

# TEST REPORT

FCC UNII Test for SM-S721U  
Certification

**APPLICANT**  
SAMSUNG Electronics Co., Ltd.

**REPORT NO.**  
HCT-RF-2407-FC006

**DATE OF ISSUE**  
July 18, 2024

**Tested by**  
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# TEST REPORT

**REPORT NO.**

HCT-RF-2407-FC006

**DATE OF ISSUE**

July 18, 2024

**Additional Model**

SM-S721U1

**Applicant**

**SAMSUNG Electronics Co., Ltd.**

129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

**Product Name**

Mobile Phone

**Model Name**

SM-S721U

**FCC ID**

A3LSMS721U

**Date of Test**

May 20, 2024 ~ July 18, 2024

**FCC Classification**

Unlicensed National Information Infrastructure(NII)

**Test Standard Used**

FCC Rule Part(s): Part 15.407

**Test Results**

PASS

**Location of Test**

☒ Permanent Testing Lab ☐ On Site Testing Lab

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

## REVISION HISTORY

The revision history for this test report is shown in table.

| Revision No. | Date of Issue | Description     |
|--------------|---------------|-----------------|
| 0            | July 18, 2024 | Initial Release |

## Notice

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### Content

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Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

The laboratory is not accredited for the test results marked \*.

Information provided by the applicant is marked \*\*.

Test results provided by external providers are marked \*\*\*.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

When confirmation of authenticity of this test report is required, please contact [www.hct.co.kr](http://www.hct.co.kr)

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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## 1. GENERAL INFORMATION

### EUT DESCRIPTION

|                                    |                                   |                                                                                                    |
|------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Model</b>                       | SM-S721U                          |                                                                                                    |
| <b>Additional Model</b>            | SM-S721U1                         |                                                                                                    |
| <b>EUT Type</b>                    | Mobile Phone                      |                                                                                                    |
| <b>Power Supply</b>                | DC 3.88 V                         |                                                                                                    |
| <b>Modulation Type</b>             | OFDM : 802.11a, 802.11n, 802.11ac |                                                                                                    |
| <b>Frequency Range<br/>(MHz)</b>   | U-NII-1                           | 20 MHz BW : 5180 - 5240<br>40 MHz BW : 5190 - 5230<br>80 MHz BW : 5210<br>160 MHz BW : 5250        |
|                                    | U-NII-2A                          | 20 MHz BW : 5260 - 5320<br>40 MHz BW : 5270 - 5310<br>80 MHz BW : 5290<br>160 MHz BW : 5250        |
|                                    | U-NII-2C                          | 20 MHz BW : 5500 - 5720<br>40 MHz BW : 5510 - 5710<br>80 MHz BW : 5530 - 5690<br>160 MHz BW : 5570 |
|                                    | U-NII-3                           | 20 MHz BW : 5745 - 5825<br>40 MHz BW : 5755 - 5795<br>80 MHz BW : 5775<br>160 MHz BW : 5815        |
|                                    | U-NII-4                           | 20 MHz BW : 5845 - 5885<br>40 MHz BW : 5835 - 5875<br>80 MHz BW : 5855<br>160 MHz BW : 5815        |
| <b>Straddle channel</b>            | Supported                         |                                                                                                    |
| <b>TDWR Band</b>                   | Supported                         |                                                                                                    |
| <b>Dynamic Frequency Selection</b> | Slave without radar detection     |                                                                                                    |
| <b>Antenna Specification</b>       | Type: Metal                       |                                                                                                    |
| <b>Serial number</b>               | Conducted : R3CX40SW86P           |                                                                                                    |
|                                    | Radiated : 67d50971db197ece       |                                                                                                    |

## ANTENNA CONFIGURATIONS

### 1. Antenna configuration

| Configurations | SISO  |       | MIMO |     |
|----------------|-------|-------|------|-----|
|                | Ant.1 | Ant.2 | CDD  | SDM |
| 802.11a        | O     | O     | O    | X   |
| 802.11n        | O     | O     | O    | O   |
| 802.11ac       | O     | O     | O    | O   |

#### Note:

- (1) O = Support, X = Not Support
- (2) SISO = Single Input Single Output
- (3) SDM = Spatial Diversity Multiplexing
- (4) CDD = Cyclic Delay Diversity

2.This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4 GHz and 5 GHz or 6GHz Bands simultaneously on each antenna.

| RSDB Scenario                                          | 2.4 GHz WiFi Ant.1 | 2.4 GHz WiFi Ant.2 | 5 GHz WiFi Ant.1 | 5 GHz WiFi Ant.2 | 6 GHz WiFi Ant.1 | 6 GHz WiFi Ant.2 | BT Ant.1 | BT Ant.2 | Test Case |
|--------------------------------------------------------|--------------------|--------------------|------------------|------------------|------------------|------------------|----------|----------|-----------|
| Dual Bluetooth + 5 GHz WiFi MIMO                       |                    |                    | on               | on               |                  |                  | on       | on       | Scenario1 |
| Dual Bluetooth + 6 GHz WiFi MIMO                       |                    |                    |                  |                  | on               | on               | on       | on       |           |
| 2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO                    | on                 | on                 | on               | on               |                  |                  |          |          | Scenario2 |
| 2.4 GHz WiFi MIMO + 6 GHz WiFi MIMO                    | on                 | on                 |                  |                  | on               | on               |          |          |           |
| Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO |                    | on                 | on               | on               |                  |                  | on       |          | Scenario3 |
| Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO |                    | on                 |                  |                  | on               | on               | on       |          |           |

### 3. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) e) (iii), f) ii)

$$\text{Directional Gain(CDD)} = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left( \sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$$

$$\text{Directional gain(SDM)} = G_{\max} + 10 \cdot \text{LOG}(N_{ANT} / N_{SS})$$

| Band    | Ant Gain (dBi) |       | N <sub>ANT</sub> / N <sub>SS</sub> | Directional Gain (dBi) |       |
|---------|----------------|-------|------------------------------------|------------------------|-------|
|         | ANT1           | ANT2  |                                    | CDD                    | SDM   |
| UNII 1  | -2.20          | -2.34 | 2 / 2                              | 0.74                   | -1.84 |
| UNII 2A | -1.84          | -3.56 |                                    | 0.35                   | -1.84 |
| UNII 2C | -2.48          | -3.70 |                                    | -0.06                  | -2.48 |
| UNII 3  | -2.65          | -3.88 |                                    | -0.23                  | -2.65 |
| UNII 4  | -2.35          | -4.08 |                                    | -0.16                  | -2.35 |

#### Note

According to Ansi C63.10-2013 section 14.4.3, the directional gain is calculated using the formula, where GN is the gain of the nth antenna and NANT is the total number of antennas used.

$$\text{Directional gain(CDD)} = 10 \cdot \log \left( \left( 10^{(\text{ANT1 Gain}/20)} + 10^{(\text{ANT2 Gain}/20)} \right)^2 / 2 \right) \text{ dBi}$$

$$\text{Directional gain(SDM)} = G_{\max} + 10 \cdot \text{LOG}(N_{ANT} / N_{SS})$$

#### Sample Calculation (Conducted Power, MIMO):

Ex) Ant 1 : 11.58 dBm Ant 2 : 12.08 dBm

$$\text{Ant1} + \text{Ant 2} = \text{MIMO}$$

$$(11.58 \text{ dBm} + 12.08 \text{ dBm}) = (14.387 \text{ mW} + 16.143 \text{ mW}) = 30.53 \text{ mW} = 14.88 \text{ dBm}$$

#### Sample Calculation (E.I.R.P & E.I.R.P Spectral Density, MIMO):

Ex) ANT1 : 15.35 dBm , ANT2 : 15.12 dBm, Directional Gain : 3 dBi

$$\text{Conducted Power} = (15.35 \text{ dBm} + 15.12 \text{ dBm}) = (34.276 \text{ mW} + 32.508 \text{ mW}) = 66.784 \text{ mW} = 18.25 \text{ dBm}$$

$$\text{E.I.R.P} = 18.25 \text{ dBm} + 3 \text{ dBi} = 21.25 \text{ dBm}$$

## 2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

| Band                             | Mode              | MIMO_CDD(Ant.1+ Ant.2) |       |             |       |                     |       |
|----------------------------------|-------------------|------------------------|-------|-------------|-------|---------------------|-------|
|                                  |                   | Ant.1 Power            |       | Ant.2 Power |       | Ant.1 + Ant.2 Power |       |
|                                  |                   | (dBm)                  | (W)   | (dBm)       | (W)   | (dBm)               | (W)   |
| UNII1                            | 802.11a           | 16.73                  | 0.047 | 17.18       | 0.052 | 19.97               | 0.099 |
|                                  | 802.11n (HT20)    | 16.82                  | 0.048 | 17.12       | 0.052 | 19.98               | 0.100 |
|                                  | 802.11n (HT40)    | 15.72                  | 0.037 | 16.13       | 0.041 | 18.94               | 0.078 |
|                                  | 802.11ac (VHT20)  | 16.71                  | 0.047 | 17.14       | 0.052 | 19.94               | 0.099 |
|                                  | 802.11ac (VHT40)  | 15.64                  | 0.037 | 16.10       | 0.041 | 18.89               | 0.077 |
|                                  | 802.11ac (VHT80)  | 14.80                  | 0.030 | 15.13       | 0.033 | 17.98               | 0.063 |
| UNII2A                           | 802.11a           | 16.82                  | 0.048 | 17.02       | 0.050 | 19.93               | 0.098 |
|                                  | 802.11n (HT20)    | 16.74                  | 0.047 | 17.16       | 0.052 | 19.97               | 0.099 |
|                                  | 802.11n (HT40)    | 16.04                  | 0.040 | 16.06       | 0.040 | 19.06               | 0.081 |
|                                  | 802.11ac (VHT20)  | 16.73                  | 0.047 | 17.05       | 0.051 | 19.90               | 0.098 |
|                                  | 802.11ac (VHT40)  | 15.66                  | 0.037 | 16.13       | 0.041 | 18.91               | 0.078 |
|                                  | 802.11ac (VHT80)  | 15.22                  | 0.033 | 14.99       | 0.032 | 18.12               | 0.065 |
| UNII2C                           | 802.11a           | 17.36                  | 0.054 | 17.25       | 0.053 | 20.32               | 0.108 |
|                                  | 802.11n (HT20)    | 17.39                  | 0.055 | 17.32       | 0.054 | 20.37               | 0.109 |
|                                  | 802.11n (HT40)    | 16.44                  | 0.044 | 16.38       | 0.043 | 19.42               | 0.088 |
|                                  | 802.11ac (VHT20)  | 17.28                  | 0.053 | 17.32       | 0.054 | 20.31               | 0.107 |
|                                  | 802.11ac (VHT40)  | 16.39                  | 0.044 | 16.32       | 0.043 | 19.37               | 0.086 |
|                                  | 802.11ac (VHT80)  | 15.53                  | 0.036 | 15.40       | 0.035 | 18.48               | 0.070 |
| UNII3                            | 802.11a           | 17.38                  | 0.055 | 17.30       | 0.054 | 20.35               | 0.108 |
|                                  | 802.11n (HT20)    | 17.44                  | 0.055 | 17.39       | 0.055 | 20.43               | 0.110 |
|                                  | 802.11n (HT40)    | 16.34                  | 0.043 | 16.20       | 0.042 | 19.28               | 0.085 |
|                                  | 802.11ac (VHT20)  | 17.38                  | 0.055 | 17.31       | 0.054 | 20.36               | 0.109 |
|                                  | 802.11ac (VHT40)  | 16.14                  | 0.041 | 16.35       | 0.043 | 19.26               | 0.084 |
|                                  | 802.11ac (VHT80)  | 15.34                  | 0.034 | 15.24       | 0.033 | 18.30               | 0.068 |
| UNII4<br>(Conducted<br>For inf.) | 802.11a           | 16.73                  | 0.047 | 17.01       | 0.050 | 19.88               | 0.097 |
|                                  | 802.11n (HT20)    | 16.90                  | 0.049 | 17.07       | 0.051 | 20.00               | 0.100 |
|                                  | 802.11n (HT40)    | 16.59                  | 0.046 | 16.20       | 0.042 | 19.41               | 0.087 |
|                                  | 802.11ac (VHT20)  | 16.86                  | 0.049 | 17.09       | 0.051 | 19.99               | 0.100 |
|                                  | 802.11ac (VHT40)  | 16.59                  | 0.046 | 16.17       | 0.041 | 19.40               | 0.087 |
|                                  | 802.11ac (VHT80)  | 15.04                  | 0.032 | 15.40       | 0.035 | 18.23               | 0.067 |
| UNII1-2A                         | 802.11ac (VHT160) | 14.48                  | 0.028 | 14.92       | 0.031 | 17.72               | 0.059 |
| UNII2C                           | 802.11ac (VHT160) | 14.94                  | 0.031 | 14.94       | 0.031 | 17.95               | 0.062 |
| UNII3&4                          | 802.11ac (VHT160) | 15.40                  | 0.035 | 15.28       | 0.034 | 18.35               | 0.068 |

| Band               | Mode              | MIMO_CDD(Ant.1+ Ant.2) (EIRP) |                  |               |       |             |                  |               |       |                       |                  |               |       |
|--------------------|-------------------|-------------------------------|------------------|---------------|-------|-------------|------------------|---------------|-------|-----------------------|------------------|---------------|-------|
|                    |                   | Ant.1 Power                   |                  |               |       | Ant.2 Power |                  |               |       | (Ant.1 + Ant.2) Power |                  |               |       |
|                    |                   | (dBm)                         | ANT<br>Gain(dBi) | EIRP<br>(dBm) | (W)   | (dBm)       | ANT<br>Gain(dBi) | EIRP<br>(dBm) | (W)   | (dBm)                 | ANT<br>Gain(dBi) | EIRP<br>(dBm) | (W)   |
| UNII4<br>(E.I.R.P) | 802.11a           | 16.73                         | -2.35            | 14.38         | 0.027 | 17.01       | -4.08            | 12.93         | 0.020 | 19.88                 | -0.16            | 19.72         | 0.094 |
|                    | 802.11n (HT20)    | 16.90                         | -2.35            | 14.55         | 0.029 | 17.07       | -4.08            | 12.99         | 0.020 | 20.00                 | -0.16            | 19.84         | 0.096 |
|                    | 802.11n (HT40)    | 16.59                         | -2.35            | 14.24         | 0.027 | 16.20       | -4.08            | 12.12         | 0.016 | 19.41                 | -0.16            | 19.25         | 0.084 |
|                    | 802.11ac (VHT20)  | 16.86                         | -2.35            | 14.51         | 0.028 | 17.09       | -4.08            | 13.01         | 0.020 | 19.99                 | -0.16            | 19.83         | 0.096 |
|                    | 802.11ac (VHT40)  | 16.59                         | -2.35            | 14.24         | 0.027 | 16.17       | -4.08            | 12.09         | 0.016 | 19.40                 | -0.16            | 19.24         | 0.084 |
|                    | 802.11ac (VHT80)  | 15.04                         | -2.35            | 12.69         | 0.019 | 15.40       | -4.08            | 11.32         | 0.014 | 18.23                 | -0.16            | 18.07         | 0.064 |
|                    | 802.11ac (VHT160) | 15.40                         | -2.35            | 13.05         | 0.020 | 15.28       | -4.08            | 11.20         | 0.013 | 18.35                 | -0.16            | 18.19         | 0.066 |

### 3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated December 14, 2017 entitled “Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E” and ANSI C63.10 (Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’ were used in the measurement. Additionally, for U-NII-4 band, use the following measurement procedure KDB 291074 D02 EMC Measurement v01

#### EUT CONFIGURATION

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

#### EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

#### GENERAL TEST PROCEDURES

##### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average Measurement Type or modes.

##### Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m 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 according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

## DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4.

(Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated March 11, 2024 (Registration Number: KR0032).

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak Measurement Typeors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

## 6. AntENNA REQUIREMENTS

According to FCC 47 CFR § 15.203, § 15.407:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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.”

- (1) The antennas of this E.U.T are permanently attached.
- (2) The E.U.T Complies with the requirement of § 15.203, § 15.407

## 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of  $k=2$  to indicate a 95 % level of confidence.

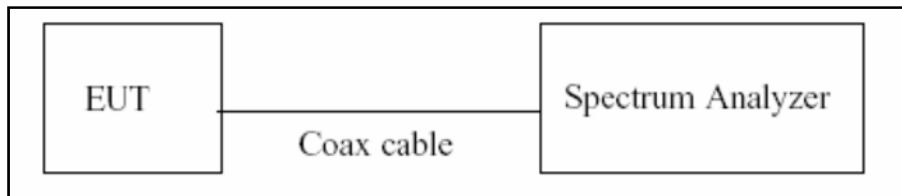
The measurement data shown herein meets or exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Parameter                                | Expanded Uncertainty (dB)                   |
|------------------------------------------|---------------------------------------------|
| Conducted Disturbance (150 kHz ~ 30 MHz) | 1.98 ( Confidence level about 95 %, $k=2$ ) |
| Radiated Disturbance (9 kHz ~ 30 MHz)    | 4.36 ( Confidence level about 95 %, $k=2$ ) |
| Radiated Disturbance (30 MHz ~ 1 GHz)    | 5.70 ( Confidence level about 95 %, $k=2$ ) |
| Radiated Disturbance (1 GHz ~ 18 GHz)    | 5.52 ( Confidence level about 95 %, $k=2$ ) |
| Radiated Disturbance (18 GHz ~ 40 GHz)   | 5.66 ( Confidence level about 95 %, $k=2$ ) |
| Radiated Disturbance (Above 40 GHz)      | 5.58 ( Confidence level about 95 %, $k=2$ ) |

## 8. DESCRIPTION OF TESTS

### 8.1. Duty Cycle

#### Test Configuration



#### Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure B.2 in KDB 789033 D02 v02r01.

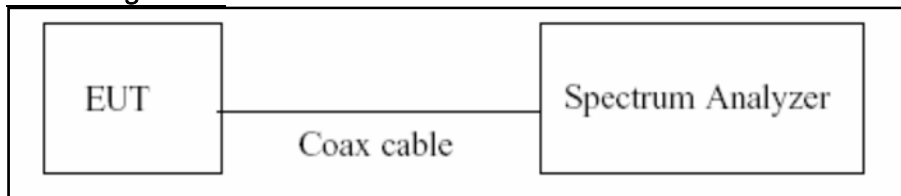
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Measurement Type or = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure  $T_{\text{total}}$  and  $T_{\text{on}}$
8. Calculate Duty Cycle =  $T_{\text{on}} / T_{\text{total}}$  and Duty Cycle Factor =  $10\log(1/\text{Duty Cycle})$

## 8.2. 6 dB Bandwidth & 26 dB Bandwidth

### Limit

Within the 5.725-5.85 GHz(NII-3) & 5.85-5.925 GHz(NII-4) band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

### Test Configuration



### Test Procedure(26 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.1 in KDB 789033 D02 v02r01.

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

### Test Procedure (6 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.2 in KDB 789033 D02 v02r01.

1. RBW = 100 kHz
2. VBW  $\geq 3 \times$  RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### Note:

1. We tested X dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.
2. DFS test channels should be defined. So, we performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.
3. The 26 dB bandwidth is used to determine the conducted power limits.

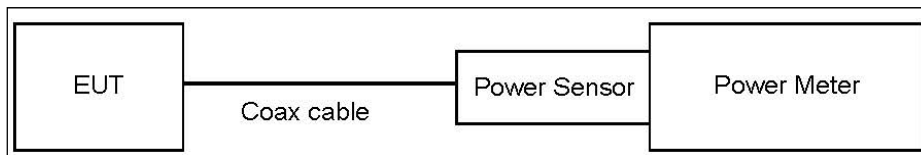
### 8.3. Output Power Measurement

#### Limit

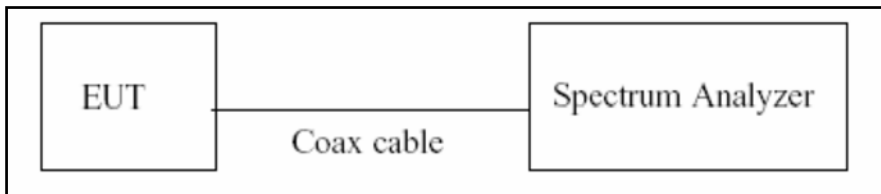
| Band        | Limit                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------|
| UNII 1      | - Master : Not exceed 1 W(=30 dBm)<br>- Slave : Not exceed 250 mW(=23.98 dBm)                                    |
| UNII 2A, 2C | Not exceed the lesser of 250 mW or 11 dBm + 10 log B,<br>(where B is the 26 dB emission bandwidth in megahertz.) |
| UNII 3      | Not exceed 1 W(=30 dBm)                                                                                          |
| UNII 4      | EIRP 30 dBm                                                                                                      |

#### Test Configuration

##### Power Meter



##### Spectrum Analyzer(Only Straddle Channel)



#### Test Procedure(Power Meter)

We tested according to Procedure E.3.a in KDB 789033 D02 v02r01.

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

**Test Procedure(Spectrum Analyzer)**

The transmitter output is connected to the Spectrum Analyzer.

We use the spectrum analyzer's integrated band power measurement function.

We tested according to Procedure E.2.d) in KDB 789033 D02 v02r01.

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW  $\geq$  3 MHz.
5. Number of points in sweep  $\geq 2 \times \text{span}/\text{RBW}$ .
6. Sweep time = auto.
7. Measurement Typeor = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add  $10\log(1/x)$ , where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

**Sample Calculation**

Total Power(dBm) = Measured Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

**Note**

1. Spectrum Measured Levels are not plot data.

The power results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Actual value of loss for the attenuator and cable combination is below table.

| Band     | Loss(dB) |
|----------|----------|
| UNII 1   | 11.97    |
| UNII 2A  | 11.97    |
| UNII 2C  | 11.97    |
| UNII 3&4 | 11.97    |

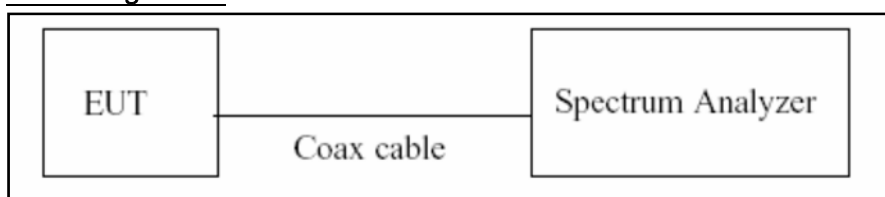
(Actual value of loss for the attenuator and cable combination)

## 8.4. Power Spectral Density

### Limit

| Band        | Limit           |
|-------------|-----------------|
| UNII 1      | 11 dBm/MHz      |
| UNII 2A, 2C | 11 dBm/MHz      |
| UNII 3      | 30 dBm/500 kHz  |
| UNII 4      | EIRP 14 dBm/MHz |

### Test Configuration



### Test Procedure

We tested according to Procedure F in KDB 789033 D02 v02r01.

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)  
→ For portion within the NII-3 be used RBW 510kHz
3. VBW  $\geq$  3 MHz
4. Number of points in sweep  $\geq$  2 x span/RBW.
5. Sweep time = auto.
6. Measurement Typeor = RMS(i.e., power averaging), if available. Otherwise, use sample Measurement Typeor mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add  $10 \log(1/x)$ , where x is the duty cycle, to the peak of the spectrum.

