

# FCC TEST REPORT

## FCC ID: 2A242-CP20

**Report Number**..... : ZKT-210904L278-03**Date of Test**..... Aug. 26, 2021 -- Sep. 14, 2021**Date of issue** ..... : Sep. 14, 2021**Total number of pages** ..... 47**Test Result** ..... : PASS**Testing Laboratory**..... : **Shenzhen ZKT Technology Co., Ltd.****Address** ..... : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China**Applicant's name** ..... : SHENZHEN ZHENYI INTELLIGENT TECH CO., LTD**Address** ..... : 701 Building A, Haohe Zhichuang, No.10, Fuyuan, 2nd road  
Zhancheng Community, Fuhai Street, BaoAn District, Shenzhen,  
Guangdong, China**Manufacturer's name** ..... : SHENZHEN PEICHENG TECHNOLOGY CO.,LTD**Address** ..... : 5th floor, 64 building,baotian Industrial Zone,qianjin 2nd  
road,xixiang,bao'an District, Shenzhen,Guangdong, China**Test specification:****Standard** ..... : FCC CFR Title 47 Part 15 Subpart C Section 15.247  
ANSI C63.10:2013  
KDB 789033 D02 V01r02**Test procedure**..... : /**Non-standard test method** ..... : N/A**Test Report Form No.** ..... : TRF-EL-110\_V0**Test Report Form(s) Originator** .... : ZKT Testing**Master TRF** ..... : Dated: 2020-01-06

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

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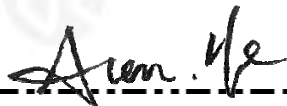
**Product name**..... : tablet PC**Trademark** ..... : ZZB**Model/Type reference** ..... : CP20**Ratings**..... : DC 3.7V from battery  
DC 5V 2A from adapter or others

**Testing procedure and testing location:**

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

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

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



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



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



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**1. VERSION**

| Report No.        | Version | Description             | Approved      |
|-------------------|---------|-------------------------|---------------|
| ZKT-210904L278-03 | Rev.01  | Initial issue of report | Sep. 14, 2021 |
|                   |         |                         |               |
|                   |         |                         |               |

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C |                                           |        |        |
|---------------------------------|-------------------------------------------|--------|--------|
| Standard Section                | Test Item                                 | Result | Remark |
| 15.203/15.247 (c)               | Antenna requirement                       | PASS   |        |
| 15.207                          | AC Power Line Conducted Emission          | PASS   |        |
| 15.407 (a) (b)                  | Spurious Radiated Emissions and Band Edge | PASS   |        |
| 15.407 (e)                      | 6 dB bandwidth                            | PASS   |        |
| 15.407 (a)                      | Power Spectral Density                    | PASS   |        |
| 15.407 (a)(1)(2)(3)             | Maximum conducted output power            | PASS   |        |
| 15.407 (g)                      | Frequency Stability                       | PASS   |        |

NOTE:

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

## 2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

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

FCC Test Firm Registration Number: 692225

Designation Number: CN1299

IC Registered No.: 27033

## 2.2 MEASUREMENT UNCERTAINTY

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

| No. | tem                                                | ncertainty |
|-----|----------------------------------------------------|------------|
| 1   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.3dB    |
| 2   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.5dB    |
| 3   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=3.34dB   |
| 4   | Conducted Adjacent channel power                   | U=1.38dB   |
| 5   | Conducted output power uncertainty Above 1G        | U=1.576dB  |
| 6   | Conducted output power uncertainty below 1G        | U=1.28dB   |
| 7   | humidity uncertainty                               | U=5.3%     |
| 8   | Temperature uncertainty                            | U=0.59℃    |
| 9   | Radiated disturbance(30MHz-1000MHz)                | U=4.8dB    |
| 10  | Radiated disturbance(1GHz-6GHz)                    | U=4.9dB    |
| 11  | Radiated disturbance(1GHz-18GHz)                   | U=5.0dB    |



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                   |                                                         |                                                                                  |
|-------------------|---------------------------------------------------------|----------------------------------------------------------------------------------|
| Product Name:     | tablet PC                                               |                                                                                  |
| Model No.:        | CP20                                                    |                                                                                  |
| Model Different.: | /                                                       |                                                                                  |
| Serial No.:       | N/A                                                     |                                                                                  |
| Hardware Version: | V1.0                                                    |                                                                                  |
| Software Version: | V1.0                                                    |                                                                                  |
| Sample(s) Status: | Engineer sample                                         |                                                                                  |
|                   | IEEE802.11<br>WLAN mode<br>supported                    | 802.11n/ac(20MHz channel bandwidth)<br>802.11n/ ac (40MHz channel bandwidth)     |
|                   | Date rate                                               | 802.11ac:MCS0-MCS9<br>802.11n: MCS0-MCS7                                         |
|                   | Modulation                                              | OFDM                                                                             |
|                   | Frequency<br>Range :                                    | IEEE802.11 ac /n (HT20): 5745-5825 MHz<br>IEEE802.11 ac /n (HT40): 5755-5795 MHz |
|                   | Channels                                                | IEEE802.11 ac /n (HT20): 5<br>IEEE802.11 ac /n (HT40): 2                         |
|                   | Antenna Type:                                           | FPCantenna                                                                       |
| Antenna gain:     | 1.09dBi                                                 |                                                                                  |
| Power supply:     | DC 3.7V from battery<br>DC 5V 2A from adapter or others |                                                                                  |

#### Frequency and Channel list for 802.11n/ac(20MHz) band IV(5725-5850MHz)

| 802.11n-HT20/ac-VHT20 carrier frequency channel |           |         |           |         |           |         |           |
|-------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                         | frequency | Channel | frequency | Channel | frequency | Channel | frequency |
| 149                                             | 5745 MHz  | 153     | 5765MHz   | 157     | 5785 MHz  | 161     | 5805 MHz  |
| 165                                             | 5825 MHz  |         |           |         |           |         |           |

#### Frequency and Channel list for 802.11n/ac(40MHz) band IV(5755-5795MHz)

| 802.11n-HT20/ac-VHT20 carrier frequency channel |           |         |           |         |           |         |           |
|-------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                         | frequency | Channel | frequency | Channel | frequency | Channel | frequency |



|     |          |     |         |  |  |  |  |
|-----|----------|-----|---------|--|--|--|--|
| 151 | 5755 MHz | 159 | 5795MHz |  |  |  |  |
|     |          |     |         |  |  |  |  |

### 3.2 DESCRIPTION OF TEST MODES

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

| Mode                                | Tx/Rx Frequency      | Test RF Channel Lists |             |             |
|-------------------------------------|----------------------|-----------------------|-------------|-------------|
|                                     |                      | Lowest(L)             | Middle(M)   | Highest(H)  |
| IEEE 802.11n-20<br>IEEE 802.11ac20  | 5725 MHz to 5850 MHz | Channel 149           | Channel 157 | Channel 165 |
|                                     |                      | 5745 MHz              | 5785 MHz    | 5825 MHz    |
| IEEE 802.11n-40<br>IEEE 802.11ac-40 | 5725 MHz to 5850 MHz | Channel 151           | --          | Channel 159 |
|                                     |                      | 5755 MHz              | --          | 5795 MHz    |

Worst Case Configuration: transmitting both 2.4GHz mode and 5GHz mode

| Description               | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna                   | ANT1             | ANT1           |
| Channel                   | 1                | 38             |
| Operating Frequency (MHz) | 2462             | 802.11ac-20    |
| Data Rate (Mbps)          | DSSS/1Mbps       | OFDM/13.5Mbps  |
| Mode                      | 2.4GWIFI-802.11b | UNII-AC20      |

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

Conducted Emission

AC Line EUT

Radiated Emission

AC Line EUT

Conducted Spurious

EUT

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

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

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

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |

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

## Note:

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

### 3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

#### Radiation Test equipment

| Item | Equipment                        | Manufacturer   | Type No.        | Serial No. | Last calibration | Calibrated until |
|------|----------------------------------|----------------|-----------------|------------|------------------|------------------|
| 1    | Spectrum Analyzer (9kHz-26.5GHz) | KEYSIGHT       | 9020A           | MY45109572 | Sep. 22, 2020    | Sep. 21, 2021    |
| 2    | Spectrum Analyzer (1GHz-40GHz)   | Agilent        | E4446A          | 100363     | Sep. 22, 2020    | Sep. 21, 2021    |
| 3    | Test Receiver (9kHz-7GHz)        | R&S            | ESCI7           | 101169     | Sep. 22, 2020    | Sep. 21, 2021    |
| 4    | Bilog Antenna (30MHz-1400MHz)    | Schwarzbeck    | VULB9168        | 00877      | Sep. 22, 2020    | Sep. 21, 2021    |
| 5    | Horn Antenna (1GHz-18GHz)        | SCHWARZBEC K   | BBHA9120D       | 1541       | Sep. 22, 2020    | Sep. 21, 2021    |
| 6    | Horn Antenna (18GHz-40GHz)       | A.H. System    | SAS-574         | 588        | Sep. 22, 2020    | Sep. 21, 2021    |
| 7    | Amplifier (30-1000MHz)           | EM Electronics | EM330 Amplifier | N/A        | Sep. 22, 2020    | Sep. 21, 2021    |
| 8    | Amplifier (1GHz-40GHz)           | QUANJUDA       | DLE-161         | 097        | Sep. 22, 2020    | Sep. 21, 2021    |
| 9    | Loop Antenna (9KHz-30MHz)        | SCHWARZBEC K   | FMZB1519B       | 014        | Sep. 22, 2020    | Sep. 21, 2021    |
| 10   | RF cables1 (9kHz-30MHz)          | N/A            | 9kHz-30MHz      | N/A        | Sep. 22, 2020    | Sep. 21, 2021    |
| 11   | RF cables2 (30MHz-1GHz)          | N/A            | 30MHz-1GHz      | N/A        | Sep. 22, 2020    | Sep. 21, 2021    |
| 12   | RF cables3 (1GHz-40GHz)          | N/A            | 1GHz-40GHz      | N/A        | Sep. 22, 2020    | Sep. 21, 2021    |
| 13   | CMW500 Test                      | R&S            | CMW500          | 106504     | Sep. 22, 2020    | Sep. 21, 2021    |
| 14   | ESG Signal Generator             | Agilent        | E4421B          | GB40051203 | Sep. 22, 2020    | Sep. 21, 2021    |
| 15   | Signal Generator                 | Agilent        | N5182A          | MY47420215 | Sep. 22, 2020    | Sep. 21, 2021    |
| 16   | D.C. Power Supply                | LongWei        | TPR-6405D       | \          | \                | \                |
| 17   | Software                         | Frad           | EZ-EMC          | FA-03A2 RE | \                | \                |

#### Conduction Test equipment

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No.  | Last calibration | Calibrated until |
|------|-------------------|--------------|----------|-------------|------------------|------------------|
| 1    | LISN              | R&S          | ENV216   | 101471      | Sep. 22, 2020    | Sep. 21, 2021    |
| 2    | LISN              | CYBERTEK     | EM5040A  | E1850400149 | Sep. 22, 2020    | Sep. 21, 2021    |
| 3    | Test Cable        | N/A          | C01      | N/A         | Sep. 22, 2020    | Sep. 21, 2021    |
| 4    | Test Cable        | N/A          | C02      | N/A         | Sep. 22, 2020    | Sep. 21, 2021    |
| 5    | EMI Test Receiver | R&S          | ESRP3    | 101946      | Sep. 22, 2020    | Sep. 21, 2021    |
| 6    | Absorbing Clamp   | DZ           | ZN23201  | N/A         | Sep. 22, 2020    | Sep. 21, 2021    |

#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

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

##### 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS

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

Note:

