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# FCC Test Report

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Report No.: AGC00688251006FR03

**FCC ID** : 2AKC6-AX940-18

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION** : Wireless USB Adapter

**BRAND NAME** : N/A

**MODEL NAME** : AX940, AX942, AX1840, AX1842

**APPLICANT** : SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD

**DATE OF ISSUE** : Dec. 10 2025

**STANDARD(S)** : FCC Part 15 Subpart E §15.407

**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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**Report Revise Record**

| Report Version | Revise Time | Issued Date  | Valid Version | Notes           |
|----------------|-------------|--------------|---------------|-----------------|
| V1.0           | /           | Dec. 10 2025 | Valid         | Initial Release |

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## 1. General Information

|                              |                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------|
| Applicant                    | SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD                                                      |
| Address                      | 3Floor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China             |
| Manufacturer                 | SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD                                                      |
| Address                      | 3Floor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China             |
| Factory                      | SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD                                                      |
| Address                      | 3Floor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China             |
| Product Designation          | Wireless USB Adapter                                                                            |
| Brand Name                   | N/A                                                                                             |
| Test Model                   | AX940                                                                                           |
| Series Model(s)              | AX942, AX1840, AX1842                                                                           |
| Difference Description       | All the series models are the same as the test model except for the model names and appearance. |
| Date of receipt of test item | Oct. 27, 2025                                                                                   |
| Date of Test                 | Oct. 27, 2025~Dec. 10 2025                                                                      |
| Deviation from Standard      | No any deviation from the test method                                                           |
| Condition of Test Sample     | Normal                                                                                          |
| Test Result                  | Pass                                                                                            |
| Test Report Form No          | AGCER-FCC-5G WLAN-V1                                                                            |

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By



Cici Li  
(Project Engineer)

Dec. 10 2025

Reviewed By



Bibo Zhang  
(Reviewer)

Dec. 10 2025

Approved By



Angela Li  
(Authorized Officer)

Dec. 10 2025

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## 2. Product Information

### 2.1 Product Technical Description

|                      |                                                                                                                                                                                                                             |                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Equipment Type       | <input type="checkbox"/> Outdoor access points<br><input type="checkbox"/> Fixed P2P access points                                                                                                                          | <input type="checkbox"/> Indoor access points<br><input checked="" type="checkbox"/> Client devices     |
| Operation Frequency  | <input checked="" type="checkbox"/> U-NII 1:5150MHz~5250MHz<br><input type="checkbox"/> U-NII 2C:5470MHz~5725MHz                                                                                                            | <input type="checkbox"/> U-NII 2A: 5250MHz~5350MHz<br><input type="checkbox"/> U-NII 3: 5725MHz~5850MHz |
| DFS Design Type      | <input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection                                                                       |                                                                                                         |
| TPC Function         | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                         |                                                                                                         |
| Hardware Version     | V2.0                                                                                                                                                                                                                        |                                                                                                         |
| Software Version     | V1.2                                                                                                                                                                                                                        |                                                                                                         |
| Test Frequency Range | For 802.11a/n-HT20/ac-VHT20/ax-HE20:5180~5240MHz<br>For 802.11n-HT40/ac-VHT40/ax-HE40:5190~5230MHz<br>For 802.11ac-VHT80/ ax-HE80:5210MHz                                                                                   |                                                                                                         |
| RF Output Power      | 802.11a:7.53dBm;802.11n(HT20):6.99dBm; 802.11n(HT40):7.36dBm;<br>802.11ac (VHT20):7.23dBm;802.11ac (VHT40):7.26dBm;<br>802.11ac (VHT80):7.27dBm;802.11ax (HE20):7.24dBm;<br>802.11ax (HE40):7.41dBm;802.11ax (HE80):7.36dBm |                                                                                                         |
| Modulation           | 802.11a/n:(64-QAM, 16-QAM, QPSK, BPSK) OFDM<br>802.11ac :(256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDM<br>802.11ax :(1024-QAM,256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDMA                                                       |                                                                                                         |
| Data Rate            | 802.11a:6/9/12/18/24/36/48/54Mbps;<br>802.11n: up to 150Mbps;<br>802.11ac: up to 433.3Mbps;<br>802.11ax: up to 600Mbps                                                                                                      |                                                                                                         |
| Number of channels   | 7 channels of U-NII-1 Band                                                                                                                                                                                                  |                                                                                                         |
| Antenna Designation  | PCBAntenna                                                                                                                                                                                                                  |                                                                                                         |
| Antenna Gain         | 3.275dBi                                                                                                                                                                                                                    |                                                                                                         |
| Power Supply         | DC 5V                                                                                                                                                                                                                       |                                                                                                         |

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## 2.2 Table of Carrier Frequency

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 36      | 5180 MHz  | 44      | 5220 MHz  |
| 40      | 5200 MHz  | 48      | 5240 MHz  |

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 38      | 5190 MHz  | 46      | 5230 MHz  |

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 42      | 5210 MHz  | --      | --        |

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### 2.3 IEEE 802.11n Modulation Scheme

| MCS Index | N <sub>ss</sub> | Modulation | R   | N <sub>BPSC</sub> | N <sub>CBPS</sub> |       | N <sub>DBPS</sub> |       | Data rate (Mbps) |       |
|-----------|-----------------|------------|-----|-------------------|-------------------|-------|-------------------|-------|------------------|-------|
|           |                 |            |     |                   | 20MHz             | 40MHz | 20MHz             | 40MHz | 800nsGI          |       |
| 0         | 1               | BPSK       | 1/2 | 1                 | 52                | 108   | 26                | 54    | 6.5              | 13.5  |
| 1         | 1               | QPSK       | 1/2 | 2                 | 104               | 216   | 52                | 108   | 13.0             | 27.0  |
| 2         | 1               | QPSK       | 3/4 | 2                 | 104               | 216   | 78                | 162   | 19.5             | 40.5  |
| 3         | 1               | 16-QAM     | 1/2 | 4                 | 208               | 432   | 104               | 216   | 26.0             | 54.0  |
| 4         | 1               | 16-QAM     | 3/4 | 4                 | 208               | 432   | 156               | 324   | 39.0             | 81.0  |
| 5         | 1               | 64-QAM     | 2/3 | 6                 | 312               | 648   | 208               | 432   | 52.0             | 108.0 |
| 6         | 1               | 64-QAM     | 3/4 | 6                 | 312               | 648   | 234               | 489   | 58.5             | 121.5 |
| 7         | 1               | 64-QAM     | 5/6 | 6                 | 312               | 648   | 260               | 540   | 65.0             | 135.0 |

| Symbol | Explanation                             |
|--------|-----------------------------------------|
| NSS    | Number of spatial streams               |
| R      | Code rate                               |
| NBPSC  | Number of coded bits per single carrier |
| NCBPS  | Number of coded bits per symbol         |
| NDBPS  | Number of data bits per symbol          |
| GI     | Guard interval                          |

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## 2.4 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for **FCC ID: 2AKC6-AX940-18** filing to comply with the FCC Part 15 requirements.

## 2.5 Test Methodology

| No. | Identity           | Document Title                                                                |
|-----|--------------------|-------------------------------------------------------------------------------|
| 1   | FCC 47 CFR Part 2  | Frequency allocations and radio treaty matters; general rules and regulations |
| 2   | FCC 47 CFR Part 15 | Radio Frequency Devices                                                       |
| 3   | ANSI C63.10-2020   | American National Standard for Testing Unlicensed Wireless Devices            |
| 5   | KDB 789033         | 789033 D02 General U-NII Test Procedures New Rules v02r01                     |

## 2.6 Special Accessories

Refer to section 4.4.

## 2.7 Equipment Modifications

Not available for this EUT intended for grant.

## 2.8 Antenna Requirement

| Standard Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>15.203 requirement:</b><br>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. |
| <b>EUT Antenna:</b><br>The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 3.275dBi.                                                                                                                                                                                                                                                                                                                                 |

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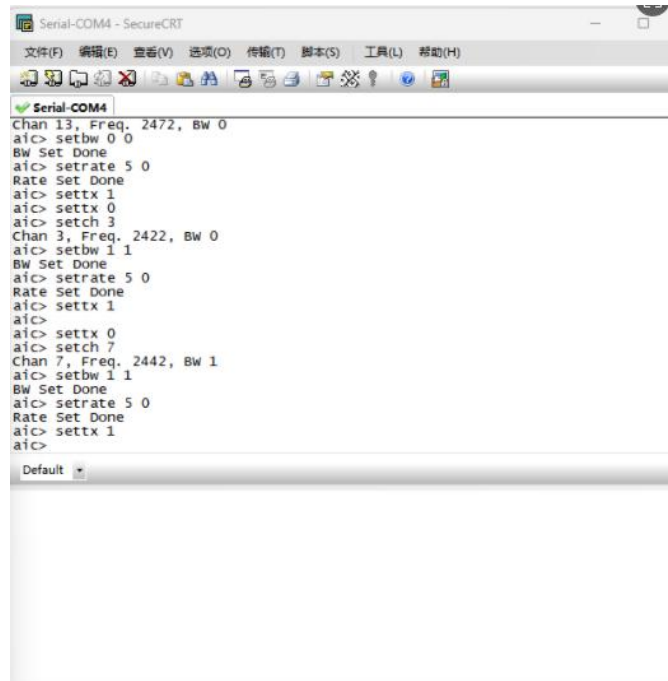
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## 2.9 Description of Test Software

### For IEEE 802.11 mode:

The test utility software used during testing was “SecureCRT”

Software Setting Diagram



| Test Mode       | Channel | Power Index |
|-----------------|---------|-------------|
| 802.11a         | L/M/H   | default     |
| 802.11n(HT20)   | L/M/H   | default     |
| 802.11n(HT40)   | L/M/H   | default     |
| 802.11ac(VHT20) | L/M/H   | default     |
| 802.11ac(VHT40) | L/M/H   | default     |
| 802.11ac(VHT80) | L/M/H   | default     |
| 802.11ax(HE20)  | L/M/H   | default     |
| 802.11ax(HE40)  | L/M/H   | default     |
| 802.11ax(HE80)  | L/M/H   | default     |

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### 3. Test Environment

#### 3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

#### 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L5488**

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

##### **A2LA-Lab Cert. No.: 5054.02**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **FCC-Registration No.: 975832**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

##### **IC-Registration No.: 24842 (CAB identifier: CN0063)**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

### 3.3 Environmental Conditions

|                         | Normal Conditions |
|-------------------------|-------------------|
| Temperature range (°C)  | 15 - 35           |
| Relative humidity range | 20% - 75%         |
| Pressure range (kPa)    | 86 - 106          |
| Power supply            | DC 5V             |

### 3.4 Measurement Uncertainty

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

| Item                                          | Measurement Uncertainty    |
|-----------------------------------------------|----------------------------|
| Uncertainty of Conducted Emission for AC Port | $U_c = \pm 2.9 \text{ dB}$ |
| Uncertainty of Radiated Emission below 1GHz   | $U_c = \pm 3.9 \text{ dB}$ |
| Uncertainty of Radiated Emission above 1GHz   | $U_c = \pm 4.9 \text{ dB}$ |
| Uncertainty of total RF power, conducted      | $U_c = \pm 0.8 \text{ dB}$ |
| Uncertainty of RF power density, conducted    | $U_c = \pm 2.6 \text{ dB}$ |
| Uncertainty of spurious emissions, conducted  | $U_c = \pm 2 \%$           |
| Uncertainty of Occupied Channel Bandwidth     | $U_c = \pm 2.7 \%$         |