**Sample Calculation**

Total PSD(dBm) = Measured Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

**Note**

1. Spectrum Measured Levels are not plot data.

The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Actual value of loss for the attenuator and cable combination is below table.

| Band     | Loss(dB) |
|----------|----------|
| UNII 1   | 11.97    |
| UNII 2A  | 11.97    |
| UNII 2C  | 11.97    |
| UNII 3&4 | 11.97    |

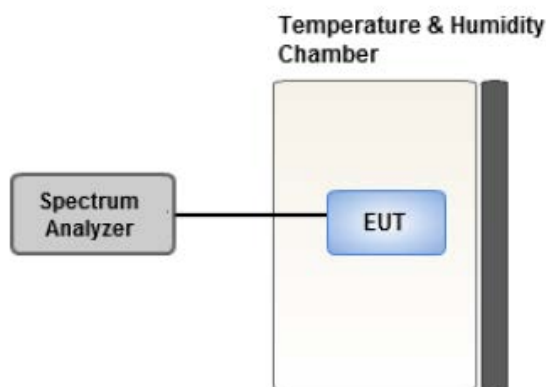
(Actual value of loss for the attenuator and cable combination)

## 8.5. Frequency Stability

### Limit

Maintained within the band

### Test Configuration



### Test Procedure

1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C.
2. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.
3. The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

## 8.6. AC Power line Conducted Emissions

### Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN).

| Frequency Range (MHz) | Limits (dB $\mu$ V)     |                         |
|-----------------------|-------------------------|-------------------------|
|                       | Quasi-peak              | Average                 |
| 0.15 to 0.50          | 66 to 56 <sup>(a)</sup> | 56 to 46 <sup>(a)</sup> |
| 0.50 to 5             | 56                      | 46                      |
| 5 to 30               | 60                      | 50                      |

<sup>(a)</sup>Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

### Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Measurement Typeors : Quasi Peak and Average Measurement Typeor.

### Sample Calculation

Quasi-peak(Final Result) = Measured Value + Correction Factor

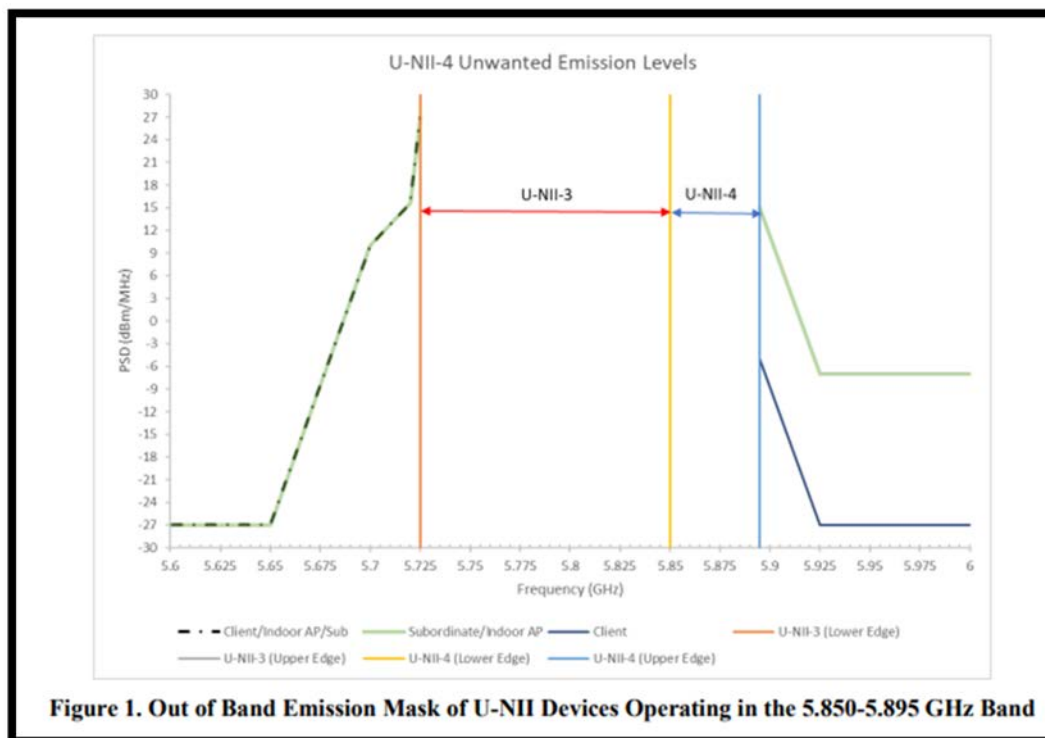
## 8.7. Radiated Test

### Limit

1. UNII 1: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.
2. UNII 2A, 2C: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.
3. UNII 3: All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
4. UNII 4: [Low Channel O.O.B.E] measured with a Peak detector  
For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of  $-27$  dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

[High Channel O.O.B.E] measured with an RMS detector

For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of  $-5$  dBm/MHz and shall decrease linearly to an e.i.r.p. of  $-27$  dBm/MHz at or above 5.925 GHz.



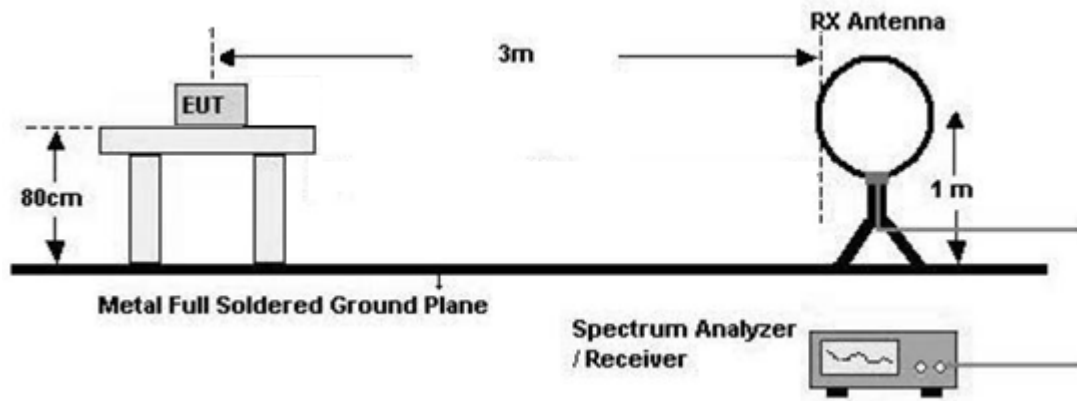
**Figure 1. Out of Band Emission Mask of U-NII Devices Operating in the 5.850-5.895 GHz Band**

5. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

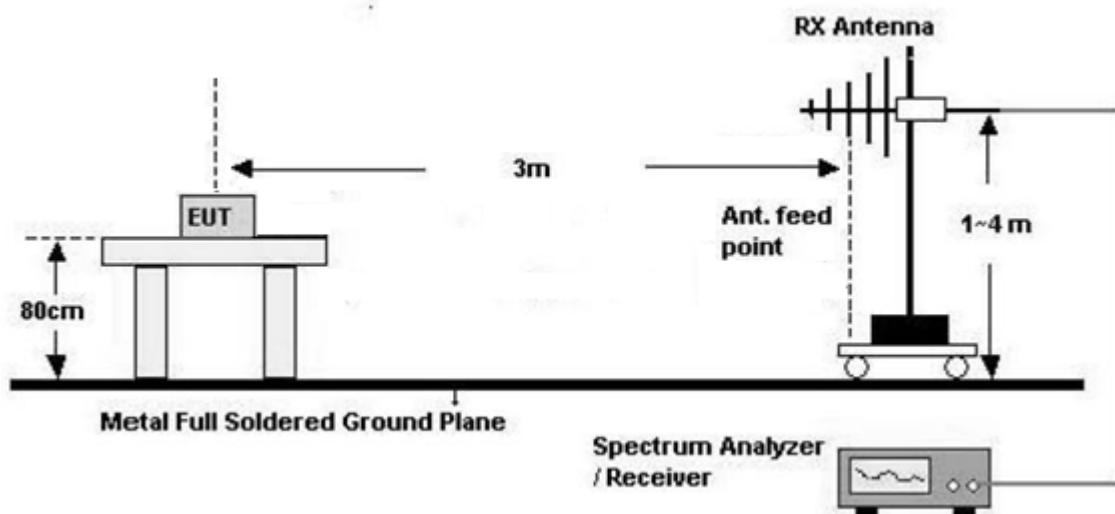
| Frequency (MHz) | Field Strength ( $\mu\text{V}/\text{m}$ ) | Measurement Distance (m) |
|-----------------|-------------------------------------------|--------------------------|
| 0.009 – 0.490   | $2400/F(\text{kHz})$                      | 300                      |
| 0.490 – 1.705   | $24000/F(\text{kHz})$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

## Test Configuration

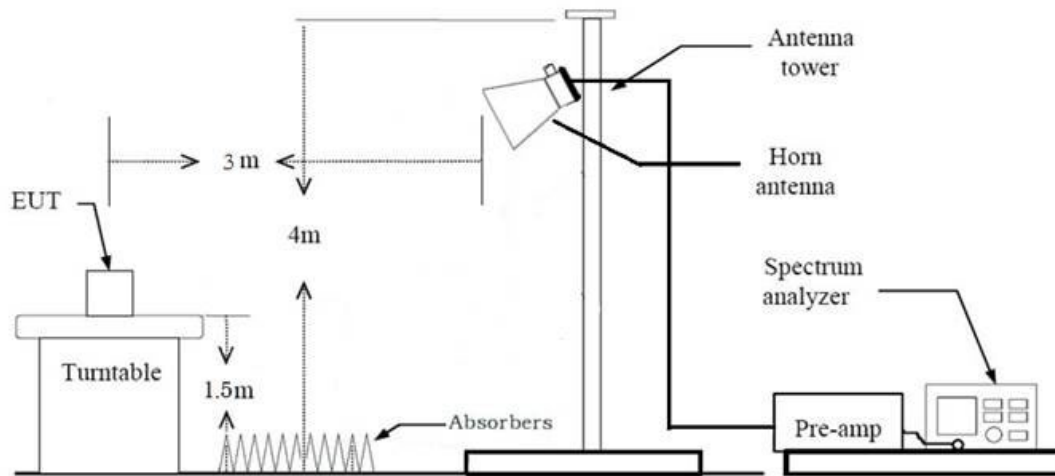
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



## Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. .We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) =  $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$   
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) =  $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$   
Measurement Distance : 3 m
8. Spectrum Setting
  - Frequency Range = 9 kHz ~ 30 MHz
  - Detector = Peak
  - Trace = Max Hold
  - RBW = 9 kHz
  - VBW  $\geq 3 \times$  RBW
9. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

**KDB 414788 OFS and Chamber Correlation Justification**

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

**Test Procedure of Radiated spurious emissions(Below 1 GHz)**

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

**6. Spectrum Setting****(1) Measurement Type(Peak):**

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Peak
- Trace = Max Hold
- RBW = 100 kHz
- VBW  $\geq 3 \times$  RBW

**(2) Measurement Type(Quasi-peak):**

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW = 120 kHz

※In general, (1) is used mainly

**7.Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L)**

8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

**Test Procedure of Radiated spurious emissions (Above 1 GHz)**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type (Peak, G.5 in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW  $\geq$  3 MHz
- Detector = Peak
- Sweep Time = auto
- Trace mode = Max Hold
- Allow sweeps to continue until the trace stabilizes.

Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately  $1/x$ , where  $x$  is the duty cycle.

(2) Measurement Type (Average, G.6.d in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW(Duty cycle  $\geq$  98 percent) =  $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) =  $VBW \geq 1/T$ , where  $T$  is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $x$  is the duty cycle.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor
10. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency

11. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)
12. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G)  
+ Distance Factor(D.F)

### **Test Procedure of Radiated Restricted Band Edge**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.

#### **8. Spectrum Setting**

##### **(1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):**

- RBW = 1 MHz
  - VBW  $\geq$  3 MHz
  - Detector = Peak
  - Sweep Time = auto
  - Trace mode = Max Hold
  - Allow sweeps to continue until the trace stabilizes.
- Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately  $1/x$ , where x is the duty cycle.

##### **(2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):**

- RBW = 1 MHz
- VBW(Duty cycle  $\geq$  98 percent) =  $\text{VBW} \leq \text{RBW}/100$  (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) =  $\text{VBW} \geq 1/T$ , where T is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where x is the duty cycle.

## 9. Measured Frequency Range :

- 4 500 MHz ~ 5 150 MHz
- 5 350 MHz ~ 5 460 MHz
- 5 460 MHz ~ 5 470 MHz
- (75 MHz or more below the 5 725 MHz) ~ 5 725 MHz
- 5 850 MHz ~ (75 MHz or more above the 5 850 MHz)

10. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)

## 11. Total

## (1) Measurement(Peak)

= Measured Value(Peak)

## (2) Measurement(Avg)

= Measured Value (Avg)

- We apply to the offset in the range 1 GHz - 18 GHz.
- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)  
– Amp. Gain(A.G) + Attenuator (ATT)

**The actual setting value of VBW**

| Mode             | Worst Data rate<br>(Mbps) | Duty Cycle | Duty Cycle<br>Factor<br>(dB) | The actual<br>setting<br>value of VBW<br>(Hz) |
|------------------|---------------------------|------------|------------------------------|-----------------------------------------------|
| 802.11a          | 6                         | 0.937      | 0.284                        | 1 000                                         |
| 802.11n(HT20)    | MCS0                      | 0.925      | 0.338                        | 1 000                                         |
| 802.11n(HT40)    | MCS0                      | 0.864      | 0.637                        | 3 000                                         |
| 802.11ac(VHT20)  | MCS0                      | 0.926      | 0.334                        | 1 000                                         |
| 802.11ac(VHT40)  | MCS0                      | 0.863      | 0.641                        | 3 000                                         |
| 802.11ac(VHT80)  | MCS0                      | 0.760      | 1.191                        | 5 000                                         |
| 802.11ac(VHT160) | MCS0                      | 0.720      | 1.424                        | 5 000                                         |

## 8.8. Worst case configuration and mode

### Conducted test

1. All datarate of operation were investigated and the worst case datarate results are reported.
2. SM-S721U, SM-S721U1 were tested and the worst case results are reported.  
(Worst case: SM-S721U)

### Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
  - Worstcase : Stand alone
2. All Antenna of operation were investigated and the worst case results are reported
  - Mode : SISO, Ant.1+Ant.2(SDM), Ant.1+Ant.2(CDD)
  - Worstcase : Ant.1+Ant.2(CDD)
3. EUT Axis
  - Radiated Spurious Emissions : X
  - Radiated Restricted Band Edge : Z
4. All datarate of operation were investigated and the worst case datarate results are reported.
  - 802.11a : 6 Mbps
  - 802.11n\_HT20 : MCS0
  - 802.11n\_HT40 : MCS0
  - 802.11ac\_VHT20 : MCS0
  - 802.11ac\_VHT40 : MCS0
  - 802.11ac\_VHT80 : MCS0
  - 802.11ac\_VHT160: MCS0
5. Radiated Spurious Emission
  - All modulation of operation were investigated and the worst case modulation results are reported.  
Worst-case : 802.11a\_6 Mbps
6. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
  - Position: Horizontal, Vertical, Parallel to the ground plane
7. SM-S721U, SM-S721U1 were tested and the worst case results are reported.  
(Worst case: SM-S721U)

#### Radiated test(RSDB)

1. All modes of operation were investigated and the worst case configuration results are reported.

- Mode : Stand alone, Stand alone + External accessories(Earphone, Keyboard, etc)
- Worstcase : Stand alone

2. EUT Axis

- Radiated Spurious Emissions : X

3. All of RSDB Scenario were investigated and the worst case configuration results are reported.

| RSDB Scenario                                          | 2.4 GHz WiFi Ant.1 | 2.4 GHz WiFi Ant.2 | 5 GHz WiFi Ant.1 | 5 GHz WiFi Ant.2 | 6 GHz WiFi Ant.1 | 6 GHz WiFi Ant.2 | BT Ant.1 | BT Ant.2 | Test Case |
|--------------------------------------------------------|--------------------|--------------------|------------------|------------------|------------------|------------------|----------|----------|-----------|
| Dual Bluetooth + 5 GHz WiFi MIMO                       |                    |                    | on               | on               |                  |                  | on       | on       | Scenario1 |
| Dual Bluetooth + 6 GHz WiFi MIMO                       |                    |                    |                  |                  | on               | on               | on       | on       |           |
| 2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO                    | on                 | on                 | on               | on               |                  |                  |          |          | Scenario2 |
| 2.4 GHz WiFi MIMO + 6 GHz WiFi MIMO                    | on                 | on                 |                  |                  | on               | on               |          |          |           |
| Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO |                    | on                 | on               | on               |                  |                  | on       |          | Scenario3 |
| Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO |                    | on                 |                  |                  | on               | on               | on       |          |           |

4. The RSDB mode test investigated both intermodulation and radiated spurious emissions.

And the worst results were reported.

- Worst result: Radiated spurious emissions
- Intermodulation: No signals are generated.
- Radiated spurious emissions: cf. Section 10.6.2.

5. The following tables show the worst case configurations determined during testing.

(Worst case: The lowest margin condition the channels and modes were selected for test.)

| RSDB Scenario 1                     | Description | Bluetooth Emission | 5 GHz Emission |
|-------------------------------------|-------------|--------------------|----------------|
| Dual Bluetooth +<br>5 GHz WiFi MIMO | Antenna     | Dual ANT           | Ant All        |
|                                     | Channel     | 78                 | 177            |
|                                     | Data Rate   | 1 Mbps             | 6 Mbps         |
|                                     | Mode        | GFSK               | 802.11a        |

Note : BT RSDB Data refer to [BT] Test Report

| RSDB Scenario 2                        | Description | 2.4GHz Emission | 5 GHz Emission |
|----------------------------------------|-------------|-----------------|----------------|
| 2.4 GHz WiFi MIMO +<br>5 GHz WiFi MIMO | Antenna     | Ant All         | Ant All        |
|                                        | Channel     | 11              | 177            |
|                                        | Data Rate   | 6 Mbps          | 6 Mbps         |
|                                        | Mode        | 802.11g         | 802.11a        |

Note : DTS RSDB Data refer to [DTS] Test Report

| RSDB Scenario 3                                              | Description | Bluetooth Emission | 2.4GHz Emission | 5 GHz Emission |
|--------------------------------------------------------------|-------------|--------------------|-----------------|----------------|
| Bluetooth ANT.1 +<br>2.4 GHz WiFi ANT.2<br>+ 5 GHz WiFi MIMO | Antenna     | ANT1               | ANT2            | Ant All        |
|                                                              | Channel     | 78                 | 11              | 177            |
|                                                              | Data Rate   | 1 Mbps             | 1 Mbps          | 6 Mbps         |
|                                                              | Mode        | GFSK               | 802.11b         | 802.11a        |

Note : BT, DTS RSDB Data refer to [BT], [DTS] Test Report

6. SM-S721U, SM-S721U1 were tested and the worst case results are reported.

(Worst case: SM-S721U)

#### **AC Power line Conducted Emissions**

1. All modes of operation were investigated and the worst case configuration results are reported.

- Mode : Stand alone + External accessories (Earphone,etc) + Travel Adapter,

Stand alone + Travel Adapter

- Worstcase : Stand alone + Travel Adapter

2. SM-S721U, SM-S721U1 were tested and the worst case results are reported.

(Worst case: SM-S721U)

## 9. SUMMARY OF TEST RESULTS

| Test Description                                                             | FCC Part Section(s)                                                          | Test Limit                                                                                                                                                                                | Test Condition | Test Result |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|
| 26 dB Bandwidth                                                              | § 15.407<br>(for Power Measurement)                                          | N/A                                                                                                                                                                                       | Conducted      | PASS        |
| 6 dB Bandwidth                                                               | § 15.407(e)                                                                  | >500 kHz<br>(5725-5850 MHz)(UNII-3)<br>(5850-5895 MHz)(UNII-4)                                                                                                                            |                | PASS        |
| Maximum Conducted Output Power                                               | § 15.407(a)(1),(2),(3)                                                       | < 250 mW(5150-5250 MHz)<br><br>< 250 mW or 11+10log <sub>10</sub> (BW) dBm (5250-5350 MHz)<br><br>< 250 mW or 11+10log <sub>10</sub> (BW) dBm (5470-5725 MHz)<br><br><1 W (5725-5850 MHz) |                | PASS        |
| Maximum EIRP Output Power                                                    | § 15.407(a)(1)(3)(iii)                                                       | < EIRP 30dBm (5850-5925 MHz)                                                                                                                                                              |                | PASS        |
| Maximum Power Spectral Density                                               | § 15.407(a)(1),(2),(3)                                                       | <11 dBm/ MHz (5150-5250 MHz)<br><11 dBm/ MHz (5250-5350 MHz)<br><11 dBm/ MHz (5470-5725 MHz)<br><30 dBm/500 kHz(5725-5850 MHz)<br>< EIRP 14 dBm/MHz(5850-5895 MHz)                        |                | PASS        |
| Frequency Stability                                                          | § 15.407(g)<br>§ 2.1055                                                      | Maintained within the band                                                                                                                                                                |                | PASS        |
| AC Conducted Emissions 150 kHz-30 MHz                                        | 15.207<br>15.407(b)(8)                                                       | <FCC 15.207 limits                                                                                                                                                                        |                | PASS        |
| Undesirable Emissions                                                        | § 15.407(b)<br>(1),(2),(3),(4)<br><br>§ 15.407(b)(5)(ii),(iii)<br>§ 15.35(b) | <-27 dBm/MHz EIRP<br>(UNII1, 2A, 2C)<br>cf. Section 8.6 (UNII 3&4)                                                                                                                        | Radiated       | PASS        |
| General Field Strength Limits(Restricted Bands and Radiated Emission Limits) | 15.205,<br>15.407(b)(9),(10)                                                 | Emissions in restricted bands must meet the radiated limits detailed in 15.209                                                                                                            |                | PASS        |

## 10. TEST RESULT

### 10.1 DUTY CYCLE

| Mode    | Data Rate (Mbps) | T <sub>on</sub> (ms) | T <sub>total</sub> (ms) | Duty Cycle | Duty Cycle Factor(dB) |
|---------|------------------|----------------------|-------------------------|------------|-----------------------|
| 802.11a | 6                | 1.466                | 1.565                   | 0.937      | 0.284                 |
|         | 9                | 0.983                | 1.084                   | 0.907      | 0.426                 |
|         | 12               | 0.745                | 0.844                   | 0.883      | 0.541                 |
|         | 18               | 0.507                | 0.603                   | 0.840      | 0.755                 |
|         | 24               | 0.385                | 0.484                   | 0.796      | 0.992                 |
|         | 36               | 0.263                | 0.365                   | 0.722      | 1.413                 |
|         | 48               | 0.203                | 0.357                   | 0.567      | 2.461                 |
|         | 54               | 0.185                | 0.390                   | 0.474      | 3.242                 |

| Mode           | MCS Index | T <sub>on</sub> (ms) | T <sub>total</sub> (ms) | Duty Cycle | Duty Cycle Factor(dB) |
|----------------|-----------|----------------------|-------------------------|------------|-----------------------|
| 802.11n (HT20) | 0         | 1.246                | 1.347                   | 0.925      | 0.338                 |
|                | 1         | 0.646                | 0.745                   | 0.867      | 0.618                 |
|                | 2         | 0.443                | 0.540                   | 0.822      | 0.853                 |
|                | 3         | 0.342                | 0.441                   | 0.776      | 1.102                 |
|                | 4         | 0.241                | 0.365                   | 0.660      | 1.806                 |
|                | 5         | 0.187                | 0.360                   | 0.521      | 2.831                 |
|                | 6         | 0.172                | 0.362                   | 0.476      | 3.228                 |
|                | 7         | 0.160                | 0.360                   | 0.444      | 3.529                 |
| 802.11n (HT40) | 0         | 0.621                | 0.719                   | 0.864      | 0.637                 |
|                | 1         | 0.327                | 0.426                   | 0.768      | 1.147                 |
|                | 2         | 0.231                | 0.400                   | 0.576      | 2.396                 |
|                | 3         | 0.185                | 0.418                   | 0.442      | 3.542                 |
|                | 4         | 0.137                | 0.398                   | 0.344      | 4.635                 |
|                | 5         | 0.114                | 0.400                   | 0.285      | 5.454                 |
|                | 6         | 0.104                | 0.390                   | 0.266      | 5.747                 |
|                | 7         | 0.096                | 0.385                   | 0.250      | 6.021                 |

