

# TEST REPORT

of

## FCC PART 15 SUBPART E

☒ New Application; ☐ Class I PC; ☐ Class II PC

**Product :** POS System/Digital Signage

**Brand:** Zunidata

**Model:** 10P-RM; 10P-RM1; 10P-RM2; 10P-RM3;  
10P-RM4 12P-RM; 12P-RM1; 12P-RM2;  
12P-RM3; 12P-RM4; 12PB-RM; 12PB-RM1;  
12PB-RM2; 12PB-RM3; 12PB-RM4; 13PB-RM;  
13PB-RM1; 13PB-RM2; 13PB-RM3;  
13PB-RM4; Imago A10-XXXX; Imago  
A12-XXXX(X=0-9, A-Z)

**Model Difference:** Appearance and LCD size are different

**FCC ID:** Z28-101213-RM

**FCC Rule Part:** §15.407, Cat:NII

**Applicant:** Zunidata Systems, Inc.

**Address:** 6F, No. 945, Boai Street, Jubei City, Hsinchu,  
Taiwan 302

**Test Performed by:**  
**International Standards Laboratory Corp.**

<LT Lab.>

\*Site Registration No.

BSMI: SL2-IN-E-0013; MRA TW0997; TAF: 0997; IC: IC4067B-4;

\*Address:

No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

\*Tel : 886-3-407-1718; Fax: 886-3-407-1738

Report No.: **ISL-19LR023FE**

Issue Date : **2019/04/16**



Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

This report MUST not be used to claim product endorsement by TAF, NVLAP or any agency of the Government.

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## VERIFICATION OF COMPLIANCE

**Applicant:** Zunidata Systems, Inc.

**Product Description:** POS System/Digital Signage

**Brand Name:** Zunidata

**Model No.:** 10P-RM; 10P-RM1; 10P-RM2; 10P-RM3; 10P-RM4 12P-RM;  
12P-RM1; 12P-RM2; 12P-RM3; 12P-RM4; 12PB-RM;  
12PB-RM1; 12PB-RM2; 12PB-RM3; 12PB-RM4; 13PB-RM;  
13PB-RM1; 13PB-RM2; 13PB-RM3; 13PB-RM4; Imago  
A10-XXXX; Imago A12-XXXX(X=0-9, A-Z)

**Model Difference:** Appearance and LCD size are different

**FCC ID:** Z28-101213-RM

**Date of test:** 2019/01/17 ~ 2019/02/22

**Date of EUT Received:** 2019/01/17

### We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory Corp.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

**Test By:**

*Barry Lee*

**Date:**

2019/04/16

*Barry Lee / Senior Engineer*

**Prepared By:**

*Gigi yeh*

**Date:**

2019/04/16

*Gigi Yeh / Senior Engineer*

**Approved By:**

*Dino Chen*

**Date:**

2019/04/16

*Dino Chen / Senior Engineer*

## Version

| Version No. | Date       | Description                  |
|-------------|------------|------------------------------|
| 00          | 2019/04/16 | Initial creation of document |
|             |            |                              |

## Uncertainty of Measurement

| Description Of Test                   | Uncertainty                                                           |
|---------------------------------------|-----------------------------------------------------------------------|
| Conducted Emission<br>(AC power line) | 2.586 dB                                                              |
| Field Strength of Spurious Radiation  | $\leq 30\text{MHz}$ : 2.96dB<br>30-1GHz: 4.22 dB<br>1-40 GHz: 4.08 dB |
| Conducted Power                       | 2.412 GHz: 1.30 dB<br>5.805 GHz: 1.55 dB                              |
| Power Density                         | 2.412 GHz: 1.30 dB<br>5.805 GHz: 1.67 dB                              |
| Frequency                             | 0.0032%                                                               |
| Time                                  | 0.01%                                                                 |
| DC Voltage                            | 1%                                                                    |

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## 1. General Information

### 1.1. Product Description

General:

|                  |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name     | POS System/Digital Signage                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                           |
| Brand Name       | Zunidata                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                           |
| Model Name       | 10P-RM; 10P-RM1; 10P-RM2; 10P-RM3; 10P-RM4 12P-RM; 12P-RM1; 12P-RM2; 12P-RM3; 12P-RM4; 12PB-RM; 12PB-RM1; 12PB-RM2; 12PB-RM3; 12PB-RM4; 13PB-RM; 13PB-RM1; 13PB-RM2; 13PB-RM3; 13PB-RM4; Imago A10-XXXX; Imago A12-XXXX(X=0-9, A-Z) |                                                                                                                                                                                                                                                                                                                                                           |
| Model Difference | Appearance and LCD size are different                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                           |
| USB port         | One provided                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| Micro USB        | One provided                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| SD               | One provided                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| HDMI             | One provided                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| RJ45             | One provided                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| Power Supply     | 12Vdc from AC/DC adapter                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                           |
|                  | Adapter:                                                                                                                                                                                                                            | <ol style="list-style-type: none"> <li>1. Model : FSP040-RHAN3;<br/>Supplier: FSP</li> <li>2. Model : 2ABL024F US;<br/>Supplier: Channel Well Technology Co., Ltd.</li> <li>3. Model : SOY-1200200-068;<br/>Supplier: Shenzhen SOY Technology Co., Ltd.</li> <li>4. Model : ZZU1588-200120;<br/>Supplier: JUNCTION GLOBAL TECHNOLOGY Co., LTD.</li> </ol> |

Bluetooth:

|                      |                               |                             |
|----------------------|-------------------------------|-----------------------------|
| Frequency Range:     | 2402 – 2480MHz                |                             |
| Bluetooth Version:   | V2.1 + EDR                    | V4.2                        |
| Channel number:      | 79 channels                   | 40 channels, 2MHz step      |
| Modulation type      | GFSK $+\pi$ / 4DQPSK + 8DPSK  | Wide band Modulation (GFSK) |
| Tune up power:       | -2.58 dBm Peak, +/- 1 dB      | 5.27 dBm (Peak), +/- 1 dB   |
| Dwell Time:          | $\leq 0.4s$                   | N/A                         |
| Antenna Designation: | Antenna Type: PCB, Gain: 3dBi |                             |

This report applies for BT V2.1 + EDR

## WLAN

| Wi-Fi               | Frequency Range (MHz)    | Channels                                                                | Peak / Average Rated Power | Modulation Technology |  |
|---------------------|--------------------------|-------------------------------------------------------------------------|----------------------------|-----------------------|--|
| 802.11b             | 2412 – 2462(DTS)         | 11                                                                      | 25.18dBm (PK)              | DSSS                  |  |
| 802.11g             | HT20<br>2412 – 2462(DTS) | 11                                                                      | 25.18dBm (PK)              | OFDM                  |  |
| 802.11n (2.4G)      | HT40<br>2422 – 2452(DTS) | 7                                                                       | 24.37dBm (PK)              |                       |  |
| 802.11a             | 5150 – 5350(NII)         | 8                                                                       | 12.35dBm (AV)              |                       |  |
|                     | 5470 – 5725(NII)         | 11                                                                      | 12.18dBm (AV)              |                       |  |
|                     | 5725 – 5850(NII)         | 5                                                                       | 11.34dBm (AV)              |                       |  |
| 802.11n(5G)         | HT20<br>5150 – 5350(NII) | 8                                                                       | 12.03dBm (AV)              |                       |  |
|                     | HT20<br>5470 – 5725(NII) | 11                                                                      | 11.75dBm (AV)              |                       |  |
|                     | HT20<br>5725 – 5850(NII) | 5                                                                       | 11.03 dBm (AV)             |                       |  |
|                     | HT40<br>5150 – 5350(NII) | 4                                                                       | 11.23dBm (AV)              |                       |  |
|                     | HT40<br>5470 – 5725(NII) | 5                                                                       | 10.89dBm (AV)              |                       |  |
|                     | HT40<br>5725 – 5850(NII) | 2                                                                       | 10.49dBm (AV)              |                       |  |
| 802.11ac            | HT80<br>5150 – 5350(NII) | 2                                                                       | 11.02dBm (AV)              |                       |  |
|                     | HT80<br>5470 – 5725(NII) | 2                                                                       | 10.75dBm (AV)              |                       |  |
|                     | HT80<br>5725 – 5850(NII) | 1                                                                       | 10.16dBm (AV)              |                       |  |
| Modulation type     |                          | CCK, DQPSK, DBPSK for DSSS<br>256QAM.64QAM. 16QAM, QPSK, BPSK for OFDM  |                            |                       |  |
| Antenna Designation |                          | PCB Antenna<br>WiFi 2.4G Antenna : 3.0 dBi<br>WiFi 5G Antenna : 4.5 dBi |                            |                       |  |

The EUT is compliance with IEEE 802.11 a/n/ac Standard.

This report applies for Wifi frequency band 5150 MHz– 5350 MHz, 5470 – 5725MHz, 5725 MHz– 5850 MHz

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

## **1.2. Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for **FCC ID: Z28-101213-RM** filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

## **1.3. Test Methodology**

Both conducted and radiated testing were performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at an antenna to EUT distance 3 meters.

KDB Document: 789033 D02 General UNII Test Procedures New Rules v02r01

FCC 14-30 Revision UNII

594280 D02 U-NII Device Security v01r03

## **1.4. Test Facility**

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of International Standards Laboratory Corp. <LT Lab.> No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10: 2013. FCC Registration Number is: 487532; Designation Number is: TW0997, Canada Registration Number: 4067B-4.

## **1.5. Special Accessories**

Not available for this EUT intended for grant.

## **1.6. Equipment Modifications**

Not available for this EUT intended for grant.

## **2. System Test Configuration**

### **2.1. EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### **2.2. EUT Exercise**

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

### **2.3. Test Procedure**

#### **2.3.1 Conducted Emissions**

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 6 of ANSI C63.10: 2013. Con-ducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR 16-1-1 Quasi-Peak and Average detector mode.

#### **2.3.2 Radiated Emissions**

The EUT is a placed on as turn table which is 0.8 m/1.5m (Frequency above 1GHz) above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 6 and 11 of ANSI C63.10: 2013

## 2.4. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**



**Table 1-1 Equipment Used in Tested System**

| Item | Equipment | Mfr/Brand | Model/<br>Type No. | Series No. | Data Cable | Power Cord |
|------|-----------|-----------|--------------------|------------|------------|------------|
| 1    | N/A       |           |                    |            |            |            |

### 3. Summary of Test Results

| FCC Rules     | Description Of Test                              | Result    |
|---------------|--------------------------------------------------|-----------|
| §15.207       | AC Power Line Conducted Emission                 | Compliant |
| §15.407(a)(2) | Output Power/ EIRP/ Spectral Density Measurement | Compliant |
| §15.407(a)    | 26dB Emission Bandwidth                          | Compliant |
| §15.407(e)    | 6dB Emission Bandwidth                           | Compliant |
| §15.407(b)    | Undesirable Emission – Radiated Measurement      | Compliant |
| §15.407( c)   | Transmission in case of Absence of Information   | Compliant |
| §15.407(g)    | Frequency Stability                              | Compliant |
| §15.407(a)    | Antenna Requirement                              | Compliant |
| §15.407(d)    | TPC and DFS Measurement                          | Compliant |
| §15.407(i)    | Device Security                                  | Compliant |

#### 4. Description of Test Modes

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting mode is programmed.

5150MHz-5250MHz:

802.11 a mode: Channel lowest (5180MHz), Mid (5200MHz) and Highest (5240MHz) with 6Mbps data rate is chosen for testing.

802.11 n HT 20 mode: Channel lowest (5180MHz), Mid (5200MHz) and Highest (5240MHz) with 6.5Mbps data rate is chosen for testing.

802.11 n HT 40 mode: Channel lowest (5190MHz) and high (5230MHz) with 13.5Mbps data rate is chosen for testing.

802.11 ac HT80: Channel (5210MHz) with 29.3Mbps lowest data rate is chosen for testing

The worst case Band 1, 802.11n HT40 was reported for Radiated Emission.

5250MHz-5350MHz:

802.11a mode: Channel low (5260MHz) and high (5320MHz) with 6Mbps lowest data rate are chosen for testing.

802.11 n HT20: Channel low (5260MHz) and high (5320MHz) with 6.5Mbps lowest data rate are chosen for testing.

802.11 n HT40: Channel low (5270MHz) and high (5310MHz) with 13.5Mbps lowest data rate are chosen for testing.

802.11 ac HT80: Channel (5290MHz) with 29.3Mbps lowest data rate is chosen for testing.

The worst case 802.11 n HT20 (5GHz) was reported for Radiated Emission.

5470MHz-5725MHz:

802.11a mode: Channel low (5500MHz), mid (5600MHz) and high (5700MHz) with 6Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 n HT20: Channel low (5500MHz), mid (5600MHz) and high (5700MHz) with 6.5Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 n HT40: Channel low (5510MHz), mid (5550MHz) and high (5670MHz) with 13.5Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 ac HT80: Channel low (5530MHz) and high (5610MHz) with 29.3Mbps lowest data rate is chosen for pre-test testing of radiated emissions.

5725MHz-5850MHz:

802.11a mode: Channel low (5745MHz), mid (5785MHz) and high (5825MHz) with 6Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 n HT20: Channel low (5745MHz), mid (5785MHz) and high (5825MHz) with 6.5Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 n HT40: Channel low (5755MHz) and high (5795MHz) with 13.5Mbps lowest data rate are chosen for pre-test testing of radiated emissions.

802.11 ac HT80: Channel (5775MHz) with lowest data rate is chosen for full testing

The worst case Band 1&2, 802.11a was reported for Radiated Emission.

## 5. Conducted Emission Test

### 5.1. Standard Applicable

According to §15.207, frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

| Frequency range<br>MHz                                                                                                                                                       | Limits<br>dB(uV) |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|
|                                                                                                                                                                              | Quasi-peak       | Average  |
| 0.15 to 0.50                                                                                                                                                                 | 66 to 56         | 56 to 46 |
| 0.50 to 5                                                                                                                                                                    | 56               | 46       |
| 5 to 30                                                                                                                                                                      | 60               | 50       |
| Note<br>1.The lower limit shall apply at the transition frequencies<br>2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. |                  |          |

### 5.2. Measurement Equipment Used:

| Conducted Emission Test Site |                 |                       |                                       |                                       |                                       |
|------------------------------|-----------------|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Equipment Type               | MFR             | Model Number          | Serial Number                         | Last Cal.                             | Cal Due.                              |
| Conduction 04-3 Cable        | WOKEN           | CFD 300-NL            | Conduction 04-3                       | 08/30/2018                            | 08/29/2019                            |
| EMI Receiver 16              | Rohde & Schwarz | ESCI                  | 101221                                | 11/17/2018                            | 11/16/2019                            |
| LISN 18                      | ROHDE & SCHWARZ | ENV216                | 101424                                | 05/31/2018                            | 05/30/2019                            |
| LISN 19                      | ROHDE & SCHWARZ | ENV216                | 101425                                | 07/22/2018                            | 07/21/2019                            |
| Test Software                | Farad           | EZEMC<br>Ver:ISL-03A2 | Appearance and LCD size are different | Appearance and LCD size are different | Appearance and LCD size are different |

### 5.3. EUT Setup:

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10: 2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

#### **5.4. Measurement Procedure:**

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

#### **5.5. Measurement Result:**

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Note: Refer to next page for measurement data and plots.

## AC POWER LINE CONDUCTED EMISSION TEST DATA

|                 |                |            |            |
|-----------------|----------------|------------|------------|
| Operation Mode: | Operation Mode | Test Date: | 2019/02/11 |
| Test By:        | Barry          |            |            |



| No. | Frequency<br>(MHz) | QP_R<br>(dBuV) | AVG_R<br>(dBuV) | Correct<br>Factor<br>(dB) | QP<br>Emission<br>(dBuV) | QP<br>Limit<br>(dBuV) | QP<br>Margin<br>(dB) | AVG<br>Emission<br>(dBuV) | AVG<br>Limit<br>(dBuV) | AVG<br>Margin<br>(dB) |
|-----|--------------------|----------------|-----------------|---------------------------|--------------------------|-----------------------|----------------------|---------------------------|------------------------|-----------------------|
| 1   | 0.254              | 40.84          | 32.29           | 9.70                      | 50.54                    | 79.00                 | -28.46               | 41.99                     | 66.00                  | -24.01                |
| 2   | 0.634              | 36.83          | 24.38           | 9.72                      | 46.55                    | 73.00                 | -26.45               | 34.10                     | 60.00                  | -25.90                |
| 3   | 0.770              | 37.09          | 22.49           | 9.72                      | 46.81                    | 73.00                 | -26.19               | 32.21                     | 60.00                  | -27.79                |
| 4   | 1.330              | 33.49          | 14.79           | 9.73                      | 43.22                    | 73.00                 | -29.78               | 24.52                     | 60.00                  | -35.48                |
| 5   | 8.750              | 28.93          | 16.01           | 9.92                      | 38.85                    | 73.00                 | -34.15               | 25.93                     | 60.00                  | -34.07                |
| 6   | 13.562             | 26.60          | 15.29           | 9.99                      | 36.59                    | 73.00                 | -36.41               | 25.28                     | 60.00                  | -34.72                |



Address: No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,  
Tao Yuan City 325, Taiwan.  
Tel: 03-4071718

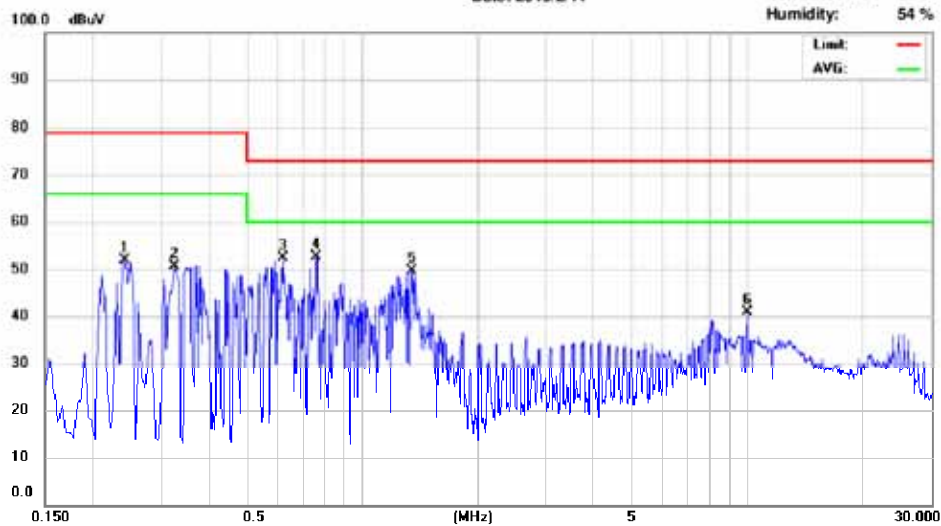
### Conducted Emission Measurement

Date: 2019/2/11

operator: SAWYER

Temperature: 26 °C

Humidity: 54 %



Site: Conduction 04

Phase: **N**

| No. | Frequency<br>(MHz) | QP_R<br>(dBuV) | AVG_R<br>(dBuV) | Correct<br>Factor<br>(dB) | QP<br>Emission<br>(dBuV) | QP<br>Limit<br>(dBuV) | QP<br>Margin<br>(dB) | AVG<br>Emission<br>(dBuV) | AVG<br>Limit<br>(dBuV) | AVG<br>Margin<br>(dB) |
|-----|--------------------|----------------|-----------------|---------------------------|--------------------------|-----------------------|----------------------|---------------------------|------------------------|-----------------------|
| 1   | 0.242              | 40.30          | 26.29           | 9.70                      | 50.00                    | 79.00                 | -29.00               | 35.99                     | 66.00                  | -30.01                |
| 2   | 0.326              | 37.42          | 26.04           | 9.70                      | 47.12                    | 79.00                 | -31.88               | 35.74                     | 66.00                  | -30.26                |
| 3   | 0.626              | 39.89          | 25.17           | 9.72                      | 49.61                    | 73.00                 | -23.39               | 34.89                     | 60.00                  | -25.11                |
| 4   | 0.762              | 41.37          | 27.76           | 9.72                      | 51.09                    | 73.00                 | -21.91               | 37.48                     | 60.00                  | -22.52                |
| 5   | 1.346              | 35.70          | 18.21           | 9.73                      | 45.43                    | 73.00                 | -27.57               | 27.94                     | 60.00                  | -32.06                |
| 6   | 10.006             | 22.72          | 6.81            | 9.97                      | 32.69                    | 73.00                 | -40.31               | 16.78                     | 60.00                  | -43.22                |

## 6. Output Power / EIRP /Spectral Density Measurement

### 6.1. Standard Applicable

According to §15.407(a) Power limits:

(1) For the band 5.15 - 5.25 GHz.

- (i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
- (ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

- (iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725 - 5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## 6.2. Measurement Procedure

For Output Power

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
3. Record the max. reading.
4. Repeat above procedures until all frequency measured were complete.

For Power Spectral Density

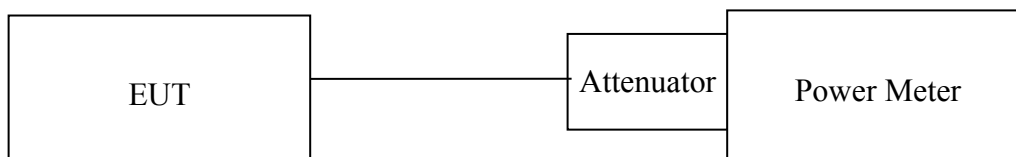
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
3. Set RBW=1MHz,VBW=3MHz, Span=50MHz (Base Mode), Sweep time = Auto, traces 100 sweeps of video averaging for 5150-5725MHz;
4. Set RBW=500kHz,VBW=1.5MHz, Span=60MHz (Base Mode), Sweep time = Auto, traces 100 sweeps of video averaging for 5725-5850MHz;
5. Record the max. reading.
6. Repeat above procedures until all frequency measured were complete.

**Refer to section E3 of KDB Document: KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

### 6.3. Measurement Equipment Used:

| Conducted Emission Test Site |          |                          |                                       |            |            |
|------------------------------|----------|--------------------------|---------------------------------------|------------|------------|
| Equipment Type               | MFR      | Model Number             | Serial Number                         | Last Cal.  | Cal Due.   |
| Power Meter 05               | Anritsu  | ML2495A                  | 1116010                               | 10/28/2018 | 10/27/2019 |
| Power Sensor 05              | Anritsu  | MA2411B                  | 34NKF50                               | 10/28/2018 | 10/27/2019 |
| Power Sensor 06              | DARE     | RPR3006W                 | 13I00030SN O33                        | 12/12/2018 | 12/11/2019 |
| Power Sensor 07              | DARE     | RPR3006W                 | 13I00030SN O34                        | 12/12/2018 | 12/11/2019 |
| Temperature Chamber          | KSON     | THS-B4H100               | 2287                                  | 12/02/2018 | 12/01/2019 |
| DC Power supply              | ABM      | 8185D                    | Appearance and LCD size are different | 11/16/2018 | 11/15/2019 |
| AC Power supply              | EXTECH   | CFC105W                  | NA                                    | 12/25/2017 | 12/24/2018 |
| Attenuator                   | Woken    | Watt-65m3502             | 11051601                              | NA         | NA         |
| Splitter                     | MCLI     | PS4-199                  | 12465                                 | 12/26/2017 | 12/25/2019 |
| Spectrum analyzer            | keysight | N9010A                   | MY56070257                            | 10/15/2018 | 10/14/2019 |
| Spectrum analyzer            | R&S      | FSP40                    | 100143                                | 11/02/2018 | 11/01/2019 |
| Test Software                | DARE     | Radimation Ver:2013.1.23 | NA                                    | NA         | NA         |

### 6.4. Measurement Equipment Used:



## 6.5. Measurement Result

### Average Power Measurement:

#### 802.11a

| Mode    | Channel | Power (dBm) | Limit(dBm) | Result |
|---------|---------|-------------|------------|--------|
| 802.11a | 5180    | 12.35       | 29.37      | Pass   |
|         | 5260    | 12.32       | 23.34      | Pass   |
|         | 5320    | 12.18       | 23.34      | Pass   |
|         | 5500    | 11.76       | 23.34      | Pass   |
|         | 5600    | 12.03       | 23.34      | Pass   |
|         | 5700    | 11.83       | 23.34      | Pass   |
|         | 5745    | 11.34       | 29.37      | Pass   |
|         | 5785    | 11.20       | 29.37      | Pass   |
|         | 5825    | 11.12       | 29.37      | Pass   |

#### 802.11n HT20

| Mode         | Channel | Power (dBm) | Limit(dBm) | Result |
|--------------|---------|-------------|------------|--------|
| 802.11n HT20 | 5180    | 11.88       | 29.37      | Pass   |
|              | 5260    | 12.03       | 23.34      | Pass   |
|              | 5320    | 11.58       | 23.34      | Pass   |
|              | 5500    | 11.43       | 23.34      | Pass   |
|              | 5600    | 11.7        | 23.34      | Pass   |
|              | 5700    | 11.75       | 23.34      | Pass   |
|              | 5745    | 10.96       | 29.37      | Pass   |
|              | 5785    | 11.03       | 29.37      | Pass   |
|              | 5825    | 10.88       | 29.37      | Pass   |

802.11n HT40

| Mode         | Channel | Power (dBm) | Limit(dBm) | Result |
|--------------|---------|-------------|------------|--------|
| 802.11n HT40 | 5190    | 11.21       | 29.37      | Pass   |
|              | 5270    | 11.23       | 23.34      | Pass   |
|              | 5310    | 10.94       | 23.34      | Pass   |
|              | 5510    | 10.63       | 23.34      | Pass   |
|              | 5550    | 10.89       | 23.34      | Pass   |
|              | 5670    | 10.82       | 23.34      | Pass   |
|              | 5755    | 10.49       | 29.37      | Pass   |
|              | 5795    | 10.17       | 29.37      | Pass   |

802.11ac HT80

| Mode          | Channel | Power (dBm) | Limit(dBm) | Result |
|---------------|---------|-------------|------------|--------|
| 802.11ac HT80 | 5210    | 11.02       | 29.37      | Pass   |
|               | 5290    | 10.78       | 23.34      | Pass   |
|               | 5530    | 10.75       | 23.34      | Pass   |
|               | 5610    | 10.69       | 29.37      | Pass   |
|               | 5775    | 10.16       | 29.37      | Pass   |

**Power Spectral Density Measurement:**
**802.11a Mode**

| <b>Frequency<br/>MHz</b> | <b>RF Power Density<br/>Reading (dBm/MHz)</b>        | <b>Maximum Limit<br/>(dBm/MHz)</b>    |
|--------------------------|------------------------------------------------------|---------------------------------------|
| 5180                     | 8.00                                                 | 16.37                                 |
| 5260                     | 7.26                                                 | 10.37                                 |
| 5320                     | 7.05                                                 | 10.37                                 |
| 5500                     | 8.56                                                 | 10.37                                 |
| 5600                     | 7.76                                                 | 10.37                                 |
| 5700                     | 6.62                                                 | 10.37                                 |
| <b>Frequency<br/>MHz</b> | <b>RF Power Density<br/>Reading<br/>(dBm/500KHz)</b> | <b>Maximum Limit<br/>(dBm/500KHz)</b> |
| 5745                     | 2.33                                                 | 29.37                                 |
| 5785                     | 3.29                                                 | 29.37                                 |
| 5825                     | 2.87                                                 | 29.37                                 |

**802.11n HT20**

| <b>Frequency<br/>MHz</b> | <b>RF Power Density<br/>Reading (dBm/MHz)</b>        | <b>Maximum Limit<br/>(dBm/MHz)</b>    |
|--------------------------|------------------------------------------------------|---------------------------------------|
| 5180                     | 7.57                                                 | 16.37                                 |
| 5260                     | 7.90                                                 | 10.37                                 |
| 5320                     | 7.21                                                 | 10.37                                 |
| 5500                     | 8.08                                                 | 10.37                                 |
| 5600                     | 6.89                                                 | 10.37                                 |
| 5700                     | 7.01                                                 | 10.37                                 |
| <b>Frequency<br/>MHz</b> | <b>RF Power Density<br/>Reading<br/>(dBm/500KHz)</b> | <b>Maximum Limit<br/>(dBm/500KHz)</b> |
| 5745                     | 2.61                                                 | 29.37                                 |
| 5785                     | 2.61                                                 | 29.37                                 |
| 5825                     | 2.55                                                 | 29.37                                 |

#### 802.11n HT40 Mode

| Frequency<br>MHz | RF Power Density<br>Reading (dBm/MHz)       | Maximum Limit<br>(dBm/MHz)    |
|------------------|---------------------------------------------|-------------------------------|
| 5190             | 4.64                                        | 16.37                         |
| 5270             | 3.91                                        | 10.37                         |
| 5310             | 3.66                                        | 10.37                         |
| 5510             | 4.59                                        | 10.37                         |
| 5550             | 4.43                                        | 10.37                         |
| 5670             | 3.31                                        | 10.37                         |
| Frequency<br>MHz | RF Power Density<br>Reading<br>(dBm/500KHz) | Maximum Limit<br>(dBm/500KHz) |
| 5755             | -0.94                                       | 29.37                         |
| 5795             | -0.87                                       | 29.37                         |

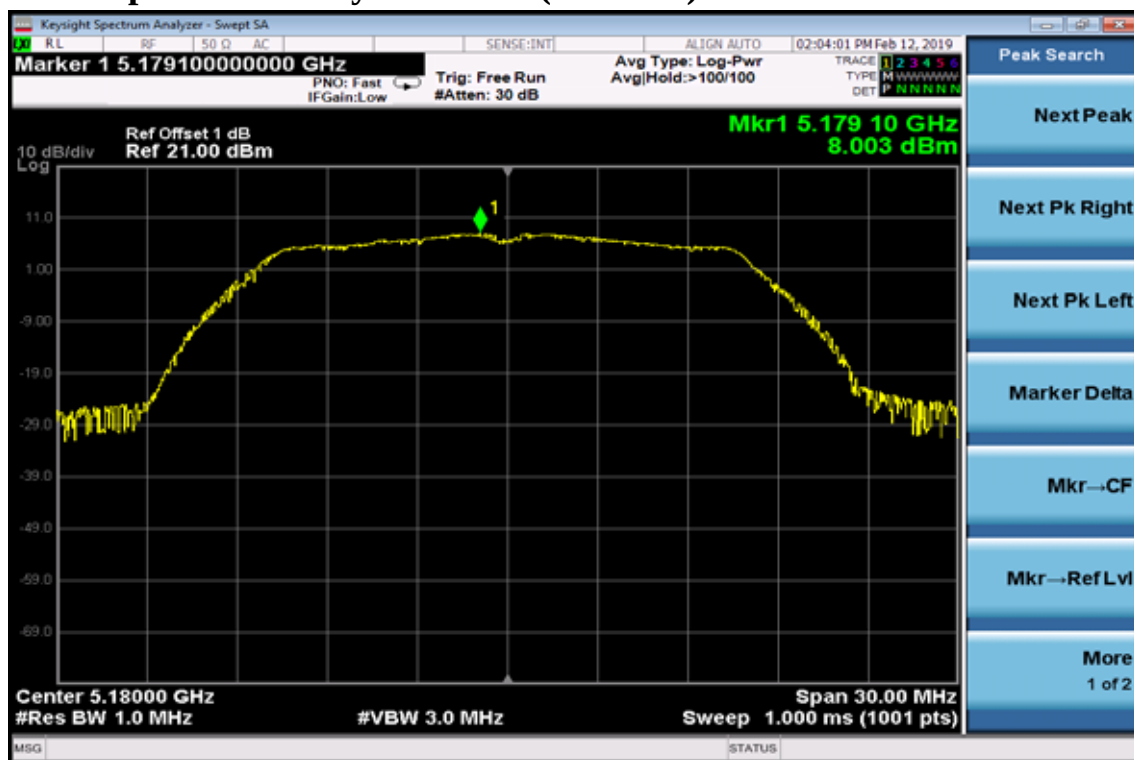
#### 802.11AC HT80 Mode

| Frequency<br>MHz | RF Power Density<br>Reading (dBm/MHz)       | Maximum Limit<br>(dBm/MHz)    |
|------------------|---------------------------------------------|-------------------------------|
| 5210             | 2.19                                        | 16.37                         |
| 5290             | 2.03                                        | 10.37                         |
| 5530             | 2.51                                        | 10.37                         |
| 5610             | 2.30                                        | 10.37                         |
| Frequency<br>MHz | RF Power Density<br>Reading<br>(dBm/500KHz) | Maximum Limit<br>(dBm/500KHz) |
| 5775             | -2.91                                       | 29.37                         |

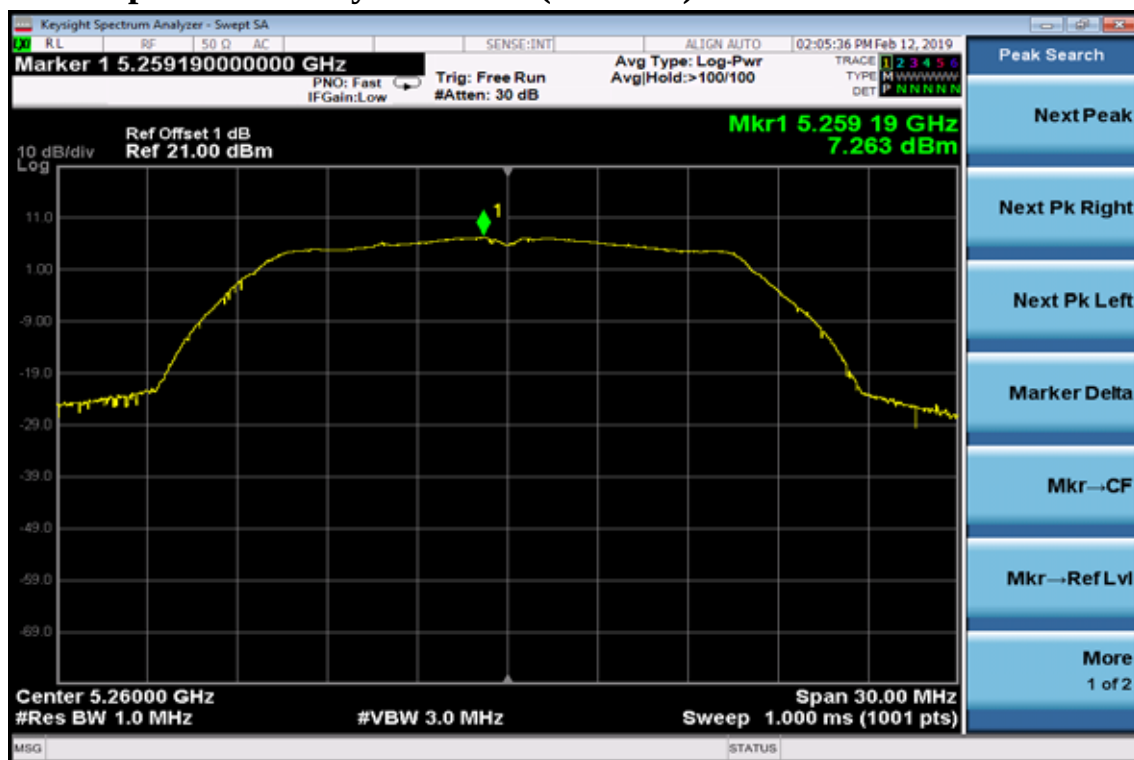
BAND 1, 2

802.11a

Power Spectral Density Data Plot (CH Low)



Power Spectral Density Data Plot (CH Mid)



## Power Spectral Density Data Plot (CH High)

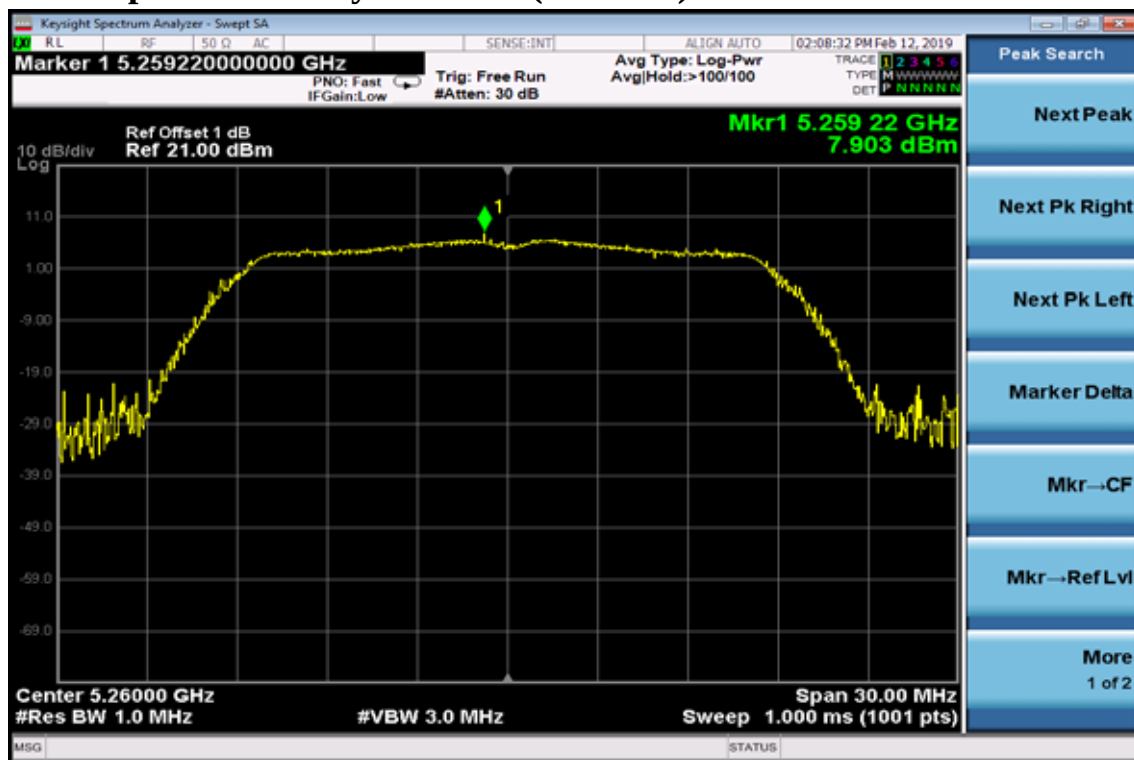


## 802.11n HT20

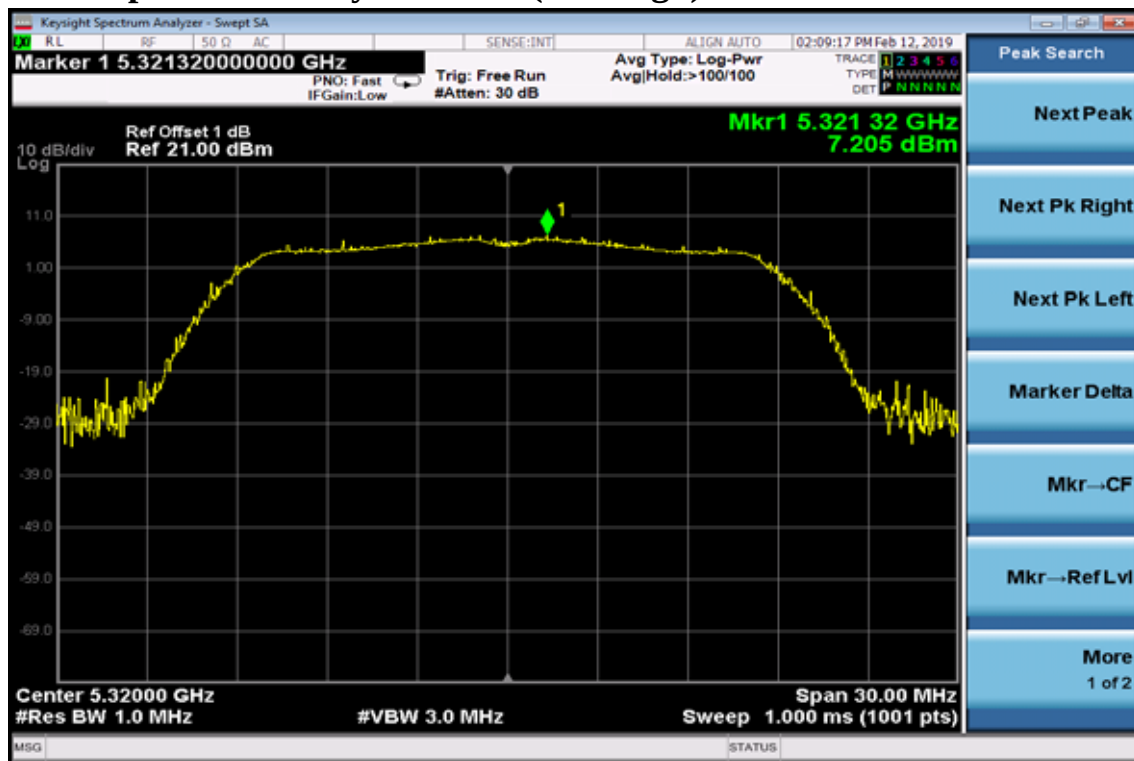
## Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)