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### 3.5 List of Equipment Used

| ● RF Conducted Test System          |               |                      |               |               |            |                           |                           |
|-------------------------------------|---------------|----------------------|---------------|---------------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment       | Manufacturer  | Model No.     | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-ER-E036   | Spectrum Analyzer    | Agilent       | N9020A        | MY49100060 | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-ER-A007   | 6dB Fixed Attenuator | Mini circuits | BW-S6-2W263A+ | N/A        | 2025-01-30                | 2026-01-29                |
| <input checked="" type="checkbox"/> | N/A           | RF Connection Cable  | N/A           | 1#            | N/A        | Each time                 | N/A                       |
| <input checked="" type="checkbox"/> | N/A           | RF Connection Cable  | N/A           | 2#            | N/A        | Each time                 | N/A                       |
| <input checked="" type="checkbox"/> | AGC-ER-E087   | Spectrum Analyzer    | Agilent       | N9020B        | MY49100060 | 2025-05-08                | 2026-05-07                |

| ● Radiated Spurious Emission        |               |                               |              |            |            |                           |                           |
|-------------------------------------|---------------|-------------------------------|--------------|------------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment                | Manufacturer | Model No.  | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-EM-E046   | EMI Test Receiver             | R&S          | ESCI       | 10096      | 2025-05-16                | 2027-05-15                |
| <input checked="" type="checkbox"/> | AGC-EM-E116   | EMI Test Receiver             | R&S          | ESCI       | 100034     | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-E061   | Spectrum Analyzer             | Agilent      | N9010A     | MY53470504 | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-E086   | Loop Antenna                  | ZHINAN       | ZN30900C   | 18051      | 2024-03-05                | 2026-03-04                |
| <input checked="" type="checkbox"/> | AGC-EM-E001   | Wideband Antenna              | SCHWARZBECK  | VULB9168   | D69250     | 2025-03-14                | 2027-03-13                |
| <input checked="" type="checkbox"/> | AGC-EM-E029   | Broadband Ridged Horn Antenna | ETS          | 3117       | 00034609   | 2025-03-27                | 2026-03-26                |
| <input checked="" type="checkbox"/> | AGC-EM-E082   | Horn Antenna                  | SCHWARZBECK  | BBHA 9170  | #768       | 2025-09-10                | 2027-09-09                |
| <input checked="" type="checkbox"/> | AGC-EM-E146   | Pre-amplifier                 | ETS          | 3117-PA    | 00246148   | 2024-07-24                | 2026-07-23                |
| <input checked="" type="checkbox"/> | AGC-EM-A118   | 5G Filter                     | SongYi       | BRM50716   | N/A        | 2025-05-16                | 2026-05-15                |
| <input checked="" type="checkbox"/> | AGC-EM-A138   | 6dB Attenuator                | Eeatsheep    | LM-XX-6-5W | N/A        | 2025-05-16                | 2027-05-15                |
| <input checked="" type="checkbox"/> | AGC-EM-A139   | 6dB Attenuator                | Eeatsheep    | LM-XX-6-5W | N/A        | 2025-05-16                | 2027-05-15                |

| ● AC Power Line Conducted Emission  |               |                          |               |           |            |                           |                           |
|-------------------------------------|---------------|--------------------------|---------------|-----------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment           | Manufacturer  | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-EM-A171   | Attenuator               | Mini-Circuits | UNAT-10A+ | N/A        | 2024-02-01                | 2026-01-31                |
| <input checked="" type="checkbox"/> | AGC-EM-E023   | Artificial Mains Network | R&S           | ESH2-Z5   | 100086     | 2025-05-08                | 2026-05-07                |
| <input checked="" type="checkbox"/> | AGC-EM-E116   | Test Receiver            | R&S           | ESCI      | 100034     | 2025-05-08                | 2026-05-07                |

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| ● Test Software                     |               |                     |              |                      |                     |
|-------------------------------------|---------------|---------------------|--------------|----------------------|---------------------|
| Used                                | Equipment No. | Test Equipment      | Manufacturer | Model No.            | Version Information |
| <input checked="" type="checkbox"/> | AGC-EM-S001   | CE Test System      | R&S          | ES-K1                | V1.71               |
| <input type="checkbox"/>            | AGC-EM-S003   | RE Test System      | FARA         | EZ-EMC               | VRA-03A             |
| <input type="checkbox"/>            | AGC-ER-S012   | BT/WIFI Test System | Tonscend     | JS1120-2             | 2.6                 |
| <input checked="" type="checkbox"/> | AGC-EM-S011   | RSE Test System     | Tonscend     | TS+-Ver2.1(JS36-RSE) | 4.0.0.0             |

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## 4. System Test Configuration

### 4.1 EUT Configuration

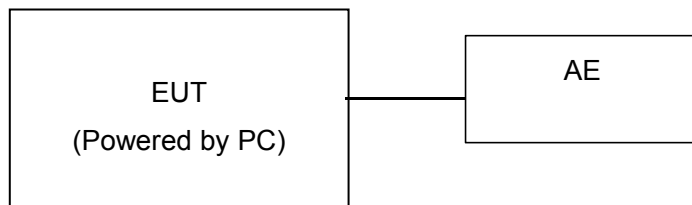
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT Exercise

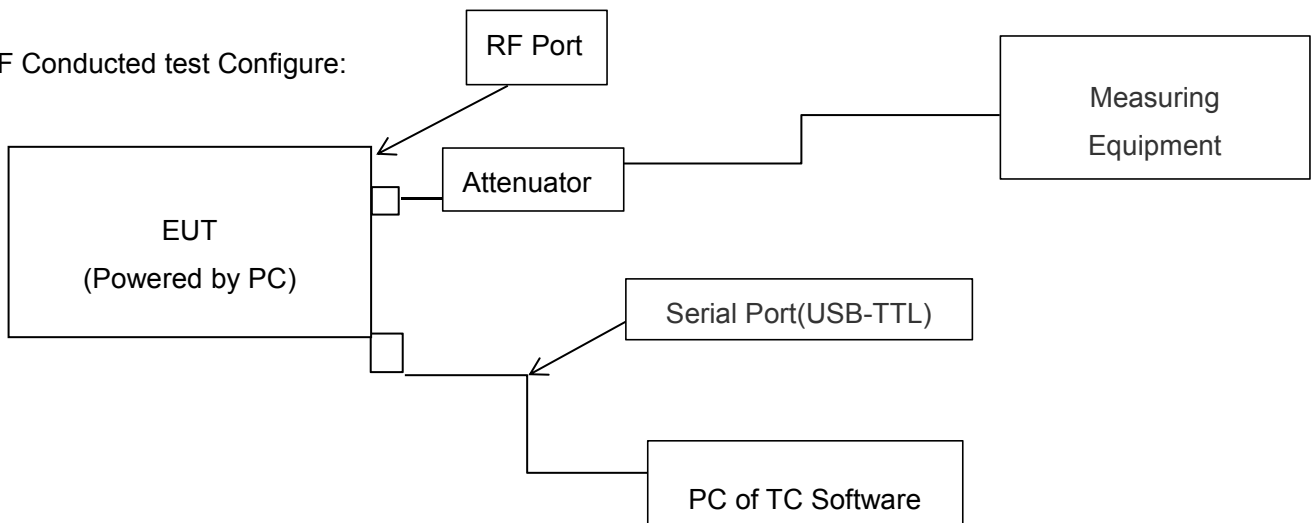
The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 4.3 Configuration of Tested System

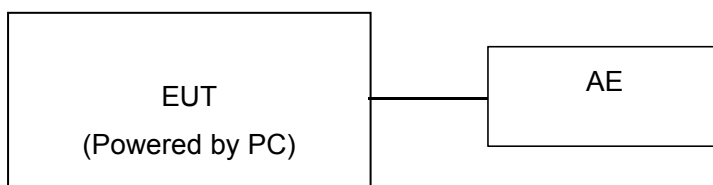
Radiated Emission Configure:



RF Conducted test Configure:



AC Power Line Conducted Emission Configure:



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#### 4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

☒ Test Accessories Come From The Laboratory

| No. | Equipment   | Model No. | Manufacturer | Specification Information | Cable |
|-----|-------------|-----------|--------------|---------------------------|-------|
| 1   | Control Box | RISYM     | USB-TTL      | --                        | --    |
| 2   | Notebook PC | Redmi     | XMA2002-AB   | --                        | --    |

☐ Test Accessories Come From The Manufacturer

| No. | Equipment | Model No. | Manufacturer | Specification Information | Cable |
|-----|-----------|-----------|--------------|---------------------------|-------|
| 1   | --        | --        | --           | --                        | --    |

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#### 4.5 Summary of Test Results

| Item | FCC Rules              | Description of Test                           | Result               |
|------|------------------------|-----------------------------------------------|----------------------|
| 1    | §15.203                | Antenna Equipment                             | Pass                 |
| 2    | §15.407(a)(1)          | RF Output Power                               | Pass                 |
| 3    | §15.407(e)             | 6dB Bandwidth Measurement                     | Pass                 |
| 4    | §2.1049                | 26dB bandwidth Measurement                    | Pass                 |
| 5    | §15.407(a/1)           | Power Spectral Density                        | Pass                 |
| 6    | §15.407(g)             | Frequency Stability                           | Pass<br>(See Note 1) |
| 7    | §15.407(c)             | Transmission Discontinuation Requirement      | Pass<br>(See Note 2) |
| 8    | §15.407(b)(1)          | Conducted Band Edge and Out-of-Band Emissions | Pass                 |
| 9    | §15.209, §15.407(b)(1) | Radiated Spurious Emission                    | Pass                 |
| 10   | §15.207                | AC Power Line Conducted Emission              | Pass                 |

Note:

1. Refer to the manufacturer's declaration in the user manual.
2. The device operates without the transmission of information.

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## 5. Description of Test Modes

| EUT Configure Mode | Applicable To |         |     |      | Description                           |
|--------------------|---------------|---------|-----|------|---------------------------------------|
|                    | RE > 1G       | RE < 1G | PLC | APCM |                                       |
| A                  | --            | --      | --  | --   | Powered by Adapter with WIFI(5G) Link |
| B                  | --            | --      | --  | --   | Powered by Battery with WIFI(5G) Link |
| C                  | ☒             | ☒       | ☒   | ☒    | Powered by USB with WIFI(5G) Link     |

Where, **RE > 1G: Radiated Emission above 1GHz**      **PLC: Power Line Conducted Emission**  
**RE < 1G: Radiated Emission below 1GHz**      **APCM: Antenna Port Conducted Measurement**

NOTE 1: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane.

NOTE 2: "--" means no effect.

### ● Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (IF EUT with antenna diversity architecture).
- ☒ Support 802.11ax, device debugging is tested in Full RU state
- ☐ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode    | Freq. Band (MHz) | Available Channel | Tested Channel | Modulation | Data Rate (Mbps) |
|--------------------|---------|------------------|-------------------|----------------|------------|------------------|
| C                  | 802.11a | 5180-5240        | 36 to 48          | 36, 40, 48     | OFDM       | 6.0              |

### ● Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☐ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode    | Freq. Band (MHz) | Available Channel | Tested Channel | Modulation | Data Rate (Mbps) |
|--------------------|---------|------------------|-------------------|----------------|------------|------------------|
| C                  | 802.11a | 5180-5240        | 36 to 48          | 36             | OFDM       | MCS0             |

### ● Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☐ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode    | Freq. Band (MHz) | Available Channel | Tested Channel | Modulation | Data Rate (Mbps) |
|--------------------|---------|------------------|-------------------|----------------|------------|------------------|
| C                  | 802.11a | 5180-5240        | 36 to 48          | 36             | OFDM       | MCS0             |

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● **Band edge Measurement:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ Support 802.11ax, device debugging is tested in Full RU state
- ☐ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode             | Freq. Band (MHz) | Available Channel | Tested Channel | Modulation | Data Rate (Mbps) |
|--------------------|------------------|------------------|-------------------|----------------|------------|------------------|
| C                  | 802.11a          | 5180-5240        | 36 to 48          | 36             | OFDM       | 6.0              |
| C                  | 802.11n (40MHz)  |                  | 38 to 46          | 38             | OFDM       | MCS0             |
| C                  | 802.11ac (80MHz) |                  | 42                | 42             | OFDM       | MCS0             |
| C                  | 802.11ax (80MHz) |                  | 42                | 42             | OFDMA      | MCS0             |

● **Antenna Port Conducted Measurement:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ Support 802.11ax, device debugging is tested in Full RU state
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode             | Freq. Band (MHz) | Available Channel | Tested Channel | Modulation | Data Rate (Mbps) |
|--------------------|------------------|------------------|-------------------|----------------|------------|------------------|
| C                  | 802.11a          | 5180-5240        | 36 to 48          | 36, 40, 48     | OFDM       | 6.0              |
| C                  | 802.11n (20MHz)  |                  | 36 to 48          | 36, 40, 48     | OFDM       | MCS0             |
| C                  | 802.11n (40MHz)  |                  | 38 to 46          | 38, 46         | OFDM       | MCS0             |
| C                  | 802.11ac (20MHz) |                  | 36 to 48          | 36, 40, 48     | OFDM       | MCS0             |
| C                  | 802.11ac (40MHz) |                  | 38 to 46          | 38, 46         | OFDM       | MCS0             |
| C                  | 802.11ac (80MHz) |                  | 42                | 42             | OFDM       | MCS0             |
| C                  | 802.11ax (20MHz) |                  | 36 to 48          | 36, 40, 48     | OFDMA      | MCS0             |
| C                  | 802.11ax (40MHz) |                  | 38 to 46          | 38, 46         | OFDMA      | MCS0             |
| C                  | 802.11ax (80MHz) |                  | 42                | 42             | OFDMA      | MCS0             |

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## 6. Duty Cycle Measurement

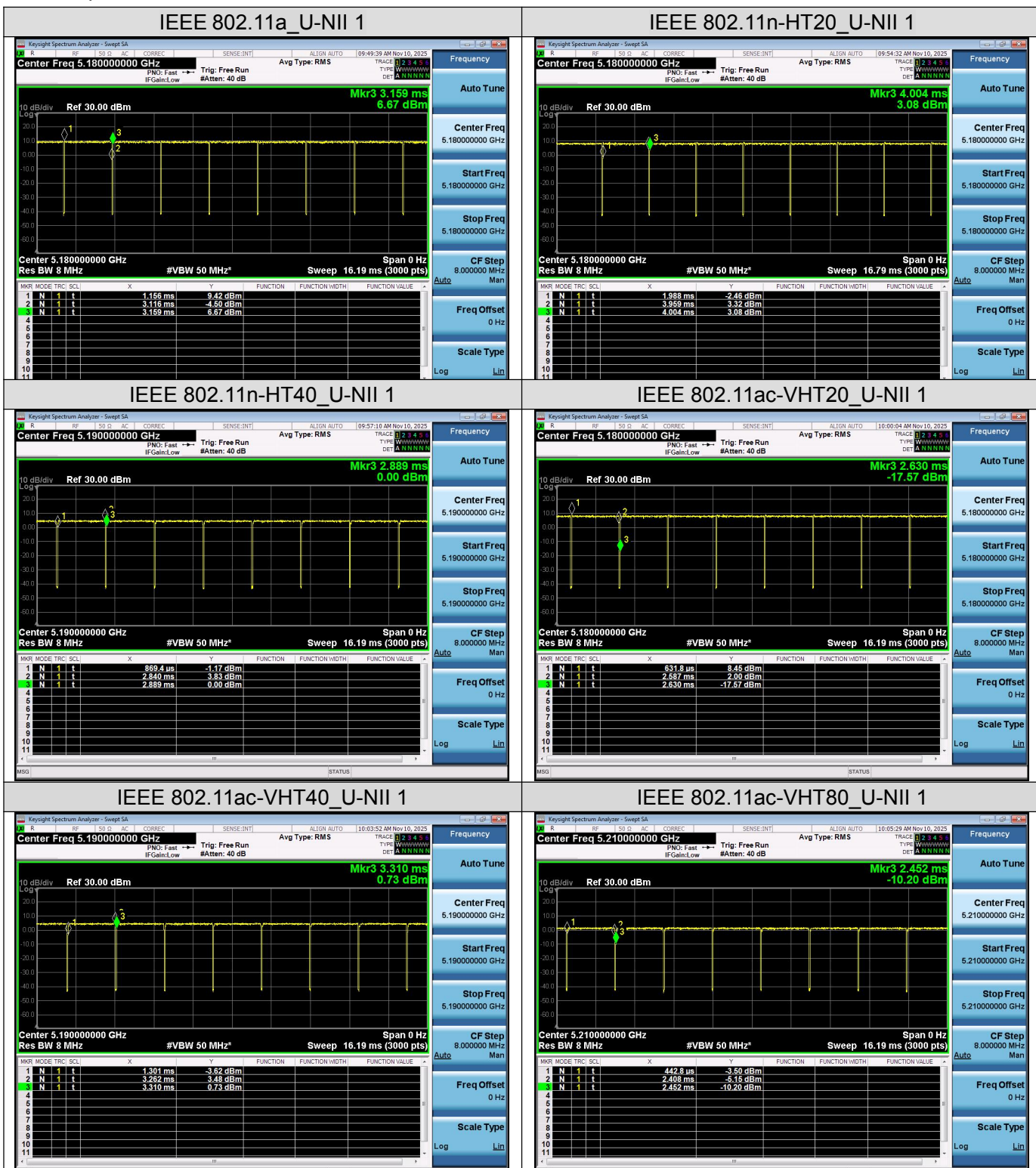
5GHz WLAN (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = Average. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| Operating mode              | Data rates (Mbps) | Duty Cycle (%) | Duty Cycle Factor (dB) |
|-----------------------------|-------------------|----------------|------------------------|
| Band U-NII1:5150MHz-5250MHz |                   |                |                        |
| 802.11a                     | 6                 | 97.85          | 0.09                   |
| 802.11n_HT20                | MCS0              | 97.77          | 0.1                    |
| 802.11n_HT40                | MCS0              | 97.57          | 0.11                   |
| 802.11ac_VHT20              | MCS0              | 97.77          | 0.1                    |
| 802.11ac_VHT40              | MCS0              | 97.61          | 0.11                   |
| 802.11ac_VHT80              | MCS0              | 97.81          | 0.1                    |
| 802.11ax_HE20               | MCS0              | 97.62          | 0.1                    |
| 802.11ax_HE40               | MCS0              | 97.88          | 0.09                   |
| 802.11ax_HE80               | MCS0              | 97.59          | 0.11                   |

Remark:

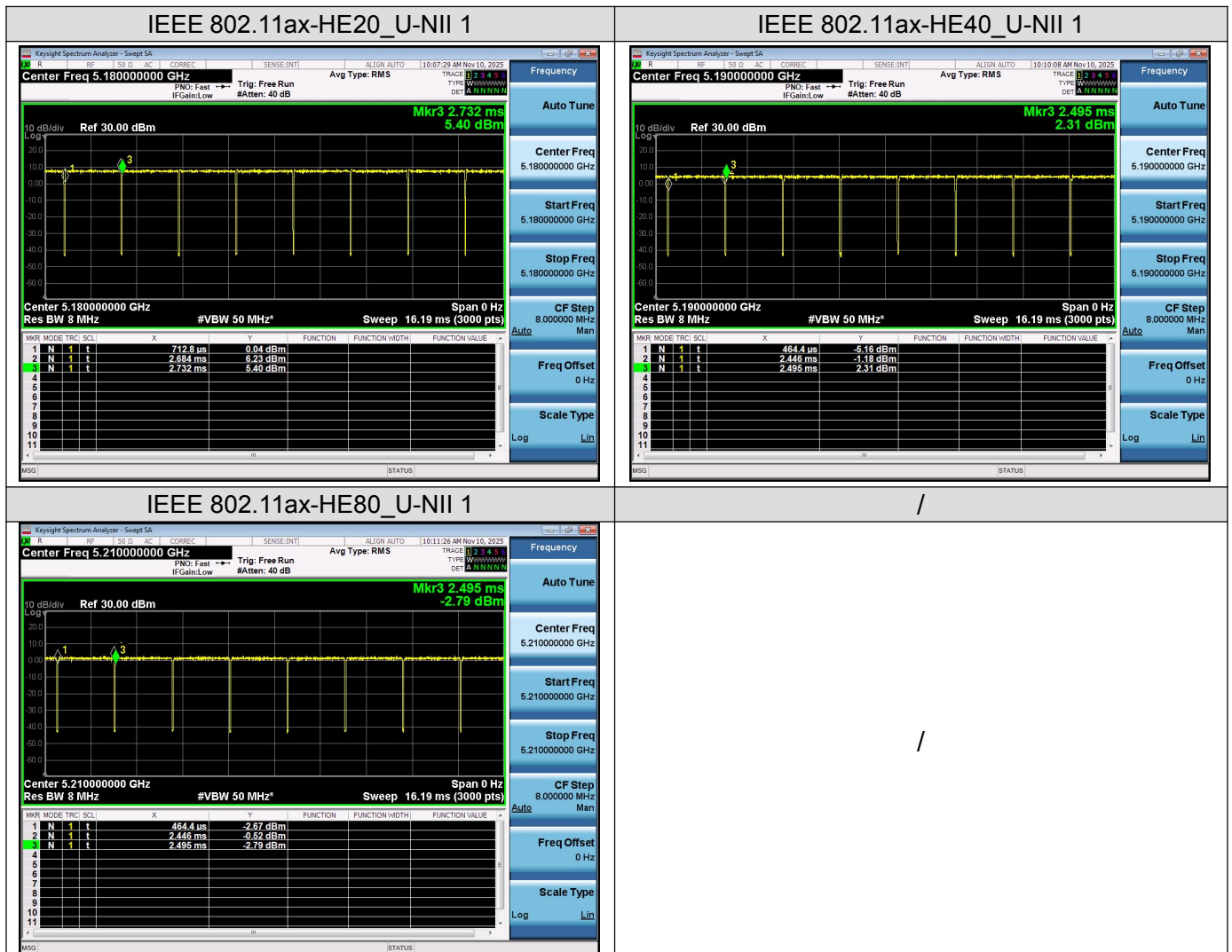
1. Duty Cycle factor =  $10 * \log (1 / \text{Duty cycle})$
2. The duty cycle of each frequency band mode reflects the determination requirements of the low channel measurement value.
3. Involving the test items of duty cycle compensation coefficient, the final results have been added and calculated by the software and presented.

The test plots as follows:



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## 7. RF Output Power Measurement

### 7.1 Provisions Applicable

| Operation Band | EUT Category                        |                                   | LIMIT                                                                                                                  |
|----------------|-------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------|
| U-NII-1        | <input type="checkbox"/>            | Outdoor Access Point              | 1 Watt (30 dBm)<br>(Max. e.i.r.p < 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon) |
|                | <input type="checkbox"/>            | Fixed point-to-point Access Point | 1 Watt (30 dBm)                                                                                                        |
|                | <input type="checkbox"/>            | Indoor Access Point               | 1 Watt (30 dBm)                                                                                                        |
|                | <input checked="" type="checkbox"/> | Client devices                    | 250mW (23.98 dBm)                                                                                                      |
| U-NII-2A       | /                                   |                                   | 250mW (23.98 dBm) or 11 dBm+10 log B*                                                                                  |
| U-NII-2C       | /                                   |                                   | 250mW (23.98 dBm) or 11 dBm+10 log B*                                                                                  |
| U-NII-3        | /                                   |                                   | 1 Watt (30 dBm)                                                                                                        |

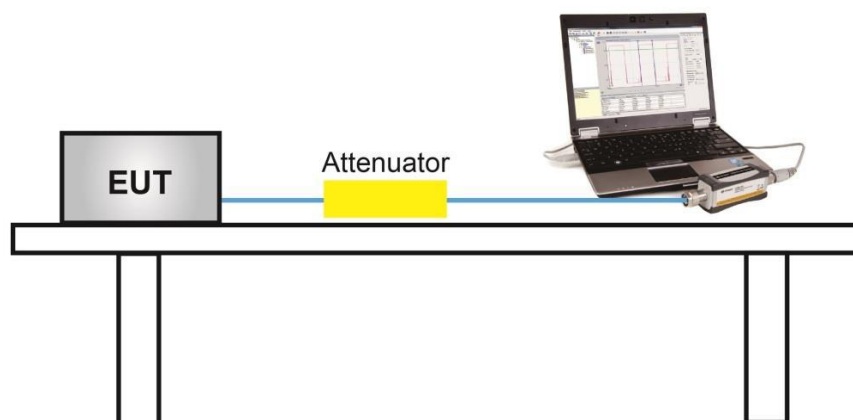
Note: Where B is the 26dB emission bandwidth in MHz.