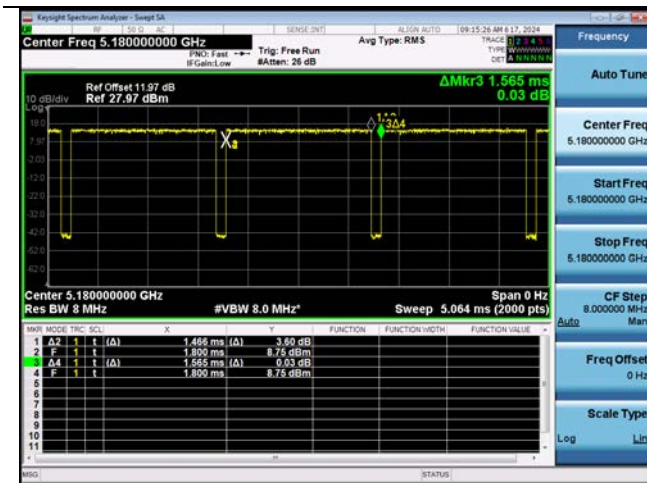
| Mode                | MCS Index | T <sub>on</sub><br>(ms) | T <sub>total</sub><br>(ms) | Duty Cycle | Duty Cycle<br>Factor(dB) |
|---------------------|-----------|-------------------------|----------------------------|------------|--------------------------|
| 802.11ac<br>(VHT20) | 0         | 1.252                   | 1.352                      | 0.926      | 0.334                    |
|                     | 1         | 0.649                   | 0.747                      | 0.868      | 0.616                    |
|                     | 2         | 0.443                   | 0.542                      | 0.818      | 0.874                    |
|                     | 3         | 0.345                   | 0.443                      | 0.777      | 1.095                    |
|                     | 4         | 0.246                   | 0.355                      | 0.693      | 1.594                    |
|                     | 5         | 0.193                   | 0.362                      | 0.531      | 2.745                    |
|                     | 6         | 0.177                   | 0.365                      | 0.486      | 3.133                    |
|                     | 7         | 0.165                   | 0.372                      | 0.442      | 3.544                    |
|                     | 8         | 0.144                   | 0.388                      | 0.373      | 4.288                    |
| 802.11ac<br>(VHT40) | 0         | 0.624                   | 0.723                      | 0.863      | 0.641                    |
|                     | 1         | 0.332                   | 0.431                      | 0.771      | 1.132                    |
|                     | 2         | 0.236                   | 0.377                      | 0.624      | 2.047                    |
|                     | 3         | 0.187                   | 0.385                      | 0.487      | 3.126                    |
|                     | 4         | 0.139                   | 0.408                      | 0.342      | 4.665                    |
|                     | 5         | 0.117                   | 0.377                      | 0.309      | 5.104                    |
|                     | 6         | 0.106                   | 0.377                      | 0.282      | 5.499                    |
|                     | 7         | 0.101                   | 0.388                      | 0.261      | 5.826                    |
|                     | 8         | 0.099                   | 0.450                      | 0.220      | 6.576                    |
|                     | 9         | 0.086                   | 0.420                      | 0.205      | 6.888                    |
| 802.11ac<br>(VHT80) | 0         | 0.312                   | 0.410                      | 0.760      | 1.191                    |
|                     | 1         | 0.253                   | 0.350                      | 0.725      | 1.399                    |
|                     | 2         | 0.250                   | 0.350                      | 0.715      | 1.456                    |
|                     | 3         | 0.236                   | 0.334                      | 0.705      | 1.521                    |
|                     | 4         | 0.193                   | 0.299                      | 0.644      | 1.911                    |
|                     | 5         | 0.167                   | 0.312                      | 0.537      | 2.704                    |
|                     | 6         | 0.165                   | 0.336                      | 0.491      | 3.089                    |
|                     | 7         | 0.150                   | 0.320                      | 0.469      | 3.291                    |
|                     | 8         | 0.144                   | 0.332                      | 0.435      | 3.614                    |
|                     | 9         | 0.142                   | 0.347                      | 0.409      | 3.885                    |

| Mode                 | MCS Index | T <sub>on</sub><br>(ms) | T <sub>total</sub><br>(ms) | Duty Cycle | Duty Cycle<br>Factor(dB) |
|----------------------|-----------|-------------------------|----------------------------|------------|--------------------------|
| 802.11ac<br>(VHT160) | 0         | 0.253                   | 0.351                      | 0.720      | 1.424                    |
|                      | 1         | 0.246                   | 0.360                      | 0.684      | 1.650                    |
|                      | 2         | 0.203                   | 0.345                      | 0.589      | 2.297                    |
|                      | 3         | 0.187                   | 0.355                      | 0.527      | 2.780                    |
|                      | 4         | 0.157                   | 0.342                      | 0.459      | 3.381                    |
|                      | 5         | 0.161                   | 0.360                      | 0.447      | 3.495                    |
|                      | 6         | 0.152                   | 0.354                      | 0.429      | 3.672                    |
|                      | 7         | 0.142                   | 0.341                      | 0.416      | 3.805                    |
|                      | 8         | 0.124                   | 0.339                      | 0.366      | 4.368                    |
|                      | 9         | 0.122                   | 0.372                      | 0.327      | 4.861                    |

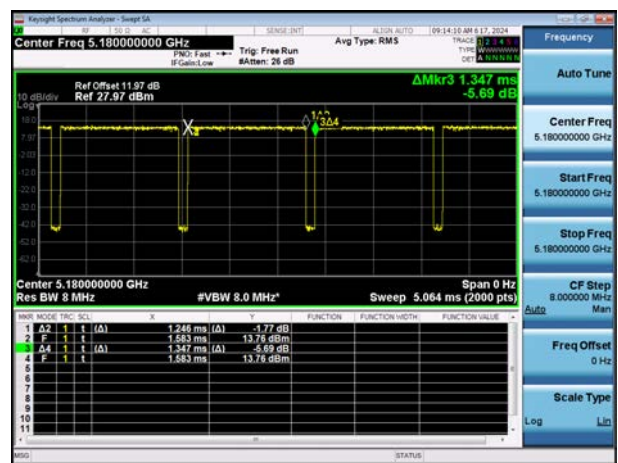
**Note:**

In order to simplify the report, attached plots were only the lowest data rate.

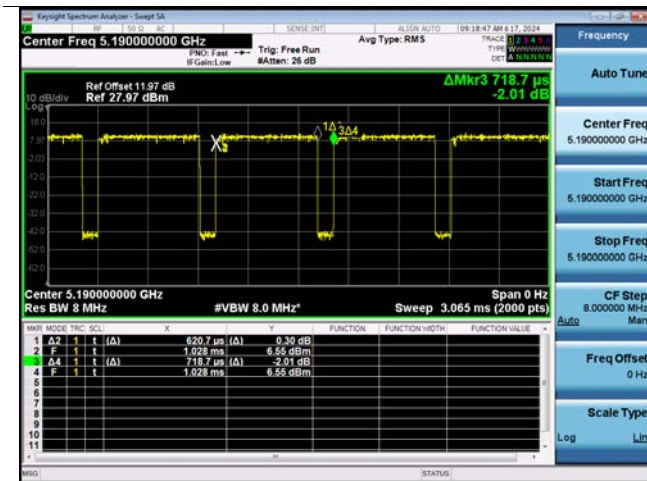
802.11a



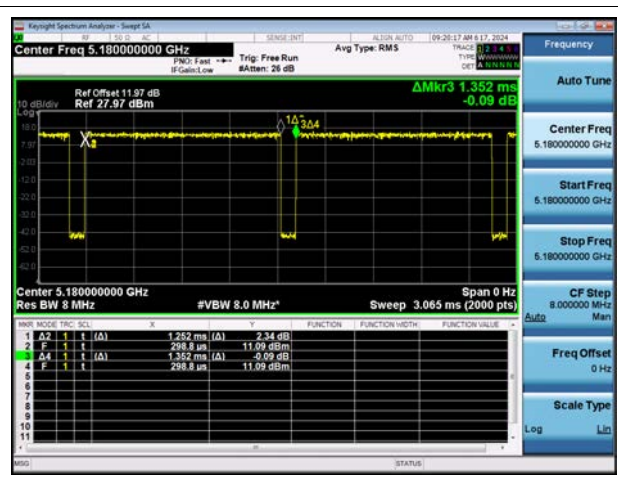
802.11n(HT20)



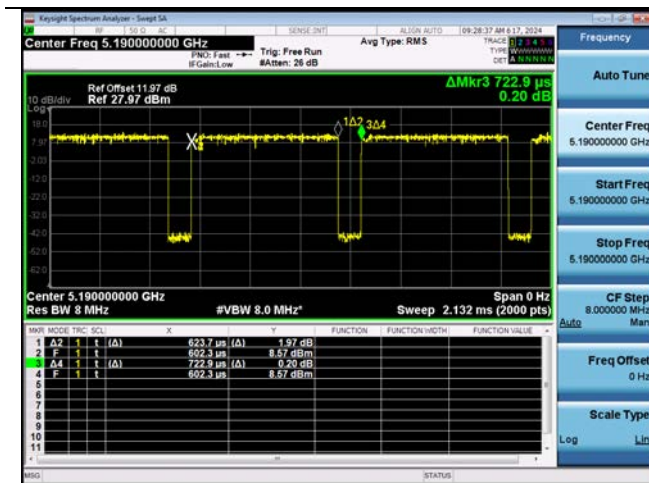
802.11n(HT40)



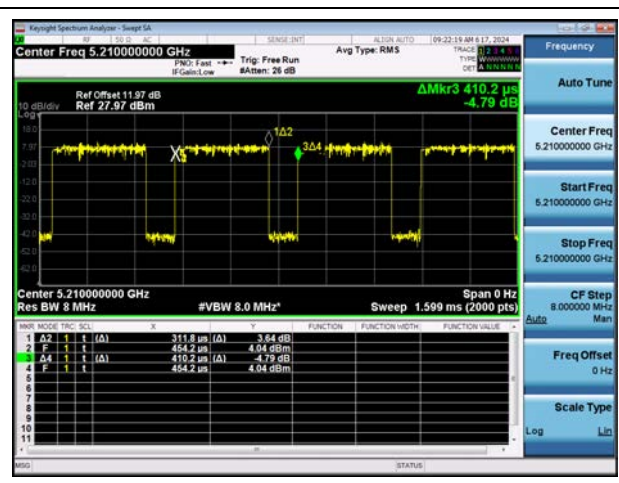
802.11ac(VHT20)



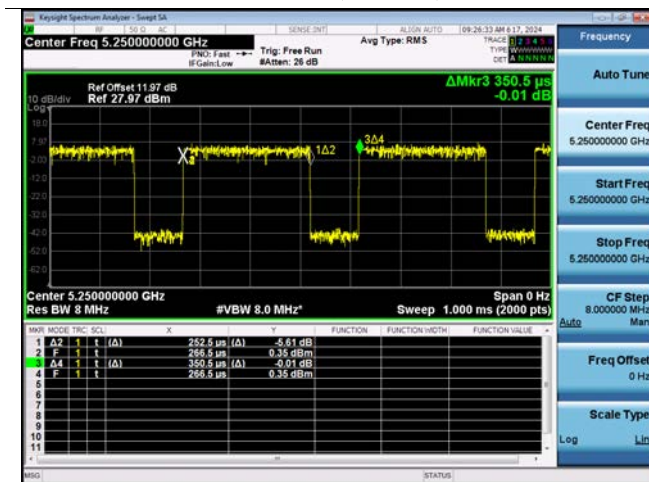
## 802.11ac(VHT40)



## 802.11ac(VHT80)



## 802.11ac(VHT160)



## 10.2 26 dB Bandwidth

### Note:

Straddle channel data in the table below are for reporting purposes only. Straddle channel data were added in section 10.7.1.

### [Ant.1]

| Mode    | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|---------|-----------------|-------------|-----------------------|------------------------------|
| 802.11a | 5180            | 36          | 23.65                 | 17.316                       |
|         | 5200            | 40          | 23.73                 | 17.399                       |
|         | 5240            | 48          | 23.09                 | 17.383                       |
|         | 5260            | 52          | 23.41                 | 17.464                       |
|         | 5300            | 60          | 23.41                 | 17.396                       |
|         | 5320            | 64          | 23.21                 | 17.490                       |
|         | 5500            | 100         | 23.67                 | 17.525                       |
|         | 5600            | 120         | 23.56                 | 17.500                       |
|         | 5720            | 144         | 23.68                 | 17.543                       |
|         | 5745            | 149         | 23.43                 | 17.474                       |
|         | 5785            | 157         | 23.42                 | 17.461                       |
|         | 5825            | 165         | 23.73                 | 17.494                       |
|         | 5845            | 169         | 23.40                 | 17.396                       |
|         | 5865            | 173         | 23.57                 | 17.456                       |
|         | 5885            | 177         | 23.71                 | 17.447                       |

| Mode           | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|----------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11n (HT20) | 5180            | 36          | 23.93                 | 18.245                       |
|                | 5200            | 40          | 23.24                 | 18.251                       |
|                | 5240            | 48          | 23.53                 | 18.207                       |
|                | 5260            | 52          | 23.66                 | 18.237                       |
|                | 5300            | 60          | 23.29                 | 18.219                       |
|                | 5320            | 64          | 23.61                 | 18.243                       |
|                | 5500            | 100         | 23.51                 | 18.252                       |
|                | 5600            | 120         | 23.53                 | 18.246                       |
|                | 5720            | 144         | 23.73                 | 18.277                       |
|                | 5745            | 149         | 23.65                 | 18.243                       |
|                | 5785            | 157         | 23.63                 | 18.240                       |
|                | 5825            | 165         | 23.40                 | 18.244                       |
|                | 5845            | 169         | 23.52                 | 18.279                       |
|                | 5865            | 173         | 23.83                 | 18.237                       |
|                | 5885            | 177         | 23.57                 | 18.266                       |

| Mode                | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|---------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac<br>(VHT20) | 5180            | 36          | 23.00                 | 18.224                       |
|                     | 5200            | 40          | 23.59                 | 18.243                       |
|                     | 5240            | 48          | 23.59                 | 18.268                       |
|                     | 5260            | 52          | 23.51                 | 18.214                       |
|                     | 5300            | 60          | 23.48                 | 18.209                       |
|                     | 5320            | 64          | 23.67                 | 18.262                       |
|                     | 5500            | 100         | 23.68                 | 18.255                       |
|                     | 5600            | 120         | 23.65                 | 18.232                       |
|                     | 5720            | 144         | 23.71                 | 18.284                       |
|                     | 5745            | 149         | 23.88                 | 18.299                       |
|                     | 5785            | 157         | 23.56                 | 18.271                       |
|                     | 5825            | 165         | 23.69                 | 18.218                       |
|                     | 5845            | 169         | 23.82                 | 18.265                       |
|                     | 5865            | 173         | 23.65                 | 18.269                       |
|                     | 5885            | 177         | 23.57                 | 18.289                       |

| Mode              | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|-------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11n<br>(HT40) | 5190            | 38          | 45.58                 | 36.846                       |
|                   | 5230            | 46          | 45.70                 | 36.824                       |
|                   | 5270            | 54          | 45.33                 | 36.844                       |
|                   | 5310            | 62          | 46.10                 | 36.848                       |
|                   | 5510            | 102         | 45.84                 | 36.870                       |
|                   | 5590            | 118         | 46.08                 | 36.810                       |
|                   | 5710            | 142         | 46.07                 | 36.832                       |
|                   | 5755            | 151         | 46.51                 | 36.910                       |
|                   | 5795            | 159         | 46.73                 | 36.879                       |
|                   | 5835            | 167         | 46.84                 | 36.907                       |
|                   | 5875            | 175         | 46.37                 | 36.861                       |

| Mode             | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT40) | 5190            | 38          | 45.50                 | 36.835                       |
|                  | 5230            | 46          | 45.65                 | 36.855                       |
|                  | 5270            | 54          | 45.44                 | 36.834                       |
|                  | 5310            | 62          | 45.65                 | 36.868                       |
|                  | 5510            | 102         | 46.00                 | 36.870                       |
|                  | 5590            | 118         | 46.49                 | 36.856                       |
|                  | 5710            | 142         | 45.75                 | 36.887                       |
|                  | 5755            | 151         | 45.42                 | 36.887                       |
|                  | 5795            | 159         | 45.66                 | 36.859                       |
|                  | 5835            | 167         | 45.52                 | 36.853                       |
|                  | 5875            | 175         | 46.54                 | 36.832                       |

| Mode             | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT80) | 5210            | 42          | 92.22                 | 76.415                       |
|                  | 5290            | 58          | 91.66                 | 76.299                       |
|                  | 5530            | 106         | 92.38                 | 76.458                       |
|                  | 5610            | 122         | 91.91                 | 76.408                       |
|                  | 5690            | 138         | 92.00                 | 76.465                       |
|                  | 5775            | 155         | 92.15                 | 76.525                       |
|                  | 5855            | 171         | 91.79                 | 76.423                       |

| Mode              | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|-------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT160) | 5250            | 50          | 183.7                 | 155.72                       |
|                   | 5570            | 114         | 180.5                 | 155.83                       |
|                   | 5815            | 163         | 184.0                 | 156.05                       |

**[Ant.2]**

| Mode    | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|---------|-----------------|-------------|-----------------------|------------------------------|
| 802.11a | 5180            | 36          | 23.13                 | 17.398                       |
|         | 5200            | 40          | 23.48                 | 17.301                       |
|         | 5240            | 48          | 23.21                 | 17.323                       |
|         | 5260            | 52          | 23.72                 | 17.363                       |
|         | 5300            | 60          | 23.25                 | 17.364                       |
|         | 5320            | 64          | 23.24                 | 17.384                       |
|         | 5500            | 100         | 23.27                 | 17.367                       |
|         | 5600            | 120         | 23.03                 | 17.405                       |
|         | 5720            | 144         | 23.78                 | 17.482                       |
|         | 5745            | 149         | 23.39                 | 17.422                       |
|         | 5785            | 157         | 23.06                 | 17.408                       |
|         | 5825            | 165         | 23.23                 | 17.448                       |
|         | 5845            | 169         | 23.24                 | 17.363                       |
|         | 5865            | 173         | 23.89                 | 17.544                       |
|         | 5885            | 177         | 23.13                 | 17.416                       |

| Mode           | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|----------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11n (HT20) | 5180            | 36          | 23.64                 | 18.232                       |
|                | 5200            | 40          | 23.47                 | 18.221                       |
|                | 5240            | 48          | 23.13                 | 18.210                       |
|                | 5260            | 52          | 23.48                 | 18.224                       |
|                | 5300            | 60          | 23.48                 | 18.210                       |
|                | 5320            | 64          | 23.48                 | 18.222                       |
|                | 5500            | 100         | 23.64                 | 18.198                       |
|                | 5600            | 120         | 23.70                 | 18.256                       |
|                | 5720            | 144         | 23.28                 | 18.215                       |
|                | 5745            | 149         | 23.57                 | 18.253                       |
|                | 5785            | 157         | 23.65                 | 18.239                       |
|                | 5825            | 165         | 23.81                 | 18.206                       |
|                | 5845            | 169         | 23.31                 | 18.238                       |
|                | 5865            | 173         | 23.56                 | 18.238                       |
|                | 5885            | 177         | 23.45                 | 18.217                       |

| Mode                | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|---------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac<br>(VHT20) | 5180            | 36          | 23.83                 | 18.244                       |
|                     | 5200            | 40          | 23.53                 | 18.244                       |
|                     | 5240            | 48          | 23.47                 | 18.225                       |
|                     | 5260            | 52          | 23.27                 | 18.210                       |
|                     | 5300            | 60          | 23.70                 | 18.262                       |
|                     | 5320            | 64          | 23.43                 | 18.228                       |
|                     | 5500            | 100         | 23.61                 | 18.248                       |
|                     | 5600            | 120         | 23.70                 | 18.227                       |
|                     | 5720            | 144         | 23.65                 | 18.244                       |
|                     | 5745            | 149         | 23.52                 | 18.212                       |
|                     | 5785            | 157         | 23.57                 | 18.229                       |
|                     | 5825            | 165         | 23.52                 | 18.201                       |
|                     | 5845            | 169         | 23.37                 | 18.203                       |
|                     | 5865            | 173         | 23.79                 | 18.238                       |
|                     | 5885            | 177         | 23.53                 | 18.232                       |

| Mode              | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|-------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11n<br>(HT40) | 5190            | 38          | 45.04                 | 36.762                       |
|                   | 5230            | 46          | 45.69                 | 36.807                       |
|                   | 5270            | 54          | 46.06                 | 36.892                       |
|                   | 5310            | 62          | 44.98                 | 36.825                       |
|                   | 5510            | 102         | 45.02                 | 36.866                       |
|                   | 5590            | 118         | 46.10                 | 36.811                       |
|                   | 5710            | 142         | 45.39                 | 36.840                       |
|                   | 5755            | 151         | 46.89                 | 36.906                       |
|                   | 5795            | 159         | 45.55                 | 36.834                       |
|                   | 5835            | 167         | 45.22                 | 36.823                       |
|                   | 5875            | 175         | 45.19                 | 36.793                       |

| Mode             | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT40) | 5190            | 38          | 45.40                 | 36.832                       |
|                  | 5230            | 46          | 45.38                 | 36.750                       |
|                  | 5270            | 54          | 45.47                 | 36.852                       |
|                  | 5310            | 62          | 45.73                 | 36.876                       |
|                  | 5510            | 102         | 45.30                 | 36.847                       |
|                  | 5590            | 118         | 45.19                 | 36.826                       |
|                  | 5710            | 142         | 45.64                 | 36.848                       |
|                  | 5755            | 151         | 45.17                 | 36.824                       |
|                  | 5795            | 159         | 45.91                 | 36.878                       |
|                  | 5835            | 167         | 45.28                 | 36.803                       |
|                  | 5875            | 175         | 45.24                 | 36.751                       |

| Mode             | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT80) | 5210            | 42          | 92.70                 | 76.497                       |
|                  | 5290            | 58          | 92.83                 | 76.592                       |
|                  | 5530            | 106         | 92.30                 | 76.483                       |
|                  | 5610            | 122         | 92.73                 | 76.565                       |
|                  | 5690            | 138         | 92.93                 | 76.641                       |
|                  | 5775            | 155         | 93.20                 | 76.674                       |
|                  | 5855            | 171         | 92.84                 | 76.521                       |

| Mode              | Frequency [MHz] | Channel No. | 26 dB Bandwidth [MHz] | 99% Occupied Bandwidth [MHz] |
|-------------------|-----------------|-------------|-----------------------|------------------------------|
| 802.11ac (VHT160) | 5250            | 50          | 185.7                 | 155.87                       |
|                   | 5570            | 114         | 180.9                 | 155.87                       |
|                   | 5815            | 163         | 185.6                 | 156.19                       |

[ANT. 1]

