV : 5725-5850 MHz | | | |
|---|---|---|---|---|---|
| | | 802.11a | 802.11n HT20 | 802.11n HT40 | 802.11ac VHT80 |
| L | Low | 149 | 149 | 151 | - |
| M | Middle | 157 | 157 | - | 155 |
| H | High | 165 | 165 | 159 | - |

## 2.3 Connection Diagram of Test System




This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

## 2.4 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | Base Station | Anritsu | MT8820C | N/A | N/A | Unshielded,1.8m |
| 2. | WLAN AP | D-link | DIR-820L | KA2IR820LA1 | N/A | Unshielded,1.8m |
| 3. | SD Card | N/A | MicroSD HC | FCC DoC | N/A | N/A |

## 2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 2.5 dB and 20dB attenuator.

*Offset(dB) = RF cable loss(dB) + attenuator factor(dB).*

= 2.5 + 20 = 22.5 (dB)

# 3 Test Result

## 3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

### 3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

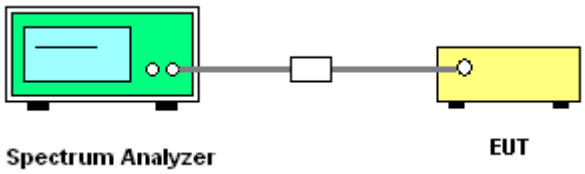
### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

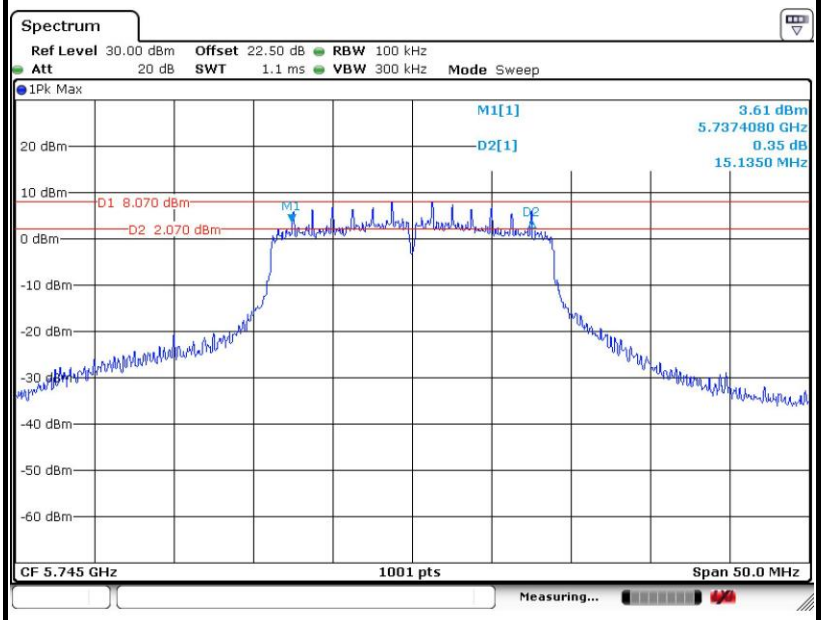
### 3.1.4 Test Setup



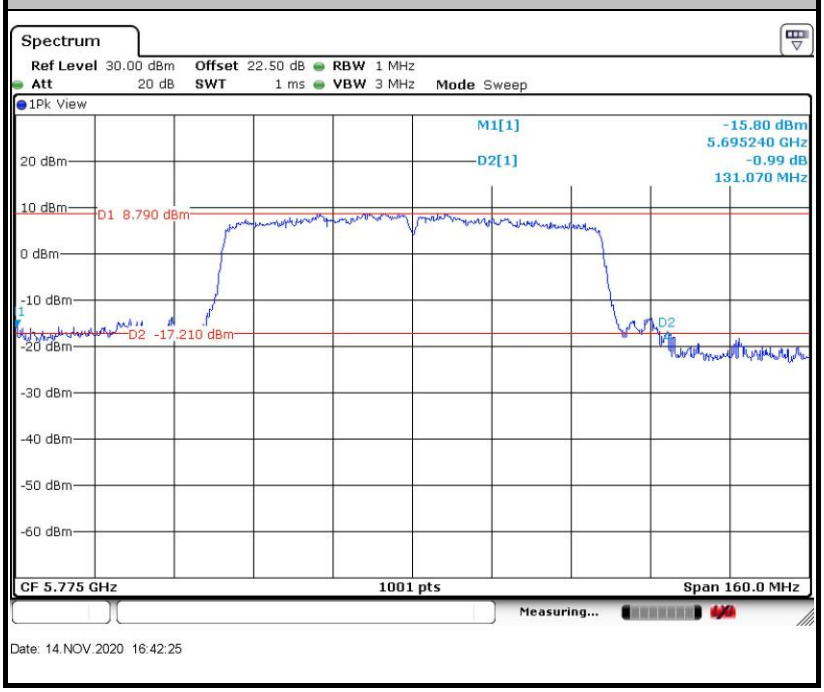
### 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

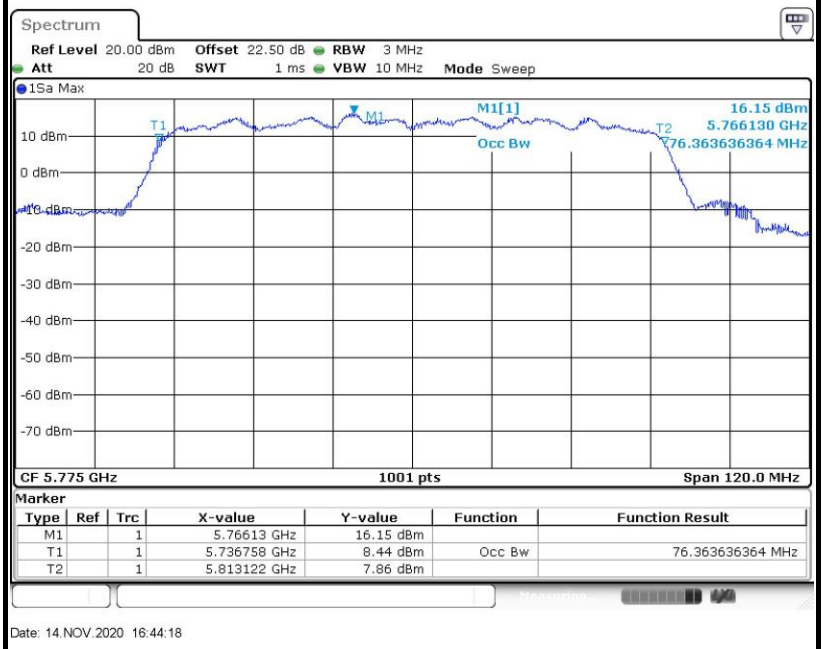
**Minimum 6dB Bandwidth**




**Maximum 26dB Bandwidth**



**Maximum 99% Occupied Bandwidth**




**Note:** The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

## 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

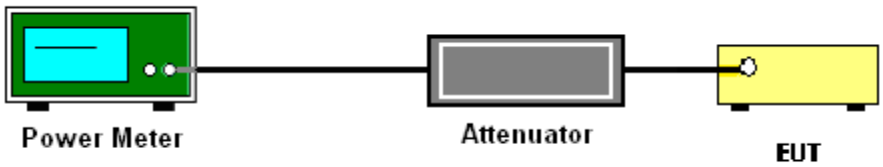
### 3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

### 3.2.4 Test Setup




### 3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

## 3.3 Power Spectral Density Measurement

### 3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

**# Method SA-2 #**

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

**<TXBF Modes>**

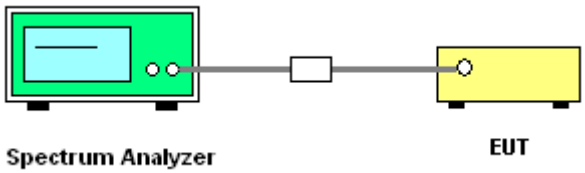
**# Method SA-3 #**

(power averaging (rms) detection with max hold):

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

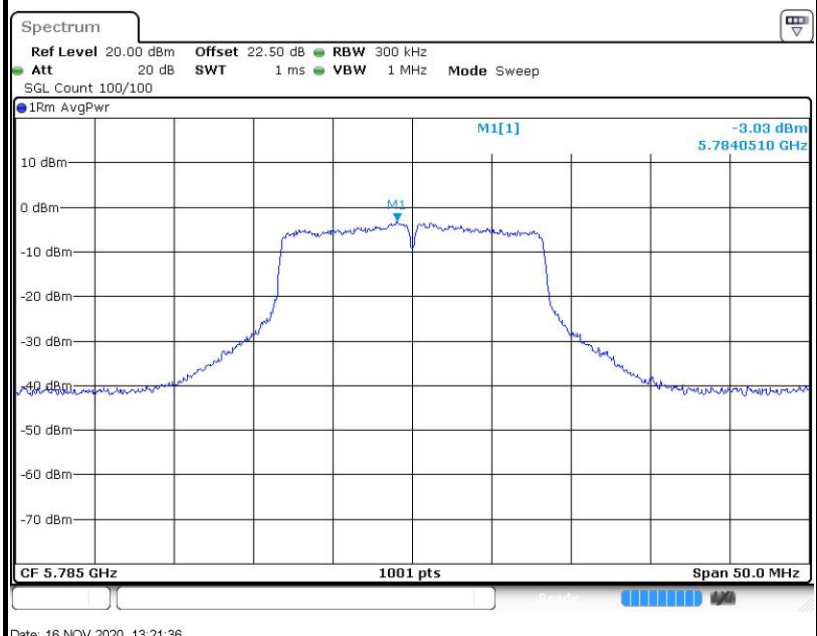
### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