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

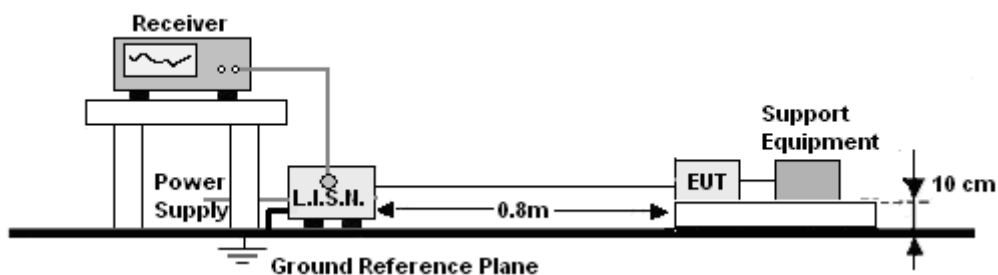
##### 4.1.2 TEST PROCEDURE

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

##### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



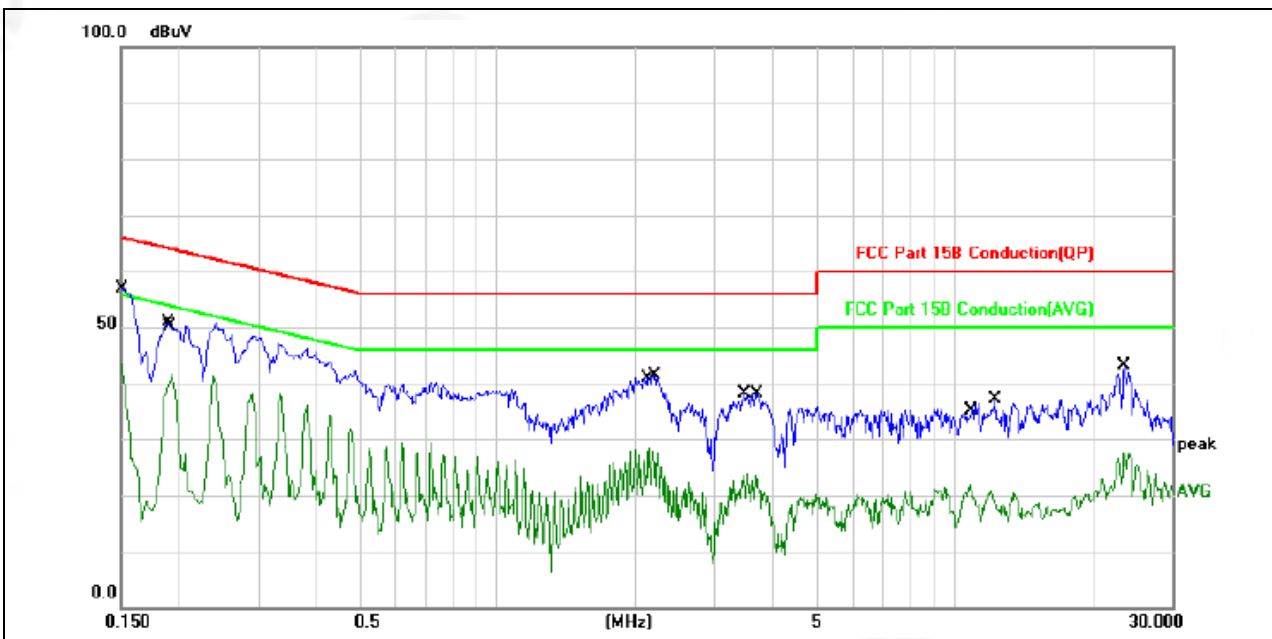
#### 4.1.5 EUT OPERATING CONDITIONS

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

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

#### 4.1.6 TEST RESULT

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



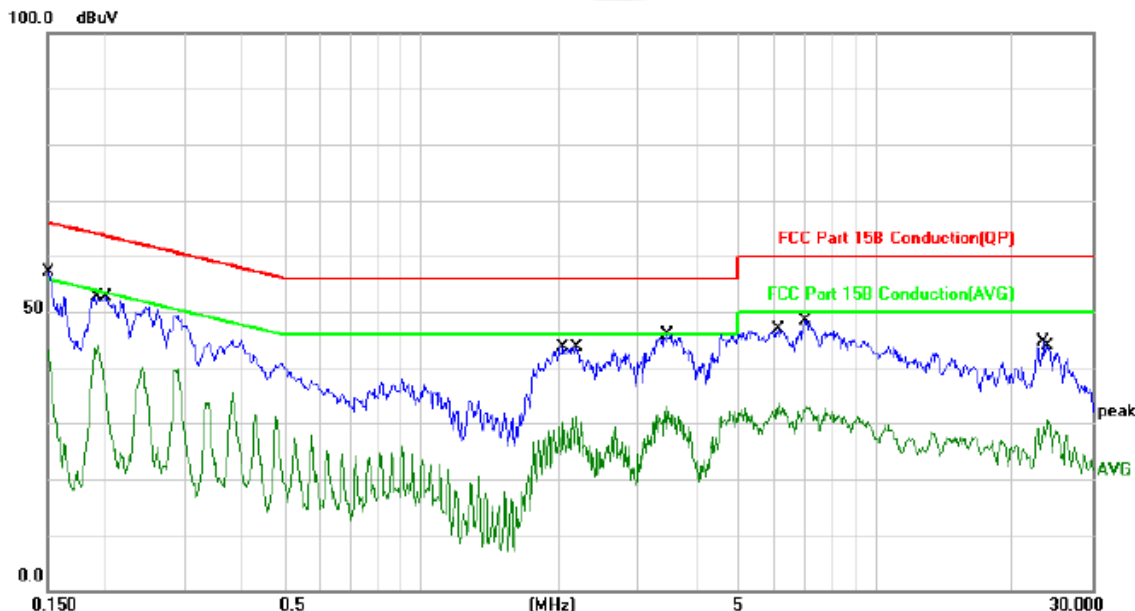
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   | *   | 0.1499       | 57.02                    | -0.13                   | 56.89                    | 66.00         | -9.11      | QP       |         |
| 2   |     | 0.1499       | 43.61                    | -0.13                   | 43.48                    | 56.00         | -12.52     | AVG      |         |
| 3   |     | 0.1900       | 51.07                    | -0.13                   | 50.94                    | 64.03         | -13.09     | QP       |         |
| 4   |     | 0.1940       | 41.86                    | -0.13                   | 41.73                    | 53.86         | -12.13     | AVG      |         |
| 5   |     | 2.1460       | 28.67                    | -0.24                   | 28.43                    | 46.00         | -17.57     | AVG      |         |
| 6   |     | 2.2020       | 41.64                    | -0.24                   | 41.40                    | 56.00         | -14.60     | QP       |         |
| 7   |     | 3.5260       | 24.16                    | -0.19                   | 23.97                    | 46.00         | -22.03     | AVG      |         |
| 8   |     | 3.7100       | 38.30                    | -0.19                   | 38.11                    | 56.00         | -17.89     | QP       |         |
| 9   |     | 10.8459      | 21.97                    | -0.11                   | 21.86                    | 50.00         | -28.14     | AVG      |         |
| 10  |     | 12.2579      | 37.15                    | -0.13                   | 37.02                    | 60.00         | -22.98     | QP       |         |
| 11  |     | 23.4860      | 27.99                    | -0.42                   | 27.57                    | 50.00         | -22.43     | AVG      |         |
| 12  |     | 23.5820      | 43.60                    | -0.42                   | 43.18                    | 60.00         | -16.82     | QP       |         |

#### Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor



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



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   | *   | 0.1499       | 57.19                    | -0.13                   | 57.06                    | 66.00         | -8.94      | QP       |         |
| 2   |     | 0.1499       | 43.24                    | -0.13                   | 43.11                    | 56.00         | -12.89     | AVG      |         |
| 3   |     | 0.1940       | 44.27                    | -0.13                   | 44.14                    | 53.86         | -9.72      | AVG      |         |
| 4   |     | 0.2006       | 52.64                    | -0.13                   | 52.51                    | 63.58         | -11.07     | QP       |         |
| 5   |     | 2.0540       | 43.92                    | -0.23                   | 43.69                    | 56.00         | -12.31     | QP       |         |
| 6   |     | 2.1940       | 31.40                    | -0.24                   | 31.16                    | 46.00         | -14.84     | AVG      |         |
| 7   |     | 3.4820       | 46.18                    | -0.19                   | 45.99                    | 56.00         | -10.01     | QP       |         |
| 8   |     | 3.4820       | 33.29                    | -0.19                   | 33.10                    | 46.00         | -12.90     | AVG      |         |
| 9   |     | 6.1179       | 33.88                    | -0.25                   | 33.63                    | 50.00         | -16.37     | AVG      |         |
| 10  |     | 6.9859       | 48.74                    | -0.28                   | 48.46                    | 60.00         | -11.54     | QP       |         |
| 11  |     | 23.4619      | 45.16                    | -0.42                   | 44.74                    | 60.00         | -15.26     | QP       |         |
| 12  |     | 24.0140      | 31.16                    | -0.43                   | 30.73                    | 50.00         | -19.27     | AVG      |         |

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS

1. Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.10-2013. The EUT was placed above the ground plane, 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz. The interface cable and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.
2. For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz.
3. For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.
4. For transmitters operating in the 5470-5600 MHz and 5650-5725 MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725 MHz band shall not exceed an EIRP of -27 dBm/MHz.
5. KDB789033v02r01G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are out side of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

### LIMITS OF RADIATED EMISSION MEASUREMENT

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

Notes:

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

#### 4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

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

Note:

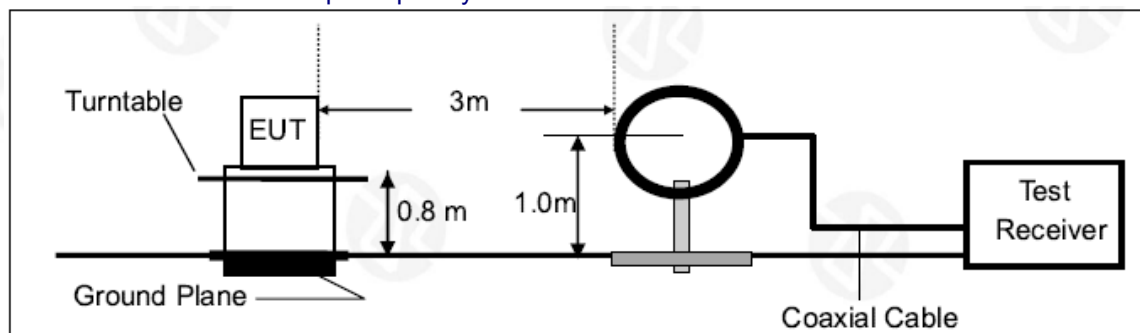
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

#### 4.2.3 DEVIATION FROM TEST STANDARD

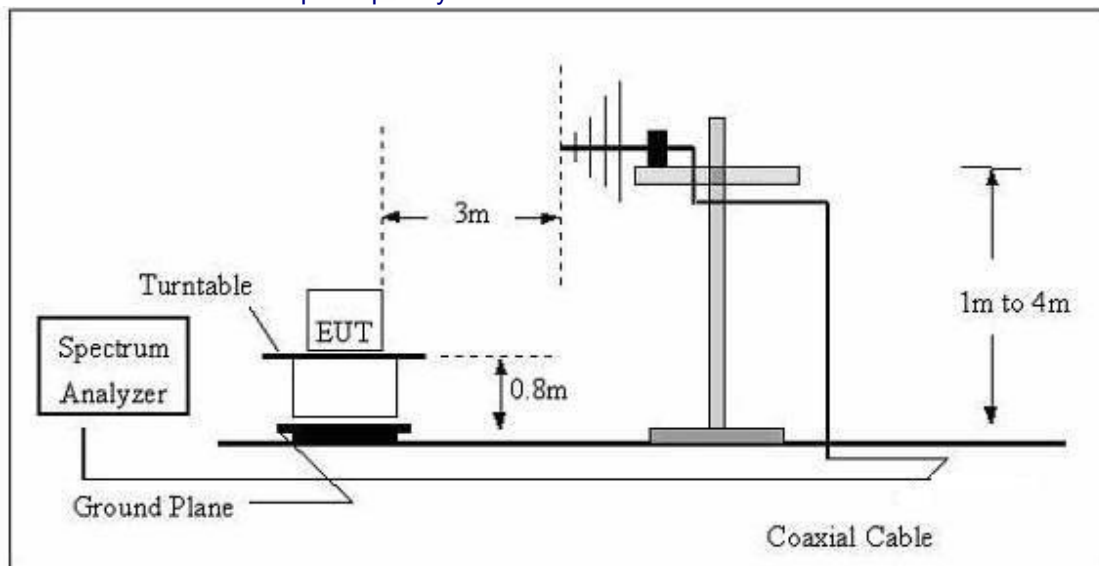
No deviation

#### 4.2.4 TEST SETUP

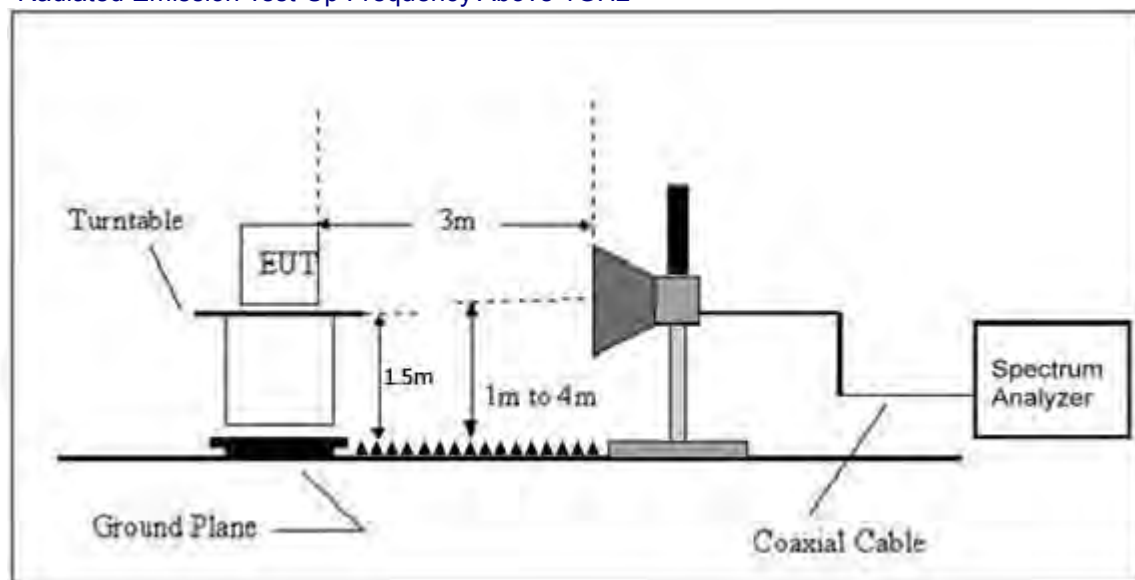
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