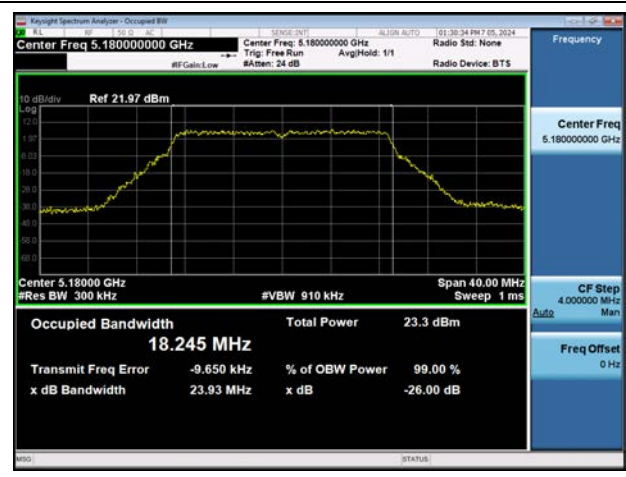
☑ Test Plots

**Note:** In order to simplify the report, attached plots were only the widest channel per channel bandwidth.

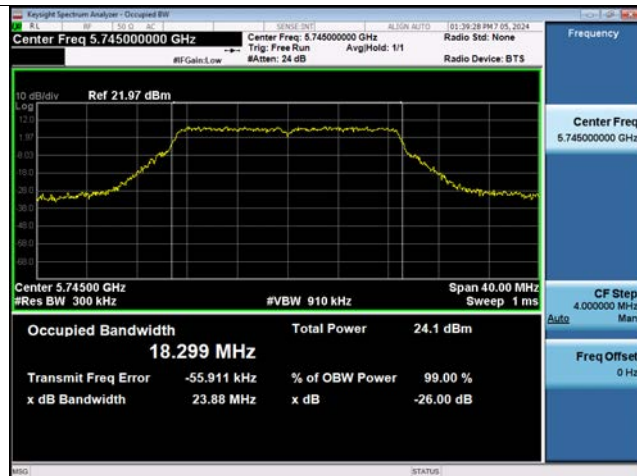
802.11a 26 dB Bandwidth (CH 40)



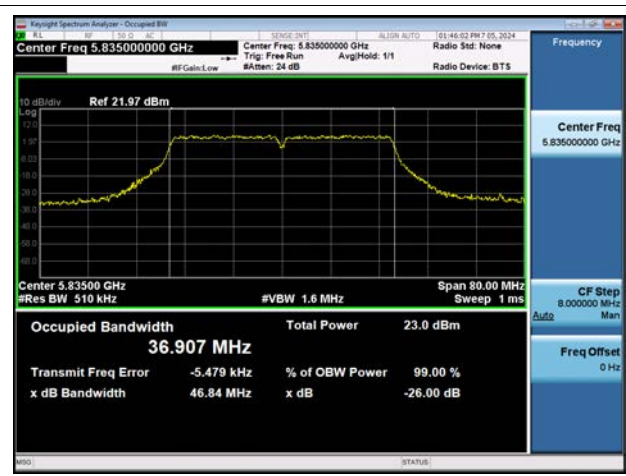
802.11n(HT20) 26 dB Bandwidth (CH 36)



802.11ac(VHT20) 26 dB Bandwidth (CH 149)



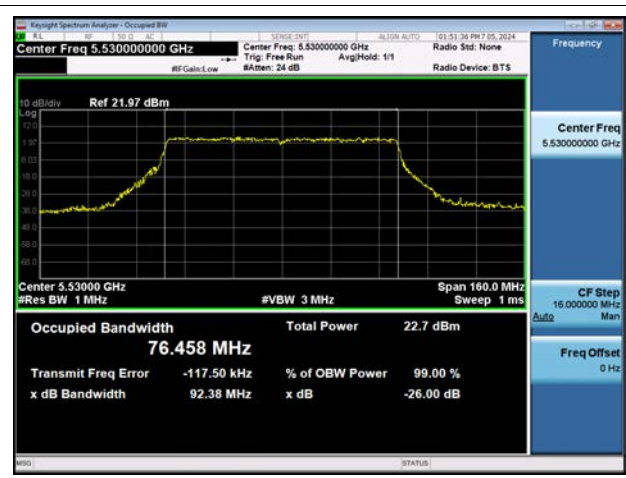
802.11n(HT40) 26 dB Bandwidth (CH 167)



802.11ac(VHT40) 26 dB Bandwidth (CH 175)



802.11ac(VHT80) 26 dB Bandwidth (CH 106)



### 802.11ac(VHT160) 26 dB Bandwidth (CH 163)



[ANT. 2]

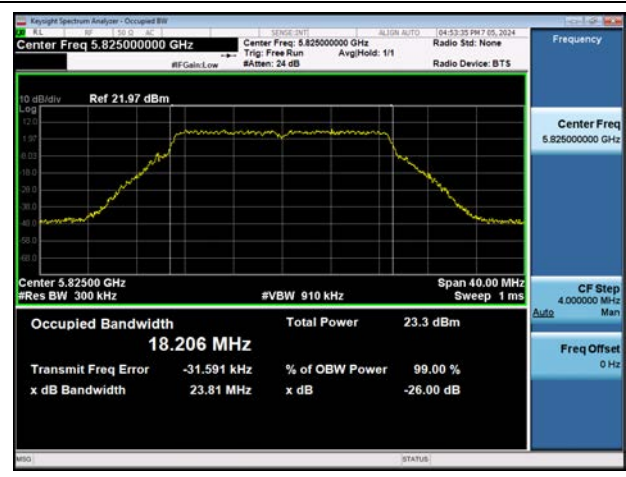
☐ Test Plots

**Note:** In order to simplify the report, attached plots were only the widest channel per channel bandwidth.

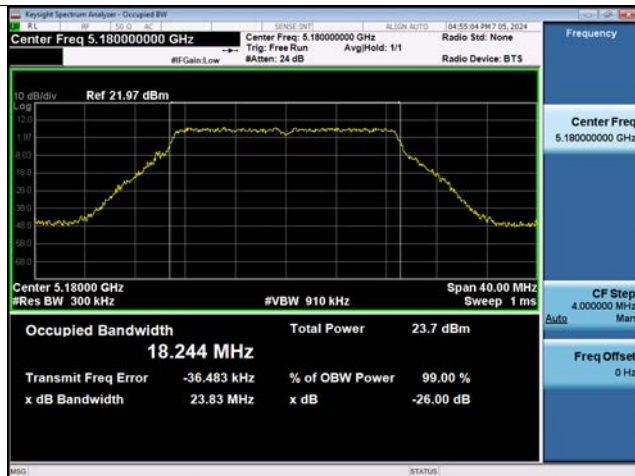
802.11a 26 dB Bandwidth (CH 173)



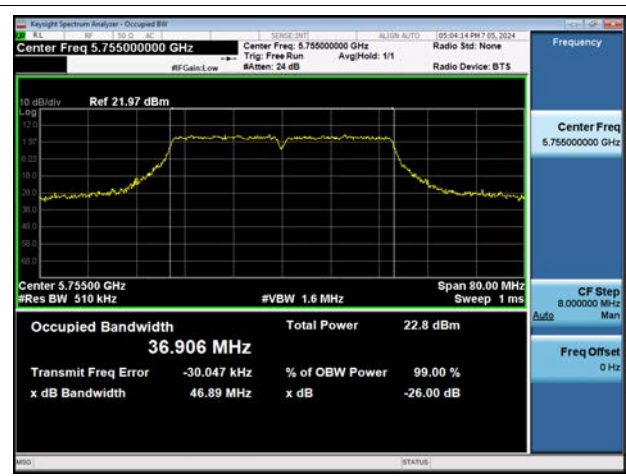
802.11n(HT20) 26 dB Bandwidth (CH 165)



802.11ac(VHT20) 26 dB Bandwidth (CH 36)



802.11n(HT40) 26 dB Bandwidth (CH 151)



802.11ac(VHT40) 26 dB Bandwidth (CH 159)



802.11ac(VHT80) 26 dB Bandwidth (CH 155)



### 802.11ac(VHT160) 26 dB Bandwidth (CH 50)



### 10.3 6 dB BANDWIDTH

[Ant.1]

| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
|------------------|-----------------|-------------|----------------------|-------------|
| 802.11a          | 5745            | 149         | 16.40                | > 0.5       |
|                  | 5785            | 157         | 16.38                | > 0.5       |
|                  | 5825            | 165         | 16.39                | > 0.5       |
|                  | 5845            | 169         | 16.40                | > 0.5       |
|                  | 5865            | 173         | 16.39                | > 0.5       |
|                  | 5885            | 177         | 16.40                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11n(HT20)    | 5745            | 149         | 17.66                | > 0.5       |
|                  | 5785            | 157         | 17.65                | > 0.5       |
|                  | 5825            | 165         | 17.64                | > 0.5       |
|                  | 5845            | 169         | 17.64                | > 0.5       |
|                  | 5865            | 173         | 17.68                | > 0.5       |
|                  | 5885            | 177         | 17.63                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT20)  | 5745            | 149         | 17.65                | > 0.5       |
|                  | 5785            | 157         | 17.66                | > 0.5       |
|                  | 5825            | 165         | 17.63                | > 0.5       |
|                  | 5845            | 169         | 17.65                | > 0.5       |
|                  | 5865            | 173         | 17.64                | > 0.5       |
|                  | 5885            | 177         | 17.65                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11n(HT40)    | 5755            | 151         | 36.44                | > 0.5       |
|                  | 5795            | 159         | 36.42                | > 0.5       |
|                  | 5835            | 167         | 36.41                | > 0.5       |
|                  | 5875            | 175         | 36.40                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT40)  | 5755            | 151         | 36.43                | > 0.5       |
|                  | 5795            | 159         | 36.43                | > 0.5       |
|                  | 5835            | 167         | 36.43                | > 0.5       |
|                  | 5875            | 175         | 36.43                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT80)  | 5775            | 155         | 76.51                | > 0.5       |
| 802.11ac(VHT80)  | 5855            | 171         | 76.41                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT160) | 5815            | 163         | 156.3                | > 0.5       |

**[Ant.2]**

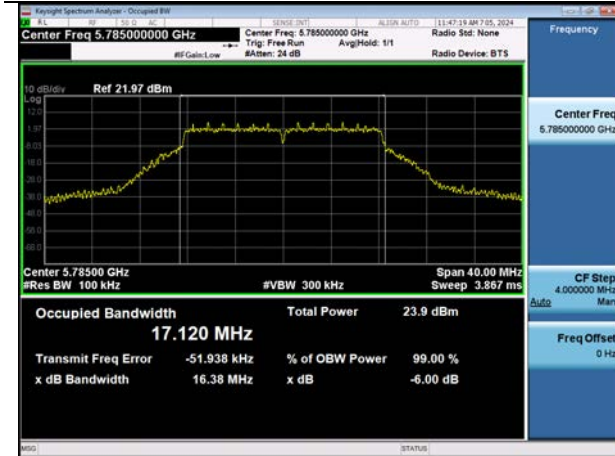
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
|------------------|-----------------|-------------|----------------------|-------------|
| 802.11a          | 5745            | 149         | 16.39                | > 0.5       |
|                  | 5785            | 157         | 16.39                | > 0.5       |
|                  | 5825            | 165         | 16.37                | > 0.5       |
|                  | 5845            | 169         | 16.40                | > 0.5       |
|                  | 5865            | 173         | 16.38                | > 0.5       |
|                  | 5885            | 177         | 16.40                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11n(HT20)    | 5745            | 149         | 17.63                | > 0.5       |
|                  | 5785            | 157         | 17.64                | > 0.5       |
|                  | 5825            | 165         | 17.65                | > 0.5       |
|                  | 5845            | 169         | 17.64                | > 0.5       |
|                  | 5865            | 173         | 17.63                | > 0.5       |
|                  | 5885            | 177         | 17.63                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT20)  | 5745            | 149         | 17.65                | > 0.5       |
|                  | 5785            | 157         | 17.66                | > 0.5       |
|                  | 5825            | 165         | 17.64                | > 0.5       |
|                  | 5845            | 169         | 17.64                | > 0.5       |
|                  | 5865            | 173         | 17.66                | > 0.5       |
|                  | 5885            | 177         | 17.67                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11n(HT40)    | 5755            | 151         | 36.44                | > 0.5       |
|                  | 5795            | 159         | 36.41                | > 0.5       |
|                  | 5835            | 167         | 36.42                | > 0.5       |
|                  | 5875            | 175         | 36.43                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT40)  | 5755            | 151         | 36.44                | > 0.5       |
|                  | 5795            | 159         | 36.42                | > 0.5       |
|                  | 5835            | 167         | 36.44                | > 0.5       |
|                  | 5875            | 175         | 36.42                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT80)  | 5775            | 155         | 76.51                | > 0.5       |
| 802.11ac(VHT80)  | 5855            | 171         | 76.53                | > 0.5       |
| Mode             | Frequency [MHz] | Channel No. | 6 dB Bandwidth [MHz] | Limit [MHz] |
| 802.11ac(VHT160) | 5815            | 163         | 156.1                | > 0.5       |

[ANT. 1]

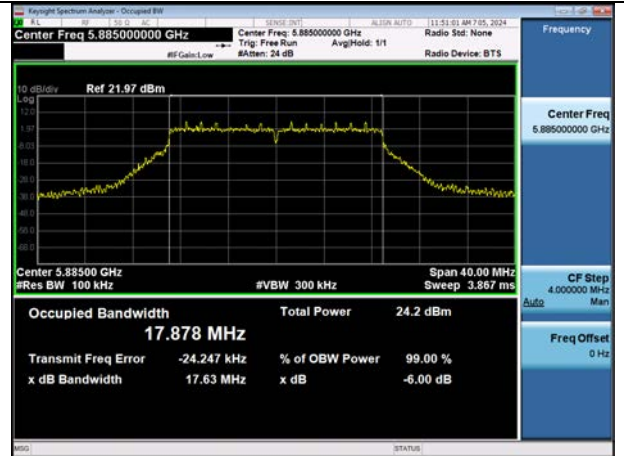
## Test Plots

**Note:** In order to simplify the report, attached plots were only the narrowest channel.

802.11a (CH.157)



802.11n(HT20) (CH.177)



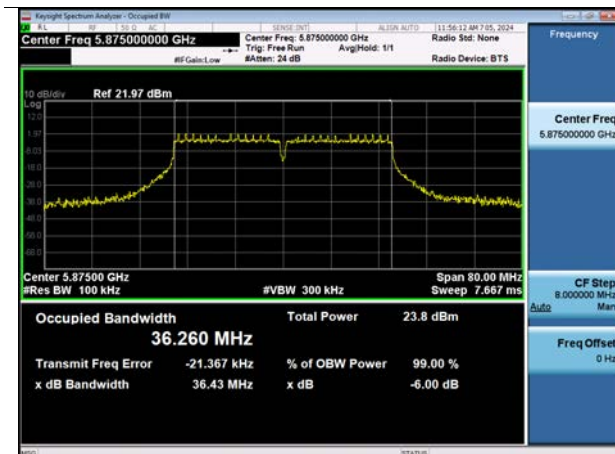
802.11ac(VHT20) (CH.165)



802.11n(HT40) (CH.175)



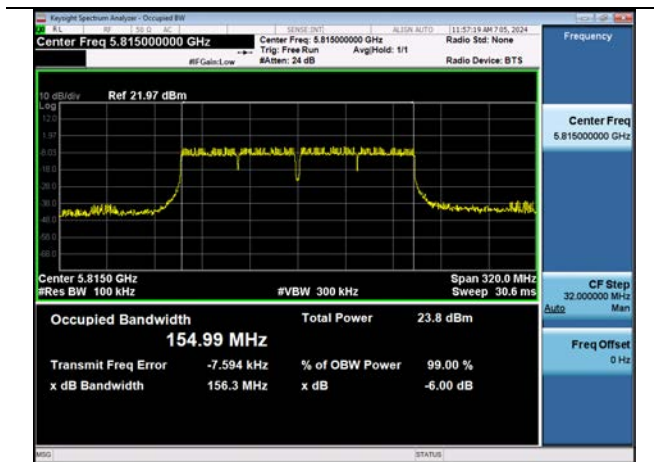
802.11ac(VHT40) (CH.175)



802.11ac(VHT80) (CH.171)



## 802.11ac(VHT160) (CH.163)



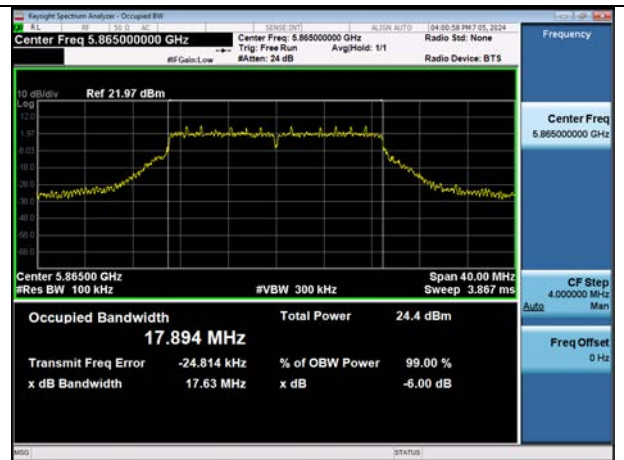
[ANT. 2]

**Note:** In order to simplify the report, attached plots were only the narrowest channel.

802.11a (CH.165)



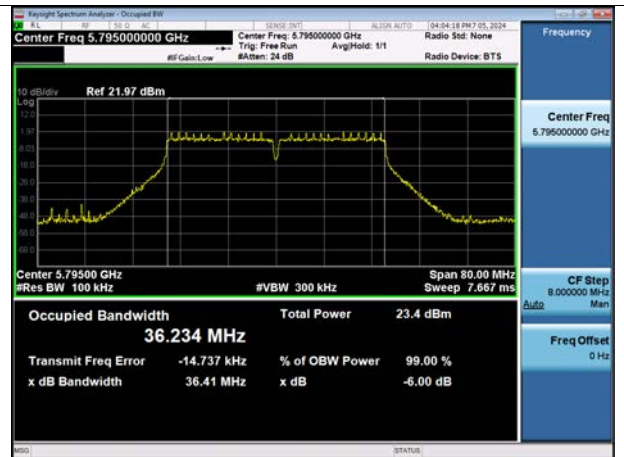
802.11n(HT20) (CH.173)



802.11ac(VHT20) (CH.165)



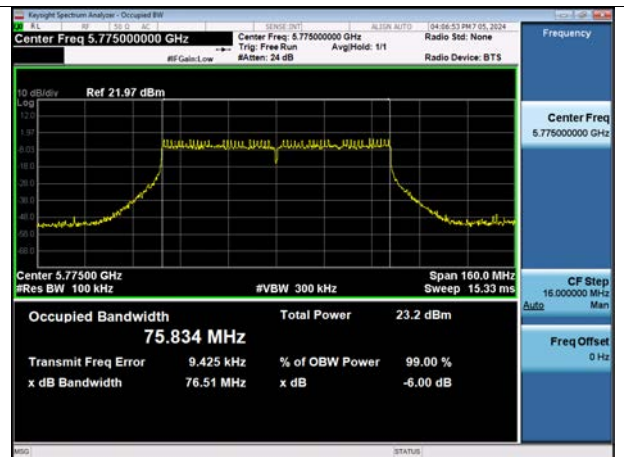
802.11n(HT40) (CH.159)



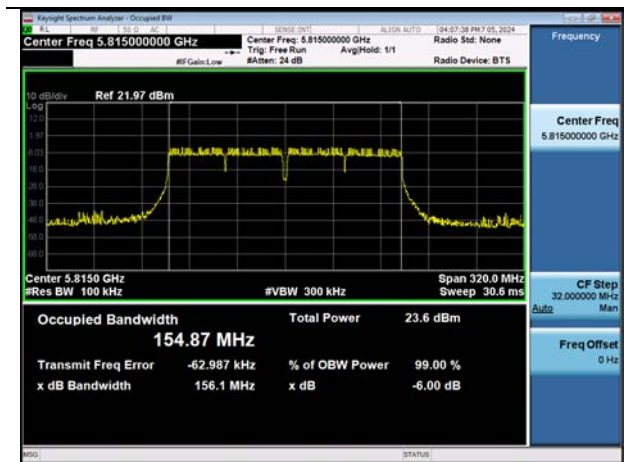
802.11ac(VHT40) (CH.159)



802.11ac(VHT80) (CH.155)



### 802.11ac(VHT160) (CH.163)



## 10.4 OUTPUT POWER MEASUREMENT

Straddle channel data in the table below are for reporting purposes only.

Straddle channel data were added in section 10.7.3.

### # Limit

(UNII 1) : 23.98 dBm

(UNII 2A, 2C) : 23.98 dBm or  $11 \text{ dBm} + 10 \log B$ , (where B is the 26 dB emission bandwidth in megahertz.)

(UNII 3) : 30.00 dBm

(UNII 4) : EIRP 30.0 dBm/MHz

(UNII 3&4) : Worst limit 30.00 dBm → UNII 4 Band Antenna Gain Negative

**[MIMO\_CDD(Ant.1+ Ant.2)]**

# Ant Total Power [dBm] = Measured Power [dBm] + Duty Cycle Factor [dB]

# MIMO\_CDD(Ant.1+ Ant.2) Total Power [dBm] = Ant.1 Total Power [dBm] + Ant.2 Total Power [dBm]

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5180            | 36          | 6M                 | a            | 16.66                   | 17.04                   | 19.86                  | -                      | -             | 23.98        |
| 5200            | 40          | 6M                 | a            | 16.73                   | 17.18                   | 19.97                  | -                      | -             | 23.98        |
| 5240            | 48          | 6M                 | a            | 16.63                   | 17.04                   | 19.85                  | -                      | -             | 23.98        |
| 5260            | 52          | 6M                 | a            | 16.71                   | 17.03                   | 19.88                  | -                      | -             | 23.98        |
| 5300            | 60          | 6M                 | a            | 16.82                   | 17.02                   | 19.93                  | -                      | -             | 23.98        |
| 5320            | 64          | 6M                 | a            | 16.78                   | 16.97                   | 19.89                  | -                      | -             | 23.98        |
| 5500            | 100         | 6M                 | a            | 16.80                   | 17.22                   | 20.03                  | -                      | -             | 23.98        |
| 5600            | 120         | 6M                 | a            | 17.15                   | 16.93                   | 20.05                  | -                      | -             | 23.98        |
| 5720            | 144         | 6M                 | a            | 17.36                   | 17.25                   | 20.32                  | -                      | -             | 23.98        |
| 5745            | 149         | 6M                 | a            | 17.38                   | 17.30                   | 20.35                  | -                      | -             | 30.00        |
| 5785            | 157         | 6M                 | a            | 16.93                   | 17.29                   | 20.12                  | -                      | -             | 30.00        |
| 5825            | 165         | 6M                 | a            | 16.80                   | 16.59                   | 19.71                  | -                      | -             | 30.00        |
| 5845            | 169         | 6M                 | a            | 16.48                   | 16.81                   | 19.66                  | -0.16                  | 19.50         | EIRP ≤ 30dBm |
| 5865            | 173         | 6M                 | a            | 16.73                   | 17.01                   | 19.88                  | -0.16                  | 19.72         | EIRP ≤ 30dBm |
| 5885            | 177         | 6M                 | a            | 16.65                   | 16.48                   | 19.58                  | -0.16                  | 19.42         | EIRP ≤ 30dBm |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5180            | 36          | MCS0               | n20          | 16.61                   | 17.06                   | 19.85                  | -                      | -             | 23.98        |
| 5200            | 40          | MCS0               | n20          | 16.82                   | 17.12                   | 19.98                  | -                      | -             | 23.98        |
| 5240            | 48          | MCS0               | n20          | 16.84                   | 17.10                   | 19.98                  | -                      | -             | 23.98        |
| 5260            | 52          | MCS0               | n20          | 16.72                   | 17.08                   | 19.91                  | -                      | -             | 23.98        |
| 5300            | 60          | MCS0               | n20          | 16.74                   | 17.16                   | 19.97                  | -                      | -             | 23.98        |
| 5320            | 64          | MCS0               | n20          | 16.62                   | 16.94                   | 19.79                  | -                      | -             | 23.98        |
| 5500            | 100         | MCS0               | n20          | 16.76                   | 17.02                   | 19.90                  | -                      | -             | 23.98        |
| 5600            | 120         | MCS0               | n20          | 17.10                   | 16.96                   | 20.04                  | -                      | -             | 23.98        |
| 5720            | 144         | MCS0               | n20          | 17.39                   | 17.32                   | 20.37                  | -                      | -             | 23.98        |
| 5745            | 149         | MCS0               | n20          | 17.44                   | 17.39                   | 20.43                  | -                      | -             | 30.00        |
| 5785            | 157         | MCS0               | n20          | 16.90                   | 17.24                   | 20.08                  | -                      | -             | 30.00        |
| 5825            | 165         | MCS0               | n20          | 16.80                   | 16.64                   | 19.73                  | -                      | -             | 30.00        |
| 5845            | 169         | MCS0               | n20          | 16.52                   | 16.77                   | 19.66                  | -0.16                  | 19.50         | EIRP ≤ 30dBm |
| 5865            | 173         | MCS0               | n20          | 16.90                   | 17.07                   | 20.00                  | -0.16                  | 19.84         | EIRP ≤ 30dBm |
| 5885            | 177         | MCS0               | n20          | 16.92                   | 16.55                   | 19.75                  | -0.16                  | 19.59         | EIRP ≤ 30dBm |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5180            | 36          | MCS0               | ac20         | 16.54                   | 16.99                   | 19.78                  | -                      | -             | 23.98        |
| 5200            | 40          | MCS0               | ac20         | 16.66                   | 17.11                   | 19.90                  | -                      | -             | 23.98        |
| 5240            | 48          | MCS0               | ac20         | 16.71                   | 17.14                   | 19.94                  | -                      | -             | 23.98        |
| 5260            | 52          | MCS0               | ac20         | 16.65                   | 17.03                   | 19.85                  | -                      | -             | 23.98        |
| 5300            | 60          | MCS0               | ac20         | 16.73                   | 17.05                   | 19.90                  | -                      | -             | 23.98        |
| 5320            | 64          | MCS0               | ac20         | 16.53                   | 16.93                   | 19.74                  | -                      | -             | 23.98        |
| 5500            | 100         | MCS0               | ac20         | 16.71                   | 17.04                   | 19.89                  | -                      | -             | 23.98        |
| 5600            | 120         | MCS0               | ac20         | 16.77                   | 16.87                   | 19.83                  | -                      | -             | 23.98        |
| 5720            | 144         | MCS0               | ac20         | 17.28                   | 17.32                   | 20.31                  | -                      | -             | 23.98        |
| 5745            | 149         | MCS0               | ac20         | 17.38                   | 17.31                   | 20.36                  | -                      | -             | 30.00        |
| 5785            | 157         | MCS0               | ac20         | 16.77                   | 17.32                   | 20.06                  | -                      | -             | 30.00        |
| 5825            | 165         | MCS0               | ac20         | 16.84                   | 16.63                   | 19.75                  | -                      | -             | 30.00        |
| 5845            | 169         | MCS0               | ac20         | 16.56                   | 16.69                   | 19.64                  | -0.16                  | 19.48         | EIRP ≤ 30dBm |
| 5865            | 173         | MCS0               | ac20         | 16.86                   | 17.09                   | 19.99                  | -0.16                  | 19.83         | EIRP ≤ 30dBm |

|      |     |      |      |       |       |       |       |       |              |
|------|-----|------|------|-------|-------|-------|-------|-------|--------------|
| 5885 | 177 | MCS0 | ac20 | 16.89 | 16.61 | 19.76 | -0.16 | 19.60 | EIRP ≤ 30dBm |
|------|-----|------|------|-------|-------|-------|-------|-------|--------------|