**Worst Case Power Density (dBm/MHz)**




**Note:** Average Power Density (dB) = Measured value+ Duty Factor

## 3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

### 3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

| EIRP (dBm) | Field Strength at 3m (dBμV/m) |
|---|---|
| - 27 | 68.3 |

**Note:** The following formula is used to convert the EIRP to field strength.

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

$E_{Meas}$ is the field strength of the emission at the measurement distance, in dBμV/m

$d_{Meas}$ is the measurement distance, in m

### 3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

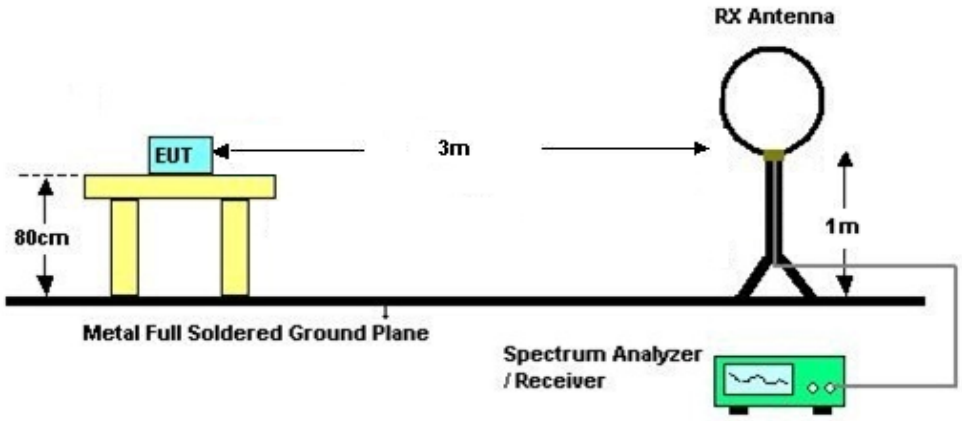
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

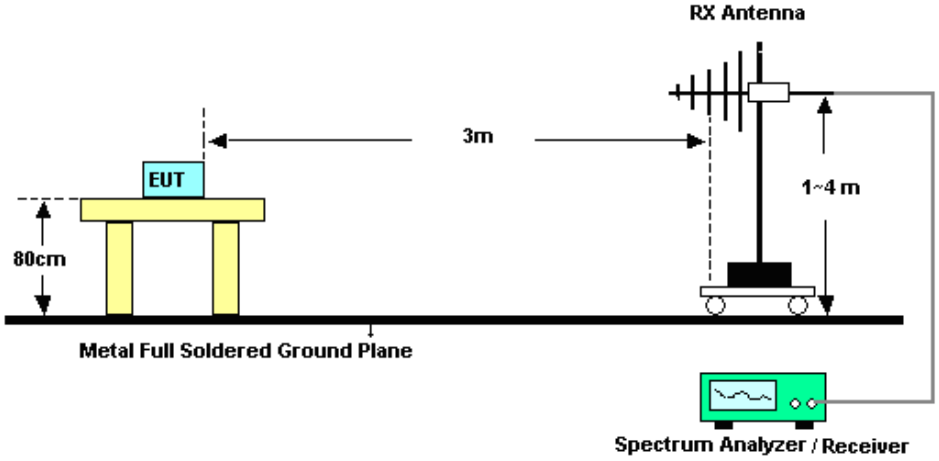
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.4.4 Test Setup

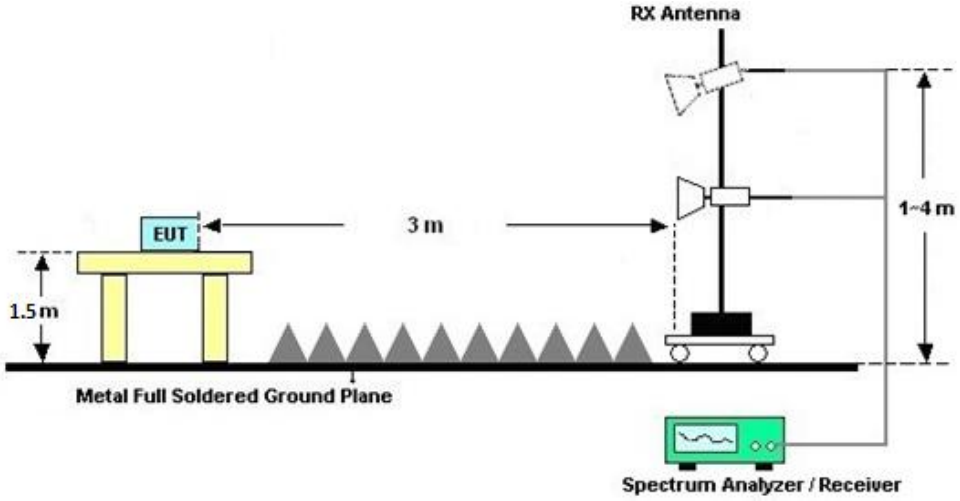
**For radiated emissions below 30MHz**




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



**For radiated emissions above 1GHz**




### 3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C.

### 3.4.7 Duty Cycle

Please refer to Appendix D.

### 3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C.

# 3.5 AC Conducted Emission Measurement

## 3.5.1 Limit of AC 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 of emission (MHz) | Conducted limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

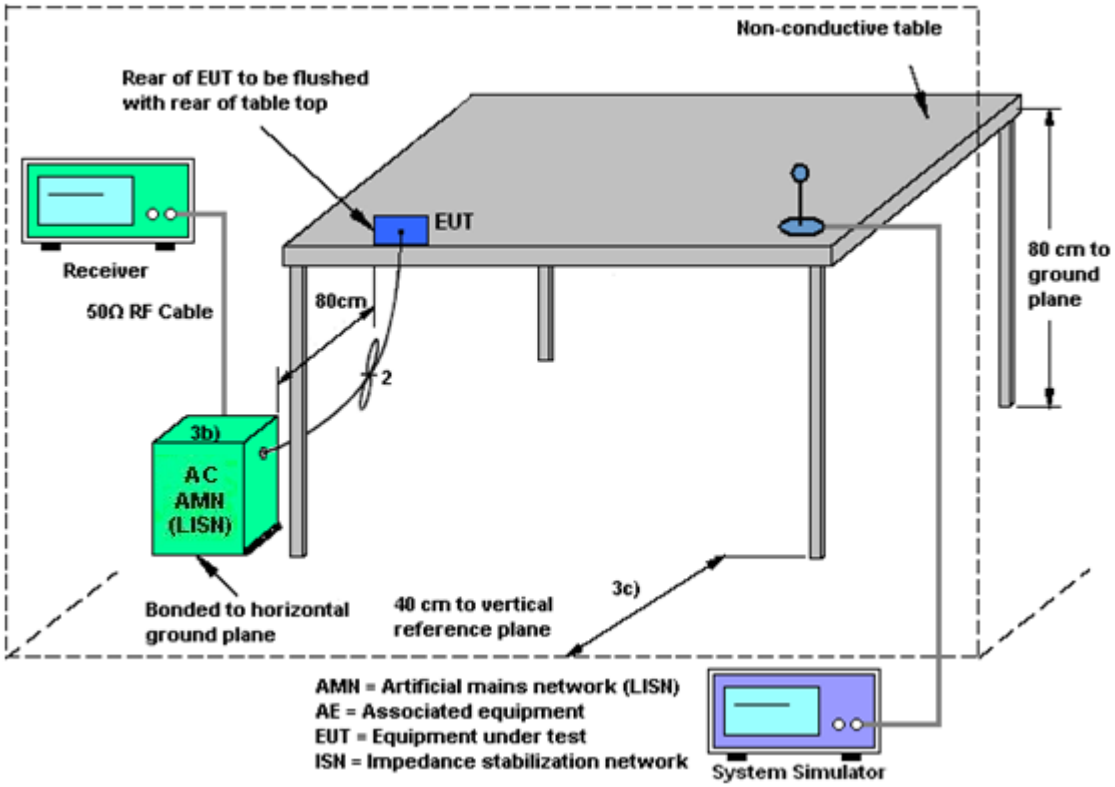
## 3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

## 3.5.3 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 microhenry 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 with Maximum Hold Mode.