### 7.2 Measurement Procedure

☒ Method PM is Measurement using an RF average power meter. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 12.3.3.1
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
3. The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
4. At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
5. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
6. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
7. Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
8. Adjust the measurement in dBm by adding  $[10 \log (1 / D)]$ , where D is the duty cycle {e.g.,  $[10 \log (1 / 0.25)]$ , if the duty cycle is 25%}.
9. The final test results have been increased by the duty cycle factor and recorded in the report.

### 7.3 Measurement Setup (Block Diagram of Configuration)



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## 7.4 Measurement Result

| Test Data of Conducted Output Power for band 5.15-5.25 |                    |                     |              |              |
|--------------------------------------------------------|--------------------|---------------------|--------------|--------------|
| Test Mode                                              | Test Channel (MHz) | Average Power (dBm) | Limits (dBm) | Pass or Fail |
| 802.11a                                                | 5180               | 7.53                | 23.98        | Pass         |
|                                                        | 5200               | 7.15                | 23.98        | Pass         |
|                                                        | 5240               | 7.13                | 23.98        | Pass         |
| 802.11n20                                              | 5180               | 6.99                | 23.98        | Pass         |
|                                                        | 5200               | 6.92                | 23.98        | Pass         |
|                                                        | 5240               | 6.87                | 23.98        | Pass         |
| 802.11n40                                              | 5190               | 7.36                | 23.98        | Pass         |
|                                                        | 5230               | 7.17                | 23.98        | Pass         |
| 802.11ac20                                             | 5180               | 7.23                | 23.98        | Pass         |
|                                                        | 5200               | 7.02                | 23.98        | Pass         |
|                                                        | 5240               | 7.06                | 23.98        | Pass         |
| 802.11ac40                                             | 5190               | 7.26                | 23.98        | Pass         |
|                                                        | 5230               | 7.12                | 23.98        | Pass         |
| 802.11ac80                                             | 5210               | 7.27                | 23.98        | Pass         |
| 802.11ax20                                             | 5180               | 7.24                | 23.98        | Pass         |
|                                                        | 5200               | 6.97                | 23.98        | Pass         |
|                                                        | 5240               | 7.11                | 23.98        | Pass         |
| 802.11ax40                                             | 5190               | 7.41                | 23.98        | Pass         |
|                                                        | 5230               | 7.28                | 23.98        | Pass         |
| 802.11ax80                                             | 5210               | 7.36                | 23.98        | Pass         |

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## 8. 6dB&26dB Bandwidth Measurement

### 8.1 Provisions Applicable

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

### 8.2 Measurement Procedure

#### ◆ -6dB bandwidth (DTS bandwidth) Test setting:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 100kHz.
4. Set the VBW  $\geq 3 \times$  RBW. Detector = Peak. Trace mode = max hold.
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.

#### ◆ 99% occupied bandwidth test setting:

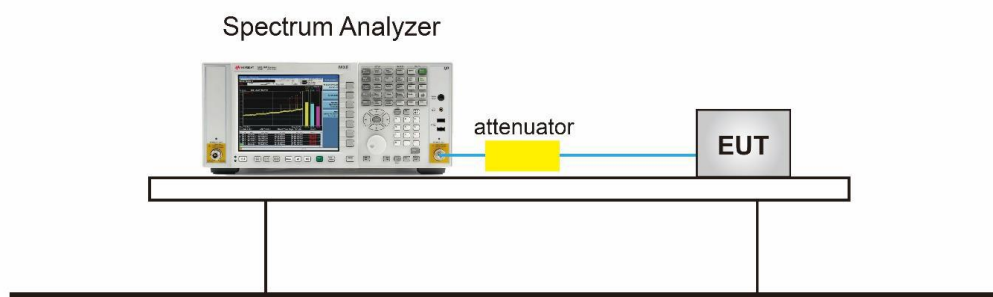
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel  
The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

#### ◆ -26dB Bandwidth test setting:

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the 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%.

**Note:** The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

### 8.3 Measurement Setup (Block Diagram of Configuration)



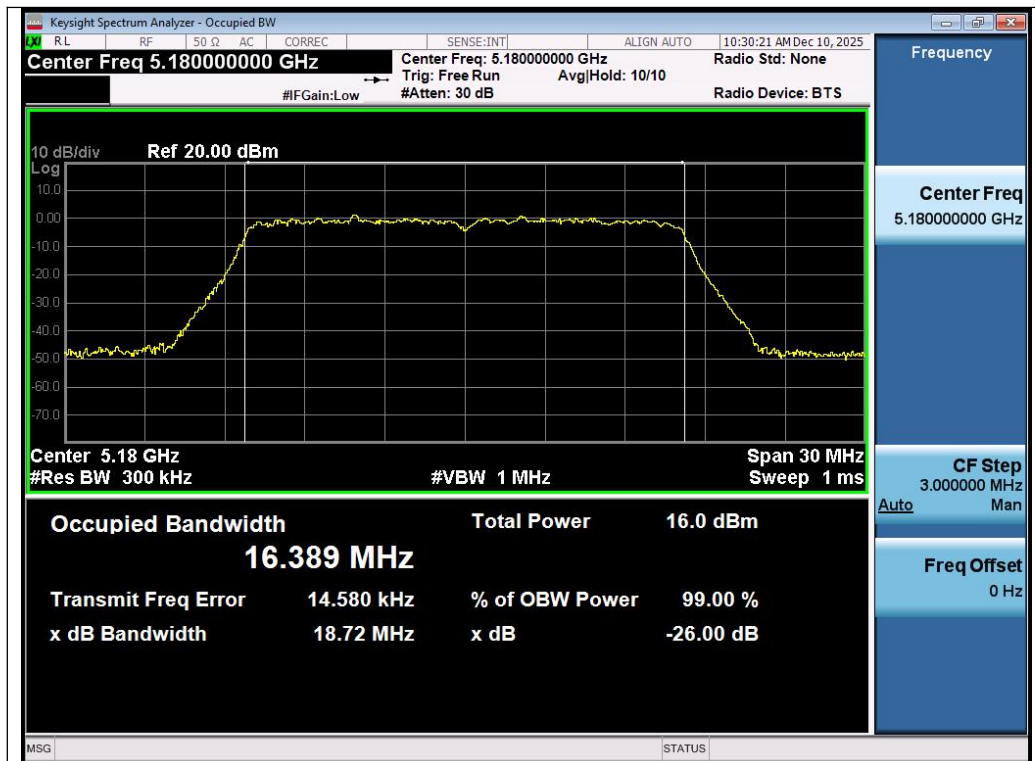
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#### 8.4 Measurement Results

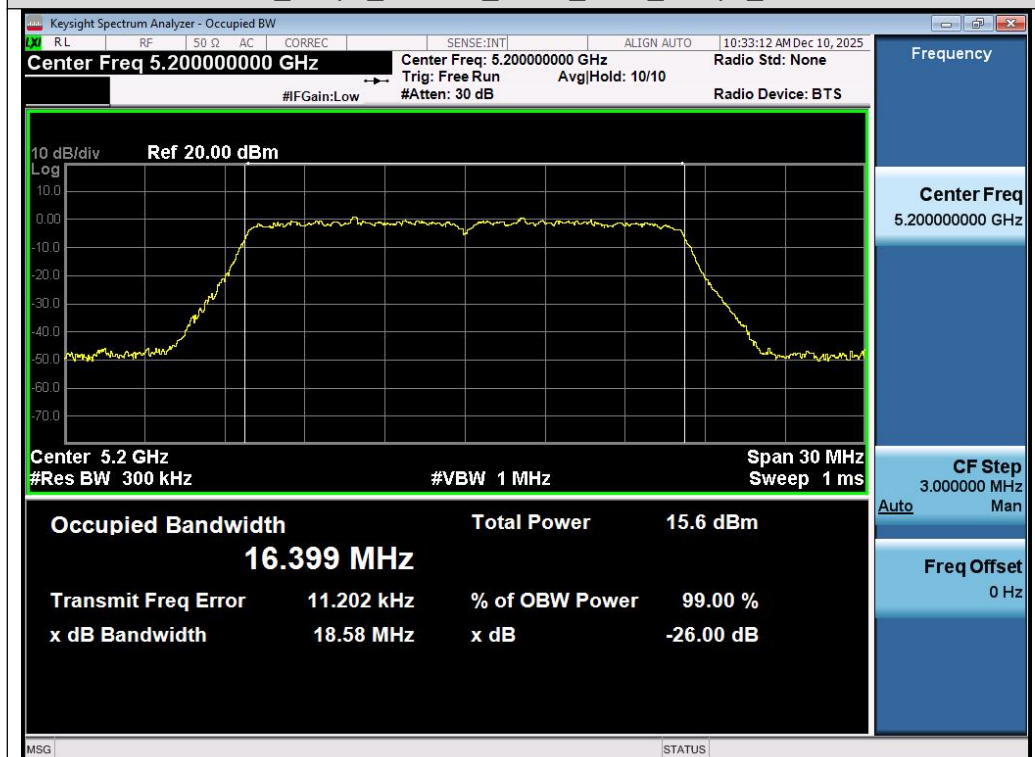
| Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 |                    |                              |                       |              |              |
|------------------------------------------------------------------------|--------------------|------------------------------|-----------------------|--------------|--------------|
| Test Mode                                                              | Test Channel (MHz) | 99% Occupied Bandwidth (MHz) | -26dB Bandwidth (MHz) | Limits (MHz) | Pass or Fail |
| 802.11a                                                                | 5180               | 16.389                       | 18.722                | N/A          | Pass         |
|                                                                        | 5200               | 16.399                       | 18.578                | N/A          | Pass         |
|                                                                        | 5240               | 16.393                       | 18.721                | N/A          | Pass         |
| 802.11n20                                                              | 5180               | 17.524                       | 19.734                | N/A          | Pass         |
|                                                                        | 5200               | 17.531                       | 19.740                | N/A          | Pass         |
|                                                                        | 5240               | 17.569                       | 19.509                | N/A          | Pass         |
| 802.11n40                                                              | 5190               | 36.032                       | 39.238                | N/A          | Pass         |
|                                                                        | 5230               | 36.039                       | 39.299                | N/A          | Pass         |
| 802.11ac20                                                             | 5180               | 17.536                       | 19.458                | N/A          | Pass         |
|                                                                        | 5200               | 17.552                       | 19.631                | N/A          | Pass         |
|                                                                        | 5240               | 17.522                       | 19.566                | N/A          | Pass         |
| 802.11ac40                                                             | 5190               | 36.119                       | 39.165                | N/A          | Pass         |
|                                                                        | 5230               | 36.086                       | 39.151                | N/A          | Pass         |
| 802.11ac80                                                             | 5210               | 76.349                       | 87.729                | N/A          | Pass         |
| 802.11ax20                                                             | 5180               | 18.933                       | 20.433                | N/A          | Pass         |
|                                                                        | 5200               | 18.887                       | 20.395                | N/A          | Pass         |
|                                                                        | 5240               | 18.906                       | 20.382                | N/A          | Pass         |
| 802.11ax40                                                             | 5190               | 37.738                       | 39.815                | N/A          | Pass         |
|                                                                        | 5230               | 37.633                       | 39.820                | N/A          | Pass         |
| 802.11ax80                                                             | 5210               | 77.441                       | 80.985                | N/A          | Pass         |