#### 4.2.5 EUT OPERATING CONDITIONS

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

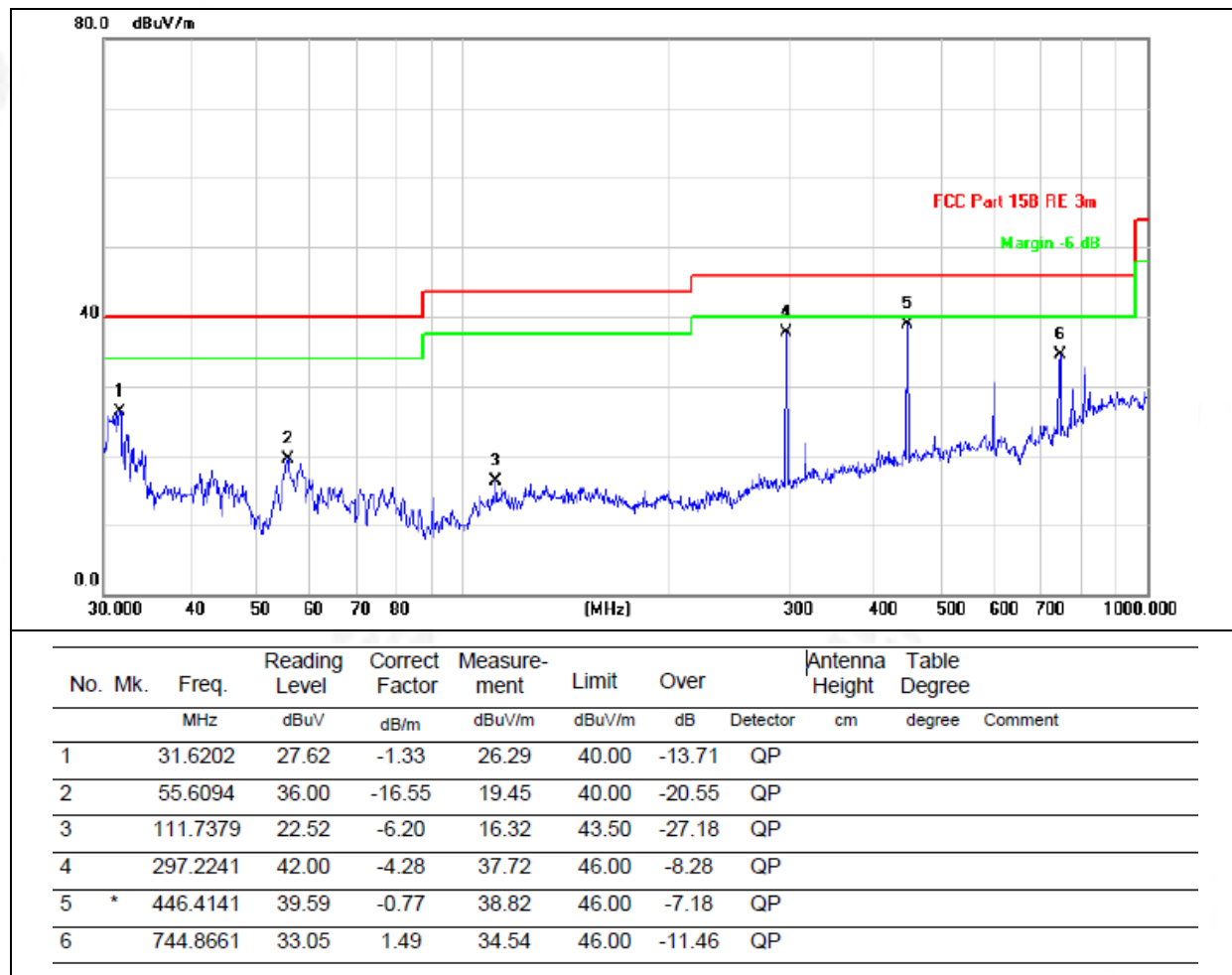
## 4.2.6 TEST RESULTS

Between 9KHz – 30MHz

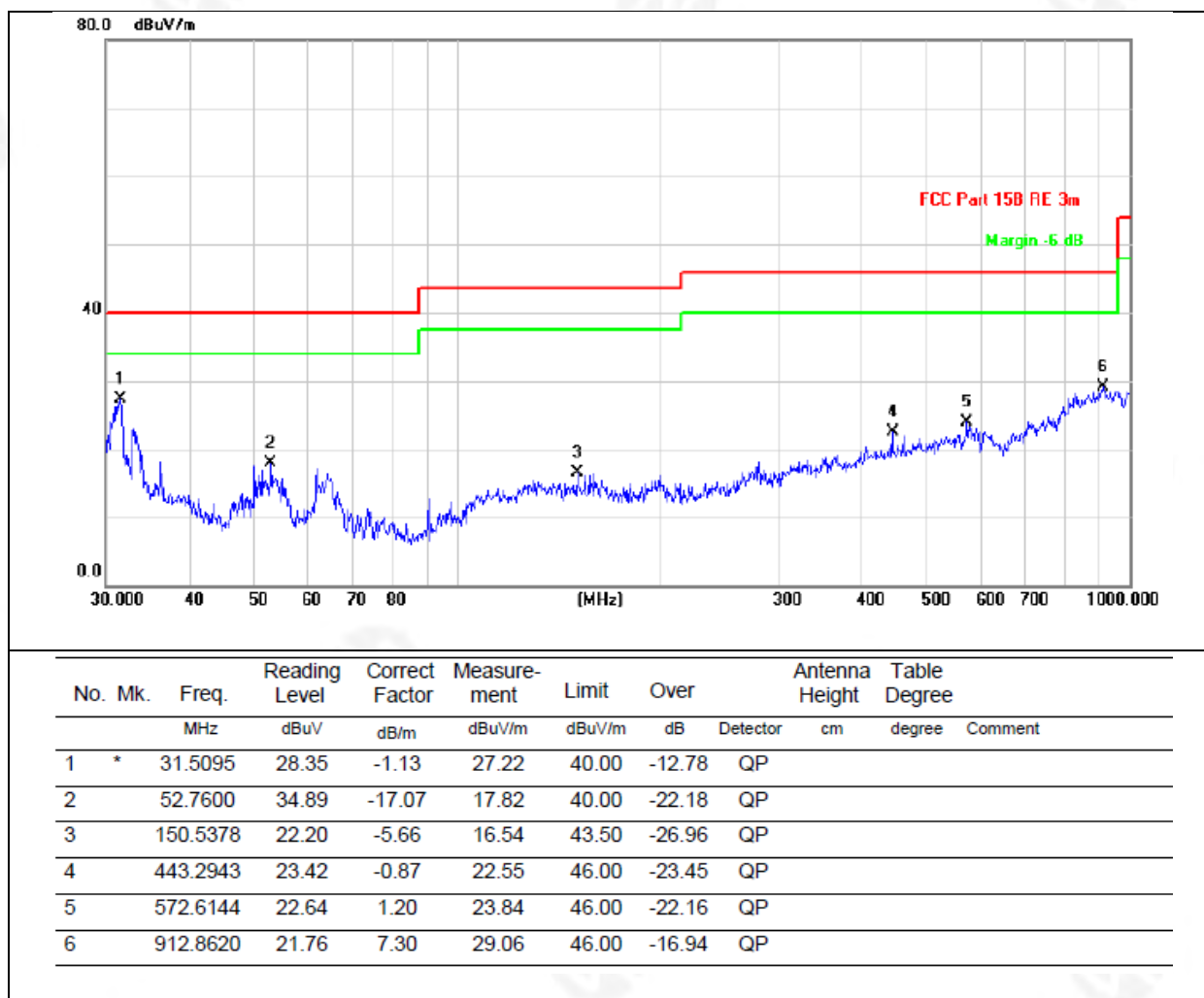
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Between 30MHz – 1GHz

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



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



Remarks:

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



1GHz~40GHz

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| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:5745MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 11490     | 55.52            | 30.55             | 5.77          | 24.66             | 55.40             | 74           | -18.60 | PK                   |
| V                   | 11490     | 43.32            | 30.55             | 5.77          | 24.66             | 43.20             | 54           | -10.80 | AV                   |
| V                   | 17235     | 55.86            | 30.33             | 6.32          | 24.55             | 56.40             | 74           | -17.60 | PK                   |
| V                   | 17235     | 41.39            | 30.33             | 6.32          | 24.55             | 41.93             | 54           | -12.07 | AV                   |
| V                   | 22980     | 55.58            | 30.85             | 7.45          | 24.69             | 56.87             | 74           | -17.13 | PK                   |
| V                   | 22980     | 40.02            | 30.85             | 7.45          | 24.69             | 41.31             | 54           | -12.69 | AV                   |
| H                   | 11490     | 55.60            | 30.55             | 5.77          | 24.66             | 55.48             | 74           | -18.52 | PK                   |
| H                   | 11490     | 44.48            | 30.55             | 5.77          | 24.66             | 44.36             | 54           | -9.64  | AV                   |
| H                   | 17235     | 55.07            | 30.33             | 6.32          | 24.55             | 55.61             | 74           | -18.39 | PK                   |
| H                   | 17235     | 41.61            | 30.33             | 6.32          | 24.55             | 42.15             | 54           | -11.85 | AV                   |
| H                   | 22980     | 55.90            | 30.85             | 7.45          | 24.69             | 57.19             | 74           | -16.81 | PK                   |
| H                   | 22980     | 39.75            | 30.85             | 7.45          | 24.69             | 41.04             | 54           | -12.96 | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:5785MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 11570     | 57.24            | 30.55             | 5.77          | 24.66             | 57.12             | 74           | -16.88 | PK                   |
| V                      | 11570     | 43.01            | 30.55             | 5.77          | 24.66             | 42.89             | 54           | -11.11 | AV                   |
| V                      | 17355     | 55.81            | 30.33             | 6.32          | 24.55             | 56.35             | 74           | -17.65 | PK                   |
| V                      | 17355     | 42.77            | 30.33             | 6.32          | 24.55             | 43.31             | 54           | -10.69 | AV                   |
| V                      | 23140     | 53.98            | 30.85             | 7.45          | 24.69             | 55.27             | 74           | -18.73 | PK                   |
| V                      | 23140     | 42.24            | 30.85             | 7.45          | 24.69             | 43.53             | 54           | -10.47 | AV                   |
| H                      | 11570     | 58.76            | 30.55             | 5.77          | 24.66             | 58.64             | 74           | -15.36 | PK                   |
| H                      | 11570     | 42.86            | 30.55             | 5.77          | 24.66             | 42.74             | 54           | -11.26 | AV                   |
| H                      | 17355     | 55.56            | 30.33             | 6.32          | 24.55             | 56.10             | 74           | -17.90 | PK                   |
| H                      | 17355     | 42.17            | 30.33             | 6.32          | 24.55             | 42.71             | 54           | -11.29 | AV                   |
| H                      | 23140     | 55.61            | 30.85             | 7.45          | 24.69             | 56.90             | 74           | -17.10 | PK                   |
| H                      | 23140     | 39.96            | 30.85             | 7.45          | 24.69             | 41.25             | 54           | -12.75 | AV                   |

| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:5825MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 11650     | 55.10            | 30.55             | 5.77          | 24.66             | 54.98             | 74           | -19.02 | PK                   |
| V                    | 11650     | 43.42            | 30.55             | 5.77          | 24.66             | 43.30             | 54           | -10.70 | AV                   |
| V                    | 17475     | 55.12            | 30.33             | 6.32          | 24.55             | 55.66             | 74           | -18.34 | PK                   |
| V                    | 17475     | 41.80            | 30.33             | 6.32          | 24.55             | 42.34             | 54           | -11.66 | AV                   |
| V                    | 23300     | 55.21            | 30.85             | 7.45          | 24.69             | 56.50             | 74           | -17.50 | PK                   |
| V                    | 23300     | 41.09            | 30.85             | 7.45          | 24.69             | 42.38             | 54           | -11.62 | AV                   |
| H                    | 11650     | 58.75            | 30.55             | 5.77          | 24.66             | 58.63             | 74           | -15.37 | PK                   |
| H                    | 11650     | 44.36            | 30.55             | 5.77          | 24.66             | 44.24             | 54           | -9.76  | AV                   |
| H                    | 17475     | 54.76            | 30.33             | 6.32          | 24.55             | 55.30             | 74           | -18.70 | PK                   |
| H                    | 17475     | 41.19            | 30.33             | 6.32          | 24.55             | 41.73             | 54           | -12.27 | AV                   |
| H                    | 23300     | 55.66            | 30.85             | 7.45          | 24.69             | 56.95             | 74           | -17.05 | PK                   |
| H                    | 23300     | 42.50            | 30.85             | 7.45          | 24.69             | 43.79             | 54           | -10.21 | AV                   |