### 3.5.4 Test Setup




### 3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

# 3.6 Automatically Discontinue Transmission

## 3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

## 3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

## 3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

# 3.7 Antenna Requirements

## 3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

## 3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSV40 | 101078 | 10Hz~40GHz | Apr. 17, 2020 | Nov. 14, 2020~ Nov. 16, 2020 | Apr. 16, 2021 | Conducted (TH01-SZ) |
| Pulse Power Senor | Anritsu | MA2411B | 1207253 | 30MHz~40GHz | Dec. 26, 2019 | Nov. 14, 2020~ Nov. 16, 2020 | Dec. 25, 2020 | Conducted (TH01-SZ) |
| Power Meter | Anritsu | ML2495A | 1218010 | 50MHz Bandwidth | Dec. 26, 2019 | Nov. 14, 2020~ Nov. 16, 2020 | Dec. 25, 2020 | Conducted (TH01-SZ) |
| EMI Test Receiver | R&S | ESR7 | 101404 | 9kHz~7GHz | Oct. 16, 2020 | Nov. 29, 2020 | Oct. 15, 2021 | Radiation (03CH04-SZ) |
| EXA Spectrum Analyzer | KEYSIGHT | N9010A | MY55150213 | 10Hz~44GHz | Jul. 21, 2020 | Nov. 29, 2020 | Jul. 20, 2021 | Radiation (03CH04-SZ) |
| Loop Antenna | R&S | HFH2-Z2 | 100354 | 9kHz~30MHz | Jun. 22, 2020 | Nov. 29, 2020 | Jun. 21, 2022 | Radiation (03CH04-SZ) |
| Bilog Antenna | TeseQ | CBL6111D | 41909 | 30MHz~1GHz | Nov. 07, 2020 | Nov. 29, 2020 | Nov. 06, 2021 | Radiation (03CH04-SZ) |
| Double Ridge Horn Antenna | SCHWARZBECK | BBHA9120D | 9120D-1474 | 1GHz~18GHz | May 23, 2020 | Nov. 29, 2020 | Mar. 22, 2021 | Radiation (03CH04-SZ) |
| Horn Antenna | SCHWARZBECK | BBHA9170 | 9170#679 | 15GHz~40GHz | Jul. 26, 2020 | Nov. 29, 2020 | Jul. 25, 2021 | Radiation (03CH04-SZ) |
| Amplifier | Burgeon | BPA-530 | 102211 | 0.01Hz ~3000MHz | Oct. 16, 2020 | Nov. 29, 2020 | Oct. 15, 2021 | Radiation (03CH04-SZ) |
| HF Amplifier | MITEQ | AMF-7D-00101800-30-10P-R | 1943528 | 1GHz~18GHz | Oct. 17, 2020 | Nov. 29, 2020 | Oct. 16, 2021 | Radiation (03CH04-SZ) |
| HF Amplifier | MITEQ | TTA1840-35-HG | 1871923 | 18GHz~40GHz | Jul. 21, 2020 | Nov. 29, 2020 | Jul. 20, 2021 | Radiation (03CH04-SZ) |
| Amplifier | Agilent Technologies | 83017A | MY53270156 | 500MHz~26.5GHz | Oct. 17, 2020 | Nov. 29, 2020 | Oct. 16, 2021 | Radiation (03CH04-SZ) |
| AC Power Source | Chroma | 61601 | N/A | N/A | NCR | Nov. 29, 2020 | NCR | Radiation (03CH04-SZ) |
| Turn Table | EM | EM1000 | N/A | 0~360 degree | NCR | Nov. 29, 2020 | NCR | Radiation (03CH04-SZ) |
| Antenna Mast | EM | EM1000 | N/A | 1 m~4 m | NCR | Nov. 29, 2020 | NCR | Radiation (03CH04-SZ) |
| EMI Receiver | R&S | ESR7 | 101630 | 9kHz~7GHz; | Dec. 27, 2019 | Nov. 11, 2020 | Dec. 26, 2021 | Conduction (CO01-SZ) |
| AC LISN | EMCO | 3816/2SH | 00103912 | 9kHz~30MHz | Dec. 27, 2020 | Nov. 11, 2020 | Dec 26, 2021 | Conduction (CO01-SZ) |
| AC LISN (for auxiliary equipment) | EMCO | 3816/2SH | 00103892 | 9kHz~30MHz | Oct. 15, 2020 | Nov. 11, 2020 | Oct. 14, 2021 | Conduction (CO01-SZ) |
| AC Power Source | Chroma | 61602 | 616020000891 | 100Vac~250Vac | Jul. 21, 2020 | Nov. 11, 2020 | Jul. 20, 2021 | Conduction (CO01-SZ) |

NCR: No Calibration Required

# 5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

**Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **2.7dB** |

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.0dB** |

**Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **4.8dB** |

**Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **5.1dB** |

# Appendix A. Conducted Test Results

# Appendix A. Test Result of Conducted Test Items

| | | | | |
|---|---|---|---|---|
| Test Engineer: | Chen Hong | Temperature: | 21~25 | °C |
| Test Date: | 2020/11/14~2020/11/16 | Relative Humidity: | 51~54 | % |

Report Number : FR0O2013F

***TEST RESULTS DATA***
***6dB and 26dB EBW and 99% OBW***

| Band IV | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | 26 dB Bandwidth (MHz) | 6 dB Bandwidth (MHz) | 6dB Bandwidth min. Limit (MHz) | Pass/Fail |
| 11a | 6M bps | 1 | 149 | 5745 | 16.78 | 24.78 | 15.29 | 0.5 | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 16.78 | 24.58 | 15.29 | 0.5 | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 16.78 | 23.98 | 15.29 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 17.98 | 24.93 | 15.14 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 18.03 | 25.33 | 15.44 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 18.03 | 25.57 | 15.93 | 0.5 | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 36.86 | 41.99 | 35.36 | 0.5 | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 36.86 | 47.47 | 35.16 | 0.5 | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 76.36 | 131.07 | 75.04 | 0.5 | Pass |

Report Number : FR0O2013F

## ***TEST RESULTS DATA***
## ***Average Power Table***

| Band IV | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | Average Conducted Power (dBm) | FCC Conducted Power Limit (dBm) | DG (dBi) | | Pass/Fail |
| 11a | 6M bps | 1 | 149 | 5745 | 0.08 | 12.23 | 30.00 | -4.50 | | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 0.08 | 12.40 | 30.00 | -4.50 | | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 0.08 | 12.63 | 30.00 | -4.50 | | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 0.08 | 12.07 | 30.00 | -4.50 | | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 0.08 | 12.24 | 30.00 | -4.50 | | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 0.08 | 12.46 | 30.00 | -4.50 | | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 0.16 | 12.12 | 30.00 | -4.50 | | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 0.16 | 12.18 | 30.00 | -4.50 | | Pass |
| VHT20 | MCS 0 | 1 | 149 | 5745 | 0.08 | 12.00 | 30.00 | -4.50 | | Pass |
| VHT20 | MCS 0 | 1 | 157 | 5785 | 0.08 | 12.22 | 30.00 | -4.50 | | Pass |
| VHT20 | MCS 0 | 1 | 165 | 5825 | 0.08 | 12.43 | 30.00 | -4.50 | | Pass |
| VHT40 | MCS 0 | 1 | 151 | 5755 | 0.16 | 12.09 | 30.00 | -4.50 | | Pass |
| VHT40 | MCS 0 | 1 | 159 | 5795 | 0.16 | 12.16 | 30.00 | -4.50 | | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 0.33 | 12.25 | 30.00 | -4.50 | | Pass |