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### Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz

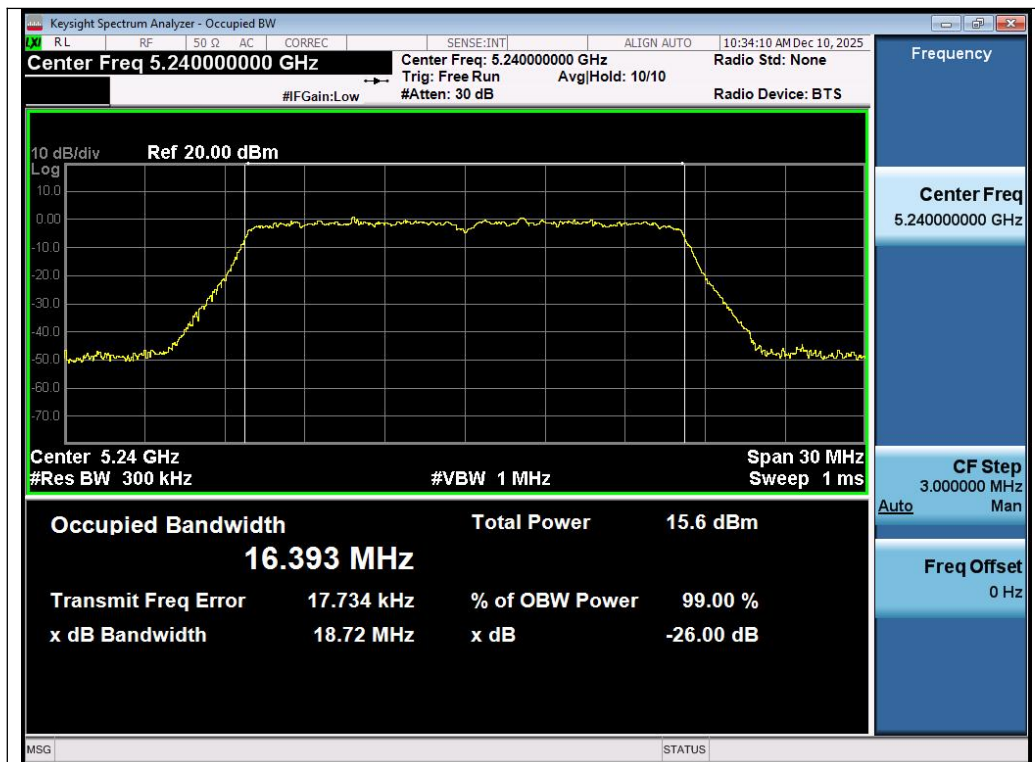


Test\_Graph\_802.11a\_ANT1\_5180\_6Mbps\_OBW

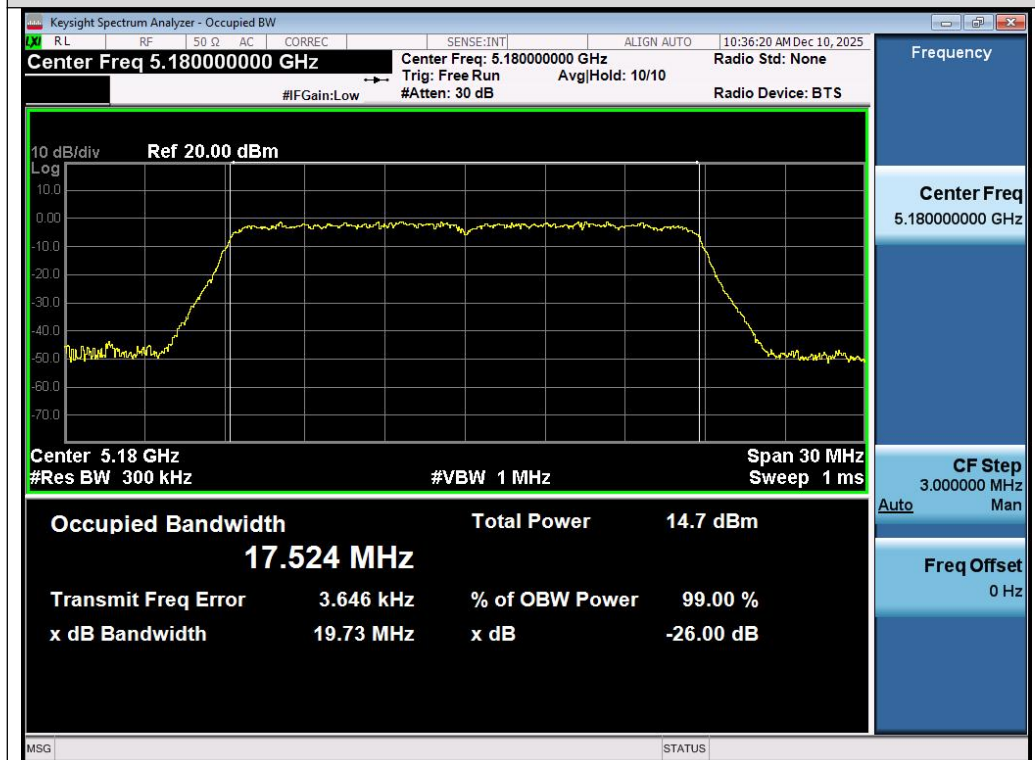


Test\_Graph\_802.11a\_ANT1\_5200\_6Mbps\_OBW

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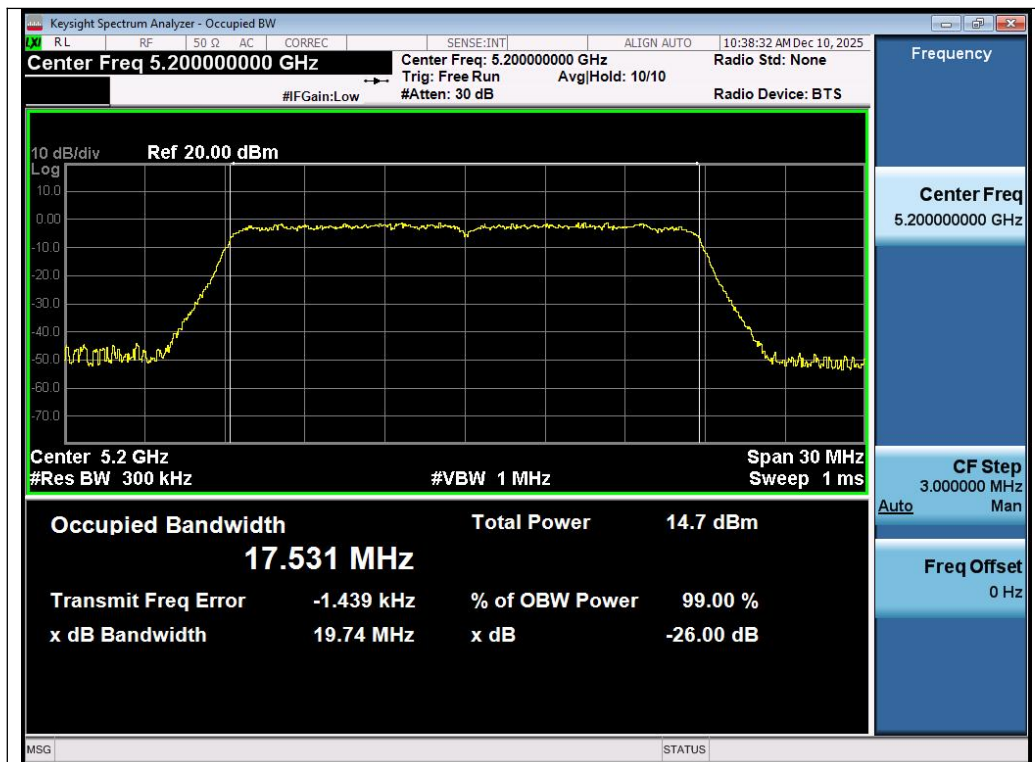


Test\_Graph\_802.11a\_ANT1\_5240\_6Mbps\_OBW



Test\_Graph\_802.11n20\_ANT1\_5180\_MCS0\_OBW

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Test\_Graph\_802.11n20\_ANT1\_5200\_MCS0\_OBW