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,  
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:5745MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 11490     | 56.39            | 30.55             | 5.77          | 24.66             | 56.27             | 74           | -17.73 | PK                   |
| V                   | 11490     | 43.41            | 30.55             | 5.77          | 24.66             | 43.29             | 54           | -10.71 | AV                   |
| V                   | 17235     | 55.25            | 30.33             | 6.32          | 24.55             | 55.79             | 74           | -18.21 | PK                   |
| V                   | 17235     | 41.71            | 30.33             | 6.32          | 24.55             | 42.25             | 54           | -11.75 | AV                   |
| V                   | 22980     | 56.27            | 30.85             | 7.45          | 24.69             | 57.56             | 74           | -16.44 | PK                   |
| V                   | 22980     | 40.93            | 30.85             | 7.45          | 24.69             | 42.22             | 54           | -11.78 | AV                   |
| H                   | 11490     | 57.10            | 30.55             | 5.77          | 24.66             | 56.98             | 74           | -17.02 | PK                   |
| H                   | 11490     | 41.91            | 30.55             | 5.77          | 24.66             | 41.79             | 54           | -12.21 | AV                   |
| H                   | 17235     | 56.02            | 30.33             | 6.32          | 24.55             | 56.56             | 74           | -17.44 | PK                   |
| H                   | 17235     | 40.88            | 30.33             | 6.32          | 24.55             | 41.42             | 54           | -12.58 | AV                   |
| H                   | 22980     | 55.33            | 30.85             | 7.45          | 24.69             | 56.62             | 74           | -17.38 | PK                   |
| H                   | 22980     | 43.17            | 30.85             | 7.45          | 24.69             | 44.46             | 54           | -9.54  | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-amp<br>lifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:5785MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 11570     | 56.53            | 30.55             | 5.77          | 24.66             | 56.41             | 74           | -17.59 | PK                   |
| V                      | 11570     | 42.34            | 30.55             | 5.77          | 24.66             | 42.22             | 54           | -11.78 | AV                   |
| V                      | 17355     | 55.88            | 30.33             | 6.32          | 24.55             | 56.42             | 74           | -17.58 | PK                   |
| V                      | 17355     | 43.37            | 30.33             | 6.32          | 24.55             | 43.91             | 54           | -10.09 | AV                   |
| V                      | 23140     | 55.99            | 30.85             | 7.45          | 24.69             | 57.28             | 74           | -16.72 | PK                   |

|   |       |       |       |      |       |       |    |        |    |
|---|-------|-------|-------|------|-------|-------|----|--------|----|
| V | 23140 | 41.60 | 30.85 | 7.45 | 24.69 | 42.89 | 54 | -11.11 | AV |
| H | 11570 | 58.46 | 30.55 | 5.77 | 24.66 | 58.34 | 74 | -15.66 | PK |
| H | 11570 | 42.65 | 30.55 | 5.77 | 24.66 | 42.53 | 54 | -11.47 | AV |
| H | 17355 | 55.44 | 30.33 | 6.32 | 24.55 | 55.98 | 74 | -18.02 | PK |
| H | 17355 | 43.10 | 30.33 | 6.32 | 24.55 | 43.64 | 54 | -10.36 | AV |
| H | 23140 | 54.69 | 30.85 | 7.45 | 24.69 | 55.98 | 74 | -18.02 | PK |
| H | 23140 | 43.49 | 30.85 | 7.45 | 24.69 | 44.78 | 54 | -9.22  | AV |

| Polar (H/V)          | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detect or Type |
|----------------------|-----------------|----------------------|--------------------|-----------------|---------------------|-------------------------|-----------------|-------------|----------------|
| High Channel:5825MHz |                 |                      |                    |                 |                     |                         |                 |             |                |
| V                    | 11650           | 57.67                | 30.55              | 5.77            | 24.66               | 57.55                   | 74              | -16.45      | PK             |
| V                    | 11650           | 42.67                | 30.55              | 5.77            | 24.66               | 42.55                   | 54              | -11.45      | AV             |
| V                    | 17475           | 54.77                | 30.33              | 6.32            | 24.55               | 55.31                   | 74              | -18.69      | PK             |
| V                    | 17475           | 40.93                | 30.33              | 6.32            | 24.55               | 41.47                   | 54              | -12.53      | AV             |
| V                    | 23300           | 54.09                | 30.85              | 7.45            | 24.69               | 55.38                   | 74              | -18.62      | PK             |
| V                    | 23300           | 41.02                | 30.85              | 7.45            | 24.69               | 42.31                   | 54              | -11.69      | AV             |
| H                    | 11650           | 56.84                | 30.55              | 5.77            | 24.66               | 56.72                   | 74              | -17.28      | PK             |
| H                    | 11650           | 43.83                | 30.55              | 5.77            | 24.66               | 43.71                   | 54              | -10.29      | AV             |
| H                    | 17475           | 55.93                | 30.33              | 6.32            | 24.55               | 56.47                   | 74              | -17.53      | PK             |
| H                    | 17475           | 43.17                | 30.33              | 6.32            | 24.55               | 43.71                   | 54              | -10.29      | AV             |
| H                    | 23300           | 56.31                | 30.85              | 7.45            | 24.69               | 57.60                   | 74              | -16.40      | PK             |
| H                    | 23300           | 41.64                | 30.85              | 7.45            | 24.69               | 42.93                   | 54              | -11.07      | AV             |

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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| Polar (H/V)         | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detect or Type |
|---------------------|-----------------|----------------------|--------------------|-----------------|---------------------|-------------------------|-----------------|-------------|----------------|
| Low Channel:5755MHz |                 |                      |                    |                 |                     |                         |                 |             |                |
| V                   | 11510           | 58.15                | 30.55              | 5.77            | 24.66               | 58.03                   | 74              | -15.97      | PK             |
| V                   | 11510           | 43.88                | 30.55              | 5.77            | 24.66               | 43.76                   | 54              | -10.24      | AV             |
| V                   | 17265           | 55.81                | 30.33              | 6.32            | 24.55               | 56.35                   | 74              | -17.65      | PK             |
| V                   | 17265           | 41.07                | 30.33              | 6.32            | 24.55               | 41.61                   | 54              | -12.39      | AV             |
| V                   | 23020           | 55.21                | 30.85              | 7.45            | 24.69               | 56.50                   | 74              | -17.50      | PK             |
| V                   | 23020           | 40.10                | 30.85              | 7.45            | 24.69               | 41.39                   | 54              | -12.61      | AV             |
| H                   | 11510           | 55.60                | 30.55              | 5.77            | 24.66               | 55.48                   | 74              | -18.52      | PK             |
| H                   | 11510           | 44.49                | 30.55              | 5.77            | 24.66               | 44.37                   | 54              | -9.63       | AV             |
| H                   | 17265           | 55.64                | 30.33              | 6.32            | 24.55               | 56.18                   | 74              | -17.82      | PK             |
| H                   | 17265           | 41.24                | 30.33              | 6.32            | 24.55               | 41.78                   | 54              | -12.22      | AV             |
| H                   | 23020           | 55.68                | 30.85              | 7.45            | 24.69               | 56.97                   | 74              | -17.03      | PK             |
| H                   | 23020           | 42.35                | 30.85              | 7.45            | 24.69               | 43.64                   | 54              | -10.36      | AV             |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:5795MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 11590     | 55.09            | 30.55             | 5.77          | 24.66             | 54.97             | 74           | -19.03 | PK                   |
| V                      | 11590     | 43.50            | 30.55             | 5.77          | 24.66             | 43.38             | 54           | -10.62 | AV                   |
| V                      | 17385     | 55.28            | 30.33             | 6.32          | 24.55             | 55.82             | 74           | -18.18 | PK                   |
| V                      | 17385     | 43.12            | 30.33             | 6.32          | 24.55             | 43.66             | 54           | -10.34 | AV                   |
| V                      | 23180     | 55.71            | 30.85             | 7.45          | 24.69             | 57.00             | 74           | -17.00 | PK                   |
| V                      | 23180     | 42.86            | 30.85             | 7.45          | 24.69             | 44.15             | 54           | -9.85  | AV                   |
| H                      | 11590     | 56.20            | 30.55             | 5.77          | 24.66             | 56.08             | 74           | -17.92 | PK                   |
| H                      | 11590     | 44.42            | 30.55             | 5.77          | 24.66             | 44.30             | 54           | -9.70  | AV                   |
| H                      | 17385     | 55.29            | 30.33             | 6.32          | 24.55             | 55.83             | 74           | -18.17 | PK                   |
| H                      | 17385     | 41.86            | 30.33             | 6.32          | 24.55             | 42.40             | 54           | -11.60 | AV                   |
| H                      | 23180     | 55.80            | 30.85             | 7.45          | 24.69             | 57.09             | 74           | -16.91 | PK                   |
| H                      | 23180     | 41.70            | 30.85             | 7.45          | 24.69             | 42.99             | 54           | -11.01 | AV                   |

**Remark:**

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

Margin= Emission Level - Limit

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

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

**802.11ac40**

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:5755MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 11510     | 56.12            | 30.55             | 5.77          | 24.66             | 56.00             | 74           | -18.00 | PK                   |
| V                   | 11510     | 42.01            | 30.55             | 5.77          | 24.66             | 41.89             | 54           | -12.11 | AV                   |
| V                   | 17265     | 56.15            | 30.33             | 6.32          | 24.55             | 56.69             | 74           | -17.31 | PK                   |
| V                   | 17265     | 42.66            | 30.33             | 6.32          | 24.55             | 43.20             | 54           | -10.80 | AV                   |
| V                   | 23020     | 55.86            | 30.85             | 7.45          | 24.69             | 57.15             | 74           | -16.85 | PK                   |
| V                   | 23020     | 42.26            | 30.85             | 7.45          | 24.69             | 43.55             | 54           | -10.45 | AV                   |
| H                   | 11510     | 54.88            | 30.55             | 5.77          | 24.66             | 54.76             | 74           | -19.24 | PK                   |
| H                   | 11510     | 42.02            | 30.55             | 5.77          | 24.66             | 41.90             | 54           | -12.10 | AV                   |
| H                   | 17265     | 55.66            | 30.33             | 6.32          | 24.55             | 56.20             | 74           | -17.80 | PK                   |
| H                   | 17265     | 41.60            | 30.33             | 6.32          | 24.55             | 42.14             | 54           | -11.86 | AV                   |
| H                   | 23020     | 56.52            | 30.85             | 7.45          | 24.69             | 57.81             | 74           | -16.19 | PK                   |
| H                   | 23020     | 42.01            | 30.85             | 7.45          | 24.69             | 43.30             | 54           | -10.70 | AV                   |

| Polar<br>(H/V)         | Frequenc<br>y | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|---------------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)         | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:5795MHz |               |                  |                   |               |                   |                   |              |        |                      |
| V                      | 11590         | 58.18            | 30.55             | 5.77          | 24.66             | 58.06             | 74           | -15.94 | PK                   |
| V                      | 11590         | 41.87            | 30.55             | 5.77          | 24.66             | 41.75             | 54           | -12.25 | AV                   |
| V                      | 17385         | 54.89            | 30.33             | 6.32          | 24.55             | 55.43             | 74           | -18.57 | PK                   |
| V                      | 17385         | 42.38            | 30.33             | 6.32          | 24.55             | 42.92             | 54           | -11.08 | AV                   |
| V                      | 23180         | 55.71            | 30.85             | 7.45          | 24.69             | 57.00             | 74           | -17.00 | PK                   |
| V                      | 23180         | 40.51            | 30.85             | 7.45          | 24.69             | 41.80             | 54           | -12.20 | AV                   |

|   |       |       |       |      |       |       |    |        |    |
|---|-------|-------|-------|------|-------|-------|----|--------|----|
| H | 11590 | 55.01 | 30.55 | 5.77 | 24.66 | 54.89 | 74 | -19.11 | PK |
| H | 11590 | 42.98 | 30.55 | 5.77 | 24.66 | 42.86 | 54 | -11.14 | AV |
| H | 17385 | 56.76 | 30.33 | 6.32 | 24.55 | 57.30 | 74 | -16.70 | PK |
| H | 17385 | 42.36 | 30.33 | 6.32 | 24.55 | 42.90 | 54 | -11.10 | AV |
| H | 23180 | 54.71 | 30.85 | 7.45 | 24.69 | 56.00 | 74 | -18.00 | PK |
| H | 23180 | 43.41 | 30.85 | 7.45 | 24.69 | 44.70 | 54 | -9.30  | AV |