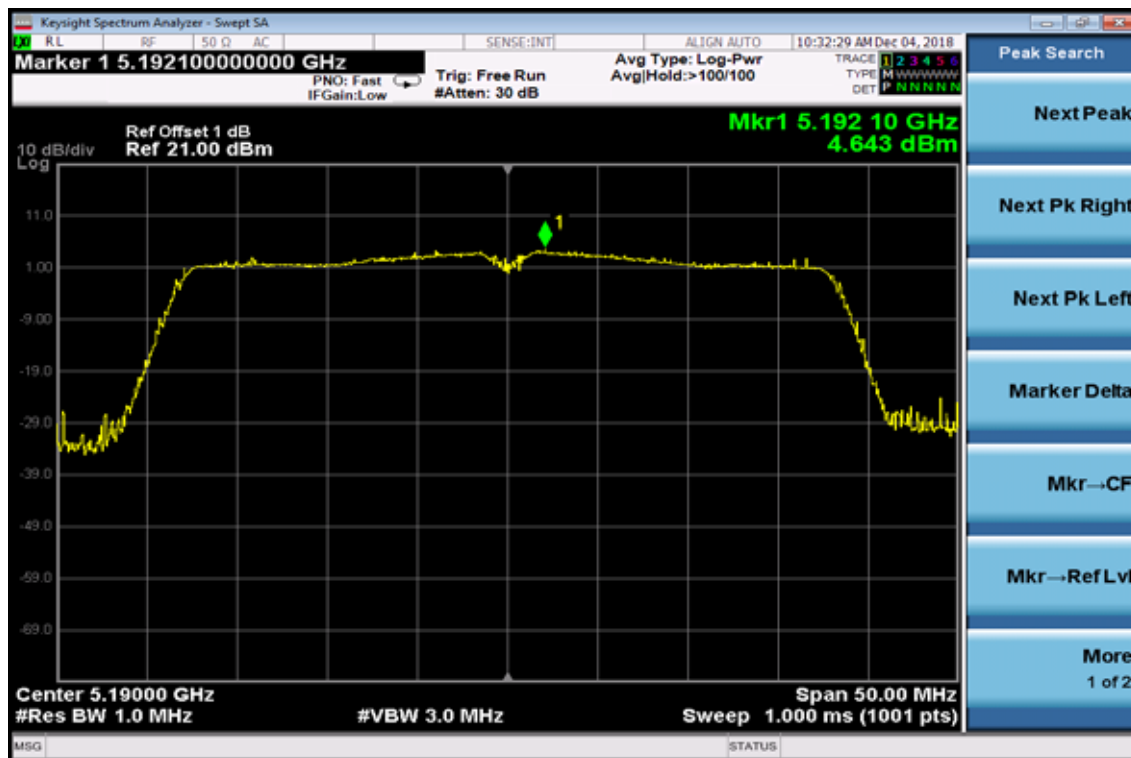


### Power Spectral Density Test Plot (CH-High)

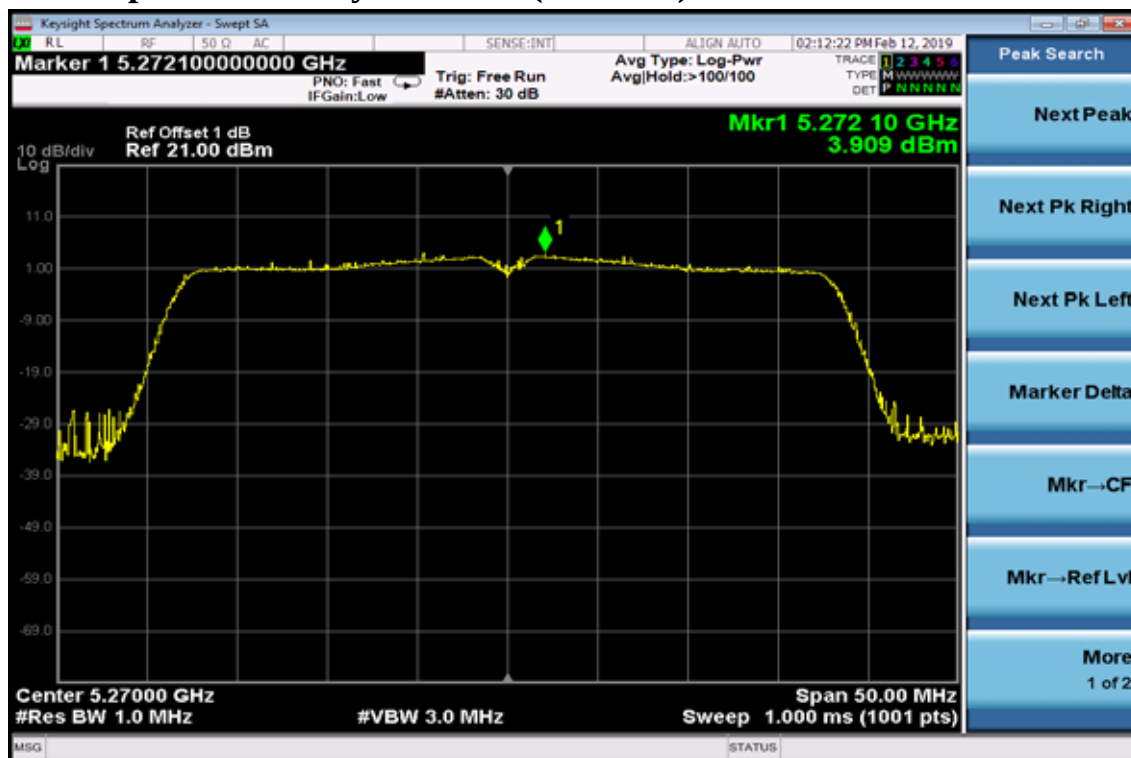


## 802.11n HT40

### Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)

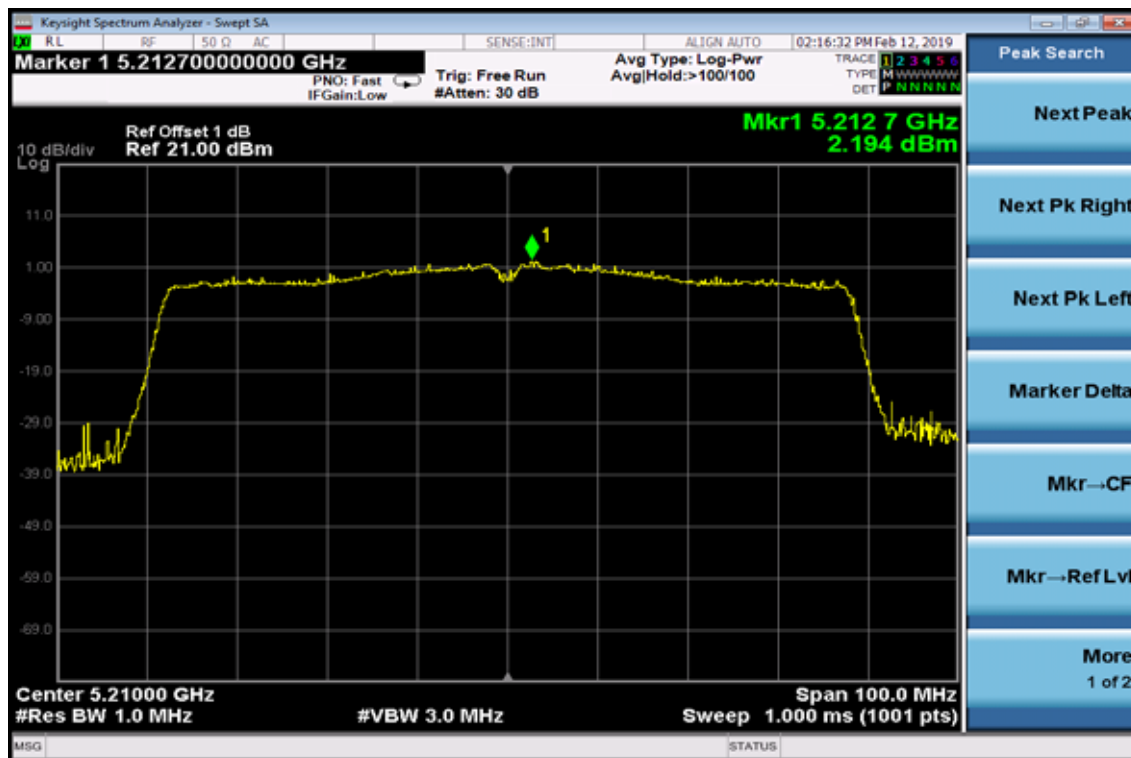


## Power Spectral Density Test Plot (CH-High)



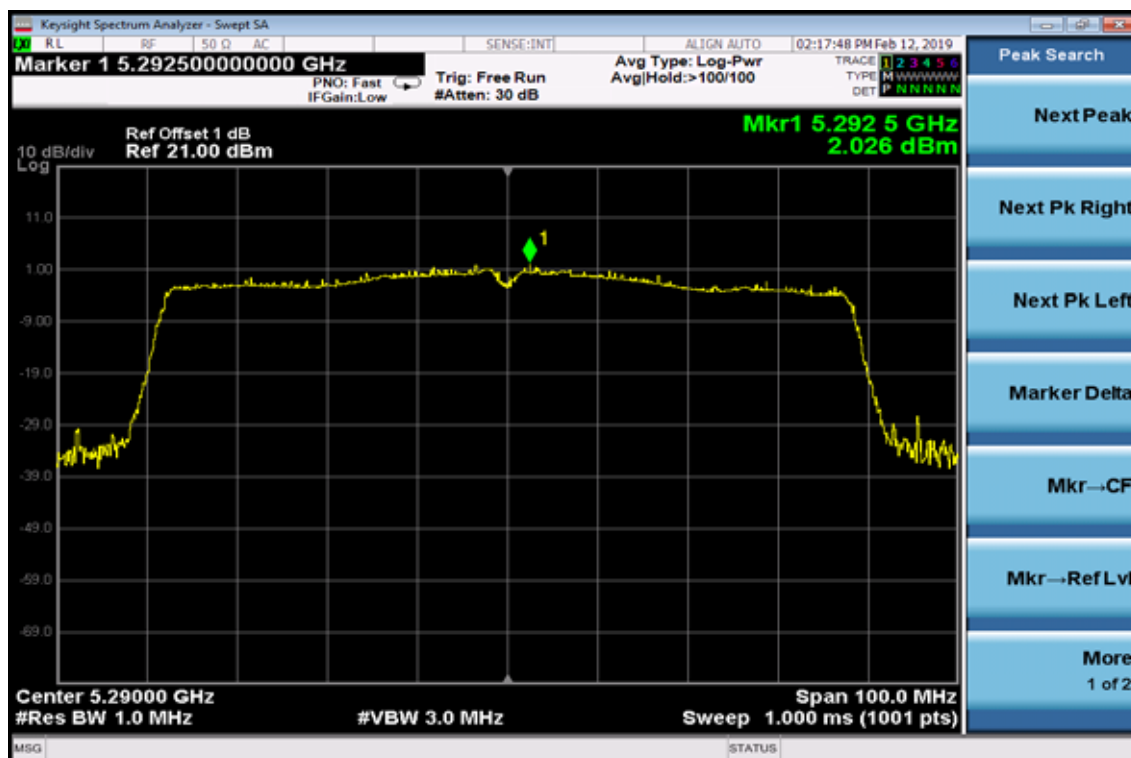
## 802.11ac HT80

### Power Spectral Density Test Plot (CH-Low)



## 802.11ac HT80

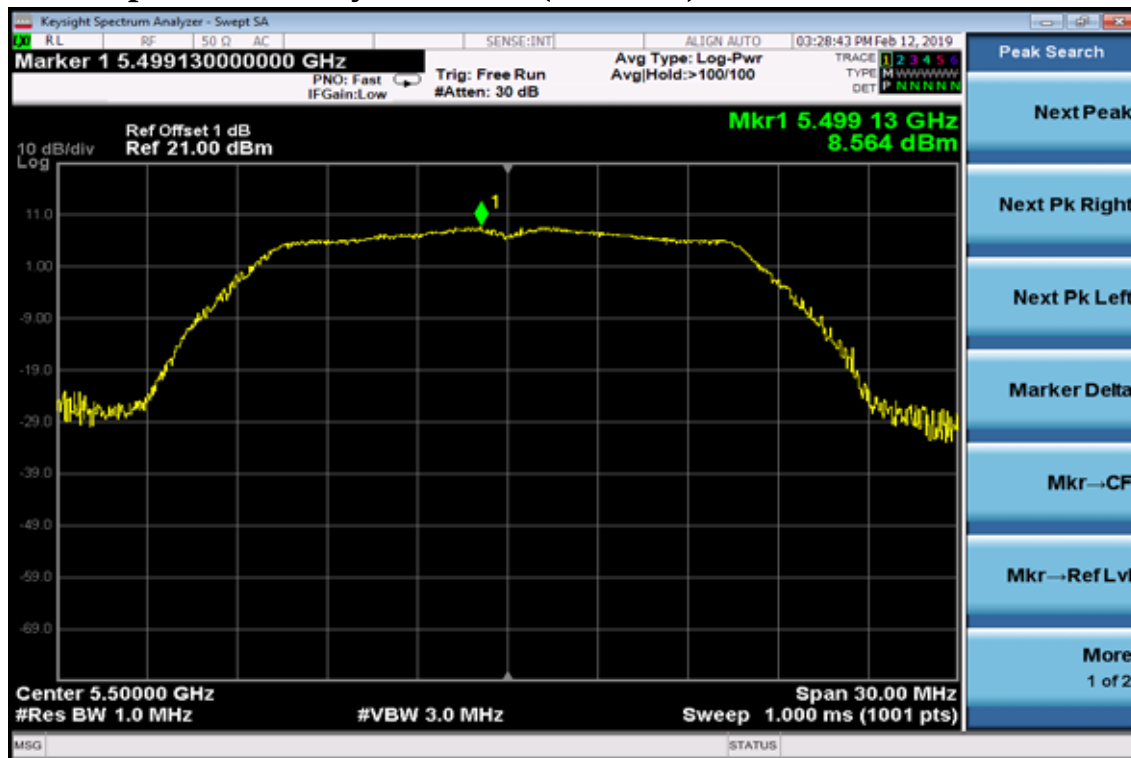
### Power Spectral Density Test Plot (CH-High)



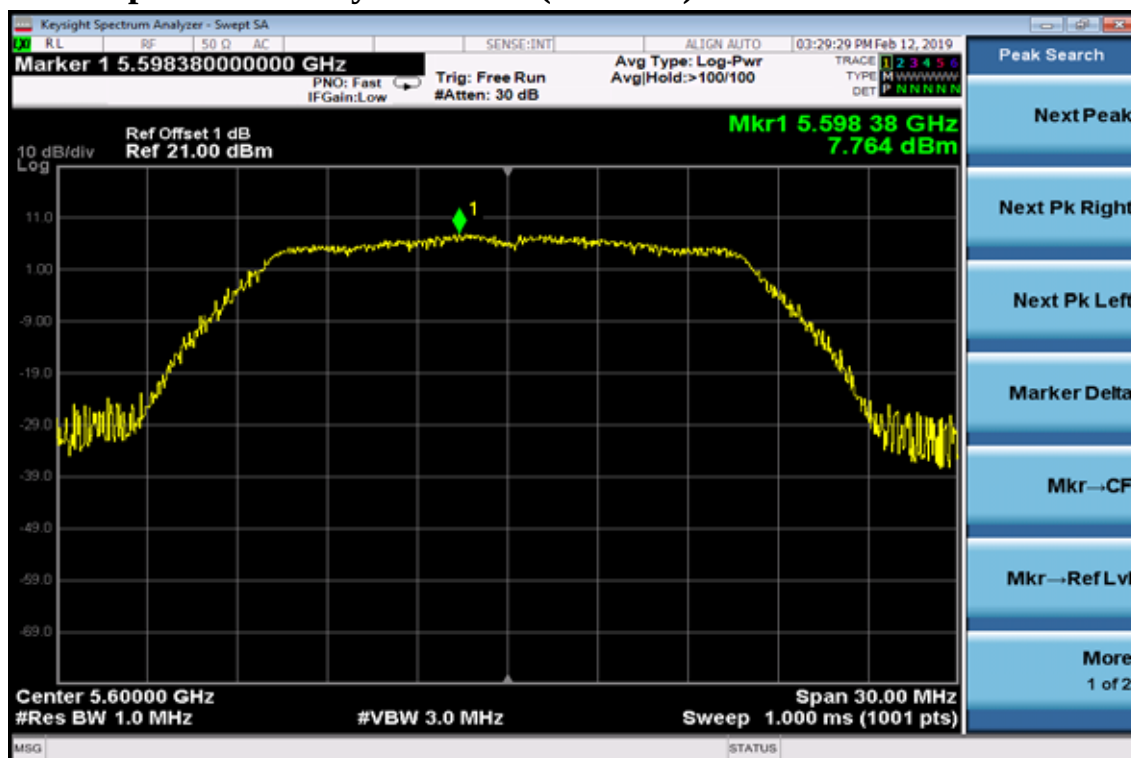
### BAND 3

### 802.11a

### Power Spectral Density Data Plot (CH Low)



### Power Spectral Density Data Plot (CH Mid)

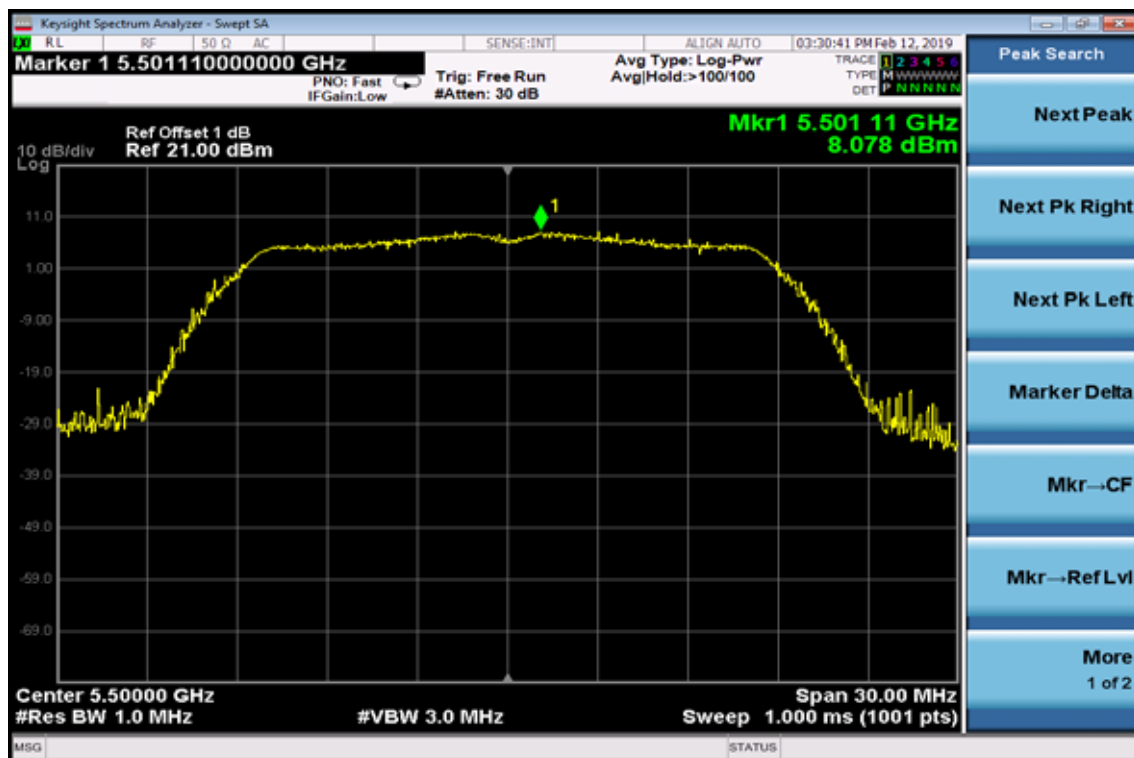


## Power Spectral Density Data Plot (CH High)

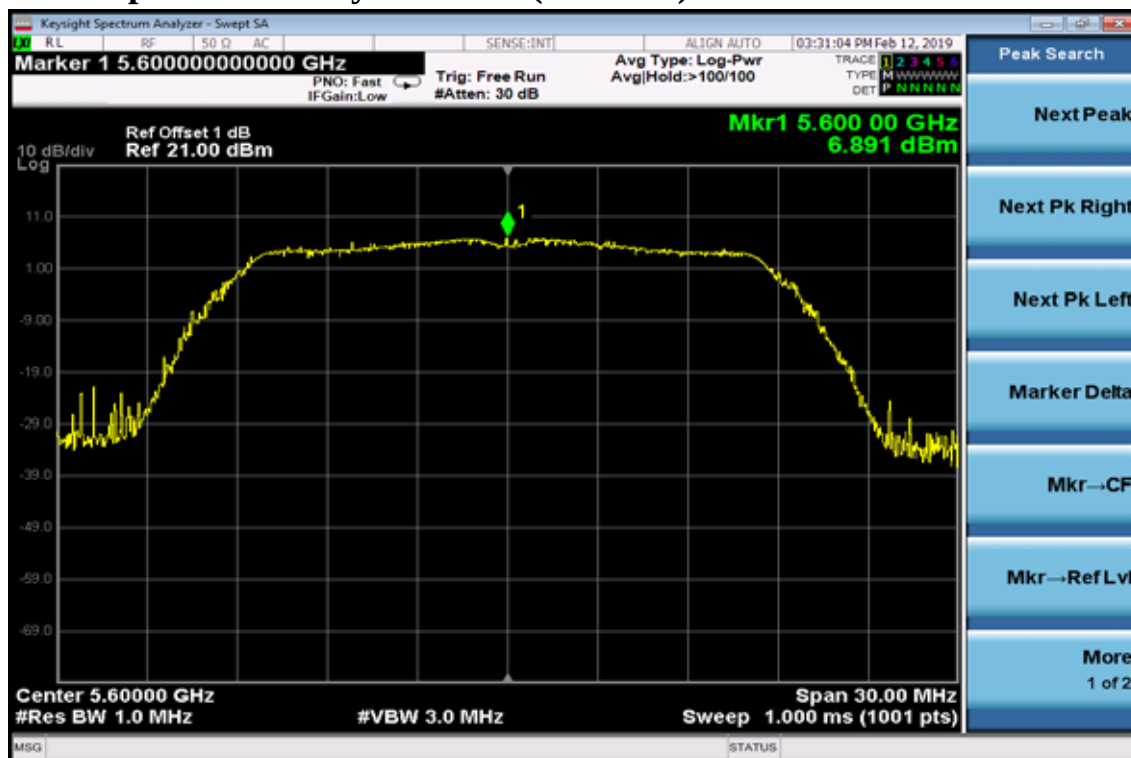


## 802.11n HT20

## Power Spectral Density Test Plot (CH-Low)



## Power Spectral Density Test Plot (CH-Mid)



## Power Spectral Density Test Plot (CH-High)

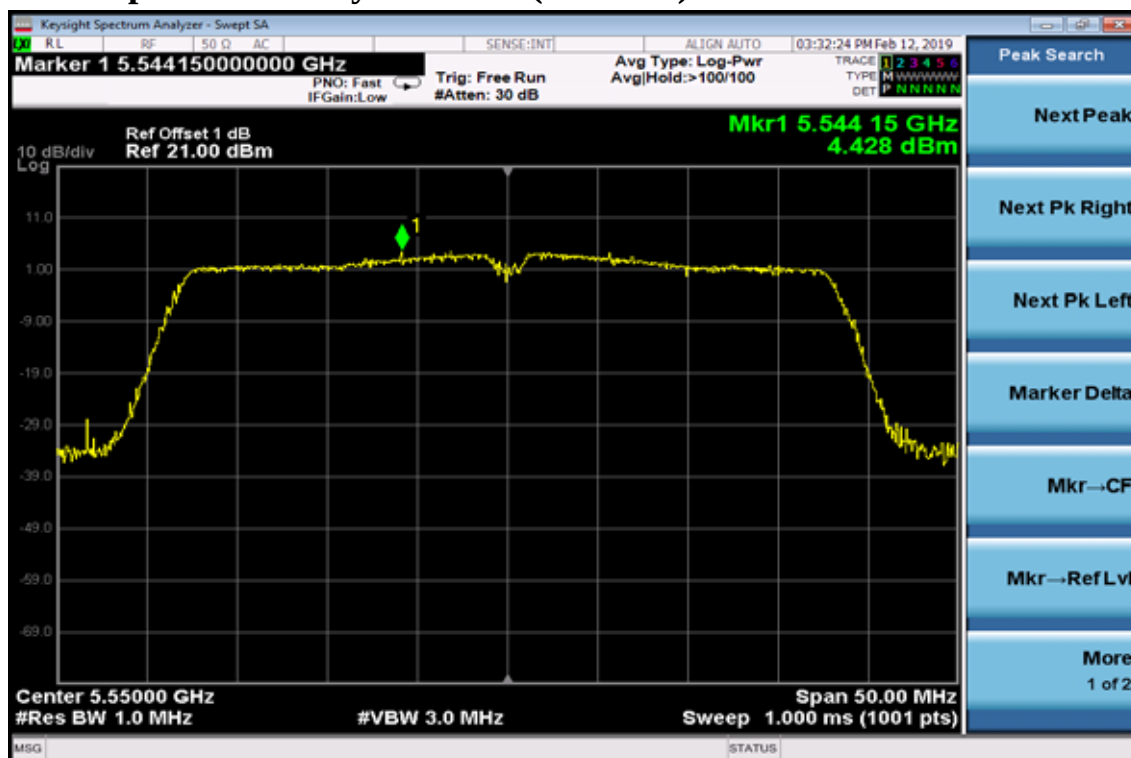


## 802.11n HT40

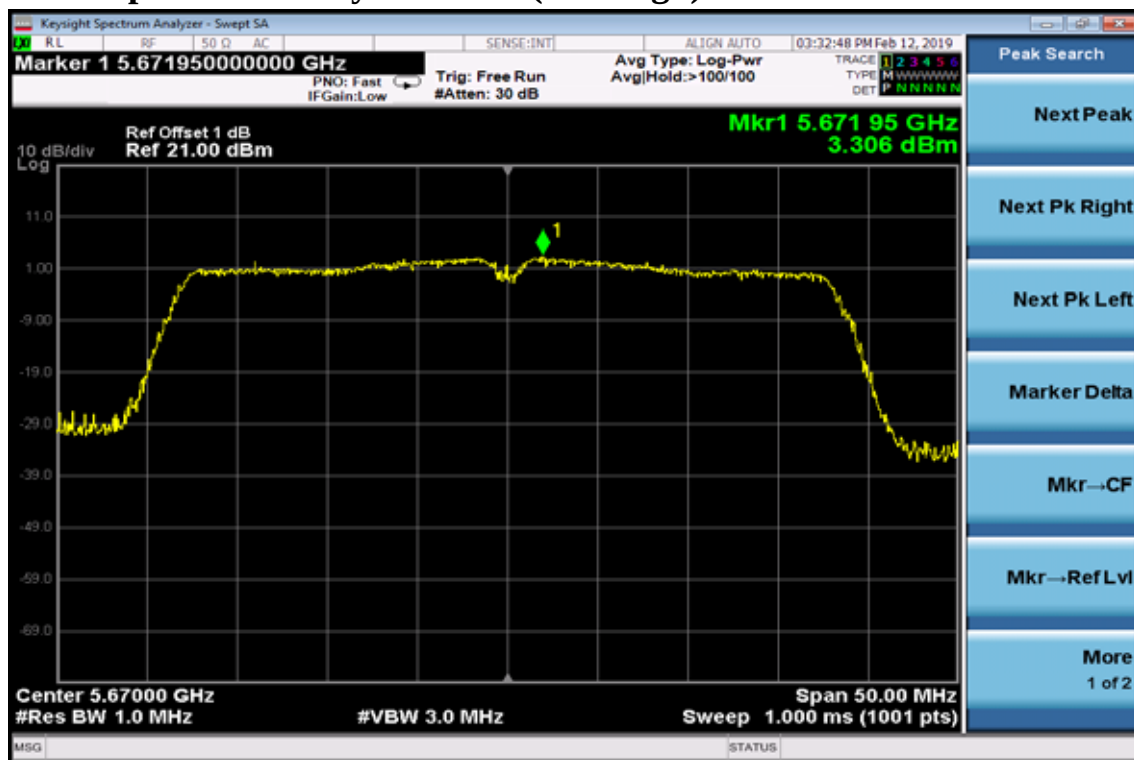
### Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)



## Power Spectral Density Test Plot (CH-High)



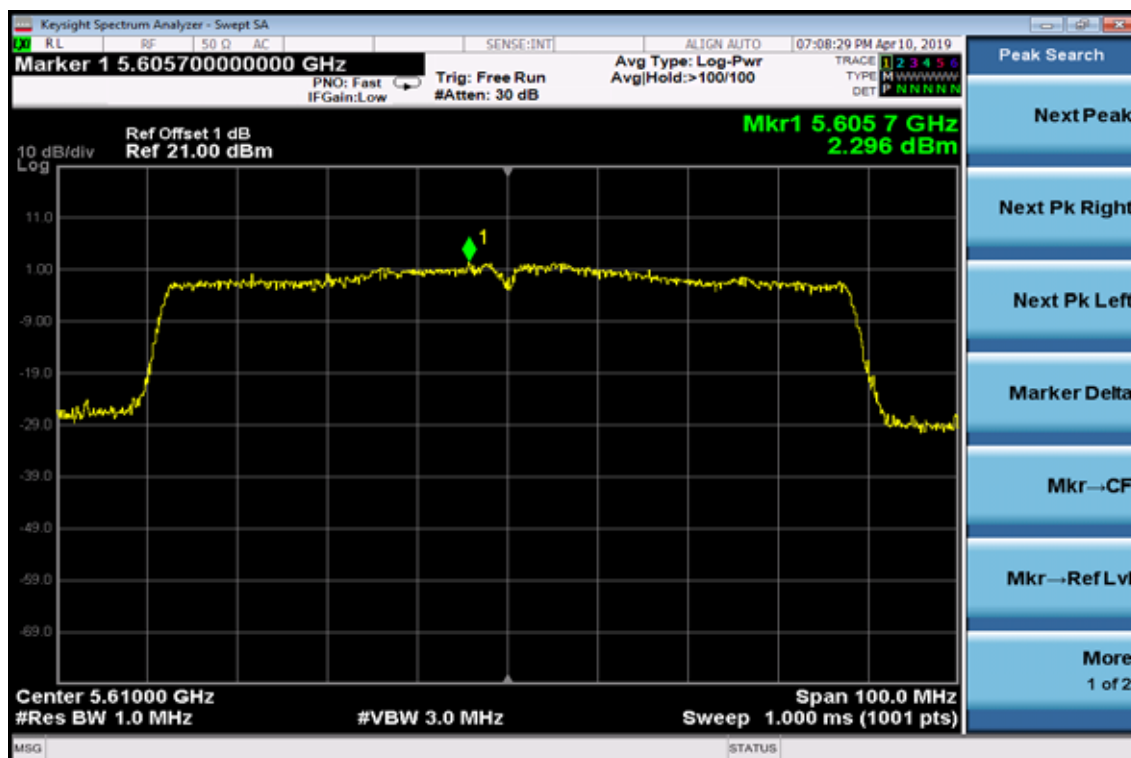
## 802.11ac HT80

### Power Spectral Density Test Plot (CH-Low)



## 802.11ac HT80

### Power Spectral Density Test Plot (CH-High)



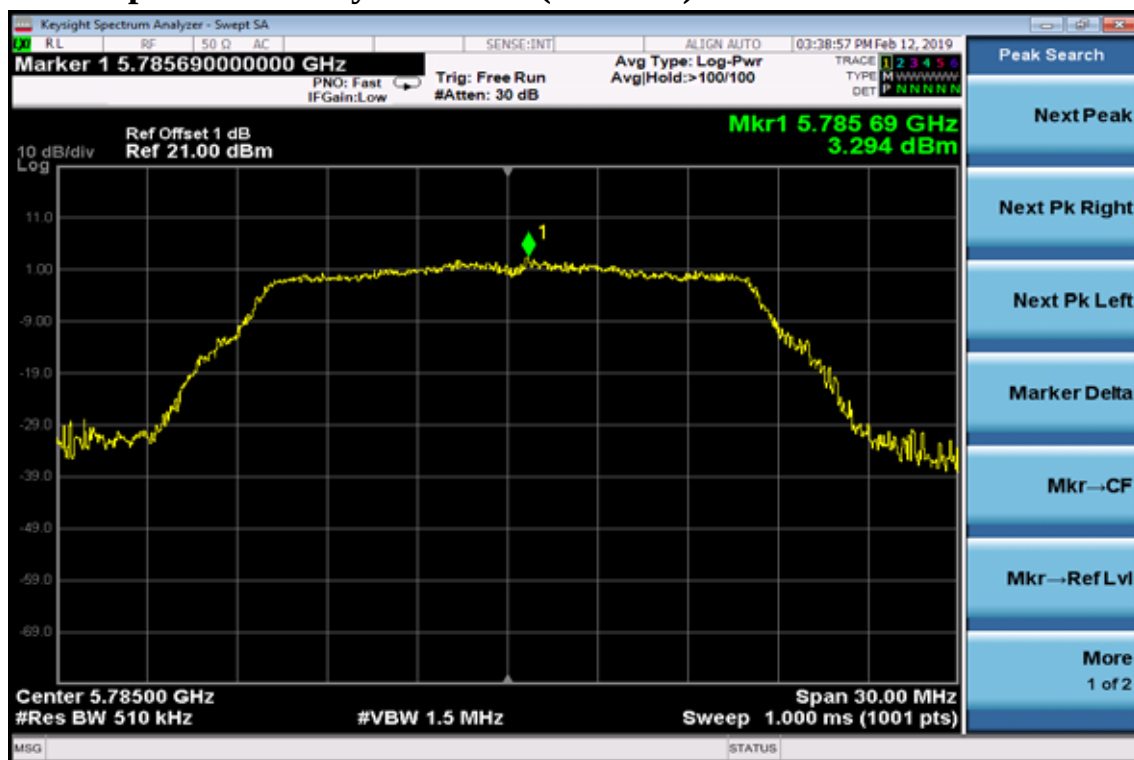
## BAND 4

### 802.11a

#### Power Spectral Density Data Plot (CH Low)



#### Power Spectral Density Data Plot (CH Mid)

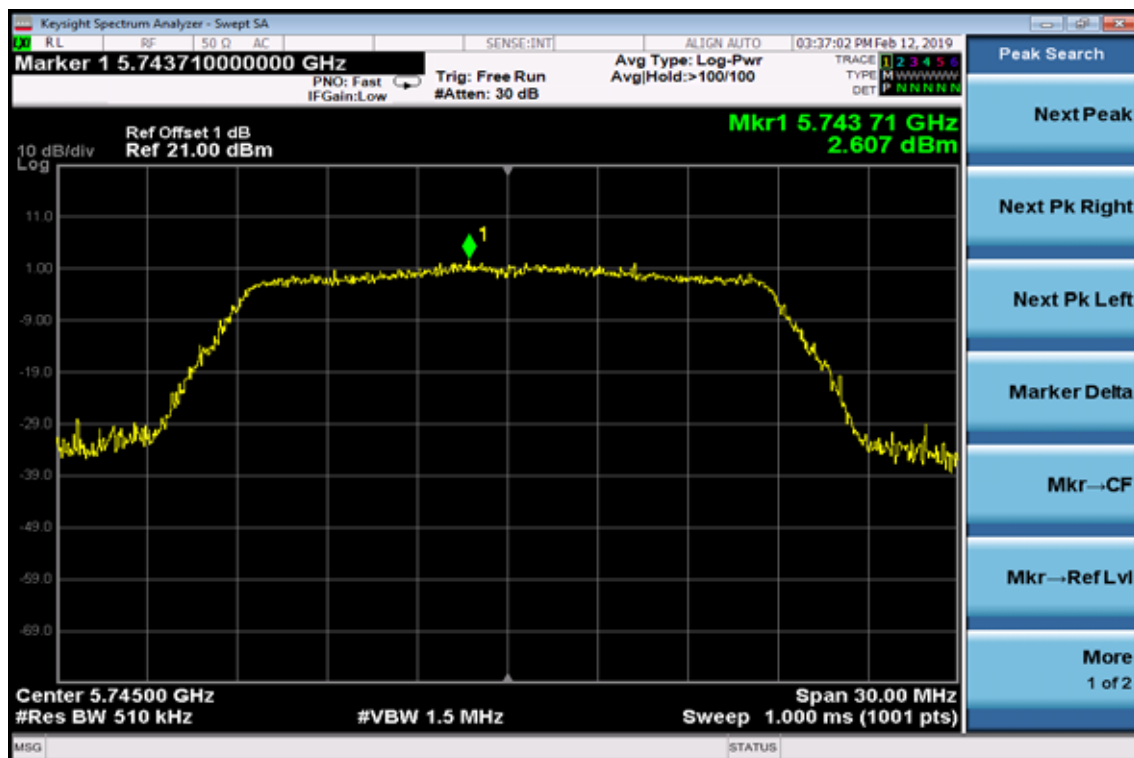


## Power Spectral Density Data Plot (CH High)

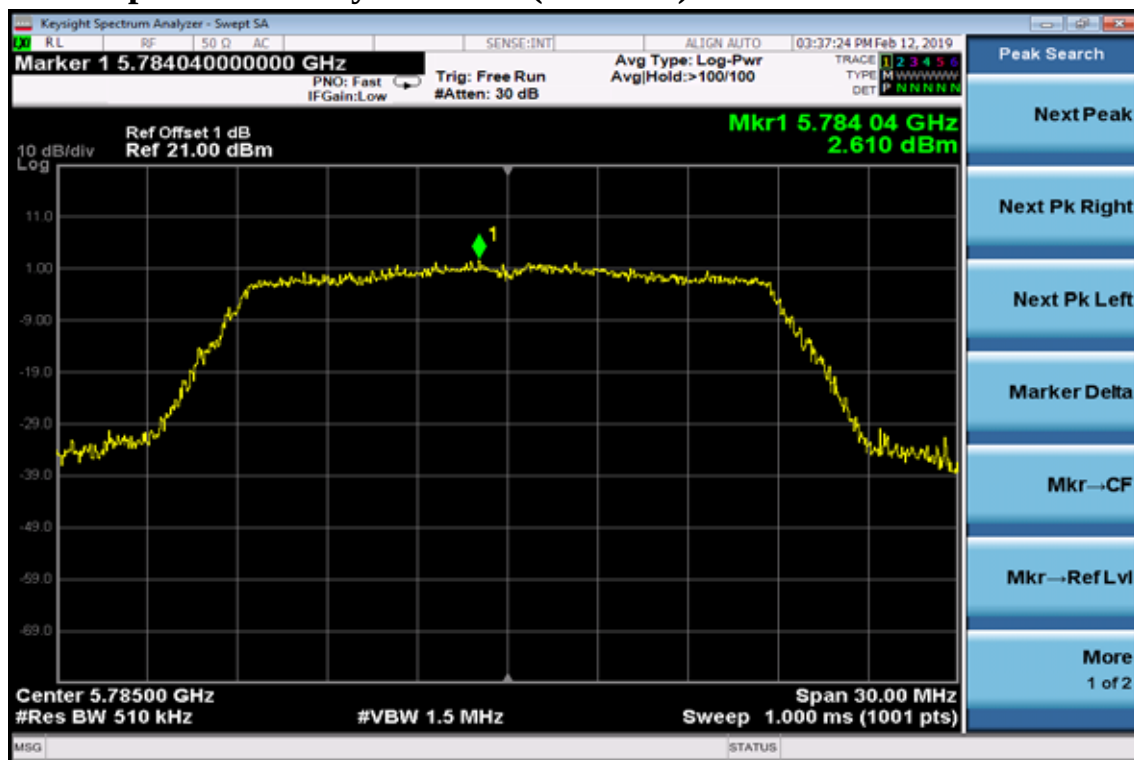


## 802.11n HT20

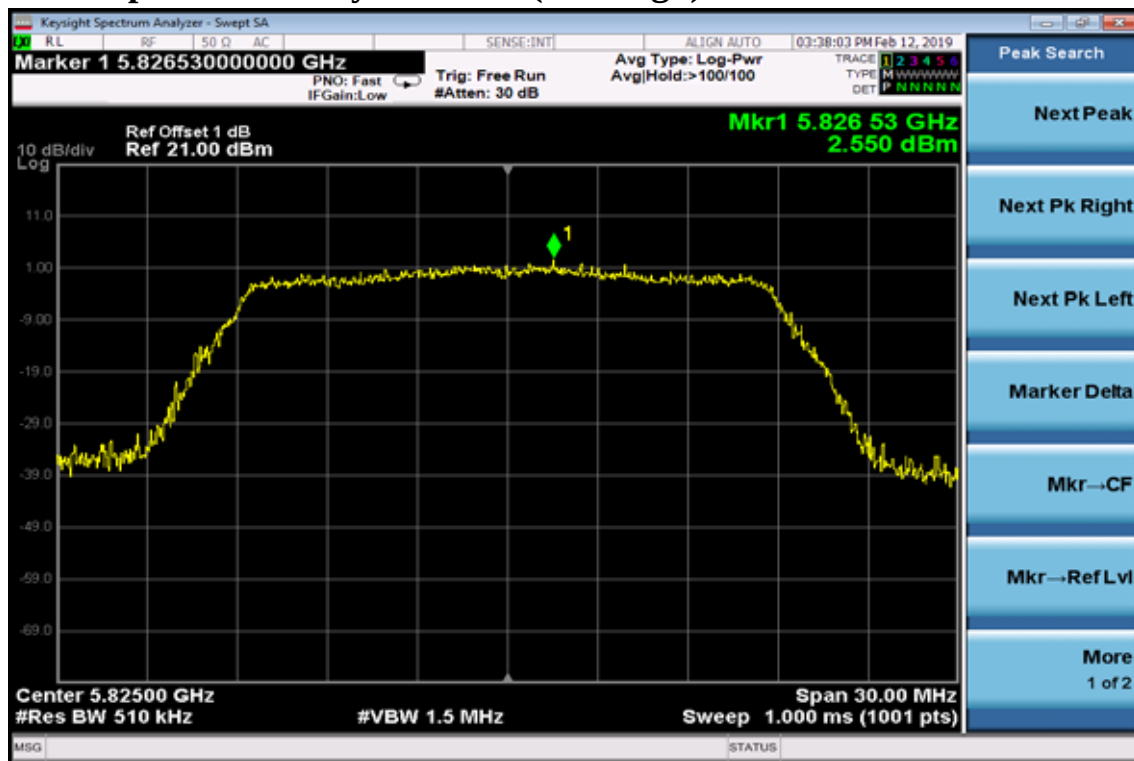
## Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)

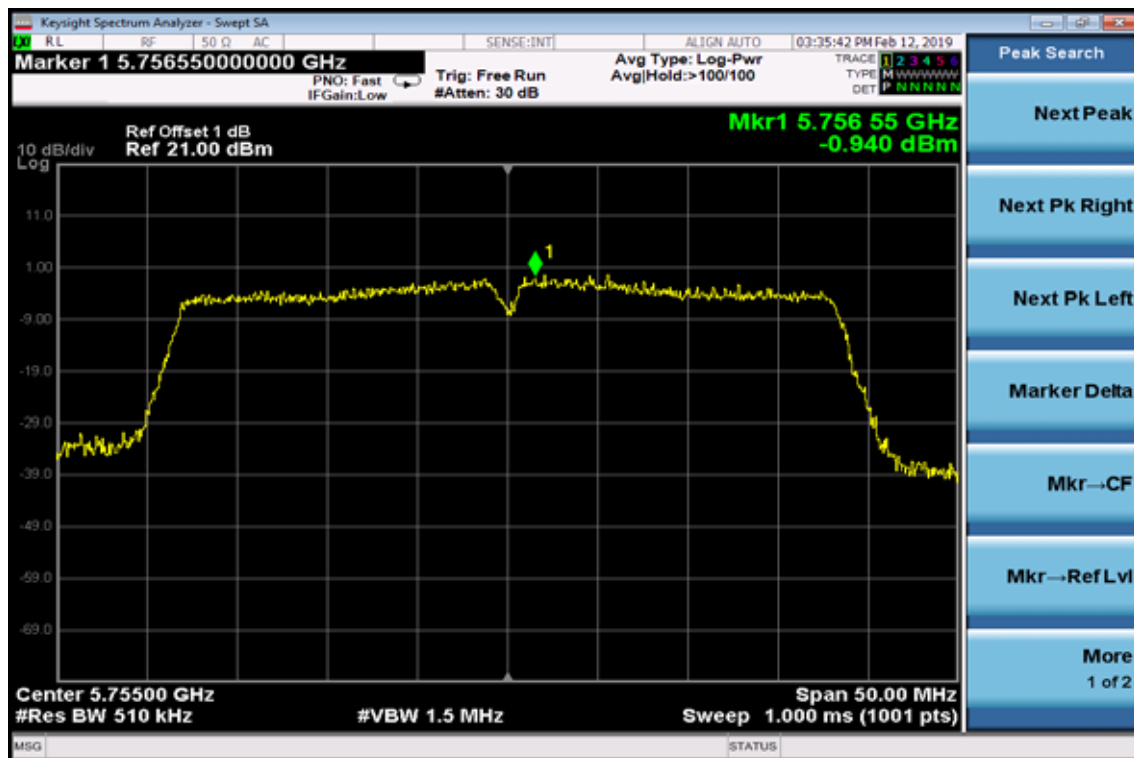


### Power Spectral Density Test Plot (CH-High)



## 802.11n HT40

### Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-High)



## 802.11ac HT80

### Power Spectral Density Test Plot



## **7. 26dB /99% Emission Bandwidth Measurement**

### **7.1. Standard Applicable**

According to §15.407(a) for band 1,2,3. No Limit required.