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5190            | 38          | MCS0               | n40          | 15.65                   | 15.96                   | 18.82                  | -                      | -             | 23.98        |
| 5230            | 46          | MCS0               | n40          | 15.72                   | 16.13                   | 18.94                  | -                      | -             | 23.98        |
| 5270            | 54          | MCS0               | n40          | 15.67                   | 16.04                   | 18.87                  | -                      | -             | 23.98        |
| 5310            | 62          | MCS0               | n40          | 16.04                   | 16.06                   | 19.06                  | -                      | -             | 23.98        |
| 5510            | 102         | MCS0               | n40          | 15.68                   | 16.09                   | 18.90                  | -                      | -             | 23.98        |
| 5590            | 118         | MCS0               | n40          | 16.49                   | 15.96                   | 19.24                  | -                      | -             | 23.98        |
| 5710            | 142         | MCS0               | n40          | 16.44                   | 16.38                   | 19.42                  | -                      | -             | 23.98        |
| 5755            | 151         | MCS0               | n40          | 16.34                   | 16.20                   | 19.28                  | -                      | -             | 30.00        |
| 5795            | 159         | MCS0               | n40          | 16.12                   | 16.37                   | 19.26                  | -                      | -             | 30.00        |
| 5835            | 167         | MCS0               | n40          | 16.42                   | 16.22                   | 19.33                  | -0.16                  | 19.17         | EIRP ≤ 30dBm |
| 5875            | 175         | MCS0               | n40          | 16.59                   | 16.20                   | 19.41                  | -0.16                  | 19.25         | EIRP ≤ 30dBm |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5190            | 38          | MCS0               | ac40         | 15.59                   | 15.99                   | 18.80                  | -                      | -             | 23.98        |
| 5230            | 46          | MCS0               | ac40         | 15.64                   | 16.10                   | 18.89                  | -                      | -             | 23.98        |
| 5270            | 54          | MCS0               | ac40         | 15.66                   | 16.13                   | 18.91                  | -                      | -             | 23.98        |
| 5310            | 62          | MCS0               | ac40         | 15.92                   | 15.86                   | 18.90                  | -                      | -             | 23.98        |
| 5510            | 102         | MCS0               | ac40         | 15.59                   | 16.06                   | 18.84                  | -                      | -             | 23.98        |
| 5590            | 118         | MCS0               | ac40         | 16.22                   | 15.83                   | 19.04                  | -                      | -             | 23.98        |
| 5710            | 142         | MCS0               | ac40         | 16.39                   | 16.32                   | 19.37                  | -                      | -             | 23.98        |
| 5755            | 151         | MCS0               | ac40         | 16.32                   | 16.15                   | 19.25                  | -                      | -             | 30.00        |
| 5795            | 159         | MCS0               | ac40         | 16.14                   | 16.35                   | 19.26                  | -                      | -             | 30.00        |
| 5835            | 167         | MCS0               | ac40         | 16.39                   | 16.20                   | 19.31                  | -0.16                  | 19.15         | EIRP ≤ 30dBm |
| 5875            | 175         | MCS0               | ac40         | 16.59                   | 16.17                   | 19.40                  | -0.16                  | 19.24         | EIRP ≤ 30dBm |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5210            | 42          | MCS0               | ac80         | 14.80                   | 15.13                   | 17.98                  | -                      | -             | 23.98        |
| 5290            | 58          | MCS0               | ac80         | 15.22                   | 14.99                   | 18.12                  | -                      | -             | 23.98        |
| 5530            | 106         | MCS0               | ac80         | 14.87                   | 15.04                   | 17.97                  | -                      | -             | 23.98        |
| 5610            | 122         | MCS0               | ac80         | 15.34                   | 15.00                   | 18.18                  | -                      | -             | 23.98        |
| 5690            | 138         | MCS0               | ac80         | 15.53                   | 15.40                   | 18.48                  | -                      | -             | 23.98        |
| 5775            | 155         | MCS0               | ac80         | 15.34                   | 15.24                   | 18.30                  | -                      | -             | 30.00        |
| 5855            | 171         | MCS0               | ac80         | 15.04                   | 15.40                   | 18.23                  | -0.16                  | 18.07         | EIRP ≤ 30dBm |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total Power [dBm] | Ant.2 Total Power [dBm] | MIMO Total Power [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]  |
|-----------------|-------------|--------------------|--------------|-------------------------|-------------------------|------------------------|------------------------|---------------|--------------|
| 5250            | 50          | MCS0               | ac160        | 14.48                   | 14.92                   | 17.72                  | -                      | -             | 23.98        |
| 5570            | 114         | MCS0               | ac160        | 14.94                   | 14.94                   | 17.95                  | -                      | -             | 23.98        |
| 5815            | 163         | MCS0               | ac160        | 15.40                   | 15.28                   | 18.35                  | -0.16                  | 18.19         | EIRP ≤ 30dBm |

## 10.5 POWER SPECTRAL DENSITY

[MIMO\_CDD(Ant.1+ Ant.2)]

# Ant Total PSD [dBm] = Measured PSD [dBm] + Duty Cycle Factor [dB]

# MIMO\_CDD(ANT.1+ ANT.2)Total PSD [dBm] = Ant.1 Total PSD [dBm] + Ant.2 Total PSD [dB]

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5180            | 36          | 6M                 | a            | 4.971                 | 5.473                 | 8.239                | -                      | -             | 11 dBm/MHz    |
| 5200            | 40          | 6M                 | a            | 5.157                 | 5.587                 | 8.387                | -                      | -             | 11 dBm/MHz    |
| 5240            | 48          | 6M                 | a            | 5.100                 | 5.471                 | 8.300                | -                      | -             | 11 dBm/MHz    |
| 5260            | 52          | 6M                 | a            | 5.219                 | 5.626                 | 8.437                | -                      | -             | 11 dBm/MHz    |
| 5300            | 60          | 6M                 | a            | 5.118                 | 5.615                 | 8.384                | -                      | -             | 11 dBm/MHz    |
| 5320            | 64          | 6M                 | a            | 5.043                 | 5.366                 | 8.218                | -                      | -             | 11 dBm/MHz    |
| 5500            | 100         | 6M                 | a            | 5.133                 | 5.758                 | 8.467                | -                      | -             | 11 dBm/MHz    |
| 5600            | 120         | 6M                 | a            | 5.343                 | 5.384                 | 8.374                | -                      | -             | 11 dBm/MHz    |
| 5720            | 144         | 6M                 | a            | 5.776                 | 5.815                 | 8.806                | -                      | -             | 11 dBm/MHz    |
| 5745            | 149         | 6M                 | a            | 3.108                 | 3.042                 | 6.085                | -                      | -             | 30 dBm/500kHz |
| 5785            | 157         | 6M                 | a            | 2.563                 | 2.921                 | 5.756                | -                      | -             | 30 dBm/500kHz |
| 5825            | 165         | 6M                 | a            | 2.740                 | 2.461                 | 5.613                | -                      | -             | 30 dBm/500kHz |
| 5845            | 169         | 6M                 | a            | 5.280                 | 5.432                 | 8.367                | -0.16                  | 8.207         | 14 dBm/EIRP   |
| 5865            | 173         | 6M                 | a            | 5.676                 | 5.834                 | 8.766                | -0.16                  | 8.606         | 14 dBm/EIRP   |
| 5885            | 177         | 6M                 | a            | 5.754                 | 5.419                 | 8.600                | -0.16                  | 8.440         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5180            | 36          | MCS0               | n20          | 4.718                 | 5.234                 | 7.994                | -                      | -             | 11 dBm/MHz    |
| 5200            | 40          | MCS0               | n20          | 4.843                 | 5.325                 | 8.101                | -                      | -             | 11 dBm/MHz    |
| 5240            | 48          | MCS0               | n20          | 4.751                 | 5.276                 | 8.032                | -                      | -             | 11 dBm/MHz    |
| 5260            | 52          | MCS0               | n20          | 4.745                 | 5.275                 | 8.029                | -                      | -             | 11 dBm/MHz    |
| 5300            | 60          | MCS0               | n20          | 4.856                 | 5.205                 | 8.045                | -                      | -             | 11 dBm/MHz    |
| 5320            | 64          | MCS0               | n20          | 4.685                 | 5.288                 | 8.008                | -                      | -             | 11 dBm/MHz    |
| 5500            | 100         | MCS0               | n20          | 4.827                 | 5.335                 | 8.099                | -                      | -             | 11 dBm/MHz    |
| 5600            | 120         | MCS0               | n20          | 5.113                 | 5.177                 | 8.156                | -                      | -             | 11 dBm/MHz    |
| 5720            | 144         | MCS0               | n20          | 5.425                 | 5.504                 | 8.475                | -                      | -             | 11 dBm/MHz    |
| 5745            | 149         | MCS0               | n20          | 2.873                 | 2.871                 | 5.883                | -                      | -             | 30 dBm/500kHz |
| 5785            | 157         | MCS0               | n20          | 2.268                 | 2.727                 | 5.514                | -                      | -             | 30 dBm/500kHz |
| 5825            | 165         | MCS0               | n20          | 2.408                 | 2.126                 | 5.280                | -                      | -             | 30 dBm/500kHz |
| 5845            | 169         | MCS0               | n20          | 4.879                 | 5.110                 | 8.007                | -0.16                  | 7.847         | 14 dBm/EIRP   |
| 5865            | 173         | MCS0               | n20          | 5.336                 | 5.524                 | 8.442                | -0.16                  | 8.282         | 14 dBm/EIRP   |
| 5885            | 177         | MCS0               | n20          | 5.464                 | 5.106                 | 8.299                | -0.16                  | 8.139         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5180            | 36          | MCS0               | ac20         | 4.818                 | 5.300                 | 8.076                | -                      | -             | 11 dBm/MHz    |
| 5200            | 40          | MCS0               | ac20         | 4.839                 | 5.469                 | 8.175                | -                      | -             | 11 dBm/MHz    |
| 5240            | 48          | MCS0               | ac20         | 4.745                 | 5.430                 | 8.111                | -                      | -             | 11 dBm/MHz    |
| 5260            | 52          | MCS0               | ac20         | 4.825                 | 5.305                 | 8.082                | -                      | -             | 11 dBm/MHz    |
| 5300            | 60          | MCS0               | ac20         | 4.873                 | 5.457                 | 8.185                | -                      | -             | 11 dBm/MHz    |
| 5320            | 64          | MCS0               | ac20         | 4.871                 | 5.224                 | 8.061                | -                      | -             | 11 dBm/MHz    |
| 5500            | 100         | MCS0               | ac20         | 4.948                 | 5.403                 | 8.191                | -                      | -             | 11 dBm/MHz    |
| 5600            | 120         | MCS0               | ac20         | 5.212                 | 5.099                 | 8.166                | -                      | -             | 11 dBm/MHz    |
| 5720            | 144         | MCS0               | ac20         | 5.483                 | 5.542                 | 8.523                | -                      | -             | 11 dBm/MHz    |
| 5745            | 149         | MCS0               | ac20         | 2.701                 | 2.788                 | 5.755                | -                      | -             | 30 dBm/500kHz |
| 5785            | 157         | MCS0               | ac20         | 2.219                 | 2.539                 | 5.392                | -                      | -             | 30 dBm/500kHz |
| 5825            | 165         | MCS0               | ac20         | 2.423                 | 2.066                 | 5.258                | -                      | -             | 30 dBm/500kHz |
| 5845            | 169         | MCS0               | ac20         | 4.963                 | 5.081                 | 8.032                | -0.16                  | 7.872         | 14 dBm/EIRP   |
| 5865            | 173         | MCS0               | ac20         | 5.490                 | 5.578                 | 8.544                | -0.16                  | 8.384         | 14 dBm/EIRP   |
| 5885            | 177         | MCS0               | ac20         | 5.390                 | 5.155                 | 8.284                | -0.16                  | 8.124         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5190            | 38          | MCS0               | n40          | 0.878                 | 1.132                 | 4.017                | -                      | -             | 11 dBm/MHz    |
| 5230            | 46          | MCS0               | n40          | 0.957                 | 1.343                 | 4.164                | -                      | -             | 11 dBm/MHz    |
| 5270            | 54          | MCS0               | n40          | 0.837                 | 1.249                 | 4.058                | -                      | -             | 11 dBm/MHz    |
| 5310            | 62          | MCS0               | n40          | 1.113                 | 1.125                 | 4.129                | -                      | -             | 11 dBm/MHz    |
| 5510            | 102         | MCS0               | n40          | 0.954                 | 1.172                 | 4.074                | -                      | -             | 11 dBm/MHz    |
| 5590            | 118         | MCS0               | n40          | 1.433                 | 0.900                 | 4.185                | -                      | -             | 11 dBm/MHz    |
| 5710            | 142         | MCS0               | n40          | 1.573                 | 1.488                 | 4.541                | -                      | -             | 11 dBm/MHz    |
| 5755            | 151         | MCS0               | n40          | -1.333                | -1.471                | 1.609                | -                      | -             | 30 dBm/500kHz |
| 5795            | 159         | MCS0               | n40          | -1.454                | -1.419                | 1.573                | -                      | -             | 30 dBm/500kHz |
| 5835            | 167         | MCS0               | n40          | 1.637                 | 1.385                 | 4.523                | -0.16                  | 4.363         | 14 dBm/EIRP   |
| 5875            | 175         | MCS0               | n40          | 1.828                 | 1.454                 | 4.655                | -0.16                  | 4.495         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5190            | 38          | MCS0               | ac40         | 0.916                 | 0.517                 | 3.731                | -                      | -             | 11 dBm/MHz    |
| 5230            | 46          | MCS0               | ac40         | 1.129                 | 0.078                 | 3.646                | -                      | -             | 11 dBm/MHz    |
| 5270            | 54          | MCS0               | ac40         | 0.989                 | 0.605                 | 3.812                | -                      | -             | 11 dBm/MHz    |
| 5310            | 62          | MCS0               | ac40         | 1.185                 | 0.729                 | 3.973                | -                      | -             | 11 dBm/MHz    |
| 5510            | 102         | MCS0               | ac40         | 0.951                 | 0.662                 | 3.819                | -                      | -             | 11 dBm/MHz    |
| 5590            | 118         | MCS0               | ac40         | 1.548                 | 0.593                 | 4.107                | -                      | -             | 11 dBm/MHz    |
| 5710            | 142         | MCS0               | ac40         | 1.591                 | 1.051                 | 4.340                | -                      | -             | 11 dBm/MHz    |
| 5755            | 151         | MCS0               | ac40         | -1.328                | -1.893                | 1.409                | -                      | -             | 30 dBm/500kHz |
| 5795            | 159         | MCS0               | ac40         | -1.253                | -1.800                | 1.492                | -                      | -             | 30 dBm/500kHz |
| 5835            | 167         | MCS0               | ac40         | 1.750                 | 0.931                 | 4.370                | -0.16                  | 4.210         | 14 dBm/EIRP   |
| 5875            | 175         | MCS0               | ac40         | 1.960                 | 0.993                 | 4.514                | -0.16                  | 4.354         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm]   |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|---------------|
| 5210            | 42          | MCS0               | ac80         | -2.698                | -2.395                | 0.467                | -                      | -             | 11 dBm/MHz    |
| 5290            | 58          | MCS0               | ac80         | -2.654                | -2.971                | 0.201                | -                      | -             | 11 dBm/MHz    |
| 5530            | 106         | MCS0               | ac80         | -2.844                | -3.213                | -0.014               | -                      | -             | 11 dBm/MHz    |
| 5610            | 122         | MCS0               | ac80         | -2.345                | -2.848                | 0.421                | -                      | -             | 11 dBm/MHz    |
| 5690            | 138         | MCS0               | ac80         | -2.300                | -2.534                | 0.595                | -                      | -             | 11 dBm/MHz    |
| 5775            | 155         | MCS0               | ac80         | -5.173                | -5.439                | -2.293               | -                      | -             | 30 dBm/500kHz |
| 5855            | 171         | MCS0               | ac80         | -2.190                | -2.583                | 0.628                | -0.16                  | 0.468         | 14 dBm/EIRP   |

| Frequency [MHz] | Channel No. | Worstcase Datarate | Mode(802.11) | Ant.1 Total PSD [dBm] | Ant.2 Total PSD [dBm] | MIMO Total PSD [dBm] | Directional Gain [dBi] | E.I.R.P [dBm] | Limit [dBm] |
|-----------------|-------------|--------------------|--------------|-----------------------|-----------------------|----------------------|------------------------|---------------|-------------|
| 5250            | 50          | MCS0               | ac160        | -6.066                | -6.393                | -3.216               | -                      | -             | 11 dBm/MHz  |
| 5570            | 114         | MCS0               | ac160        | -5.820                | -6.312                | -3.048               | -                      | -             | 11 dBm/MHz  |
| 5815            | 163         | MCS0               | ac160        | -5.329                | -5.517                | -2.411               | -0.16                  | -2.571        | 14 dBm/EIRP |

[MIMO\_CDD(Ant.1+ Ant.2)]

## Test Plots

**Note:** In order to simplify the report, attached plots were only channel of the highest PSD.

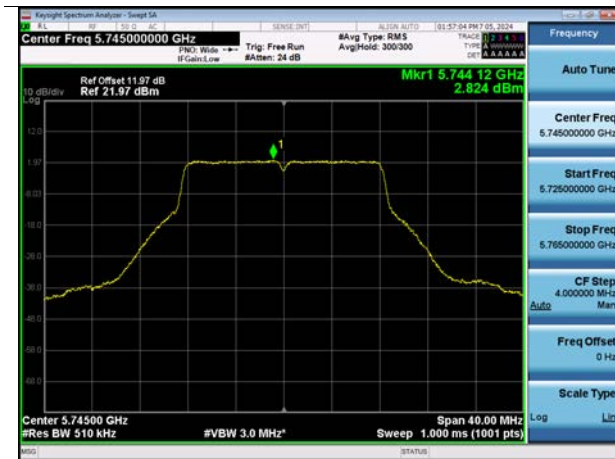
ANT. 1

ANT. 2

### 802.11a UNII 1-2C (Ch. 144)



### 802.11a UNII 3 (Ch. 149)



### 802.11a UNII 4 (Ch. 173)



## ANT. 1

## ANT. 2

### 802.11n(HT20) UNII 1-2C (Ch. 144)



### 802.11 n(HT20) UNII 3 (Ch. 149)



### 802.11 n(HT20) UNII 4 (Ch. 173)



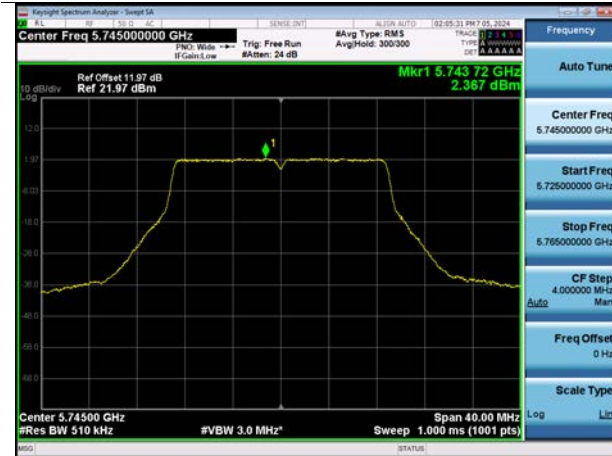
ANT. 1

ANT. 2

802.11ac(VHT20) UNII 1-2C (Ch. 144)



802.11 ac(VHT20) UNII 3 (Ch. 149)



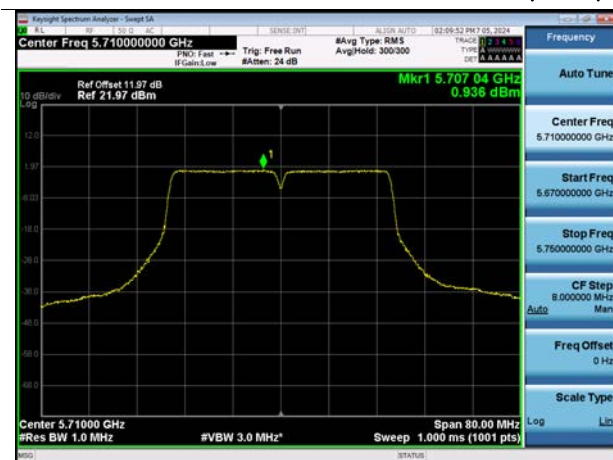
802.11 ac(VHT20) UNII 4 (Ch. 173)