## Remark:

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

Margin= Emission Level - Limit

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

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



Radiated Band Edge Test:

| Worse case mode: |               | 802.11n(HT20)(6.5Mbps) |                | Test channel: |        | 149           |           |
|------------------|---------------|------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                 | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                   | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650.00          | 56.43         | -0.12                  | 56.31          | 74            | -17.69 | peak          | H         |
|                  | 43.07         | -0.12                  | 42.95          | 54            | -11.05 | AV            | H         |
| 5650.00          | 56.27         | -0.12                  | 56.15          | 74            | -17.85 | peak          | V         |
|                  | 42.62         | -0.12                  | 42.50          | 54            | -11.50 | AV            | V         |

| Worse case mode: |               | 802.11n(HT20)(6.5Mbps) |                | Test channel: |        | 165           |           |
|------------------|---------------|------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                 | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                   | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5850.00          | 56.94         | -0.12                  | 56.82          | 74            | -17.18 | peak          | H         |
|                  | 42.34         | -0.12                  | 42.22          | 54            | -11.78 | AV            | H         |
| 5850.00          | 55.99         | -0.12                  | 55.87          | 74            | -18.13 | peak          | V         |
|                  | 43.67         | -0.12                  | 43.55          | 54            | -10.45 | AV            | V         |

| Worse case mode: |               | 802.11n(HT40)(13.5Mbps) |                | Test channel: |        | 151           |           |
|------------------|---------------|-------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                  | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                    | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650.00          | 58.09         | -0.12                   | 57.97          | 74            | -16.03 | peak          | H         |
|                  | 43.88         | -0.12                   | 43.76          | 54            | -10.24 | AV            | H         |
| 5650.00          | 54.35         | -0.12                   | 54.23          | 74            | -19.77 | peak          | V         |
|                  | 43.67         | -0.12                   | 43.55          | 54            | -10.45 | AV            | V         |

| Worse case mode: |               | 802.11n(HT40)(13.5Mbps) |                | Test channel: |        | 159           |           |
|------------------|---------------|-------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                  | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                    | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5850.00          | 57.71         | -0.12                   | 57.59          | 74            | -16.41 | peak          | H         |
|                  | 43.00         | -0.12                   | 42.88          | 54            | -11.12 | AV            | H         |
| 5850.00          | 56.83         | -0.12                   | 56.71          | 74            | -17.29 | peak          | V         |
|                  | 43.58         | -0.12                   | 43.46          | 54            | -10.54 | AV            | V         |

| Worse case mode: |               | 802.11ac(HT20)(6.5Mbps) |                | Test channel: |        | 149           |           |
|------------------|---------------|-------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                  | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                    | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650.00          | 56.28         | -0.12                   | 56.16          | 74            | -17.84 | peak          | H         |
|                  | 43.62         | -0.12                   | 43.50          | 54            | -10.50 | AV            | H         |
| 5650.00          | 56.81         | -0.12                   | 56.69          | 74            | -17.31 | peak          | V         |
|                  | 43.58         | -0.12                   | 43.46          | 54            | -10.54 | AV            | V         |



| Worse case mode: |               | 802.11ac(HT20)(6.5Mbps) |                | Test channel: |        | 165           |           |
|------------------|---------------|-------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                  | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                    | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5850.00          | 58.93         | -0.12                   | 58.81          | 74            | -15.19 | peak          | H         |
|                  | 44.21         | -0.12                   | 44.09          | 54            | -9.91  | AV            | H         |
| 5850.00          | 55.23         | -0.12                   | 55.11          | 74            | -18.89 | peak          | V         |
|                  | 43.61         | -0.12                   | 43.49          | 54            | -10.51 | AV            | V         |

| Worse case mode: |               | 802.11ac(VHT40)(13.5Mbps) |                | Test channel: |        | 151           |           |
|------------------|---------------|---------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                    | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                      | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650.00          | 56.07         | -0.12                     | 55.95          | 74            | -18.05 | peak          | H         |
|                  | 41.74         | -0.12                     | 41.62          | 54            | -12.38 | AV            | H         |
| 5650.00          | 55.02         | -0.12                     | 54.90          | 74            | -19.10 | peak          | V         |
|                  | 43.76         | -0.12                     | 43.64          | 54            | -10.36 | AV            | V         |

| Worse case mode: |               | 802.11ac(VHT40)(13.5Mbps) |                | Test channel: |        | 159           |           |
|------------------|---------------|---------------------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor                    | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)                      | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5850.00          | 57.64         | -0.12                     | 57.52          | 74            | -16.48 | peak          | H         |
|                  | 44.30         | -0.12                     | 44.18          | 54            | -9.82  | AV            | H         |
| 5850.00          | 56.65         | -0.12                     | 56.53          | 74            | -17.47 | peak          | V         |
|                  | 41.66         | -0.12                     | 41.54          | 54            | -12.46 | AV            | V         |

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

## 5. POWER SPECTRAL DENSITY TEST

|                   |                                                 |
|-------------------|-------------------------------------------------|
| Test Requirement: | FCC 47 CFR Part 15 Subpart E Section 15.407 (a) |
| Test Method:      | KDB 789033 D02 v02r01                           |

### 5.1 APPLIED PROCEDURES / LIMIT

|        |          |              |
|--------|----------|--------------|
| LIMIT: | U-NII-1  | 11DBM/MHZ    |
|        | U-NII-2A | 11DBM/MHZ    |
|        | U-NII-2C | 11DBM/MHZ    |
|        | U-NII-3  | 30DBM/500KHZ |

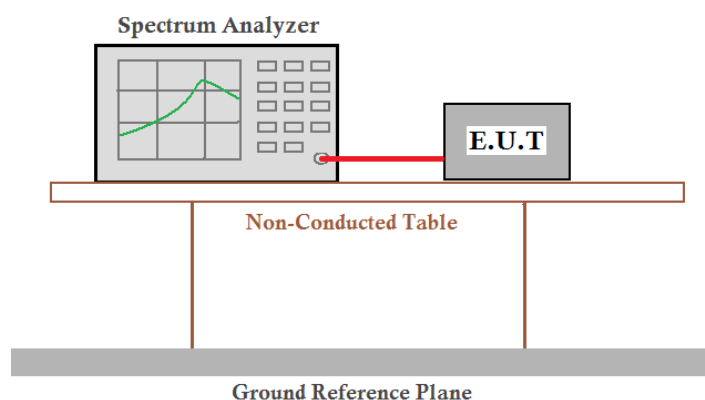
### 5.2 TEST PROCEDURE

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

### 5.3 DEVIATION FROM STANDARD

No deviation.

### 5.4 TEST SETUP



## 5.5 EUT OPERATION CONDITIONS

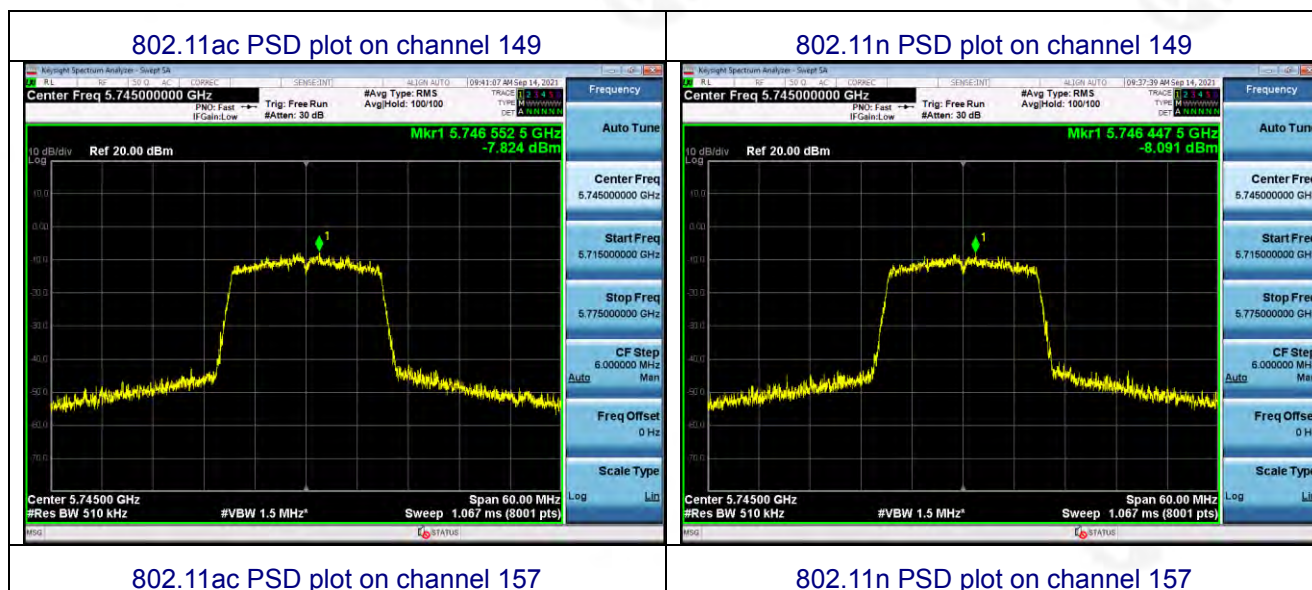
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

## 5.6 TEST RESULT

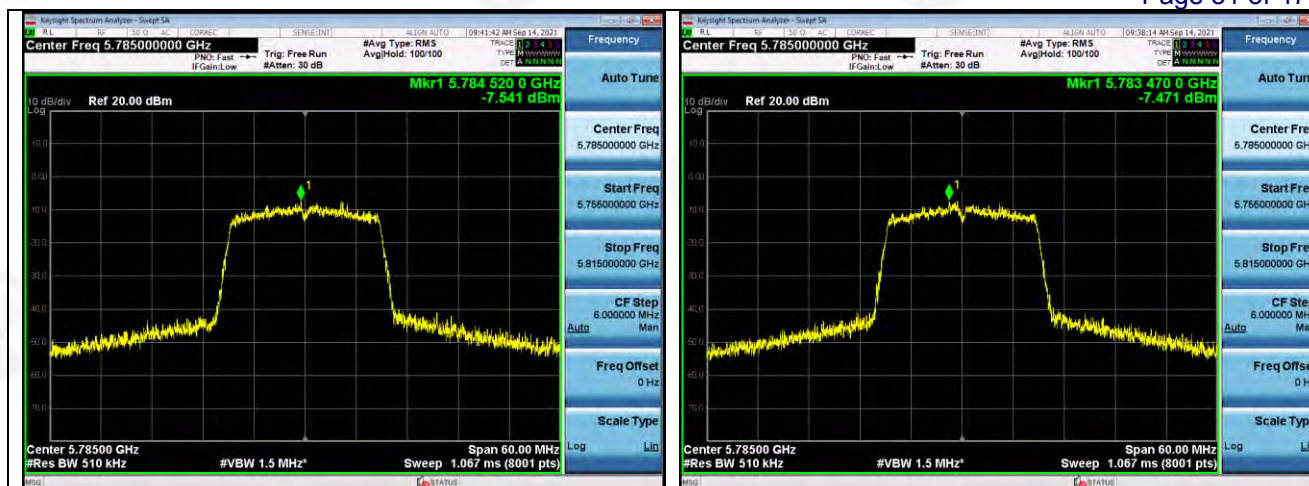
|               |                      |                     |         |
|---------------|----------------------|---------------------|---------|
| Temperature : | 26°C                 | Relative Humidity : | 54%     |
| Pressure :    | 101kPa               | Test Voltage :      | DC 3.7V |
| Test Mode :   | TX frequency band IV |                     |         |

| Test Mode | Test Channel | Meas PSD [dBm/510kHz] | PSD [dBm/500kHz] | Limit [dBm/500kHz] | Verdict |
|-----------|--------------|-----------------------|------------------|--------------------|---------|
| 11N20     | 5745         | -8.091                | -8.177           | 30.00              | PASS    |
| 11N20     | 5785         | -7.471                | -7.557           | 30.00              | PASS    |
| 11N20     | 5825         | -6.295                | -6.381           | 30.00              | PASS    |
| 11N40     | 5755         | -11.212               | -11.298          | 30.00              | PASS    |
| 11N40     | 5795         | -11.095               | -11.181          | 30.00              | PASS    |
| 11AC20    | 5745         | -7.824                | -7.910           | 30.00              | PASS    |
| 11AC20    | 5785         | -7.541                | -7.627           | 30.00              | PASS    |
| 11AC20    | 5825         | -6.485                | -6.571           | 30.00              | PASS    |
| 11AC40    | 5755         | -11.418               | -11.504          | 30.00              | PASS    |
| 11AC40    | 5795         | -10.194               | -10.280          | 30.00              | PASS    |

$$\text{PSD[dBm/500kHz]} = \text{Meas PSD [dBm/510kHz]} + 10 \cdot \log(500/510)$$