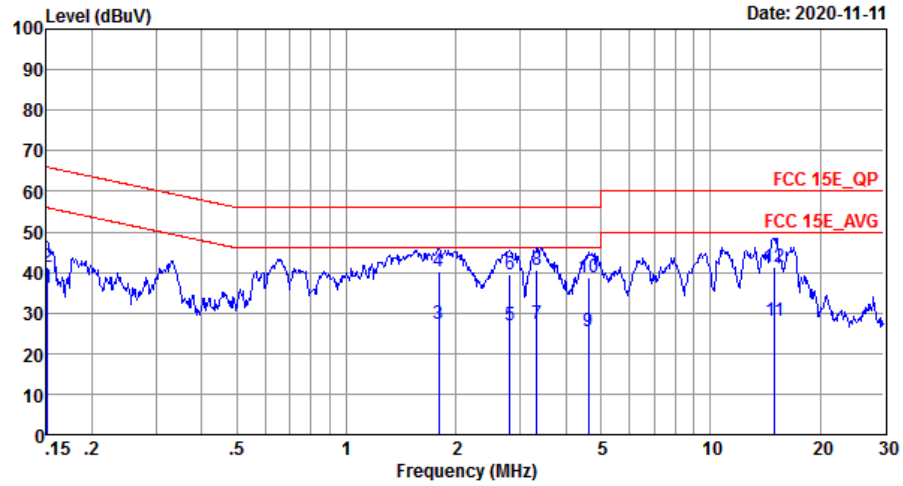
Report Number : FR0O2013F

## ***TEST RESULTS DATA***
## ***Power Spectral Density***

| Band IV | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | 10log (500kHz /RBW) Factor (dB) | Average Power Density (dBm/500kHz) | Average PSD Limit (dBm/500kHz) | DG (dBi) | Pass/Fail |
| 11a | 6M bps | 1 | 149 | 5745 | 0.08 | 2.22 | -1.41 | 30.00 | -4.50 | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 0.08 | 2.22 | -0.74 | 30.00 | -4.50 | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 0.08 | 2.22 | -0.96 | 30.00 | -4.50 | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 0.08 | 2.22 | -1.54 | 30.00 | -4.50 | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 0.08 | 2.22 | -1.55 | 30.00 | -4.50 | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 0.08 | 2.22 | -1.16 | 30.00 | -4.50 | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 0.16 | 2.22 | -4.80 | 30.00 | -4.50 | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 0.16 | 2.22 | -4.90 | 30.00 | -4.50 | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 0.33 | 2.22 | -7.92 | 30.00 | -4.50 | Pass |

# Appendix B. AC Conducted Emission Test Results

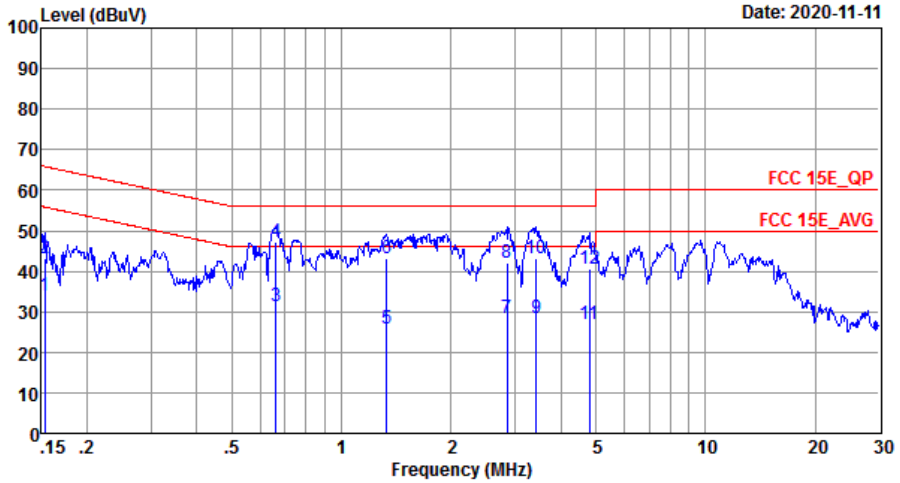
| | | | |
|---|---|---|---|
| **Test Engineer :** | Xie YuQiang | **Temperature :** | 22~25℃ |
| | | **Relative Humidity :** | 50~55% |
| **Test Voltage :** | 120Vac / 60Hz | **Phase :** | Line |
| **Remark :** | All emissions not reported here are more than 10 dB below the prescribed limit. | | |




Site : CO01-SZ
Condition: FCC 15E_QP LISN_20200719_L LINE

| | | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | | 0.15 | 36.04 | -19.92 | 55.96 | 26.00 | 0.03 | 10.01 | Average |
| 2 | | 0.15 | 41.34 | -24.62 | 65.96 | 31.30 | 0.03 | 10.01 | QP |
| 3 | | 1.79 | 27.35 | -18.65 | 46.00 | 17.20 | 0.10 | 10.05 | Average |
| 4 | | 1.79 | 40.15 | -15.85 | 56.00 | 30.00 | 0.10 | 10.05 | QP |
| 5 | | 2.81 | 26.84 | -19.16 | 46.00 | 16.61 | 0.15 | 10.08 | Average |
| 6 | | 2.81 | 39.34 | -16.66 | 56.00 | 29.11 | 0.15 | 10.08 | QP |
| 7 | | 3.33 | 27.17 | -18.83 | 46.00 | 16.90 | 0.17 | 10.10 | Average |
| 8 | * | 3.33 | 40.77 | -15.23 | 56.00 | 30.50 | 0.17 | 10.10 | QP |
| 9 | | 4.62 | 25.43 | -20.57 | 46.00 | 15.09 | 0.19 | 10.15 | Average |
| 10 | | 4.62 | 38.63 | -17.37 | 56.00 | 28.29 | 0.19 | 10.15 | QP |
| 11 | | 14.99 | 28.20 | -21.80 | 50.00 | 17.40 | 0.51 | 10.29 | Average |
| 12 | | 14.99 | 41.30 | -18.70 | 60.00 | 30.50 | 0.51 | 10.29 | QP |

| Test Engineer : | Xie YuQiang | Temperature : | 22~25℃ |
|---|---|---|---|
| | | Relative Humidity : | 50~55% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |
| Remark : | All emissions not reported here are more than 10 dB below the prescribed limit. | | |




Site : CO01-SZ
Condition: FCC 15E_QP LISN_20170907_N NEUTRAL

| | | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | | 0.15 | 34.01 | -21.81 | 55.82 | 24.00 | 0.00 | 10.01 | Average |
| 2 | | 0.15 | 43.21 | -22.61 | 65.82 | 33.20 | 0.00 | 10.01 | QP |
| 3 | | 0.66 | 31.37 | -14.63 | 46.00 | 21.30 | 0.00 | 10.07 | Average |
| 4 | * | 0.66 | 47.17 | -8.83 | 56.00 | 37.10 | 0.00 | 10.07 | QP |
| 5 | | 1.33 | 25.65 | -20.35 | 46.00 | 15.60 | 0.00 | 10.05 | Average |
| 6 | | 1.33 | 43.05 | -12.95 | 56.00 | 33.00 | 0.00 | 10.05 | QP |
| 7 | | 2.85 | 28.39 | -17.61 | 46.00 | 18.30 | 0.00 | 10.09 | Average |
| 8 | | 2.85 | 42.09 | -13.91 | 56.00 | 32.00 | 0.00 | 10.09 | QP |
| 9 | | 3.44 | 28.31 | -17.69 | 46.00 | 18.20 | 0.00 | 10.11 | Average |
| 10 | | 3.44 | 43.31 | -12.69 | 56.00 | 33.20 | 0.00 | 10.11 | QP |
| 11 | | 4.80 | 26.75 | -19.25 | 46.00 | 16.60 | 0.00 | 10.15 | Average |
| 12 | | 4.80 | 40.45 | -15.55 | 56.00 | 30.30 | 0.00 | 10.15 | QP |

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

# Appendix C. Radiated Spurious Emission

**Band 4 - 5725~5850MHz**

**WIFI 802.11a (Band Edge @ 3m)**

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1 | | ( MHz ) | ( dBµV/m ) | ( dB ) | ( dBµV/m ) | ( dBµV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11a CH 149 5745MHz | | 5645 | 47.76 | -20.54 | 68.3 | 39.32 | 32.2 | 9.84 | 33.6 | 355 | 199 | P | H |
| | | 5689.8 | 57.71 | -39.99 | 97.7 | 49.19 | 32.2 | 9.92 | 33.6 | 355 | 199 | P | H |
| | | 5715.8 | 50.03 | -59.6 | 109.63 | 41.42 | 32.2 | 10.01 | 33.6 | 355 | 199 | P | H |
| | | 5725 | 55.34 | -66.86 | 122.2 | 46.73 | 32.2 | 10.01 | 33.6 | 355 | 199 | P | H |
| | | 5745 | 101.65 | - | - | 92.96 | 32.2 | 10.09 | 33.6 | 355 | 199 | P | H |
| | | 5745 | 94.75 | - | - | 86.06 | 32.2 | 10.09 | 33.6 | 355 | 199 | A | H |
| | | 5630.4 | 48.11 | -20.19 | 68.3 | 39.67 | 32.2 | 9.84 | 33.6 | 396 | 288 | P | V |
| | | 5694.6 | 54.52 | -46.71 | 101.23 | 46 | 32.2 | 9.92 | 33.6 | 396 | 288 | P | V |
| | | 5720 | 50.67 | -60.13 | 110.8 | 42.06 | 32.2 | 10.01 | 33.6 | 396 | 288 | P | V |
| | | 5724.2 | 52.23 | -68.15 | 120.38 | 43.62 | 32.2 | 10.01 | 33.6 | 396 | 288 | P | V |
| | | 5745 | 99.15 | - | - | 90.46 | 32.2 | 10.09 | 33.6 | 396 | 288 | P | V |
| | | 5745 | 92.79 | - | - | 84.1 | 32.2 | 10.09 | 33.6 | 396 | 288 | A | V |