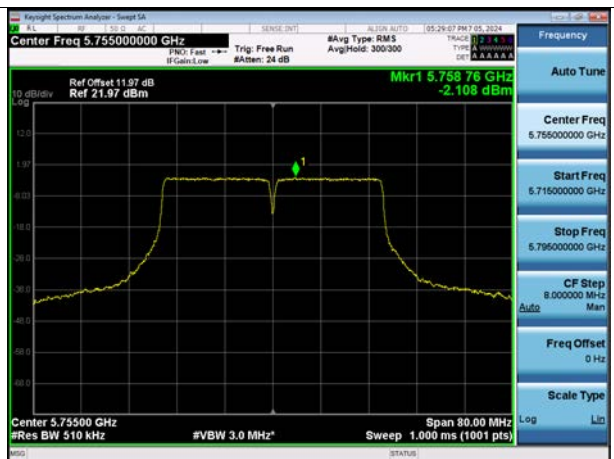
ANT. 1

ANT. 2

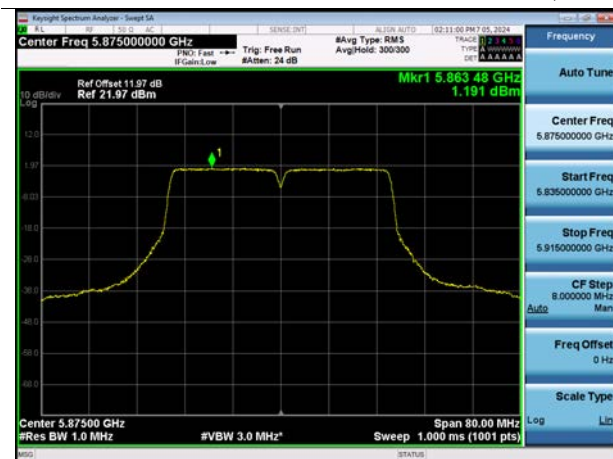
## 802.11n(HT40) UNII 1-2C (Ch. 142)



## 802.11 n(HT40) UNII 3 (Ch. 151)



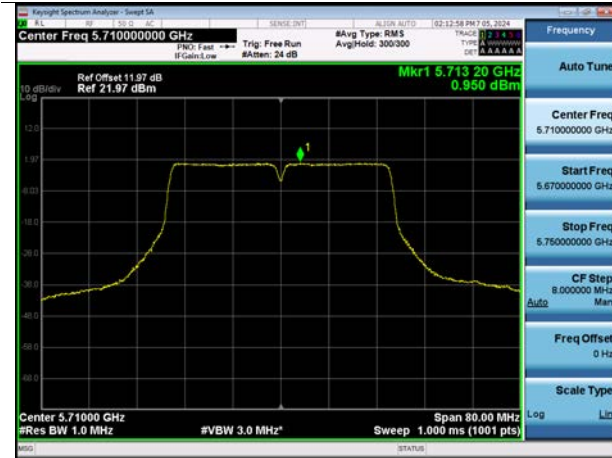
## 802.11 n(HT40) UNII 4 (Ch. 175)



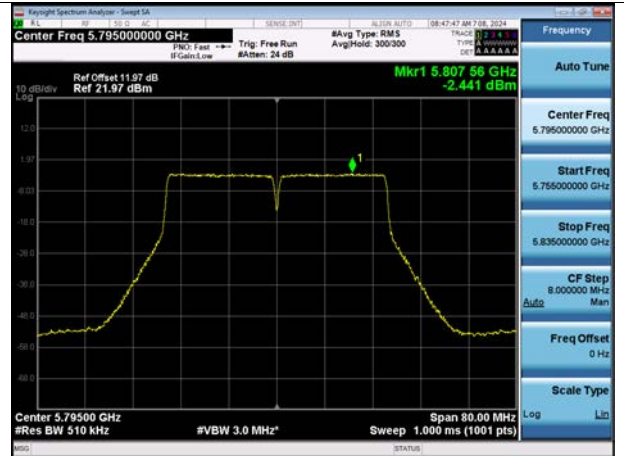
ANT. 1

ANT. 2

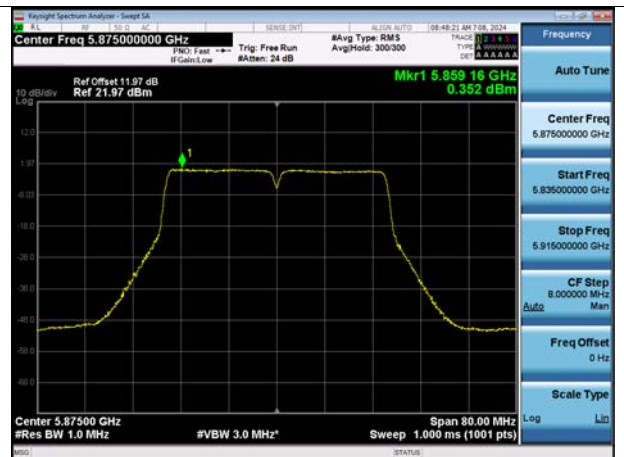
802.11ac(VHT40) UNII 1-2C (Ch. 142)



802.11 ac(VHT40) UNII 3 (Ch. 159)



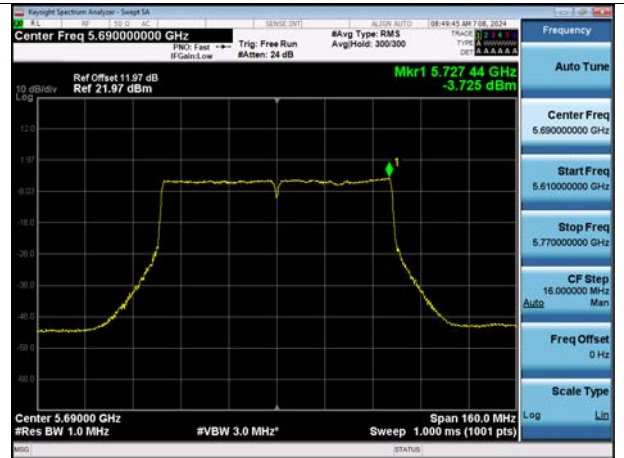
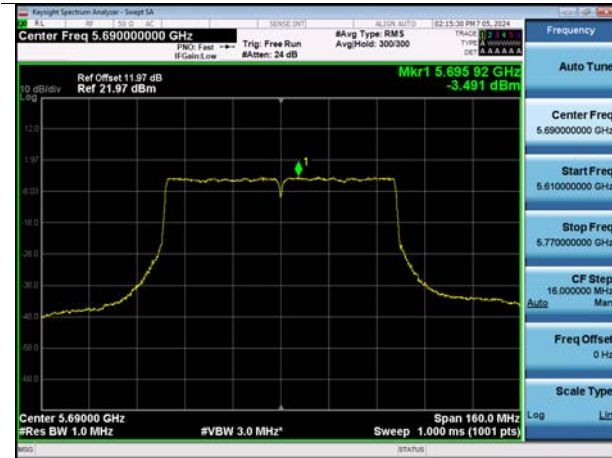
802.11 ac(VHT40) UNII 4 (Ch. 175)



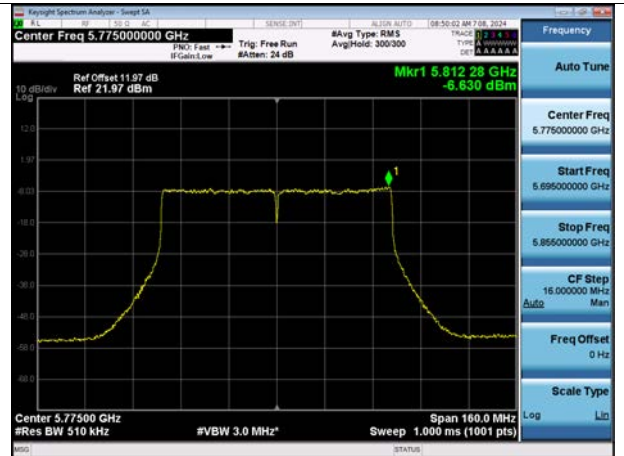
## ANT. 1

## ANT. 2

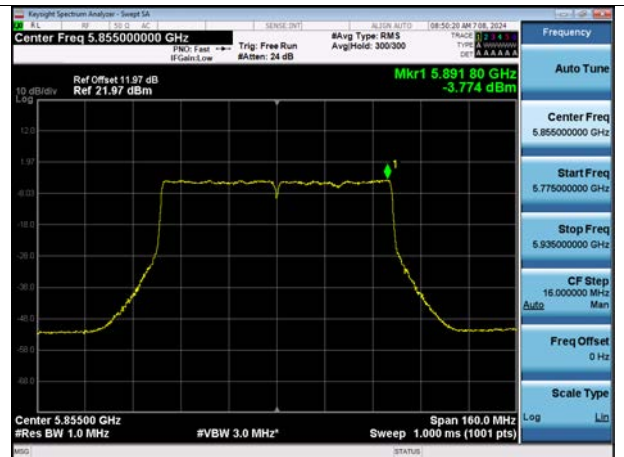
### 802.11ac(VHT80) UNII 1-2C (Ch. 138)



### 802.11 ac(VHT80) UNII 3 (Ch. 155)



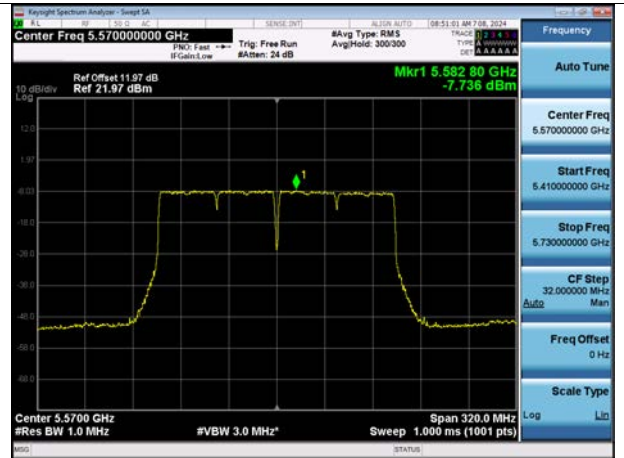
### 802.11 ac(VHT80) UNII 4 (Ch. 171)



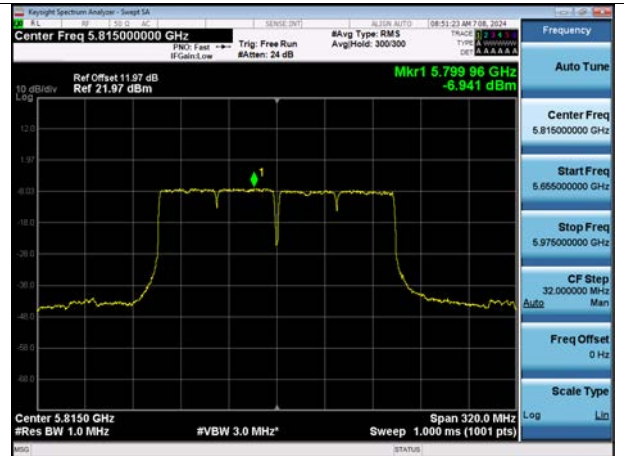
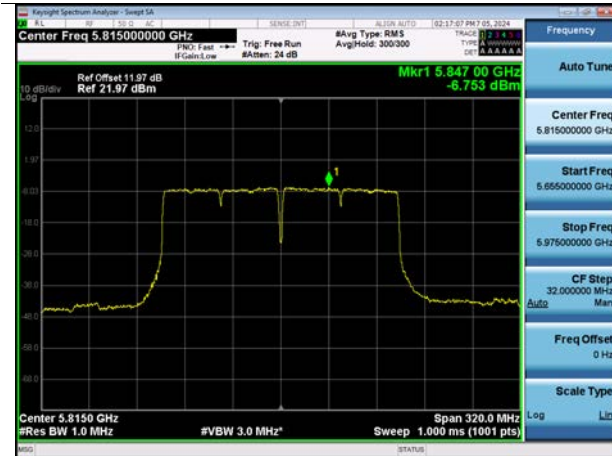
## ANT. 1

## ANT. 2

### 802.11ac(VHT160) UNII 1-2C (Ch. 114)



### 802.11 ac(VHT160) UNII 3-4 (Ch. 163)



## 10.6 FREQUENCY STABILITY

### Note:

1. All modes of operation were investigated and the worst case configuration results are reported.
2. Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

### 10.6.1 802.11ac 160 MHz BW

[MIMO\_CDD(Ant1+Ant2)]

Startup after the EUT is energized

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 1 & 2A |
| OPERATING FREQUENCY: | 5,250,000,000 Hz |
| CHANNEL:             | 50               |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>(°C) | Frequency<br>(kHz) | Frequency<br>Error (kHz) |
|----------------|----------------|---------------|--------------------|--------------------------|
| 100%           | 3.88           | +20(Ref)      | 5250034.81         | 34.81                    |
| 100%           |                | -30           | 5250010.98         | 10.98                    |
| 100%           |                | -20           | 5250033.87         | 33.87                    |
| 100%           |                | -10           | 5250028.64         | 28.64                    |
| 100%           |                | 0             | 5250036.28         | 36.28                    |
| 100%           |                | +10           | 5250034.81         | 34.81                    |
| 100%           |                | +30           | 5250027.47         | 27.47                    |
| 100%           |                | +40           | 5250020.08         | 20.08                    |
| 100%           |                | +50           | 5250024.40         | 24.40                    |
| High           | 4.45           | +20           | 5250028.88         | 28.88                    |
| Low            | 3.70           | +20           | 5250029.18         | 29.18                    |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 2C     |
| OPERATING FREQUENCY: | 5,570,000,000 Hz |
| CHANNEL:             | 114              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5570031.98 | 31.98       |
| 100%    |       | -30      | 5570010.35 | 10.35       |
| 100%    |       | -20      | 5570012.94 | 12.94       |
| 100%    |       | -10      | 5570033.61 | 33.61       |
| 100%    |       | 0        | 5570025.78 | 25.78       |
| 100%    |       | +10      | 5570030.15 | 30.15       |
| 100%    |       | +30      | 5570034.01 | 34.01       |
| 100%    |       | +40      | 5570026.68 | 26.68       |
| 100%    |       | +50      | 5570042.12 | 42.12       |
| High    | 4.45  | +20      | 5570022.90 | 22.90       |
| Low     | 3.70  | +20      | 5570026.26 | 26.26       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 3 & 4  |
| OPERATING FREQUENCY: | 5,815,000,000 Hz |
| CHANNEL:             | 163              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>(°C) | Frequency<br>(kHz) | Frequency<br>Error (kHz) |
|----------------|----------------|---------------|--------------------|--------------------------|
| 100%           | 3.88           | +20(Ref)      | 5815034.09         | 34.09                    |
| 100%           |                | -30           | 5815010.34         | 10.34                    |
| 100%           |                | -20           | 5815011.62         | 11.62                    |
| 100%           |                | -10           | 5815031.51         | 31.51                    |
| 100%           |                | 0             | 5815035.36         | 35.36                    |
| 100%           |                | +10           | 5815036.33         | 36.33                    |
| 100%           |                | +30           | 5815029.86         | 29.86                    |
| 100%           |                | +40           | 5815042.42         | 42.42                    |
| 100%           |                | +50           | 5815047.39         | 47.39                    |
| High           | 4.45           | +20           | 5815032.49         | 32.49                    |
| Low            | 3.70           | +20           | 5815041.19         | 41.19                    |

### 2 minutes after the EUT is energized

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 1 & 2A |
| OPERATING FREQUENCY: | 5,250,000,000 Hz |
| CHANNEL:             | 50               |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5250032.29 | 32.29       |
| 100%    |       | -30      | 5250010.98 | 10.98       |
| 100%    |       | -20      | 5250032.97 | 32.97       |
| 100%    |       | -10      | 5250037.48 | 37.48       |
| 100%    |       | 0        | 5250031.05 | 31.05       |
| 100%    |       | +10      | 5250021.62 | 21.62       |
| 100%    |       | +30      | 5250039.19 | 39.19       |
| 100%    |       | +40      | 5250041.75 | 41.75       |
| 100%    |       | +50      | 5250030.20 | 30.20       |
| High    | 4.45  | +20      | 5250043.40 | 43.40       |
| Low     | 3.70  | +20      | 5250048.92 | 48.92       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 2C     |
| OPERATING FREQUENCY: | 5,570,000,000 Hz |
| CHANNEL:             | 114              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5570030.86 | 30.86       |
| 100%    |       | -30      | 5570008.87 | 8.87        |
| 100%    |       | -20      | 5570012.94 | 12.94       |
| 100%    |       | -10      | 5570025.08 | 25.08       |
| 100%    |       | 0        | 5570025.28 | 25.28       |
| 100%    |       | +10      | 5570023.96 | 23.96       |
| 100%    |       | +30      | 5570020.59 | 20.59       |
| 100%    |       | +40      | 5570025.66 | 25.66       |
| 100%    |       | +50      | 5570034.94 | 34.94       |
| High    | 4.45  | +20      | 5570045.80 | 45.80       |
| Low     | 3.70  | +20      | 5570034.83 | 34.83       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 3 & 4  |
| OPERATING FREQUENCY: | 5,815,000,000 Hz |
| CHANNEL:             | 163              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>(°C) | Frequency<br>(kHz) | Frequency<br>Error (kHz) |
|----------------|----------------|---------------|--------------------|--------------------------|
| 100%           | 3.88           | +20(Ref)      | 5815034.25         | 34.25                    |
| 100%           |                | -30           | 5815008.85         | 8.85                     |
| 100%           |                | -20           | 5815011.62         | 11.62                    |
| 100%           |                | -10           | 5815026.17         | 26.17                    |
| 100%           |                | 0             | 5815023.02         | 23.02                    |
| 100%           |                | +10           | 5815021.54         | 21.54                    |
| 100%           |                | +30           | 5815027.78         | 27.78                    |
| 100%           |                | +40           | 5815026.58         | 26.58                    |
| 100%           |                | +50           | 5815022.83         | 22.83                    |
| High           | 4.45           | +20           | 5815036.65         | 36.65                    |
| Low            | 3.70           | +20           | 5815046.71         | 46.71                    |

### 5 minutes after the EUT is energized

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 1 & 2A |
| OPERATING FREQUENCY: | 5,250,000,000 Hz |
| CHANNEL:             | 50               |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5250031.17 | 31.17       |
| 100%    |       | -30      | 5250010.98 | 10.98       |
| 100%    |       | -20      | 5250031.01 | 31.01       |
| 100%    |       | -10      | 5250033.18 | 33.18       |
| 100%    |       | 0        | 5250039.31 | 39.31       |
| 100%    |       | +10      | 5250025.63 | 25.63       |
| 100%    |       | +30      | 5250026.74 | 26.74       |
| 100%    |       | +40      | 5250036.98 | 36.98       |
| 100%    |       | +50      | 5250048.55 | 48.55       |
| High    | 4.45  | +20      | 5250026.62 | 26.62       |
| Low     | 3.70  | +20      | 5250032.50 | 32.50       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 2C     |
| OPERATING FREQUENCY: | 5,570,000,000 Hz |
| CHANNEL:             | 114              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5570033.36 | 33.36       |
| 100%    |       | -30      | 5570009.80 | 9.80        |
| 100%    |       | -20      | 5570012.94 | 12.94       |
| 100%    |       | -10      | 5570023.63 | 23.63       |
| 100%    |       | 0        | 5570036.77 | 36.77       |
| 100%    |       | +10      | 5570036.67 | 36.67       |
| 100%    |       | +30      | 5570049.87 | 49.87       |
| 100%    |       | +40      | 5570043.94 | 43.94       |
| 100%    |       | +50      | 5570045.02 | 45.02       |
| High    | 4.45  | +20      | 5570036.72 | 36.72       |
| Low     | 3.70  | +20      | 5570033.63 | 33.63       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 3 & 4  |
| OPERATING FREQUENCY: | 5,815,000,000 Hz |
| CHANNEL:             | 163              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>(°C) | Frequency<br>(kHz) | Frequency<br>Error (kHz) |
|----------------|----------------|---------------|--------------------|--------------------------|
| 100%           | 3.88           | +20(Ref)      | 5815030.50         | 30.50                    |
| 100%           |                | -30           | 5815008.94         | 8.94                     |
| 100%           |                | -20           | 5815011.62         | 11.62                    |
| 100%           |                | -10           | 5815034.81         | 34.81                    |
| 100%           |                | 0             | 5815020.59         | 20.59                    |
| 100%           |                | +10           | 5815023.03         | 23.03                    |
| 100%           |                | +30           | 5815023.94         | 23.94                    |
| 100%           |                | +40           | 5815041.67         | 41.67                    |
| 100%           |                | +50           | 5815044.16         | 44.16                    |
| High           | 4.45           | +20           | 5815023.19         | 23.19                    |
| Low            | 3.70           | +20           | 5815027.44         | 27.44                    |

### 10 minutes after the EUT is energized

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 1 & 2A |
| OPERATING FREQUENCY: | 5,250,000,000 Hz |
| CHANNEL:             | 50               |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5250031.97 | 31.97       |
| 100%    |       | -30      | 5250010.98 | 10.98       |
| 100%    |       | -20      | 5250034.36 | 34.36       |
| 100%    |       | -10      | 5250036.07 | 36.07       |
| 100%    |       | 0        | 5250027.77 | 27.77       |
| 100%    |       | +10      | 5250039.18 | 39.18       |
| 100%    |       | +30      | 5250033.39 | 33.39       |
| 100%    |       | +40      | 5250038.52 | 38.52       |
| 100%    |       | +50      | 5250030.18 | 30.18       |
| High    | 4.45  | +20      | 5250048.71 | 48.71       |
| Low     | 3.70  | +20      | 5250039.45 | 39.45       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 2C     |
| OPERATING FREQUENCY: | 5,570,000,000 Hz |
| CHANNEL:             | 114              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage | Power | Temp.    | Frequency  | Frequency   |
|---------|-------|----------|------------|-------------|
| (%)     | (VDC) | (°C)     | (kHz)      | Error (kHz) |
| 100%    | 3.88  | +20(Ref) | 5570032.20 | 32.20       |
| 100%    |       | -30      | 5570008.39 | 8.39        |
| 100%    |       | -20      | 5570012.94 | 12.94       |
| 100%    |       | -10      | 5570022.90 | 22.90       |
| 100%    |       | 0        | 5570022.88 | 22.88       |
| 100%    |       | +10      | 5570031.17 | 31.17       |
| 100%    |       | +30      | 5570049.21 | 49.21       |
| 100%    |       | +40      | 5570043.61 | 43.61       |
| 100%    |       | +50      | 5570049.52 | 49.52       |
| High    | 4.45  | +20      | 5570020.56 | 20.56       |
| Low     | 3.70  | +20      | 5570020.25 | 20.25       |

|                      |                  |
|----------------------|------------------|
| OPERATING BAND:      | UNII Band 3 & 4  |
| OPERATING FREQUENCY: | 5,815,000,000 Hz |
| CHANNEL:             | 163              |
| REFERENCE VOLTAGE:   | 3.88 VDC         |

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>(°C) | Frequency<br>(kHz) | Frequency<br>Error (kHz) |
|----------------|----------------|---------------|--------------------|--------------------------|
| 100%           | 3.88           | +20(Ref)      | 5815030.36         | 30.36                    |
| 100%           |                | -30           | 5815010.05         | 10.05                    |
| 100%           |                | -20           | 5815011.62         | 11.62                    |
| 100%           |                | -10           | 5815020.65         | 20.65                    |
| 100%           |                | 0             | 5815025.29         | 25.29                    |
| 100%           |                | +10           | 5815025.62         | 25.62                    |
| 100%           |                | +30           | 5815043.62         | 43.62                    |
| 100%           |                | +40           | 5815049.16         | 49.16                    |
| 100%           |                | +50           | 5815030.69         | 30.69                    |
| High           | 4.45           | +20           | 5815030.14         | 30.14                    |
| Low            | 3.70           | +20           | 5815035.69         | 35.69                    |

## 10.7 STRADDLE CHANNEL

### 10.7.1 26 dB Bandwidth

[ANT. 1]

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11a         | UNII 2C | 5720            | 144     | 5708.16                  | 16.84                 |
| 802.11n(HT20)   |         |                 |         | 5708.16                  | 16.84                 |
| 802.11ac(VHT20) |         |                 |         | 5708.04                  | 16.96                 |
| 802.11a         | UNII 3  | 5720            | 144     | 5731.52                  | 6.52                  |
| 802.11n(HT20)   |         |                 |         | 5731.76                  | 6.76                  |
| 802.11ac(VHT20) |         |                 |         | 5731.84                  | 6.84                  |