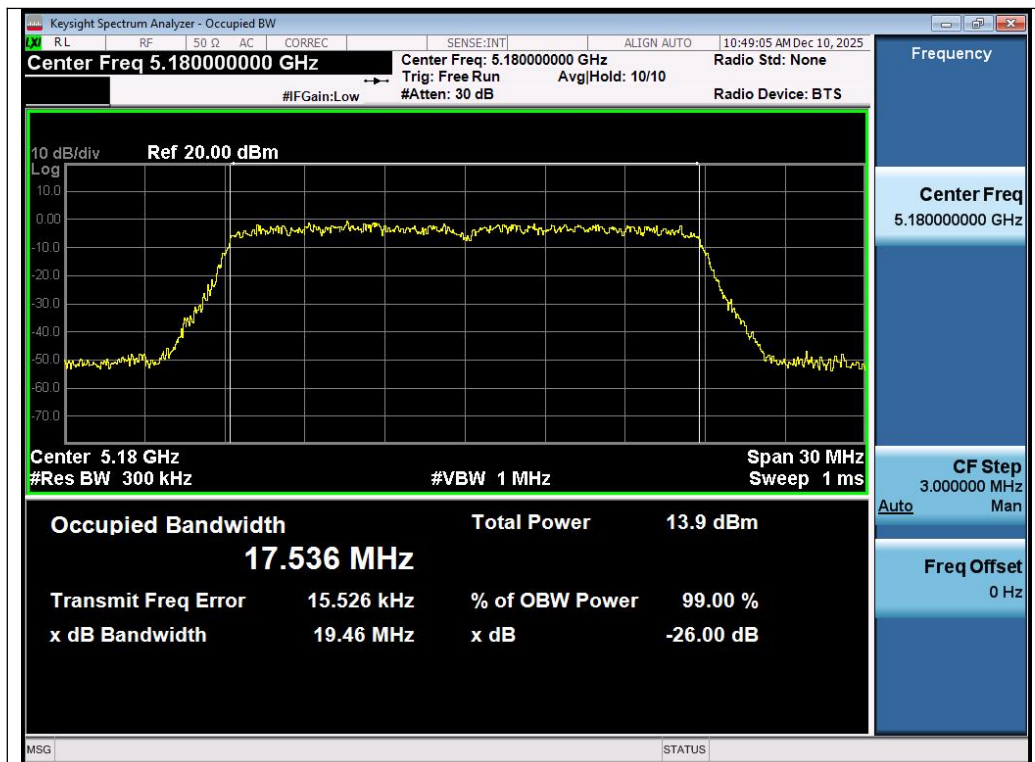


Test\_Graph\_802.11n20\_ANT1\_5240\_MCS0\_OBW

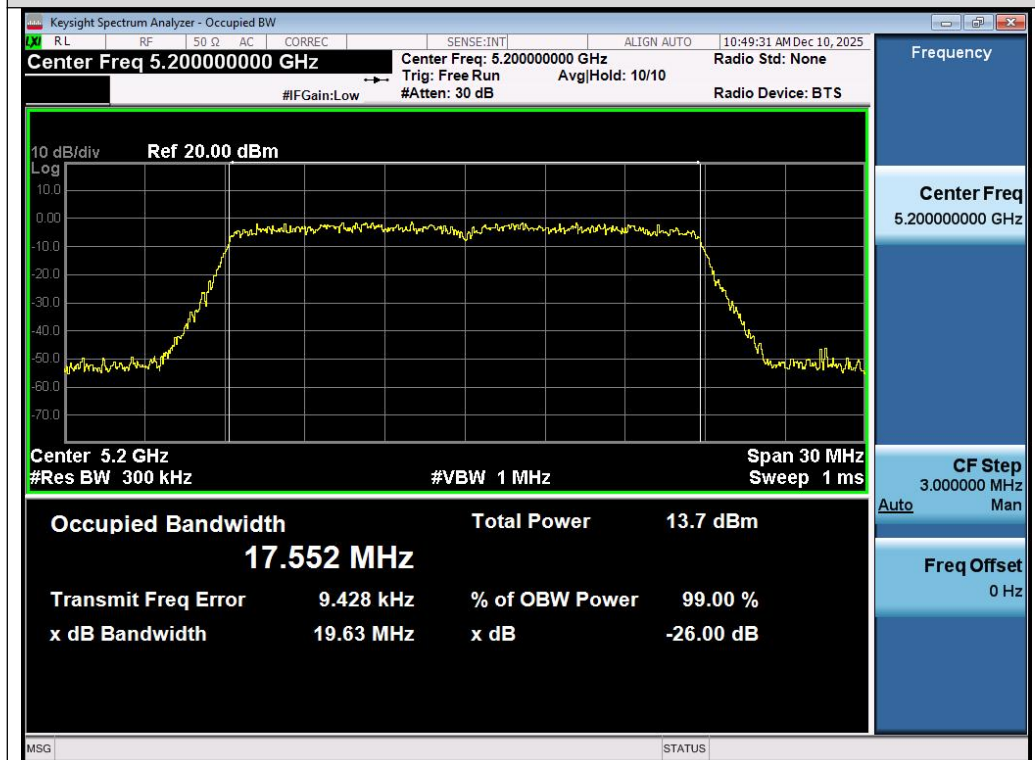
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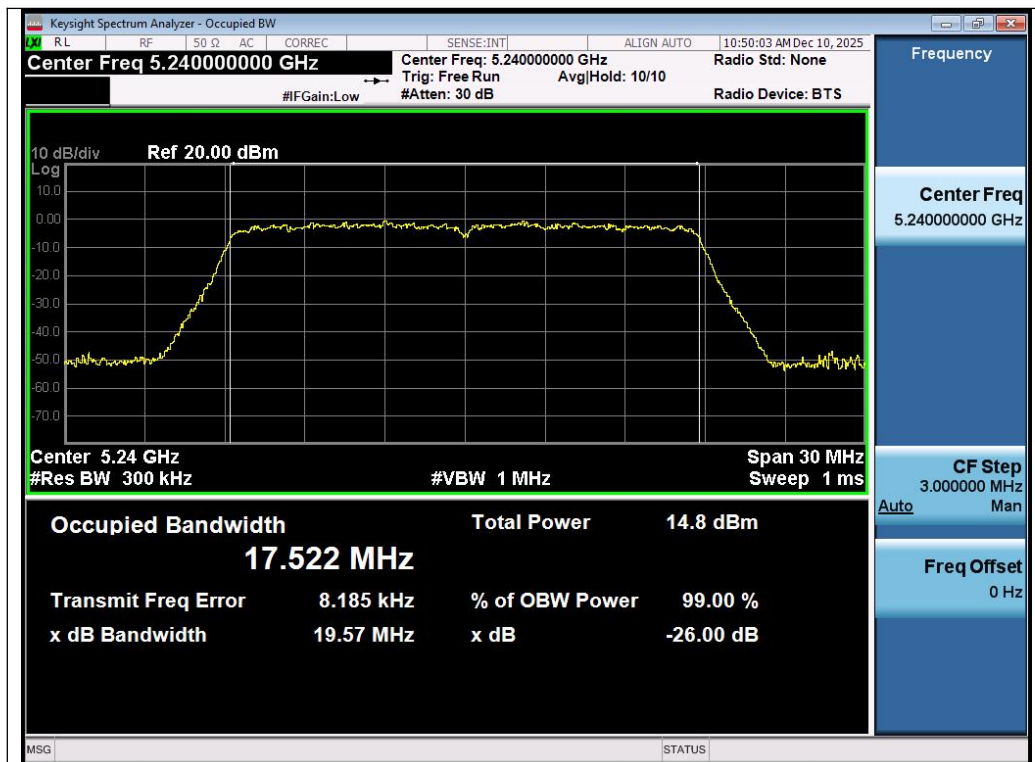


Test\_Graph\_802.11ac20\_ANT1\_5180\_MCS0\_OBW

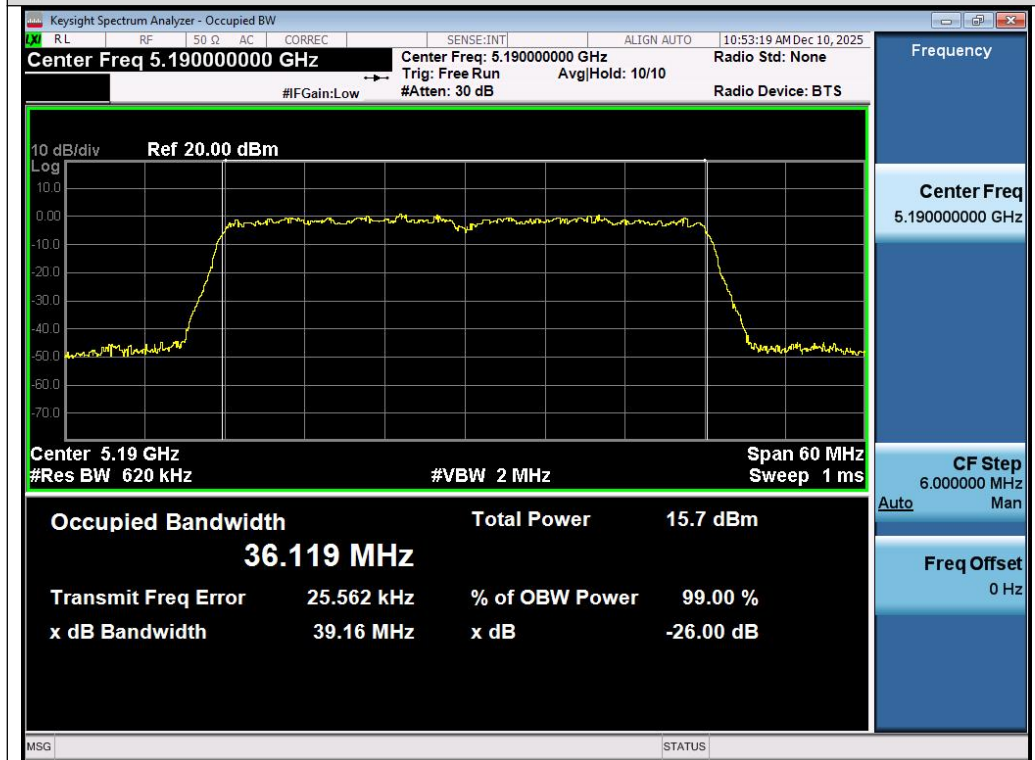


Test\_Graph\_802.11ac20\_ANT1\_5200\_MCS0\_OBW

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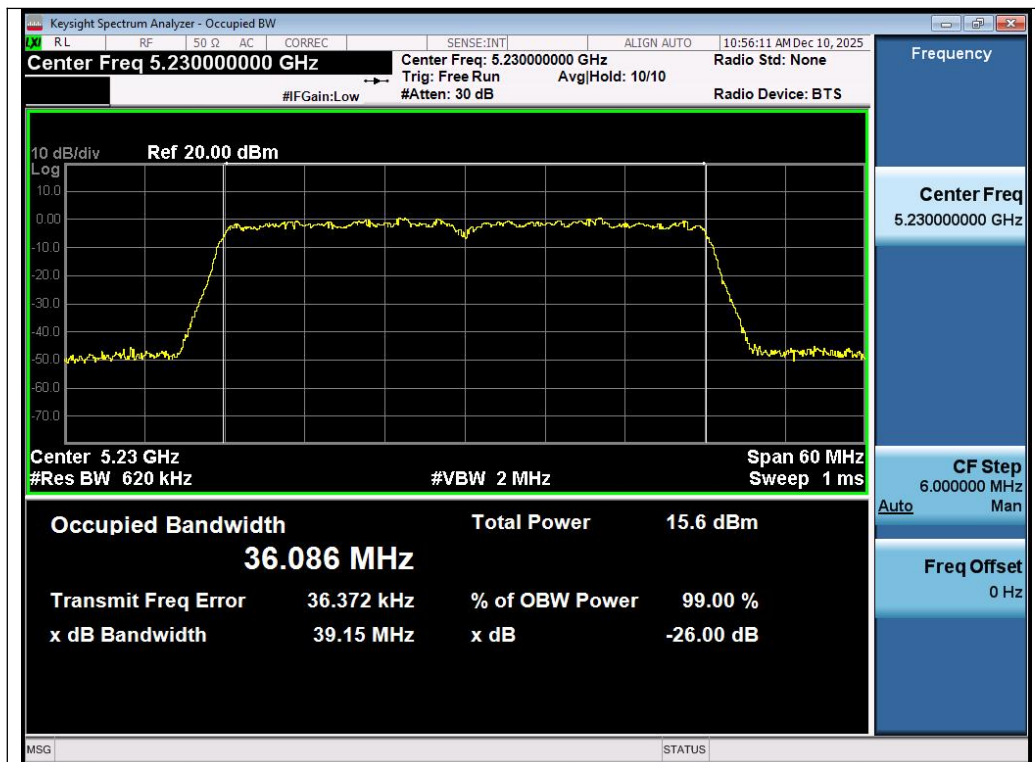


