# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| **FCC ID** | : | **A4RGXQ96** |
| **Equipment** | : | **Phone** |
| **Model Name** | : | **GXQ96** |
| **Applicant** | : | **Google LLC**<br>**1600 Amphitheatre Parkway,**<br>**Mountain View, California, 94043 USA** |
| **Standard** | : | **FCC Part 15 Subpart E §15.407** |

**The product was received on May 23, 2024 and testing was performed from May 23, 2024 to Oct. 04, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.**

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

Louis Wu

**Approved by: Louis Wu**

***Sporton International Inc. Wensan Laboratory***
*No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)*

# Table of Contents

# History of this test report

| Report No. | Version | Description | Issue Date |
|---|---|---|---|
| FR451606H | 01 | Initial issue of report | Oct. 07, 2024 |
| FR451606H | 02 | 1. Add Section 3.5 and Section 3.6<br>2. Revise List of Measuring Equipment, Summary of Test Result and Appendix C<br>This report is an updated version, replacing the report issued on Oct. 07, 2024. | Oct. 24, 2024 |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---|---|---|---|---|
| 3.1 | 15.407(a)(10) | 26dB Emission Bandwidth | Pass | - |
| 3.1 | 2.1049 | 99% Occupied Bandwidth | Pass | - |
| 3.2 | 15.407(a)(7) | Fundamental Maximum EIRP | Pass | - |
| 3.3 | 15.407(a)(7) | Fundamental Power Spectral Density | Pass | - |
| 3.4 | 15.407(b)(6) | In-Band Emissions (Channel Mask) | Pass | - |
| - | 15.407(d)(6) | Contention Based Protocol | Pass | See Note |
| 3.5 | 15.407<br>KDB 987594 D02 Section II. L. | Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point(APC) | Pass | - |
| 3.6 | 15.407<br>KDB 987594 D02 Section II. K. | Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP | Pass | - |
| 3.5 | 15.407(b) | Unwanted Emissions | Pass | 1.89 dB under the limit at 5924.71 and 5924.32 MHz |
| 3.8 | 15.207 | AC Conducted Emission | Pass | 13.60 dB under the limit at 0.15 MHz |
| 3.9 | 15.203<br>15.407(a) | Antenna Requirement | Pass | - |

**Note:** The receiver circuitry is the same for the CBP mechanism so testing can be performed once based on LPI report to show compliance

| **Conformity Assessment Condition:** |
|---|
| 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.<br>2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”. |
| **Disclaimer:** |
| The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity. |

**Reviewed by: William Chen**

**Report Producer: Michelle Chen**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature |
|---|
| **General Specs**<br>GSM/WCDMA/LTE/5G NR, Bluetooth, BLE, BLE channel sounding, Wi-Fi 802.11ax, NFC, WPC Rx and GNSS.<br><br>**Antenna Type**<br>WLAN:<br>**<Ant. 4>:** IFA Antenna<br>**<Ant. 3>:** IFA Antenna |

**Remark:** The EUT's information above is declared by manufacturer.

| EUT Information List | |
|---|---|
| **S/N** | **Performed Test Item** |
| 46181JEBF10528 | RF Conducted Measurement |
| 46181JEBF10894 | Radiated Spurious Emission |
| 44291JEBF05116 | Conducted Emission |

| Antenna information | | |
|---|---|---|
| **5925 MHz ~ 6425 MHz** | Peak Gain (dBi) | Ant. 4: -1.8<br>Ant. 3: -4.9 |
| **6525 MHz ~ 6875 MHz** | Peak Gain (dBi) | Ant. 4: -0.9<br>Ant. 3: -2.6 |

| Antenna information for Directional Gain | | |
|---|---|---|
| **5925 MHz ~ 6425 MHz** | Peak Gain (dBi) | <6G_Ant4 + 6G_Ant3><br>Correlated: -2.83<br>Uncorrelated: -1.80 |
| **6525 MHz ~ 6875 MHz** | Peak Gain (dBi) | <6G_Ant4 + 6G_Ant3><br>Correlated: -0.33<br>Uncorrelated: -0.90 |

**Remark:**

1. The correlated antenna gain is provided by the MIMO antenna report using KDB 662911 D01 from manufacturer.
2. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

## 1.2 Modification of EUT

No modifications made to the EUT during the testing.

## 1.3 Testing Location

| | |
|---|---|
| **Test Site** | Sporton International Inc. EMC & Wireless Communications Laboratory |
| **Test Site Location** | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City 333, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| **Test Site No.** | **Sporton Site No.** |
| | CO07-HY (TAF Code: 1190) |
| **Remark** | The Conducted Emission, Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point(APC) and Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP test items subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory. |

| | |
|---|---|
| **Test Site** | Sporton International Inc. Wensan Laboratory |
| **Test Site Location** | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist.,<br>Taoyuan City 333010, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| **Test Site No.** | **Sporton Site No.** |
| | TH05-HY, 03CH12-HY |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

## 1.4 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

**Remark:**

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find Z plane with Adapter as worst plane.

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

## 2.1 Carrier Frequency and Channel

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **BW 20M** | **Channel** | 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 |
| | **Freq. (MHz)** | 5955 | 5975 | 5995 | 6015 | 6035 | 6055 | 6075 | 6095 |
| **BW 40M** | **Channel** | 3 | | 11 | | 19 | | 27 | |
| | **Freq. (MHz)** | 5965 | | 6005 | | 6045 | | 6085 | |
| **BW 80M** | **Channel** | 7 | | | | 23 | | | |
| | **Freq. (MHz)** | 5985 | | | | 6065 | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **BW 20M** | **Channel** | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 |
| | **Freq. (MHz)** | 6115 | 6135 | 6155 | 6175 | 6195 | 6215 | 6235 | 6255 |
| **BW 40M** | **Channel** | 35 | | 43 | | 51 | | 59 | |
| | **Freq. (MHz)** | 6125 | | 6165 | | 6205 | | 6245 | |
| **BW 80M** | **Channel** | 39 | | | | 55 | | | |
| | **Freq. (MHz)** | 6145 | | | | 6225 | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW 20M | Channel | 65 | 69 | 73 | 77 | 81 | 85 | 89 | 93 |
| | Freq. (MHz) | 6275 | 6295 | 6315 | 6335 | 6355 | 6375 | 6395 | 6415 |
| BW 40M | Channel | 67 | | 75 | | 83 | | 91 | |
| | Freq. (MHz) | 6285 | | 6325 | | 6365 | | 6405 | |
| BW 80M | Channel | 71 | | | | 87 | | | |
| | Freq. (MHz) | 6305 | | | | 6385 | | | |

| | | | | |
|---|---|---|---|---|
| BW 20M | Channel | 117 | 121 | 125 |
| | Freq. (MHz) | 6535 | 6555 | 6575 |
| BW 40M | Channel | - | 123 | |
| | Freq. (MHz) | - | 6565 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW 20M | Channel | 129 | 133 | 137 | 141 | 145 | 149 | 153 | 157 |
| | Freq. (MHz) | 6595 | 6615 | 6635 | 6655 | 6675 | 6695 | 6715 | 6735 |
| BW 40M | Channel | 131 | | 139 | | 147 | | 155 | |
| | Freq. (MHz) | 6605 | | 6645 | | 6685 | | 6725 | |
| BW 80M | Channel | 135 | | | | 151 | | | |
| | Freq. (MHz) | 6625 | | | | 6705 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW 20M | Channel | 161 | 165 | 169 | 173 | 177 | 181 |
| | Freq. (MHz) | 6755 | 6775 | 6795 | 6815 | 6835 | 6855 |
| BW 40M | Channel | 163 | | 171 | | 179 | |
| | Freq. (MHz) | 6765 | | 6805 | | 6845 | |
| BW 80M | Channel | 167 | | | | | |
| | Freq. (MHz) | 6785 | | | | | |

## 2.2 Test Mode

This device support 26/52/106/242/484/996-tone RU.

The PSD of partial RU is reduced to be smaller than full RU according to TCB workshop interim guidance Oct. 2022.

The 802.11ax mode is investigated among different tones, full resource units (RU), partial resource units. The partial RU has no higher power than full RU's, thus the full RU is chosen as main test configuration.

The 242-tone RU is covered by 20MHz channel, 484-tone RU is covered by 40MHz channel and 996-tone RU is covered by 80MHz channel.

The SISO mode conducted power is covered by MIMO mode per chain, so only the MIMO mode is tested.

**The final test modes include the worst data rates for each modulation shown in the table below.**

**MIMO Mode**

| Modulation | Data Rate |
|---|---|
| **802.11a** | **6 Mbps** |
| **802.11ax HE20** | **MCS0** |
| **802.11ax HE40** | **MCS0** |
| **802.11ax HE80** | **MCS0** |

**Remark:** The conducted power level of each chain in MIMO mode is equal or higher than SISO mode.

| Test Cases | |
|---|---|
| **AC Conducted Emission** | Mode 1 : LTE Band 26 Idle + WLAN (6GHz) Link + Bluetooth Link + USB Cable 1 (Charging from Adapter) + Recording mode; Battery < 50% + Rear Camera |

**Remark:**

1. For Radiated Test Cases, the tests were performed with USB Cable 1.
2. During the preliminary test, both charging modes (Adapter mode and WPC Rx mode) were verified. It is determined that the adaptor mode is the worst case for official test.

| Ch. # | | UNII-5 (5925-6425 MHz) | UNII-7 (6525-6875 MHz) |
|---|---|---|---|
| | | 802.11a | 802.11a |
| L | Low | 001 | 117 |
| M | Middle | 049 | 149 |
| H | High | 093 | 181 |

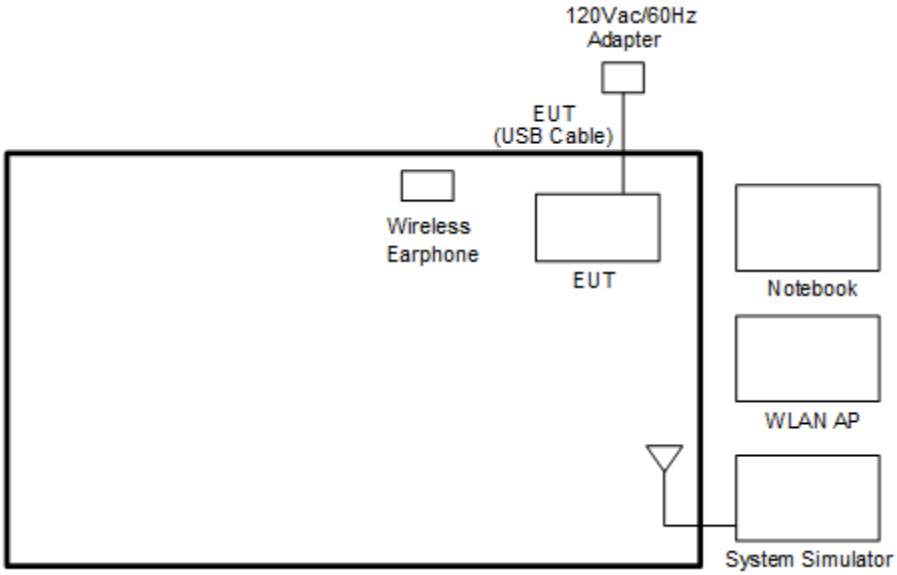
| Ch. # | | UNII-5 (5925-6425 MHz) | | |
|---|---|---|---|---|
| | | 802.11ax HE20 | 802.11ax HE40 | 802.11ax HE80 |
| L | Low | 001 | 003 | 007 |
| M | Middle | 049 | 051 | 055 |
| H | High | 093 | 091 | 087 |

| Ch. # | | UNII-7 (6525-6875 MHz) | | |
|---|---|---|---|---|
| | | 802.11ax HE20 | 802.11ax HE40 | 802.11ax HE80 |
| L | Low | 117 | 123 | 135 |
| M | Middle | 149 | 147 | 151 |
| H | High | 181 | 179 | 167 |

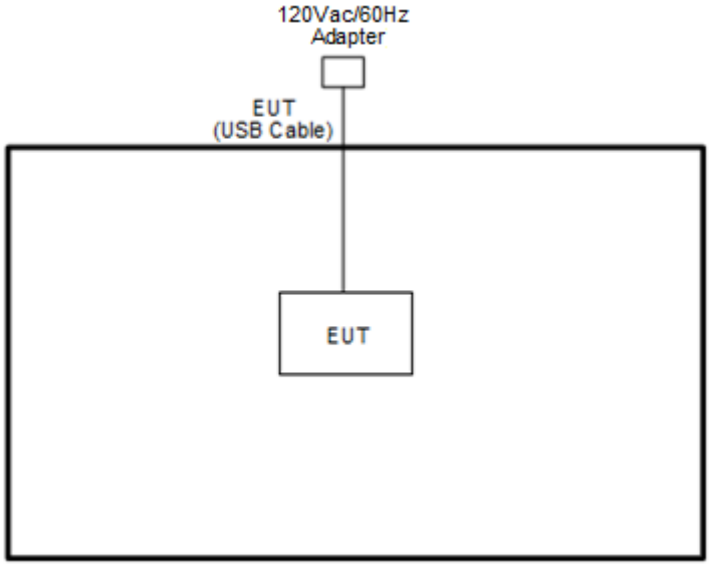
**Remark:** Based on ANSI C63.10 clause 5.6.2.2, b) Spurious emissions, measure the mode with the highest output power and the mode with highest output power spectral density for each modulation family.