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11n(HT40)   | UNII 2C | 5710            | 142     | 5686.80                  | 38.20                 |
| 802.11ac(VHT40) |         |                 |         | 5686.16                  | 38.84                 |
| 802.11n(HT40)   | UNII 3  | 5710            | 142     | 5732.96                  | 7.96                  |
| 802.11ac(VHT40) |         |                 |         | 5732.88                  | 7.88                  |

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11ac(VHT80) | UNII 2C | 5690            | 138     | 5643.12                  | 81.88                 |
|                 | UNII 3  | 5690            | 138     | 5735.60                  | 10.60                 |

**Note:**

[UNII 2C] 26 dB Bandwidth = 5 725 MHz - Measured Frequency[MHz]

[UNII 3C] 26 dB Bandwidth = Measured Frequency[MHz] – 5 725 MHz

**[ANT. 2]**

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11a         | UNII 2C | 5720            | 144     | 5708.12                  | 16.88                 |
| 802.11n(HT20)   |         |                 |         | 5708.16                  | 16.84                 |
| 802.11ac(VHT20) |         |                 |         | 5708.16                  | 16.84                 |
| 802.11a         | UNII 3  | 5720            | 144     | 5731.76                  | 6.76                  |
| 802.11n(HT20)   |         |                 |         | 5731.80                  | 6.80                  |
| 802.11ac(VHT20) |         |                 |         | 5731.80                  | 6.80                  |

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11n(HT40)   | UNII 2C | 5710            | 142     | 5686.64                  | 38.36                 |
| 802.11ac(VHT40) |         |                 |         | 5687.28                  | 37.72                 |
| 802.11n(HT40)   | UNII 3  | 5710            | 142     | 5732.40                  | 7.40                  |
| 802.11ac(VHT40) |         |                 |         | 5732.24                  | 7.24                  |

| Mode            | Band    | Frequency [MHz] | Channel | Measured Frequency [MHz] | 26 dB Bandwidth [MHz] |
|-----------------|---------|-----------------|---------|--------------------------|-----------------------|
| 802.11ac(VHT80) | UNII 2C | 5690            | 138     | 5642.80                  | 82.20                 |
|                 | UNII 3  | 5690            | 138     | 5735.92                  | 10.92                 |

**Note:**

[UNII 2C] 26 dB Bandwidth = 5 725 MHz - Measured Frequency[MHz]

[UNII 3C] 26 dB Bandwidth = Measured Frequency[MHz] – 5 725 MHz

[ANT. 1]

■ Test Plots (26 dB Bandwidth)

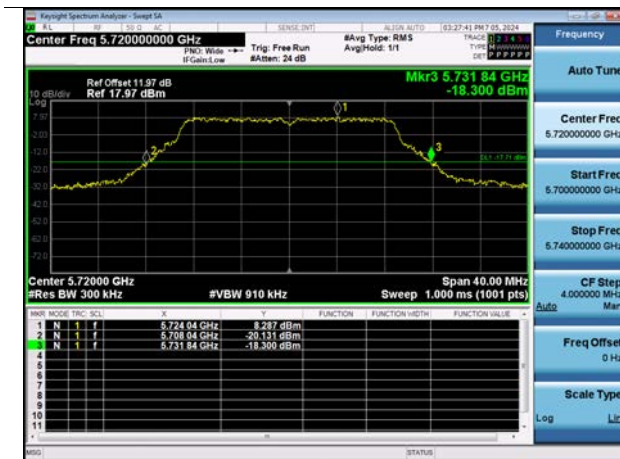
802.11a UNII Band



802.11n(HT20) UNII Band



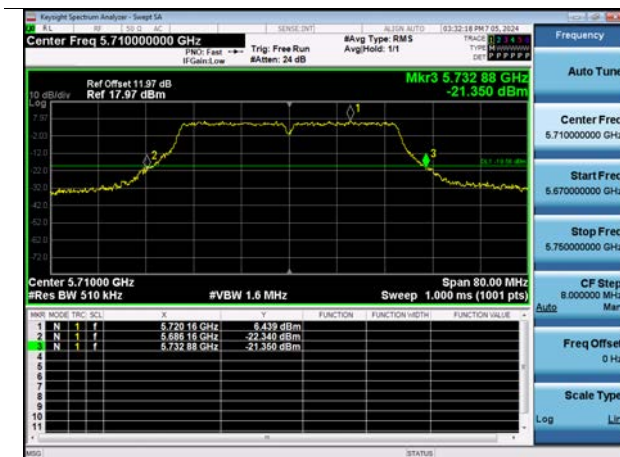
802.11ac(VHT20) UNII Band



802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



[ANT. 2]

■ Test Plots (26 dB Bandwidth)

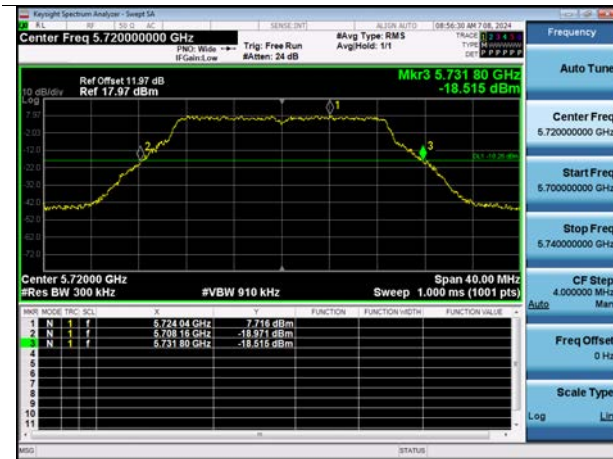
802.11a UNII Band



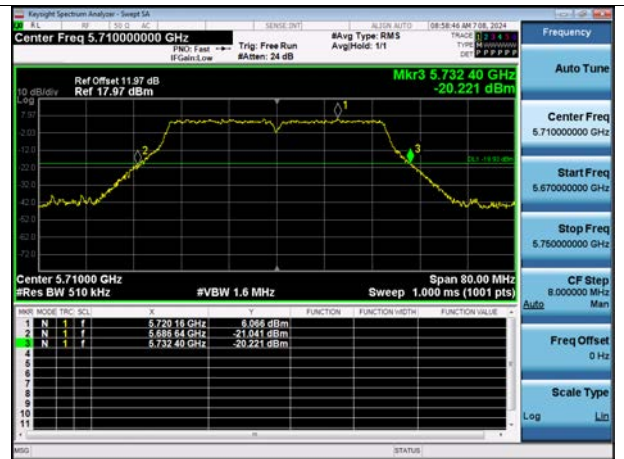
802.11n(HT20) UNII Band



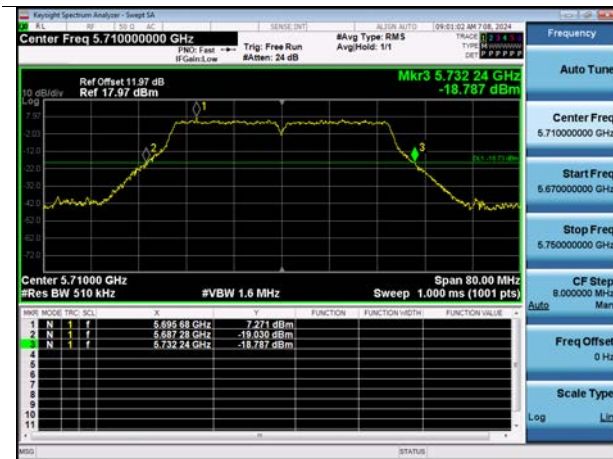
802.11ac(VHT20) UNII Band



802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



### 10.7.2 6 dB Bandwidth

#### [ANT. 1]

| Mode            | Band  | Frequency [MHz] | Channel | Measured Frequency [MHz] | 6dB Bandwidth [MHz] | Limit [MHz] |
|-----------------|-------|-----------------|---------|--------------------------|---------------------|-------------|
| 802.11a         | UNII3 | 5720            | 144     | 5728.20                  | 3.20                | > 0.5       |
| 802.11n(HT20)   |       |                 |         | 5728.84                  | 3.84                | > 0.5       |
| 802.11ac(VHT20) |       |                 |         | 5728.80                  | 3.80                | > 0.5       |
| 802.11n(HT40)   | UNII3 | 5710            | 142     | 5728.24                  | 3.24                | > 0.5       |
| 802.11ac(VHT40) |       |                 |         | 5728.24                  | 3.24                | > 0.5       |
| 802.11ac(VHT80) | UNII3 | 5690            | 138     | 5728.24                  | 3.24                | > 0.5       |

#### [ANT. 2]

| Mode            | Band  | Frequency [MHz] | Channel | Measured Frequency [MHz] | 6dB Bandwidth [MHz] | Limit [MHz] |
|-----------------|-------|-----------------|---------|--------------------------|---------------------|-------------|
| 802.11a         | UNII3 | 5720            | 144     | 5728.20                  | 3.20                | > 0.5       |
| 802.11n(HT20)   |       |                 |         | 5728.80                  | 3.80                | > 0.5       |
| 802.11ac(VHT20) |       |                 |         | 5728.80                  | 3.80                | > 0.5       |
| 802.11n(HT40)   | UNII3 | 5710            | 142     | 5728.24                  | 3.24                | > 0.5       |
| 802.11ac(VHT40) |       |                 |         | 5728.24                  | 3.24                | > 0.5       |
| 802.11ac(VHT80) | UNII3 | 5690            | 138     | 5728.24                  | 3.24                | > 0.5       |

#### Note:

6 dB Bandwidth = Measured Frequency[MHz] – 5 725MHz

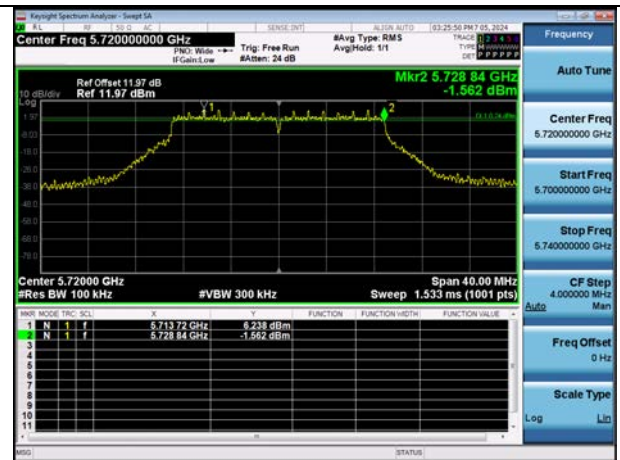
[ANT. 1]

■ Test Plots (UNII 3 Band 6 dB Bandwidth)

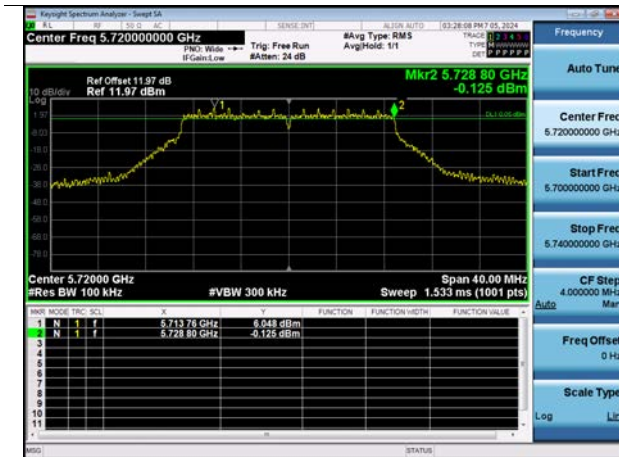
802.11a UNII Band



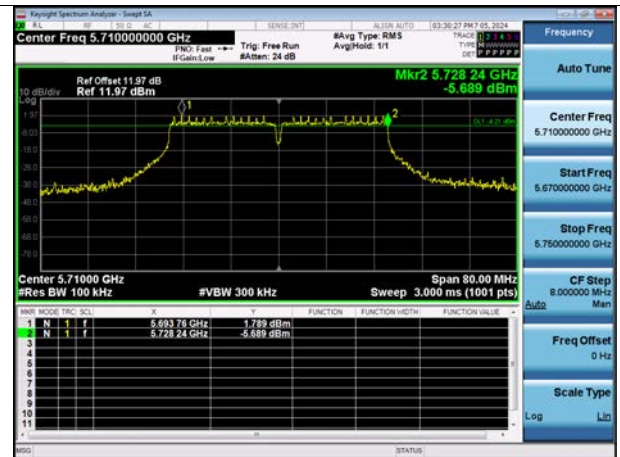
802.11n(HT20) UNII Band



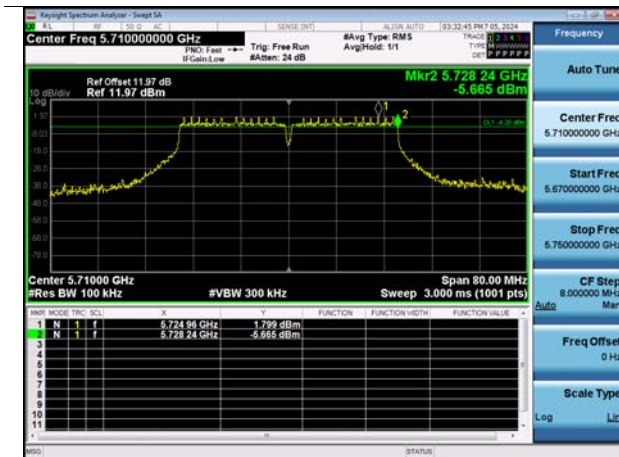
802.11ac(VHT20) UNII Band



802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



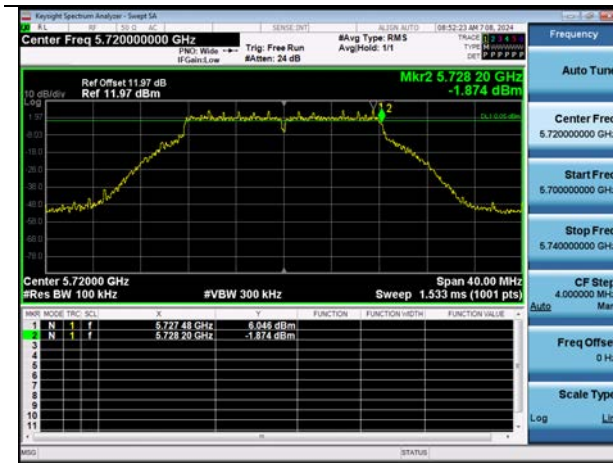
802.11ac(VHT80) UNII Band



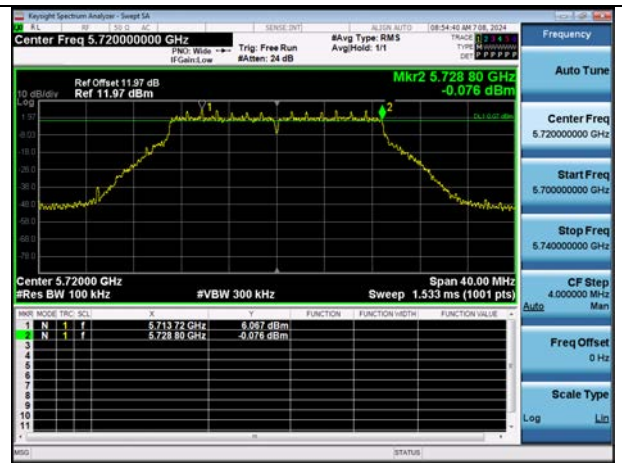
[ANT. 2]

■ Test Plots (UNII 3 Band 6 dB Bandwidth)

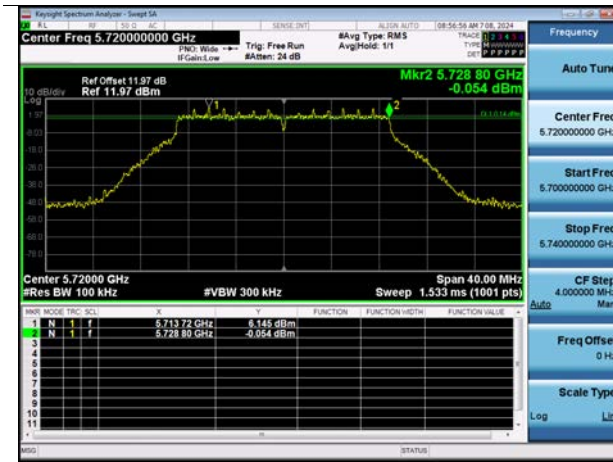
802.11a UNII Band



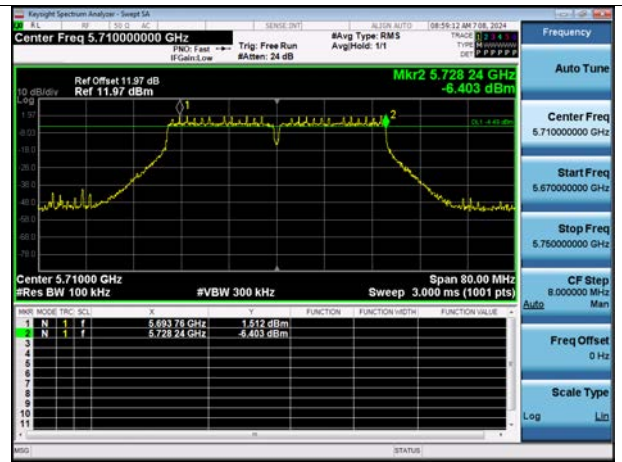
802.11n(HT20) UNII Band



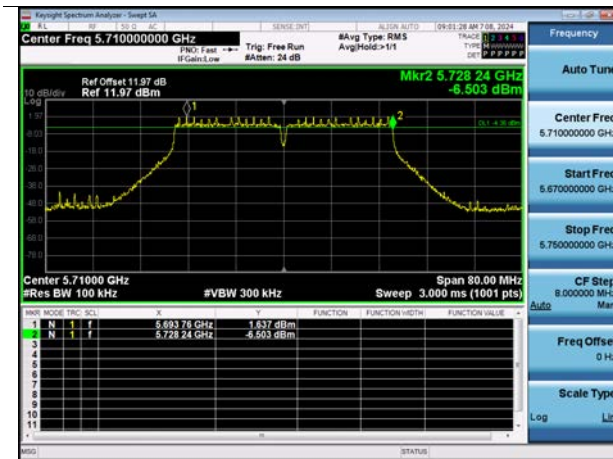
802.11ac(VHT20) UNII Band



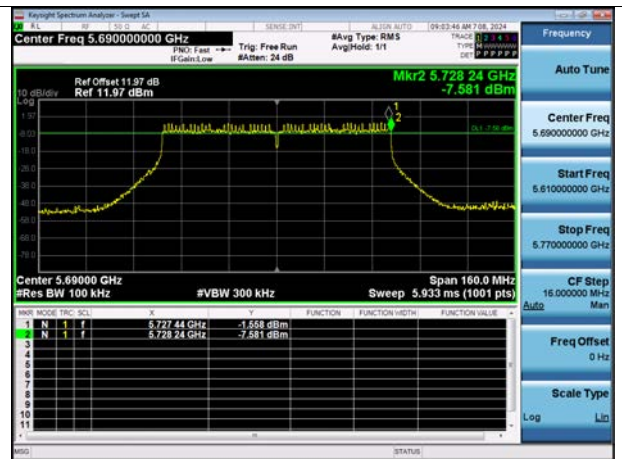
802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



### 10.7.3 Output Power

[ANT. 1]

| Mode            | Frequency [MHz] | Channel | Measured Power [dBm] | Duty Cycle Factor [dB] | Total Power [dBm] | Limit [dBm] | Worstcase Datarate |
|-----------------|-----------------|---------|----------------------|------------------------|-------------------|-------------|--------------------|
| 802.11a         | 5720            | 144     | 15.76                | 0.284                  | 16.05             | 23.29       | 6 Mbps             |
| 802.11n(HT20)   | (UNII 2C        |         | 15.65                | 0.338                  | 15.99             | 23.26       | MCS0               |
| 802.11ac(VHT20) | Band)           |         | 15.69                | 0.334                  | 16.03             | 23.29       | MCS0               |
| 802.11a         | 5720            | 144     | 9.75                 | 0.284                  | 10.03             | 30.00       | 6 Mbps             |
| 802.11n(HT20)   | (UNII 3         |         | 10.24                | 0.338                  | 10.58             | 30.00       | MCS0               |
| 802.11ac(VHT20) | Band)           |         | 10.28                | 0.334                  | 10.61             | 30.00       | MCS0               |

| Mode            | Frequency [MHz] | Channel | Measured Power [dBm] | Duty Cycle Factor [dB] | Total Power [dBm] | Limit [dBm] | Worstcase Datarate |
|-----------------|-----------------|---------|----------------------|------------------------|-------------------|-------------|--------------------|
| 802.11n(HT40)   | 5710            | 142     | 15.19                | 0.637                  | 15.82             | 23.98       | MCS0               |
| 802.11ac(VHT40) | (UNII 2C Band)  |         | 15.16                | 0.641                  | 15.80             | 23.98       | MCS0               |
| 802.11n(HT40)   | 5710            | 142     | 5.32                 | 0.637                  | 5.96              | 30.00       | MCS0               |
| 802.11ac(VHT40) | (UNII 3 Band)   |         | 5.28                 | 0.641                  | 5.92              | 30.00       | MCS0               |

| Mode            | Frequency [MHz]     | Channel | Measured Power [dBm] | Duty Cycle Factor [dB] | Total Power [dBm] | Limit [dBm] | Worstcase Datarate |
|-----------------|---------------------|---------|----------------------|------------------------|-------------------|-------------|--------------------|
| 802.11ac(VHT80) | 5690 (UNII 2C Band) | 138     | 13.93                | 1.191                  | 15.12             | 23.98       | MCS0               |
|                 | 5690 (UNII 3 Band)  | 138     | 0.69                 | 1.191                  | 1.88              | 30.00       | MCS0               |

## [ANT. 2]

| Mode            | Frequency<br>[MHz] | Channel | Measured<br>Power<br>[dBm] | Duty<br>Cycle<br>Factor<br>[dB] | Total<br>Power<br>[dBm] | Limit<br>[dBm] | Worstcase<br>Datarate |
|-----------------|--------------------|---------|----------------------------|---------------------------------|-------------------------|----------------|-----------------------|
| 802.11a         | 5720               | 144     | 15.53                      | 0.284                           | 15.81                   | 23.27          | 6 Mbps                |
| 802.11n(HT20)   | (UNII 2C<br>Band)  |         | 15.32                      | 0.338                           | 15.66                   | 23.26          | MCS0                  |
| 802.11ac(VHT20) |                    |         | 15.40                      | 0.334                           | 15.74                   | 23.26          | MCS0                  |
| 802.11a         | 5720               | 144     | 9.44                       | 0.284                           | 9.72                    | 30.00          | 6 Mbps                |
| 802.11n(HT20)   | (UNII 3<br>Band)   |         | 9.80                       | 0.338                           | 10.14                   | 30.00          | MCS0                  |
| 802.11ac(VHT20) |                    |         | 9.87                       | 0.334                           | 10.21                   | 30.00          | MCS0                  |