Test\_Graph\_802.11ac20\_ANT1\_5240\_MCS0\_OBW

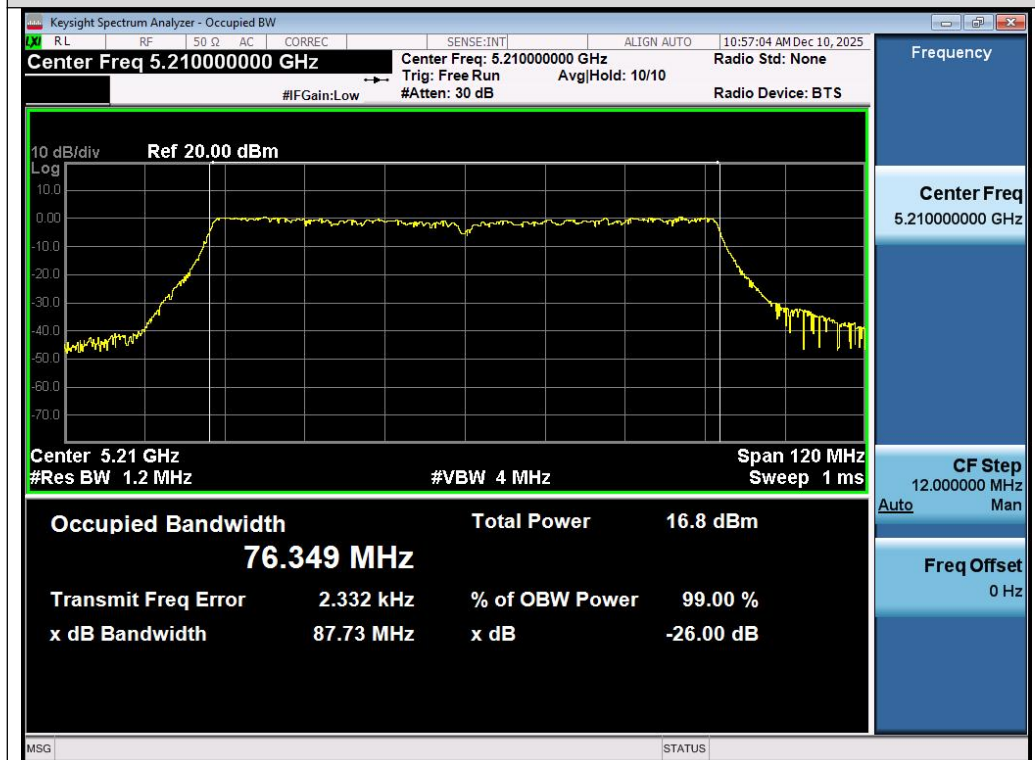


Test\_Graph\_802.11ac40\_ANT1\_5190\_MCS0\_OBW

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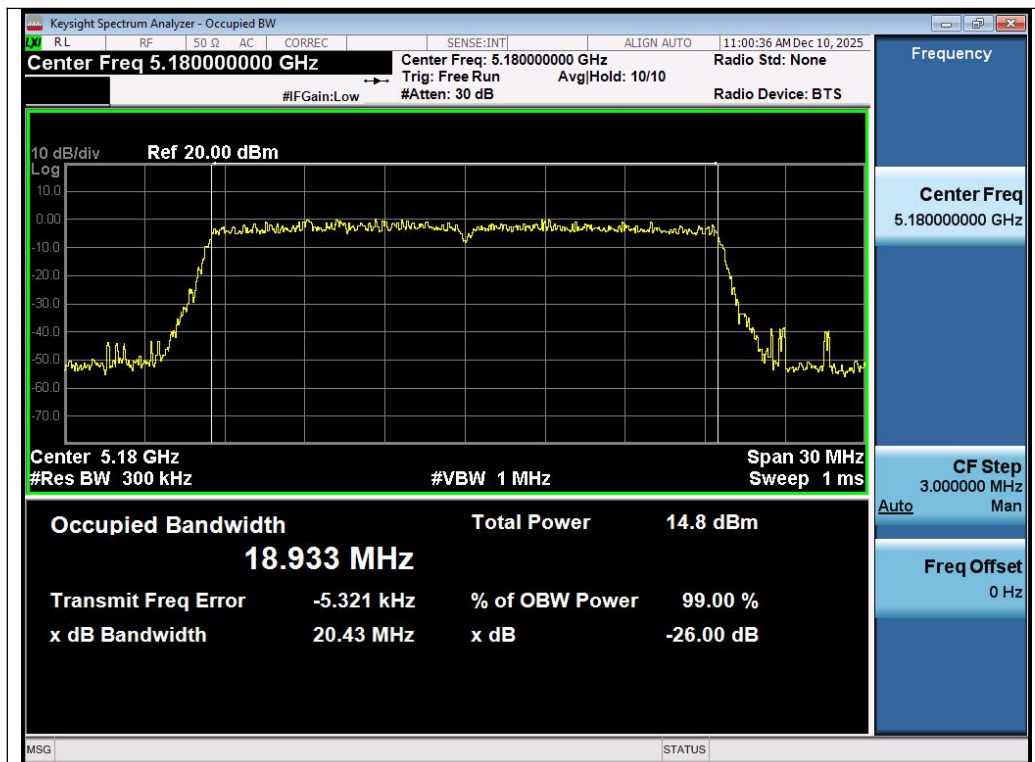


Test\_Graph\_802.11ac40\_ANT1\_5230\_MCS0\_OBW

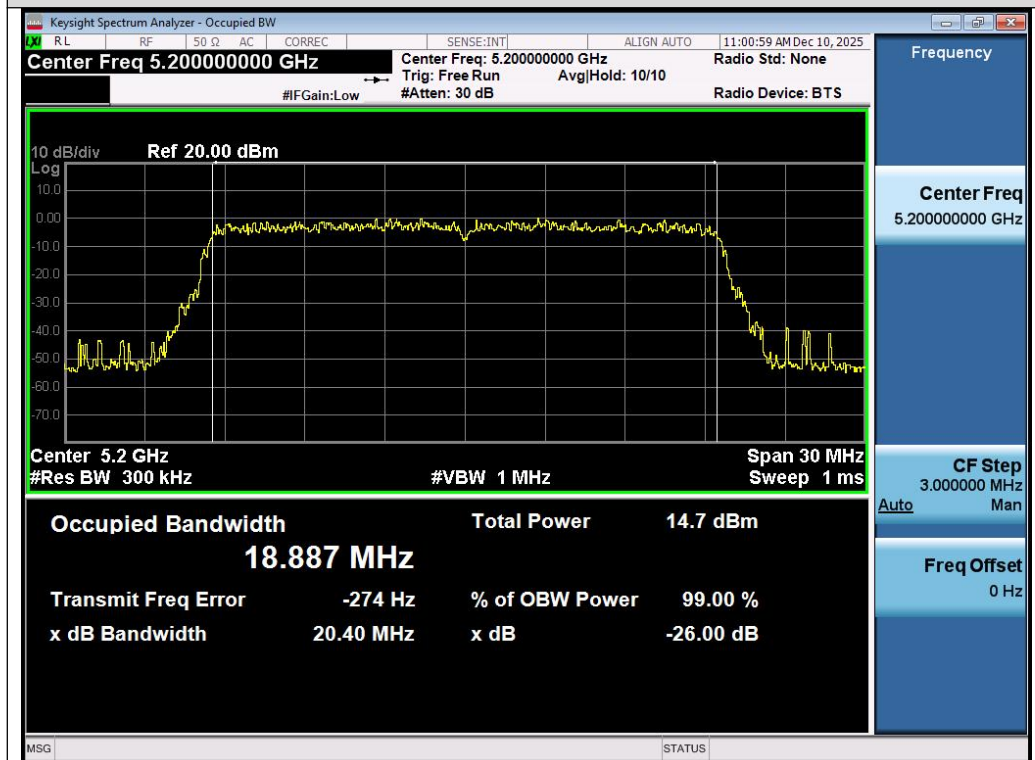


Test\_Graph\_802.11ac80\_ANT1\_5210\_MCS0\_OBW

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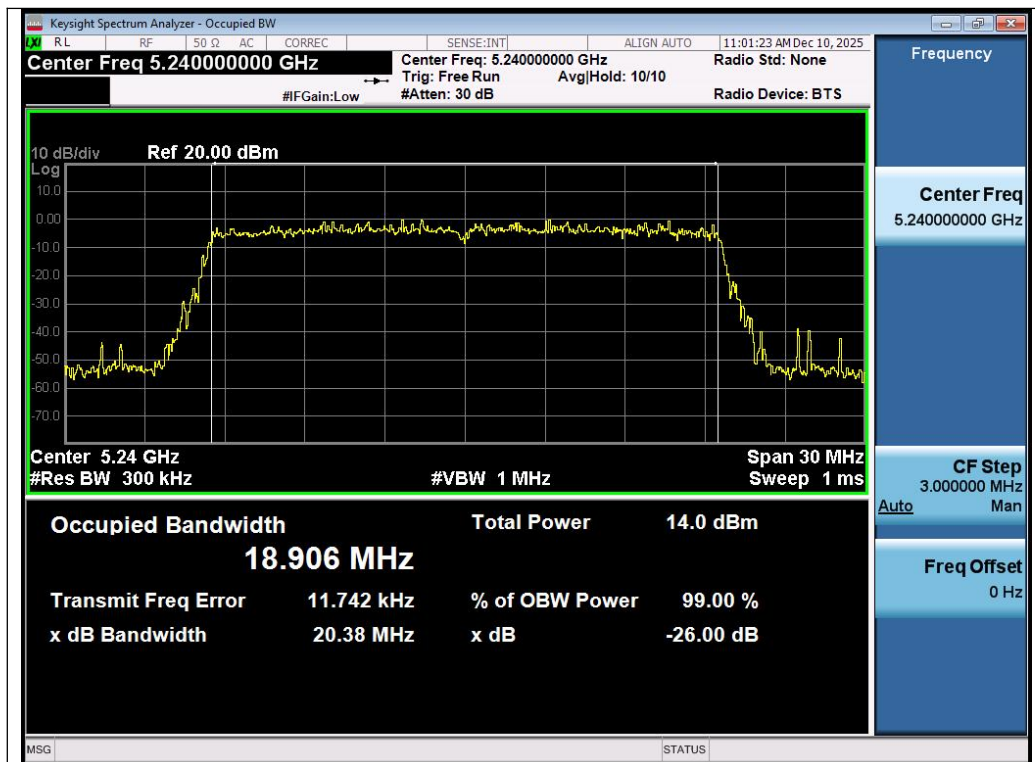
Test\_Graph\_802.11ax20\_ANT1\_5180\_MCS0\_OBW



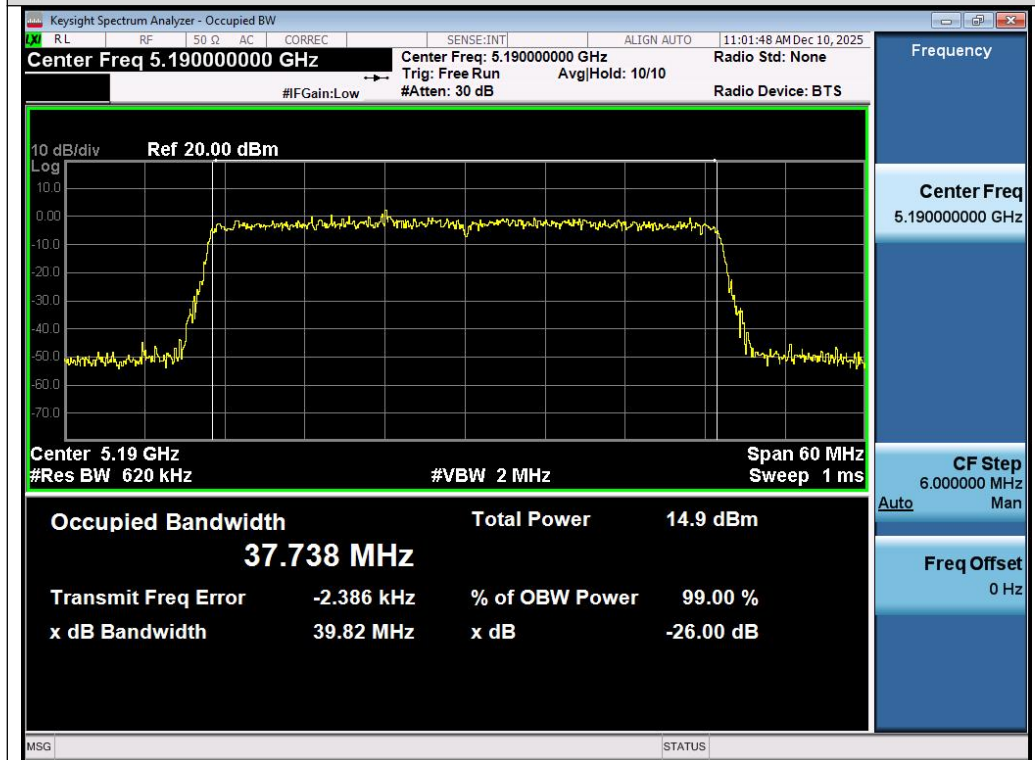
Test\_Graph\_802.11ax20\_ANT1\_5200\_MCS0\_OBW

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Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