### **7.2. Measurement Procedure**

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=300kHz, VBW =1MHz, Span= 50MHz, Sweep=auto
4. Mark the peak frequency and -26dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

**Refer to section D of KDB Document: KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

### **7.3. Measurement Equipment Used:**

Refer to section 6.3 for details.

### **7.4. Test Set-up:**

Refer to section 6.4 for details.

## 7.5. Measurement Result

### 802.11a Mode

| Frequency (MHz) | 26dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|-----------------|----------------------|---------------------|
| 5180            | 21.560               | 16.904              |
| 5260            | 21.300               | 16.880              |
| 5320            | 21.480               | 16.935              |
| 5500            | 21.460               | 16.885              |
| 5600            | 21.550               | 16.897              |
| 5700            | 21.410               | 16.884              |

### 802.11n HT20 Mode

| Frequency (MHz) | 26dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|-----------------|----------------------|---------------------|
| 5180            | 21.730               | 17.979              |
| 5260            | 21.600               | 17.973              |
| 5320            | 21.640               | 18.005              |
| 5500            | 21.650               | 17.959              |
| 5600            | 21.890               | 18.113              |
| 5700            | 21.880               | 18.076              |

### 802.11n HT40 Mode

| Frequency (MHz) | 26dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|-----------------|----------------------|---------------------|
| 5190            | 39.850               | 36.292              |
| 5270            | 39.660               | 36.299              |
| 5310            | 39.820               | 36.321              |
| 5510            | 40.080               | 36.330              |
| 5570            | 40.000               | 36.341              |
| 5670            | 40.040               | 36.359              |

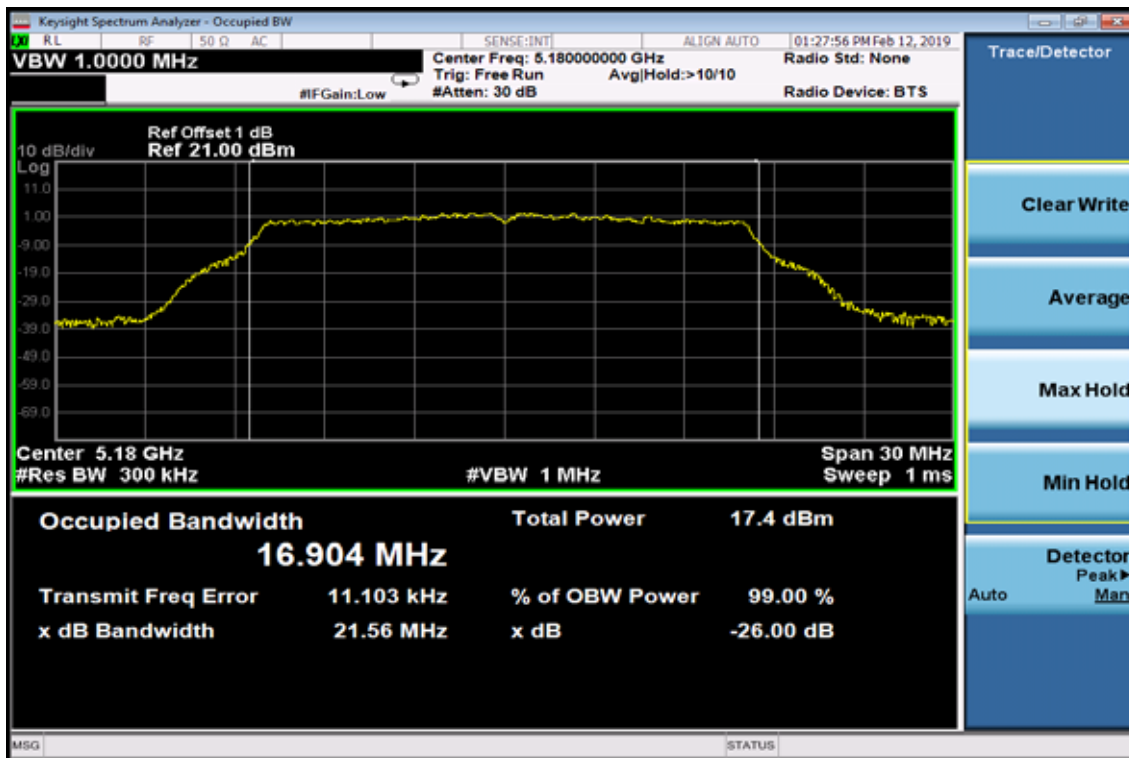
### 802.11a HT80 Mode

| Frequency (MHz) | 26dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|-----------------|----------------------|---------------------|
| 5210            | 80.200               | 75.389              |
| 5290            | 80.090               | 75.485              |
| 5530            | 80.760               | 75.357              |
| 5610            | 80.290               | 75.443              |

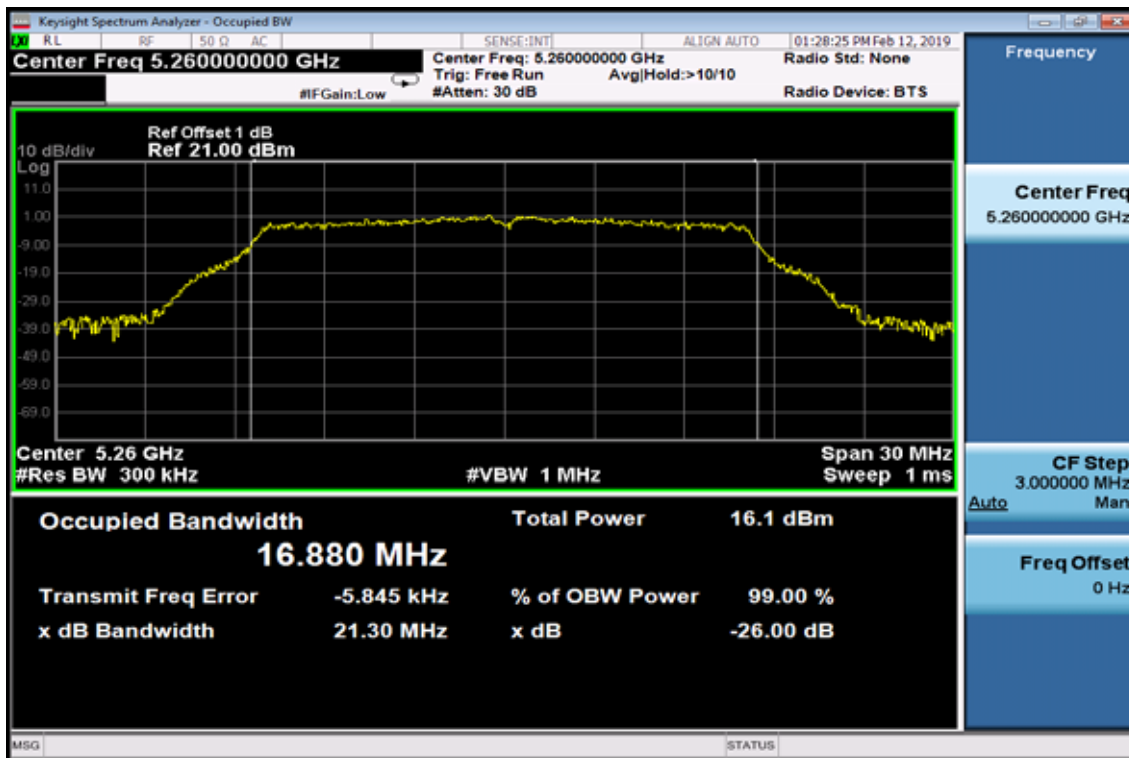
## Band 1, 2

802.11a

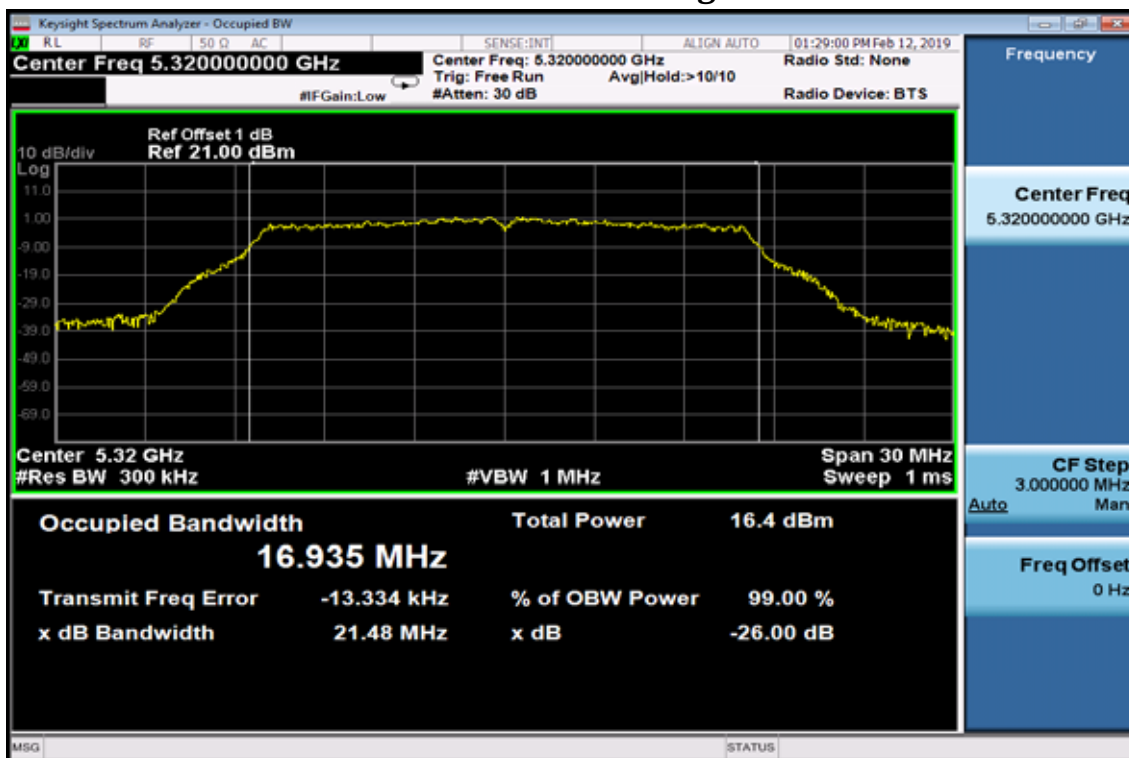
### 26dB / 99% Band Width Test Data CH-Low



### 26dB / 99% Band Width Test Data CH-Mid

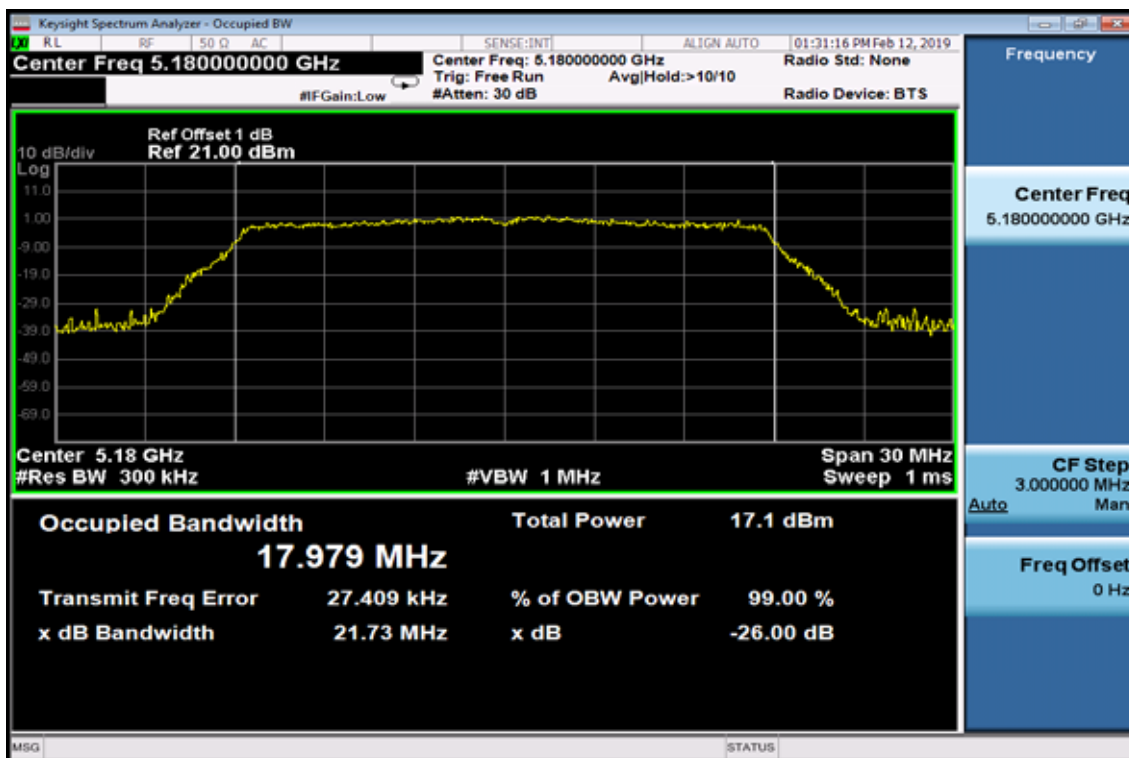


## 26dB / 99% Band Width Test Data CH-High

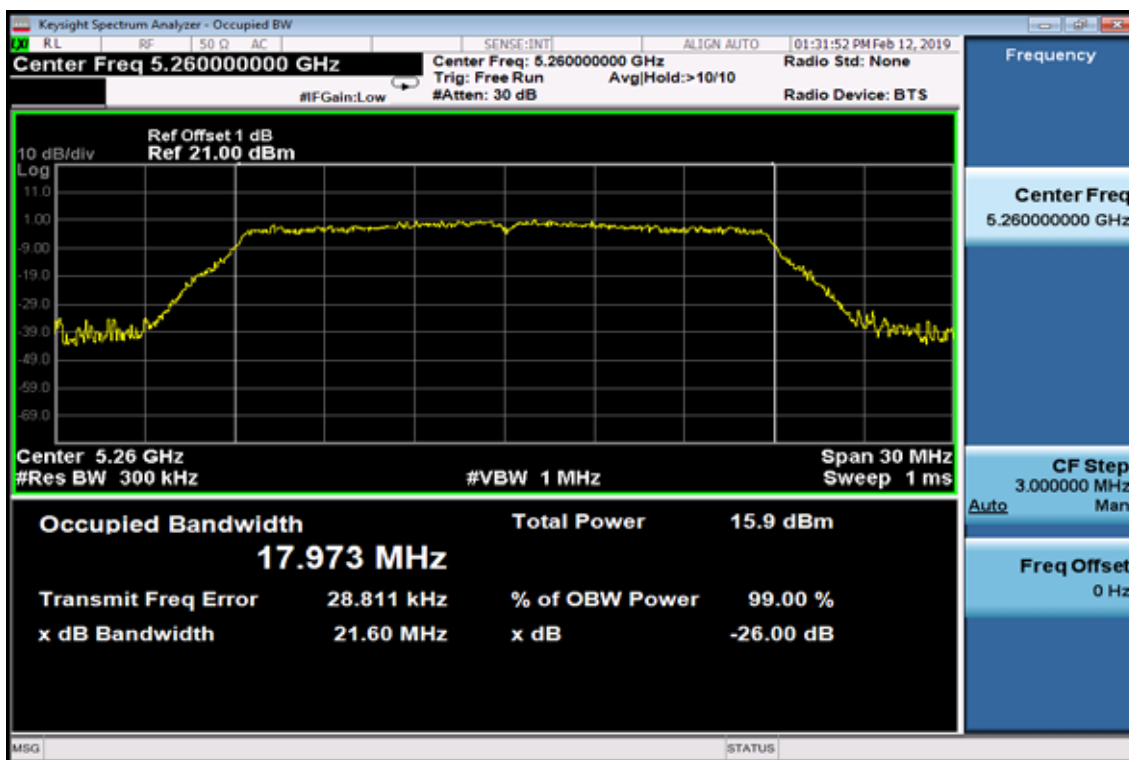


## 802.11n HT20

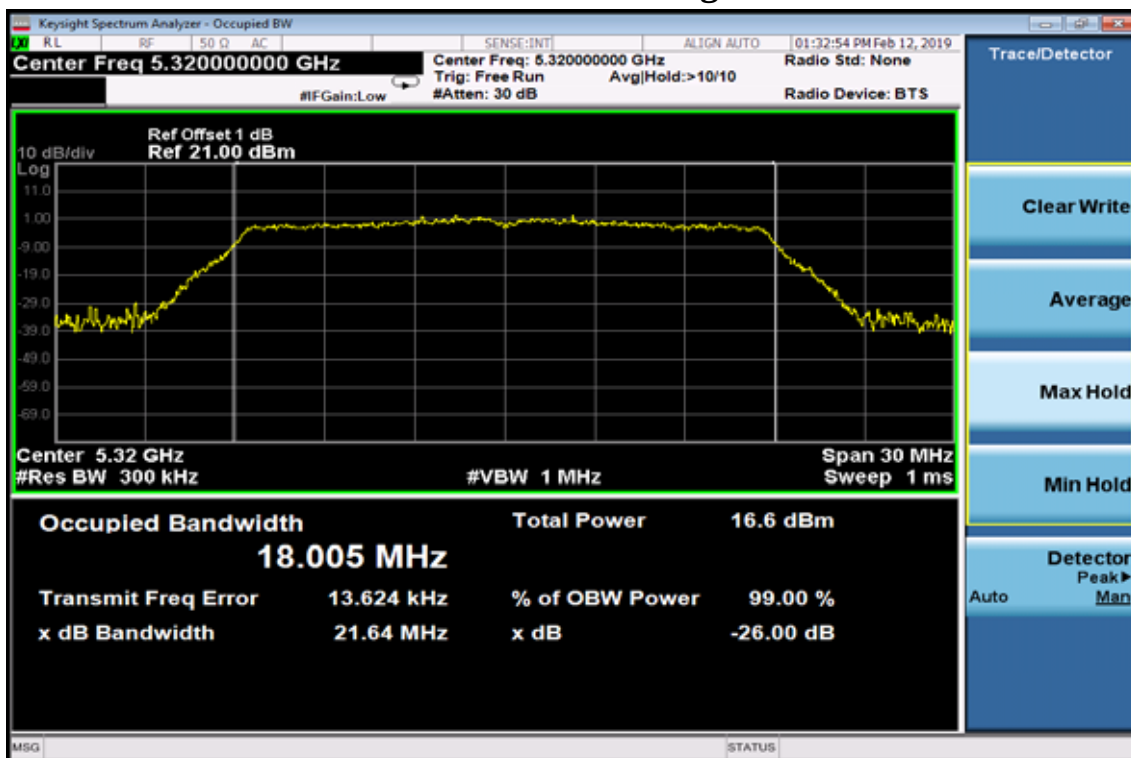
## 26dB / 99% Band Width Test Data CH-Low



## 26dB / 99% Band Width Test Data CH-Mid

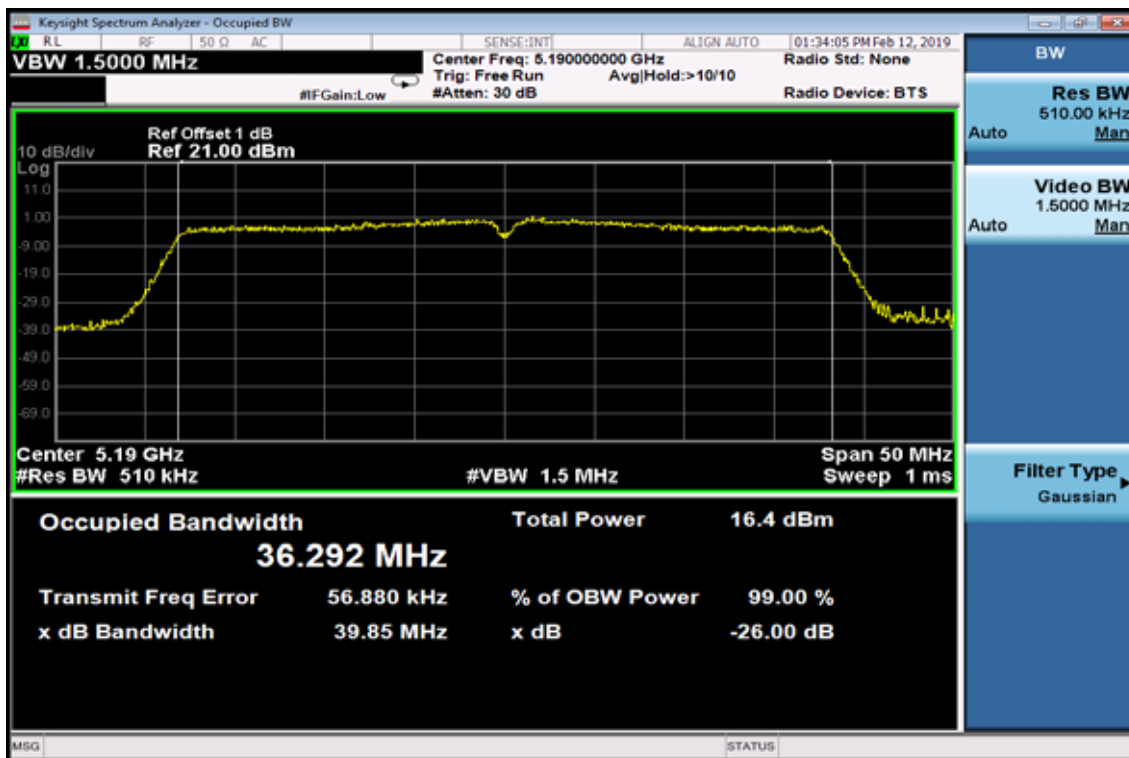


## 26dB / 99% Band Width Test Data CH-High

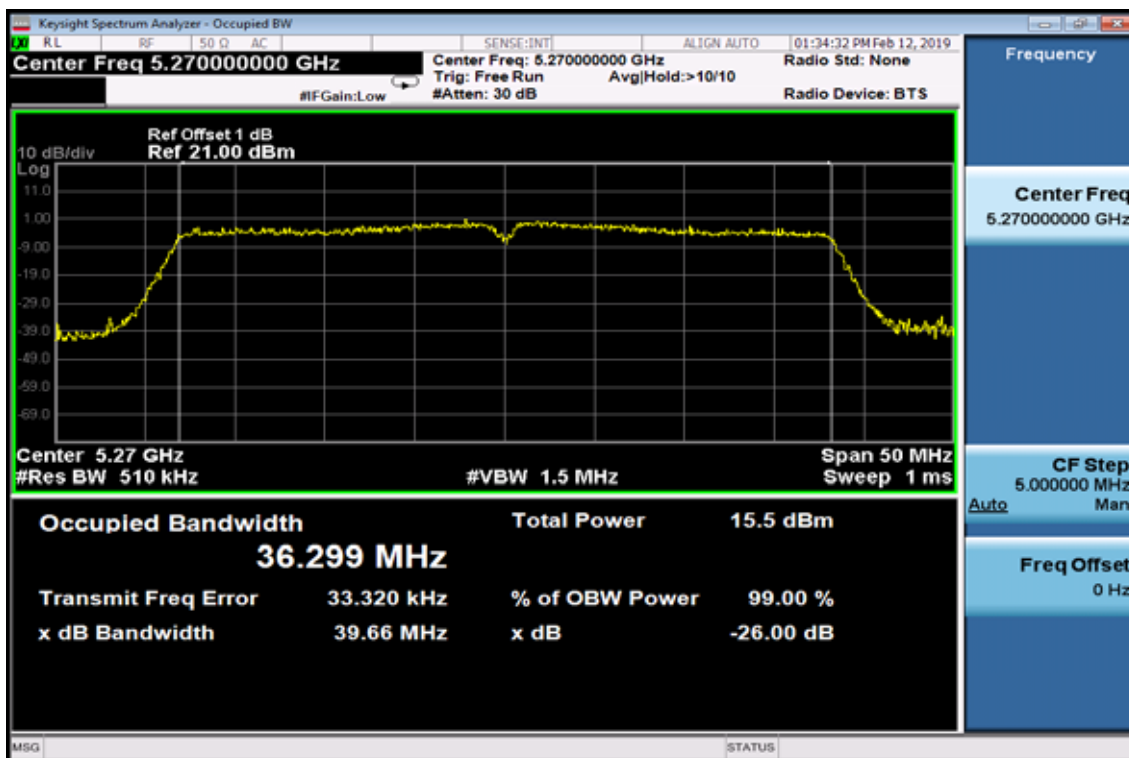


## 802.11n HT40

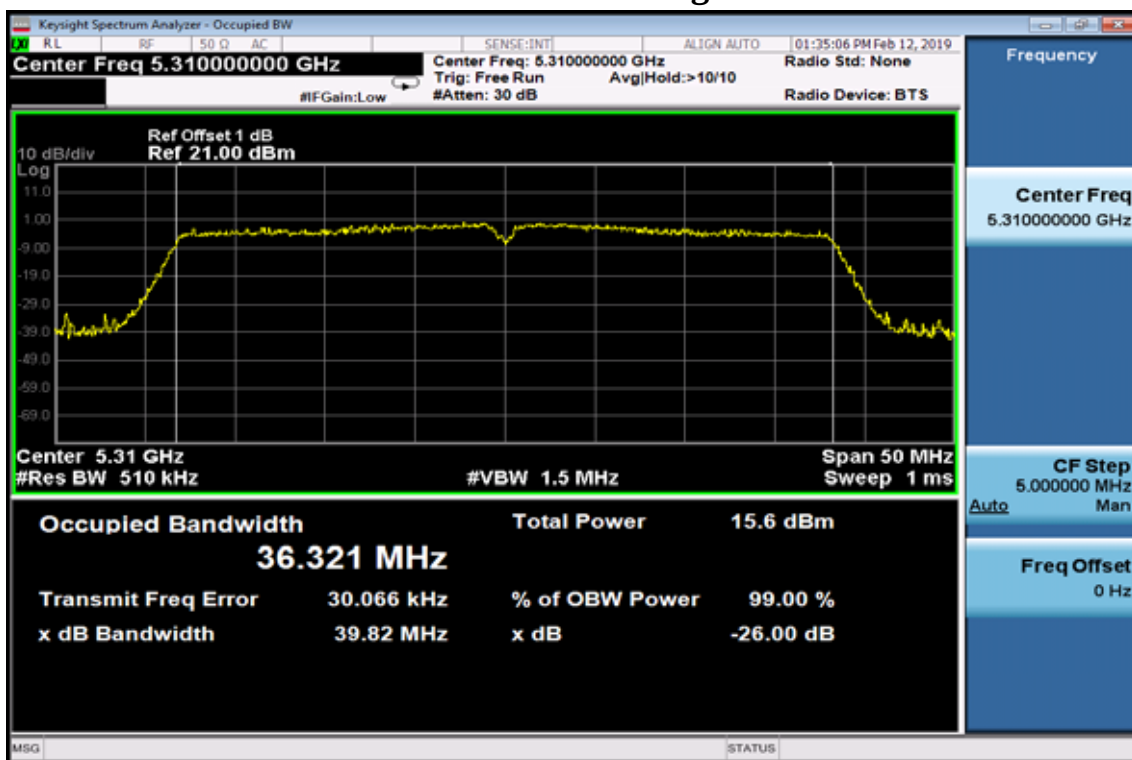
### 26dB / 99% Band Width Test Data CH-Low



### 26dB / 99% Band Width Test Data CH-Mid

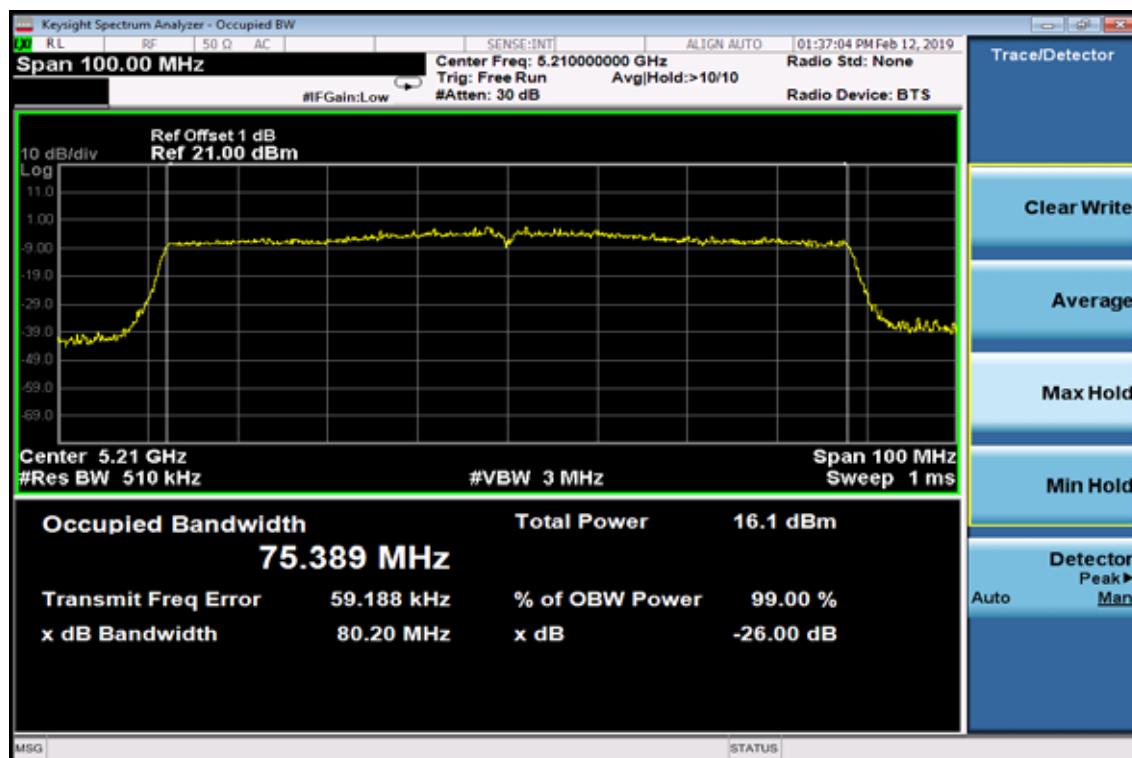


## 26dB / 99% Band Width Test Data CH-High



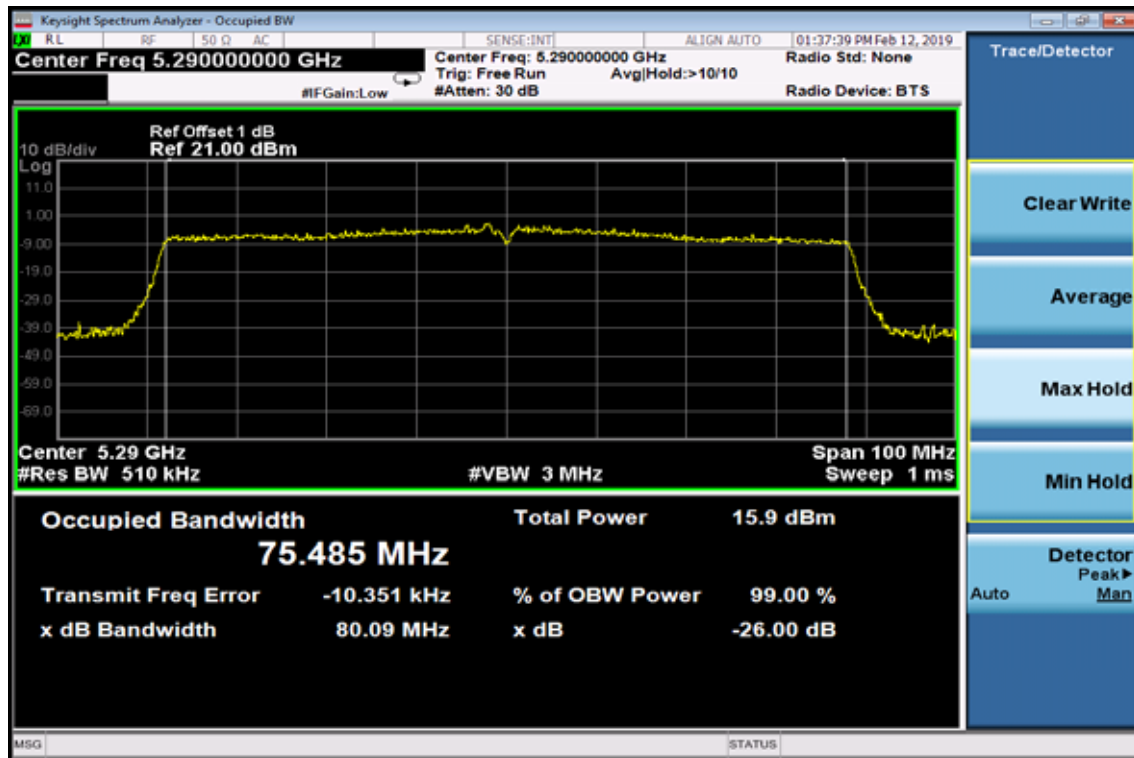
## 802.11ac HT80

## 26dB / 99% Band Width Test Data CH-Low



## 802.11ac HT80

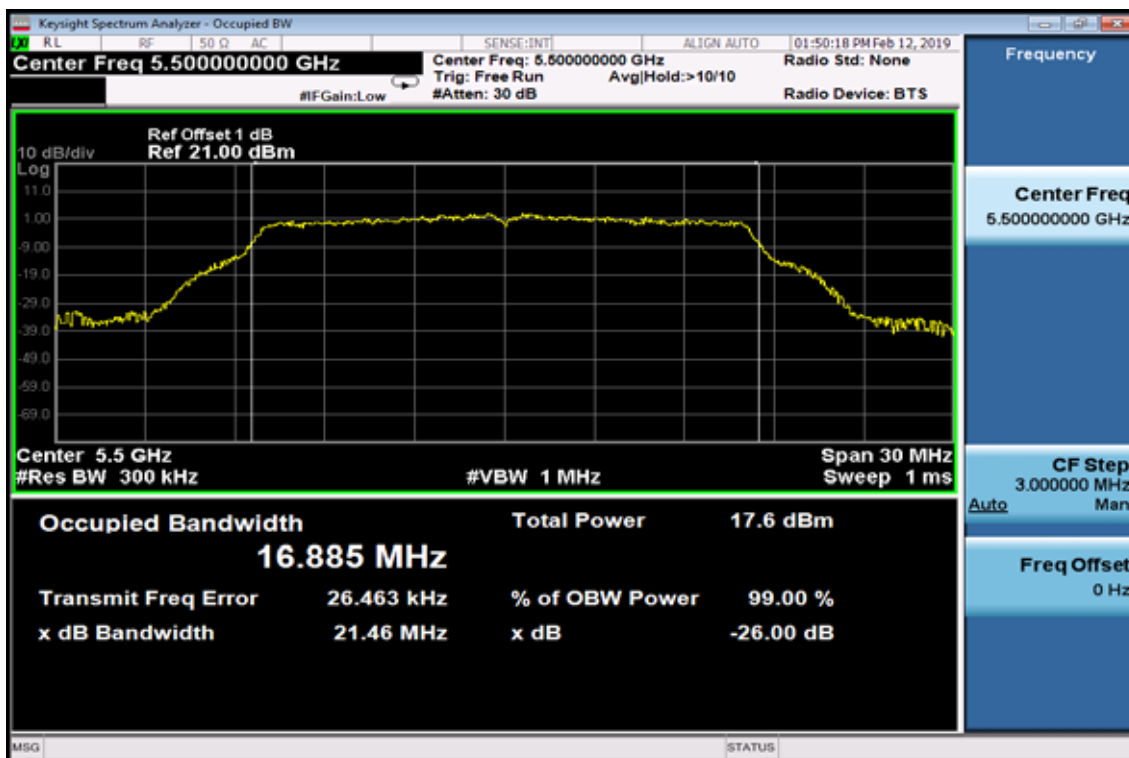
### 26dB / 99% Band Width Test Data CH-High