## 2.3 Connection Diagram of Test System

**<AC Conducted Emission Mode>**




**<WLAN Tx Mode>**



## 2.4 Support Unit used in test configuration and system

| Item | Equipment | Brand Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded,1.8m |
| 2. | WLAN AP | ASUS | GT-AXE11000 | FCC DoC | N/A | Unshielded,1.8m |
| 3. | Notebook | Dell | Latitude 3420 | FCC DoC | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 4. | Wireless Earphone | Google | G1007/G1008 | A4RG1007/ A4RG1008 | N/A | N/A |
| 5. | Adapter | N/A | GW8L7 | N/A | N/A | N/A |

## 2.5 EUT Operation Test Setup

The RF test items, utility “Cmd Version 1.0.32” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

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

Example :

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

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

# 3 Test Result

## 3.1 26dB & 99% Occupied Bandwidth Measurement

### 3.1.1 Limit of 26dB & 99% Occupied Bandwidth

**<FCC 14-30 CFR 15.407>**

(a)(10) The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

### 3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

### 3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak 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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

### 3.1.4 Test Setup


### 3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

# 3.2 Fundamental Maximum EIRP Measurement

## 3.2.1 Limit of Fundamental Maximum EIRP

**<FCC 14-30 CFR 15.407>**

(a)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access
point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm and the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.

## 3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

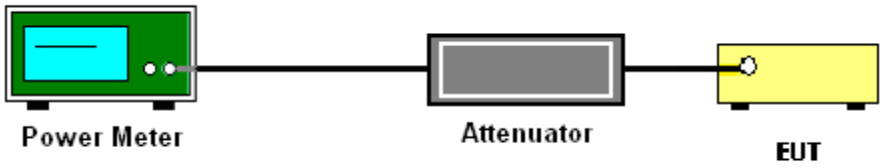
## 3.2.3 Test Procedures

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

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

## 3.2.4 Test Setup




## 3.2.5 Test Result of Fundamental Maximum EIRP

Please refer to Appendix A.

# 3.3 Fundamental Power Spectral Density Measurement

## 3.3.1 Limit of Fundamental Power Spectral Density

**<FCC 14-30 CFR 15.407>**

(a)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1-megahertz band.

## 3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

## 3.3.3 Test Procedures

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

Section F) Maximum power spectral density.

**# Method SA-2 #**

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

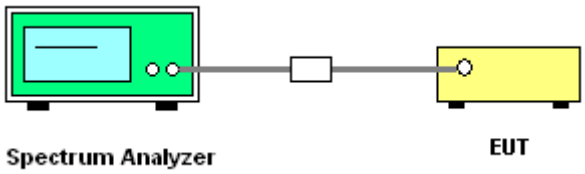
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (a): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points; the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

### 3.3.4 Test Setup




### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

# 3.4 In-Band Emissions (Channel Mask)

## 3.4.1 Limit of Unwanted Emissions

**<FCC 14-30 CFR 15.407>**

(a)(6) For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

## 3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

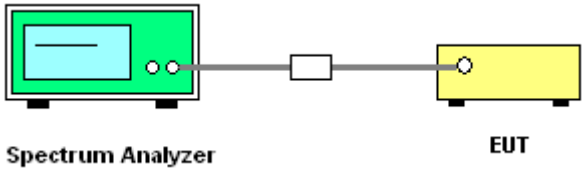
### 3.4.3 Test Procedures

The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v02r01.

Section J) In-Band Emissions.

1. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth
2. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
   a) Set the span to encompass the entire 26 dB EBW of the signal.
   b) Set RBW = same RBW used for 26 dB EBW measurement.
   c) Set VBW ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / RBW].
   e) Sweep time = auto.
   f) Detector = RMS (i.e., power averaging)
   g) Trace average at least 100 traces in power averaging (rms) mode.
   h) Use the peak search function on the instrument to find the peak of the spectrum.
3. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
   a. Suppressed by 20 dB at 1 MHz outside of the channel edge.
   b. Suppressed by 28 dB at one channel bandwidth from the channel center.
   c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
4. Adjust the span to encompass the entire mask as necessary.
5. Clear trace.
6. Trace average at least 100 traces in power averaging (rms) mode.
7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

### 3.4.4 Test Setup




### 3.4.5 Test Result of In-Band Emissions (Channel Mask)

Please refer to Appendix A.

# 3.5 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point (APC)

## 3.5.1 Limit of Standard Client Proper Power Adjustment

15.407 KDB 987594 D02 Section II. L. Power limits for standard client devices

c) The maximum power limits shall remain at least 6 dB below the power levels authorized for the associated standard-power access point

## 3.5.2 Test Procedures of Standard Client Proper Power Adjustment

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v3.

Section L. Proper Power Adjustment

## 3.5.3 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point

A client device that connects to a Standard Power AP must limit its power to a minimum of 6 dB lower than its associated Standard Power access point's authorized transmit power. The term "authorized" means the AFC-approved power level for the AP to use on a particular channel.

Test procedure to show that the client device can lower its power accordingly.

## 3.5.4 Test Procedure:

1. Connect equipment as shown in Figure 7 below.
2. Adjust Atten 1 to Std Power AP so as to facilitate error free communication with the Client but protect the Client receiver from overload or damage.
3. Configure the Client and AP so that they associate and start sending data (stream data). The AP should be configured such that its registered power is 36 dBm EIRP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Use this power, along with its antenna gain, to calculate the Client EIRP.
6. The Client EIRP should be minimally 6 dB lower than that of the AP.
7. Repeat Steps 2 through 5 at two other selected measurement points – the first at the midpoint and the second at the lowest rated power of the client as declared by the manufacturer.

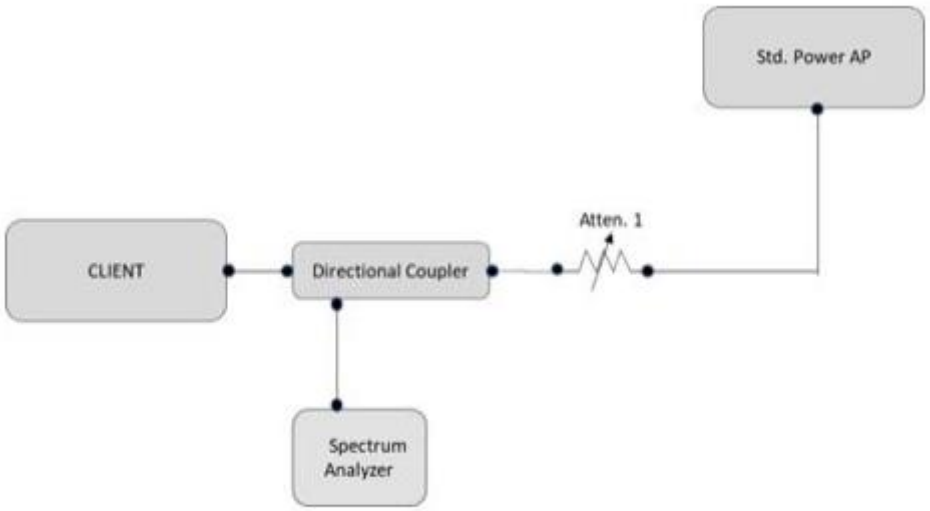



**Figure 7. Test setup for conducted testing**

### 3.5.5 Test Result Summary

Companion Standard Power AP: Brand name: Broadcom, Model name: RT-BE96U

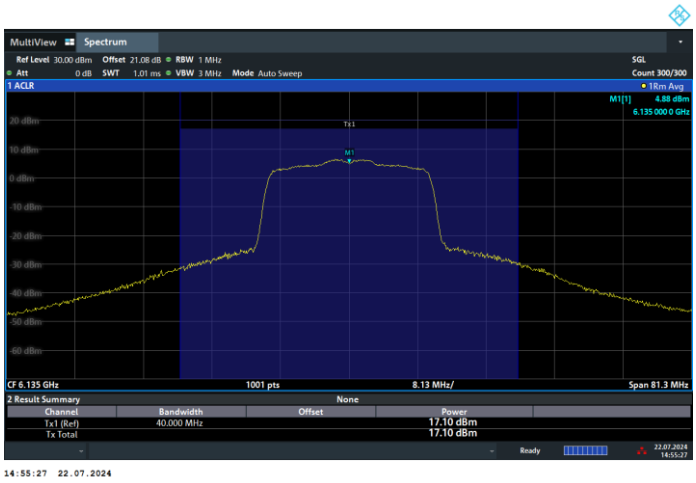
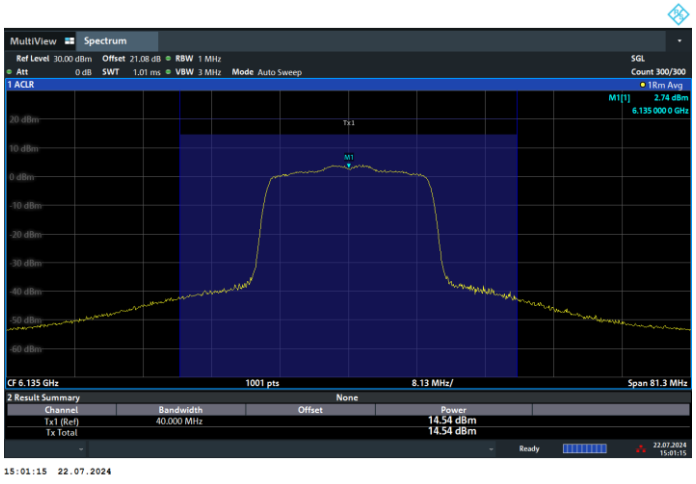
802.11ax 20MHz bandwidth

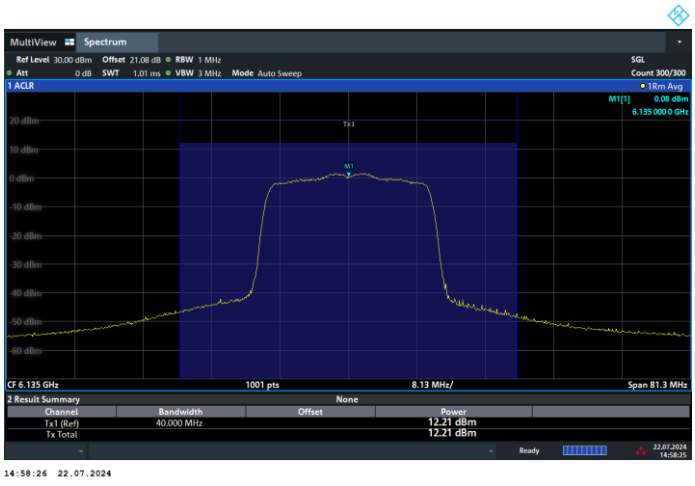
Test channel 37

| | Client single conducted Power (dBm) | Client EIRP (dBm) | AP EIRP (dBm) | AP to client EIRP Delta (dB) |
|---|---|---|---|---|
| **Maximum EIRP** | 17.10 | 18.30 | 36.00 | 17.7 |
| **Midpoint EIRP** | 14.54 | 15.74 | 24.00 | 8.26 |
| **Lowest EIRP** | 12.21 | 14.41 | 21.00 | 6.59 |
| **Requirement** | | | | At least 6 dB |
| **Result** | | | | Pass |

**Note:** Client EIRP = Client single conducted power + MIMO Factor 3dBr + antenna gain -1.8dBi

### 3.5.6 Test Result Plot

| AP EIRP 36dBm | Measured highest power<br>Client single conducted power 17.10dBm |
|---|---|
| Center-ch \| EIRPc \| PSDf \| Example chanspec<br>37 / 0x25 \| +36.00 \| +23.00 \| 0x5025 : 6g37 |  |
| **AP EIRP 24dBm** | **Measured mid-point power<br>Client single conducted power 14.54dBm** |
| Center-ch \| EIRPc \| PSDf \| Example chanspec<br>37 / 0x25 \| +24.00 \| +11.00 \| 0x5025 : 6g37 |  |

| AP EIRP 21dBm | Measured lowest power<br>Client single conducted power 12.21dBm |
|---|---|
| Center-ch \| EIRPc \| PSDf \| Example chanspec<br>37 / 0x25 \| +21.00 \| +8.00 \| 0x5025 : 6g37 |  |

# 3.6 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

## 3.6.1 Limit of Proper Power Adjustment

15.407 KDB 987594 D02 Section II. K. Power limits for standard client devices

A client device may connect to a Standard Power AP with a maximum power level of 30 dBm EIRP. A client may also connect to a Low Power indoor AP, but the power level is limited to a maximum of 24 dBm EIRP.

## 3.6.2 Test Procedures of Standard Client Proper Power Adjustment

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v03.