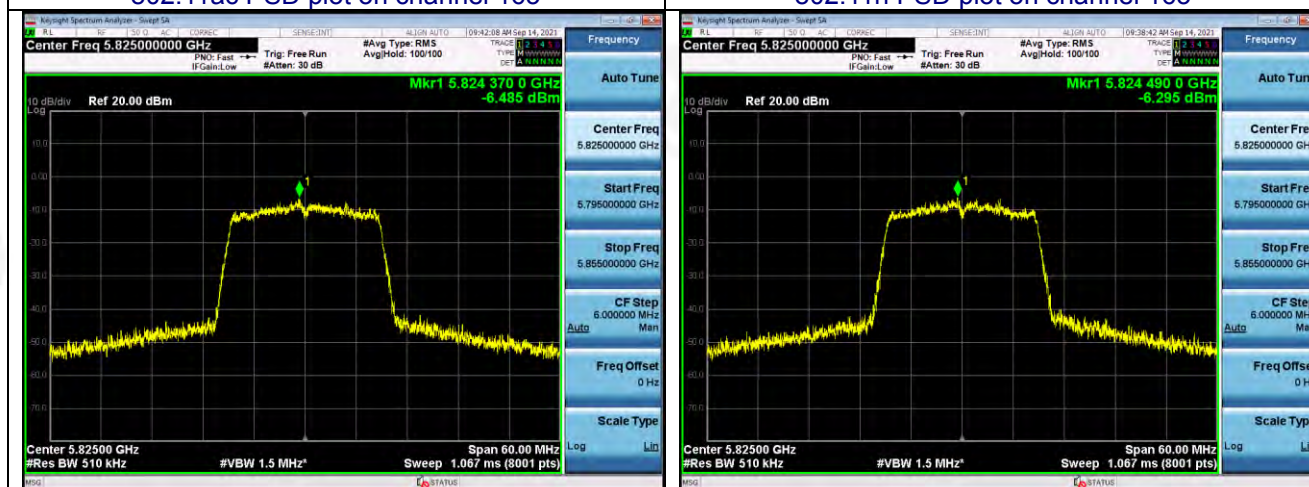






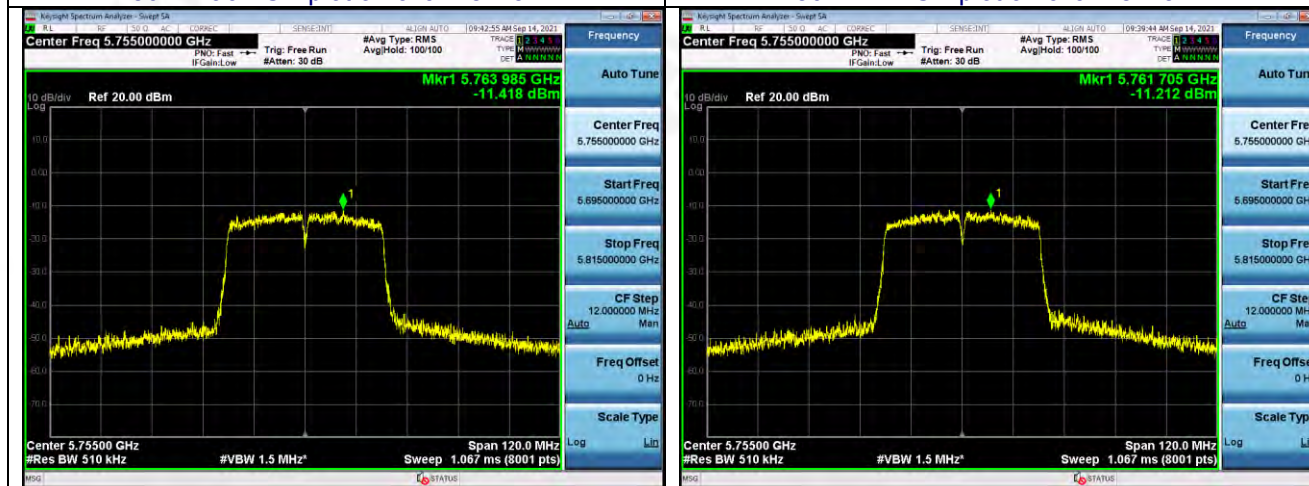
802.11ac PSD plot on channel 165

802.11n PSD plot on channel 165



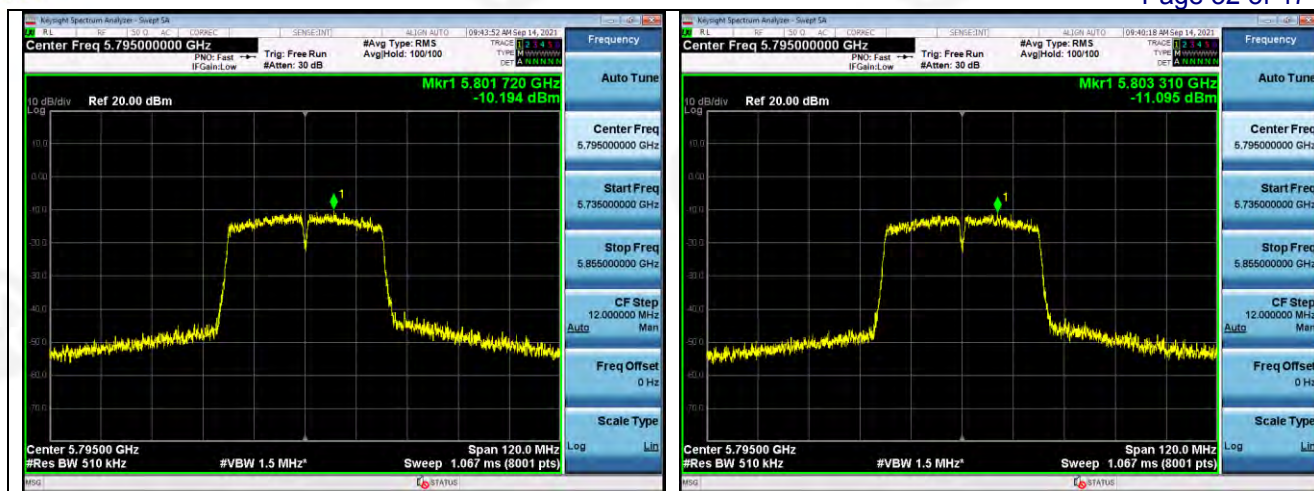
802.11ac PSD plot on channel 151

802.11n PSD plot on channel 151



802.11ac PSD plot on channel 159

802.11n PSD plot on channel 159



## 6. CHANNEL BANDWIDTH

|                   |                                      |
|-------------------|--------------------------------------|
| Test Requirement: | Part 15 Subpart C Section 15.407 (e) |
| Test Method:      | KDB 789033 D02 v02r01                |

### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15.407 (e) |                                         |        |
|--------------------|-----------------------------------------|--------|
| Test Item          | Limit                                   | Result |
| Bandwidth          | $\geq 500\text{KHz}$<br>(6dB bandwidth) | PASS   |

### 6.2 TEST PROCEDURE

- Set RBW = 100KHz.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

The following procedure shall be used for measuring (99 %) power bandwidth:

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1 % to 5 % of the OBW
- Set VBW  $\geq 3 \cdot \text{RBW}$
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- Use the 99 % power bandwidth function of the instrument (if available).
- If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

### 6.3 DEVIATION FROM STANDARD

No deviation.

### 6.4 TEST SETUP





## 6.5 EUT OPERATION CONDITIONS

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

## 6.6 TEST RESULT

|               |        |                     |         |
|---------------|--------|---------------------|---------|
| Temperature : | 26℃    | Relative Humidity : | 54%     |
| Pressure :    | 101kPa | Test Voltage :      | DC 3.7V |
| Test Mode :   | TX     |                     |         |

| Test CH | Channel Bandwidth (MHz) |            |           |           | Limit(KHz) | Result |
|---------|-------------------------|------------|-----------|-----------|------------|--------|
|         | 802.11ac20              | 802.11ac40 | 802.11n20 | 802.11n40 |            |        |
| Lowest  | 17.63                   | 36.38      | 17.64     | 36.38     | >500       | Pass   |
| Middle  | 17.58                   | --         | 17.61     | --        |            |        |
| Highest | 17.61                   | 36.37      | 17.64     | 36.37     |            |        |

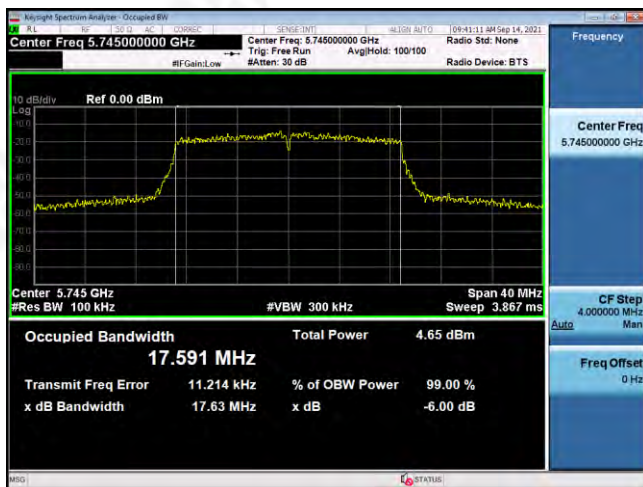
| Test CH | 99% Occupy Bandwidth (MHz) |            |           |           | Result |
|---------|----------------------------|------------|-----------|-----------|--------|
|         | 802.11ac20                 | 802.11ac40 | 802.11n20 | 802.11n40 |        |
| Lowest  | 17.591                     | 35.947     | 17.582    | 35.958    | Pass   |
| Middle  | 17.597                     | --         | 17.598    | --        |        |
| Highest | 17.565                     | 35.943     | 17.570    | 35.927    |        |

Test plot as follows:

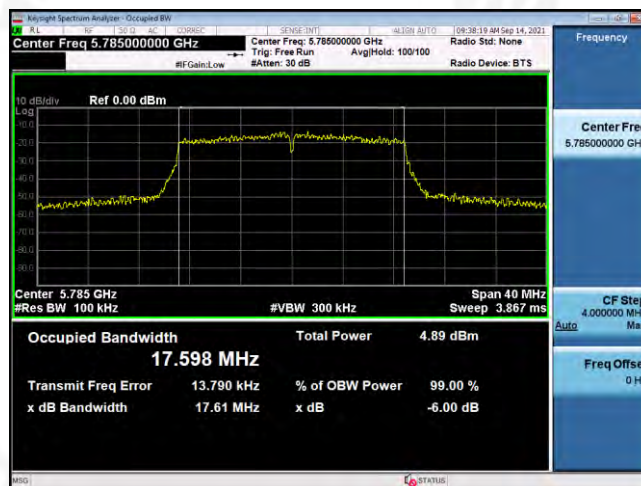
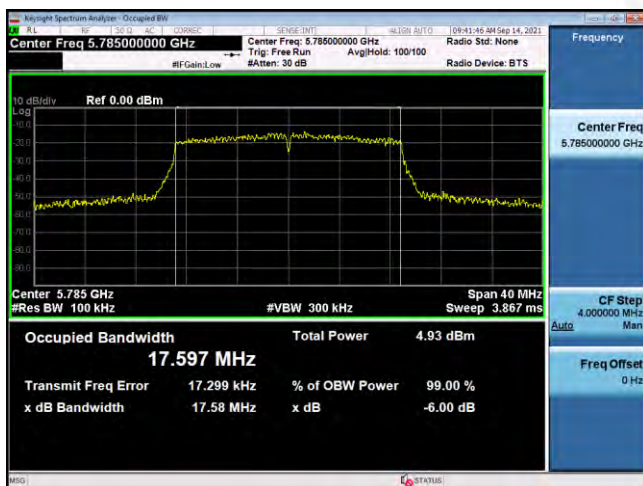
802.11ac20