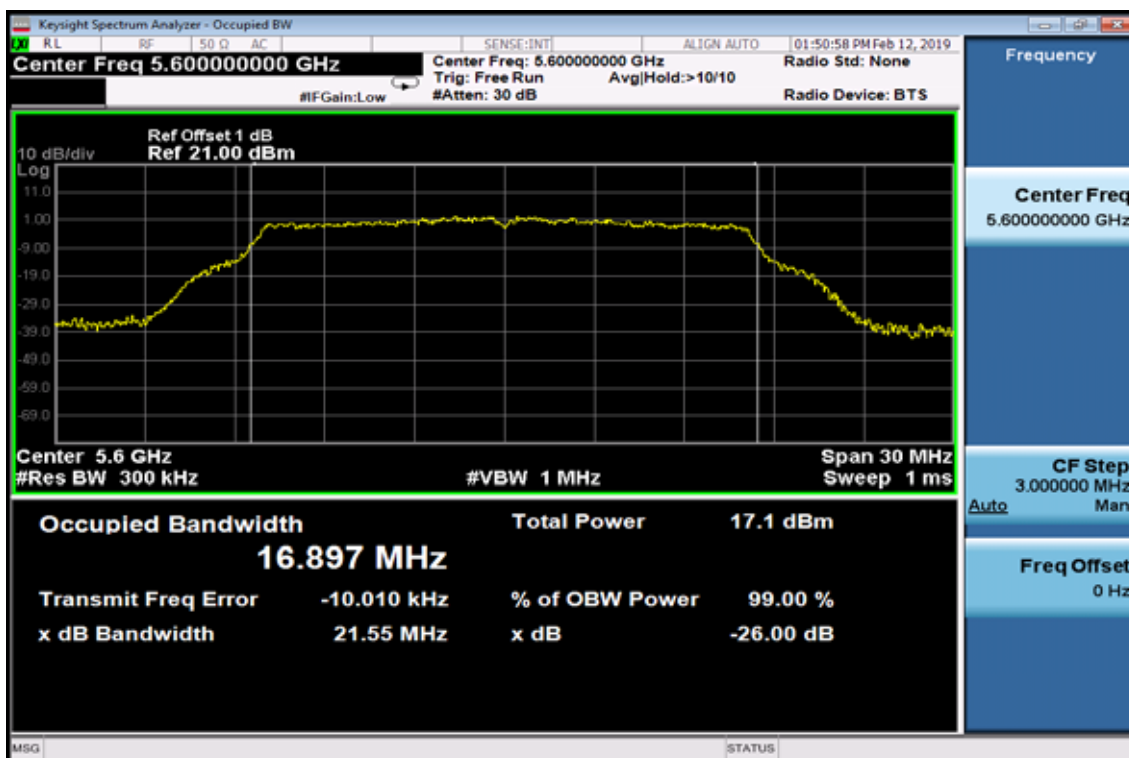
### Band 3

802.11a

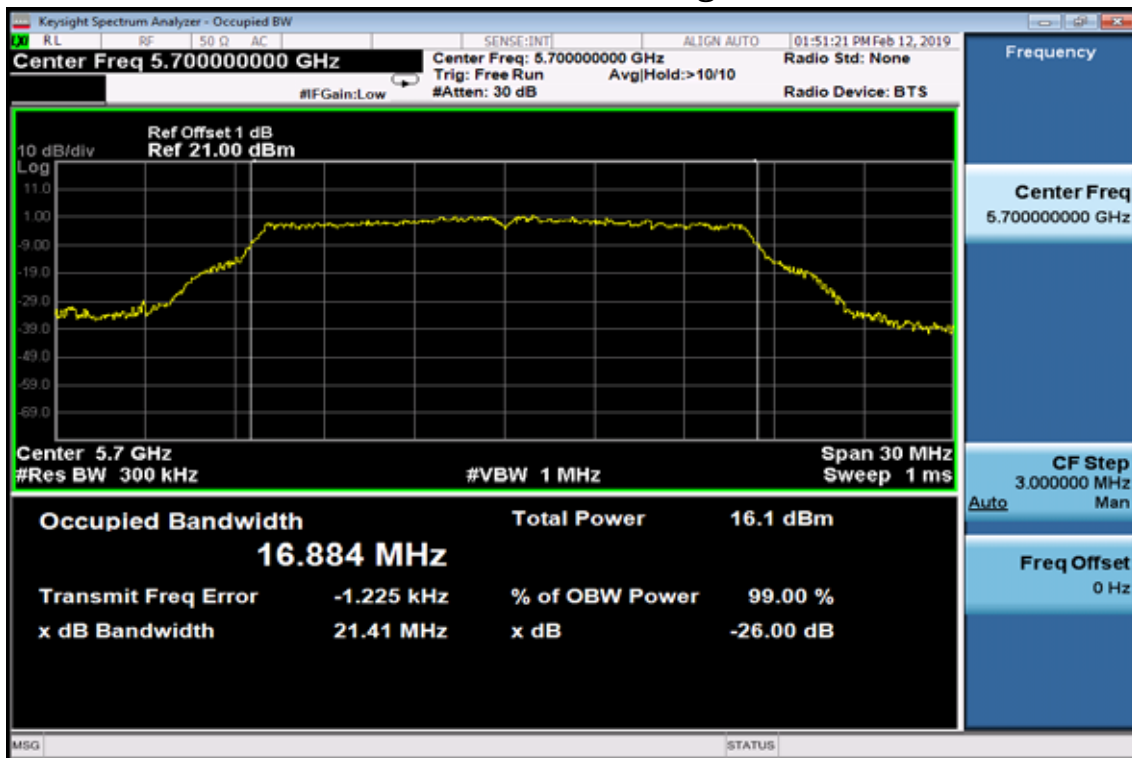
26dB / 99% Band Width Test Data CH-Low



26dB / 99% Band Width Test Data CH-Mid

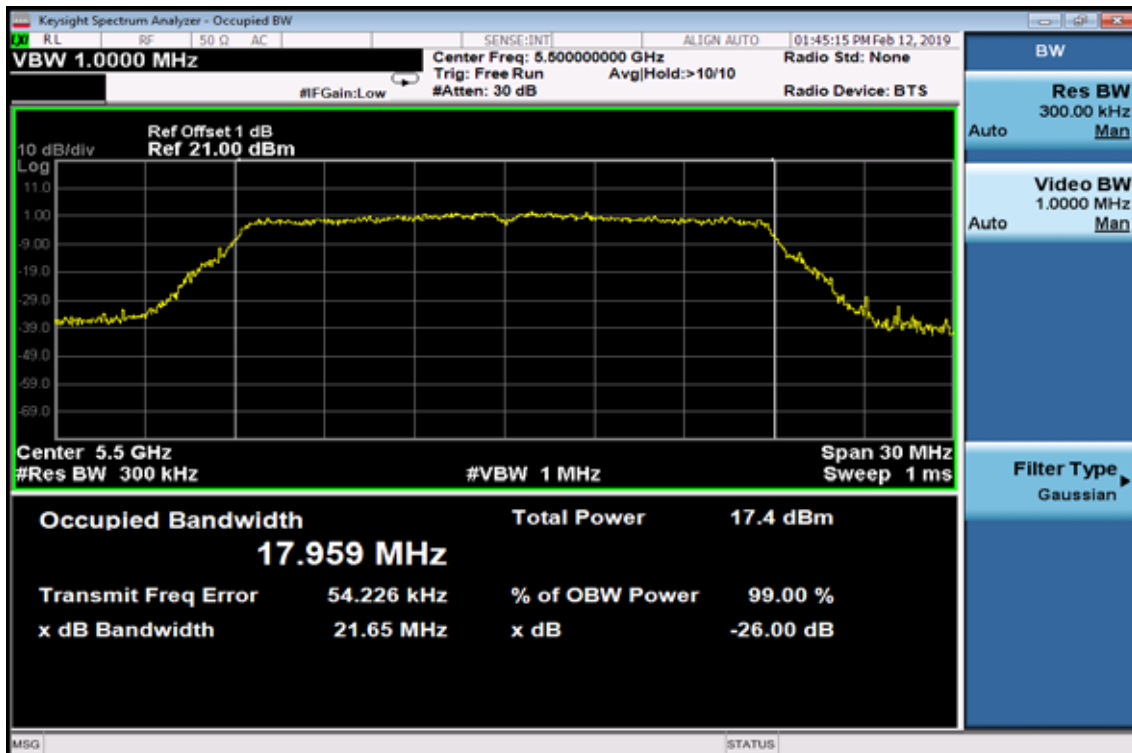


## 26dB / 99% Band Width Test Data CH-High

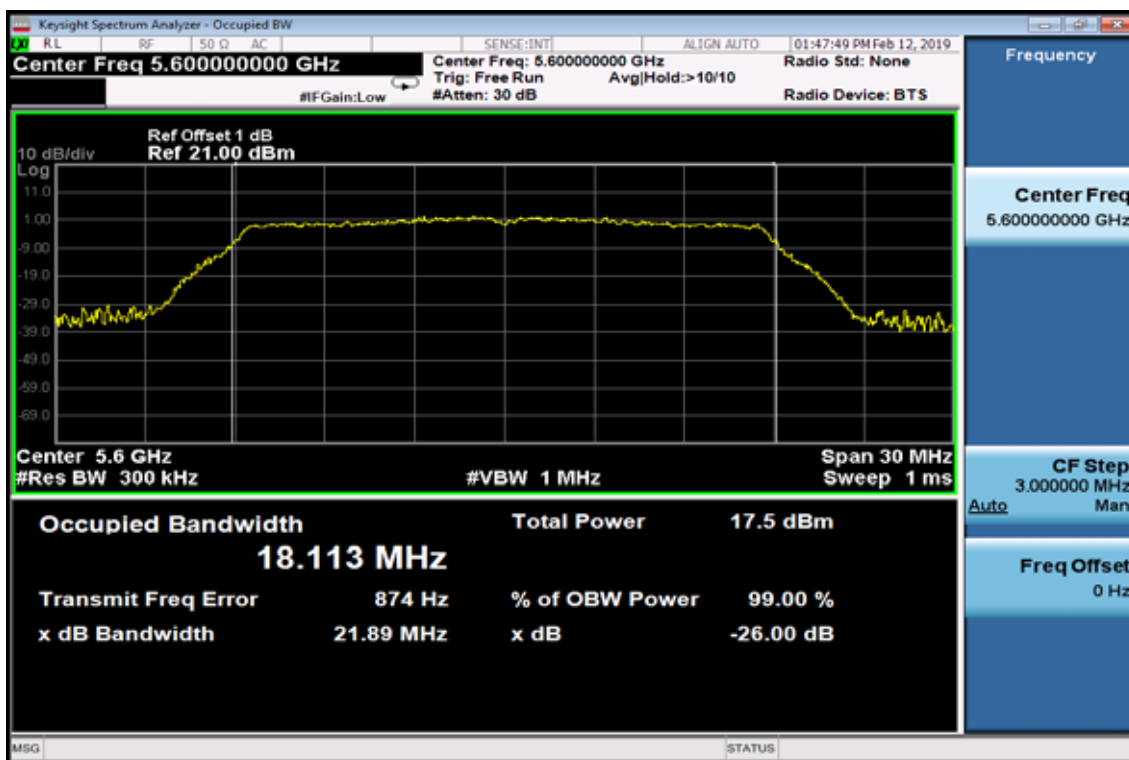


## 802.11n HT20

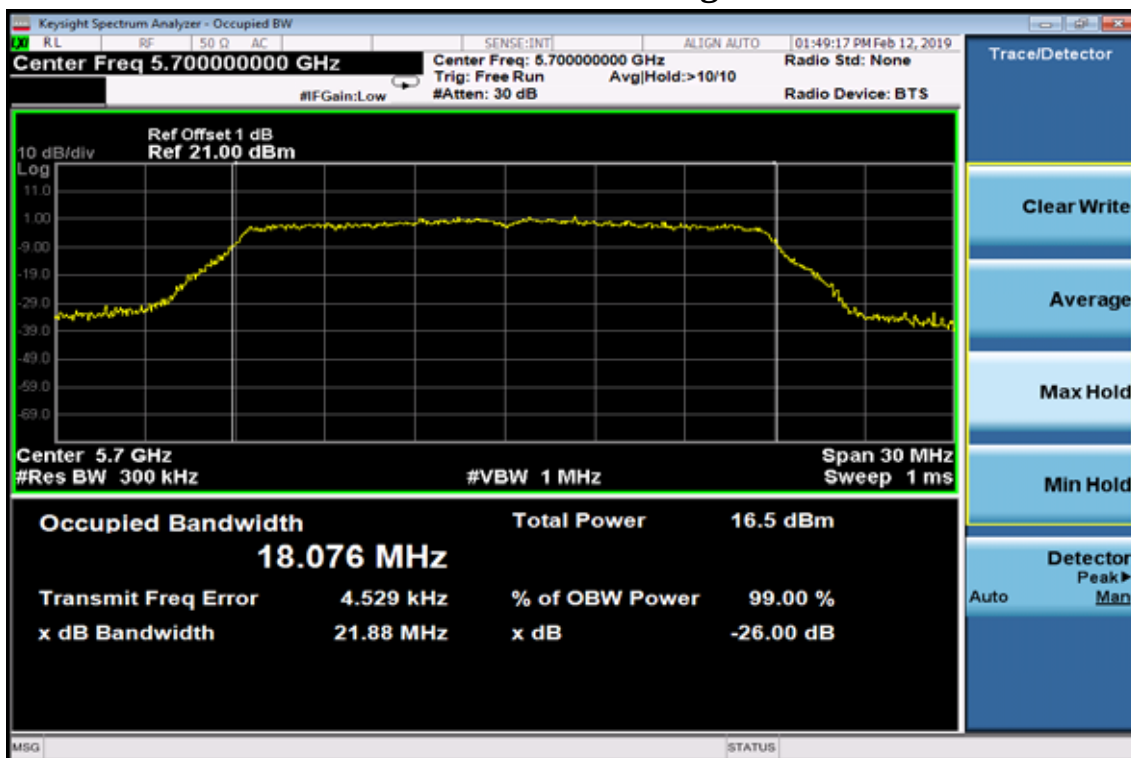
## 26dB / 99% Band Width Test Data CH-Low



## 26dB / 99% Band Width Test Data CH-Mid

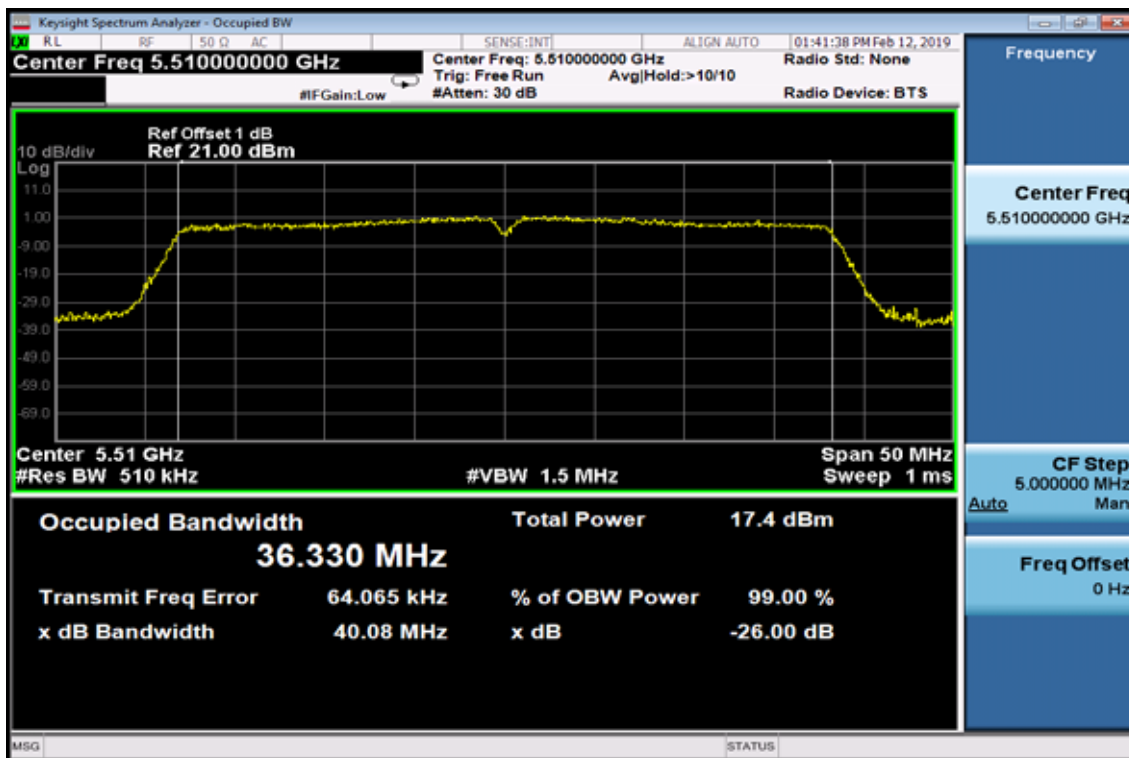


## 26dB / 99% Band Width Test Data CH-High

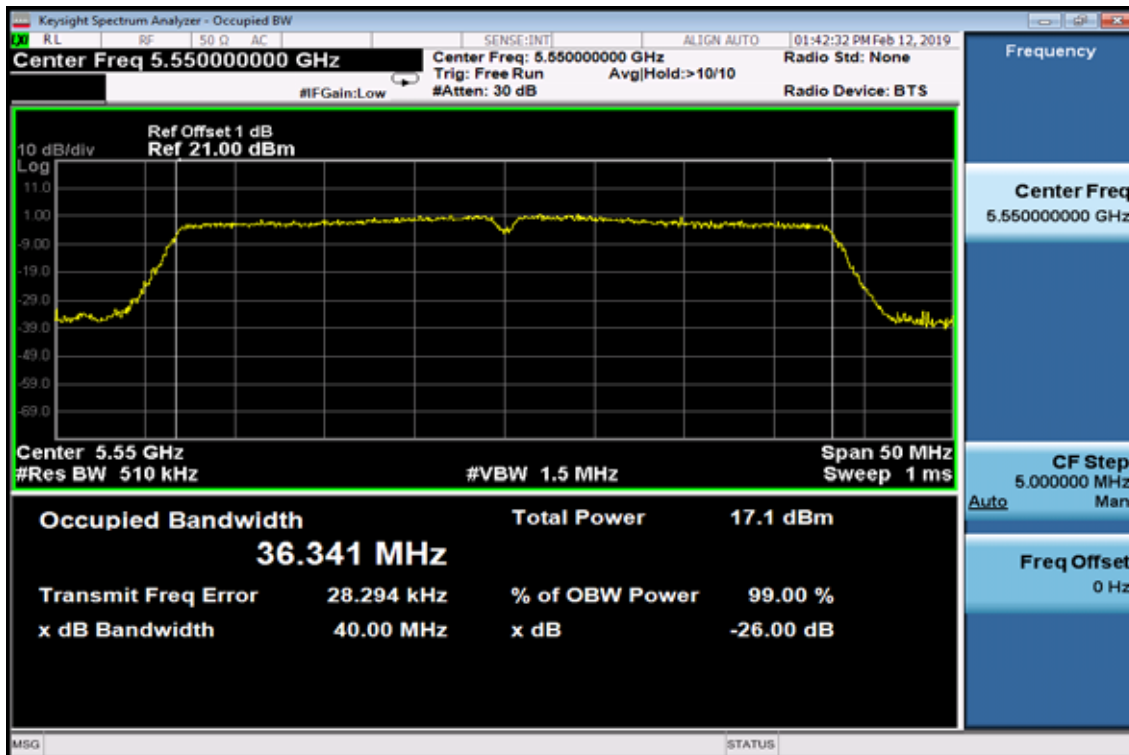


802.11n HT40

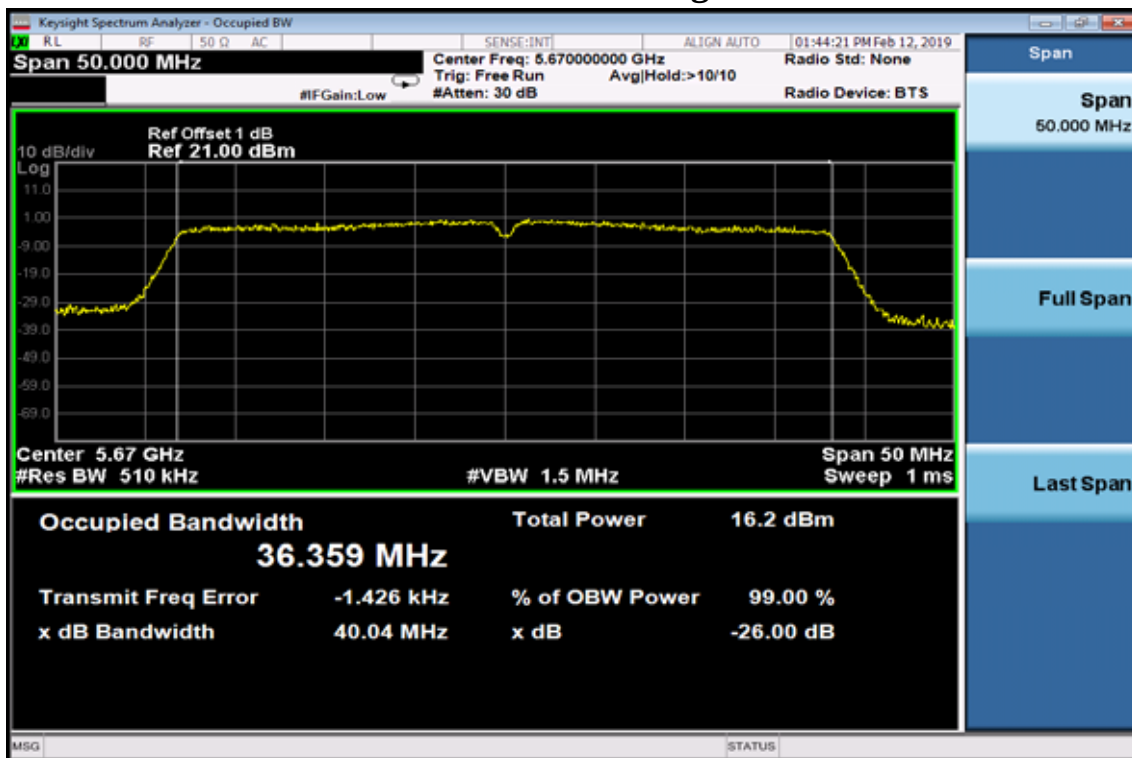
26dB / 99% Band Width Test Data CH-Low



26dB / 99% Band Width Test Data CH-Mid

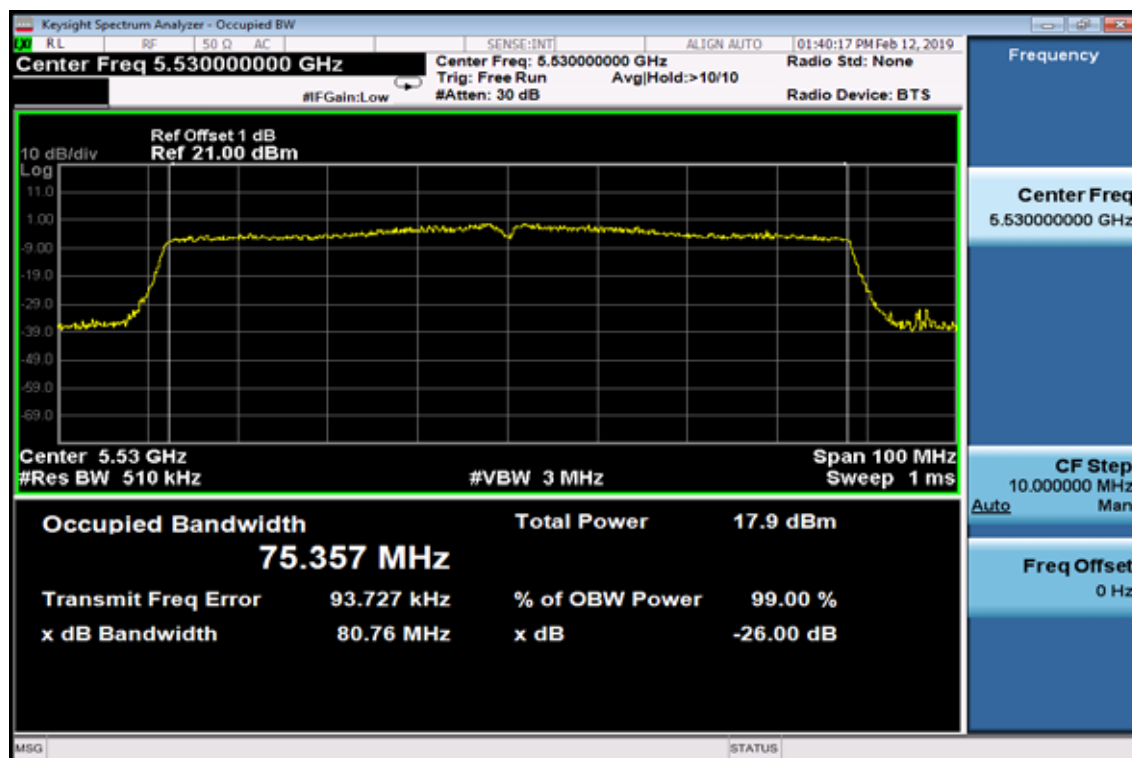


## 26dB / 99% Band Width Test Data CH-High



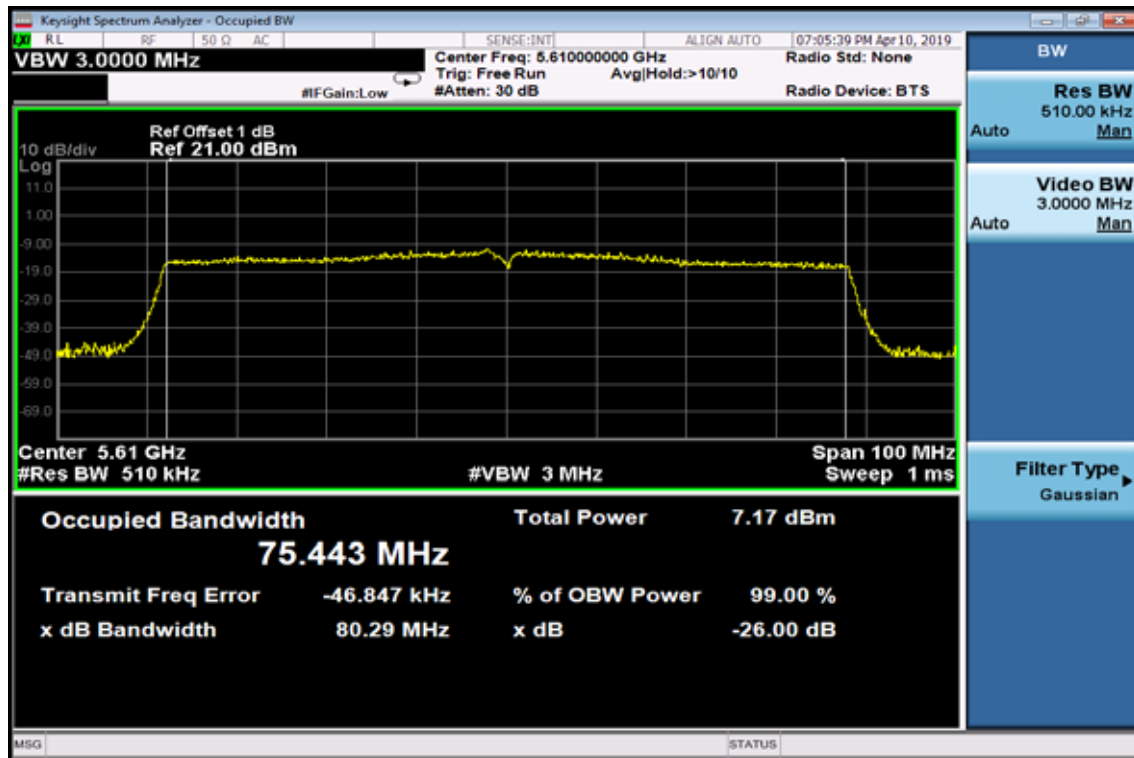
## 802.11ac HT80

## 26dB / 99% Band Width Test Data CH-Low



802.11ac HT80

26dB / 99% Band Width Test Data CH-High



## **8. 6dB Emission Bandwidth Measurement**

### **8.1. Standard Applicable**

According to §15.407 (e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

### **8.2. Measurement Procedure**

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=100kHz, VBW =300MHz, Span= 50MHz, Sweep=auto
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

**Refer to section D of KDB Document: KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

### **8.3. Measurement Equipment Used:**

Refer to section 6.3 for details.

### **8.4. Test Set-up:**

Refer to section 6.4 for details.

## 8.5. Measurement Result

### 802.11a Mode

| Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) | Limit (kHz) |
|-----------------|---------------------|---------------------|-------------|
| 5745            | 16.340              | 16.459              | >500        |
| 5785            | 16.340              | 16.466              | >500        |
| 5825            | 16.340              | 16.465              | >500        |

### 802.11n HT20 Mode

| Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) | Limit (kHz) |
|-----------------|---------------------|---------------------|-------------|
| 5745            | 17.560              | 17.662              | >500        |
| 5785            | 17.580              | 17.651              | >500        |
| 5825            | 17.320              | 17.661              | >500        |

### 802.11n HT40 Mode

| Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) | Limit (kHz) |
|-----------------|---------------------|---------------------|-------------|
| 5755            | 35.940              | 36.027              | >500        |
| 5795            | 35.800              | 36.030              | >500        |

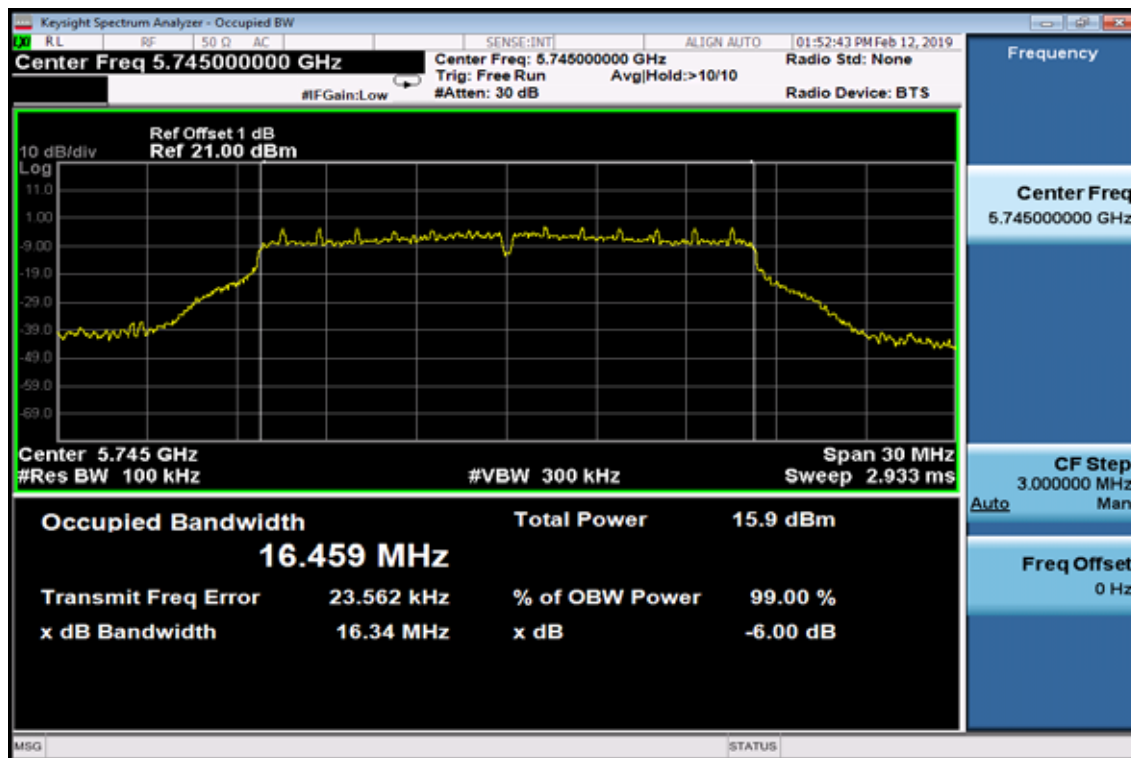
### 802.11a HT80 Mode

| Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) | Limit (kHz) |
|-----------------|---------------------|---------------------|-------------|
| 5775            | 75.430              | 75.299              | >500        |