Section K. Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

## 3.6.3 Test Procedure:

1. Connect equipment as shown in Figure 6 below..
2. Adjust Atten 2 to Std Power AP so as to facilitate error free communication with the Client (Atten 1 should be set to High on the RF path to the Low Power AP)
3. Configure the Client and APs so that they associate and start sending data (stream data). It is important that the client is configured to transmit at its highest power level. Initially, because the attenuation on Atten 1 is set high, the Client will only associate with the Std Power AP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Gradually increase Atten 2 while at the same time decreasing Atten 1. This simulates the Client moving from outdoors to indoors. At some level of attenuation the Client should associate with the Low Power indor AP.
6. Verify transmission between Client and Low Power AP.
7. Measure the RF power of the Client device using the same method as in step 4. Verify the power is no more than 24 dBm EIRP

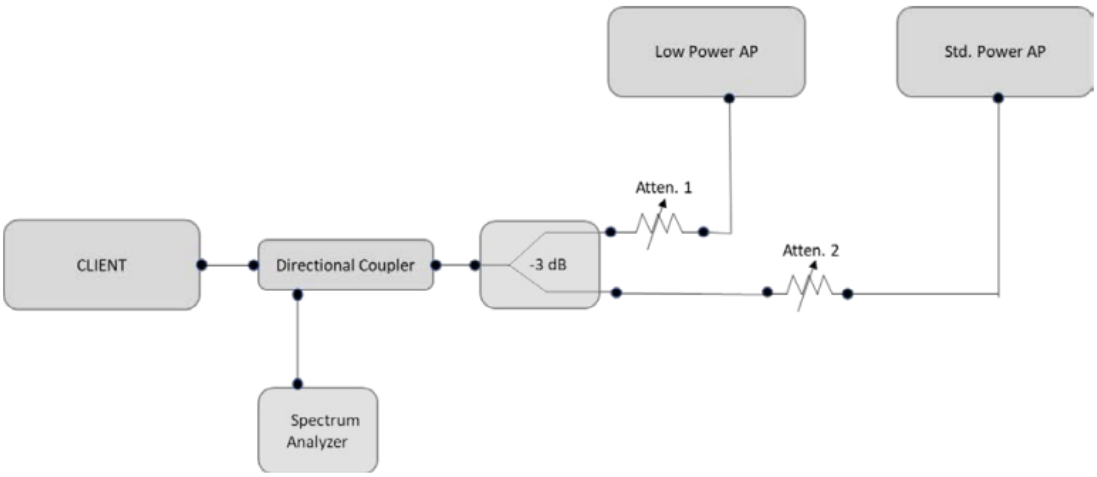



**Figure 6. Test setup for conducted testing**

### 3.6.4 Test Result Summary

Companion Standard Power AP: Brand name: Broadcom, Model name: RT-BE96U

Companion Indoor Power AP: Brand name: Broadcom, Model name: RT-BE96U

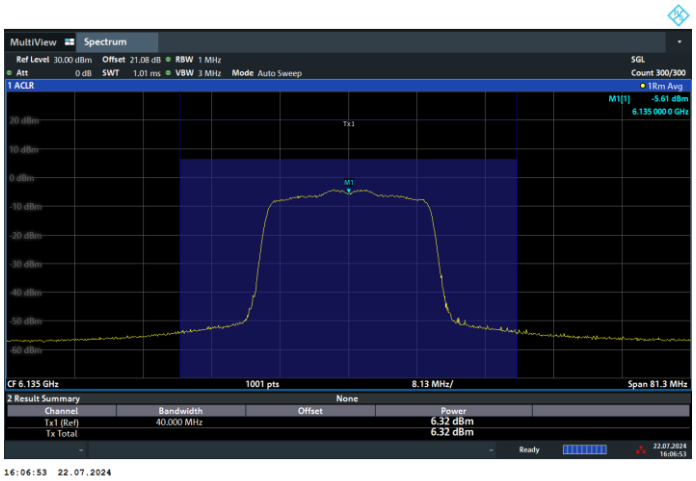
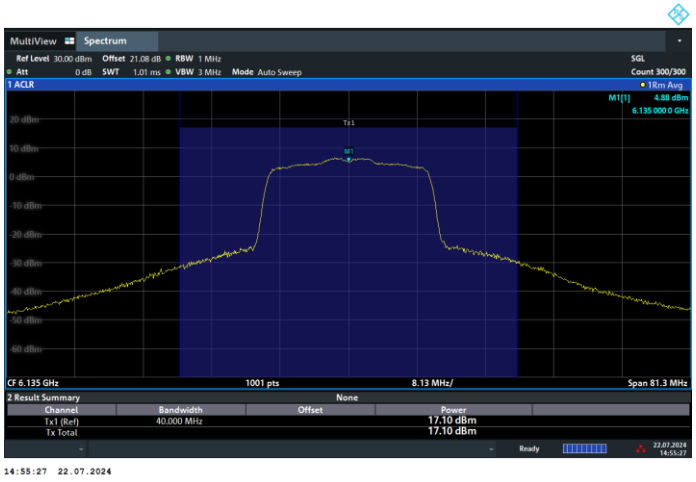
802.11ax 20MHz bandwidth

Test channel 37

| | Client single conducted Power (dBm) | Client EIRP (dBm) | Limit EIRP (dBm) | Result |
|---|---|---|---|---|
| **Indoor EIRP** | 6.32 | 7.52 | 24 | Pass |
| **Standard EIRP** | 17.10 | 18.30 | 30 | Pass |

**Note:** Client EIRP = Client single conducted power + MIMO Factor 3dB + antenna gain -1.8dBi

### 3.6.5 Test Result Plot

| | |
|---|---|
| **Measured Indoor power**<br>**Client single conducted power**<br>**6.32dBm** |  |
| **Measured Standard power**<br>**Client single conducted power**<br>**17.10dBm** |  |

## 3.7 Unwanted Emissions Measurement

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

### 3.7.1 Limit of Unwanted Emissions

(1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

| EIRP (dBm) | Field Strength at 3m (dBμV/m) |
|---|---|
| - 27 (RMS) | 68.3 |
| - 7 (Peak) | 88.3 |

According 987594 D02 U-NII 6GHz EMC Measurement v02r01 section G:
Unwanted emissions outside of restricted bands are measured with a RMS detector.
In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit

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

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

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

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

### 3.7.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

### 3.7.3 Test Procedures

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

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

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

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

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

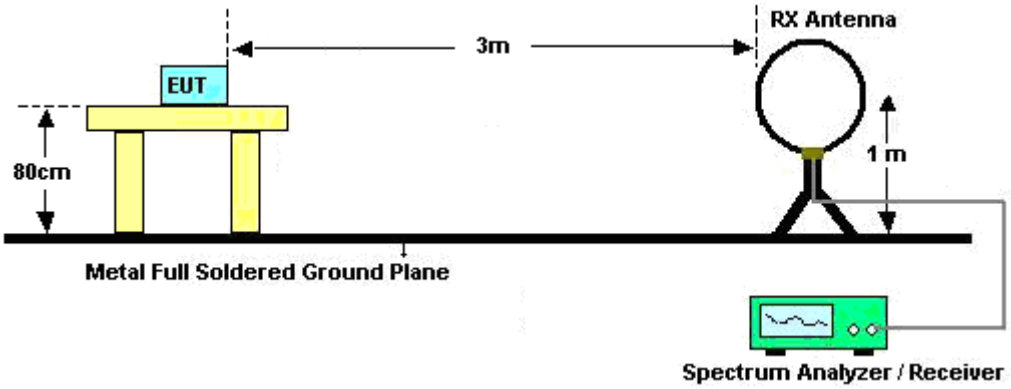
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

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

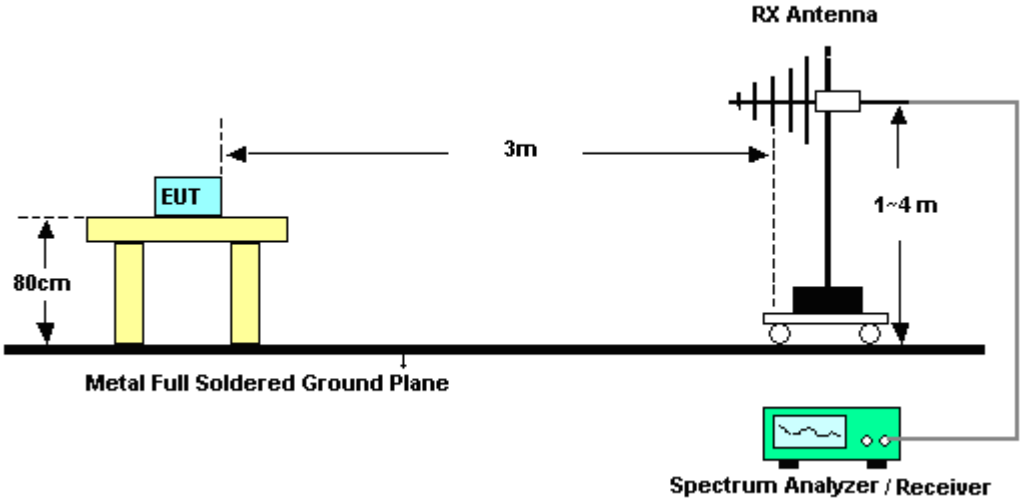
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-“..

### 3.7.4 Test Setup

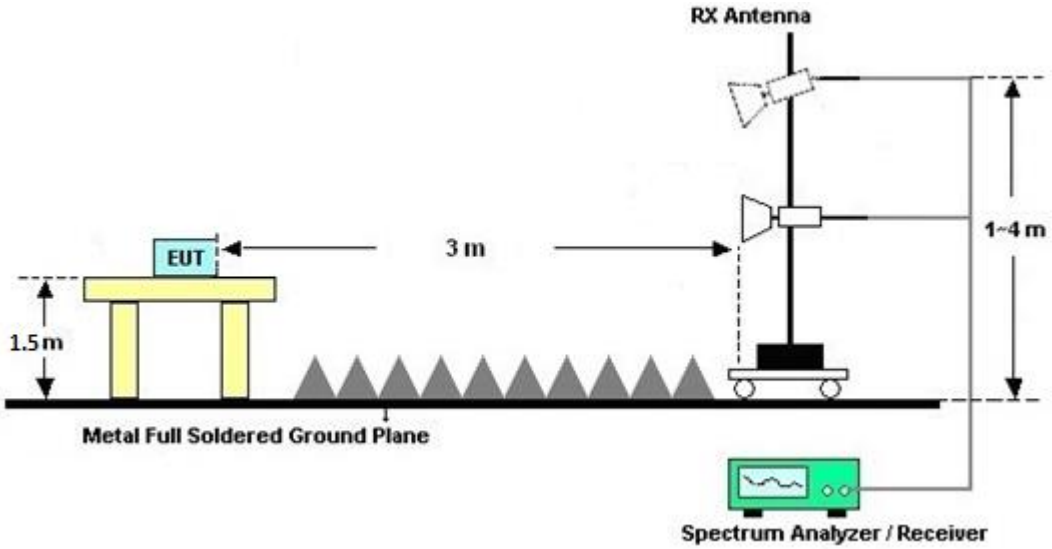
**For radiated emissions below 30MHz**



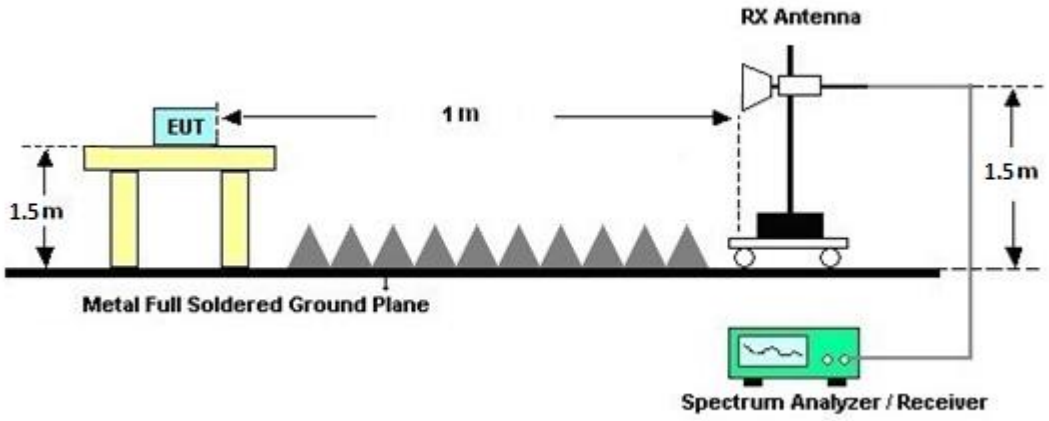

**For radiated emissions from 30MHz to 1GHz**




**For radiated test from 1GHz to 18GHz**



**For radiated test above 18GHz**




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

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

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

### 3.7.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

### 3.7.7 Duty Cycle

Please refer to Appendix D.

### 3.7.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

# 3.8 AC Conducted Emission Measurement

## 3.8.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

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

*Decreases with the logarithm of the frequency.

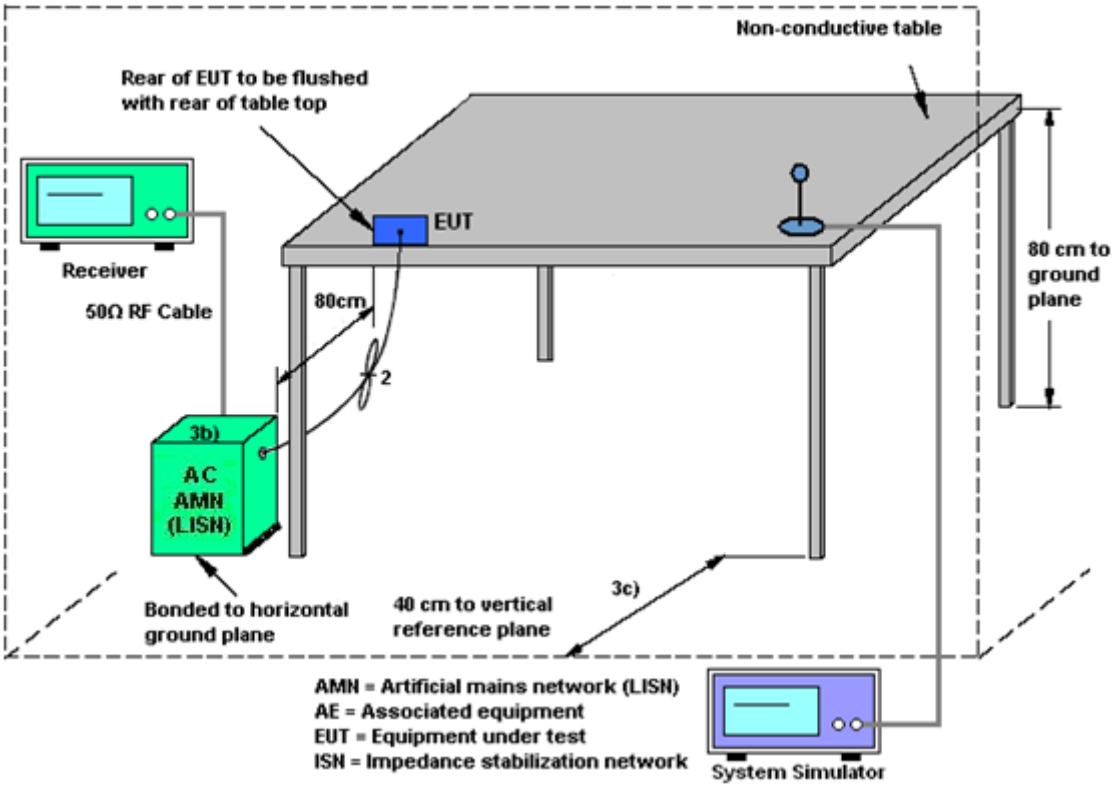
## 3.8.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

## 3.8.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

### 3.8.4 Test Setup




### 3.8.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

# 3.9 Antenna Requirements

## 3.9.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

## 3.9.2 Antenna Anti-Replacement Construction

b) Unique (non-standard) antenna connector.