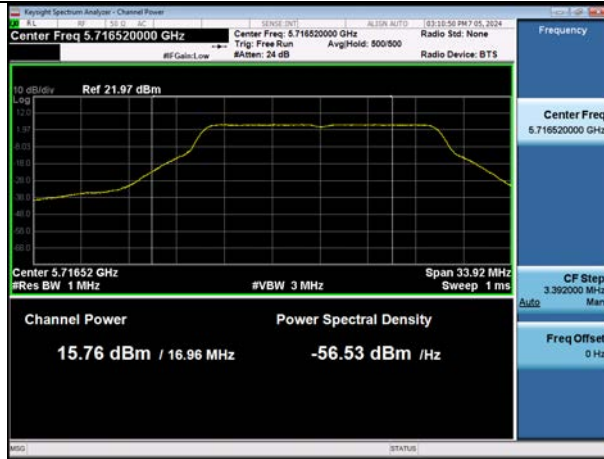
| Mode            | Frequency [MHz] | Channel | Measured Power [dBm] | Duty Cycle Factor [dB] | Total Power [dBm] | Limit [dBm] | Worstcase Datarate |
|-----------------|-----------------|---------|----------------------|------------------------|-------------------|-------------|--------------------|
| 802.11n(HT40)   | 5710            | 142     | 14.91                | 0.637                  | 15.54             | 23.98       | MCS0               |
| 802.11ac(VHT40) | (UNII 2C Band)  |         | 14.83                | 0.641                  | 15.47             | 23.98       | MCS0               |
| 802.11n(HT40)   | 5710            | 142     | 4.91                 | 0.637                  | 5.54              | 30.00       | MCS0               |
| 802.11ac(VHT40) | (UNII 3 Band)   |         | 4.89                 | 0.641                  | 5.54              | 30.00       | MCS0               |

| Mode            | Frequency [MHz]        | Channel | Measured Power [dBm] | Duty Cycle Factor [dB] | Total Power [dBm] | Limit [dBm] | Worstcase Datarate |
|-----------------|------------------------|---------|----------------------|------------------------|-------------------|-------------|--------------------|
| 802.11ac(VHT80) | 5690<br>(UNII 2C Band) | 138     | 13.50                | 1.191                  | 14.69             | 23.98       | MCS0               |
|                 | 5690<br>(UNII 3 Band)  | 138     | 1.03                 | 1.191                  | 2.22              | 30.00       | MCS0               |

[ANT. 1]

▣ Test Plots

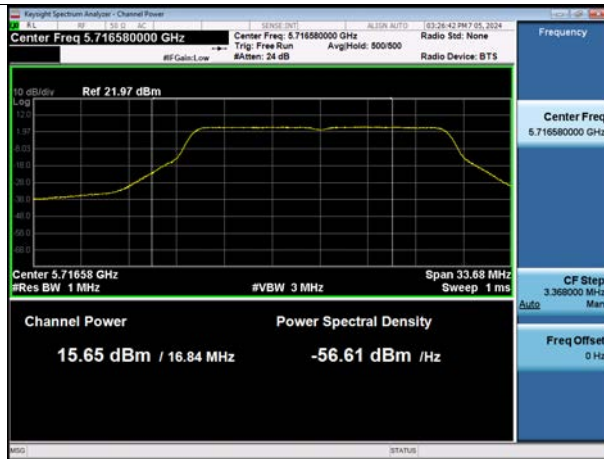
802.11a UNII 2C Band



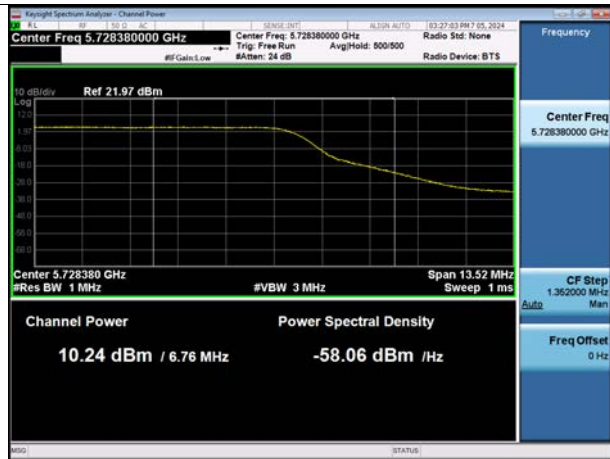
802.11a UNII 3 Band



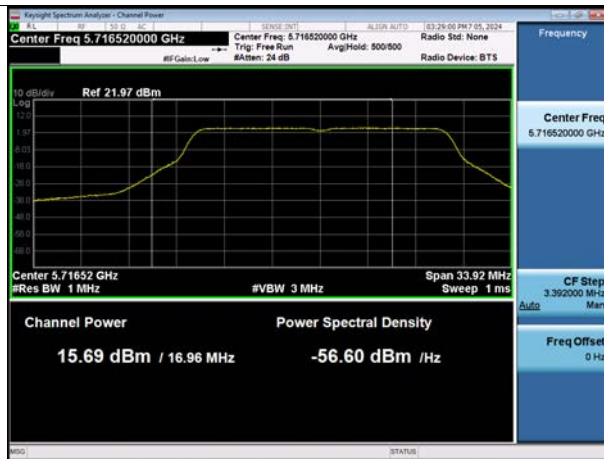
802.11n(HT20) UNII 2C Band



802.11n(HT20) UNII 3 Band



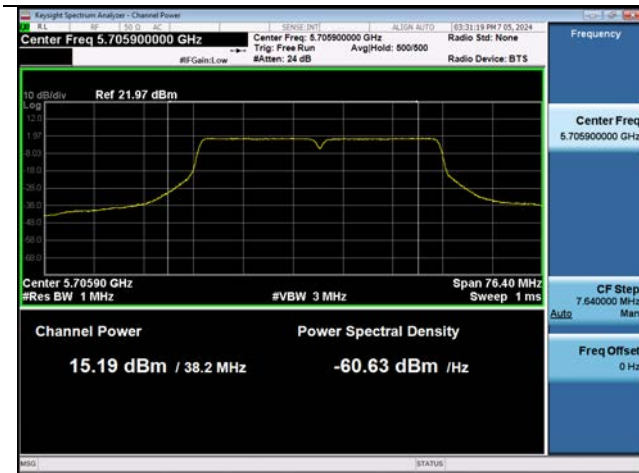
802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band



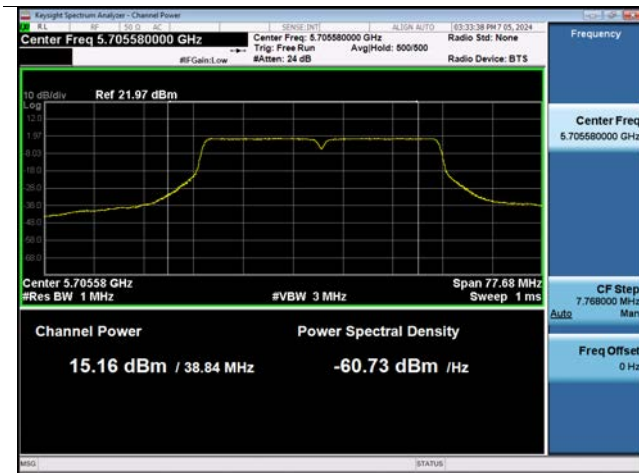
802.11n(HT40) UNII 2C Band



802.11n(HT40) UNII 3 Band



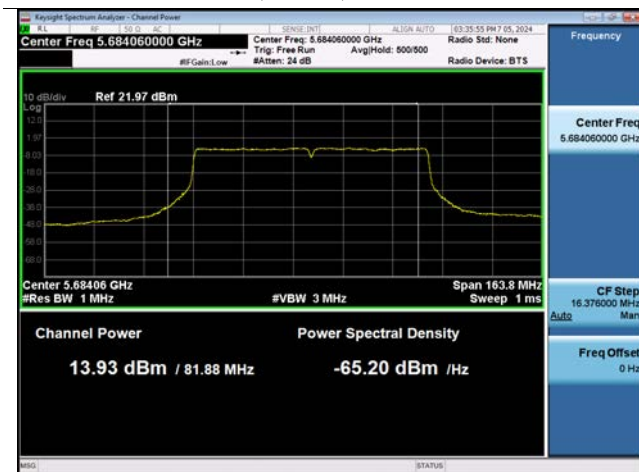
802.11ac(VHT40) UNII 2C Band



802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



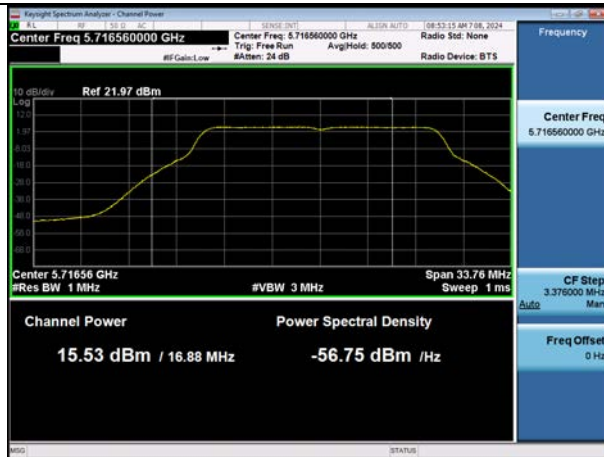
802.11ac(VHT80) UNII 3 Band



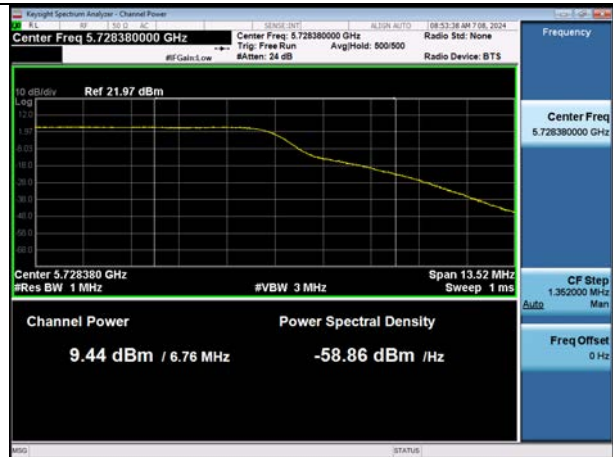
[ANT. 2]

Test Plots

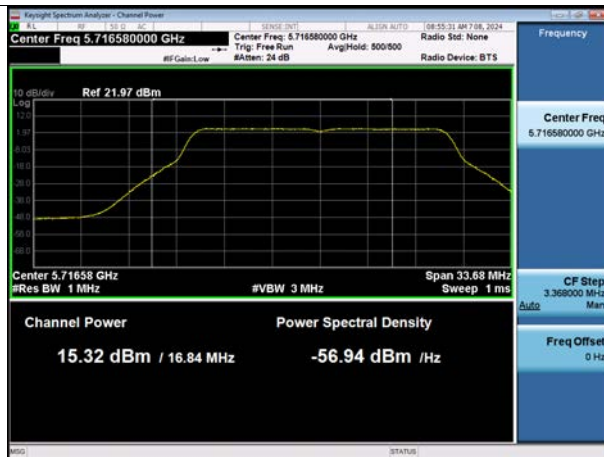
802.11a UNII 2C Band



802.11a UNII 3 Band



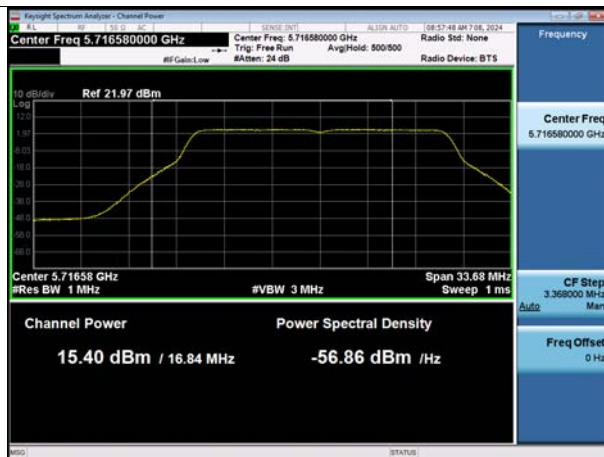
802.11n(HT20) UNII 2C Band



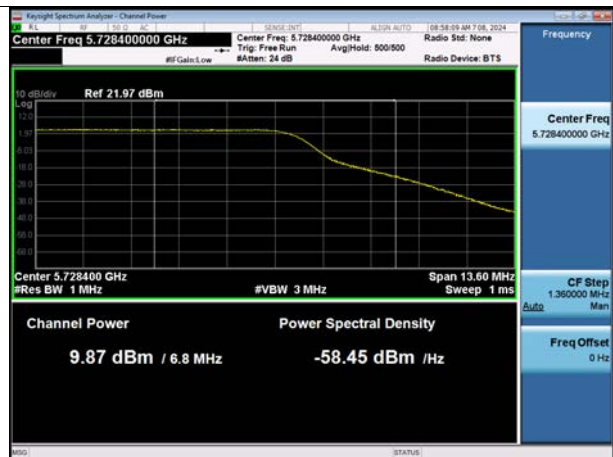
802.11n(HT20) UNII 3 Band



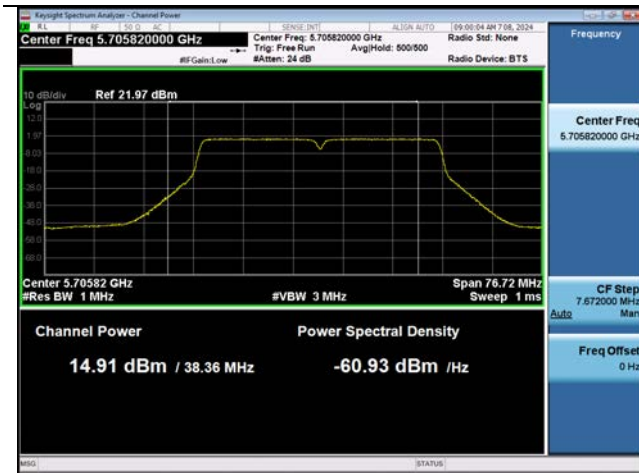
802.11ac(VHT20) UNII 2C Band



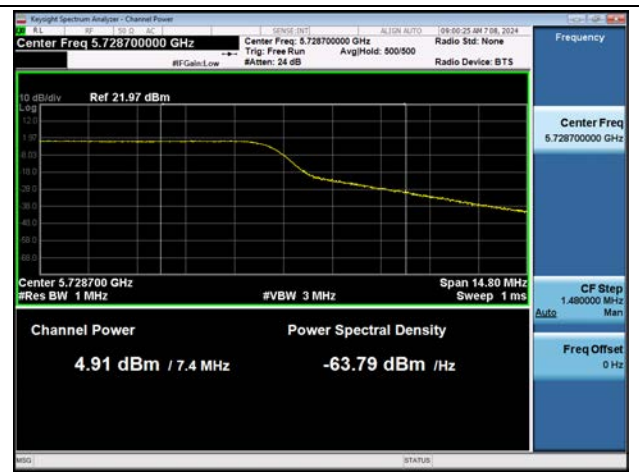
802.11ac(VHT20) UNII 3 Band



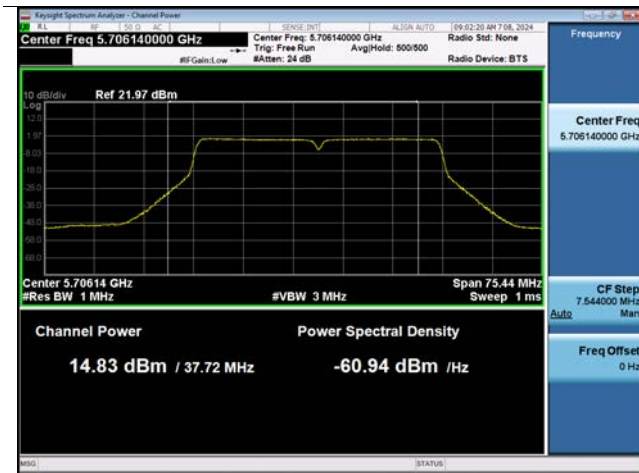
802.11n(HT40) UNII 2C Band



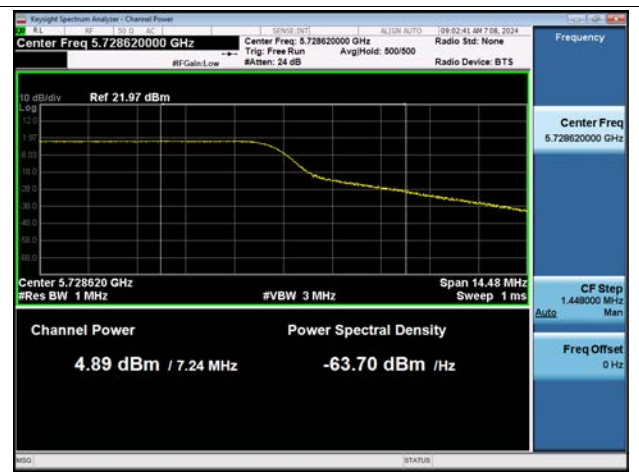
802.11n(HT40) UNII 3 Band



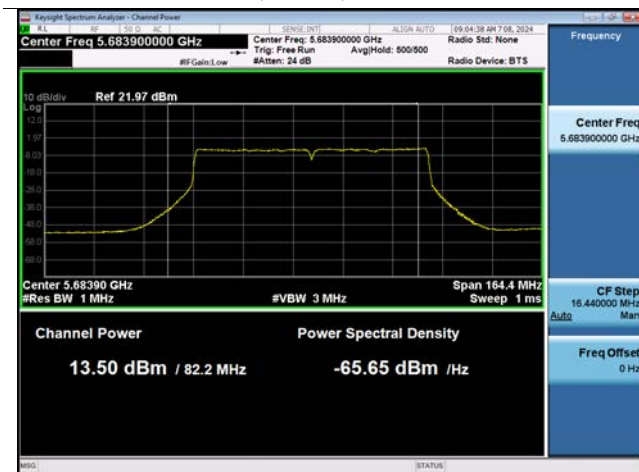
802.11ac(VHT40) UNII 2C Band



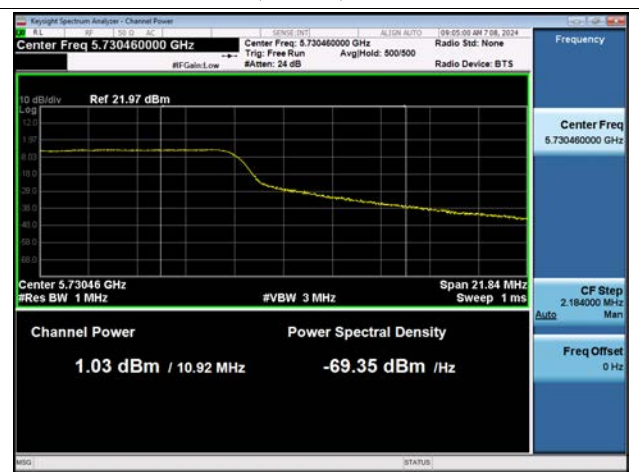
802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band



### 10.7.4 Power Spectral Density

[ANT. 1]

| Mode            | Frequency [MHz] | Channel | Measured Density [dBm] | Duty Cycle Factor [dB] | Total PSD [dBm] | Limit [dBm]     | Worstcase Datarate |
|-----------------|-----------------|---------|------------------------|------------------------|-----------------|-----------------|--------------------|
| 802.11a         | 5720            | 144     | 5.351                  | 0.284                  | 5.634           | 11              | 6 Mbps             |
| 802.11n(HT20)   | (UNII 2C        |         | 5.233                  | 0.338                  | 5.571           | dBm/<br>MHz     | MCS0               |
| 802.11ac(VHT20) | Band)           |         | 5.135                  | 0.334                  | 5.469           |                 | MCS0               |
| 802.11a         | 5720            | 144     | 2.507                  | 0.284                  | 2.791           | 30              | 6 Mbps             |
| 802.11n(HT20)   | (UNII 3         |         | 2.278                  | 0.338                  | 2.616           | dBm/<br>500 kHz | MCS0               |
| 802.11ac(VHT20) | Band)           |         | 2.130                  | 0.334                  | 2.464           |                 | MCS0               |

| Mode            | Frequency [MHz]   | Channel | Measured Density [dBm] | Duty Cycle Factor [dB] | Total PSD [dBm] | Limit [dBm]        | Worstcase Datarate |
|-----------------|-------------------|---------|------------------------|------------------------|-----------------|--------------------|--------------------|
| 802.11n(HT40)   | 5710              | 142     | 0.890                  | 0.637                  | 1.526           | 11 dBm/<br>MHz     | MCS0               |
| 802.11ac(VHT40) | (UNII 2C<br>Band) |         | 0.769                  | 0.641                  | 1.410           |                    | MCS0               |
| 802.11n(HT40)   | 5710              | 142     | -1.974                 | 0.637                  | -1.337          | 30 dBm/<br>500 kHz | MCS0               |
| 802.11ac(VHT40) | (UNII 3<br>Band)  |         | -2.014                 | 0.641                  | -1.373          |                    | MCS0               |

| Mode            | Frequency [MHz]           | Channel | Measured Density [dBm] | Duty Cycle Factor [dB] | Total PSD [dBm] | Limit [dBm]        | Worstcase Datarate |
|-----------------|---------------------------|---------|------------------------|------------------------|-----------------|--------------------|--------------------|
| 802.11ac(VHT80) | 5690<br>(UNII 2C<br>Band) | 138     | -3.508                 | 1.191                  | -2.317          | 11 dBm/<br>MHz     | MCS0               |
|                 | 5690<br>(UNII 3<br>Band)  | 138     | -6.383                 | 1.191                  | -5.192          | 30 dBm/<br>500 kHz | MCS0               |

## [ANT. 2]

| Mode            | Frequency<br>[MHz] | Channel | Measured<br>Density<br>[dBm] | Duty<br>Cycle<br>Factor<br>[dB] | Total<br>PSD<br>[dBm] | Limit<br>[dBm] | Worstcase<br>Datarate |
|-----------------|--------------------|---------|------------------------------|---------------------------------|-----------------------|----------------|-----------------------|
| 802.11a         | 5720               | 144     | 5.100                        | 0.284                           | 5.383                 | 11 dBm/<br>MHz | 6 Mbps                |
| 802.11n(HT20)   | (UNII 2C           |         | 4.843                        | 0.338                           | 5.182                 |                | MCS0                  |
| 802.11ac(VHT20) | Band)              |         | 4.762                        | 0.334                           | 5.096                 |                | MCS0                  |
| 802.11a         | 5720               | 144     | 2.191                        | 0.284                           | 2.475                 | 30 dBm         | 6 Mbps                |
| 802.11n(HT20)   | (UNII 3            |         | 1.745                        | 0.338                           | 2.083                 | /500 kHz       | MCS0                  |
| 802.11ac(VHT20) | Band)              |         | 1.991                        | 0.334                           | 2.325                 | z              | MCS0                  |

| Mode            | Frequency [MHz] | Channel | Measured Density [dBm] | Duty Cycle Factor [dB] | Total PSD [dBm] | Limit [dBm]     | Worstcase Datarate |
|-----------------|-----------------|---------|------------------------|------------------------|-----------------|-----------------|--------------------|
| 802.11n(HT40)   | 5710            | 142     | 0.469                  | 0.637                  | 1.106           | 11 dBm/ MHz     | MCS0               |
| 802.11ac(VHT40) | (UNII 2C Band)  |         | 0.732                  | 0.641                  | 1.373           |                 | MCS0               |
| 802.11n(HT40)   | 5710            | 142     | -2.359                 | 0.637                  | -1.722          | 30 dBm/ 500 kHz | MCS0               |
| 802.11ac(VHT40) | (UNII 3 Band)   |         | -2.504                 | 0.641                  | -1.863          |                 | MCS0               |

| Mode            | Frequency [MHz] | Channel | Measured Density [dBm] | Duty Cycle Factor [dB] | Total PSD [dBm] | Limit [dBm]     | Worstcase Datarate |
|-----------------|-----------------|---------|------------------------|------------------------|-----------------|-----------------|--------------------|
| 802.11ac(VHT80) | 5690            | 138     | -3.866                 | 1.191                  | -2.675          | 11 dBm/ MHz     | MCS0               |
|                 | 5690            | 138     | -6.623                 | 1.191                  | -5.432          | 30 dBm /500 kHz | MCS0               |