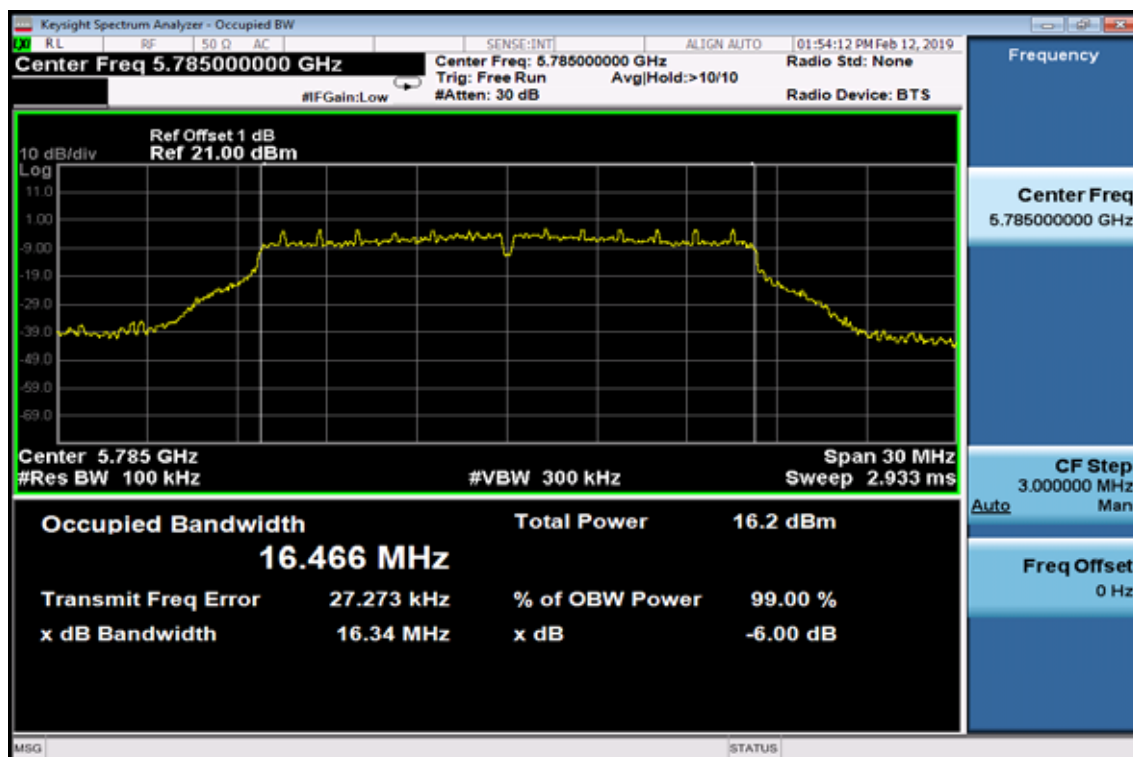
5725-5850 MHz

802.11a

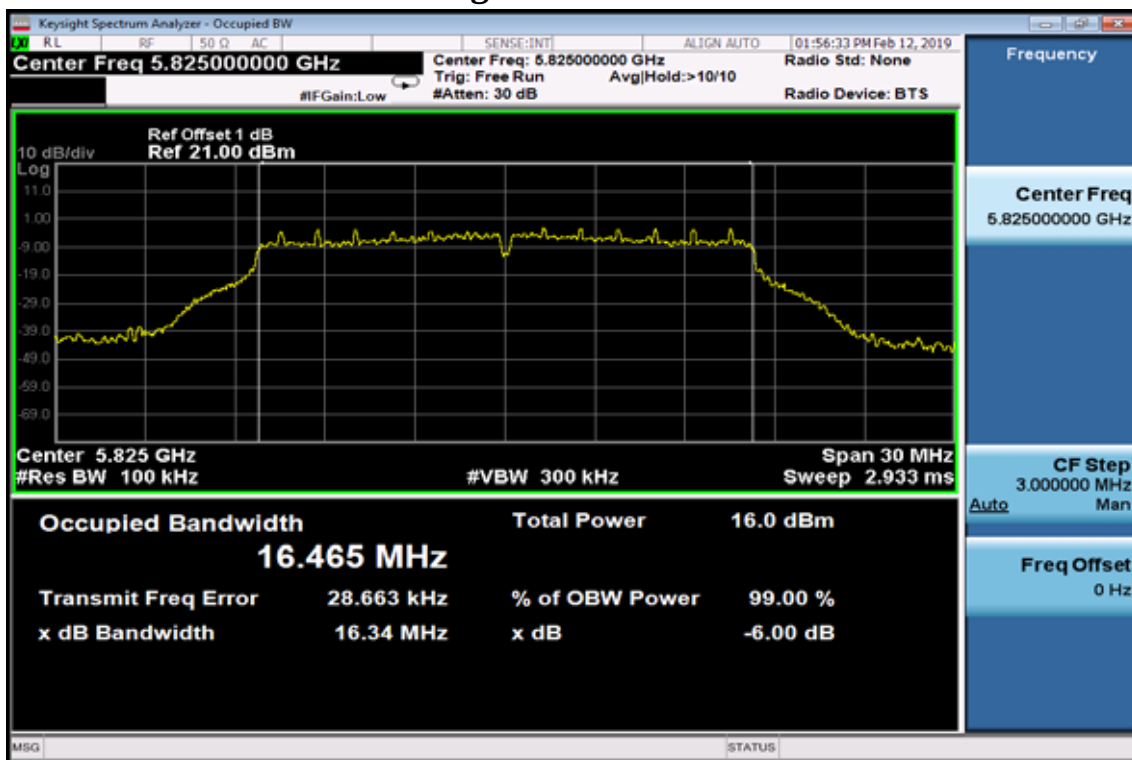
6dB Band Width Test Data CH-Low



6dB Band Width Data CH-Mid

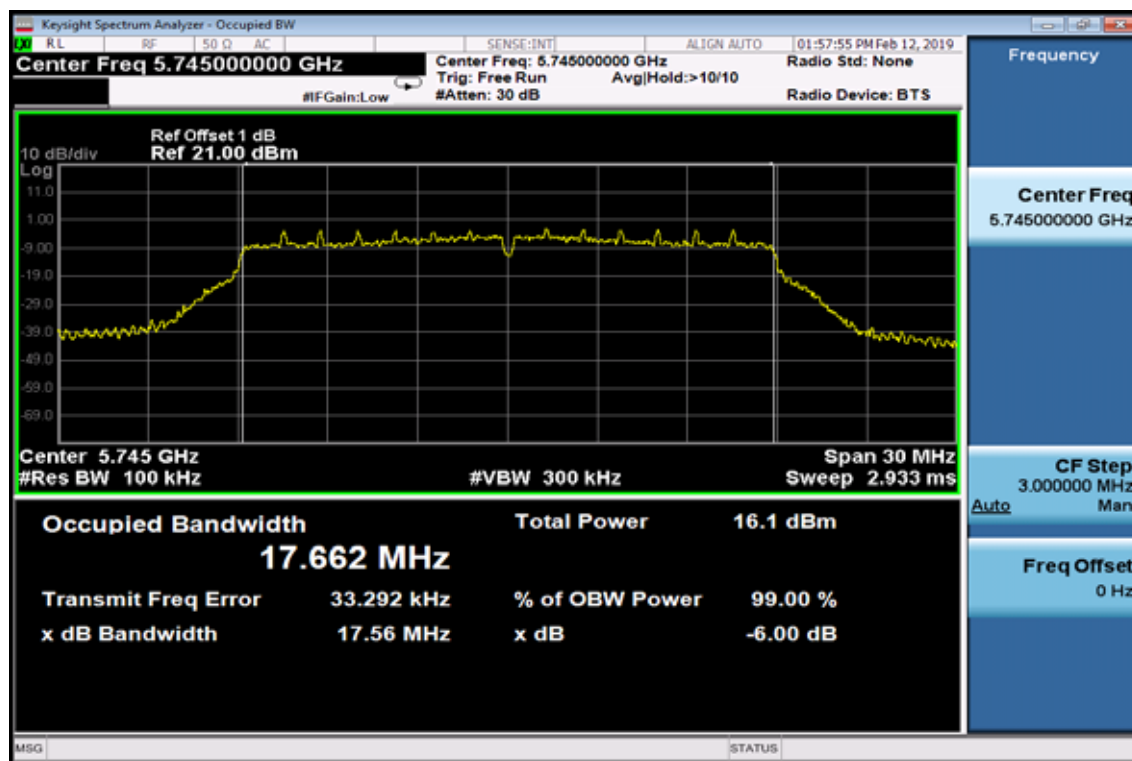


## 6dB Band Width Data CH-High

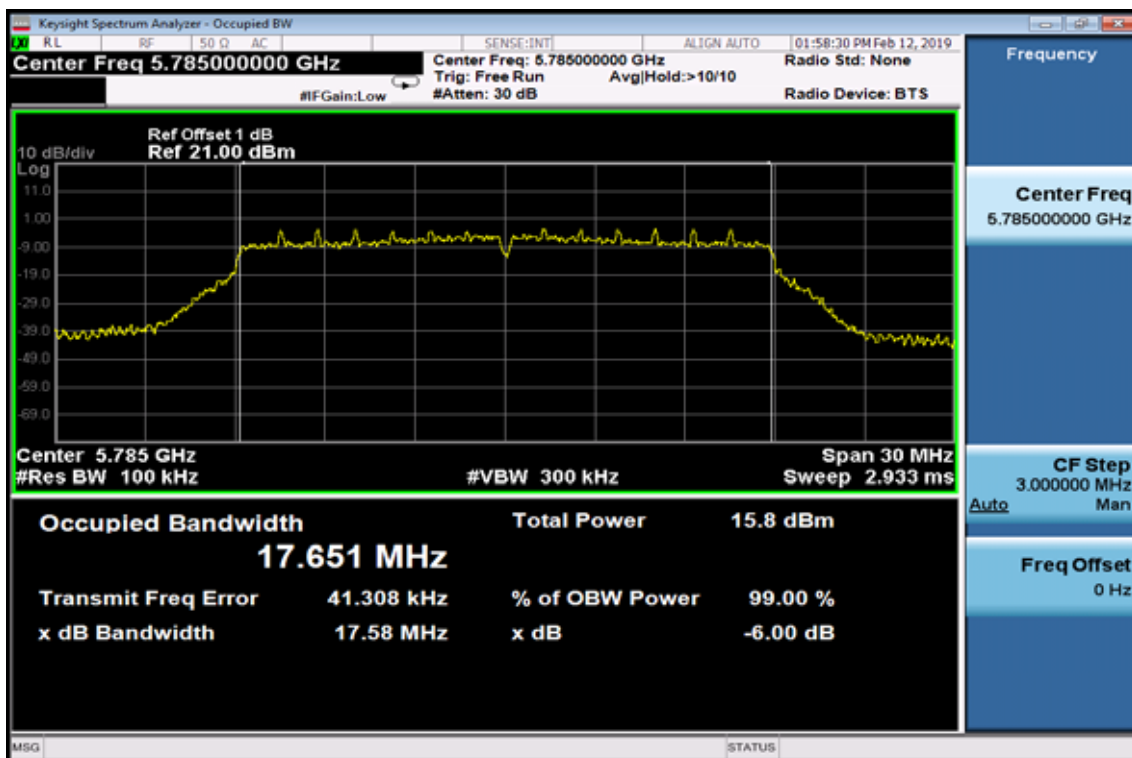


## 802.11n HT20

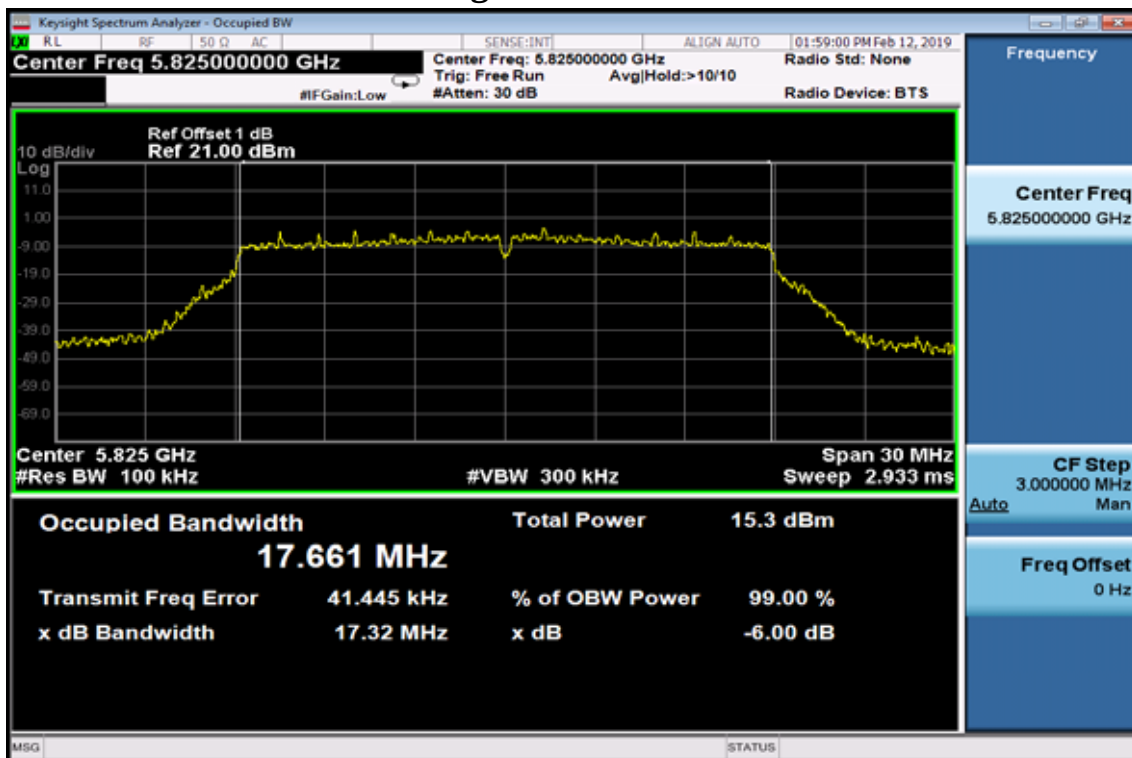
## 6dB Band Width Data CH-Low



## 6dB Band Width Data CH-Mid

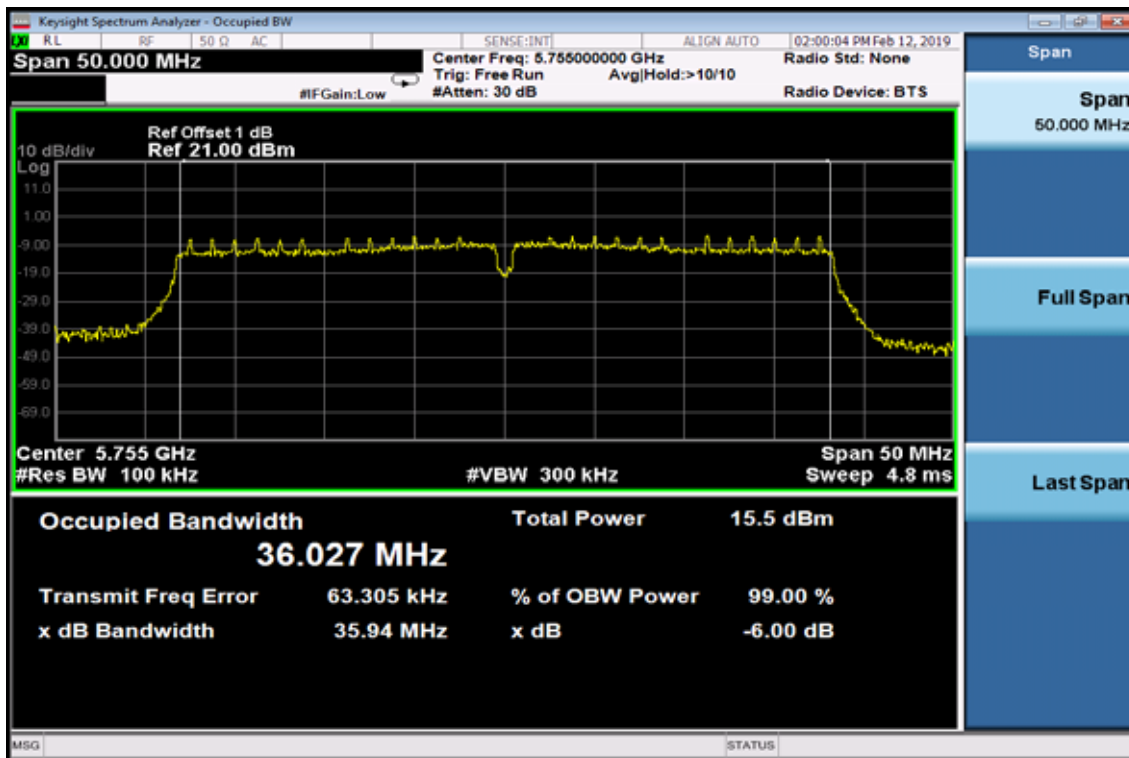


## 6dB Band Width Data CH-High

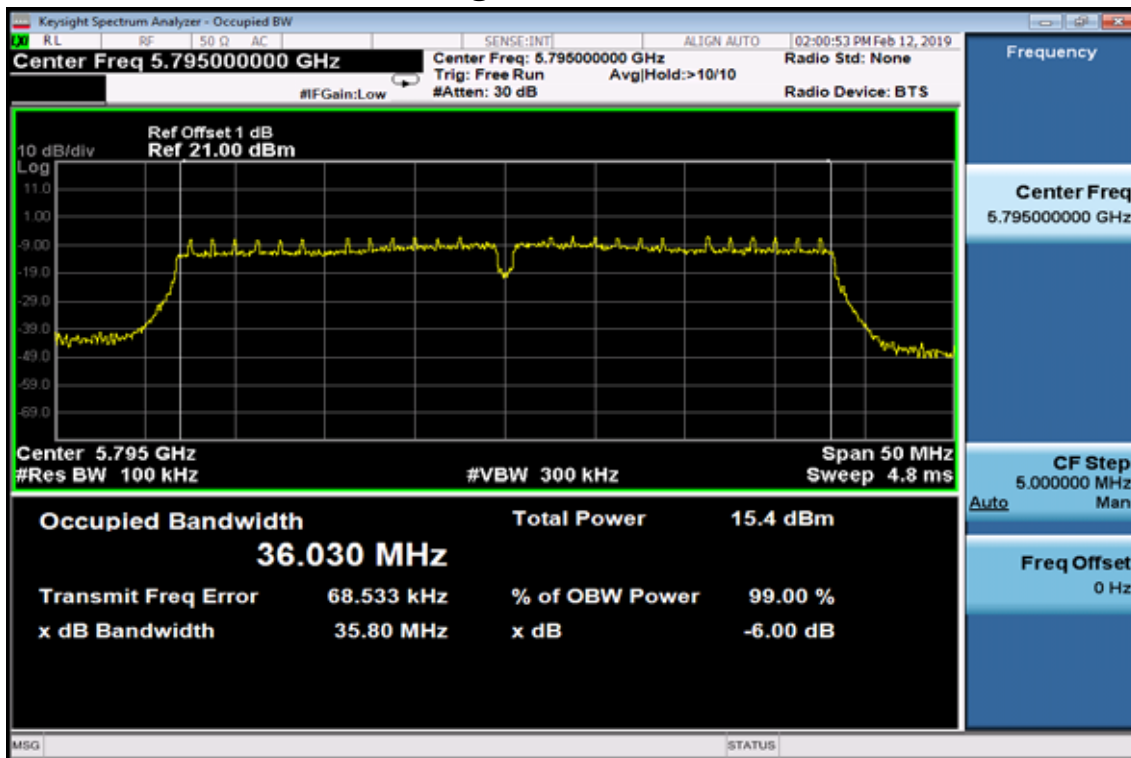


## 802.11n HT40

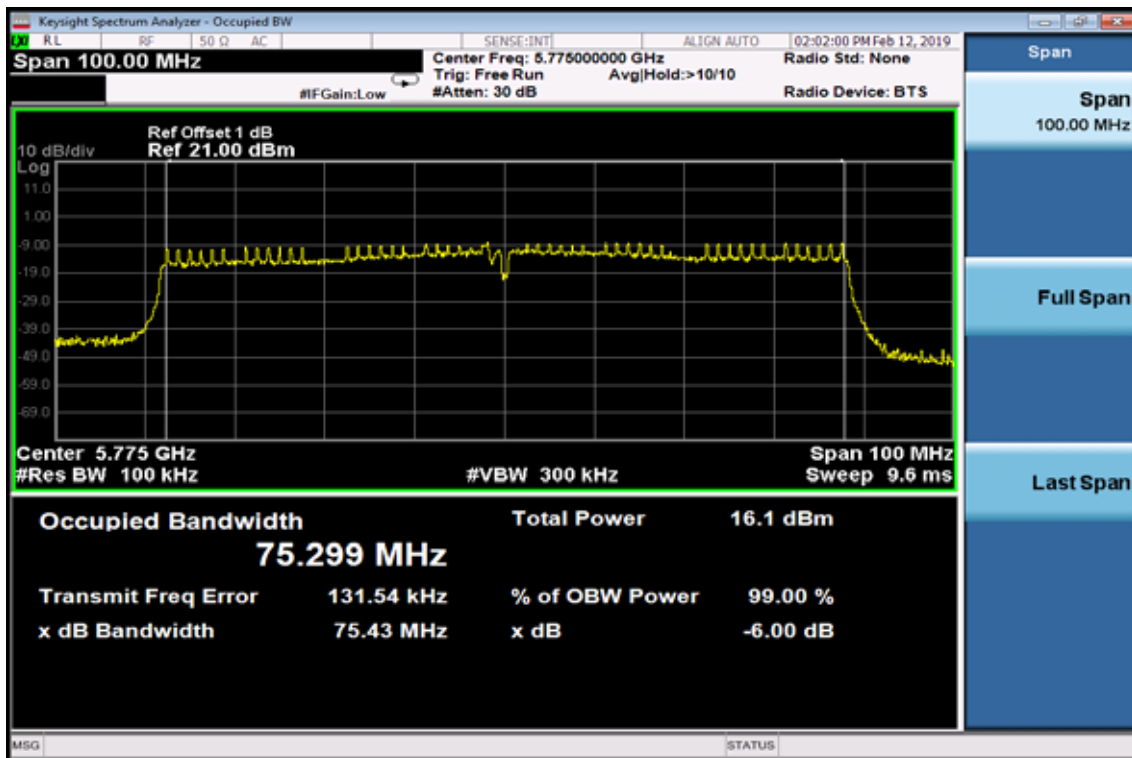
### 6dB Band Width Data CH-Low



### 6dB Band Width Data CH-High



## 802.11ac HT80 6dB Band Width Data



## **9. Undesirable Emission – Radiated Measurement**

### **9.1. Standard Applicable**

According to §15.407(b), Undesirable Emission Limits: Except as shown in Paragraph (b)(7) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.
- (7) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

### §15.205- RESTRICTED BANDS OF OPERATIONS

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

| MHz                        | MHz                 | MHz             | GHz              |
|----------------------------|---------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423      | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475 | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67        | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25        | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6           | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2         | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94        | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138           | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05      | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 -         | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.52525           | 2655 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 156.7 - 156.9       | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 162.0125 - 167.17   | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 167.72 - 173.2      | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 240 - 285           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              | 322 - 335.4         |                 |                  |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## §15.209- RADIATED EMISSION LIMITS: GENERAL REQUIREMENTS

### FCC PART 15.209

| MEASURING DISTANCE OF 3 METER |                                  |                            |
|-------------------------------|----------------------------------|----------------------------|
| FREQUENCY RANGE<br>(MHz)      | FIELD STRENGTH<br>(Microvolts/m) | FIELD STRENGTH<br>(dBuV/m) |
| 30-88                         | 100                              | 40                         |
| 88-216                        | 150                              | 43.5                       |
| 216-960                       | 200                              | 46                         |
| Above 960                     | 500                              | 54                         |

### 9.2. EUT Setup

1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.10: 2013
2. The EUT was put in the front of the test table. The host PC system was placed on the center of the back edge on the test table. The peripherals like modem, monitor printer, K/B, and mouse were placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The keyboard was placed directly in the front of the monitor, flushed with the front tabletop. The mouse was placed next to the Keyboard, flushed with the back of keyboard.
4. The spacing between the peripherals was 10 centimeters.
5. External I/O cables were draped along the edge of the test table and bundle when necessary.
6. The host PC system was connected with 120Vac/60Hz power source.

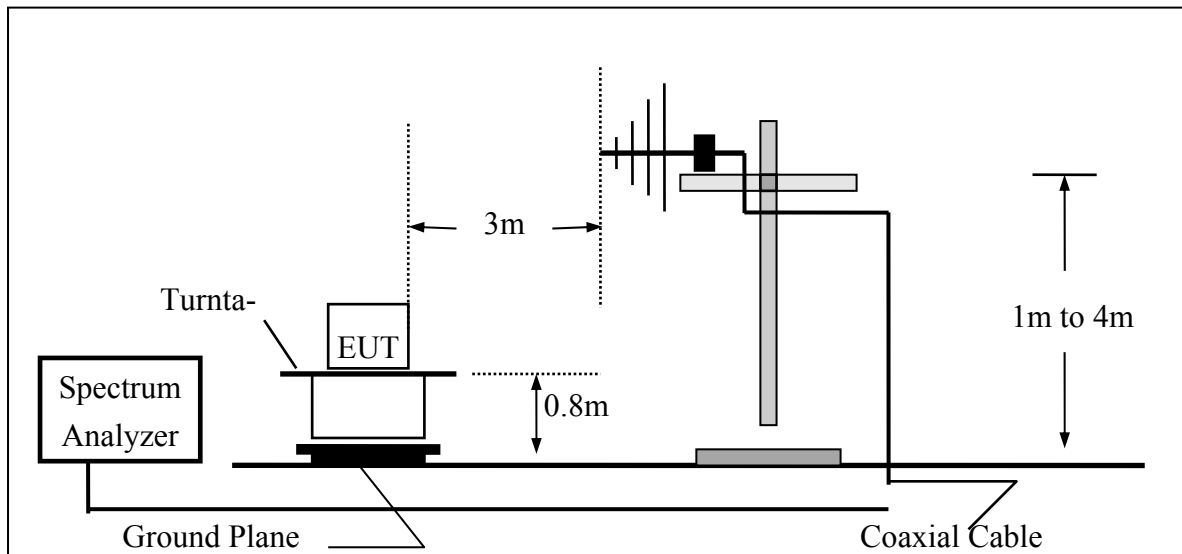
### 9.3. Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until all frequency measured were complete.

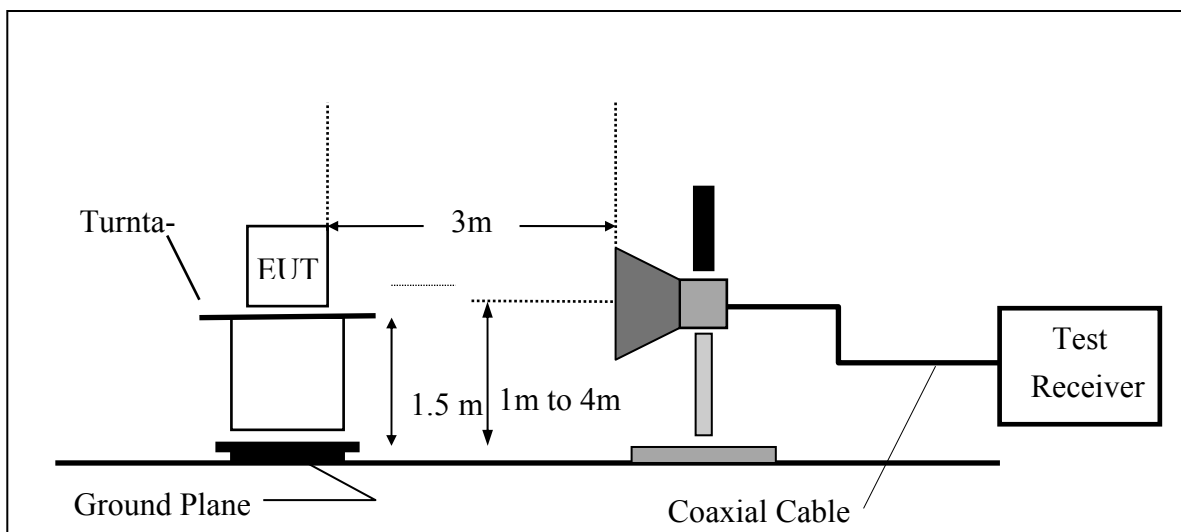
**Refer to section F of KDB Document: KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

#### 9.4. Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Setup, Frequency below 1000MHz



(B) Radiated Emission Test Setup Frequency above 1 GHz



**9.5. Measurement Equipment Used:**

| Chamber 19(966)         |               |                        |                 |            |            |
|-------------------------|---------------|------------------------|-----------------|------------|------------|
| Equipment Type          | MFR           | Model Number           | Serial Number   | Last Cal.  | Cal Due.   |
| 966 Chamber             | Chance Most   | Chamber 19             | N/A             | 08/13/2018 | 08/12/2019 |
| Spectrum analyzer       | R&S           | FSP40                  | 100116          | 01/10/2019 | 01/09/2020 |
| EMI Receiver            | R&S           | ESR3                   | 102461          | 08/08/2018 | 08/07/2019 |
| Loop Antenna(9K-30M)    | EM            | EM-6879                | 271             | 06/06/2018 | 06/05/2020 |
| Bilog Antenna (30M-1G)  | SCHWARZBECK   | VULB9168 w<br>5dB Att  | 736             | 01/29/2019 | 01/28/2020 |
| Horn antenna (1G-18G)   | SCHWARZBECK   | 9120D                  | 9120D-1627      | 11/27/2017 | 11/26/2019 |
| Horn antenna (18G-26G)  | Com-power     | AH-826                 | 081001          | 11/21/2017 | 11/20/2019 |
| Horn antenna (26G-40G)  | Com-power     | AH-640                 | 100A            | 03/29/2019 | 03/28/2021 |
| Preamplifier (9k-1000M) | HP            | 8447F                  | 3113A06362      | 01/14/2019 | 01/13/2020 |
| Preamplifier(1G-26G)    | Agilent       | 8449B                  | 3008A02471      | 10/29/2018 | 10/28/2019 |
| Preamplifier (26G-40G)  | MITEQ         | JS4-26004000-<br>27-5A | 818471          | 05/06/2019 | 05/05/2020 |
| RF Cable (9k-18G)       | HUBER SUHNER  | SUCOFLEX<br>104A       | MY1397/4A       | 01/17/2019 | 01/16/2020 |
| RF cable (18G~40G)      | HUBER SUHNER  | Sucoflex 102           | 27963/2&37421/2 | 11/12/2018 | 11/11/2019 |
| Turn Table              | MF            | Turn Table-19          | Turn Table-19   | N/A        | N/A        |
| Mast Tower              | MF            | JSDES-15A              | 1308283         | N/A        | N/A        |
| Controller              | MF            | MF-7802BS              | MF780208460     | N/A        | N/A        |
| AC power source         | T-Power       | TFC-1005               | 40006471        | N/A        | N/A        |
| Signal Generator        | Anritsu       | MG3692A                | 20311           | 01/09/2019 | 01/08/2020 |
| 2.4G Filter             | Micro-Tronics | Brm50702               | 76              | 12/25/2018 | 12/24/2019 |
| 5G Filter               | Micro-Tronics | Brm50716               | 005             | 12/25/2018 | 12/24/2019 |
| 966 Chamber             | Chance Most   | Chamber 19             | N/A             | 08/13/2018 | 08/12/2019 |
| Test Software           | Audix         | N/A                    | N/A             | N/A        | N/A        |

## 9.6. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

|       |                        |                                            |
|-------|------------------------|--------------------------------------------|
| Where | FS = Field Strength    | CL = Cable Attenuation Factor (Cable Loss) |
|       | RA = Reading Amplitude | AG = Amplifier Gain                        |
|       | AF = Antenna Factor    |                                            |

## 9.7. Measurement Result

Refer to attach tabular data sheets.

### NOTE:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz. And RBW 1MHz for frequency above 1GHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

## **(Band 1, 2 a mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 125.06   | 38.42        | -8.04     | 30.38        | 43.50        | -13.12    | Peak   | VERTICAL   |
| 2  | 250.19   | 33.25        | -6.67     | 26.58        | 46.00        | -19.42    | Peak   | VERTICAL   |
| 3  | 395.69   | 45.55        | -3.06     | 42.49        | 46.00        | -3.51     | Peak   | VERTICAL   |
| 4  | 500.45   | 32.50        | -1.64     | 30.86        | 46.00        | -15.14    | Peak   | VERTICAL   |
| 5  | 625.58   | 37.92        | 0.71      | 38.63        | 46.00        | -7.37     | Peak   | VERTICAL   |
| 6  | 750.71   | 30.34        | 3.09      | 33.43        | 46.00        | -12.57    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 125.06   | 38.99        | -8.04     | 30.95        | 43.50        | -12.55    | Peak   | HORIZONTAL |
| 2  | 250.19   | 41.31        | -6.67     | 34.64        | 46.00        | -11.36    | Peak   | HORIZONTAL |
| 3  | 395.69   | 39.80        | -3.06     | 36.74        | 46.00        | -9.26     | Peak   | HORIZONTAL |
| 4  | 545.07   | 36.82        | -0.90     | 35.92        | 46.00        | -10.08    | Peak   | HORIZONTAL |
| 5  | 594.54   | 33.69        | 0.29      | 33.98        | 46.00        | -12.02    | Peak   | HORIZONTAL |
| 6  | 625.58   | 42.30        | 0.71      | 43.01        | 46.00        | -2.99     | Peak   | HORIZONTAL |

### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.54           | -8.04        | 30.50           | 43.50           | -13.00       | Peak   | VERTICAL   |
| 2  | 250.19      | 33.44           | -6.67        | 26.77           | 46.00           | -19.23       | Peak   | VERTICAL   |
| 3  | 395.69      | 45.71           | -3.06        | 42.65           | 46.00           | -3.35        | Peak   | VERTICAL   |
| 4  | 500.45      | 32.18           | -1.64        | 30.54           | 46.00           | -15.46       | Peak   | VERTICAL   |
| 5  | 625.58      | 38.21           | 0.71         | 38.92           | 46.00           | -7.08        | Peak   | VERTICAL   |
| 6  | 750.71      | 30.63           | 3.09         | 33.72           | 46.00           | -12.28       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.43           | -8.04        | 30.39           | 43.50           | -13.11       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.30           | -6.67        | 34.63           | 46.00           | -11.37       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.61           | -3.06        | 33.55           | 46.00           | -12.45       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.56           | -1.64        | 32.92           | 46.00           | -13.08       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.20           | 0.71         | 42.91           | 46.00           | -3.09        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.89           | 3.09         | 37.98           | 46.00           | -8.02        | Peak   | HORIZONTAL |

## Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.63           | -8.04        | 30.59           | 43.50           | -12.91       | Peak   | VERTICAL   |
| 2  | 395.69      | 38.27           | -3.06        | 35.21           | 46.00           | -10.79       | Peak   | VERTICAL   |
| 3  | 500.45      | 33.08           | -1.64        | 31.44           | 46.00           | -14.56       | Peak   | VERTICAL   |
| 4  | 625.58      | 38.41           | 0.71         | 39.12           | 46.00           | -6.88        | Peak   | VERTICAL   |
| 5  | 750.71      | 30.05           | 3.09         | 33.14           | 46.00           | -12.86       | Peak   | VERTICAL   |
| 6  | 875.84      | 31.89           | 4.85         | 36.74           | 46.00           | -9.26        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.68           | -8.04        | 30.64           | 43.50           | -12.86       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.03           | -6.67        | 34.36           | 46.00           | -11.64       | Peak   | HORIZONTAL |
| 3  | 395.69      | 41.00           | -3.06        | 37.94           | 46.00           | -8.06        | Peak   | HORIZONTAL |
| 4  | 514.03      | 34.69           | -1.42        | 33.27           | 46.00           | -12.73       | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.10           | 0.71         | 41.81           | 46.00           | -4.19        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.57           | 3.09         | 37.66           | 46.00           | -8.34        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 1, 2 HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 37.06           | -6.70        | 30.36           | 40.00           | -9.64        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.38           | -8.04        | 30.34           | 43.50           | -13.16       | Peak   | VERTICAL   |
| 3  | 395.69      | 38.61           | -3.06        | 35.55           | 46.00           | -10.45       | Peak   | VERTICAL   |
| 4  | 521.79      | 32.83           | -1.28        | 31.55           | 46.00           | -14.45       | Peak   | VERTICAL   |
| 5  | 625.58      | 37.75           | 0.71         | 38.46           | 46.00           | -7.54        | Peak   | VERTICAL   |
| 6  | 750.71      | 30.71           | 3.09         | 33.80           | 46.00           | -12.20       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.83           | -8.04        | 30.79           | 43.50           | -12.71       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.26           | -6.67        | 34.59           | 46.00           | -11.41       | Peak   | HORIZONTAL |
| 3  | 395.69      | 40.87           | -3.06        | 37.81           | 46.00           | -8.19        | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.89           | -1.64        | 33.25           | 46.00           | -12.75       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.33           | 0.71         | 43.04           | 46.00           | -2.96        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.95           | 3.09         | 38.04           | 46.00           | -7.96        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.89           | -8.04        | 30.85           | 43.50           | -12.65       | Peak   | VERTICAL   |
| 2  | 395.69      | 42.01           | -3.06        | 38.95           | 46.00           | -7.05        | Peak   | VERTICAL   |
| 3  | 500.45      | 31.78           | -1.64        | 30.14           | 46.00           | -15.86       | Peak   | VERTICAL   |
| 4  | 625.58      | 37.93           | 0.71         | 38.64           | 46.00           | -7.36        | Peak   | VERTICAL   |
| 5  | 750.71      | 29.68           | 3.09         | 32.77           | 46.00           | -13.23       | Peak   | VERTICAL   |
| 6  | 875.84      | 31.20           | 4.85         | 36.05           | 46.00           | -9.95        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.75           | -8.04        | 30.71           | 43.50           | -12.79       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.31           | -6.67        | 34.64           | 46.00           | -11.36       | Peak   | HORIZONTAL |
| 3  | 395.69      | 37.55           | -3.06        | 34.49           | 46.00           | -11.51       | Peak   | HORIZONTAL |
| 4  | 522.76      | 37.45           | -1.27        | 36.18           | 46.00           | -9.82        | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.04           | 0.71         | 41.75           | 46.00           | -4.25        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.44           | 3.09         | 38.53           | 46.00           | -7.47        | Peak   | HORIZONTAL |

## Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 38.27           | -6.70        | 31.57           | 40.00           | -8.43        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.76           | -8.04        | 30.72           | 43.50           | -12.78       | Peak   | VERTICAL   |
| 3  | 395.69      | 39.43           | -3.06        | 36.37           | 46.00           | -9.63        | Peak   | VERTICAL   |
| 4  | 520.82      | 32.05           | -1.30        | 30.75           | 46.00           | -15.25       | Peak   | VERTICAL   |
| 5  | 625.58      | 37.58           | 0.71         | 38.29           | 46.00           | -7.71        | Peak   | VERTICAL   |
| 6  | 875.84      | 30.65           | 4.85         | 35.50           | 46.00           | -10.50       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.83           | -8.04        | 30.79           | 43.50           | -12.71       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.23           | -6.67        | 34.56           | 46.00           | -11.44       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.53           | -3.06        | 33.47           | 46.00           | -12.53       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.25           | -1.64        | 32.61           | 46.00           | -13.39       | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.33           | 0.71         | 42.04           | 46.00           | -3.96        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.48           | 3.09         | 38.57           | 46.00           | -7.43        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 1, 2 ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 59.10    | 38.31        | -6.70     | 31.61        | 40.00        | -8.39     | Peak   | VERTICAL   |
| 2  | 125.06   | 38.53        | -8.04     | 30.49        | 43.50        | -13.01    | Peak   | VERTICAL   |
| 3  | 250.19   | 33.78        | -6.67     | 27.11        | 46.00        | -18.89    | Peak   | VERTICAL   |
| 4  | 395.69   | 38.94        | -3.06     | 35.88        | 46.00        | -10.12    | Peak   | VERTICAL   |
| 5  | 625.58   | 37.57        | 0.71      | 38.28        | 46.00        | -7.72     | Peak   | VERTICAL   |
| 6  | 875.84   | 31.62        | 4.85      | 36.47        | 46.00        | -9.53     | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 125.06   | 38.31        | -8.04     | 30.27        | 43.50        | -13.23    | Peak   | HORIZONTAL |
| 2  | 250.19   | 41.11        | -6.67     | 34.44        | 46.00        | -11.56    | Peak   | HORIZONTAL |
| 3  | 395.69   | 35.87        | -3.06     | 32.81        | 46.00        | -13.19    | Peak   | HORIZONTAL |
| 4  | 500.45   | 34.82        | -1.64     | 33.18        | 46.00        | -12.82    | Peak   | HORIZONTAL |
| 5  | 625.58   | 42.02        | 0.71      | 42.73        | 46.00        | -3.27     | Peak   | HORIZONTAL |
| 6  | 750.71   | 35.26        | 3.09      | 38.35        | 46.00        | -7.65     | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.52           | -8.04        | 30.48           | 43.50           | -13.02       | Peak   | VERTICAL   |
| 2  | 395.69      | 47.15           | -3.06        | 44.09           | 46.00           | -1.91        | Peak   | VERTICAL   |
| 3  | 513.06      | 33.65           | -1.43        | 32.22           | 46.00           | -13.78       | Peak   | VERTICAL   |
| 4  | 625.58      | 37.65           | 0.71         | 38.36           | 46.00           | -7.64        | Peak   | VERTICAL   |
| 5  | 750.71      | 29.92           | 3.09         | 33.01           | 46.00           | -12.99       | Peak   | VERTICAL   |
| 6  | 875.84      | 31.52           | 4.85         | 36.37           | 46.00           | -9.63        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.57           | -8.04        | 30.53           | 43.50           | -12.97       | Peak   | HORIZONTAL |
| 2  | 250.19      | 40.98           | -6.67        | 34.31           | 46.00           | -11.69       | Peak   | HORIZONTAL |
| 3  | 395.69      | 35.71           | -3.06        | 32.65           | 46.00           | -13.35       | Peak   | HORIZONTAL |
| 4  | 500.45      | 35.55           | -1.64        | 33.91           | 46.00           | -12.09       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.03           | 0.71         | 42.74           | 46.00           | -3.26        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.31           | 3.09         | 38.40           | 46.00           | -7.60        | Peak   | HORIZONTAL |

## **Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

## Radiated Spurious Emission Measurement Result (below 1GHz)

(Worst case: Band 3, 802.11a mode)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 59.10    | 37.86        | -6.70     | 31.16        | 40.00        | -8.84     | Peak   | VERTICAL   |
| 2  | 125.06   | 38.38        | -8.04     | 30.34        | 43.50        | -13.16    | Peak   | VERTICAL   |
| 3  | 395.69   | 40.32        | -3.06     | 37.26        | 46.00        | -8.74     | Peak   | VERTICAL   |
| 4  | 520.82   | 33.39        | -1.30     | 32.09        | 46.00        | -13.91    | Peak   | VERTICAL   |
| 5  | 520.82   | 33.39        | -1.30     | 32.09        | 46.00        | -13.91    | Peak   | VERTICAL   |
| 6  | 625.58   | 38.11        | 0.71      | 38.82        | 46.00        | -7.18     | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 125.06   | 38.48        | -8.04     | 30.44        | 43.50        | -13.06    | Peak   | HORIZONTAL |
| 2  | 250.19   | 41.35        | -6.67     | 34.68        | 46.00        | -11.32    | Peak   | HORIZONTAL |
| 3  | 395.69   | 35.71        | -3.06     | 32.65        | 46.00        | -13.35    | Peak   | HORIZONTAL |
| 4  | 521.79   | 37.01        | -1.28     | 35.73        | 46.00        | -10.27    | Peak   | HORIZONTAL |
| 5  | 625.58   | 42.21        | 0.71      | 42.92        | 46.00        | -3.08     | Peak   | HORIZONTAL |
| 6  | 750.71   | 35.16        | 3.09      | 38.25        | 46.00        | -7.75     | Peak   | HORIZONTAL |

### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.63           | -8.04        | 30.59           | 43.50           | -12.91       | Peak   | VERTICAL   |
| 2  | 395.69      | 45.84           | -3.06        | 42.78           | 46.00           | -3.22        | Peak   | VERTICAL   |
| 3  | 513.06      | 32.86           | -1.43        | 31.43           | 46.00           | -14.57       | Peak   | VERTICAL   |
| 4  | 625.58      | 37.73           | 0.71         | 38.44           | 46.00           | -7.56        | Peak   | VERTICAL   |
| 5  | 750.71      | 29.72           | 3.09         | 32.81           | 46.00           | -13.19       | Peak   | VERTICAL   |
| 6  | 875.84      | 31.42           | 4.85         | 36.27           | 46.00           | -9.73        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.36           | -8.04        | 30.32           | 43.50           | -13.18       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.35           | -6.67        | 34.68           | 46.00           | -11.32       | Peak   | HORIZONTAL |
| 3  | 395.69      | 42.08           | -3.06        | 39.02           | 46.00           | -6.98        | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.20           | -1.64        | 32.56           | 46.00           | -13.44       | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.22           | 0.71         | 41.93           | 46.00           | -4.07        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.49           | 3.09         | 38.58           | 46.00           | -7.42        | Peak   | HORIZONTAL |

## **Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

### Radiated Spurious Emission Measurement Result (below 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 125.06      | 38.71           | -8.04        | 30.67           | 43.50           | -12.83       | Peak   | VERTICAL   |
| 2  | 250.19      | 33.21           | -6.67        | 26.54           | 46.00           | -19.46       | Peak   | VERTICAL   |
| 3  | 395.69      | 43.03           | -3.06        | 39.97           | 46.00           | -6.03        | Peak   | VERTICAL   |
| 4  | 625.58      | 37.88           | 0.71         | 38.59           | 46.00           | -7.41        | Peak   | VERTICAL   |
| 5  | 750.71      | 30.23           | 3.09         | 33.32           | 46.00           | -12.68       | Peak   | VERTICAL   |
| 6  | 875.84      | 32.09           | 4.85         | 36.94           | 46.00           | -9.06        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.78           | -8.04        | 30.74           | 43.50           | -12.76       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.28           | -6.67        | 34.61           | 46.00           | -11.39       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.36           | -3.06        | 33.30           | 46.00           | -12.70       | Peak   | HORIZONTAL |
| 4  | 594.54      | 34.59           | 0.29         | 34.88           | 46.00           | -11.12       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.11           | 0.71         | 42.82           | 46.00           | -3.18        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.75           | 3.09         | 37.84           | 46.00           | -8.16        | Peak   | HORIZONTAL |

#### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 3, 802.11HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 60.07       | 37.62           | -6.76        | 30.86           | 40.00           | -9.14        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.65           | -8.04        | 30.61           | 43.50           | -12.89       | Peak   | VERTICAL   |
| 3  | 250.19      | 32.98           | -6.67        | 26.31           | 46.00           | -19.69       | Peak   | VERTICAL   |
| 4  | 395.69      | 38.77           | -3.06        | 35.71           | 46.00           | -10.29       | Peak   | VERTICAL   |
| 5  | 625.58      | 37.92           | 0.71         | 38.63           | 46.00           | -7.37        | Peak   | VERTICAL   |
| 6  | 750.71      | 30.54           | 3.09         | 33.63           | 46.00           | -12.37       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.61           | -8.04        | 30.57           | 43.50           | -12.93       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.14           | -6.67        | 34.47           | 46.00           | -11.53       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.10           | -3.06        | 33.04           | 46.00           | -12.96       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.97           | -1.64        | 33.33           | 46.00           | -12.67       | Peak   | HORIZONTAL |
| 5  | 625.58      | 40.92           | 0.71         | 41.63           | 46.00           | -4.37        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.11           | 3.09         | 38.20           | 46.00           | -7.80        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 36.09           | -6.70        | 29.39           | 40.00           | -10.61       | Peak   | VERTICAL   |
| 2  | 125.06      | 38.46           | -8.04        | 30.42           | 43.50           | -13.08       | Peak   | VERTICAL   |
| 3  | 250.19      | 33.19           | -6.67        | 26.52           | 46.00           | -19.48       | Peak   | VERTICAL   |
| 4  | 395.69      | 45.59           | -3.06        | 42.53           | 46.00           | -3.47        | Peak   | VERTICAL   |
| 5  | 500.45      | 33.52           | -1.64        | 31.88           | 46.00           | -14.12       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.62           | 0.71         | 38.33           | 46.00           | -7.67        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.81           | -8.04        | 30.77           | 43.50           | -12.73       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.08           | -6.67        | 34.41           | 46.00           | -11.59       | Peak   | HORIZONTAL |
| 3  | 395.69      | 35.78           | -3.06        | 32.72           | 46.00           | -13.28       | Peak   | HORIZONTAL |
| 4  | 522.76      | 35.17           | -1.27        | 33.90           | 46.00           | -12.10       | Peak   | HORIZONTAL |
| 5  | 625.58      | 40.96           | 0.71         | 41.67           | 46.00           | -4.33        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.12           | 3.09         | 38.21           | 46.00           | -7.79        | Peak   | HORIZONTAL |

## **Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

### Radiated Spurious Emission Measurement Result (below 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 51.34    | 35.62        | -6.23     | 29.39        | 40.00        | -10.61    | Peak   | VERTICAL   |
| 2  | 125.06   | 38.37        | -8.04     | 30.33        | 43.50        | -13.17    | Peak   | VERTICAL   |
| 3  | 250.19   | 33.23        | -6.67     | 26.56        | 46.00        | -19.44    | Peak   | VERTICAL   |
| 4  | 395.69   | 39.15        | -3.06     | 36.09        | 46.00        | -9.91     | Peak   | VERTICAL   |
| 5  | 500.45   | 32.82        | -1.64     | 31.18        | 46.00        | -14.82    | Peak   | VERTICAL   |
| 6  | 625.58   | 37.98        | 0.71      | 38.69        | 46.00        | -7.31     | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 125.06   | 38.56        | -8.04     | 30.52        | 43.50        | -12.98    | Peak   | HORIZONTAL |
| 2  | 250.19   | 41.04        | -6.67     | 34.37        | 46.00        | -11.63    | Peak   | HORIZONTAL |
| 3  | 395.69   | 42.87        | -3.06     | 39.81        | 46.00        | -6.19     | Peak   | HORIZONTAL |
| 4  | 500.45   | 34.63        | -1.64     | 32.99        | 46.00        | -13.01    | Peak   | HORIZONTAL |
| 5  | 594.54   | 33.47        | 0.29      | 33.76        | 46.00        | -12.24    | Peak   | HORIZONTAL |
| 6  | 625.58   | 40.88        | 0.71      | 41.59        | 46.00        | -4.41     | Peak   | HORIZONTAL |

#### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 3, 802.11ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 50.37       | 36.73           | -6.18        | 30.55           | 40.00           | -9.45        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.42           | -8.04        | 30.38           | 43.50           | -13.12       | Peak   | VERTICAL   |
| 3  | 250.19      | 32.96           | -6.67        | 26.29           | 46.00           | -19.71       | Peak   | VERTICAL   |
| 4  | 395.69      | 38.71           | -3.06        | 35.65           | 46.00           | -10.35       | Peak   | VERTICAL   |
| 5  | 500.45      | 32.05           | -1.64        | 30.41           | 46.00           | -15.59       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.66           | 0.71         | 38.37           | 46.00           | -7.63        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.60           | -8.04        | 30.56           | 43.50           | -12.94       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.31           | -6.67        | 34.64           | 46.00           | -11.36       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.48           | -3.06        | 33.42           | 46.00           | -12.58       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.69           | -1.64        | 33.05           | 46.00           | -12.95       | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.18           | 0.71         | 41.89           | 46.00           | -4.11        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.78           | 3.09         | 37.87           | 46.00           | -8.13        | Peak   | HORIZONTAL |

Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 3, 802.11ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 37.09           | -6.70        | 30.39           | 40.00           | -9.61        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.63           | -8.04        | 30.59           | 43.50           | -12.91       | Peak   | VERTICAL   |
| 3  | 250.19      | 32.96           | -6.67        | 26.29           | 46.00           | -19.71       | Peak   | VERTICAL   |
| 4  | 395.69      | 39.08           | -3.06        | 36.02           | 46.00           | -9.98        | Peak   | VERTICAL   |
| 5  | 500.45      | 32.25           | -1.64        | 30.61           | 46.00           | -15.39       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.67           | 0.71         | 38.38           | 46.00           | -7.62        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.22           | -8.04        | 30.18           | 43.50           | -13.32       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.15           | -6.67        | 34.48           | 46.00           | -11.52       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.06           | -3.06        | 33.00           | 46.00           | -13.00       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.47           | -1.64        | 32.83           | 46.00           | -13.17       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.11           | 0.71         | 42.82           | 46.00           | -3.18        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.65           | 3.09         | 37.74           | 46.00           | -8.26        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 4, 802.11a mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 37.09           | -6.70        | 30.39           | 40.00           | -9.61        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.63           | -8.04        | 30.59           | 43.50           | -12.91       | Peak   | VERTICAL   |
| 3  | 250.19      | 32.96           | -6.67        | 26.29           | 46.00           | -19.71       | Peak   | VERTICAL   |
| 4  | 395.69      | 39.08           | -3.06        | 36.02           | 46.00           | -9.98        | Peak   | VERTICAL   |
| 5  | 500.45      | 32.25           | -1.64        | 30.61           | 46.00           | -15.39       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.67           | 0.71         | 38.38           | 46.00           | -7.62        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.22           | -8.04        | 30.18           | 43.50           | -13.32       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.15           | -6.67        | 34.48           | 46.00           | -11.52       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.06           | -3.06        | 33.00           | 46.00           | -13.00       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.47           | -1.64        | 32.83           | 46.00           | -13.17       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.11           | 0.71         | 42.82           | 46.00           | -3.18        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.65           | 3.09         | 37.74           | 46.00           | -8.26        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 36.92           | -6.70        | 30.22           | 40.00           | -9.78        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.72           | -8.04        | 30.68           | 43.50           | -12.82       | Peak   | VERTICAL   |
| 3  | 395.69      | 38.66           | -3.06        | 35.60           | 46.00           | -10.40       | Peak   | VERTICAL   |
| 4  | 545.07      | 33.33           | -0.90        | 32.43           | 46.00           | -13.57       | Peak   | VERTICAL   |
| 5  | 625.58      | 37.75           | 0.71         | 38.46           | 46.00           | -7.54        | Peak   | VERTICAL   |
| 6  | 750.71      | 30.23           | 3.09         | 33.32           | 46.00           | -12.68       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.75           | -8.04        | 30.71           | 43.50           | -12.79       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.05           | -6.67        | 34.38           | 46.00           | -11.62       | Peak   | HORIZONTAL |
| 3  | 395.69      | 35.70           | -3.06        | 32.64           | 46.00           | -13.36       | Peak   | HORIZONTAL |
| 4  | 500.45      | 35.04           | -1.64        | 33.40           | 46.00           | -12.60       | Peak   | HORIZONTAL |
| 5  | 625.58      | 42.03           | 0.71         | 42.74           | 46.00           | -3.26        | Peak   | HORIZONTAL |
| 6  | 750.71      | 35.11           | 3.09         | 38.20           | 46.00           | -7.80        | Peak   | HORIZONTAL |

## Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

### Radiated Spurious Emission Measurement Result (below 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 36.97           | -6.70        | 30.27           | 40.00           | -9.73        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.38           | -8.04        | 30.34           | 43.50           | -13.16       | Peak   | VERTICAL   |
| 3  | 250.19      | 33.18           | -6.67        | 26.51           | 46.00           | -19.49       | Peak   | VERTICAL   |
| 4  | 395.69      | 38.84           | -3.06        | 35.78           | 46.00           | -10.22       | Peak   | VERTICAL   |
| 5  | 521.79      | 34.83           | -1.28        | 33.55           | 46.00           | -12.45       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.89           | 0.71         | 38.60           | 46.00           | -7.40        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.63           | -8.04        | 30.59           | 43.50           | -12.91       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.13           | -6.67        | 34.46           | 46.00           | -11.54       | Peak   | HORIZONTAL |
| 3  | 395.69      | 43.38           | -3.06        | 40.32           | 46.00           | -5.68        | Peak   | HORIZONTAL |
| 4  | 522.76      | 35.29           | -1.27        | 34.02           | 46.00           | -11.98       | Peak   | HORIZONTAL |
| 5  | 625.58      | 40.80           | 0.71         | 41.51           | 46.00           | -4.49        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.42           | 3.09         | 37.51           | 46.00           | -8.49        | Peak   | HORIZONTAL |

#### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 4, 802.11 HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 59.10       | 38.23           | -6.70        | 31.53           | 40.00           | -8.47        | Peak   | VERTICAL   |
| 2  | 125.06      | 38.49           | -8.04        | 30.45           | 43.50           | -13.05       | Peak   | VERTICAL   |
| 3  | 250.19      | 33.45           | -6.67        | 26.78           | 46.00           | -19.22       | Peak   | VERTICAL   |
| 4  | 395.69      | 39.84           | -3.06        | 36.78           | 46.00           | -9.22        | Peak   | VERTICAL   |
| 5  | 522.76      | 35.03           | -1.27        | 33.76           | 46.00           | -12.24       | Peak   | VERTICAL   |
| 6  | 625.58      | 37.50           | 0.71         | 38.21           | 46.00           | -7.79        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.55           | -8.04        | 30.51           | 43.50           | -12.99       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.16           | -6.67        | 34.49           | 46.00           | -11.51       | Peak   | HORIZONTAL |
| 3  | 395.69      | 39.97           | -3.06        | 36.91           | 46.00           | -9.09        | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.73           | -1.64        | 33.09           | 46.00           | -12.91       | Peak   | HORIZONTAL |
| 5  | 625.58      | 40.82           | 0.71         | 41.53           | 46.00           | -4.47        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.83           | 3.09         | 37.92           | 46.00           | -8.08        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 375.32      | 38.17           | -3.49        | 34.68           | 46.00           | -11.32       | Peak   | VERTICAL   |
| 2  | 549.92      | 31.26           | -0.81        | 30.45           | 46.00           | -15.55       | Peak   | VERTICAL   |
| 3  | 625.58      | 31.48           | 0.71         | 32.19           | 46.00           | -13.81       | Peak   | VERTICAL   |
| 4  | 710.94      | 30.70           | 2.15         | 32.85           | 46.00           | -13.15       | Peak   | VERTICAL   |
| 5  | 750.71      | 30.33           | 3.09         | 33.42           | 46.00           | -12.58       | Peak   | VERTICAL   |
| 6  | 802.12      | 29.77           | 3.62         | 33.39           | 46.00           | -12.61       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 375.32      | 34.59           | -3.49        | 31.10           | 46.00           | -14.90       | Peak   | HORIZONTAL |
| 2  | 468.44      | 30.04           | -1.92        | 28.12           | 46.00           | -17.88       | Peak   | HORIZONTAL |
| 3  | 545.07      | 29.90           | -0.90        | 29.00           | 46.00           | -17.00       | Peak   | HORIZONTAL |
| 4  | 625.58      | 34.07           | 0.71         | 34.78           | 46.00           | -11.22       | Peak   | HORIZONTAL |
| 5  | 811.82      | 29.67           | 3.77         | 33.44           | 46.00           | -12.56       | Peak   | HORIZONTAL |
| 6  | 855.47      | 30.53           | 4.46         | 34.99           | 46.00           | -11.01       | Peak   | HORIZONTAL |

## Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

### Radiated Spurious Emission Measurement Result (below 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 59.10    | 37.46        | -6.70     | 30.76        | 40.00        | -9.24     | Peak   | VERTICAL   |
| 2  | 125.06   | 38.56        | -8.04     | 30.52        | 43.50        | -12.98    | Peak   | VERTICAL   |
| 3  | 395.69   | 46.39        | -3.06     | 43.33        | 46.00        | -2.67     | Peak   | VERTICAL   |
| 4  | 522.76   | 37.10        | -1.27     | 35.83        | 46.00        | -10.17    | Peak   | VERTICAL   |
| 5  | 625.58   | 37.69        | 0.71      | 38.40        | 46.00        | -7.60     | Peak   | VERTICAL   |
| 6  | 750.71   | 30.77        | 3.09      | 33.86        | 46.00        | -12.14    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 125.06   | 38.63        | -8.04     | 30.59        | 43.50        | -12.91    | Peak   | HORIZONTAL |
| 2  | 250.19   | 41.01        | -6.67     | 34.34        | 46.00        | -11.66    | Peak   | HORIZONTAL |
| 3  | 395.69   | 36.16        | -3.06     | 33.10        | 46.00        | -12.90    | Peak   | HORIZONTAL |
| 4  | 500.45   | 34.64        | -1.64     | 33.00        | 46.00        | -13.00    | Peak   | HORIZONTAL |
| 5  | 625.58   | 40.83        | 0.71      | 41.54        | 46.00        | -4.46     | Peak   | HORIZONTAL |
| 6  | 750.71   | 34.82        | 3.09      | 37.91        | 46.00        | -8.09     | Peak   | HORIZONTAL |

#### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

# **Radiated Spurious Emission Measurement Result (below 1GHz)**

## **(Band 4, 802.11ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Pol       | Ver./Hor   |
| Humidity       | 65 %    |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 60.07       | 36.61           | -6.76        | 29.85           | 40.00           | -10.15       | Peak   | VERTICAL   |
| 2  | 125.06      | 38.32           | -8.04        | 30.28           | 43.50           | -13.22       | Peak   | VERTICAL   |
| 3  | 395.69      | 45.56           | -3.06        | 42.50           | 46.00           | -3.50        | Peak   | VERTICAL   |
| 4  | 500.45      | 32.04           | -1.64        | 30.40           | 46.00           | -15.60       | Peak   | VERTICAL   |
| 5  | 625.58      | 37.81           | 0.71         | 38.52           | 46.00           | -7.48        | Peak   | VERTICAL   |
| 6  | 750.71      | 29.93           | 3.09         | 33.02           | 46.00           | -12.98       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 125.06      | 38.92           | -8.04        | 30.88           | 43.50           | -12.62       | Peak   | HORIZONTAL |
| 2  | 250.19      | 41.03           | -6.67        | 34.36           | 46.00           | -11.64       | Peak   | HORIZONTAL |
| 3  | 395.69      | 36.48           | -3.06        | 33.42           | 46.00           | -12.58       | Peak   | HORIZONTAL |
| 4  | 500.45      | 34.47           | -1.64        | 32.83           | 46.00           | -13.17       | Peak   | HORIZONTAL |
| 5  | 625.58      | 41.89           | 0.71         | 42.60           | 46.00           | -3.40        | Peak   | HORIZONTAL |
| 6  | 750.71      | 34.59           | 3.09         | 37.68           | 46.00           | -8.32        | Peak   | HORIZONTAL |

### Remark:

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (below 1GHz)**  
**(Band 4, 802.11ac80 mode)**

|                |          |           |            |
|----------------|----------|-----------|------------|
| Operation Mode | TX MODE  | Test Date | 2019/02/20 |
| Channel Number | CH Highc | Test By   | Barry      |
| Temperature    | 25 °C    | Pol       | Ver./Hor   |
| Humidity       | 65 %     |           |            |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 68.80       | 44.23           | -8.43        | 35.80           | 40.00           | -4.20        | Peak   | VERTICAL   |
| 2  | 120.21      | 45.88           | -8.55        | 37.33           | 43.50           | -6.17        | Peak   | VERTICAL   |
| 3  | 375.32      | 38.40           | -3.53        | 34.87           | 46.00           | -11.13       | Peak   | VERTICAL   |
| 4  | 624.61      | 41.77           | 0.65         | 42.42           | 46.00           | -3.58        | Peak   | VERTICAL   |
| 5  | 859.35      | 38.77           | 4.47         | 43.24           | 46.00           | -2.76        | Peak   | VERTICAL   |
| 6  | 874.87      | 39.07           | 4.77         | 43.84           | 46.00           | -2.16        | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 120.21      | 43.55           | -8.55        | 35.00           | 43.50           | -8.50        | Peak   | HORIZONTAL |
| 2  | 215.27      | 41.59           | -8.37        | 33.22           | 43.50           | -10.28       | Peak   | HORIZONTAL |
| 3  | 250.19      | 47.07           | -6.71        | 40.36           | 46.00           | -5.64        | Peak   | HORIZONTAL |
| 4  | 500.45      | 33.01           | -1.69        | 31.32           | 46.00           | -14.68       | Peak   | HORIZONTAL |
| 5  | 539.25      | 32.38           | -1.05        | 31.33           | 46.00           | -14.67       | Peak   | HORIZONTAL |
| 6  | 859.35      | 33.43           | 4.47         | 37.90           | 46.00           | -8.10        | Peak   | HORIZONTAL |

**Remark:**

- 1 emission is 20dB lower, so that emission as measured between 9kHz to 30MHz is not reported
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100kHz, VBW=300kHz.

**Radiated Spurious Emission Measurement Result (above 1GHz)**  
**(Band 1-2, 802.11a mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 45.64           | -2.34        | 43.30           | 74.00           | -30.70       | Peak   | VERTICAL   |
| 2  | 10360.00    | 22.31           | 4.29         | 26.60           | 74.00           | -47.40       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1980.00     | 47.06           | -5.34        | 41.72           | 74.00           | -32.28       | Peak   | HORIZONTAL |
| 2  | 10360.00    | 22.04           | 4.29         | 26.33           | 74.00           | -47.67       | Peak   | HORIZONTAL |

**Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

### Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 44.77           | -2.34        | 42.43           | 74.00           | -31.57       | Peak   | VERTICAL   |
| 2  | 10520.00    | 20.63           | 4.74         | 25.37           | 74.00           | -48.63       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 50.20           | -8.73        | 41.47           | 74.00           | -32.53       | Peak   | HORIZONTAL |
| 2  | 10520.00    | 19.87           | 4.74         | 24.61           | 74.00           | -49.39       | Peak   | HORIZONTAL |

Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

## Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 44.72           | -2.34        | 42.38           | 74.00           | -31.62       | Peak   | VERTICAL   |
| 2  | 10640.00    | 22.06           | 5.11         | 27.17           | 74.00           | -46.83       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 51.17           | -8.73        | 42.44           | 74.00           | -31.56       | Peak   | HORIZONTAL |
| 2  | 10640.00    | 23.10           | 5.11         | 28.21           | 74.00           | -45.79       | Peak   | HORIZONTAL |

### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**  
**(Band 1-2, 802.11 HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 55.49           | -8.73        | 46.76           | 74.00           | -27.24       | Peak   | VERTICAL   |
| 2  | 10380.00    | 20.60           | 4.35         | 24.95           | 74.00           | -49.05       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 49.36           | -8.73        | 40.63           | 74.00           | -33.37       | Peak   | HORIZONTAL |
| 2  | 10380.00    | 21.07           | 4.35         | 25.42           | 74.00           | -48.58       | Peak   | HORIZONTAL |

Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1980.00     | 47.72           | -5.34        | 42.38           | 74.00           | -31.62       | Peak   | VERTICAL   |
| 2  | 10540.00    | 20.77           | 4.81         | 25.58           | 74.00           | -48.42       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1980.00     | 42.41           | -5.34        | 37.07           | 74.00           | -36.93       | Peak   | HORIZONTAL |
| 2  | 10540.00    | 21.69           | 4.81         | 26.50           | 74.00           | -47.50       | Peak   | HORIZONTAL |

**Remark:**

- Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

### Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 51.30           | -8.73        | 42.57           | 74.00           | -31.43       | Peak   | VERTICAL   |
| 2  | 10620.00    | 21.59           | 5.05         | 26.64           | 74.00           | -47.36       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1980.00     | 42.51           | -5.34        | 37.17           | 74.00           | -36.83       | Peak   | HORIZONTAL |
| 2  | 10620.00    | 23.56           | 5.05         | 28.61           | 74.00           | -45.39       | Peak   | HORIZONTAL |

#### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**  
**(Band 1-2, 802.11 ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 1980.00  | 54.09        | -5.34     | 48.75        | 74.00        | -25.25    | Peak   | VERTICAL   |
| 2  | 10420.00 | 20.37        | 4.47      | 24.84        | 74.00        | -49.16    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 1182.00  | 60.98        | -8.73     | 52.25        | 74.00        | -21.75    | Peak   | HORIZONTAL |
| 2  | 10420.00 | 20.23        | 4.47      | 24.70        | 74.00        | -49.30    | Peak   | HORIZONTAL |

**Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

# **Radiated Spurious Emission Measurement Result (above 1GHz)**

**(Worst case: Band 3, 802.11a mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 1182.00  | 55.09        | -8.73     | 46.36        | 74.00        | -27.64    | Peak   | VERTICAL   |
| 2  | 11000.00 | 21.52        | 6.19      | 27.71        | 74.00        | -46.29    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 1980.00  | 52.20        | -5.34     | 46.86        | 74.00        | -27.14    | Peak   | HORIZONTAL |
| 2  | 11000.00 | 21.76        | 6.19      | 27.95        | 74.00        | -46.05    | Peak   | HORIZONTAL |

## **Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

### Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 59.48           | -8.73        | 50.75           | 74.00           | -23.25       | Peak   | VERTICAL   |
| 2  | 10520.00    | 21.72           | 4.74         | 26.46           | 74.00           | -47.54       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1980.00     | 44.87           | -5.34        | 39.53           | 74.00           | -34.47       | Peak   | HORIZONTAL |
| 2  | 11200.00    | 22.43           | 6.41         | 28.84           | 74.00           | -45.16       | Peak   | HORIZONTAL |

Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

## Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 54.79           | -8.73        | 46.06           | 74.00           | -27.94       | Peak   | VERTICAL   |
| 2  | 11400.00    | 21.37           | 6.62         | 27.99           | 74.00           | -46.01       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 49.80           | -8.73        | 41.07           | 74.00           | -32.93       | Peak   | HORIZONTAL |
| 2  | 11400.00    | 22.81           | 6.62         | 29.43           | 74.00           | -44.57       | Peak   | HORIZONTAL |

### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

# **Radiated Spurious Emission Measurement Result (above 1GHz)**

## **(Band 3, 802.11 HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 50.40           | -8.73        | 41.67           | 74.00           | -32.33       | Peak   | VERTICAL   |
| 2  | 11020.00    | 21.43           | 6.21         | 27.64           | 74.00           | -46.36       | Peak   | VERTICAL   |
| 3  | 11400.00    | 20.81           | 6.62         | 27.43           | 74.00           | -46.57       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 53.58           | -8.73        | 44.85           | 74.00           | -29.15       | Peak   | HORIZONTAL |
| 2  | 11020.00    | 21.18           | 6.21         | 27.39           | 74.00           | -46.61       | Peak   | HORIZONTAL |

### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 47.54           | -2.34        | 45.20           | 74.00           | -28.80       | Peak   | VERTICAL   |
| 2  | 11100.00    | 20.74           | 6.30         | 27.04           | 74.00           | -46.96       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1707.00     | 44.98           | -6.94        | 38.04           | 74.00           | -35.96       | Peak   | HORIZONTAL |
| 2  | 11100.00    | 19.50           | 6.30         | 25.80           | 74.00           | -48.20       | Peak   | HORIZONTAL |

**Remark:**

- Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

### Radiated Spurious Emission Measurement Result (above 1GHz)

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 2771.00  | 45.67        | -2.34     | 43.33        | 74.00        | -30.67    | Peak   | VERTICAL   |
| 2  | 11340.00 | 21.89        | 6.56      | 28.45        | 74.00        | -45.55    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 2414.00  | 49.67        | -2.99     | 46.68        | 74.00        | -27.32    | Peak   | HORIZONTAL |
| 2  | 11340.00 | 21.18        | 6.56      | 27.74        | 74.00        | -46.26    | Peak   | HORIZONTAL |

#### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**  
**(Band 3, 802.11 ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2435.00     | 50.24           | -2.97        | 47.27           | 74.00           | -26.73       | Peak   | VERTICAL   |
| 2  | 11060.00    | 20.37           | 6.26         | 26.63           | 74.00           | -47.37       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 2764.00     | 40.15           | -2.34        | 37.81           | 74.00           | -36.19       | Peak   | HORIZONTAL |
| 2  | 11060.00    | 21.50           | 6.26         | 27.76           | 74.00           | -46.24       | Peak   | HORIZONTAL |
| 3  | 20504.00    | 25.12           | 15.26        | 40.38           | 74.00           | -33.62       | Peak   | HORIZONTAL |

**Remark:**

- Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**
**(Worst case: Band 4, 802.11a mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 11490.00    | 20.72           | 6.72         | 27.44           | 74.00           | -46.56       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 2421.00     | 48.72           | -2.98        | 45.74           | 74.00           | -28.26       | Peak   | HORIZONTAL |
| 2  | 11490.00    | 19.98           | 6.72         | 26.70           | 74.00           | -47.30       | Peak   | HORIZONTAL |

**Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Mid  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1182.00     | 56.13           | -8.73        | 47.40           | 74.00           | -26.60       | Peak   | VERTICAL   |
| 2  | 11570.00    | 21.90           | 6.74         | 28.64           | 74.00           | -45.36       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 49.29           | -8.73        | 40.56           | 74.00           | -33.44       | Peak   | HORIZONTAL |
| 2  | 11570.00    | 19.66           | 6.74         | 26.40           | 74.00           | -47.60       | Peak   | HORIZONTAL |

**Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 46.34           | -2.34        | 44.00           | 74.00           | -30.00       | Peak   | VERTICAL   |
| 2  | 11650.00    | 20.75           | 6.75         | 27.50           | 74.00           | -46.50       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 51.03           | -8.73        | 42.30           | 74.00           | -31.70       | Peak   | HORIZONTAL |
| 2  | 11650.00    | 21.65           | 6.75         | 28.40           | 74.00           | -45.60       | Peak   | HORIZONTAL |

**Remark:**

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

# **Radiated Spurious Emission Measurement Result (above 1GHz)**

## **(Band 4, 802.11 HT40 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2421.00     | 52.92           | -2.98        | 49.94           | 74.00           | -24.06       | Peak   | VERTICAL   |
| 2  | 11510.00    | 19.96           | 6.73         | 26.69           | 74.00           | -47.31       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1707.00     | 56.83           | -6.94        | 49.89           | 74.00           | -24.11       | Peak   | HORIZONTAL |
| 2  | 11510.00    | 18.57           | 6.73         | 25.30           | 74.00           | -48.70       | Peak   | HORIZONTAL |

### Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH High | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 2771.00     | 44.75           | -2.34        | 42.41           | 74.00           | -31.59       | Peak   | VERTICAL   |
| 2  | 11590.00    | 20.36           | 6.74         | 27.10           | 74.00           | -46.90       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 1182.00     | 49.92           | -8.73        | 41.19           | 74.00           | -32.81       | Peak   | HORIZONTAL |
| 2  | 11590.00    | 21.13           | 6.74         | 27.87           | 74.00           | -46.13       | Peak   | HORIZONTAL |

**Remark:**

- Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**  
**(Band 4, 802.11 ac80 mode)**

|                |         |           |            |
|----------------|---------|-----------|------------|
| Operation Mode | TX MODE | Test Date | 2019/02/20 |
| Channel Number | CH Low  | Test By   | Barry      |
| Temperature    | 25 °C   | Humidity  | 60 %       |

| No | Freq<br>MHz | Reading<br>dBuV | Factor<br>dB | Level<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Remark | Pol<br>V/H |
|----|-------------|-----------------|--------------|-----------------|-----------------|--------------|--------|------------|
| 1  | 1714.00     | 55.65           | -6.91        | 48.74           | 74.00           | -25.26       | Peak   | VERTICAL   |
| 2  | 11550.00    | 19.19           | 6.73         | 25.92           | 74.00           | -48.08       | Peak   | VERTICAL   |
|    |             |                 |              |                 |                 |              |        |            |
| 1  | 3849.00     | 41.84           | 0.31         | 42.15           | 74.00           | -31.85       | Peak   | HORIZONTAL |
| 2  | 11550.00    | 20.28           | 6.73         | 27.01           | 74.00           | -46.99       | Peak   | HORIZONTAL |

Remark:

- 1 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 2 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 4 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 1-2, 802.11a mode) -Radiated**

Operation Mode TX CH Low  
Channel Number 5180 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5150.00  | 62.88        | -8.39     | 54.49        | 68.20        | -13.71    | Peak   | VERTICAL   |
| 2  | 5183.20  | 108.52       | -8.32     | 100.20       | F            | --        | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5150.00  | 66.31        | -8.39     | 57.92        | 68.20        | -10.28    | Peak   | HORIZONTAL |
| 2  | 5182.50  | 111.42       | -8.32     | 103.10       | F            | --        | Peak   | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5320MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5318.85  | 108.44       | -8.03     | 100.41       | F            | --        | Peak   | VERTICAL   |
| 2  | 5350.00  | 60.03        | -7.98     | 52.05        | 68.20        | -16.15    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5321.10  | 111.50       | -8.03     | 103.47       | F            | --        | Peak   | HORIZONTAL |
| 2  | 5350.00  | 60.38        | -7.98     | 52.40        | 68.20        | -15.80    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 1-2, 802.11n HT20 mode) -Radiated**

|                |           |           |            |
|----------------|-----------|-----------|------------|
| Operation Mode | TX CH Low | Test Date | 2019/02/20 |
| Channel Number | 5180 MHz  | Test By   | Barry      |
| Temperature    | 25 °C     | Humidity  | 65 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|---------|------------|
| 1  | 5150.00  | 61.32        | -8.39     | 52.93        | 68.20        | -15.27    | Peak    | VERTICAL   |
| 2  | 5182.50  | 107.30       | -8.32     | 98.98        | F            | --        | Peak    | VERTICAL   |
|    |          |              |           |              |              |           |         |            |
| 1  | 5150.00  | 59.02        | -8.39     | 50.63        | 54.00        | -3.37     | Average | HORIZONTAL |
| 2  | 5150.00  | 59.02        | -8.39     | 50.63        | 68.20        | -17.57    | Peak    | HORIZONTAL |
| 3  | 5150.00  | 65.90        | -8.39     | 57.51        | 68.20        | -10.69    | Peak    | HORIZONTAL |
| 4  | 5179.70  | 110.29       | -8.32     | 101.97       | F            | --        | Peak    | HORIZONTAL |

|                |            |           |            |
|----------------|------------|-----------|------------|
| Operation Mode | TX CH High | Test Date | 2019/02/20 |
| Channel Number | 5320MHz    | Test By   | Barry      |
| Temperature    | 25 °C      | Humidity  | 65 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5350.00  | 61.79        | -7.98     | 53.81        | 68.20        | -14.39    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5350.00  | 61.56        | -7.98     | 53.58        | 68.20        | -14.62    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 1-2, 802.11n HT40 mode) -Radiated**

Operation Mode TX CH Low  
Channel Number 5190 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|---------|------------|
| 1  | 5150.00  | 58.30        | -8.39     | 49.91        | 54.00        | -4.09     | Average | VERTICAL   |
| 2  | 5150.00  | 63.29        | -8.39     | 54.90        | 68.20        | -13.30    | Peak    | VERTICAL   |
| 3  | 5192.96  | 103.96       | -8.29     | 95.67        | F            | --        | Peak    | VERTICAL   |
|    |          |              |           |              |              |           |         |            |
| 1  | 5150.00  | 60.02        | -8.39     | 51.63        | 54.00        | -2.37     | Average | HORIZONTAL |
| 2  | 5150.00  | 68.17        | -8.39     | 59.78        | 68.20        | -8.42     | Peak    | HORIZONTAL |
| 3  | 5193.67  | 106.61       | -8.29     | 98.32        | F            | --        | Peak    | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5310MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5272.47  | 104.59       | -8.13     | 96.46        | F            | --        | Peak   | VERTICAL   |
| 2  | 5350.00  | 57.11        | -7.98     | 49.13        | 68.20        | -19.07    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5272.68  | 107.26       | -8.13     | 99.13        | F            | --        | Peak   | HORIZONTAL |
| 2  | 5350.00  | 57.93        | -7.98     | 49.95        | 68.20        | -18.25    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 1-2, 802.11ac 80 mode) -Radiated**

Operation Mode TX CH Low  
Channel Number 5210 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|---------|------------|
| 1  | 5150.00  | 58.54        | -8.39     | 50.15        | 54.00        | -3.85     | Average | VERTICAL   |
| 2  | 5150.00  | 64.30        | -8.39     | 55.91        | 68.20        | -12.29    | Peak    | VERTICAL   |
| 3  | 5217.75  | 101.65       | -8.24     | 93.41        | F            | --        | Peak    | VERTICAL   |
|    |          |              |           |              |              |           |         |            |
| 1  | 5150.00  | 60.00        | -8.39     | 51.61        | 54.00        | -2.39     | Average | HORIZONTAL |
| 2  | 5150.00  | 70.98        | -8.39     | 62.59        | 68.20        | -5.61     | Peak    | HORIZONTAL |
| 3  | 5213.25  | 103.61       | -8.25     | 95.36        | F            | --        | Peak    | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5290MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|---------|------------|
| 1  | 5293.40  | 102.70       | -8.08     | 94.62        | F            | --        | Peak    | VERTICAL   |
| 2  | 5350.00  | 56.32        | -7.98     | 48.34        | 54.00        | -5.66     | Average | VERTICAL   |
| 3  | 5350.00  | 67.82        | -7.98     | 59.84        | 68.20        | -8.36     | Peak    | VERTICAL   |
| 4  | 5353.75  | 55.92        | -7.96     | 47.96        | 54.00        | -6.04     | Average | VERTICAL   |
| 5  | 5353.75  | 70.05        | -7.96     | 62.09        | 74.00        | -11.91    | Peak    | VERTICAL   |
|    |          |              |           |              |              |           |         |            |
| 1  | 5300.37  | 104.90       | -8.08     | 96.82        | F            | --        | Peak    | HORIZONTAL |
| 2  | 5350.00  | 59.13        | -7.98     | 51.15        | 54.00        | -2.85     | Average | HORIZONTAL |
| 3  | 5350.00  | 72.77        | -7.98     | 64.79        | 68.20        | -3.41     | Peak    | HORIZONTAL |
| 4  | 5354.43  | 59.59        | -7.96     | 51.63        | 54.00        | -2.37     | Average | HORIZONTAL |
| 5  | 5354.43  | 74.29        | -7.96     | 66.33        | 74.00        | -7.67     | Peak    | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 3, 802.11a mode) -Radiated**

Operation Mode TX CH Low  
Channel Number 5500 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5470.00  | 65.10        | -7.65     | 57.45        | 68.20        | -10.75    | Peak   | VERTICAL   |
| 2  | 5501.42  | 108.94       | -7.56     | 101.38       | F            | --        | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5470.00  | 66.36        | -7.65     | 58.71        | 68.20        | -9.49     | Peak   | HORIZONTAL |
| 2  | 5501.53  | 111.39       | -7.56     | 103.83       | F            | --        | Peak   | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5700MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5701.36  | 107.71       | -6.90     | 100.81       | F            | --        | Peak   | VERTICAL   |
| 2  | 5725.00  | 60.19        | -6.82     | 53.37        | 68.20        | -14.83    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5701.04  | 109.00       | -6.90     | 102.10       | F            | --        | Peak   | HORIZONTAL |
| 2  | 5725.00  | 62.92        | -6.82     | 56.10        | 68.20        | -12.10    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 3, 802.11n HT20 mode) -Radiated**

Operation Mode TX CH Low  
Channel Number 5500 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5470.00  | 65.99        | -7.65     | 58.34        | 68.20        | -9.86     | Peak   | VERTICAL   |
| 2  | 5498.34  | 108.72       | -7.56     | 101.16       | F            | --        | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5470.00  | 66.21        | -7.65     | 58.56        | 68.20        | -9.64     | Peak   | HORIZONTAL |
| 2  | 5498.01  | 111.65       | -7.56     | 104.09       | F            | --        | Peak   | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5700MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5702.32  | 107.18       | -6.89     | 100.29       | F            | --        | Peak   | VERTICAL   |
| 2  | 5725.00  | 64.46        | -6.82     | 57.64        | 68.20        | -10.56    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5699.28  | 108.70       | -6.90     | 101.80       | F            | --        | Peak   | HORIZONTAL |
| 2  | 5725.00  | 64.55        | -6.82     | 57.73        | 68.20        | -10.47    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Band Edges test (Band 3, 802.11n HT40 mode) -Radiated**

|                |           |           |            |
|----------------|-----------|-----------|------------|
| Operation Mode | TX CH Low | Test Date | 2019/02/20 |
| Channel Number | 5510 MHz  | Test By   | Barry      |
| Temperature    | 25 °C     | Humidity  | 65 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5470.00  | 66.05        | -7.65     | 58.40        | 68.20        | -9.80     | Peak   | VERTICAL   |
| 2  | 5507.51  | 105.58       | -7.53     | 98.05        | F            | --        | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5470.00  | 71.99        | -7.65     | 64.34        | 68.20        | -3.86     | Peak   | HORIZONTAL |
| 2  | 5506.73  | 107.31       | -7.54     | 99.77        | F            | --        | Peak   | HORIZONTAL |

|                |            |           |            |
|----------------|------------|-----------|------------|
| Operation Mode | TX CH High | Test Date | 2019/02/20 |
| Channel Number | 5670MHz    | Test By   | Barry      |
| Temperature    | 25 °C      | Humidity  | 65 %       |

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5672.20  | 105.07       | -7.00     | 98.07        | F            | --        | Peak   | VERTICAL   |
| 2  | 5725.00  | 57.44        | -6.82     | 50.62        | 68.20        | -17.58    | Peak   | VERTICAL   |
|    |          |              |           |              |              |           |        |            |
| 1  | 5672.20  | 105.36       | -7.00     | 98.36        | F            | --        | Peak   | HORIZONTAL |
| 2  | 5725.00  | 58.27        | -6.82     | 51.45        | 68.20        | -16.75    | Peak   | HORIZONTAL |

**Remark:**

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

### Band Edges test (Band 3, 802.11ac 80 mode) -Radiated

Operation Mode TX CH Low  
Channel Number 5530 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|---------|------------|
| 1  | 5459.33  | 50.25        | -7.69     | 42.56        | 54.00        | -11.44    | Average | VERTICAL   |
| 2  | 5459.33  | 66.92        | -7.69     | 59.23        | 74.00        | -14.77    | Peak    | VERTICAL   |
| 3  | 5470.00  | 66.71        | -7.65     | 59.06        | 68.20        | -9.14     | Peak    | VERTICAL   |
| 4  | 5536.68  | 102.02       | -7.44     | 94.58        | F            | --        | Peak    | VERTICAL   |
| 1  | 5457.80  | 55.55        | -7.69     | 47.86        | 54.00        | -6.14     | Average | HORIZONTAL |
| 2  | 5457.80  | 70.85        | -7.69     | 63.16        | 74.00        | -10.84    | Peak    | HORIZONTAL |
| 3  | 5470.00  | 71.64        | -7.65     | 63.99        | 68.20        | -4.21     | Peak    | HORIZONTAL |
| 4  | 5524.61  | 104.57       | -7.48     | 97.09        | F            | --        | Peak    | HORIZONTAL |

Operation Mode TX CH High  
Channel Number 5610MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H    |
|----|----------|--------------|-----------|--------------|--------------|-----------|--------|------------|
| 1  | 5528.16  | 102.14       | -7.47     | 94.67        | F            | --        | Peak   | VERTICAL   |
| 2  | 5725.00  | 56.90        | -6.82     | 50.08        | 68.20        | -18.12    | Peak   | VERTICAL   |
| 1  | 5527.80  | 104.41       | -7.47     | 96.94        | F            | --        | Peak   | HORIZONTAL |
| 2  | 5725.00  | 57.64        | -6.82     | 50.82        | 68.20        | -17.38    | Peak   | HORIZONTAL |

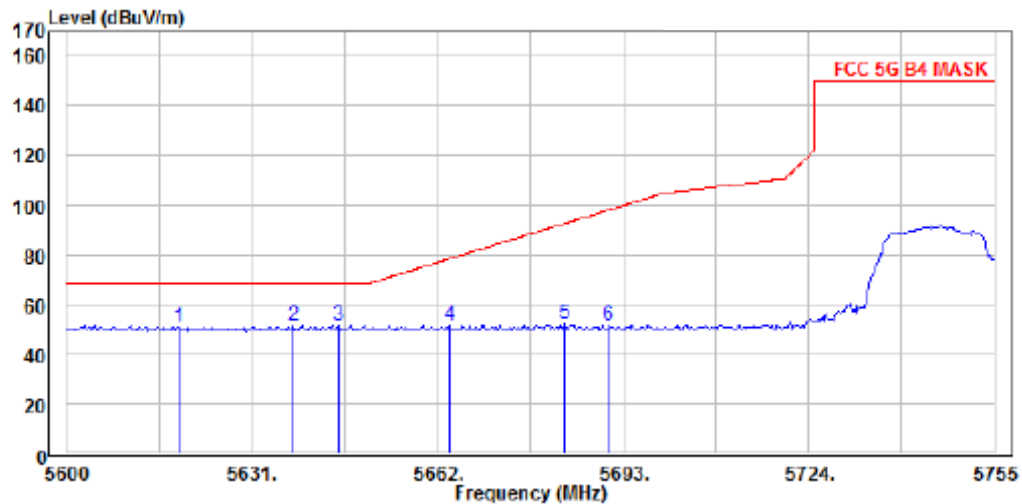
#### Remark:

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

## Band Edges test (Band 4, 802.11a mode) –Radiated

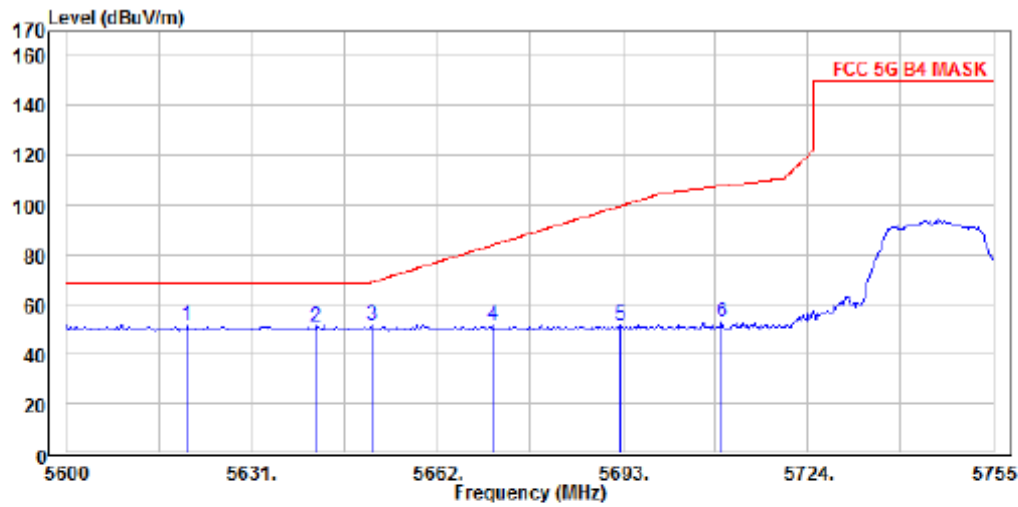
Operation Mode TX CH Low  
Channel Number 5745 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11a B4 Low Ch  
Note :

|      |          | Read  |        |        | Limit  | Over   |           |
|------|----------|-------|--------|--------|--------|--------|-----------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1    | 5618.645 | 51.33 | 0.00   | 51.33  | 68.20  | -16.87 | Vertical  |
| 2    | 5637.964 | 51.48 | 0.00   | 51.48  | 68.20  | -16.72 | Vertical  |
| 3 PP | 5645.377 | 52.03 | 0.00   | 52.03  | 68.20  | -16.17 | Vertical  |
| 4    | 5664.022 | 51.95 | 0.00   | 51.95  | 78.61  | -26.66 | Vertical  |
| 5    | 5683.116 | 52.22 | 0.00   | 52.22  | 92.74  | -40.52 | Vertical  |
| 6    | 5690.529 | 51.95 | 0.00   | 51.95  | 98.22  | -46.27 | Vertical  |

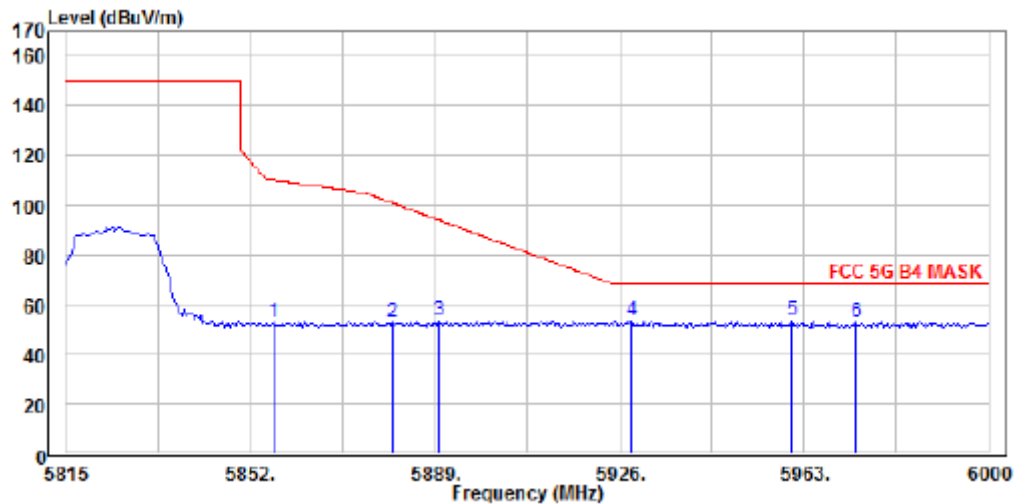


Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東菱10PM  
 Mode : Wifi 5G Mask 802.11a B4 Low Ch  
 Note :

|   |             | Read  |        | Limit  | Over   |                   |
|---|-------------|-------|--------|--------|--------|-------------------|
|   | Freq        | Level | Factor | Level  | Limit  | Pol/Phase         |
|   | MHz         | dBuV  | dB/m   | dBuV/m | dBuV/m | dB                |
| 1 | PP 5620.217 | 51.86 | 0.00   | 51.86  | 68.20  | -16.34 Horizontal |
| 2 | 5641.558    | 51.38 | 0.00   | 51.38  | 68.20  | -16.82 Horizontal |
| 3 | 5651.217    | 52.02 | 0.00   | 52.02  | 69.10  | -17.08 Horizontal |
| 4 | 5671.210    | 51.49 | 0.00   | 51.49  | 83.94  | -32.45 Horizontal |
| 5 | 5692.551    | 51.65 | 0.00   | 51.65  | 99.71  | -48.06 Horizontal |
| 6 | 5709.623    | 52.76 | 0.00   | 52.76  | 107.90 | -55.14 Horizontal |