(3) Use of a standard connector is also allowed if the connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter, where such disassembly is not normally required. The user manual must not show that user has access to the connector.

# 4 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Aug. 07, 2024 | N/A | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESR3 | 102388 | 9kHz~3.6GHz | Dec. 06, 2023 | Aug. 07, 2024 | Dec. 05, 2024 | Conduction (CO05-HY) |
| Hygrometer | Testo | 608-H1 | 34913912 | N/A | Oct. 26, 2023 | Aug. 07, 2024 | Oct. 25, 2024 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100081 | 9kHz~30MHz | Nov. 22, 2023 | Aug. 07, 2024 | Nov. 21, 2024 | Conduction (CO05-HY) |
| Software | Rohde & Schwarz | EMC32 | N/A | N/A | N/A | Aug. 07, 2024 | N/A | Conduction (CO05-HY) |
| Pulse Limiter | SCHWARZBECK | VTSD 9561-F N | 00691 | N/A | Jul. 30, 2024 | Aug. 07, 2024 | Jul. 29, 2025 | Conduction (CO05-HY) |
| LISN Cable | MVE | RG-400 | 260260 | N/A | Dec. 28, 2023 | Aug. 07, 2024 | Dec. 27, 2024 | Conduction (CO05-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9kHz~30MHz | Feb. 23, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Feb. 22, 2025 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01N-06 | 37059 & 01 | 30MHz~1GHz | Nov. 03, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Nov. 02, 2024 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-02114 | 1GHz~18GHz | Jul. 11, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Jul. 10, 2025 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA9170 | 00993 | 18GHz-40GHz | Nov. 24, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Nov. 23, 2024 | Radiation (03CH12-HY) |
| Preamplifier | COM-POWER | PA-103 | 161075 | 10MHz~1GHz | Mar. 20, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Mar. 19, 2025 | Radiation (03CH12-HY) |
| Preamplifier | Agilent | 8449B | 3008A02375 | 1GHz~26.5GHz | May 22, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | May 21, 2025 | Radiation (03CH12-HY) |
| Preamplifier | E-INSTRUMENT TECH LTD. | ERA-100M-18G-56-01-A70 | EC1900249 | 1GHz-18GHz | Dec. 20, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Dec. 19, 2024 | Radiation (03CH12-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz~40GHz | Dec. 07, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Dec. 06, 2024 | Radiation (03CH12-HY) |
| Spectrum Analyzer | Agilent | N9010A | MY53470118 | 10Hz~44GHz | Jan. 10, 2024 | Jul. 11, 2024~ Aug. 08, 2024 | Jan. 09, 2025 | Radiation (03CH12-HY) |
| Spectrum Analyzer | Agilent | N9010A | MY53470118 | 10Hz~44GHz | Aug. 09, 2024 | Aug. 09, 2024~ Sep. 06, 2024 | Aug. 08, 2025 | Radiation (03CH12-HY) |
| EMI Test Receiver | Agilent | N9038A(MXE) | MY53290053 | 20Hz~26.5GHz | Aug. 29, 2023 | Jul. 11, 2024~ Aug. 27, 2024 | Aug. 28, 2024 | Radiation (03CH12-HY) |
| EMI Test Receiver | Agilent | N9038A(MXE) | MY53290045 | 20Hz~8.4GHz | Apr. 17, 2024 | Aug. 28, 2024~ Sep. 06, 2024 | Apr. 16, 2025 | Radiation (03CH12-HY) |
| Filter | Wainwright | WLKS1200-12SS | SN2 | 1.2GHz Low Pass Filter | Mar. 13, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Mar. 12, 2025 | Radiation (03CH12-HY) |
| Filter | Wainwright | WHKX8-5872.5-6750-18000-40ST | SN2 | 6.75GHz High Pass Filter | Mar. 13, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Mar. 12, 2025 | Radiation (03CH12-HY) |
| Notch Filter | Wainwright | WRCQV14-5425-5825-6525-6925-60SS | SN1 | N/A | Jan. 05, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Jan. 04, 2025 | Radiation (03CH12-HY) |
| Notch Filter | Wainwright | WRCQV14-6025-6425-7125-7525-60SS | SN2 | N/A | Jan. 05, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Jan. 04, 2025 | Radiation (03CH12-HY) |

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 803951/2 | 9kHz~30MHz | Mar. 06, 2024 | Jul. 11, 2024~ Sep. 06, 2024 | Mar. 05, 2025 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0058/126E | 30MHz~18GHz | Dec. 18, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Dec. 17, 2024 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30MHz~40GHz | Dec. 18, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Dec. 17, 2024 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 803953/2 | 30MHz~40GHz | Dec. 18, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Dec. 17, 2024 | Radiation (03CH12-HY) |
| Hygrometer | TECPEL | DTM-303B | TP210117 | N/A | Oct. 19, 2023 | Jul. 11, 2024~ Sep. 06, 2024 | Oct. 18, 2024 | Radiation (03CH12-HY) |
| Controller | EMEC | EM1000 | N/A | Control Turn table & Ant Mast | N/A | Jul. 11, 2024~ Sep. 06, 2024 | N/A | Radiation (03CH12-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1m~4m | N/A | Jul. 11, 2024~ Sep. 06, 2024 | N/A | Radiation (03CH12-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Jul. 11, 2024~ Sep. 06, 2024 | N/A | Radiation (03CH12-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-000989 | N/A | N/A | Jul. 11, 2024~ Sep. 06, 2024 | N/A | Radiation (03CH12-HY) |
| Hygrometer | TECPEL | DTM-303A | TP201996 | N/A | Nov. 07, 2023 | May 23, 2024~ Oct. 04, 2024 | Nov. 06, 2024 | Conducted (TH05-HY) |
| USB Power Sensor | DARE | RPR3008W | RPR8W-2301001( NO:146) | 10MHz~8GHz | Jan. 29, 2024 | May 23, 2024~ Oct. 04, 2024 | Jan. 28, 2025 | Conducted (TH05-HY) |
| Switch Box & RF Cable | E-Instument | ETF-058 | EC1208382 (BOX1) | N/A | Apr. 01, 2024 | May 23, 2024~ Oct. 04, 2024 | Mar. 31, 2025 | Conducted (TH05-HY) |
| Software | Sporton | BTWIFI_Final_version1.0 | N/A | N/A | N/A | May 23, 2024~ Oct. 04, 2024 | N/A | Conducted (TH05-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101565 | 10Hz~40GHz | Dec. 19, 2023 | May 23, 2024~ Oct. 04, 2024 | Dec. 18, 2024 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSV3013 | 101549 | 10Hz~13.6GHz | Jan. 30, 2024 | Jul. 22, 2024 | Jan. 29, 2025 | AFC (DF02-HY) |

# 5 Measurement Uncertainty

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

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 3.50 dB |

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

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 6.10 dB |

**Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 4.30 dB |

**Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 4.80 dB |

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

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 5.30 dB |

# Appendix A. Test Result of Conducted Test Items

| | | | | |
|---|---|---|---|---|
| Test Engineer: | Hank Hsu | Temperature: | 21~25 | °C |
| Test Date: | 2024/05/23~2024/10/04 | Relative Humidity: | 51~54 | % |

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

| U-NII-5 MIMO | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | Emission Bandwidth Limit (MHz) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| 11a | 6Mbps | 2 | 001 | 5955 | 29.17 | 28.07 | 43.22 | 47.13 | 320.00 | Pass |
| 11a | 6Mbps | 2 | 049 | 6195 | 28.27 | 28.62 | 43.08 | 42.67 | 320.00 | Pass |
| 11a | 6Mbps | 2 | 093 | 6415 | 27.77 | 28.62 | 45.48 | 47.41 | 320.00 | Pass |

Report Number : FR451606H

## ***TEST RESULTS DATA***
## ***EIRP Power Table***

| U-NII-5 MIMO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | Conducted Power (dBm) | | | DG (dBi) | | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| 11a | 6Mbps | 2 | 001 | 5955 | 17.45 | 17.20 | 20.34 | -1.80 | | 18.54 | 30.00 | Pass |
| 11a | 6Mbps | 2 | 049 | 6195 | 18.85 | 18.50 | 21.69 | -1.80 | | 19.89 | 30.00 | Pass |
| 11a | 6Mbps | 2 | 093 | 6415 | 18.85 | 18.00 | 21.46 | -1.80 | | 19.66 | 30.00 | Pass |

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

| U-NII-5 MIMO | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | Duty Factor (dB) | | Conducted Power Density with Duty Factor (dBm/MHz) | | | DG (dBi) | | EIRP Power Density (dBm/MHz) | EIRP Power Density Limit (dBm/MHz) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| 11a | 6Mbps | 2 | 001 | 5955 | 0.28 | 0.29 | | | 9.06 | -2.83 | | 6.23 | 17.00 | Pass |
| 11a | 6Mbps | 2 | 049 | 6195 | 0.28 | 0.29 | | | 10.41 | -2.83 | | 7.58 | 17.00 | Pass |
| 11a | 6Mbps | 2 | 093 | 6415 | 0.28 | 0.29 | | | 10.16 | -2.83 | | 7.33 | 17.00 | Pass |

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

| U-NII-7 MIMO | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | Emission Bandwidth Limit (MHz) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| 11a | 6Mbps | 2 | 117 | 6535 | 27.32 | 29.72 | 49.62 | 49.34 | 320.00 | Pass |
| 11a | 6Mbps | 2 | 149 | 6695 | 27.32 | 29.72 | 49.54 | 48.91 | 320.00 | Pass |
| 11a | 6Mbps | 2 | 181 | 6855 | 26.77 | 29.67 | 49.12 | 49.08 | 320.00 | Pass |

Report Number : FR451606H

## ***TEST RESULTS DATA***
## ***EIRP Power Table***

| U-NII-7 MIMO | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | Conducted Power (dBm) | | | DG (dBi) | | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| 11a | 6Mbps | 2 | 117 | 6535 | 18.85 | 17.87 | 21.40 | -0.90 | | 20.50 | 30.00 | Pass |
| 11a | 6Mbps | 2 | 149 | 6695 | 18.65 | 17.77 | 21.24 | -0.90 | | 20.34 | 30.00 | Pass |
| 11a | 6Mbps | 2 | 181 | 6855 | 17.25 | 17.67 | 20.48 | -0.90 | | 19.58 | 30.00 | Pass |

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

| U-NII-7 MIMO | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | Duty Factor (dB) | | Conducted Power Density with Duty Factor (dBm/MHz) | | | DG (dBi) | | EIRP Power Density (dBm/MHz) | EIRP Power Density Limit (dBm/MHz) | Pass /Fail |
| | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| 11a | 6Mbps | 2 | 117 | 6535 | 0.28 | 0.29 | | | 10.25 | -0.33 | | 9.92 | 17.00 | Pass |
| 11a | 6Mbps | 2 | 149 | 6695 | 0.28 | 0.29 | | | 9.75 | -0.33 | | 9.42 | 17.00 | Pass |
| 11a | 6Mbps | 2 | 181 | 6855 | 0.28 | 0.29 | | | 9.04 | -0.33 | | 8.71 | 17.00 | Pass |

## ***TEST RESULTS DATA***
## ***26dB and 99% OBW***

| U-NII-5 MIMO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | Emission Bandwidth Limit (MHz) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| HE20 | MCS0 | 2 | 001 | 5955 | Full | 22.78 | 29.02 | 49.66 | 49.90 | 320.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | Full | 26.47 | 25.92 | 46.05 | 43.35 | 320.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | Full | 29.97 | 29.82 | 46.46 | 48.70 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 003 | 5965 | Full | 45.75 | 51.95 | 80.66 | 88.88 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 051 | 6205 | Full | 39.76 | 41.86 | 78.69 | 84.03 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 091 | 6405 | Full | 42.86 | 50.75 | 77.95 | 87.14 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 007 | 5985 | Full | 77.44 | 78.04 | 141.63 | 144.13 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 055 | 6225 | Full | 77.56 | 77.68 | 146.11 | 139.39 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 087 | 6385 | Full | 77.44 | 78.16 | 135.30 | 163.58 | 320.00 | Pass |

## *TEST RESULTS DATA*
## *EIRP Power Table*

| U-NII-5 MIMO | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | Conducted Power (dBm) | | | DG (dBi) | | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| HE20 | MCS0 | 2 | 001 | 5955 | Full | 17.45 | 16.90 | 20.19 | -1.80 | | 18.39 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 26/0 | 8.85 | 7.40 | 11.20 | -1.80 | | 9.40 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 52/37 | 11.65 | 10.10 | 13.95 | -1.80 | | 12.15 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 106/53 | 14.65 | 14.20 | 17.44 | -1.80 | | 15.64 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | Full | 18.85 | 18.50 | 21.69 | -1.80 | | 19.89 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 26/4 | 11.95 | 11.20 | 14.60 | -1.80 | | 12.80 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 52/38 | 13.55 | 13.10 | 16.34 | -1.80 | | 14.54 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 106/53 | 16.15 | 15.90 | 19.04 | -1.80 | | 17.24 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | Full | 18.95 | 18.00 | 21.51 | -1.80 | | 19.71 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 26/8 | 10.35 | 9.70 | 13.05 | -1.80 | | 11.25 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 52/40 | 12.35 | 12.40 | 15.39 | -1.80 | | 13.59 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 106/54 | 15.55 | 15.70 | 18.64 | -1.80 | | 16.84 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 003 | 5965 | Full | 15.85 | 15.10 | 18.50 | -1.80 | | 16.70 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 051 | 6205 | Full | 18.75 | 18.40 | 21.59 | -1.80 | | 19.79 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 091 | 6405 | Full | 18.65 | 18.30 | 21.49 | -1.80 | | 19.69 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 007 | 5985 | Full | 14.85 | 14.90 | 17.89 | -1.80 | | 16.09 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 055 | 6225 | Full | 18.85 | 18.50 | 21.69 | -1.80 | | 19.89 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 087 | 6385 | Full | 18.55 | 18.20 | 21.39 | -1.80 | | 19.59 | 30.00 | Pass |