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a CH 157 5785MHz | | 5648.8 | 49.34 | -18.96 | 68.3 | 40.9 | 32.2 | 9.84 | 33.6 | 301 | 357 | P | H |
| | | 5680.2 | 48.55 | -42.08 | 90.63 | 40.03 | 32.2 | 9.92 | 33.6 | 301 | 357 | P | H |
| | | 5709.4 | 50.35 | -57.48 | 107.83 | 41.74 | 32.2 | 10.01 | 33.6 | 301 | 357 | P | H |
| | | 5720.8 | 48.9 | -63.72 | 112.62 | 40.29 | 32.2 | 10.01 | 33.6 | 301 | 357 | P | H |
| | | 5785 | 101.44 | - | - | 92.67 | 32.2 | 10.17 | 33.6 | 301 | 357 | P | H |
| | | 5785 | 94.83 | - | - | 86.06 | 32.2 | 10.17 | 33.6 | 301 | 357 | A | H |
| | | 5854 | 48.35 | -64.73 | 113.08 | 39.42 | 32.28 | 10.25 | 33.6 | 301 | 357 | P | H |
| | | 5859.8 | 52.18 | -57.27 | 109.45 | 43.16 | 32.29 | 10.33 | 33.6 | 301 | 357 | P | H |
| | | 5917.6 | 48 | -25.74 | 73.74 | 38.8 | 32.38 | 10.42 | 33.6 | 301 | 357 | P | H |
| | | 5939.4 | 49.7 | -18.6 | 68.3 | 40.39 | 32.41 | 10.5 | 33.6 | 301 | 357 | P | H |
| | | 5629.2 | 48.19 | -20.11 | 68.3 | 39.75 | 32.2 | 9.84 | 33.6 | 378 | 296 | P | V |
| | | 5694.4 | 48.1 | -52.98 | 101.08 | 39.58 | 32.2 | 9.92 | 33.6 | 378 | 296 | P | V |
| | | 5719.6 | 48.61 | -62.08 | 110.69 | 40 | 32.2 | 10.01 | 33.6 | 378 | 296 | P | V |
| | | 5723.6 | 52.62 | -66.39 | 119.01 | 44.01 | 32.2 | 10.01 | 33.6 | 378 | 296 | P | V |
| | | 5785 | 100.41 | - | - | 91.64 | 32.2 | 10.17 | 33.6 | 378 | 296 | P | V |
| | | 5785 | 94.07 | - | - | 85.3 | 32.2 | 10.17 | 33.6 | 378 | 296 | A | V |
| | | 5854.4 | 48.57 | -63.6 | 112.17 | 39.64 | 32.28 | 10.25 | 33.6 | 378 | 296 | P | V |
| | | 5863 | 48.65 | -59.91 | 108.56 | 39.63 | 32.29 | 10.33 | 33.6 | 378 | 296 | P | V |
| | | 5896 | 48.64 | -41.02 | 89.66 | 39.48 | 32.34 | 10.42 | 33.6 | 378 | 296 | P | V |
| | | 5928 | 47.62 | -20.68 | 68.3 | 38.41 | 32.39 | 10.42 | 33.6 | 378 | 296 | P | V |

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a CH 165 5825MHz | | 5825 | 101.55 | - | - | 92.66 | 32.24 | 10.25 | 33.6 | 126 | 293 | P | H |
| | | 5825 | 94.3 | - | - | 85.41 | 32.24 | 10.25 | 33.6 | 126 | 293 | A | H |
| | | 5850.8 | 48.42 | -71.96 | 120.38 | 39.49 | 32.28 | 10.25 | 33.6 | 126 | 293 | P | H |
| | | 5870.2 | 49.99 | -56.55 | 106.54 | 40.95 | 32.31 | 10.33 | 33.6 | 126 | 293 | P | H |
| | | 5894.4 | 51.82 | -39.03 | 90.85 | 42.75 | 32.34 | 10.33 | 33.6 | 126 | 293 | P | H |
| | | 5926.4 | 48.41 | -19.89 | 68.3 | 39.2 | 32.39 | 10.42 | 33.6 | 126 | 293 | P | H |
| | | 5825 | 100.21 | - | - | 91.32 | 32.24 | 10.25 | 33.6 | 268 | 292 | P | V |
| | | 5825 | 93.36 | - | - | 84.47 | 32.24 | 10.25 | 33.6 | 268 | 292 | A | V |
| | | 5853.8 | 49.55 | -63.99 | 113.54 | 40.62 | 32.28 | 10.25 | 33.6 | 268 | 292 | P | V |
| | | 5873.8 | 58.68 | -46.86 | 105.54 | 49.64 | 32.31 | 10.33 | 33.6 | 268 | 292 | P | V |
| | | 5876.2 | 50.55 | -53.76 | 104.31 | 41.51 | 32.31 | 10.33 | 33.6 | 268 | 292 | P | V |
| | | 5926.2 | 48.47 | -19.83 | 68.3 | 39.26 | 32.39 | 10.42 | 33.6 | 268 | 292 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

**Band 4 5725~5850MHz**

**WIFI 802.11a (Harmonic @ 3m)**

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a CH 149 5745MHz | | 11490 | 47.16 | -26.84 | 74 | 56.14 | 39.28 | 9.5 | 57.76 | 160 | 360 | P | H |
| | | 17235 | 52.58 | -15.62 | 68.2 | 52.62 | 43.04 | 14.89 | 57.97 | 170 | 360 | P | H |
| | | 11490 | 47.66 | -26.34 | 74 | 56.64 | 39.28 | 9.5 | 57.76 | 160 | 360 | P | V |
| | | 17235 | 50.38 | -17.82 | 68.2 | 50.42 | 43.04 | 14.89 | 57.97 | 161 | 0 | P | V |
| 802.11a CH 157 5785MHz | | 11570 | 49.79 | -24.21 | 74 | 49.34 | 40.32 | 12.93 | 52.8 | 175 | 198 | P | H |
| | | 17355 | 49.1 | -19.2 | 68.3 | 42.18 | 43.61 | 15.8 | 52.49 | 189 | 185 | P | H |
| | | 11570 | 48.42 | -25.58 | 74 | 47.97 | 40.32 | 12.93 | 52.8 | 175 | 198 | P | V |
| | | 17355 | 50.12 | -18.18 | 68.3 | 43.2 | 43.61 | 15.8 | 52.49 | 189 | 185 | P | V |
| 802.11a CH 165 5825MHz | | 11650 | 49.63 | -24.37 | 74 | 49.24 | 40.11 | 12.99 | 52.71 | 156 | 347 | P | H |
| | | 17475 | 50.91 | -17.39 | 68.3 | 43.66 | 44.01 | 15.89 | 52.65 | 100 | 0 | P | H |
| | | 11650 | 50.72 | -23.28 | 74 | 50.33 | 40.11 | 12.99 | 52.71 | 142 | 326 | P | V |
| | | 17475 | 49.74 | -18.56 | 68.3 | 42.49 | 44.01 | 15.89 | 52.65 | 100 | 0 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Band 4 5725~5850MHz

## WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5606 | 48.63 | -19.67 | 68.3 | 40.27 | 32.2 | 9.76 | 33.6 | 346 | 336 | P | H |
| | | 5683.4 | 49.91 | -43.08 | 92.99 | 41.39 | 32.2 | 9.92 | 33.6 | 346 | 336 | P | H |
| | | 5701.6 | 51.28 | -54.37 | 105.65 | 42.67 | 32.2 | 10.01 | 33.6 | 346 | 336 | P | H |
| | | 5723.6 | 54.69 | -64.32 | 119.01 | 46.08 | 32.2 | 10.01 | 33.6 | 346 | 336 | P | H |
| 802.11n | | 5745 | 100.78 | - | - | 92.09 | 32.2 | 10.09 | 33.6 | 346 | 336 | P | H |
| HT20 | | 5745 | 94.38 | - | - | 85.69 | 32.2 | 10.09 | 33.6 | 346 | 336 | A | H |
| CH 149 | | 5620.2 | 48.53 | -19.77 | 68.3 | 40.17 | 32.2 | 9.76 | 33.6 | 265 | 300 | P | V |
| 5745MHz | | 5676 | 50.3 | -37.23 | 87.53 | 41.78 | 32.2 | 9.92 | 33.6 | 265 | 300 | P | V |
| | | 5714.6 | 50.6 | -58.69 | 109.29 | 41.99 | 32.2 | 10.01 | 33.6 | 265 | 300 | P | V |
| | | 5720.6 | 53.48 | -58.69 | 112.17 | 44.87 | 32.2 | 10.01 | 33.6 | 265 | 300 | P | V |
| | | 5745 | 101.34 | - | - | 92.65 | 32.2 | 10.09 | 33.6 | 265 | 300 | P | V |
| | | 5745 | 94.46 | - | - | 85.77 | 32.2 | 10.09 | 33.6 | 265 | 300 | A | V |