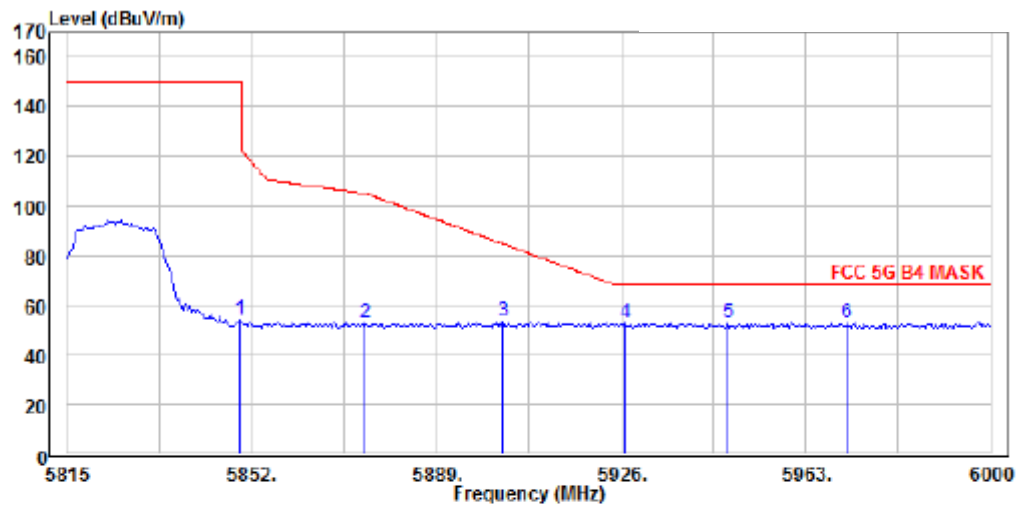
Operation Mode TX CH High  
Channel Number 5825MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東空10PM  
Mode : Wifi 5G Mask 802.11a B4 High Ch  
Note :

|      |          | Read  |        | Limit  | Over   |                 |
|------|----------|-------|--------|--------|--------|-----------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB              |
| 1    | 5856.558 | 53.25 | 0.00   | 53.25  | 110.36 | -57.11 Vertical |
| 2    | 5880.420 | 53.23 | 0.00   | 53.23  | 101.17 | -47.94 Vertical |
| 3    | 5889.804 | 53.49 | 0.00   | 53.49  | 94.21  | -40.72 Vertical |
| 4 PP | 5928.413 | 53.42 | 0.00   | 53.42  | 68.20  | -14.78 Vertical |
| 5    | 5960.587 | 53.40 | 0.00   | 53.40  | 68.20  | -14.80 Vertical |
| 6    | 5973.457 | 52.86 | 0.00   | 52.86  | 68.20  | -15.34 Vertical |



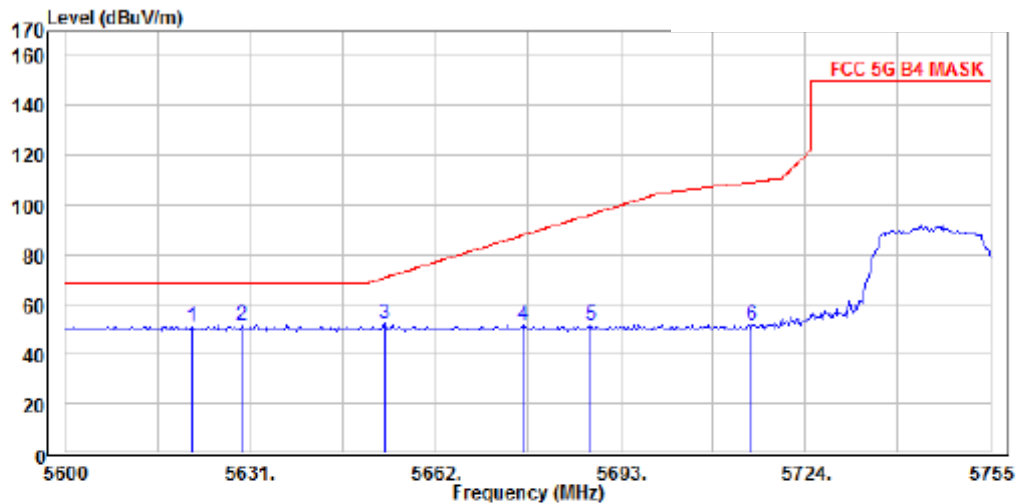
Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東菱10PM  
 Mode : Wifi 5G Mask 802.11a B4 High Ch  
 Note :

|      |          | Read  |        | Limit  | Over   |                   |
|------|----------|-------|--------|--------|--------|-------------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit Pol/Phase   |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB                |
| 1    | 5849.587 | 54.02 | 0.00   | 54.02  | 150.00 | -95.98 Horizontal |
| 2    | 5874.790 | 52.82 | 0.00   | 52.82  | 105.26 | -52.44 Horizontal |
| 3    | 5902.406 | 53.39 | 0.00   | 53.39  | 84.88  | -31.49 Horizontal |
| 4    | 5926.804 | 52.94 | 0.00   | 52.94  | 68.20  | -15.26 Horizontal |
| 5 PP | 5947.449 | 53.22 | 0.00   | 53.22  | 68.20  | -14.98 Horizontal |
| 6    | 5971.312 | 53.13 | 0.00   | 53.13  | 68.20  | -15.07 Horizontal |

## Band Edges test (Band 4, 802.11n HT20 mode) –Radiated

Operation Mode TX CH Low  
Channel Number 5745 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

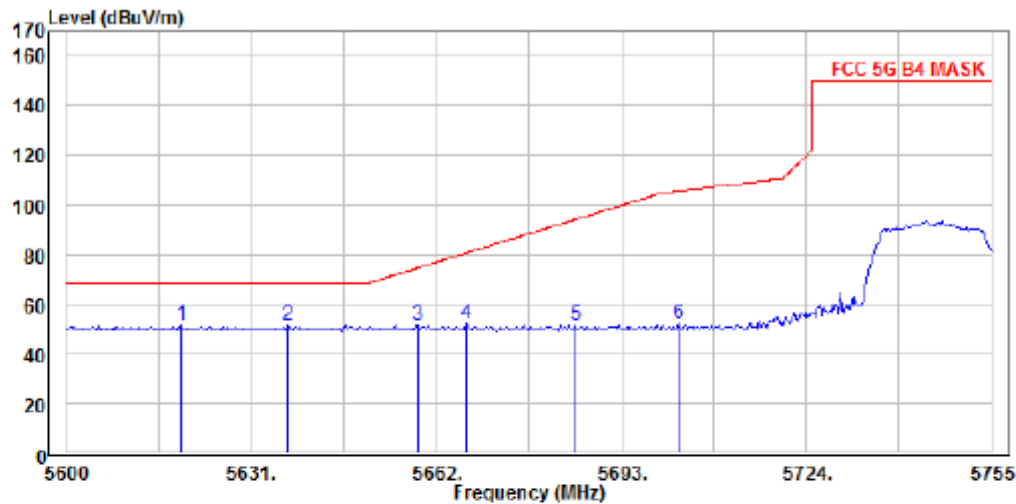


Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11HT20 B4 Low Ch  
Note :

|      |          | Read  |        |        | Limit  | Over   |           |
|------|----------|-------|--------|--------|--------|--------|-----------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1    | 5621.116 | 51.27 | 0.00   | 51.27  | 68.20  | -16.93 | Vertical  |
| 2 PP | 5629.652 | 51.88 | 0.00   | 51.88  | 68.20  | -16.32 | Vertical  |
| 3    | 5653.464 | 52.64 | 0.00   | 52.64  | 70.77  | -18.13 | Vertical  |
| 4    | 5676.602 | 51.77 | 0.00   | 51.77  | 87.93  | -36.16 | Vertical  |
| 5    | 5688.058 | 51.59 | 0.00   | 51.59  | 96.39  | -44.80 | Vertical  |
| 6    | 5715.015 | 52.00 | 0.00   | 52.00  | 109.41 | -57.41 | Vertical  |

Operation Mode TX CH High  
Channel Number 5825 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %

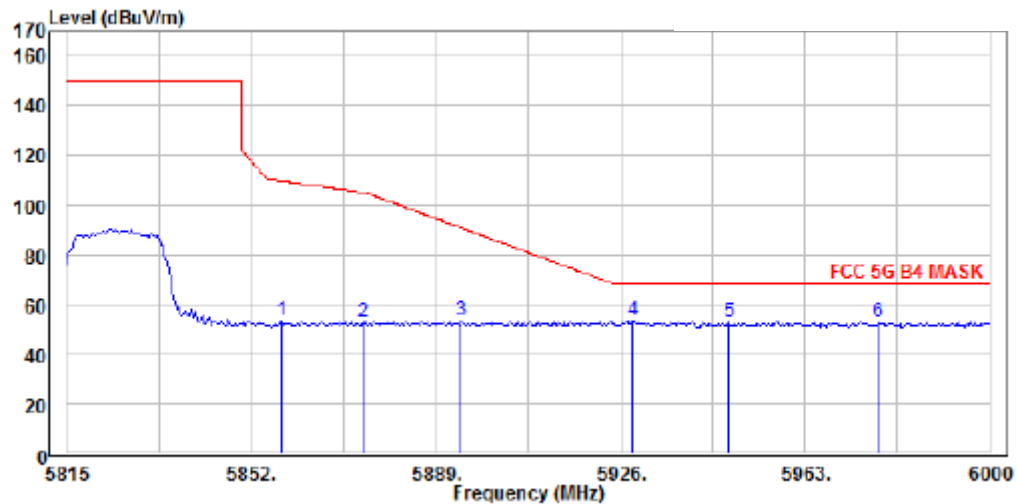


Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11HT20 B4 Low Ch  
Note :

|      |          | Read   |        | Limit  | Over   |                   |
|------|----------|--------|--------|--------|--------|-------------------|
| Freq | Level    | Factor | Level  | Line   | Limit  | Pol/Phase         |
| MHz  | dBuV     | dB/m   | dBuV/m | dBuV/m | dB     |                   |
| 1    | 5619.319 | 51.44  | 0.00   | 51.44  | 68.20  | -16.76 Horizontal |
| 2 PP | 5637.065 | 51.53  | 0.00   | 51.53  | 68.20  | -16.67 Horizontal |
| 3    | 5658.855 | 51.66  | 0.00   | 51.66  | 74.78  | -23.12 Horizontal |
| 4    | 5666.942 | 52.08  | 0.00   | 52.08  | 80.77  | -28.69 Horizontal |
| 5    | 5685.362 | 51.86  | 0.00   | 51.86  | 94.40  | -42.54 Horizontal |
| 6    | 5702.659 | 52.24  | 0.00   | 52.24  | 105.95 | -53.71 Horizontal |

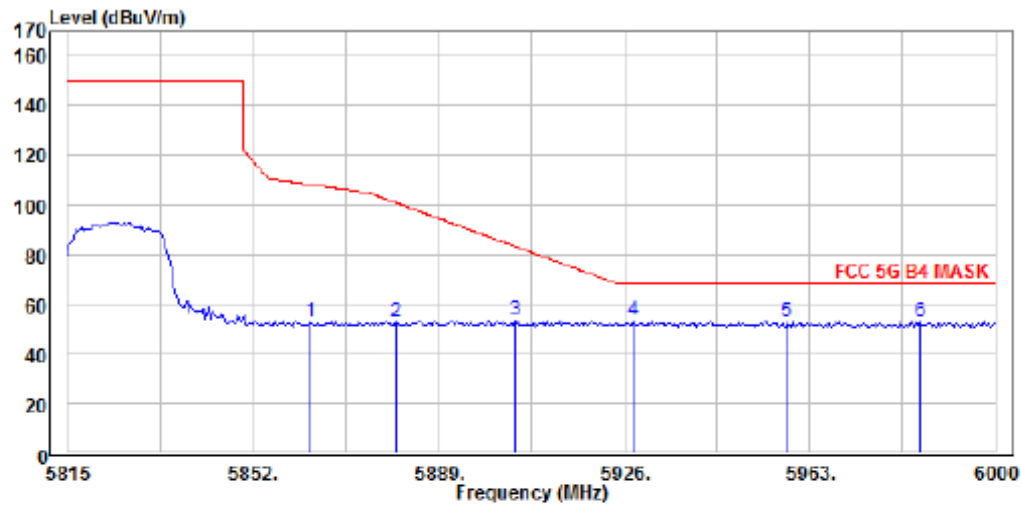
Operation Mode TX CH High  
Channel Number 5825MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11HT20 B4 High Ch  
Note :

|      |          | Read  |        |        | Limit  | Over   |           |
|------|----------|-------|--------|--------|--------|--------|-----------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1    | 5857.898 | 53.64 | 0.00   | 53.64  | 109.99 | -56.35 | Vertical  |
| 2    | 5874.253 | 53.28 | 0.00   | 53.28  | 105.41 | -52.13 | Vertical  |
| 3    | 5894.094 | 53.58 | 0.00   | 53.58  | 91.03  | -37.45 | Vertical  |
| 4 PP | 5928.413 | 53.56 | 0.00   | 53.56  | 68.20  | -14.64 | Vertical  |
| 5    | 5947.717 | 52.97 | 0.00   | 52.97  | 68.20  | -15.23 | Vertical  |
| 6    | 5977.747 | 53.18 | 0.00   | 53.18  | 68.20  | -15.02 | Vertical  |



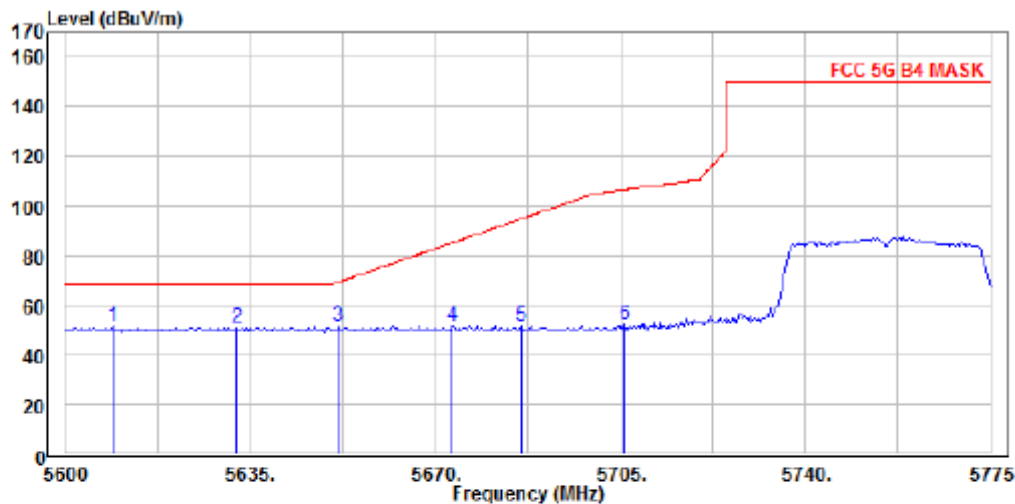
Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
: RBW:1000kHz VBN:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11HT20 B4 High Ch  
Note :

|      |          | Read  |        | Limit  | Over   |                   |
|------|----------|-------|--------|--------|--------|-------------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit Pol/Phase   |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB                |
| 1    | 5863.529 | 53.31 | 0.00   | 53.31  | 108.41 | -55.10 Horizontal |
| 2    | 5880.420 | 52.93 | 0.00   | 52.93  | 101.17 | -48.24 Horizontal |
| 3    | 5904.283 | 53.54 | 0.00   | 53.54  | 83.49  | -29.95 Horizontal |
| 4 PP | 5927.877 | 53.88 | 0.00   | 53.88  | 68.20  | -14.32 Horizontal |
| 5    | 5958.442 | 53.24 | 0.00   | 53.24  | 68.20  | -14.96 Horizontal |
| 6    | 5984.985 | 52.83 | 0.00   | 52.83  | 68.20  | -15.37 Horizontal |

# Band Edges test (Band 4, 802.11n HT40 mode) –Radiated

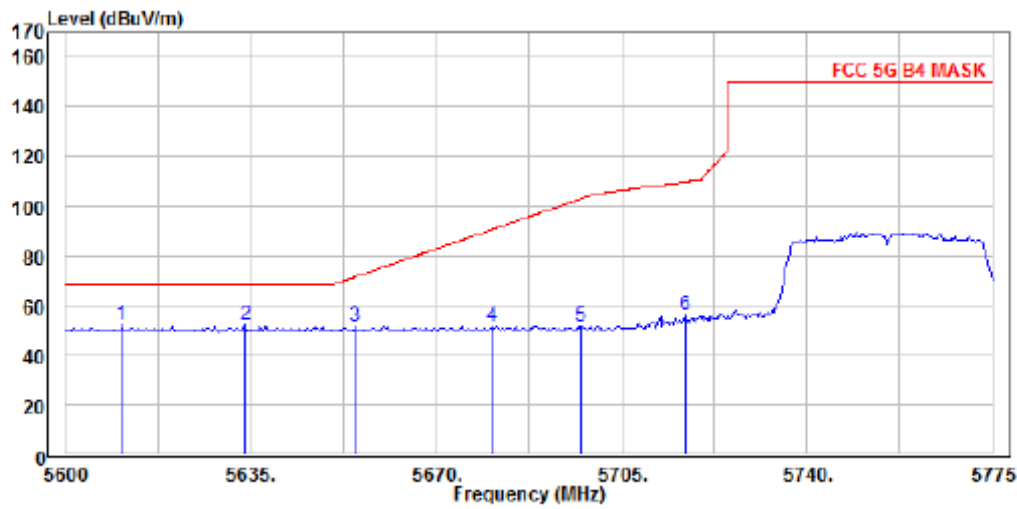
Operation Mode TX CH Low  
Channel Number 5755 MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東荃10PM  
Mode : Wifi 5G Mask 802.11HT40 B4 Low Ch  
Note :

|   |             | Read  |        |        | Limit  | Over   |           |
|---|-------------|-------|--------|--------|--------|--------|-----------|
|   | Freq        | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|   | MHz         | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1 | PP 5609.130 | 51.64 | 0.00   | 51.64  | 68.20  | -16.56 | Vertical  |
| 2 | 5632.464    | 51.38 | 0.00   | 51.38  | 68.20  | -16.82 | Vertical  |
| 3 | 5651.739    | 51.69 | 0.00   | 51.69  | 69.49  | -17.80 | Vertical  |
| 4 | 5673.297    | 51.92 | 0.00   | 51.92  | 85.48  | -33.56 | Vertical  |
| 5 | 5686.232    | 51.89 | 0.00   | 51.89  | 95.04  | -43.15 | Vertical  |
| 6 | 5705.761    | 52.43 | 0.00   | 52.43  | 106.82 | -54.39 | Vertical  |

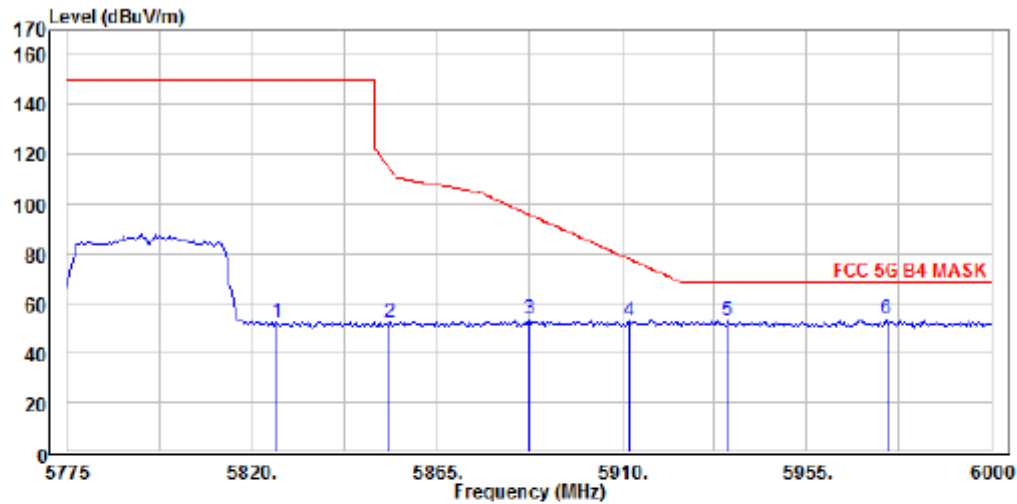


Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東荃10PM  
 Mode : Wifi 5G Mask 802.11HT40 B4 Low Ch  
 Note :

|      |          | Read  |        | Limit  | Over   |                   |
|------|----------|-------|--------|--------|--------|-------------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit Pol/Phase   |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB                |
| 1    | 5610.652 | 52.20 | 0.00   | 52.20  | 68.20  | -16.00 Horizontal |
| 2 PP | 5633.985 | 52.46 | 0.00   | 52.46  | 68.20  | -15.74 Horizontal |
| 3    | 5654.529 | 52.00 | 0.00   | 52.00  | 71.56  | -19.56 Horizontal |
| 4    | 5680.398 | 51.65 | 0.00   | 51.65  | 90.73  | -39.08 Horizontal |
| 5    | 5697.391 | 51.85 | 0.00   | 51.85  | 103.28 | -51.43 Horizontal |
| 6    | 5716.920 | 55.95 | 0.00   | 55.95  | 109.94 | -53.99 Horizontal |

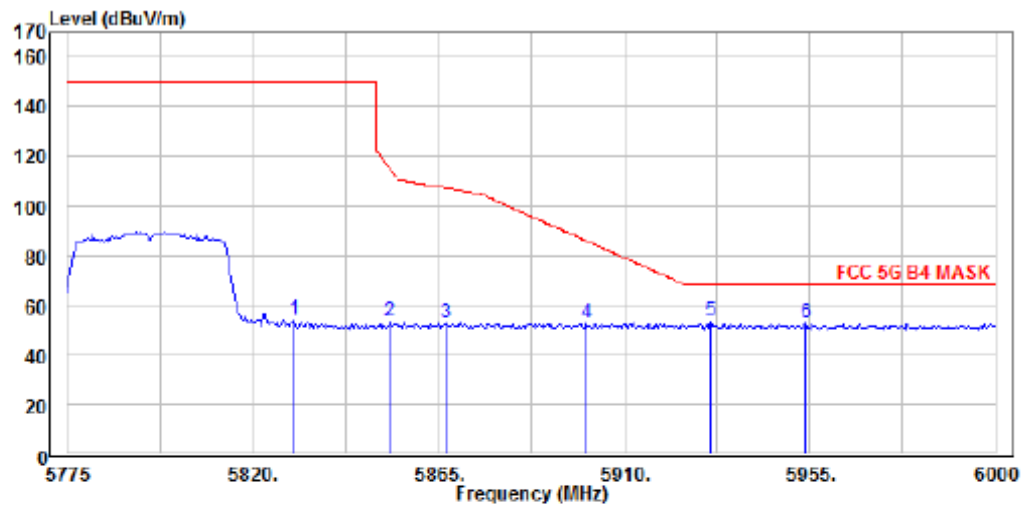
Operation Mode TX CH High  
Channel Number 5795MHz  
Temperature 25 °C

Test Date 2019/02/20  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11HT40 B4 High Ch  
Note :

|      | Freq     | Read<br>Level | Factor | Level  | Limit<br>Line | Over<br>Limit | Pol/Phase |
|------|----------|---------------|--------|--------|---------------|---------------|-----------|
|      | MHz      | dBuV          | dB/m   | dBuV/m | dBuV/m        | dB            |           |
| 1    | 5826.196 | 52.37         | 0.00   | 52.37  | 150.00        | -97.63        | Vertical  |
| 2    | 5853.587 | 52.61         | 0.00   | 52.61  | 114.02        | -61.41        | Vertical  |
| 3    | 5887.500 | 53.44         | 0.00   | 53.44  | 95.92         | -42.48        | Vertical  |
| 4    | 5911.630 | 52.93         | 0.00   | 52.93  | 78.06         | -25.13        | Vertical  |
| 5    | 5935.761 | 52.85         | 0.00   | 52.85  | 68.20         | -15.35        | Vertical  |
| 6 PP | 5974.565 | 53.62         | 0.00   | 53.62  | 68.20         | -14.58        | Vertical  |



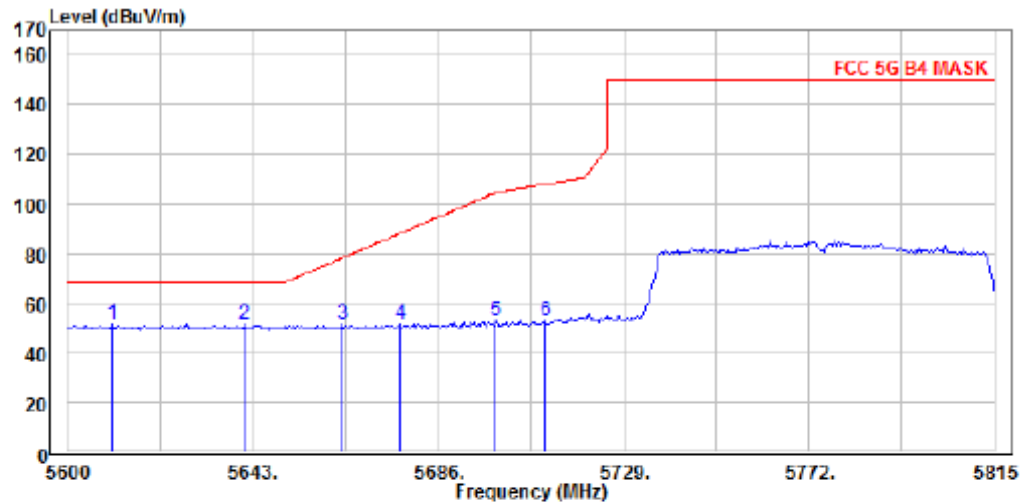
Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東菱10PM  
 Mode : Wifi 5G Mask 802.11HT40 B4 High Ch  
 Note :

|      |          | Read  |        | Limit  | Over   |                   |
|------|----------|-------|--------|--------|--------|-------------------|
|      | Freq     | Level | Factor | Level  | Limit  | Pol/Phase         |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB                |
| 1    | 5830.109 | 54.00 | 0.00   | 54.00  | 150.00 | -96.00 Horizontal |
| 2    | 5853.261 | 53.41 | 0.00   | 53.41  | 114.76 | -61.35 Horizontal |
| 3    | 5866.630 | 53.28 | 0.00   | 53.28  | 107.54 | -54.26 Horizontal |
| 4    | 5900.870 | 52.96 | 0.00   | 52.96  | 86.02  | -33.06 Horizontal |
| 5 PP | 5930.870 | 53.36 | 0.00   | 53.36  | 68.20  | -14.84 Horizontal |
| 6    | 5954.022 | 53.01 | 0.00   | 53.01  | 68.20  | -15.19 Horizontal |

# Band Edges test (Band 4, 802.11ac HT80 mode) –Radiated

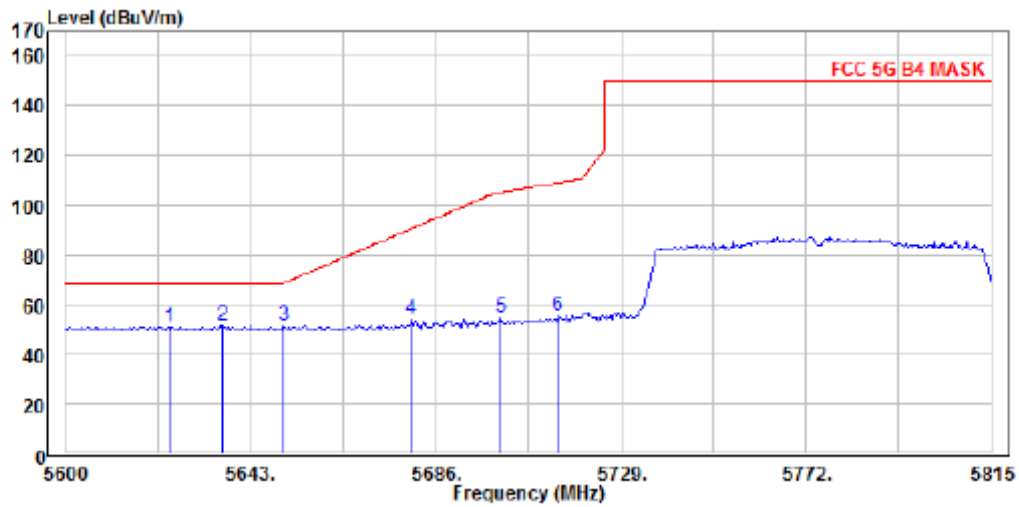
Operation Mode TX CH Low  
Channel Number 5775 MHz  
Temperature 25 °C

Test Date 2018/12/08  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東菱10PM  
Mode : Wifi 5G Mask 802.11AC80 B4  
Note :

|      |          | Read  |        |        | Limit  | Over   |           |
|------|----------|-------|--------|--------|--------|--------|-----------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1 PP | 5610.283 | 51.59 | 0.00   | 51.59  | 68.20  | -16.61 | Vertical  |
| 2    | 5641.130 | 51.42 | 0.00   | 51.42  | 68.20  | -16.78 | Vertical  |
| 3    | 5663.877 | 51.67 | 0.00   | 51.67  | 78.50  | -26.83 | Vertical  |
| 4    | 5677.275 | 51.87 | 0.00   | 51.87  | 88.42  | -36.55 | Vertical  |
| 5    | 5699.398 | 52.92 | 0.00   | 52.92  | 104.76 | -51.84 | Vertical  |
| 6    | 5710.928 | 53.00 | 0.00   | 53.00  | 108.26 | -55.26 | Vertical  |

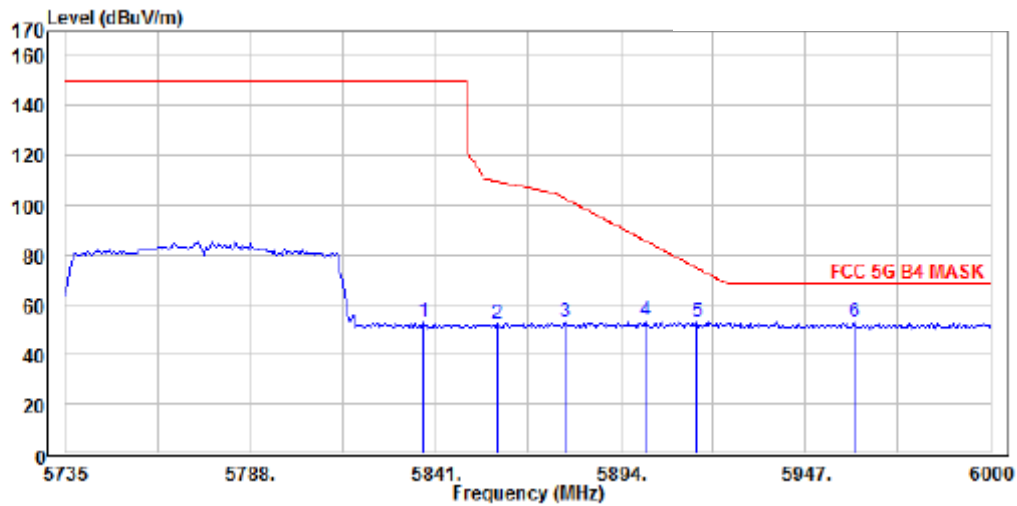


Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東菱10PM  
 Mode : Wifi 5G Mask 802.11AC80 B4  
 Note :

|      |          | Read  |        |        | Limit  | Over   |            |
|------|----------|-------|--------|--------|--------|--------|------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase  |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |            |
| 1    | 5623.993 | 51.14 | 0.00   | 51.14  | 68.20  | -17.06 | Horizontal |
| 2 PP | 5636.457 | 51.75 | 0.00   | 51.75  | 68.20  | -16.45 | Horizontal |
| 3    | 5650.790 | 51.71 | 0.00   | 51.71  | 68.79  | -17.08 | Horizontal |
| 4    | 5680.391 | 53.99 | 0.00   | 53.99  | 90.73  | -36.74 | Horizontal |
| 5    | 5701.268 | 54.74 | 0.00   | 54.74  | 105.56 | -50.82 | Horizontal |
| 6    | 5714.355 | 55.33 | 0.00   | 55.33  | 109.22 | -53.89 | Horizontal |

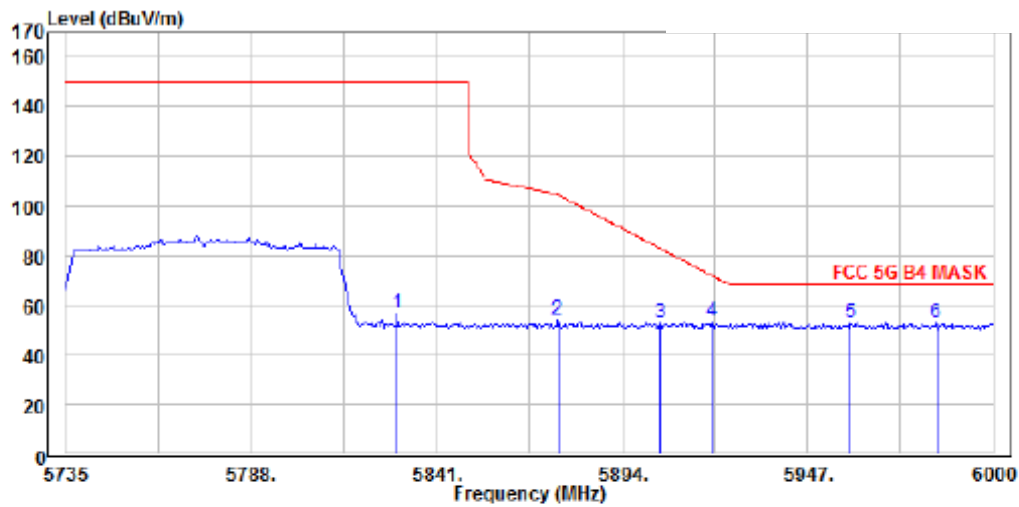
Operation Mode TX CH High  
Channel Number 5775 MHz  
Temperature 25 °C

Test Date 2018/12/08  
Test By Barry  
Humidity 65 %



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Vertical  
: RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
EUT : 東荃10PM  
Mode : Wifi 5G Mask 802.11AC80 B4  
Note :

|      |          | Read  |        |        | Limit  | Over   |           |
|------|----------|-------|--------|--------|--------|--------|-----------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |           |
| 1    | 5837.543 | 53.14 | 0.00   | 53.14  | 150.00 | -96.86 | Vertical  |
| 2    | 5858.667 | 52.58 | 0.00   | 52.58  | 109.77 | -57.19 | Vertical  |
| 3    | 5878.253 | 52.92 | 0.00   | 52.92  | 102.78 | -49.86 | Vertical  |
| 4    | 5901.297 | 53.52 | 0.00   | 53.52  | 85.70  | -32.18 | Vertical  |
| 5    | 5915.891 | 52.94 | 0.00   | 52.94  | 74.92  | -21.98 | Vertical  |
| 6 PP | 5961.210 | 52.74 | 0.00   | 52.74  | 68.20  | -15.46 | Vertical  |



Condition: limit\FCC\FCC 5G B4 MASK.csv 3m Horizontal  
 : RBW:1000kHz VBW:3000kHz SWT:Auto DET:Positive  
 EUT : 東菱10PM  
 Mode : Wifi 5G Mask 802.11AC80 B4  
 Note :

|      |          | Read  |        |        | Limit  | Over   |            |
|------|----------|-------|--------|--------|--------|--------|------------|
|      | Freq     | Level | Factor | Level  | Line   | Limit  | Pol/Phase  |
|      | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |            |
| 1    | 5829.862 | 56.88 | 0.00   | 56.88  | 150.00 | -93.12 | Horizontal |
| 2    | 5875.565 | 54.01 | 0.00   | 54.01  | 104.78 | -50.77 | Horizontal |
| 3    | 5904.753 | 52.88 | 0.00   | 52.88  | 83.14  | -30.26 | Horizontal |
| 4    | 5919.732 | 53.35 | 0.00   | 53.35  | 72.08  | -18.73 | Horizontal |
| 5 PP | 5959.290 | 52.97 | 0.00   | 52.97  | 68.20  | -15.23 | Horizontal |
| 6    | 5983.870 | 52.71 | 0.00   | 52.71  | 68.20  | -15.49 | Horizontal |

## **10. Transmission in the Absence of Data**

### **10.1. Standard Applicable**

According to §15.407(c)

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

### **10.2. Result:**

Pass, the device is compliance with 802.11 a/ b/g/n ac standard, the short control signal is appear during no transmission period.

## 11. Frequency Stability

### 11.1. Standard Applicable

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.

### 11.2. Result

Test frequency : 5260 MHz

| Temperature test |                  |             |             |                       |
|------------------|------------------|-------------|-------------|-----------------------|
| Power Supply     | Environment      | Frequency   | Delta (MHz) | frequency drift (ppm) |
| Vdc              | Temperature (°C) | (MHz)       |             |                       |
| 12               | -20              | 5260.021800 | 0.021800    | 4.14                  |
|                  | -10              | 5260.024700 | 0.024700    | 4.70                  |
|                  | 0                | 5260.025900 | 0.025900    | 4.92                  |
|                  | 10               | 5260.031400 | 0.031400    | 5.97                  |
|                  | 20               | 5260.031600 | 0.031600    | 6.01                  |
|                  | 30               | 5260.034900 | 0.034900    | 6.63                  |
|                  | 40               | 5260.034700 | 0.034700    | 6.60                  |
|                  | 50               | 5260.038700 | 0.038700    | 7.36                  |

| Voltage test |                  |             |             |                       |
|--------------|------------------|-------------|-------------|-----------------------|
| Power Supply | Environment      | Frequency   | Delta (kHz) | frequency drift (ppm) |
| Vdc          | Temperature (°C) | (MHz)       |             |                       |
| 12           | 20               | 5260.025800 | 0.02580     | 4.90                  |
| 13.2         | 20               | 5260.014600 | 0.01460     | 2.78                  |
| 10.8         | 20               | 5260.032100 | 0.03210     | 6.10                  |

## 12. Antenna Requirement

### 12.1. Standard Applicable

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

According to RSS-GEN 7.1.2, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-247 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-247 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5745-5850 MHz Bands) or RSS-247 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-247 Annex 8 or Annex 9, the antenna gain shall not be added.

### 12.2. Antenna Connected Construction

The directional gains of antenna used for transmitting is 4.5dBi, which is revised PCB antenna and no consideration of replacement by user. Please see EUT photo and antenna spec. for details.

## 13. TPC and DFS Measurement

### 13.1. TPC: Standard Applicable

According to §15.407(h)(1), Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

According to RSS 210 A9.2 (3), The maximum conducted output power shall not exceed 250mW or  $11 + 10 \log_{10} B$ , dBm, whichever power is less. The power spectral density shall not exceed 11dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or  $17 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz. Note that devices with a maximum e.i.r.p. greater than 500mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

**15.1.1. Result:** Appearance and LCD size are different, The output power is less than 500mW (27dBm).

### 13.2. DFS: Standard Applicable

According to §15.407(h)(2), Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection.

According to RSS 210 A9.3), Note: For the band 5600-5650 MHz, no operation is permitted. Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600-5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band.

Devices operating in the bands 5250-5350 MHz, 5470-5600 MHz and 5650-5725 MHz band shall comply with the following:

(a) Devices shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems (see Note below). The minimum DFS radar signal detection threshold is -62dBm for devices with a maximum e.i.r.p. less than 200mW, and -64dBm for devices with a maximum e.i.r.p. of 200mW to 1 W. The detection threshold power is the received power, averaged over a 1-microsecond reference to a 0dBi antenna. The DFS process shall provide a uniform spreading of the loading over all the available channels.

Note: Test procedures for demonstrating compliance with the DFS radar detection requirements set out in this section are being evaluated by Industry Canada. As an interim measure, the Department will, until further notice, accept utilization of the DFS test procedures published by the U.S. Federal Communications Commission (FCC) 3 to demonstrate compliance with the requirements of this section.

(b) Operational requirements: the requirement for channel availability check time applies in the master operational mode. The requirement for channel move time applies in both the master and slave operational modes.

(i) In-service monitoring: an LE-LAN device should be able to monitor the operating channel to check that a co-channel radar has not moved or started operation within range of the LE-LAN device. During in-service monitoring, the LE-LAN radar detection function continuously searches for radar signals between normal LE-LAN transmissions.

(ii) Channel availability check time: the device shall check if there is a radar system already operating on the channel before it initiates a transmission on a channel and when it moves to a channel. The device may start using the channel if no radar signals with a power level greater than the interference threshold value specified in A9.3 (a) above is detected within 60 seconds.

(iii) Channel move time: after a radar's signal is detected, the device shall cease all transmissions on the operating channel within 10 seconds. Transmission during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. Intermittent management and control signals may also be sent during the remaining time to facilitate vacating the operating channel.

(iv) Channel closing time: the maximum channel closing time is 260 ms.

(v) Non-occupancy period: a channel that has been flagged as containing a radar signal, either by a channel availability check or in-service monitoring, is subject to a 30-minute non-occupancy period where the channel cannot be used by the LE-LAN device. The non-occupancy period starts from the time that the radar signal is detected.

### 13.2.1. Limit

**Table 1: Applicability of DFS requirements prior to use of a channel**

| Requirement                     | Operational Mode |                                 |                              |
|---------------------------------|------------------|---------------------------------|------------------------------|
|                                 | Slave            | Client(without radar detection) | Client(with radar detection) |
| Non-occupancy Period            | Yes              | Not required                    | Yes                          |
| DFS Detection Threshold         | Yes              | Not required                    | Yes                          |
| Channel Availability Check Time | Yes              | Not required                    | Not required                 |
| Uniform Spreading               | Yes              | Not required                    | Not required                 |
| U-NII Detection Band-width      | Yes              | Not required                    | Yes                          |

**Table 2: Applicability of DFS requirements during normal operation**

| Requirement                       | Operational Mode |                                 |                              |
|-----------------------------------|------------------|---------------------------------|------------------------------|
|                                   | Slave            | Client(without radar detection) | Client(with radar detection) |
| DFS Detection Threshold           | Yes              | Not required                    | Yes                          |
| Channel Closing Transmission Time | Yes              | Yes                             | Yes                          |
| Channel Move Time                 | Yes              | Yes                             | Yes                          |
| U-NII Detection Bandwidth         | Yes              | Not required                    | Yes                          |

Refer to KDB Number: 848637

Refer to KDB Number: 905462 APPENDIX B COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5.25-5.35 GHz AND 5.47-5.725 GHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION.

**Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring**

| Maximum Transmit Power                                                                                                                                                                                                                                                                                                                                                                                 | Value<br>(see note) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| ≥ 200 milliwatt                                                                                                                                                                                                                                                                                                                                                                                        | -64 dBm             |
| < 200 milliwatt                                                                                                                                                                                                                                                                                                                                                                                        | -62 dBm             |
| <p>Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna</p> <p>Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.</p> |                     |

**Table 4: DFS Response requirement values**

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Value                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <i>Non-occupancy period</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Minimum 30 minutes                                                                                        |
| <i>Channel Availability Check Time</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 60 seconds                                                                                                |
| <i>Channel Move Time</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 seconds<br>See Note 1.                                                                                 |
| <i>Channel Closing Transmission Time</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.<br>See Notes 1 and 2. |
| <i>U-NII Detection Bandwidth</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum 80% of the U-NII 99% transmission power bandwidth. See Note 3.                                    |
| <p><b>Note 1:</b> The instant that the <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> begins is as follows:</p> <ul style="list-style-type: none"> <li>For the Short Pulse Radar Test Signals this instant is the end of the <i>Burst</i>.</li> <li>For the Frequency Hopping radar Test Signal, this instant is the end of the last radar <i>Burst</i> generated.</li> <li>For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the <i>Radar Waveform</i>.</li> </ul> <p><b>Note 2:</b> The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel move</i> (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p><b>Note 3:</b> During the <i>U-NII Detection Bandwidth</i> detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p> |                                                                                                           |

**Table 5: Radar Test Waveforms**

**Short Pulse Radar**

| Radar Type                  | Pulse Width (μsec) | PRI (μsec) | Number of Pulses | Minimum Percentage of Successful Detection | Minimum Trials |
|-----------------------------|--------------------|------------|------------------|--------------------------------------------|----------------|
| 1                           | 1                  | 1428       | 18               | 60%                                        | 30             |
| 2                           | 1-5                | 150-230    | 23-29            | 60%                                        | 30             |
| 3                           | 6-10               | 200-500    | 16-18            | 60%                                        | 30             |
| 4                           | 11-20              | 200-500    | 12-16            | 60%                                        | 30             |
| Aggregate (Radar Types 1-4) |                    |            |                  | 80%                                        | 120            |

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. For Short Pulse Radar Type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms

**Long Pulse Radar**

| Radar Type | Pulse Width (μsec) | Chirp Width (MHz) | PRI (μsec) | Number of Pulses per Burst | Number of Bursts | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|-------------------|------------|----------------------------|------------------|--------------------------------------------|----------------|
| 5          | 50-100             | 5-20              | 1000-2000  | 1-3                        | 8-20             | 80%                                        | 30             |

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

**Frequency Hopping Radar**

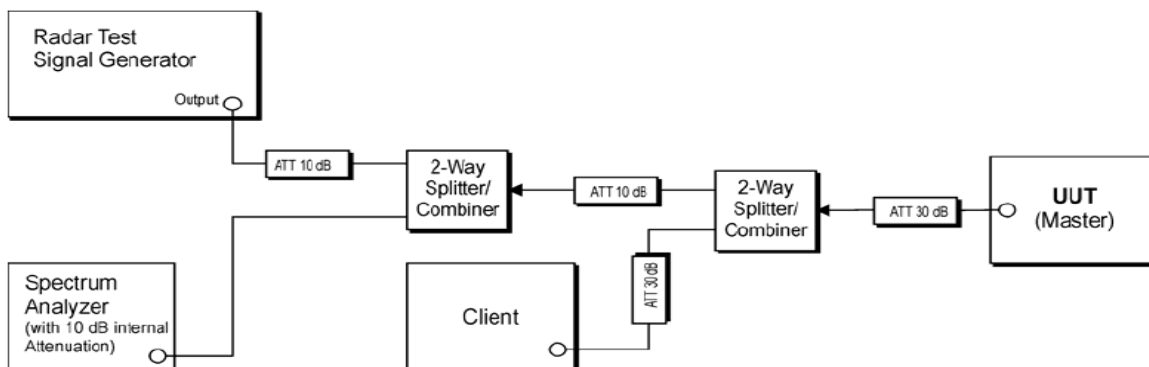
| Radar Type | Pulse Width (μsec) | PRI (μsec) | Pulses per Hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|------------|----------------|--------------------|--------------------------------|--------------------------------------------|----------------|
| 6          | 1                  | 333        | 9              | .333               | 300                            | 70%                                        | 30             |

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm: 3

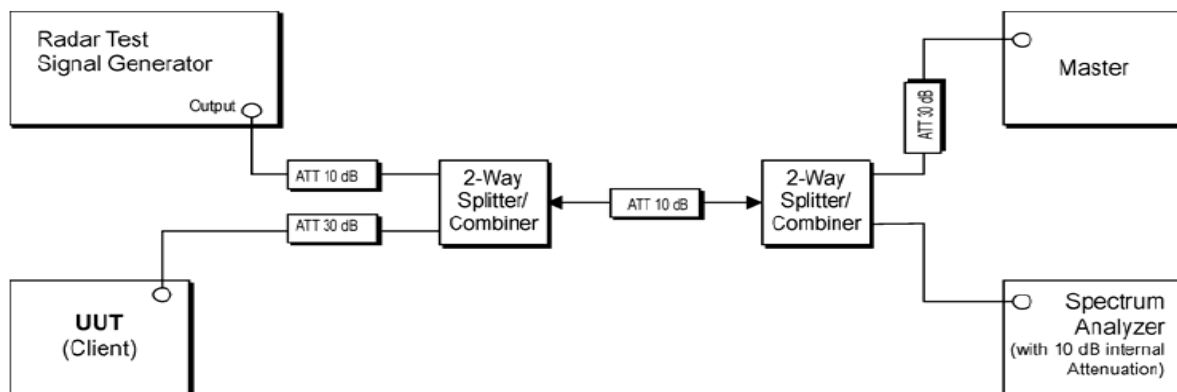
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

### 13.2.2. Test Setup

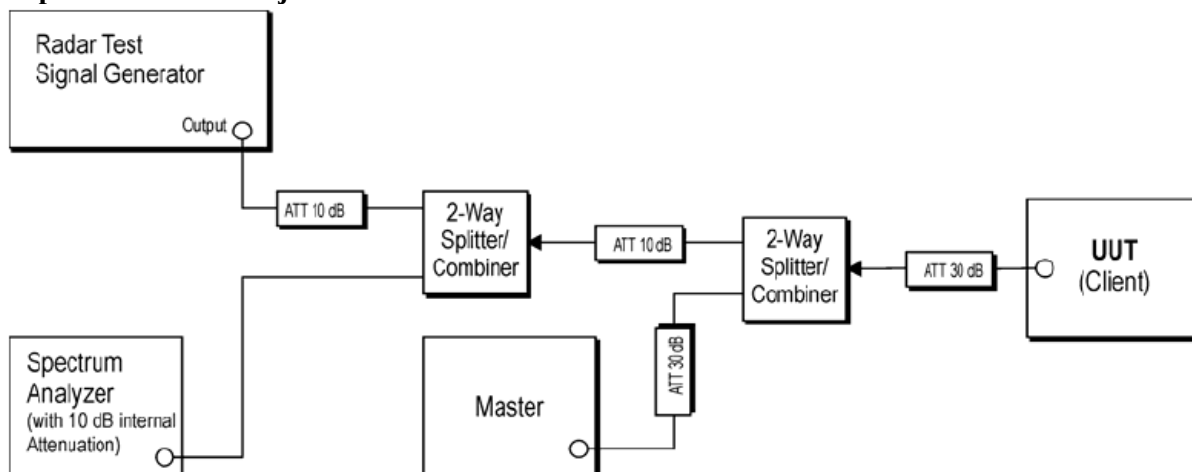
#### Setup for Master with injection at the Master



#### Setup for Client with injection at the Master



#### Setup for Client with injection at the Client



### 13.3. Test Equipment Used:

| Conducted DFS Test Site |               |                                 |               |            |            |
|-------------------------|---------------|---------------------------------|---------------|------------|------------|
| Equipment Type          | MFR           | Model Number                    | Serial Number | Last Cal.  | Cal Due.   |
| Signal Generator        | Agilent       | E4438C                          | MY49071550    | 11/16/2018 | 11/15/2019 |
| Signal Generator        | keysight      | N5182B                          | MY53052399    | 12/07/2018 | 12/06/2019 |
| Spectrum analyzer       | keysight      | N9010A                          | MY56070257    | 10/15/2018 | 10/14/2019 |
| AP Router               | ASUS          | RTAC66U                         | FTX1220905D   | NA         | NA         |
| Usb Adapter             | D-Link        | DWA-182                         | QBYS1D8000073 | NA         | NA         |
| Test Box                | keysight      | AD211A                          | NA            | NA         | NA         |
| Test Box                | keysight      | AD191A                          | NA            | NA         | NA         |
| Direction Coupler       | Krytar        | 1821S                           | 1461          | NA         | NA         |
| Splitter                | Mini-Circuits | ZN2PD-63-S                      | UU97201111    | NA         | NA         |
| Attenuator              | Woken         | Watt-65m3502                    | 11051601      | NA         | NA         |
| Software                | Agilent       | Adaptive TEST                   | NA            | NA         | NA         |
| Cable                   | Draka         | NA                              | NA            | NA         | NA         |
| Test Software           | Keysight      | N9607B<br>DFS Radar<br>Profiles | NA            | NA         | NA         |
| Test Software           | Keysight      | ETSI Standard<br>test system    | NA            | NA         | NA         |

#### 13.3.1. Description of EUT :

EUT operates over the 5250-5350MHz and 5470-5725MHz ranges and EUT is a slave device (client equipment) w/o radar detection and DFS capability.

The EUT utilizes the 802.11ac architecture, with a nominal channel bandwidth of 80MHz WLAN traffic is generated by streaming the mpeg file from the master to slave in full monitor video mode using the media player.

The rated output power of the master unit is >23dBm(EIRP).therefore the required interference threshold level is -64dBm. The master device as employed for the applicable DFS test is ASUS router whose FCC ID= MSQ-RTAC66U

### 13.4. Test results

#### Applicability of DFS requirements prior to use of a channel

| Requirement                     | Operational Mode: Client(without radar detection) |        |
|---------------------------------|---------------------------------------------------|--------|
|                                 | Test Result                                       | Remark |
| Non-occupancy Period            | Appearance and LCD size are different             | Pass   |
| DFS Detection Threshold         | Appearance and LCD size are different             | Pass   |
| Channel Availability Check Time | Appearance and LCD size are different             | Pass   |
| Uniform Spreading               | Appearance and LCD size are different             | Pass   |
| U-NII Detection Bandwidth       | Appearance and LCD size are different             | Pass   |

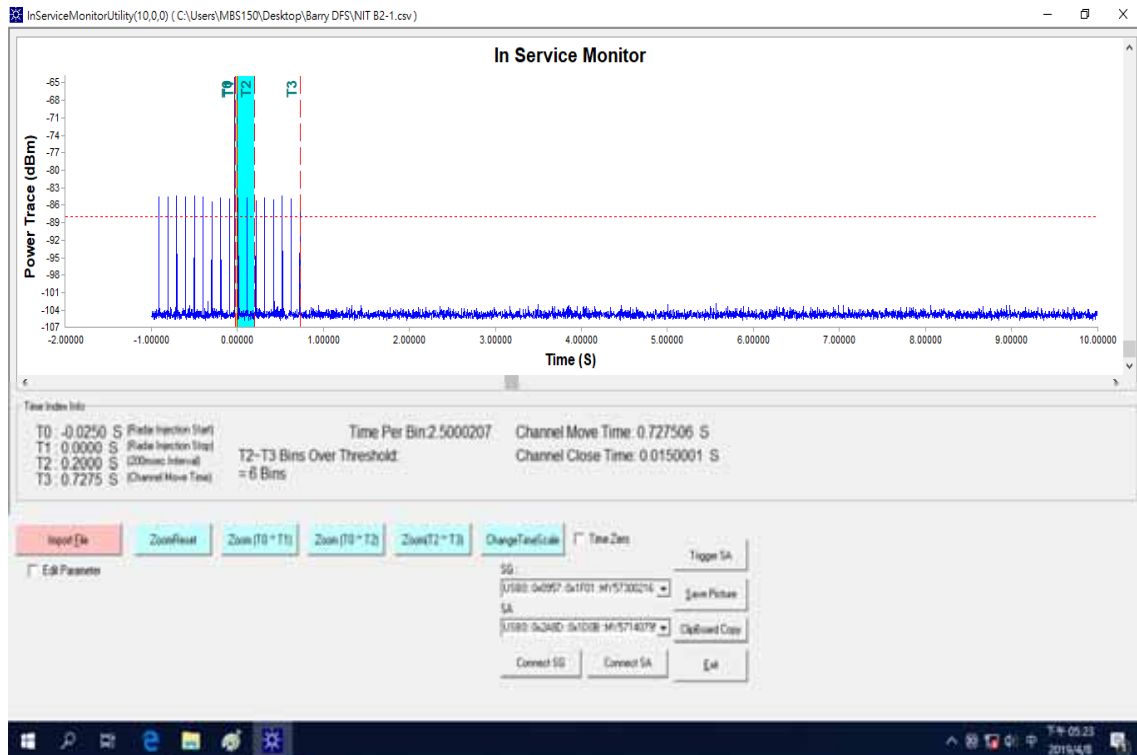
#### Applicability of DFS requirements during normal operation

| Requirement                       | Operational Mode: Client(without radar detection) |        |
|-----------------------------------|---------------------------------------------------|--------|
|                                   | Test Result                                       | Remark |
| DFS Detection Threshold           | Appearance and LCD size are different             | Pass   |
| Channel Closing Transmission Time | Less than 200ms, Refer to next page for plots.    | Pass   |
| Channel Move Time                 | Less than 10s, Refer to next page for plots.      | Pass   |
| U-NII Detection Bandwidth         | Appearance and LCD size are different             | Pass   |

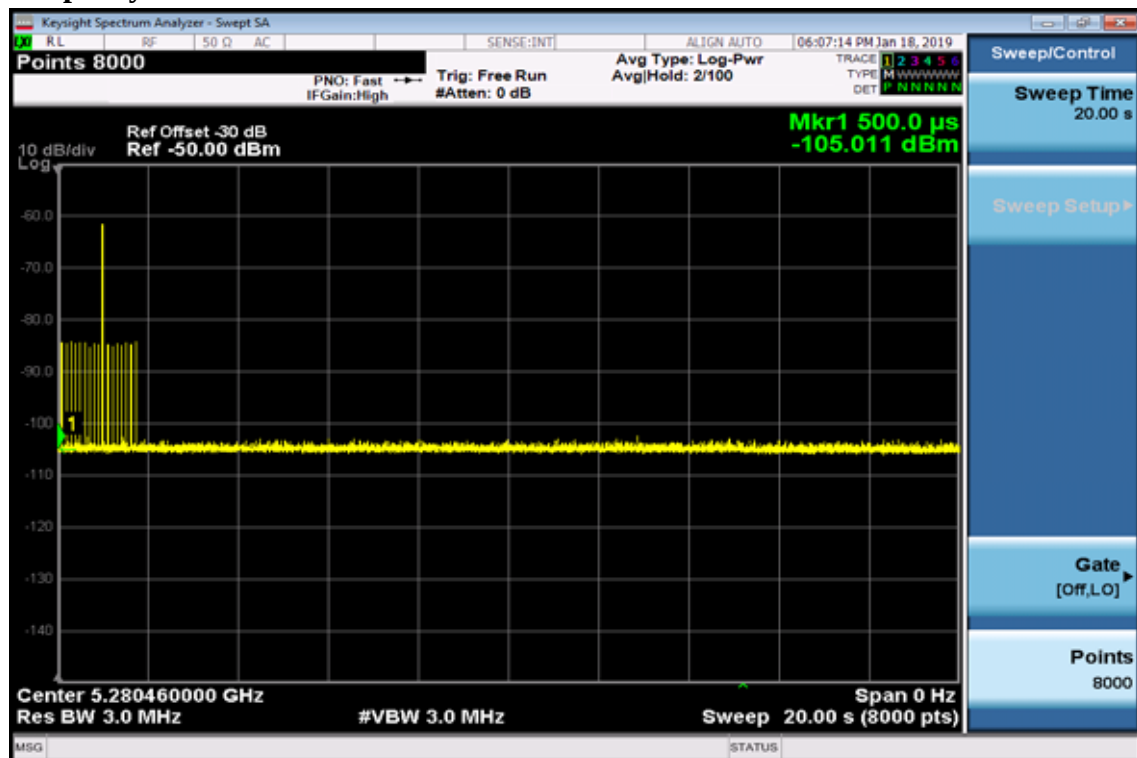
Input Level to Master AP= -64dBm

5250MHz ~ 5350MHz

## Radar Type 1 Channel Move & Closing Transmission Time

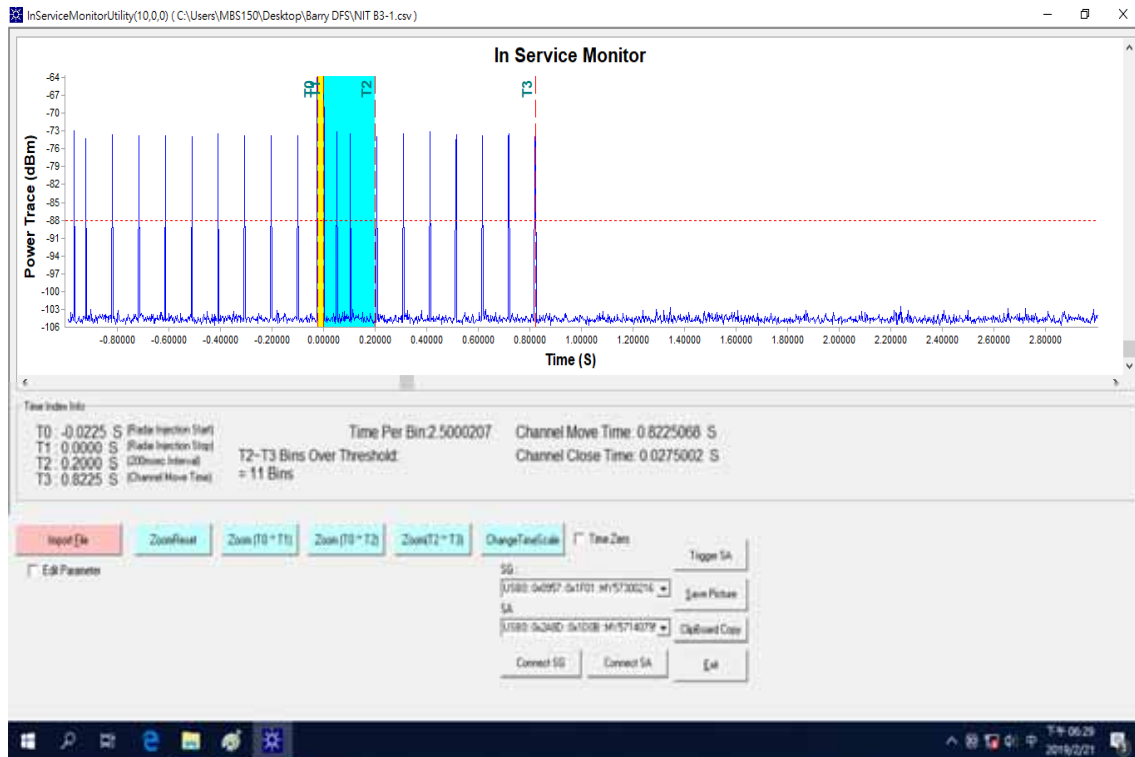


## Non-occupancy Period

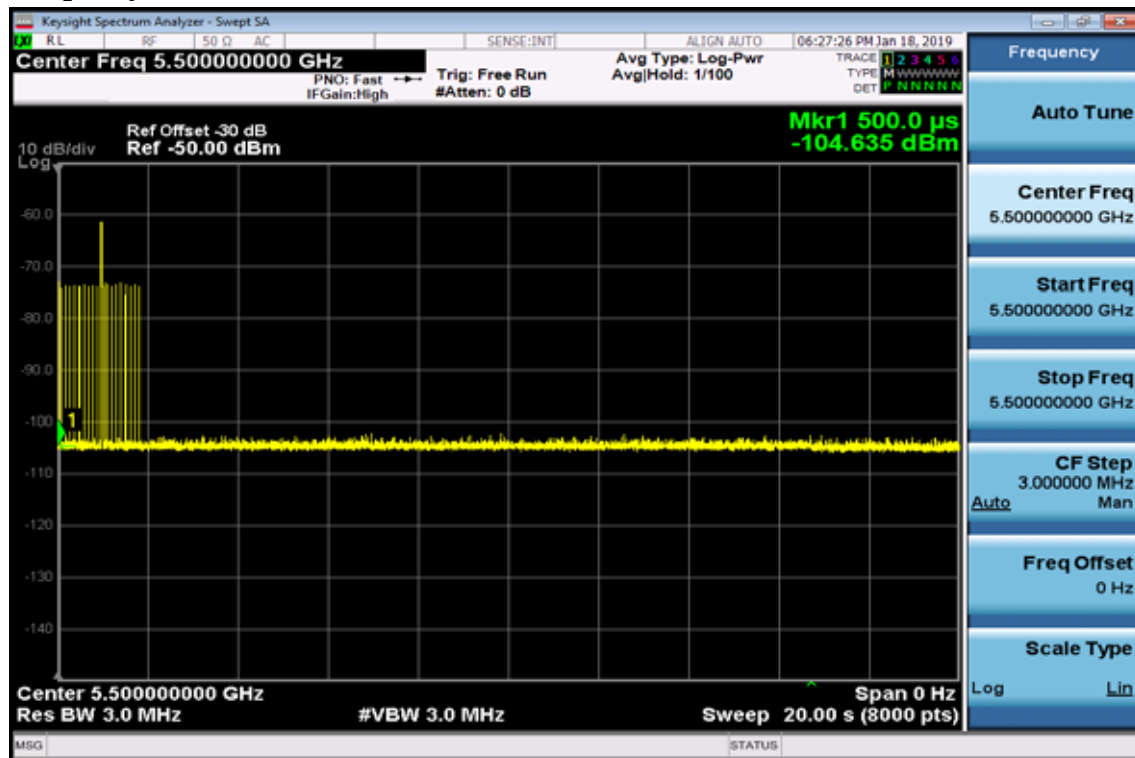


5500MHz ~ 5700MHz

## Radar Type 1 Channel Move & Closing Transmission Time

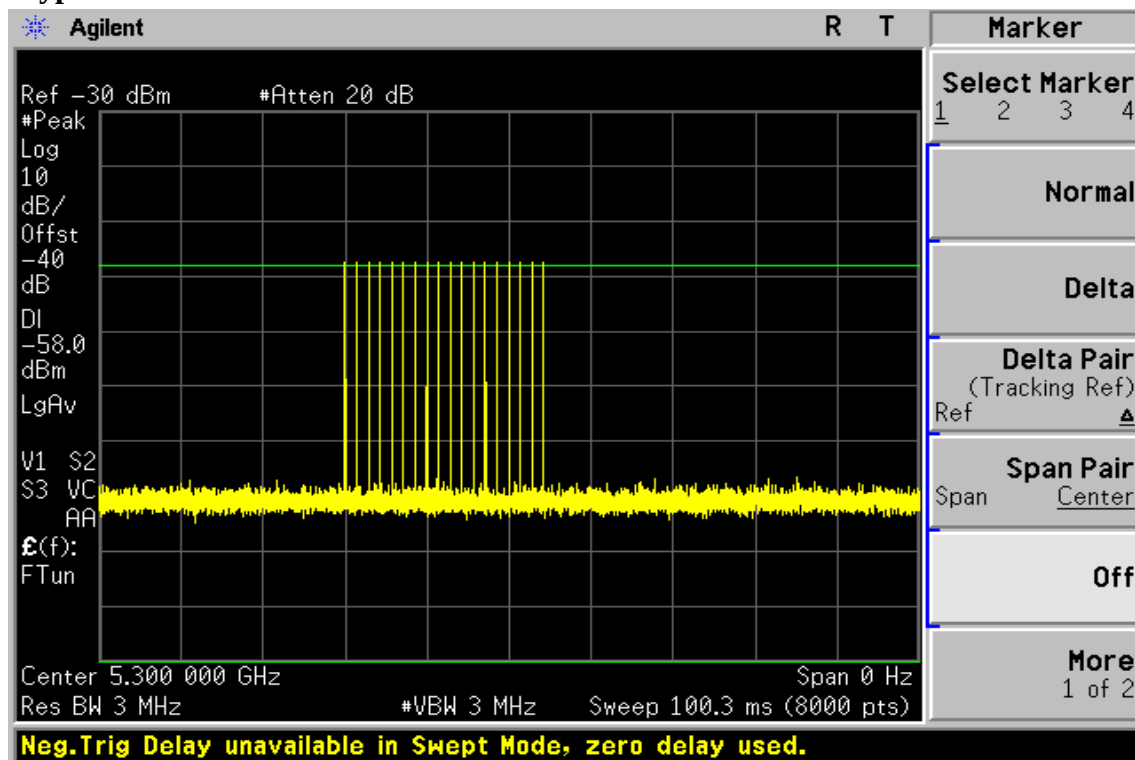


## Non-occupancy Period

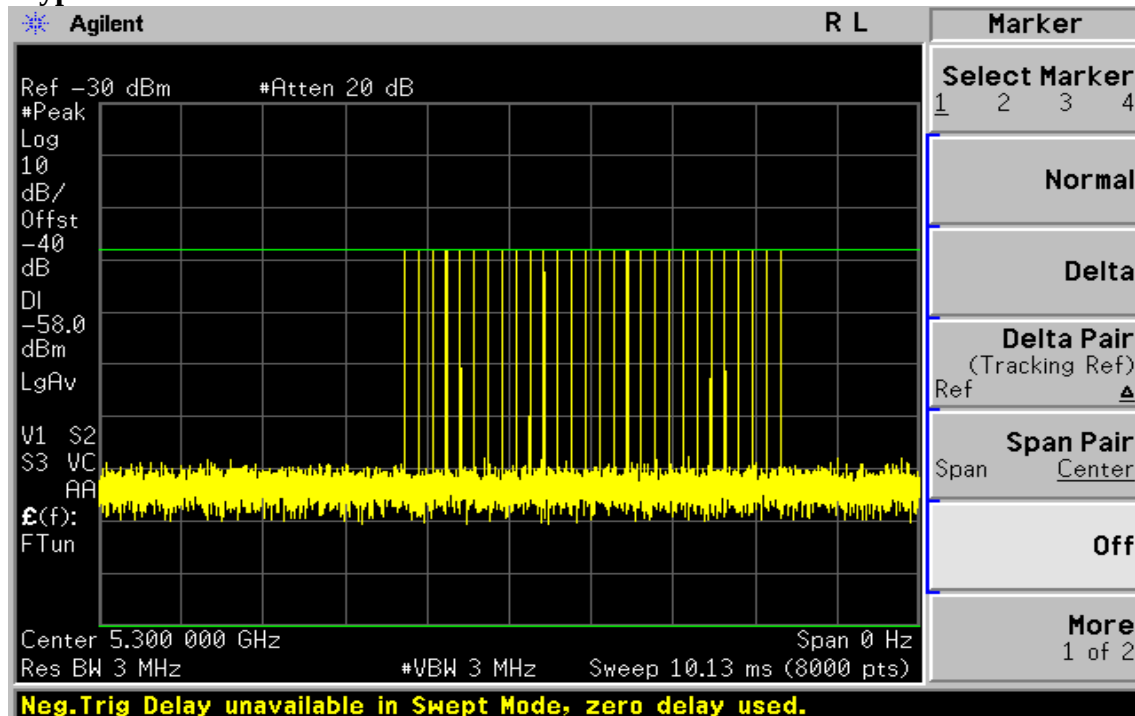


## Calibration plots for each of the required radar waveforms

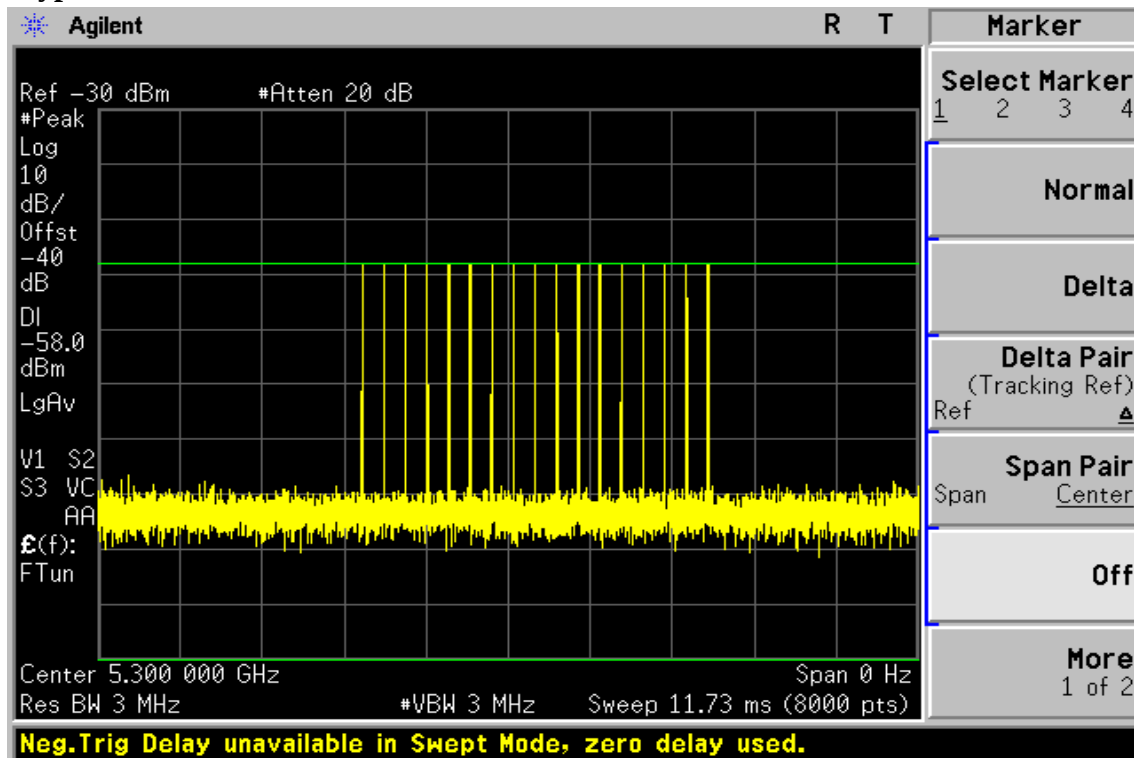
### Radar type 1



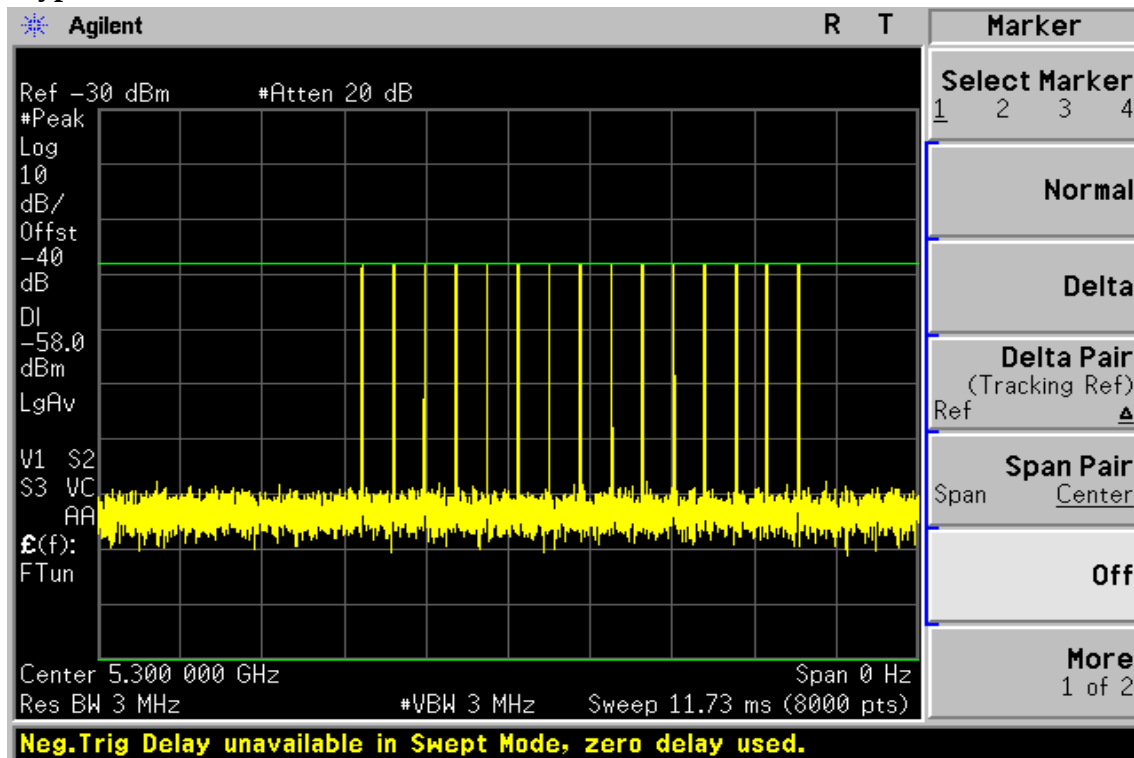
### Radar type 2



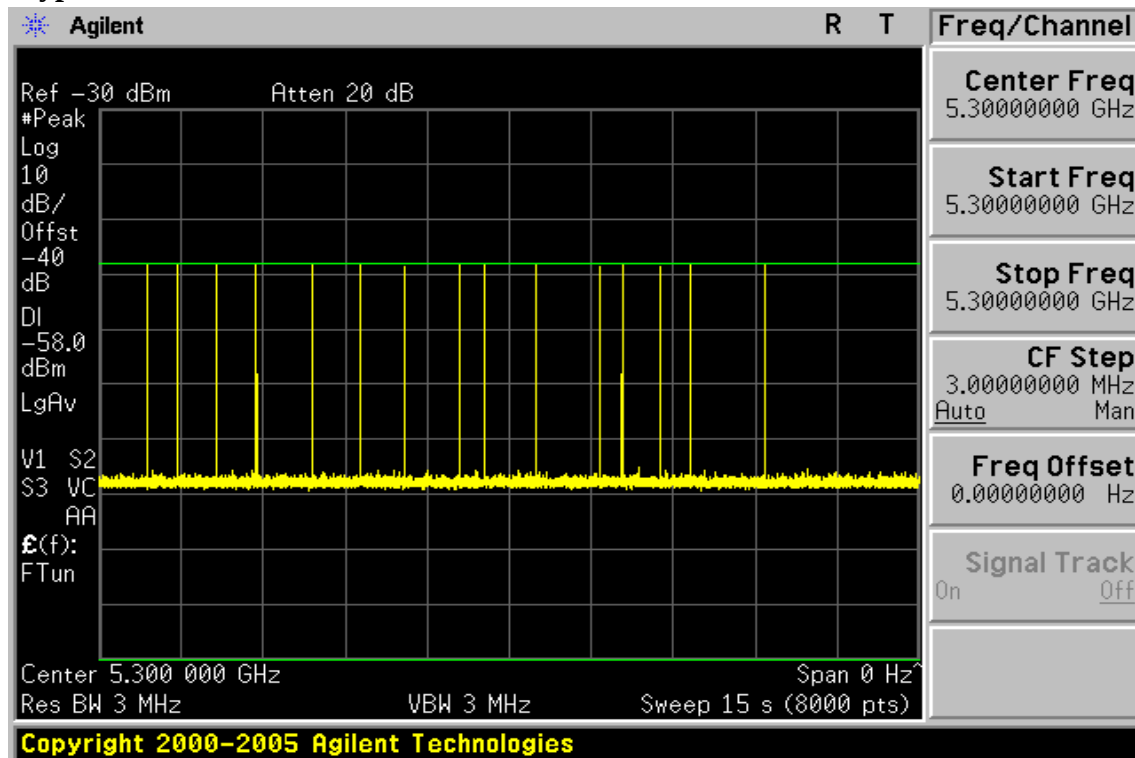
### Radar type 3



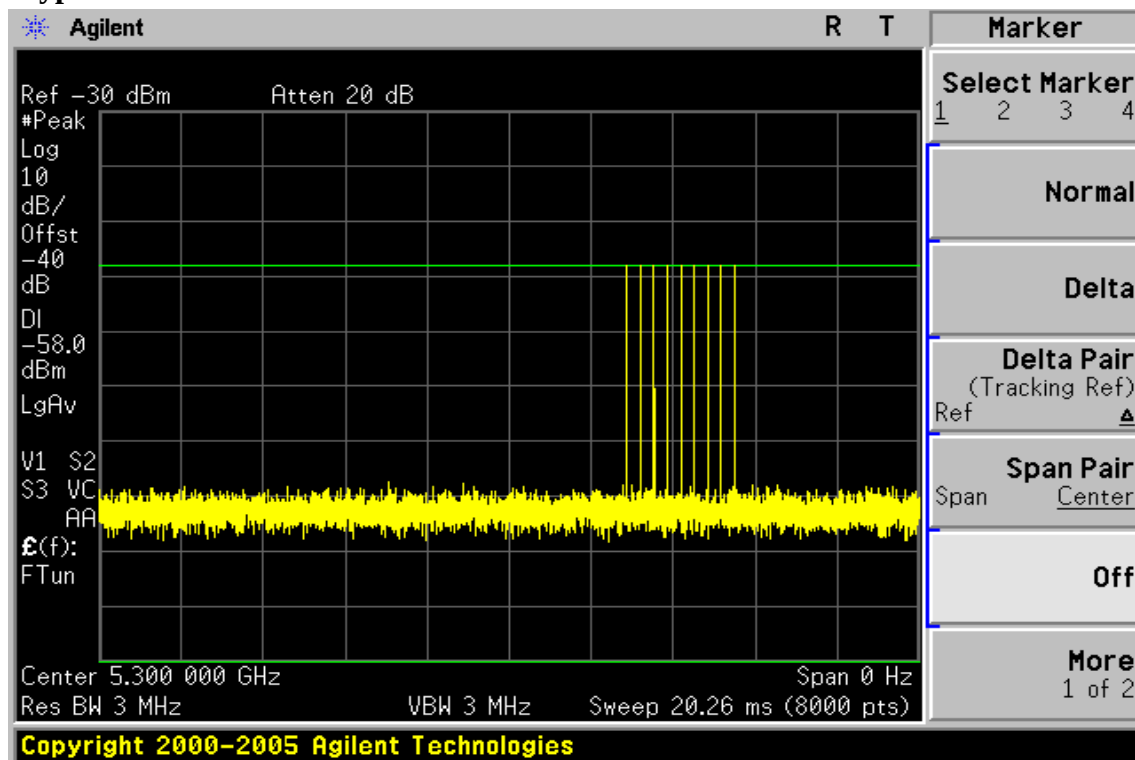
### Radar type 4



## Radar type 5

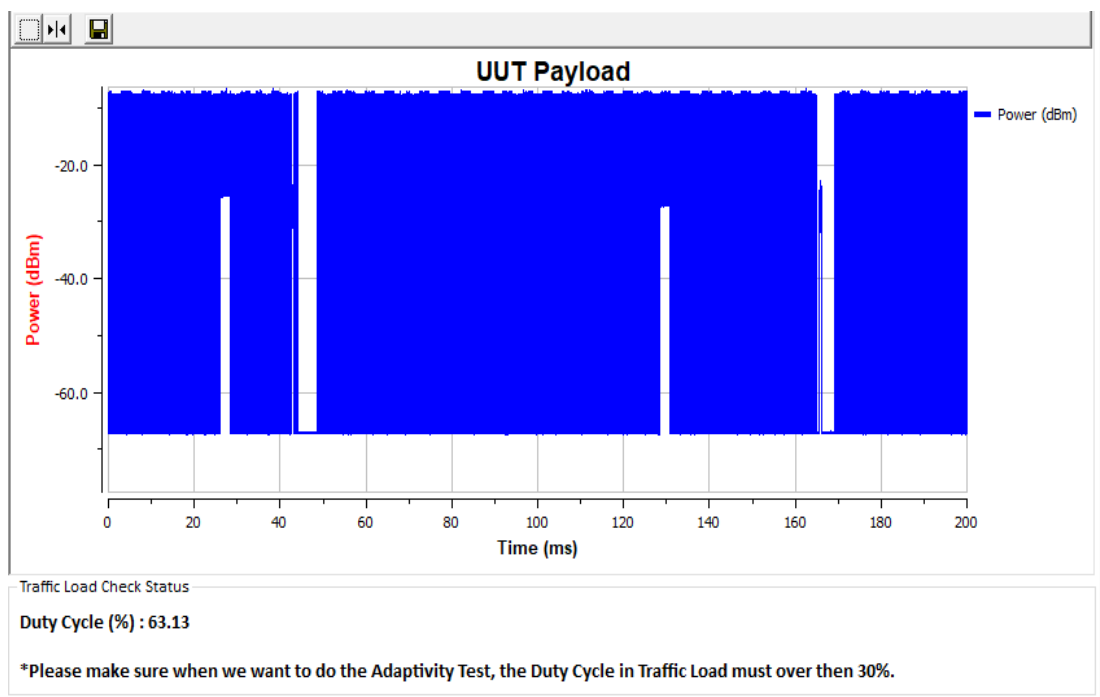


## Radar type 6



## Band 2

### WLAN traffic



## Band 3

### WLAN traffic