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

| U-NII-5 MIMO | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | Duty Factor (dB) | | Conducted Power Density with Duty Factor (dBm/MHz) | | | DG (dBi) | | EIRP Power Density (dBm/MHz) | EIRP Power Density Limit (dBm/MHz) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| HE20 | MCS0 | 2 | 001 | 5955 | Full | 0.40 | 0.40 | | | 8.37 | -2.83 | | 5.54 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 26/0 | 0.48 | 0.48 | | | 7.84 | -2.83 | | 5.01 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 52/37 | 0.53 | 0.53 | | | 7.77 | -2.83 | | 4.94 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 001 | 5955 | 106/53 | 0.58 | 0.59 | | | 8.18 | -2.83 | | 5.35 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | Full | 0.40 | 0.40 | | | 9.99 | -2.83 | | 7.16 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 26/4 | 0.48 | 0.48 | | | 9.98 | -2.83 | | 7.15 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 52/38 | 0.53 | 0.53 | | | 9.82 | -2.83 | | 6.99 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 049 | 6195 | 106/53 | 0.58 | 0.59 | | | 9.57 | -2.83 | | 6.74 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | Full | 0.40 | 0.40 | | | 9.84 | -2.83 | | 7.01 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 26/8 | 0.48 | 0.48 | | | 9.76 | -2.83 | | 6.93 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 52/40 | 0.53 | 0.53 | | | 9.34 | -2.83 | | 6.51 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 093 | 6415 | 106/54 | 0.58 | 0.59 | | | 9.58 | -2.83 | | 6.75 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 003 | 5965 | Full | 0.40 | 0.40 | | | 4.11 | -2.83 | | 1.28 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 051 | 6205 | Full | 0.40 | 0.40 | | | 7.32 | -2.83 | | 4.49 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 091 | 6405 | Full | 0.40 | 0.40 | | | 6.81 | -2.83 | | 3.98 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 007 | 5985 | Full | 0.54 | 0.54 | | | 0.69 | -2.83 | | -2.14 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 055 | 6225 | Full | 0.54 | 0.54 | | | 3.95 | -2.83 | | 1.12 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 087 | 6385 | Full | 0.54 | 0.54 | | | 3.68 | -2.83 | | 0.85 | 17.00 | Pass |

## ***TEST RESULTS DATA***
## ***26dB and 99% OBW***

| U-NII-7 MIMO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | 99% Bandwidth (MHz) | | 26 dB Bandwidth (MHz) | | Emission Bandwidth Limit (MHz) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | | |
| HE20 | MCS0 | 2 | 117 | 6535 | Full | 28.42 | 28.52 | 47.95 | 51.00 | 320.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | Full | 28.22 | 28.62 | 53.46 | 57.73 | 320.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | Full | 29.47 | 29.87 | 53.35 | 53.98 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 123 | 6565 | Full | 44.66 | 39.66 | 87.34 | 77.86 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 147 | 6685 | Full | 49.65 | 42.36 | 88.02 | 76.96 | 320.00 | Pass |
| HE40 | MCS0 | 2 | 179 | 6845 | Full | 60.84 | 53.05 | 97.89 | 89.41 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 135 | 6625 | Full | 78.40 | 78.04 | 152.10 | 160.06 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 151 | 6705 | Full | 84.76 | 79.12 | 173.34 | 157.54 | 320.00 | Pass |
| HE80 | MCS0 | 2 | 167 | 6785 | Full | 85.95 | 82.96 | 180.96 | 173.02 | 320.00 | Pass |

## ***TEST RESULTS DATA***
## ***EIRP Power Table***

| U-NII-7 MIMO | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | Conducted Power (dBm) | | | DG (dBi) | | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| HE20 | MCS0 | 2 | 117 | 6535 | Full | 18.95 | 18.07 | 21.54 | -0.90 | | 20.64 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 26/0 | 10.35 | 9.67 | 13.03 | -0.90 | | 12.13 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 52/37 | 12.55 | 11.97 | 15.28 | -0.90 | | 14.38 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 106/53 | 16.15 | 15.77 | 18.97 | -0.90 | | 18.07 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | Full | 18.85 | 17.87 | 21.40 | -0.90 | | 20.50 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 26/4 | 11.25 | 10.37 | 13.84 | -0.90 | | 12.94 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 52/38 | 12.75 | 11.57 | 15.21 | -0.90 | | 14.31 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 106/53 | 15.65 | 14.87 | 18.29 | -0.90 | | 17.39 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | Full | 17.25 | 17.87 | 20.58 | -0.90 | | 19.68 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 26/8 | 9.15 | 8.97 | 12.07 | -0.90 | | 11.17 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 52/40 | 12.45 | 11.57 | 15.04 | -0.90 | | 14.14 | 30.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 106/54 | 14.75 | 14.57 | 17.67 | -0.90 | | 16.77 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 123 | 6565 | Full | 18.95 | 17.97 | 21.50 | -0.90 | | 20.60 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 147 | 6685 | Full | 18.55 | 17.67 | 21.14 | -0.90 | | 20.24 | 30.00 | Pass |
| HE40 | MCS0 | 2 | 179 | 6845 | Full | 17.15 | 17.77 | 20.48 | -0.90 | | 19.58 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 135 | 6625 | Full | 18.95 | 18.07 | 21.54 | -0.90 | | 20.64 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 151 | 6705 | Full | 18.65 | 18.27 | 21.47 | -0.90 | | 20.57 | 30.00 | Pass |
| HE80 | MCS0 | 2 | 167 | 6785 | Full | 18.15 | 17.77 | 20.97 | -0.90 | | 20.07 | 30.00 | Pass |

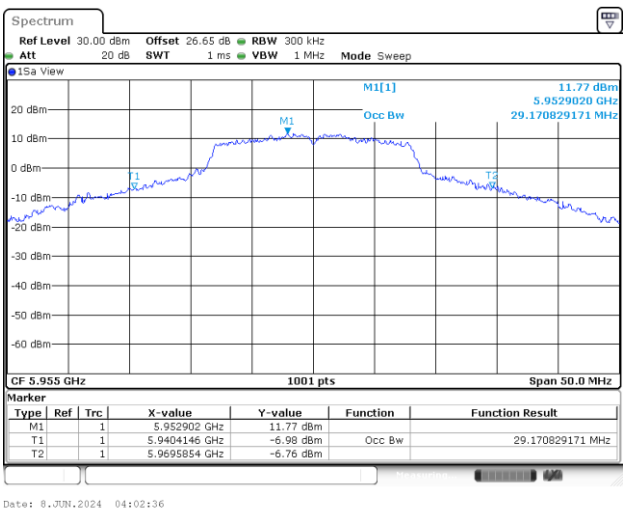
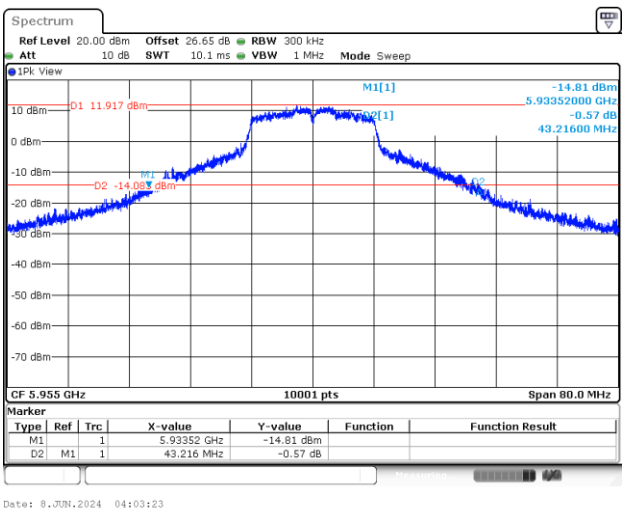
## ***TEST RESULTS DATA***
## ***EIRP Power Spectral Density***

| U-NII-7 MIMO | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mod. | Data Rate | $N_{TX}$ | CH. | Freq. (MHz) | RU Config. | Duty Factor (dB) | | Conducted Power Density with Duty Factor (dBm/MHz) | | | DG (dBi) | | EIRP Power Density (dBm/MHz) | EIRP Power Density Limit (dBm/MHz) | Pass /Fail |
| | | | | | | Ant 4 | Ant 3 | Ant 4 | Ant 3 | SUM | Ant 4 | Ant 3 | SUM | | |
| HE20 | MCS0 | 2 | 117 | 6535 | Full | 0.40 | 0.40 | | | 9.95 | -0.33 | | 9.62 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 26/0 | 0.48 | 0.48 | | | 9.81 | -0.33 | | 9.48 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 52/37 | 0.53 | 0.53 | | | 9.58 | -0.33 | | 9.25 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 117 | 6535 | 106/53 | 0.58 | 0.59 | | | 9.67 | -0.33 | | 9.34 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | Full | 0.40 | 0.40 | | | 9.41 | -0.33 | | 9.08 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 26/4 | 0.48 | 0.48 | | | 9.38 | -0.33 | | 9.05 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 52/38 | 0.53 | 0.53 | | | 8.98 | -0.33 | | 8.65 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 149 | 6695 | 106/53 | 0.58 | 0.59 | | | 9.11 | -0.33 | | 8.78 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | Full | 0.40 | 0.40 | | | 8.66 | -0.33 | | 8.33 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 26/8 | 0.48 | 0.48 | | | 8.62 | -0.33 | | 8.29 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 52/40 | 0.53 | 0.53 | | | 8.55 | -0.33 | | 8.22 | 17.00 | Pass |
| HE20 | MCS0 | 2 | 181 | 6855 | 106/54 | 0.58 | 0.59 | | | 8.28 | -0.33 | | 7.95 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 123 | 6565 | Full | 0.40 | 0.40 | | | 6.72 | -0.33 | | 6.39 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 147 | 6685 | Full | 0.40 | 0.40 | | | 6.28 | -0.33 | | 5.95 | 17.00 | Pass |
| HE40 | MCS0 | 2 | 179 | 6845 | Full | 0.40 | 0.40 | | | 5.60 | -0.33 | | 5.27 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 135 | 6625 | Full | 0.54 | 0.54 | | | 3.95 | -0.33 | | 3.62 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 151 | 6705 | Full | 0.54 | 0.54 | | | 3.64 | -0.33 | | 3.31 | 17.00 | Pass |
| HE80 | MCS0 | 2 | 167 | 6785 | Full | 0.54 | 0.54 | | | 3.36 | -0.33 | | 3.03 | 17.00 | Pass |

## Test Result of 26dB & 99% Occupied Bandwidth

**MIMO <Ant. 4+3>**

**<802.11a>**

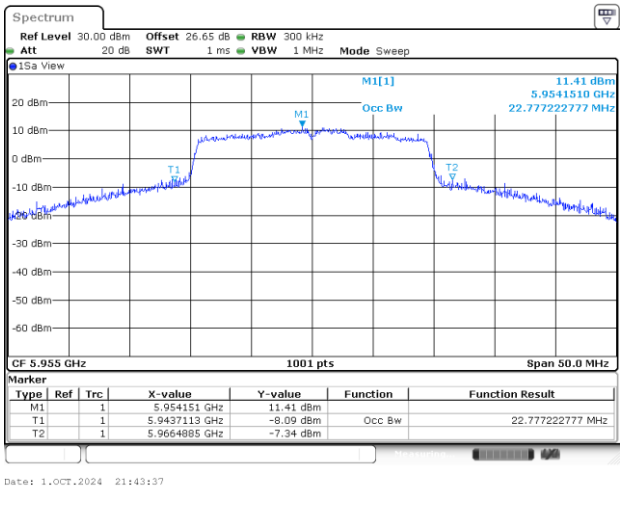
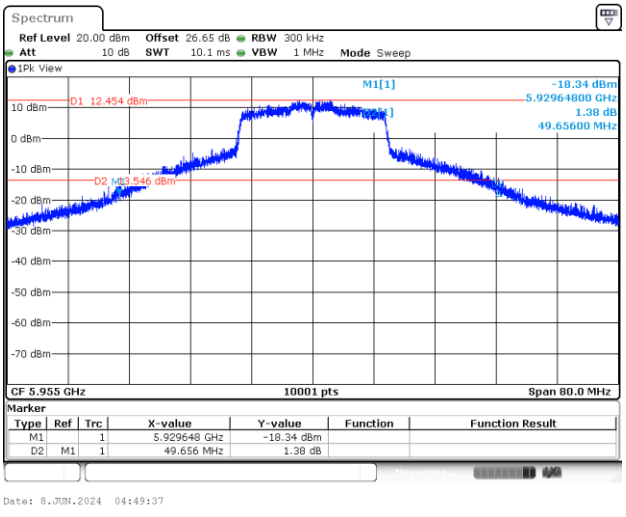
| 99% Occupied Bandwidth | 26dB Bandwidth |
|---|---|
|  |  |