802.11n20

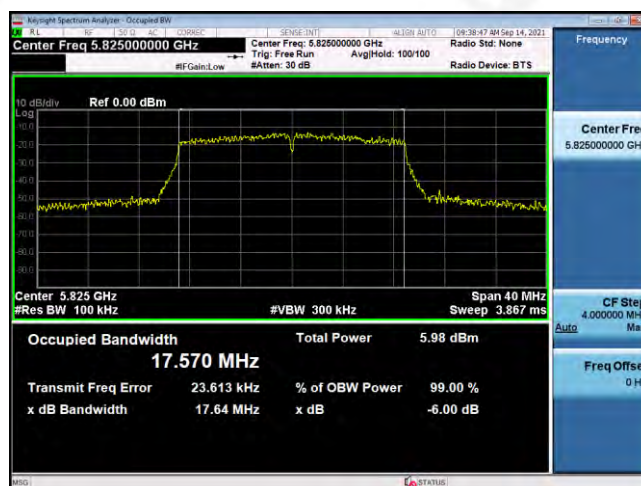
Lowest channel



Middle channel



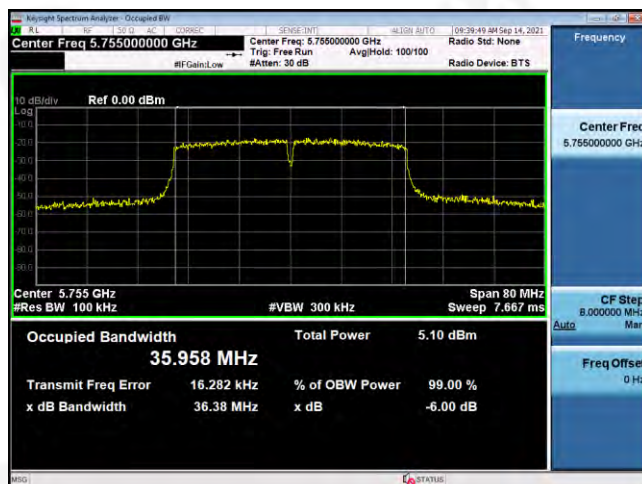
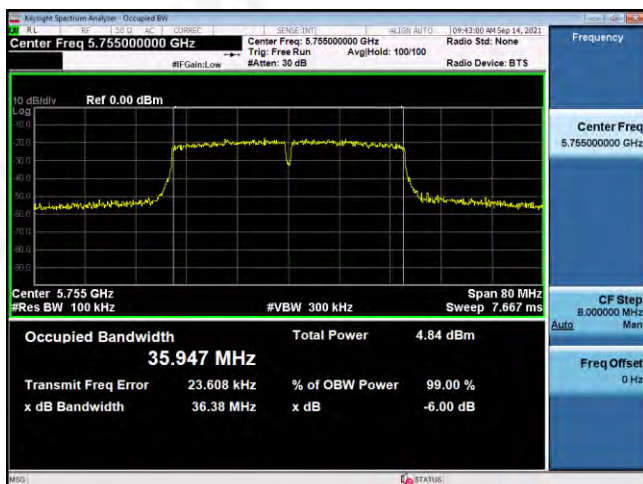
Highest channel



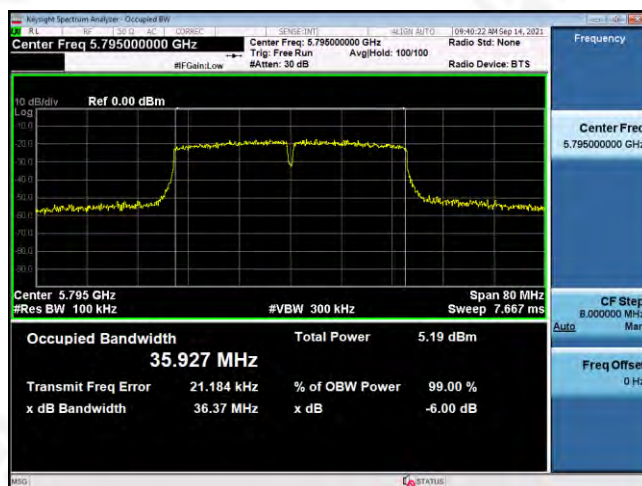
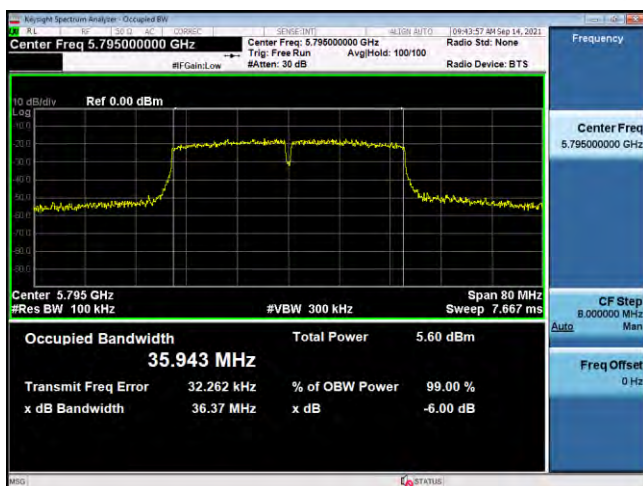
802.11ac40

801.11n40

### Lowest channel



### Highest channel





## 7. OUTPUT POWER TEST

|                   |                       |
|-------------------|-----------------------|
| Test Requirement: | 15.407 (a)(1)(2)(3)   |
| Test Method:      | KDB 789033 D02 v02r01 |

### 7.1 APPLIED PROCEDURES/LIMIT

| FCC Part15 (15.247) , Subpart C |                 |                          |        |
|---------------------------------|-----------------|--------------------------|--------|
| Test Item                       | Limit           | Frequency Range<br>(MHz) | Result |
| Conducted Output Power          | 1 watt or 30dBm | 5275-5850                | PASS   |

### 7.2 DEVIATION FROM STANDARD

No deviation.

### 7.3 TEST SETUP



### 7.4 EUT OPERATION CONDITIONS

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

## 7.5 TEST RESULT

|               |        |                     |         |
|---------------|--------|---------------------|---------|
| Temperature : | 26℃    | Relative Humidity : | 54%     |
| Pressure :    | 101kPa | Test Voltage :      | DC 3.7V |

| Test CH            | Frequency | Peak Output Power | Limit(dBm) | Result |
|--------------------|-----------|-------------------|------------|--------|
|                    |           | (dBm)             | (dBm)      |        |
|                    | (MHz)     |                   |            |        |
| TX 802.11ac20 mode |           |                   |            |        |
| CH149              | 5745      | 1.17              | 30.00      | Pass   |
| CH157              | 5785      | 1.68              | 30.00      | Pass   |
| CH165              | 5825      | 1.23              | 30.00      | Pass   |
| TX 802.11n20 mode  |           |                   |            |        |
| CH149              | 5745      | 1.34              | 30.00      | Pass   |
| CH157              | 5785      | 0.96              | 30.00      | Pass   |
| CH165              | 5825      | 0.89              | 30.00      | Pass   |
| TX 802.11ac40 mode |           |                   |            |        |
| CH151              | 5755      | -0.26             | 30.00      | Pass   |
| CH159              | 5795      | -0.55             | 30.00      | Pass   |
| TX 802.11n40 mode  |           |                   |            |        |
| CH151              | 5755      | -0.98             | 30.00      | Pass   |
| CH159              | 5795      | -0.88             | 30.00      | Pass   |



## 8. OUT OF BAND EDGE EMISSION

|                   |                       |
|-------------------|-----------------------|
| Test Requirement: | 15.407 (b)            |
| Test Method:      | KDB 789033 D02 v02r01 |

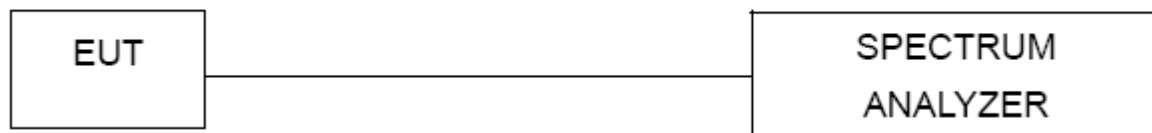
### 8.1 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

### 8.2 DEVIATION FROM STANDARD

No deviation.

### 8.3 TEST SETUP



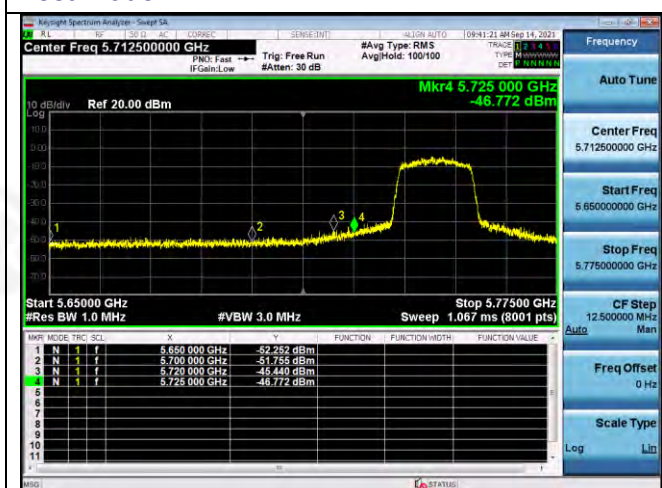
### 8.4 EUT OPERATION CONDITIONS

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

### 8.5 TEST RESULTS

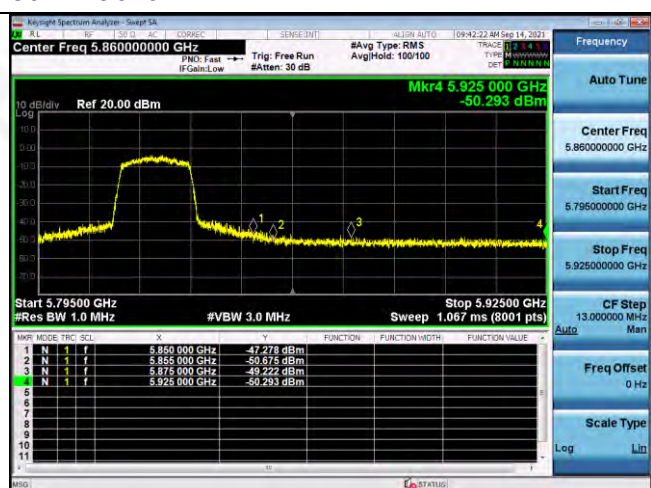
Test plot as follows:

Test mode:



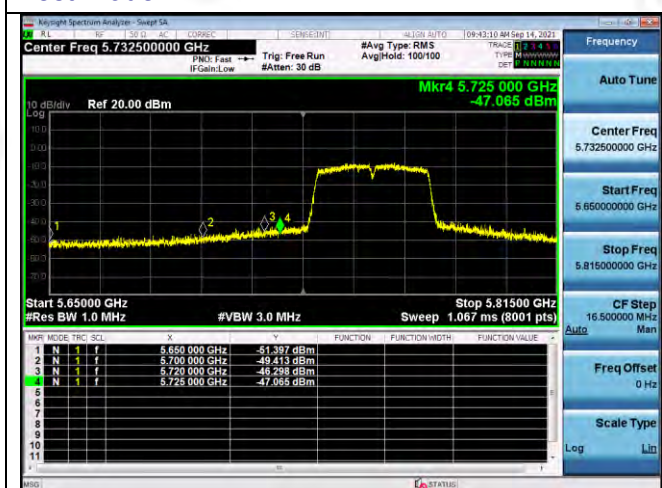
Lowest channel

802.11ac20



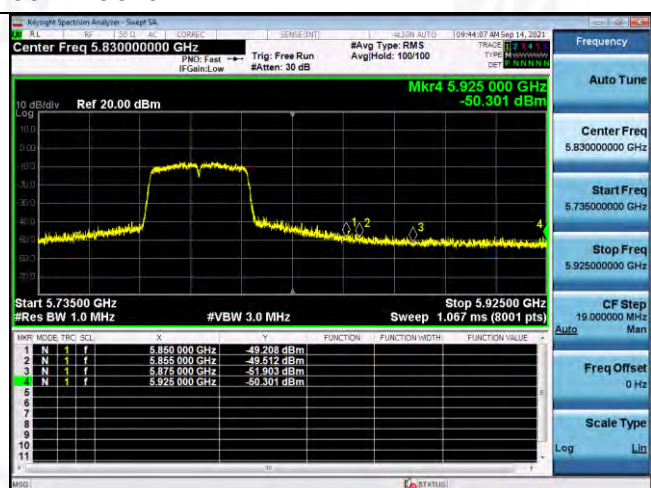
Highest channel

Test mode:



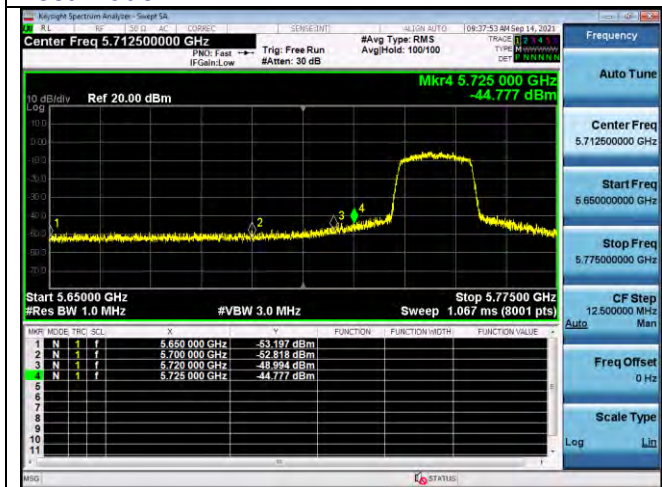
Lowest channel

802.11ac40



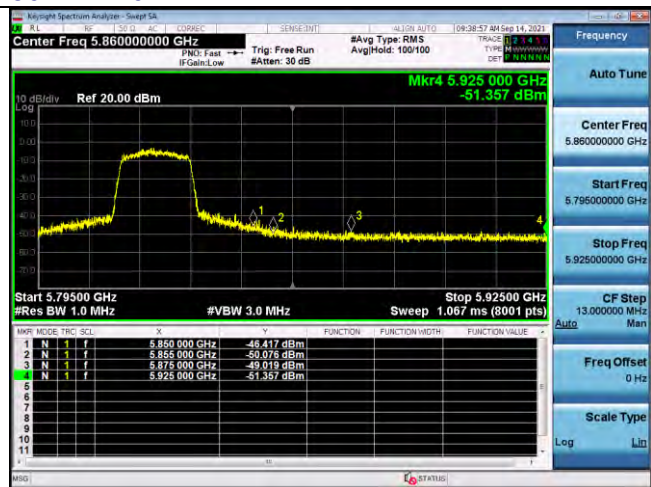
Highest channel

Test mode:



Lowest channel

802.11n20



Highest channel

Test mode:



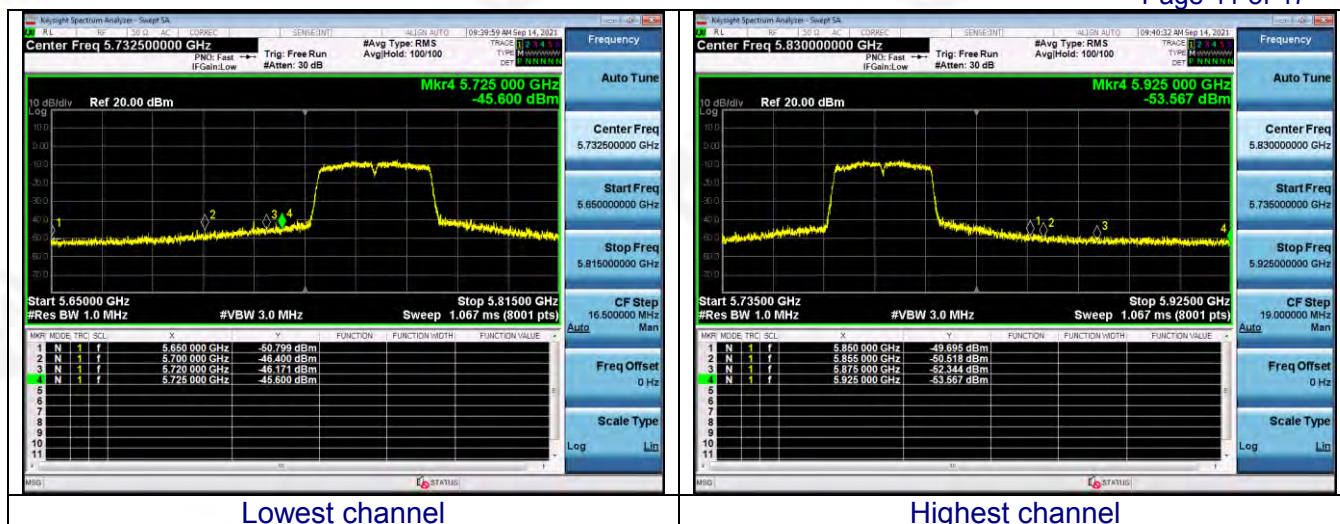
Lowest channel

802.11n40



Highest channel





Lowest channel

Highest channel

## 9. FREQUENCY STABILITY MEASUREMENT

### 9.1 LIMIT

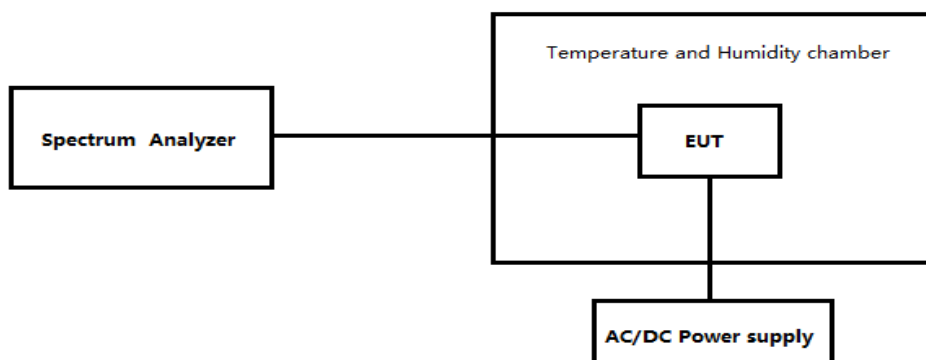
According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of

normal operation as specified in the user's manual.

### 9.2 TEST PROCEDURE

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

### 9.3 TEST CONFIGURATION



### 9.4 TEST RESULT

|               |        |                     |         |
|---------------|--------|---------------------|---------|
| Temperature : | 26°C   | Relative Humidity : | 54%     |
| Pressure :    | 101kPa | Test Voltage :      | DC 3.7V |

#### 802.11ac(VHT20)- CH149

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 74                                  | 0.0129 |
| 40               | 3.7           | 86                                  | 0.0150 |
| 30               | 3.7           | 74                                  | 0.0129 |

|     |     |    |        |
|-----|-----|----|--------|
| 20  | 3.7 | 90 | 0.0156 |
| 10  | 3.7 | 82 | 0.0143 |
| 0   | 3.7 | 88 | 0.0152 |
| -10 | 3.7 | 91 | 0.0158 |
| -20 | 3.7 | 99 | 0.0173 |
| -30 | 3.7 | 95 | 0.0165 |

802.11ac(VHT20)- CH165

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 79                                  | 0.0137 |
| 40               | 3.7           | 78                                  | 0.0135 |
| 30               | 3.7           | 74                                  | 0.0128 |
| 20               | 3.7           | 83                                  | 0.0143 |
| 10               | 3.7           | 71                                  | 0.0122 |
| 0                | 3.7           | 97                                  | 0.0168 |
| -10              | 3.7           | 98                                  | 0.0169 |
| -20              | 3.7           | 92                                  | 0.0158 |
| -30              | 3.7           | 96                                  | 0.0166 |

802.11n(HT20)- CH149

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 75                                  | 0.0131 |
| 40               | 3.7           | 80                                  | 0.0139 |
| 30               | 3.7           | 73                                  | 0.0126 |
| 20               | 3.7           | 98                                  | 0.0171 |
| 10               | 3.7           | 77                                  | 0.0135 |
| 0                | 3.7           | 70                                  | 0.0122 |
| -10              | 3.7           | 90                                  | 0.0157 |
| -20              | 3.7           | 83                                  | 0.0144 |
| -30              | 3.7           | 78                                  | 0.0135 |

802.11n(HT20)- CH165

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 92                                  | 0.0158 |
| 40               | 3.7           | 71                                  | 0.0122 |
| 30               | 3.7           | 72                                  | 0.0124 |
| 20               | 3.7           | 72                                  | 0.0124 |
| 10               | 3.7           | 91                                  | 0.0157 |
| 0                | 3.7           | 82                                  | 0.0142 |
| -10              | 3.7           | 76                                  | 0.0131 |
| -20              | 3.7           | 75                                  | 0.0130 |
| -30              | 3.7           | 73                                  | 0.0126 |



802.11ac(VHT40)-CH151

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 76                                  | 0.0132 |
| 40               | 3.7           | 70                                  | 0.0122 |
| 30               | 3.7           | 70                                  | 0.0122 |
| 20               | 3.7           | 86                                  | 0.0149 |
| 10               | 3.7           | 71                                  | 0.0123 |
| 0                | 3.7           | 95                                  | 0.0166 |
| -10              | 3.7           | 85                                  | 0.0148 |
| -20              | 3.7           | 84                                  | 0.0146 |
| -30              | 3.7           | 89                                  | 0.0154 |

802.11ac(VHT40)-CH159

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 85                                  | 0.0147 |
| 40               | 3.7           | 84                                  | 0.0145 |
| 30               | 3.7           | 94                                  | 0.0163 |
| 20               | 3.7           | 93                                  | 0.0161 |
| 10               | 3.7           | 82                                  | 0.0141 |
| 0                | 3.7           | 90                                  | 0.0154 |
| -10              | 3.7           | 75                                  | 0.0130 |
| -20              | 3.7           | 82                                  | 0.0142 |
| -30              | 3.7           | 87                                  | 0.0151 |

802.11n(HT40)-CH151

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 88                                  | 0.0153 |
| 40               | 3.7           | 90                                  | 0.0157 |
| 30               | 3.7           | 79                                  | 0.0137 |
| 20               | 3.7           | 88                                  | 0.0153 |
| 10               | 3.7           | 99                                  | 0.0171 |
| 0                | 3.7           | 92                                  | 0.0159 |
| -10              | 3.7           | 80                                  | 0.0139 |
| -20              | 3.7           | 91                                  | 0.0159 |
| -30              | 3.7           | 93                                  | 0.0161 |

802.11n(HT40)-CH159

| Temperature (°C) | Voltage (VDC) | Frequency Measure with time Elapsed |        |
|------------------|---------------|-------------------------------------|--------|
|                  |               | MCF                                 | (ppm)  |
| 50               | 3.7           | 71                                  | 0.0122 |
| 40               | 3.7           | 72                                  | 0.0124 |
| 30               | 3.7           | 93                                  | 0.0161 |



|     |     |    |        |
|-----|-----|----|--------|
| 20  | 3.7 | 88 | 0.0151 |
| 10  | 3.7 | 88 | 0.0152 |
| 0   | 3.7 | 95 | 0.0163 |
| -10 | 3.7 | 85 | 0.0146 |
| -20 | 3.7 | 84 | 0.0144 |
| -30 | 3.7 | 94 | 0.0163 |

## 10.ANTENNA REQUIREMENT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Standard requirement:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | FCC Part15 C Section 15.203 /247(c) |
| <p>For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.</p> <p>Refer to statement below for compliance.</p> <p>The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.</p> <p>Antenna Connected Construction</p> <p>The FPC antenna used in the product is a permanently connected antenna that complies with the provisions of part 15.203 requirement in this section. The antenna used in this product is a FPC antenna, The directional gains of antenna used for transmitting is 1.09 dBi.</p> |                                     |
| <p>EUT Antenna:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                     |

#### 10. TEST SETUP PHOTO

Reference to the test setup file for details.

#### 11. EUT CONSTRUCTIONAL DETAILS

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

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