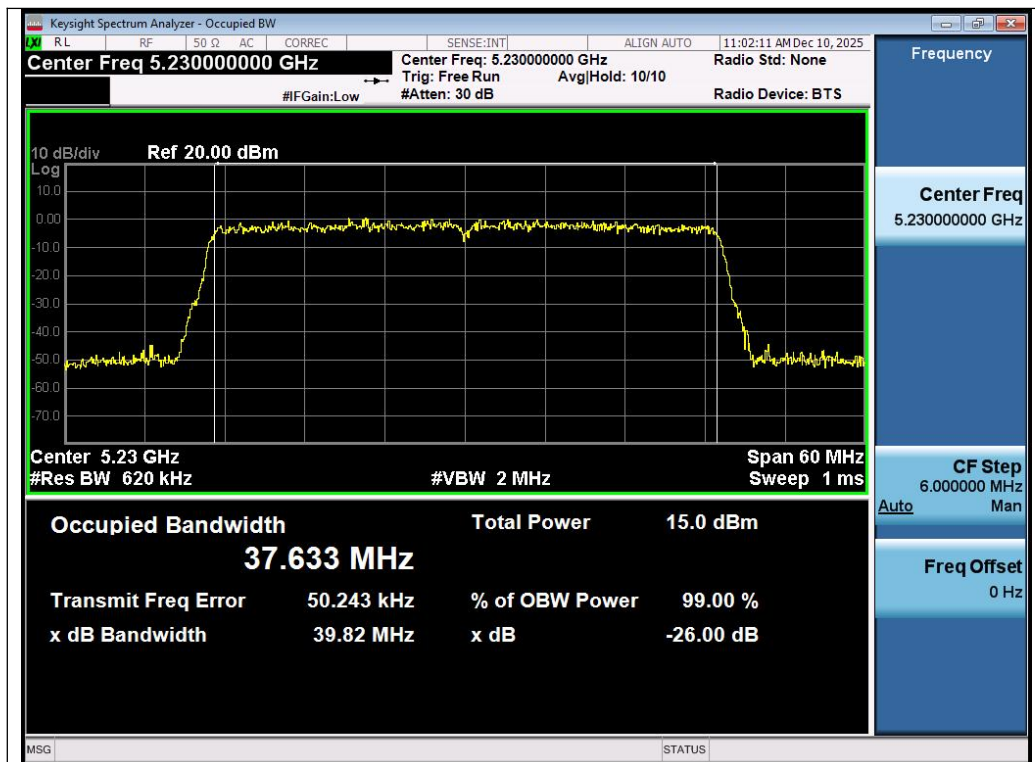


Test\_Graph\_802.11ax20\_ANT1\_5240\_MCS0\_OBW

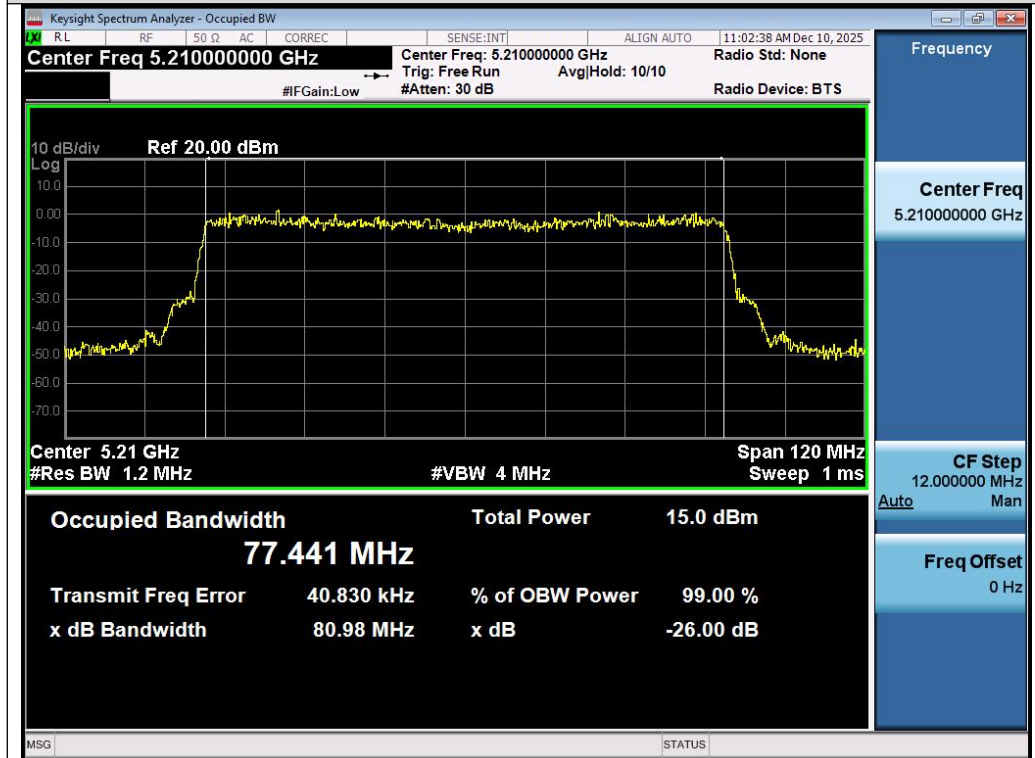


Test\_Graph\_802.11ax40\_ANT1\_5190\_MCS0\_OBW

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Test\_Graph\_802.11ax40\_ANT1\_5230\_MCS0\_OBW



Test\_Graph\_802.11ax80\_ANT1\_5210\_MCS0\_OBW

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## 9. Power Spectral Density Measurement

### 9.1 Provisions Applicable

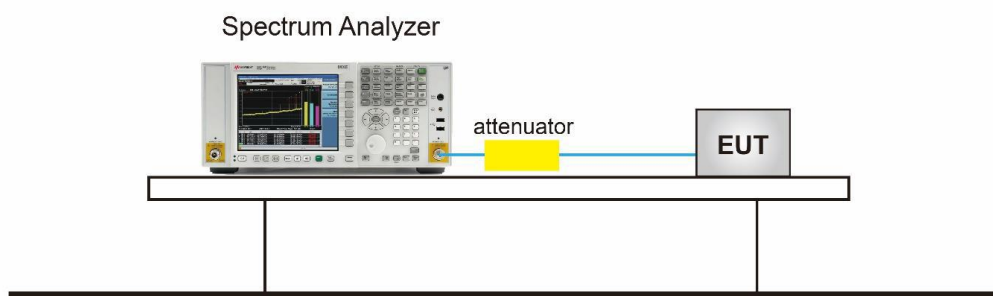
| Operation Band | EUT Category                        |                                   | LIMIT         |
|----------------|-------------------------------------|-----------------------------------|---------------|
| U-NII-1        | <input type="checkbox"/>            | Outdoor Access Point              | 17dBm/ MHz    |
|                | <input type="checkbox"/>            | Fixed point-to-point Access Point | 17dBm/ MHz    |
|                | <input type="checkbox"/>            | Indoor Access Point               | 17dBm/ MHz    |
|                | <input checked="" type="checkbox"/> | Client devices                    | 11dBm/ MHz    |
| U-NII-2A       | /                                   |                                   | 11dBm/ MHz    |
| U-NII-2C       | /                                   |                                   | 11dBm/ MHz    |
| U-NII-3        | /                                   |                                   | 30 dBm/500kHz |

### 9.2 Measurement Procedure

☒ For Average power spectral density test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator.
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz.
4. If measurement bandwidth of Maximum PSD is specified in 500 kHz, RBW = 100KHz
5. Set VBW  $\geq$  [3 $\times$ RBW].
6. Sweep Time=Auto couple.
7. Detector function=RMS (i.e., power averaging).
8. Trace average at least 100 traces in power averaging (rms) mode.
9. When the measurement bandwidth of Maximum PSD is specified in 100 kHz, add a constant factor  $10 \cdot \log(500\text{kHz}/100\text{kHz}) = 6.99$  dB to the measured result.
10. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
11. Add  $[10 \log (1/D)]$ , where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add  $[10 \log (1/0.25)] = 6$  dB if the duty cycle is 25%.
12. The final test results have been increased by the duty cycle factor and recorded in the report

### 9.3 Measurement Setup (Block Diagram of Configuration)



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## 9.4 Measurement Result

| Test Data of Conducted Output Power Density for band 5.15-5.25 GHz |                    |                                 |                  |              |
|--------------------------------------------------------------------|--------------------|---------------------------------|------------------|--------------|
| Test Mode                                                          | Test Channel (MHz) | Average Power Density (dBm/MHz) | Limits (dBm/MHz) | Pass or Fail |
| 802.11a                                                            | 5180               | -1.499                          | 11               | Pass         |
|                                                                    | 5200               | -1.784                          | 11               | Pass         |
|                                                                    | 5240               | -1.925                          | 11               | Pass         |
| 802.11n20                                                          | 5180               | -3.214                          | 11               | Pass         |
|                                                                    | 5200               | -3.226                          | 11               | Pass         |
|                                                                    | 5240               | -3.368                          | 11               | Pass         |
| 802.11n40                                                          | 5190               | -5.981                          | 11               | Pass         |
|                                                                    | 5230               | -6.244                          | 11               | Pass         |
| 802.11ac20                                                         | 5180               | -3.063                          | 11               | Pass         |
|                                                                    | 5200               | -2.907                          | 11               | Pass         |
|                                                                    | 5240               | -3.235                          | 11               | Pass         |
| 802.11ac40                                                         | 5190               | -6.203                          | 11               | Pass         |
|                                                                    | 5230               | -6.324                          | 11               | Pass         |
| 802.11ac80                                                         | 5210               | -9.022                          | 11               | Pass         |
| 802.11ax20                                                         | 5180               | -3.013                          | 11               | Pass         |
|                                                                    | 5200               | -3.447                          | 11               | Pass         |
|                                                                    | 5240               | -3.314                          | 11               | Pass         |
| 802.11ax40                                                         | 5190               | -6.244                          | 11               | Pass         |
|                                                                    | 5230               | -6.151                          | 11               | Pass         |
| 802.11ax80                                                         | 5210               | -9.077                          | 11               | Pass         |

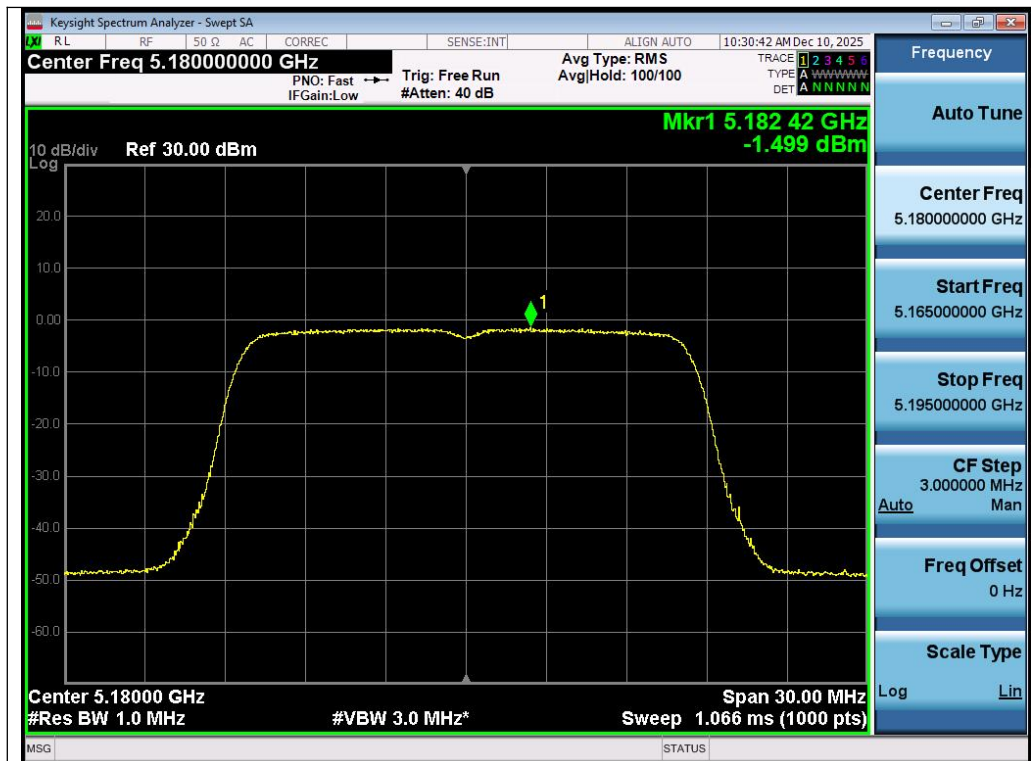
Note: 1. Power density(dBm/500kHz) = Power density(dBm/100kHz)+10\*log(500/100).

2. The Total PSD(dBm/500kHz) =  $10 \cdot \log \{ 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} \}$  (dBm/500kHz).

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### Test Graphs of Conducted Output Power Spectral Density for band 5.15-5.25 GHz



Test\_Graph\_802.11a\_ANT1\_5180\_6Mbps\_PSD



Test\_Graph\_802.11a\_ANT1\_5200\_6Mbps\_PSD

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