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

**<802.11ax HE20>**

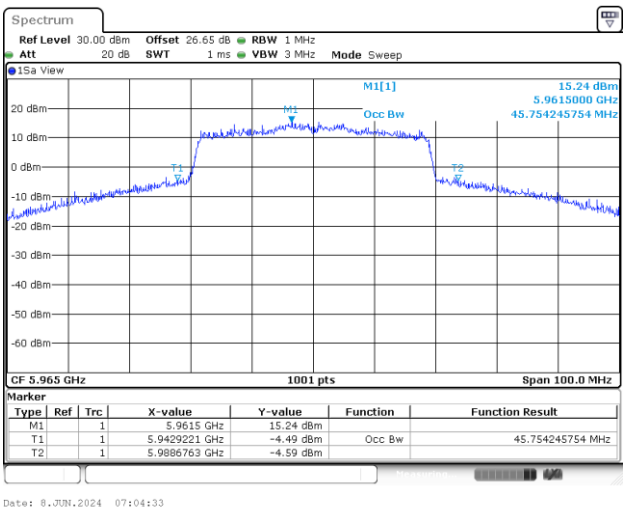
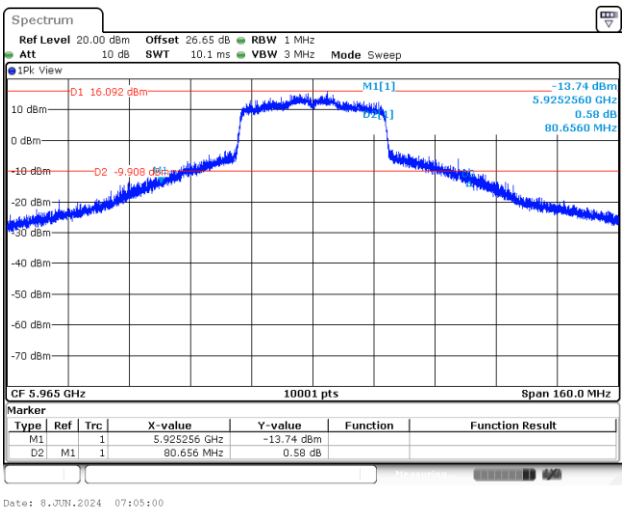
| 99% Occupied Bandwidth | 26dB Bandwidth |
|---|---|
|  |  |





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

**<802.11ax HE40>**

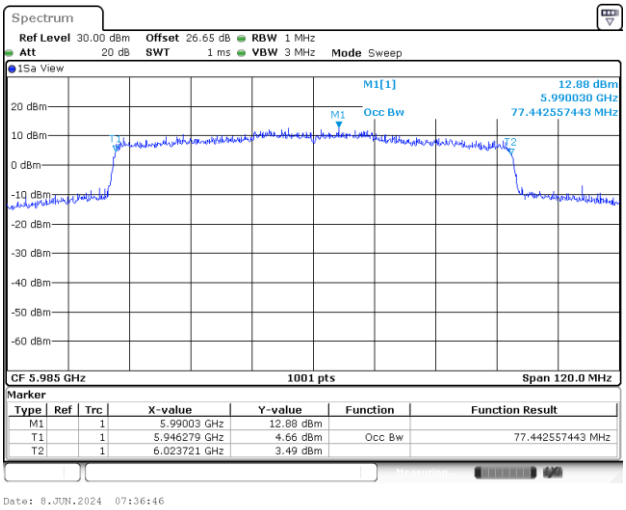
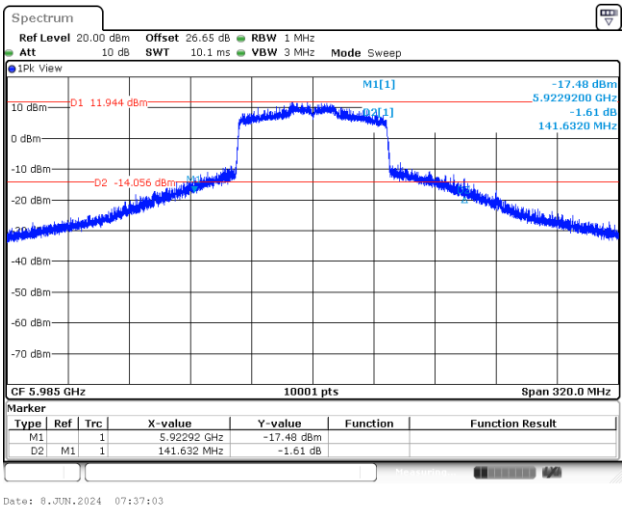
| 99% Occupied Bandwidth | 26dB Bandwidth |
|---|---|
|  |  |





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

**<802.11ax HE80>**

| 99% Occupied Bandwidth | 26dB Bandwidth |
|---|---|
|  |  |



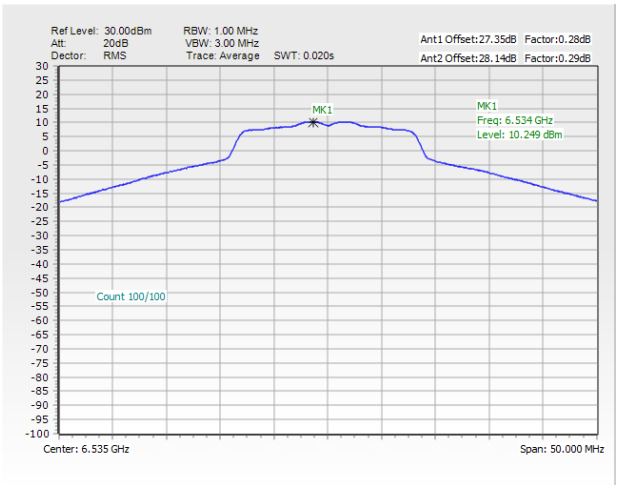


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

## Test Result of Power Spectral Density

**<802.11a>**

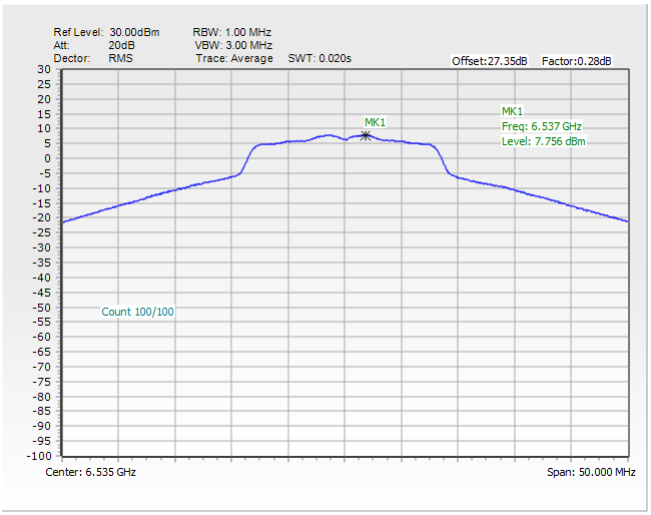
### Maximum Power Density Plot (dBm/MHz)



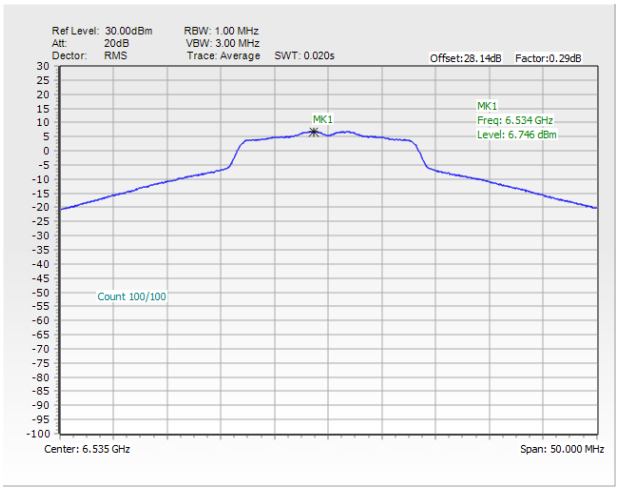

**Note:**

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

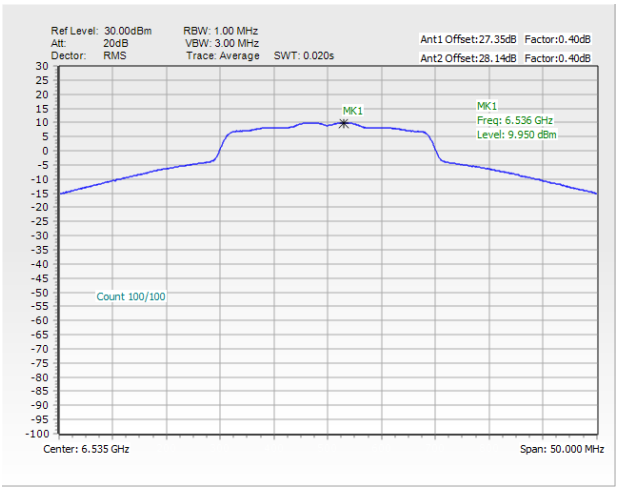
### Power Density Plot Trace 1 (Ant 4)




### Power Density Plot Trace 2 (Ant 3)



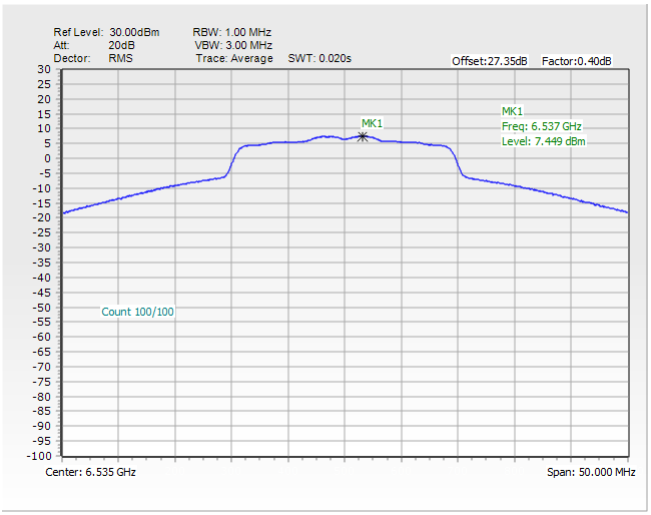
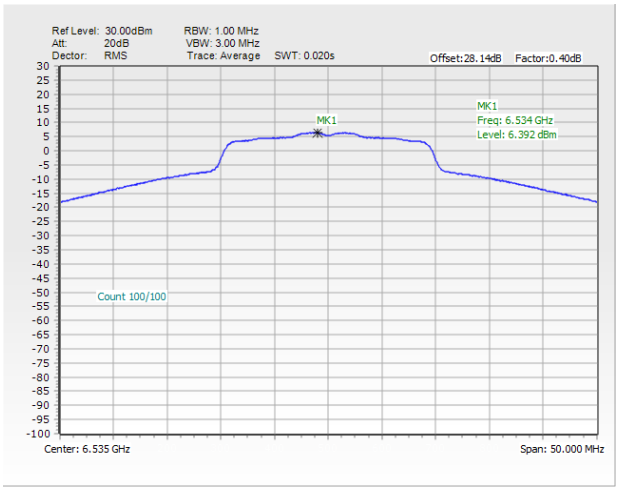
**<802.11ax HE20>**

| Maximum Power Density Plot (dBm/MHz) |
|---|
|  |

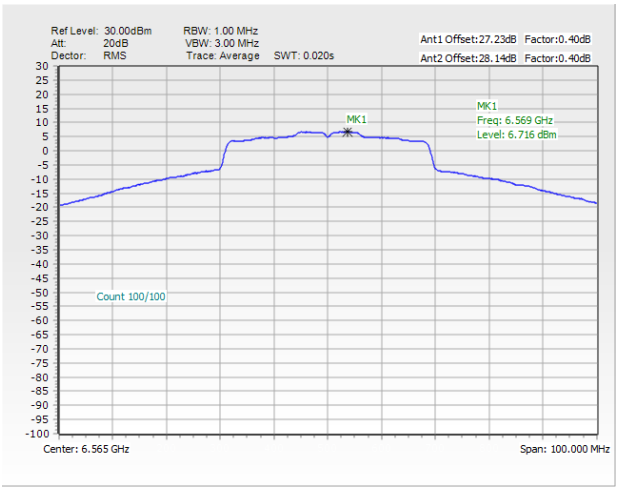


**Note:**

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

| Power Density Plot Trace 1 (Ant 4) | Power Density Plot Trace 2 (Ant 3) |
|---|---|
|  |  |

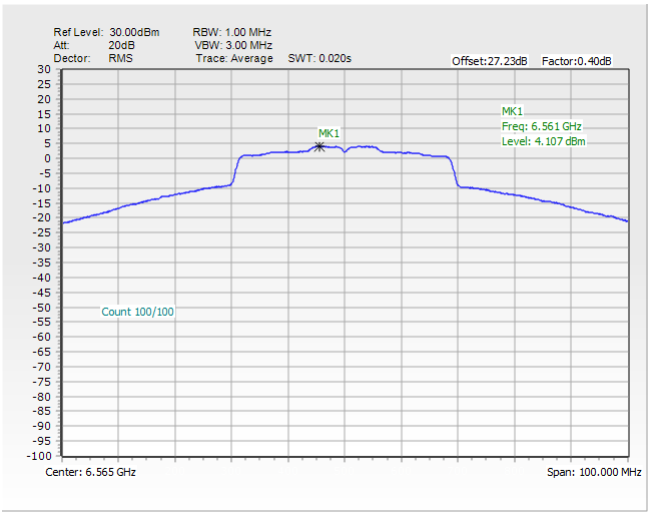
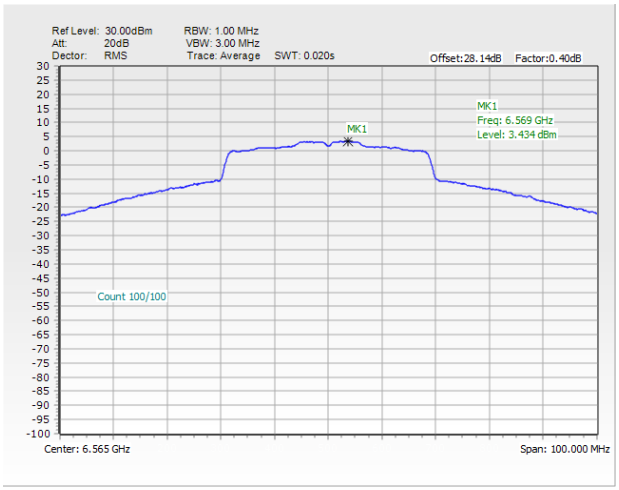
**<802.11ax HE40>**

| Maximum Power Density Plot (dBm/MHz) |
|---|
|  |

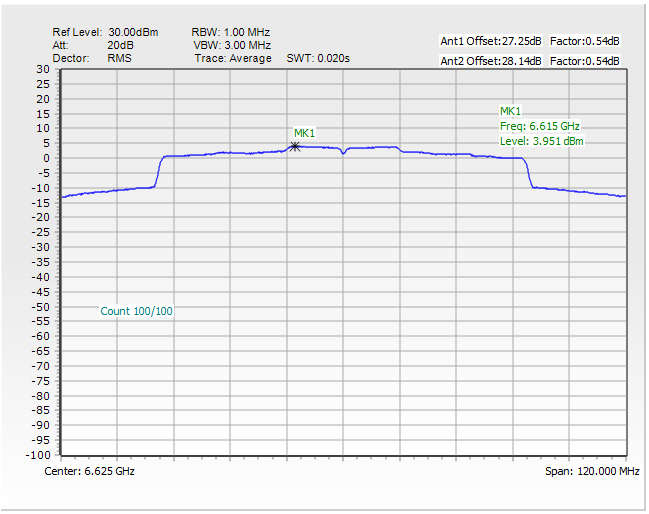


**Note:**

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

| Power Density Plot Trace 1 (Ant 4) | Power Density Plot Trace 2 (Ant 3) |
|---|---|
|  |  |