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5616 | 48.5 | -19.8 | 68.3 | 40.14 | 32.2 | 9.76 | 33.6 | 377 | 357 | P | H |
| | | 5698.8 | 48.83 | -55.49 | 104.32 | 40.31 | 32.2 | 9.92 | 33.6 | 377 | 357 | P | H |
| | | 5714.8 | 48.11 | -61.24 | 109.35 | 39.5 | 32.2 | 10.01 | 33.6 | 377 | 357 | P | H |
| | | 5721.8 | 47.8 | -67.1 | 114.9 | 39.19 | 32.2 | 10.01 | 33.6 | 377 | 357 | P | H |
| | | 5785 | 101.16 | - | - | 92.39 | 32.2 | 10.17 | 33.6 | 377 | 357 | P | H |
| | | 5785 | 94.77 | - | - | 86 | 32.2 | 10.17 | 33.6 | 377 | 357 | A | H |
| | | 5853 | 47.33 | -68.03 | 115.36 | 38.4 | 32.28 | 10.25 | 33.6 | 377 | 357 | P | H |
| | | 5868.6 | 49.99 | -57 | 106.99 | 40.96 | 32.3 | 10.33 | 33.6 | 377 | 357 | P | H |
| 802.11n | | 5923 | 49.94 | -19.83 | 69.77 | 40.74 | 32.38 | 10.42 | 33.6 | 377 | 357 | P | H |
| HT20 | | 5932 | 48.26 | -20.04 | 68.3 | 39.04 | 32.4 | 10.42 | 33.6 | 377 | 357 | P | H |
| CH 157 | | 5611.2 | 48.65 | -19.65 | 68.3 | 40.29 | 32.2 | 9.76 | 33.6 | 271 | 294 | P | V |
| 5785MHz | | 5653.2 | 48.86 | -21.81 | 70.67 | 40.42 | 32.2 | 9.84 | 33.6 | 271 | 294 | P | V |
| | | 5715.6 | 48.26 | -61.31 | 109.57 | 39.65 | 32.2 | 10.01 | 33.6 | 271 | 294 | P | V |
| | | 5724.8 | 49.2 | -72.54 | 121.74 | 40.59 | 32.2 | 10.01 | 33.6 | 271 | 294 | P | V |
| | | 5785 | 100.48 | - | - | 91.71 | 32.2 | 10.17 | 33.6 | 271 | 294 | P | V |
| | | 5785 | 93 | - | - | 84.23 | 32.2 | 10.17 | 33.6 | 271 | 294 | A | V |
| | | 5850.4 | 47.57 | -73.72 | 121.29 | 38.64 | 32.28 | 10.25 | 33.6 | 271 | 294 | P | V |
| | | 5869.6 | 47.98 | -58.73 | 106.71 | 38.95 | 32.3 | 10.33 | 33.6 | 271 | 294 | P | V |
| | | 5888.6 | 48.54 | -46.59 | 95.13 | 39.48 | 32.33 | 10.33 | 33.6 | 271 | 294 | P | V |
| | | 5940.8 | 48.71 | -19.59 | 68.3 | 39.4 | 32.41 | 10.5 | 33.6 | 271 | 294 | P | V |

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 CH 165 5825MHz | | 5825 | 101.88 | - | - | 92.99 | 32.24 | 10.25 | 33.6 | 211 | 185 | P | H |
| | | 5825 | 94.48 | - | - | 85.59 | 32.24 | 10.25 | 33.6 | 211 | 185 | A | H |
| | | 5853.6 | 49.86 | -64.13 | 113.99 | 40.93 | 32.28 | 10.25 | 33.6 | 211 | 185 | P | H |
| | | 5862.4 | 49.84 | -58.89 | 108.73 | 40.82 | 32.29 | 10.33 | 33.6 | 211 | 185 | P | H |
| | | 5905.6 | 50.5 | -32.08 | 82.58 | 41.32 | 32.36 | 10.42 | 33.6 | 211 | 185 | P | H |
| | | 5941.4 | 48.67 | -19.63 | 68.3 | 39.36 | 32.41 | 10.5 | 33.6 | 211 | 185 | P | H |
| | | 5825 | 99.66 | - | - | 90.77 | 32.24 | 10.25 | 33.6 | 299 | 309 | P | V |
| | | 5825 | 93.41 | - | - | 84.52 | 32.24 | 10.25 | 33.6 | 299 | 309 | A | V |
| | | 5850.2 | 50.04 | -71.7 | 121.74 | 41.11 | 32.28 | 10.25 | 33.6 | 299 | 309 | P | V |
| | | 5857.4 | 49.52 | -60.61 | 110.13 | 40.5 | 32.29 | 10.33 | 33.6 | 299 | 309 | P | V |
| | | 5891.6 | 48.94 | -43.97 | 92.91 | 39.87 | 32.34 | 10.33 | 33.6 | 299 | 309 | P | V |
| | | 5932 | 48.93 | -19.37 | 68.3 | 39.71 | 32.4 | 10.42 | 33.6 | 299 | 309 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Band 4 5725~5850MHz

## WIFI 802.11n HT20 (Harmonic @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n | | 11490 | 49.8 | -24.2 | 74 | 49.3 | 40.5 | 12.88 | 52.88 | 165 | 110 | P | H |
| HT20 | | 17235 | 50.17 | -18.13 | 68.3 | 43.59 | 43.2 | 15.71 | 52.33 | 170 | 155 | P | H |
| CH 149 | | 11490 | 50.16 | -23.84 | 74 | 49.66 | 40.5 | 12.88 | 52.88 | 201 | 0 | P | V |
| 5745MHz | | 17235 | 50.85 | -17.45 | 68.3 | 44.27 | 43.2 | 15.71 | 52.33 | 129 | 185 | P | V |
| 802.11n | | 11570 | 50.43 | -23.57 | 74 | 49.98 | 40.32 | 12.93 | 52.8 | 163 | 225 | P | H |
| HT20 | | 17355 | 49.98 | -18.32 | 68.3 | 43.06 | 43.61 | 15.8 | 52.49 | 144 | 105 | P | H |
| CH 157 | | 11570 | 49.44 | -24.56 | 74 | 48.99 | 40.32 | 12.93 | 52.8 | 163 | 225 | P | V |
| 5785MHz | | 17355 | 51.33 | -16.97 | 68.3 | 44.41 | 43.61 | 15.8 | 52.49 | 144 | 105 | P | V |
| 802.11n | | 11650 | 50.3 | -23.7 | 74 | 49.91 | 40.11 | 12.99 | 52.71 | 156 | 347 | P | H |
| HT20 | | 17475 | 51.71 | -16.59 | 68.3 | 44.46 | 44.01 | 15.89 | 52.65 | 136 | 192 | P | H |
| CH 165 | | 11650 | 49.84 | -24.16 | 74 | 49.45 | 40.11 | 12.99 | 52.71 | 142 | 326 | P | V |
| 5825MHz | | 17475 | 51.27 | -17.03 | 68.3 | 44.02 | 44.01 | 15.89 | 52.65 | 150 | 360 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Band 4 5725~5850MHz

## WIFI 802.11n HT40 (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5647.8 | 48.88 | -19.42 | 68.3 | 40.44 | 32.2 | 9.84 | 33.6 | 112 | 187 | P | H |
| | | 5674.8 | 50.6 | -36.04 | 86.64 | 42.08 | 32.2 | 9.92 | 33.6 | 112 | 187 | P | H |
| | | 5718.2 | 59.25 | -51.05 | 110.3 | 50.64 | 32.2 | 10.01 | 33.6 | 112 | 187 | P | H |
| | | 5723.8 | 59.79 | -59.67 | 119.46 | 51.18 | 32.2 | 10.01 | 33.6 | 112 | 187 | P | H |
| | | 5755 | 99.68 | - | - | 90.99 | 32.2 | 10.09 | 33.6 | 112 | 187 | P | H |
| | | 5755 | 92.43 | - | - | 83.74 | 32.2 | 10.09 | 33.6 | 112 | 187 | A | H |
| | | 5853.4 | 47.8 | -66.65 | 114.45 | 38.87 | 32.28 | 10.25 | 33.6 | 112 | 187 | P | H |
| | | 5865.2 | 48.52 | -59.42 | 107.94 | 39.49 | 32.3 | 10.33 | 33.6 | 112 | 187 | P | H |
| 802.11n | | 5903.8 | 48.46 | -35.45 | 83.91 | 39.28 | 32.36 | 10.42 | 33.6 | 112 | 187 | P | H |
| HT40 | | 5931.6 | 48.13 | -20.17 | 68.3 | 38.91 | 32.4 | 10.42 | 33.6 | 112 | 187 | P | H |
| CH 151 | | 5607 | 47.96 | -20.34 | 68.3 | 39.6 | 32.2 | 9.76 | 33.6 | 346 | 291 | P | V |
| 5755MHz | | 5673.4 | 49.28 | -36.33 | 85.61 | 40.76 | 32.2 | 9.92 | 33.6 | 346 | 291 | P | V |
| | | 5715 | 55.53 | -53.87 | 109.4 | 46.92 | 32.2 | 10.01 | 33.6 | 346 | 291 | P | V |
| | | 5724 | 56.13 | -63.79 | 119.92 | 47.52 | 32.2 | 10.01 | 33.6 | 346 | 291 | P | V |
| | | 5755 | 97.51 | - | - | 88.82 | 32.2 | 10.09 | 33.6 | 346 | 291 | P | V |
| | | 5755 | 90.8 | - | - | 82.11 | 32.2 | 10.09 | 33.6 | 346 | 291 | A | V |
| | | 5852.2 | 47.88 | -69.3 | 117.18 | 38.95 | 32.28 | 10.25 | 33.6 | 346 | 291 | P | V |
| | | 5866.4 | 48.61 | -59 | 107.61 | 39.58 | 32.3 | 10.33 | 33.6 | 346 | 291 | P | V |
| | | 5924.2 | 49.07 | -19.82 | 68.89 | 39.86 | 32.39 | 10.42 | 33.6 | 346 | 291 | P | V |
| | | 5950 | 48.29 | -20.01 | 68.3 | 38.97 | 32.42 | 10.5 | 33.6 | 346 | 291 | P | V |

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5649.4 | 47.97 | -20.33 | 68.3 | 39.53 | 32.2 | 9.84 | 33.6 | 303 | 356 | P | H |
| | | 5689.4 | 48.48 | -48.92 | 97.4 | 39.96 | 32.2 | 9.92 | 33.6 | 303 | 356 | P | H |
| | | 5715.8 | 50.25 | -59.38 | 109.63 | 41.64 | 32.2 | 10.01 | 33.6 | 303 | 356 | P | H |
| | | 5725 | 48.13 | -74.07 | 122.2 | 39.52 | 32.2 | 10.01 | 33.6 | 303 | 356 | P | H |
| | | 5795 | 99.14 | - | - | 90.37 | 32.2 | 10.17 | 33.6 | 303 | 356 | P | H |
| | | 5795 | 92.41 | - | - | 83.64 | 32.2 | 10.17 | 33.6 | 303 | 356 | A | H |
| | | 5850.4 | 48.33 | -72.96 | 121.29 | 39.4 | 32.28 | 10.25 | 33.6 | 303 | 356 | P | H |
| | | 5862.4 | 50.37 | -58.36 | 108.73 | 41.35 | 32.29 | 10.33 | 33.6 | 303 | 356 | P | H |
| 802.11n | | 5878.6 | 48.64 | -53.89 | 102.53 | 39.59 | 32.32 | 10.33 | 33.6 | 303 | 356 | P | H |
| HT40 | | 5926.2 | 48.08 | -20.22 | 68.3 | 38.87 | 32.39 | 10.42 | 33.6 | 303 | 356 | P | H |
| CH 159 | | 5630.8 | 48.65 | -19.65 | 68.3 | 40.21 | 32.2 | 9.84 | 33.6 | 393 | 295 | P | V |
| 5795MHz | | 5665.6 | 48.84 | -31.01 | 79.85 | 40.32 | 32.2 | 9.92 | 33.6 | 393 | 295 | P | V |
| | | 5708 | 47.87 | -59.57 | 107.44 | 39.26 | 32.2 | 10.01 | 33.6 | 393 | 295 | P | V |
| | | 5720.2 | 47.62 | -63.64 | 111.26 | 39.01 | 32.2 | 10.01 | 33.6 | 393 | 295 | P | V |
| | | 5795 | 97.1 | - | - | 88.33 | 32.2 | 10.17 | 33.6 | 393 | 295 | P | V |
| | | 5795 | 90.34 | - | - | 81.57 | 32.2 | 10.17 | 33.6 | 393 | 295 | A | V |
| | | 5853.4 | 47.79 | -66.66 | 114.45 | 38.86 | 32.28 | 10.25 | 33.6 | 393 | 295 | P | V |
| | | 5859.4 | 48.74 | -60.83 | 109.57 | 39.72 | 32.29 | 10.33 | 33.6 | 393 | 295 | P | V |
| | | 5887 | 48.08 | -48.24 | 96.32 | 39.02 | 32.33 | 10.33 | 33.6 | 393 | 295 | P | V |
| | | 5932.4 | 49.44 | -18.86 | 68.3 | 40.22 | 32.4 | 10.42 | 33.6 | 393 | 295 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

**Band 4 5725~5850MHz**

**WIFI 802.11n HT40 (Harmonic @ 3m)**

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBµV/m ) | Over Limit ( dB ) | Limit Line ( dBµV/m ) | Read Level ( dBµV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11n | | 11510 | 49.26 | -24.74 | 74 | 48.81 | 40.47 | 12.88 | 52.9 | 126 | 336 | P | H |
| HT40 | | 17265 | 49.94 | -18.36 | 68.3 | 43.27 | 43.3 | 15.74 | 52.37 | 156 | 291 | P | H |
| CH 151 | | 11510 | 49.8 | -24.2 | 74 | 49.35 | 40.47 | 12.88 | 52.9 | 160 | 360 | P | V |
| 5755MHz | | 17265 | 47.92 | -20.38 | 68.3 | 41.25 | 43.3 | 15.74 | 52.37 | 100 | 0 | P | V |
| 802.11n | | 11590 | 49.92 | -24.08 | 74 | 49.47 | 40.27 | 12.96 | 52.78 | 126 | 297 | P | H |
| HT40 | | 17385 | 51.05 | -17.25 | 68.3 | 44.05 | 43.71 | 15.83 | 52.54 | 136 | 248 | P | H |
| CH 159 | | 11590 | 50.01 | -23.99 | 74 | 49.56 | 40.27 | 12.96 | 52.78 | 170 | 300 | P | V |
| 5795MHz | | 17385 | 51.2 | -17.1 | 68.3 | 44.2 | 43.71 | 15.83 | 52.54 | 150 | 200 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Band 4 5725~5850MHz

## WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5647.8 | 49.52 | -18.78 | 68.3 | 41.08 | 32.2 | 9.84 | 33.6 | 337 | 209 | P | H |
| | | 5697.6 | 58.17 | -45.27 | 103.44 | 49.65 | 32.2 | 9.92 | 33.6 | 337 | 209 | P | H |
| | | 5719.4 | 59.18 | -51.45 | 110.63 | 50.57 | 32.2 | 10.01 | 33.6 | 337 | 209 | P | H |
| | | 5723.8 | 57.13 | -62.33 | 119.46 | 48.52 | 32.2 | 10.01 | 33.6 | 337 | 209 | P | H |
| | | 5775 | 95.51 | - | - | 86.82 | 32.2 | 10.09 | 33.6 | 337 | 209 | P | H |
| | | 5775 | 88.79 | - | - | 80.1 | 32.2 | 10.09 | 33.6 | 337 | 209 | A | H |
| | | 5850 | 54.35 | -67.85 | 122.2 | 45.42 | 32.28 | 10.25 | 33.6 | 337 | 209 | P | H |
| | | 5860.8 | 53.42 | -55.75 | 109.17 | 44.4 | 32.29 | 10.33 | 33.6 | 337 | 209 | P | H |
| 802.11ac | | 5875.4 | 50.84 | -54.06 | 104.9 | 41.8 | 32.31 | 10.33 | 33.6 | 337 | 209 | P | H |
| VHT80 | | 5935 | 48.92 | -19.38 | 68.3 | 39.62 | 32.4 | 10.5 | 33.6 | 337 | 209 | P | H |
| CH 155 | | 5632.8 | 48.32 | -19.98 | 68.3 | 39.88 | 32.2 | 9.84 | 33.6 | 315 | 289 | P | V |
| 5775MHz | | 5699 | 56.21 | -48.26 | 104.47 | 47.69 | 32.2 | 9.92 | 33.6 | 315 | 289 | P | V |
| | | 5712.8 | 58.04 | -50.75 | 108.79 | 49.43 | 32.2 | 10.01 | 33.6 | 315 | 289 | P | V |
| | | 5724.6 | 65.85 | -55.44 | 121.29 | 57.24 | 32.2 | 10.01 | 33.6 | 315 | 289 | P | V |
| | | 5775 | 96.08 | - | - | 87.39 | 32.2 | 10.09 | 33.6 | 315 | 289 | P | V |
| | | 5775 | 88.24 | - | - | 79.55 | 32.2 | 10.09 | 33.6 | 315 | 289 | A | V |
| | | 5851.4 | 52.38 | -66.63 | 119.01 | 43.45 | 32.28 | 10.25 | 33.6 | 315 | 289 | P | V |
| | | 5867.8 | 53.85 | -53.36 | 107.21 | 44.82 | 32.3 | 10.33 | 33.6 | 315 | 289 | P | V |
| | | 5881.4 | 48.47 | -51.99 | 100.46 | 39.42 | 32.32 | 10.33 | 33.6 | 315 | 289 | P | V |
| | | 5939.8 | 48.38 | -19.92 | 68.3 | 39.07 | 32.41 | 10.5 | 33.6 | 315 | 289 | P | V |