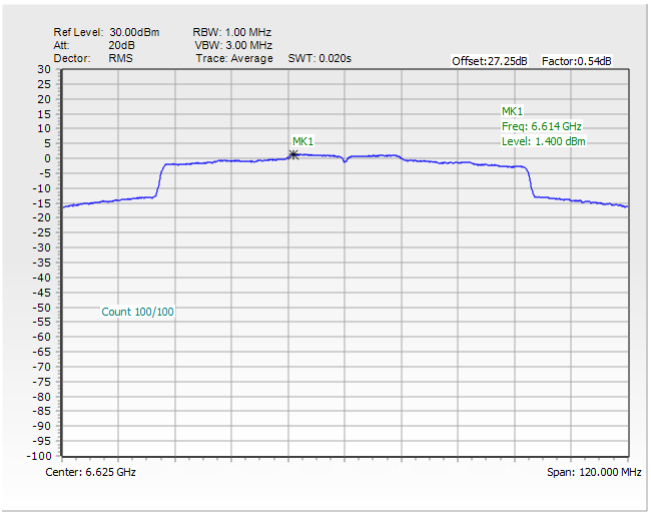
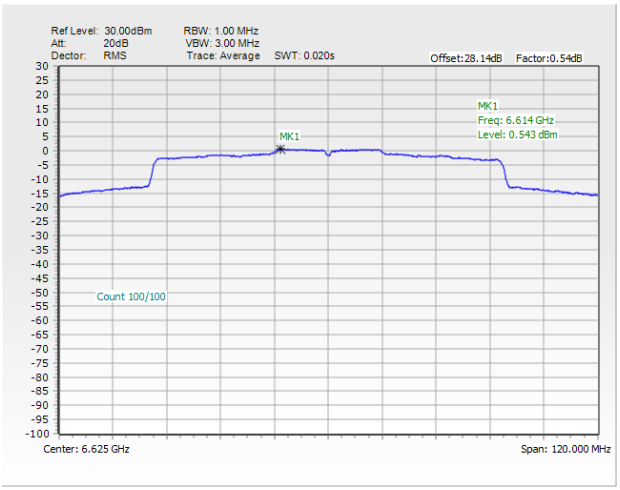
**<802.11ax HE80>**

| Maximum Power Density Plot (dBm/MHz) |
|---|
|  |



**Note:**

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

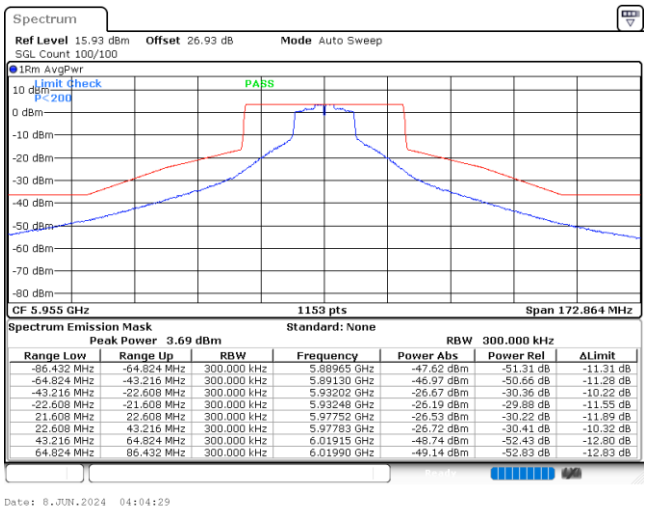
| Power Density Plot Trace 1 (Ant 4) | Power Density Plot Trace 2 (Ant 3) |
|---|---|
|  |  |