**Remark**

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

**Band 4 5725~5850MHz**

**WIFI 802.11ac VHT80 (Harmonic @ 3m)**

| WIFI Ant. 1 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Over Limit ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Cable Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11ac | | 11550 | 49.22 | -24.78 | 74 | 48.75 | 40.37 | 12.93 | 52.83 | 125 | 332 | P | H |
| VHT80 | | 17325 | 49.74 | -18.56 | 68.3 | 42.87 | 43.51 | 15.8 | 52.44 | 144 | 196 | P | H |
| CH 155 | | 11550 | 48.37 | -25.63 | 74 | 47.9 | 40.37 | 12.93 | 52.83 | 160 | 360 | P | V |
| 5775MHz | | 17325 | 50.16 | -18.14 | 68.3 | 43.29 | 43.51 | 15.8 | 52.44 | 170 | 360 | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Emission below 1GHz

## 5GHz WIFI 802.11n HT20 (LF @ 3m)

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 5GHz 802.11n HT20 LF | | 34.85 | 27.96 | -12.04 | 40 | 35.62 | 22.37 | 0.57 | 30.6 | - | - | P | H |
| | | 150.28 | 31.63 | -11.87 | 43.5 | 46.02 | 16.76 | 1.25 | 32.4 | 136 | 299 | P | H |
| | | 282.2 | 31.4 | -14.6 | 46 | 42.53 | 19.12 | 1.75 | 32 | - | - | P | H |
| | | 623.64 | 27.4 | -18.6 | 46 | 31.45 | 25.5 | 2.6 | 32.15 | - | - | P | H |
| | | 685.72 | 27.99 | -18.01 | 46 | 32.15 | 25.31 | 2.73 | 32.2 | - | - | P | H |
| | | 797.27 | 29.35 | -16.65 | 46 | 32.32 | 26.31 | 2.93 | 32.21 | - | - | P | H |
| | | 41.64 | 32.75 | -7.25 | 40 | 46.32 | 18.4 | 0.63 | 32.6 | 182 | 196 | P | V |
| | | 78.5 | 29.46 | -10.54 | 40 | 48.03 | 13.15 | 0.88 | 32.6 | - | - | P | V |
| | | 166.77 | 30.67 | -12.83 | 43.5 | 45.7 | 15.98 | 1.32 | 32.33 | - | - | P | V |
| | | 277.35 | 28.8 | -17.2 | 46 | 40.04 | 19.03 | 1.73 | 32 | - | - | P | V |
| | | 446.13 | 28.28 | -17.72 | 46 | 35.14 | 22.85 | 2.19 | 31.9 | - | - | P | V |
| | | 703.18 | 28.59 | -17.41 | 46 | 32.68 | 25.35 | 2.77 | 32.21 | - | - | P | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against limit line. | | | | | | | | | | | | |

**Note symbol**

| | |
|---|---|
| * | **Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| ! | Test result is **over limit** line. |
| P/A | **P**eak or **A**verage |
| H/V | **H**orizontal or **V**ertical |

## A calculation example for radiated spurious emission is shown as below:

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 1 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 01 2412MHz | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

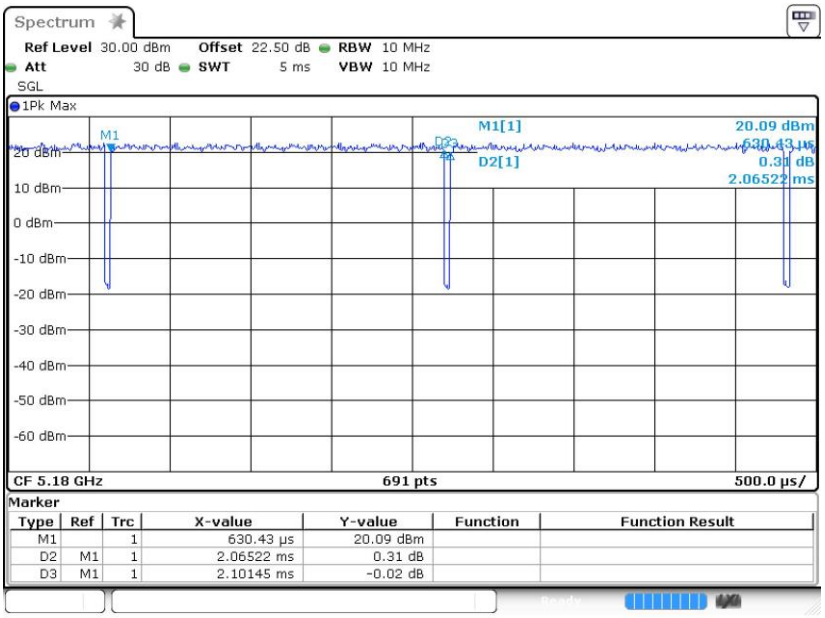
= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is "PASS".**

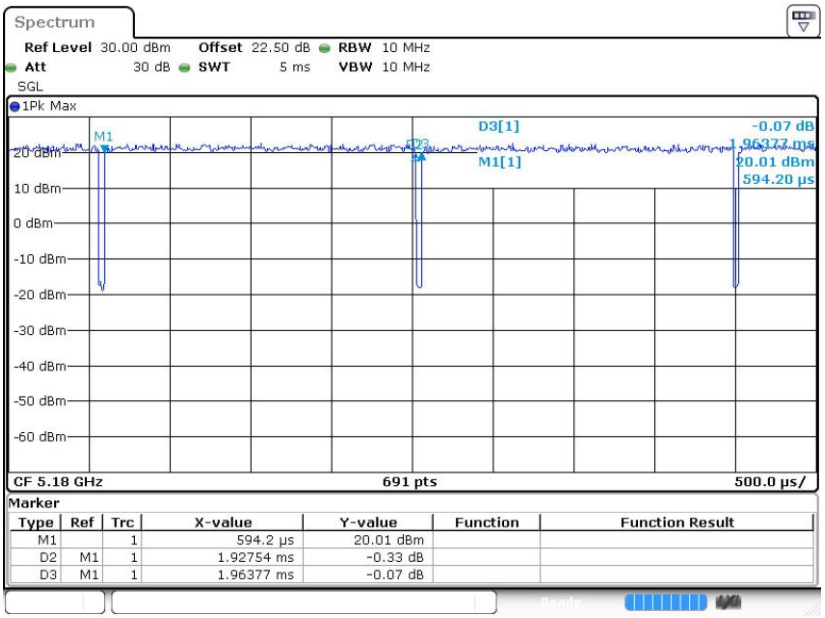
# Appendix D. Duty Cycle Plots

| Band | Duty Cycle(%) | T(ms) | 1/T(kHz) | VBW Setting |
|---|---|---|---|---|
| 802.11a | 98.28 | - | - | 10Hz |
| 802.11n HT20 | 98.16 | - | - | 10Hz |
| 802.11n HT40 | 96.32 | 0.9493 | 1.053 | 3KHz |
| 802.11ac VHT80 | 92.79 | 0.466 | 2.146 | 3KHz |

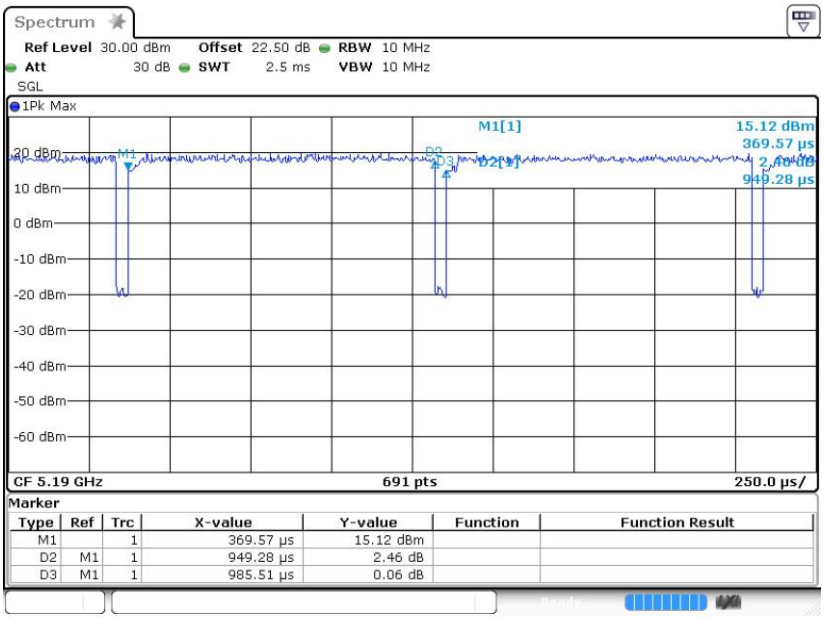
**802.11a**



### 802.11n HT20




### 802.11n HT40



**802.11ac VHT80**