# In-Band Emissions (Channel Mask)

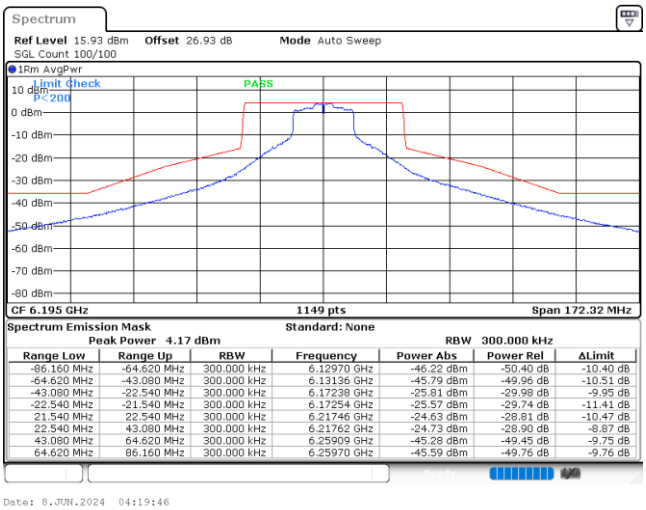
**MIMO <Ant. 4+3(4)>**

| EUT Mode | 802.11a |
|---|---|

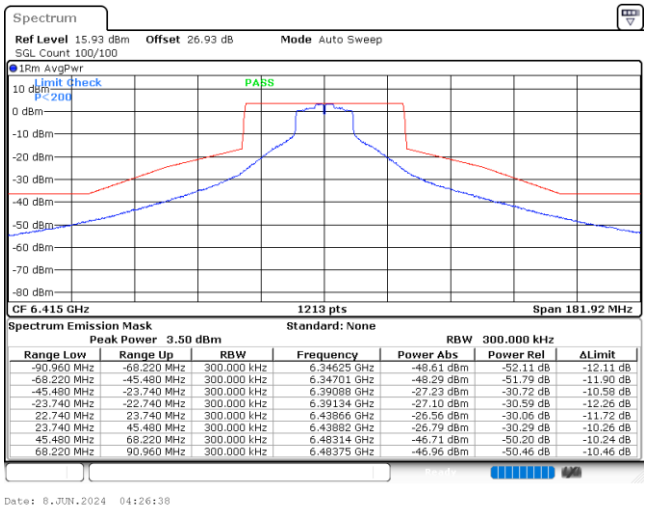
## Plot on Channel 5955 MHz



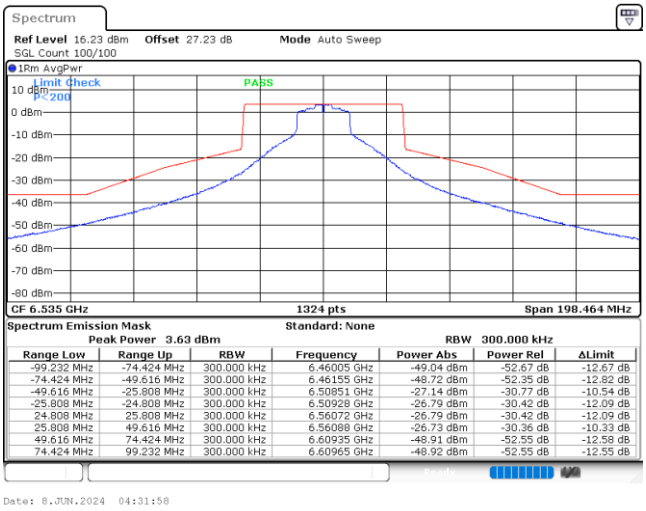

## Plot on Channel 6195 MHz



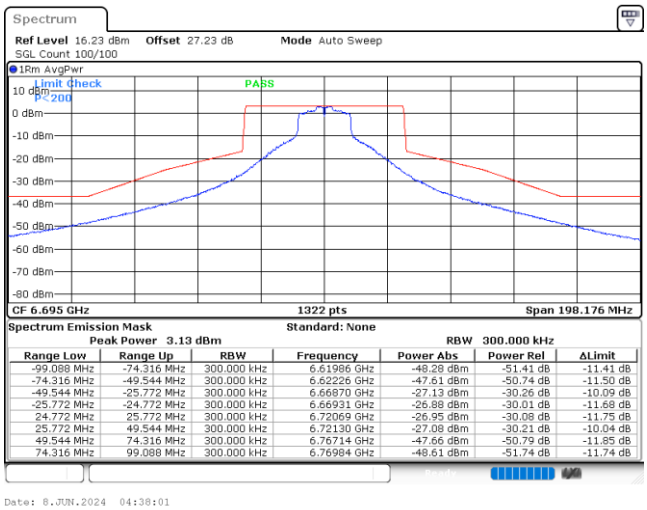

## Plot on Channel 6415 MHz



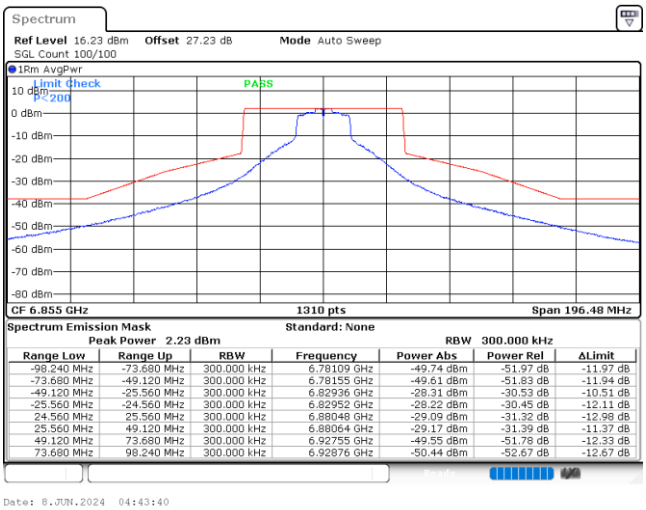

## Plot on Channel 6535 MHz



### Plot on Channel 6695 MHz



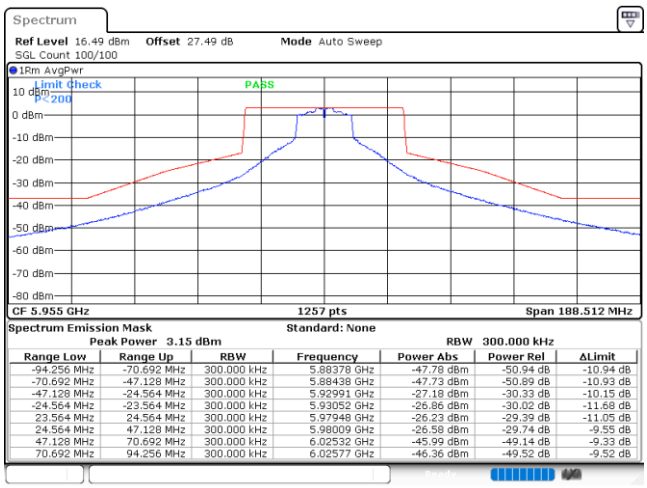

### Plot on Channel 6855 MHz



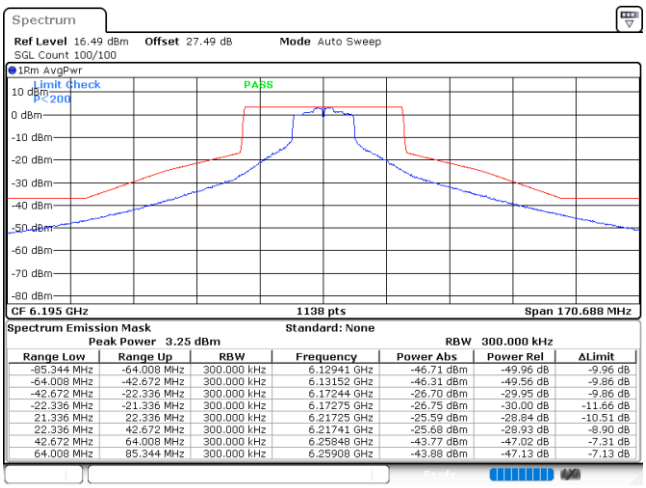
**MIMO <Ant. 4+3(3)>**

| EUT Mode | 802.11a |
|---|---|

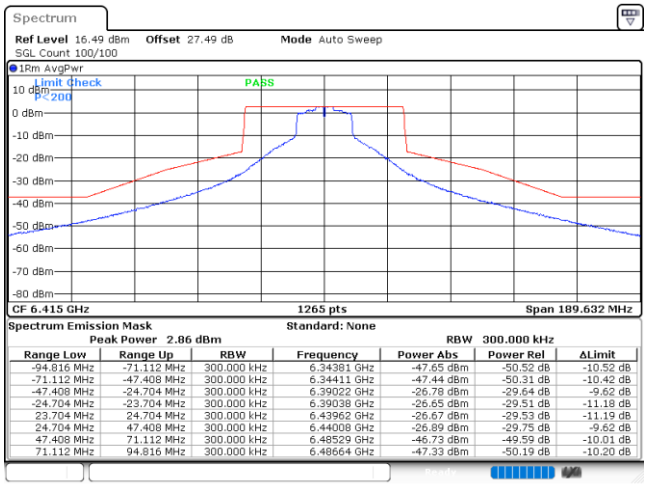
### Plot on Channel 5955 MHz



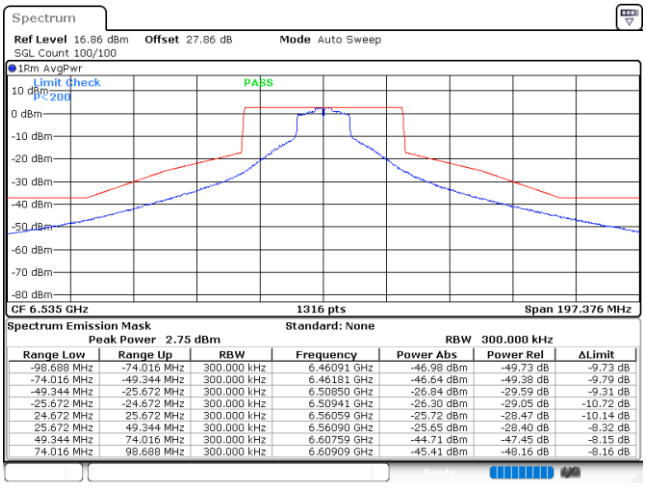

### Plot on Channel 6195 MHz



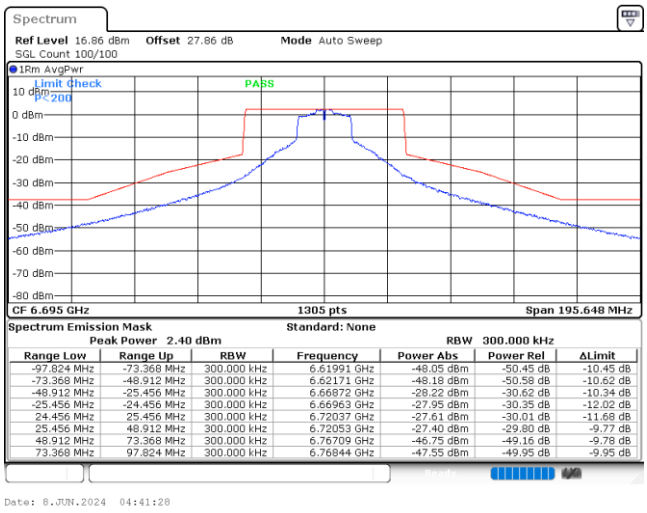

### Plot on Channel 6415 MHz




### Plot on Channel 6535 MHz



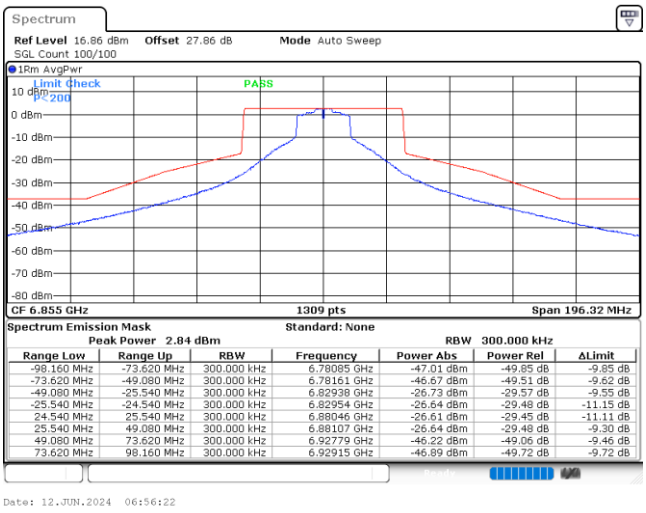
### Plot on Channel 6695 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -97.824 MHz | -73.368 MHz | 300.000 kHz | 6.61991 GHz | -48.05 dBm | -50.45 dB | -10.45 dB |
| -73.368 MHz | -48.912 MHz | 300.000 kHz | 6.62171 GHz | -48.18 dBm | -50.58 dB | -10.62 dB |
| -48.912 MHz | -25.456 MHz | 300.000 kHz | 6.66872 GHz | -28.22 dBm | -30.62 dB | -10.34 dB |
| -25.456 MHz | -24.456 MHz | 300.000 kHz | 6.66963 GHz | -27.95 dBm | -30.35 dB | -12.02 dB |
| 24.456 MHz | 25.456 MHz | 300.000 kHz | 6.72037 GHz | -27.61 dBm | -30.01 dB | -11.68 dB |
| 25.456 MHz | 48.912 MHz | 300.000 kHz | 6.72053 GHz | -27.40 dBm | -29.80 dB | -9.77 dB |
| 48.912 MHz | 73.368 MHz | 300.000 kHz | 6.76709 GHz | -46.75 dBm | -49.16 dB | -9.78 dB |
| 73.368 MHz | 97.824 MHz | 300.000 kHz | 6.76844 GHz | -47.55 dBm | -49.95 dB | -9.95 dB |

Date: 8.JUN.2024 04:41:28

### Plot on Channel 6855 MHz



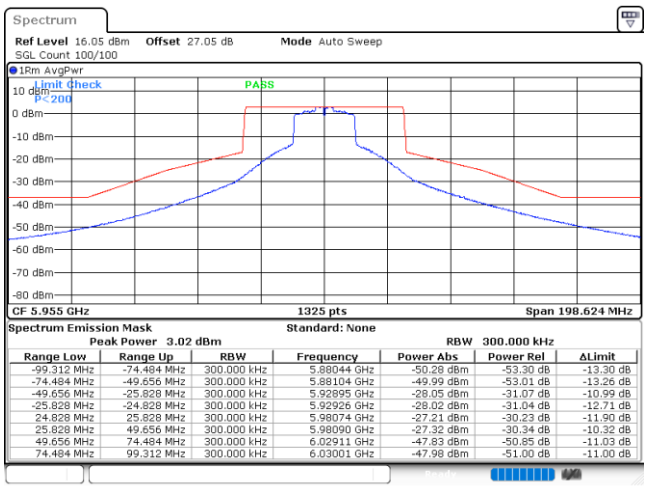

| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -98.160 MHz | -73.620 MHz | 300.000 kHz | 6.78085 GHz | -47.01 dBm | -49.85 dB | -9.85 dB |
| -73.620 MHz | -49.080 MHz | 300.000 kHz | 6.78161 GHz | -46.67 dBm | -49.51 dB | -9.62 dB |
| -49.080 MHz | -25.540 MHz | 300.000 kHz | 6.82938 GHz | -26.73 dBm | -29.57 dB | -9.55 dB |
| -25.540 MHz | -24.540 MHz | 300.000 kHz | 6.82954 GHz | -26.64 dBm | -29.48 dB | -11.15 dB |
| 24.540 MHz | 25.540 MHz | 300.000 kHz | 6.88046 GHz | -26.61 dBm | -29.45 dB | -11.11 dB |
| 25.540 MHz | 49.080 MHz | 300.000 kHz | 6.88107 GHz | -26.64 dBm | -29.48 dB | -9.30 dB |
| 49.080 MHz | 73.620 MHz | 300.000 kHz | 6.92779 GHz | -46.22 dBm | -49.06 dB | -9.46 dB |
| 73.620 MHz | 98.160 MHz | 300.000 kHz | 6.92915 GHz | -46.89 dBm | -49.72 dB | -9.72 dB |

Date: 12.JUN.2024 06:56:22

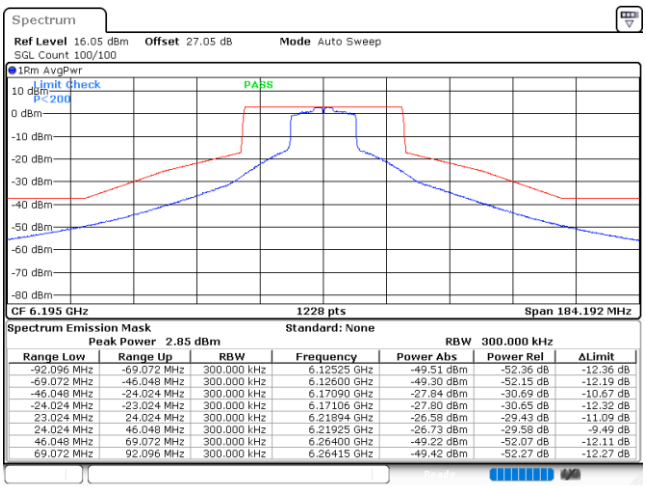
**MIMO <Ant. 4+3(4)>**

| EUT Mode | 802.11ax HE20 Full RU |
|---|---|

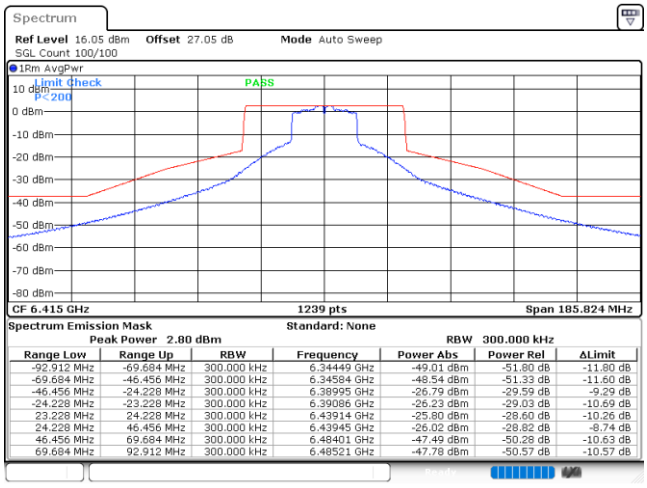
### Plot on Channel 5955 MHz



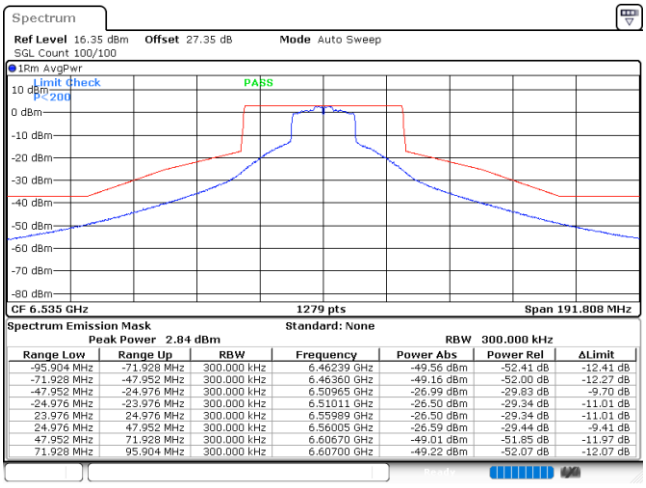

### Plot on Channel 6195 MHz



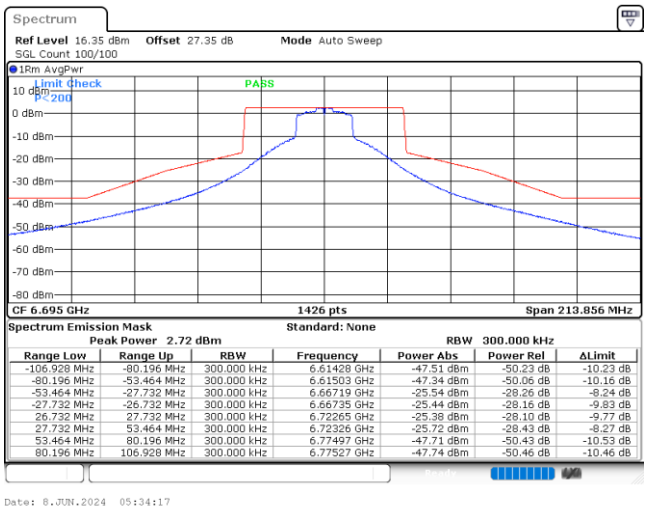

### Plot on Channel 6415 MHz



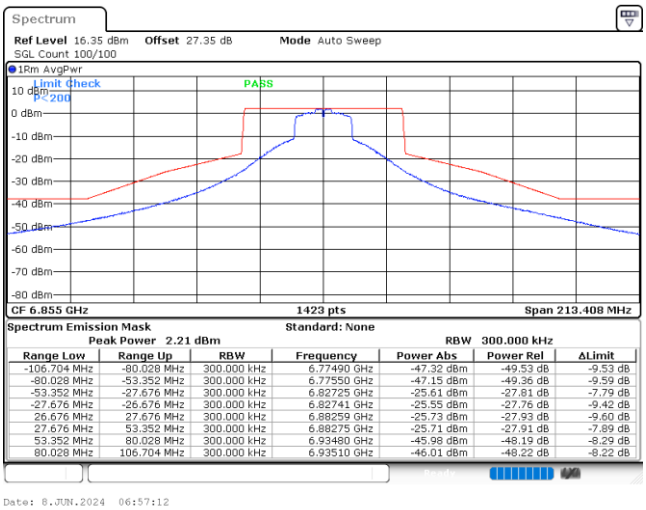

### Plot on Channel 6535 MHz



### Plot on Channel 6695 MHz

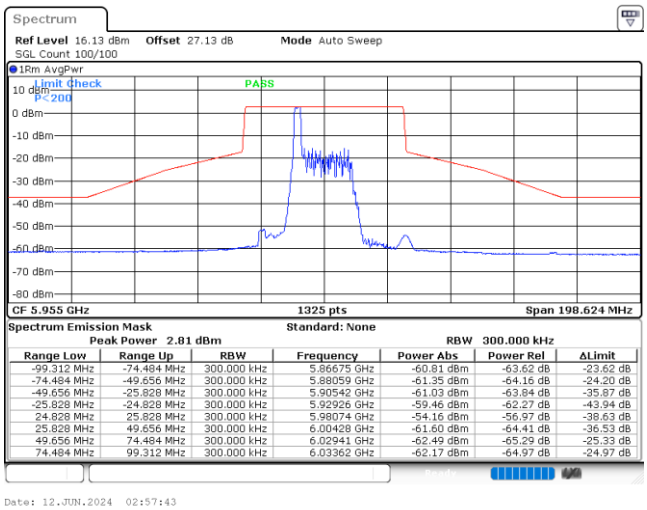



### Plot on Channel 6855 MHz

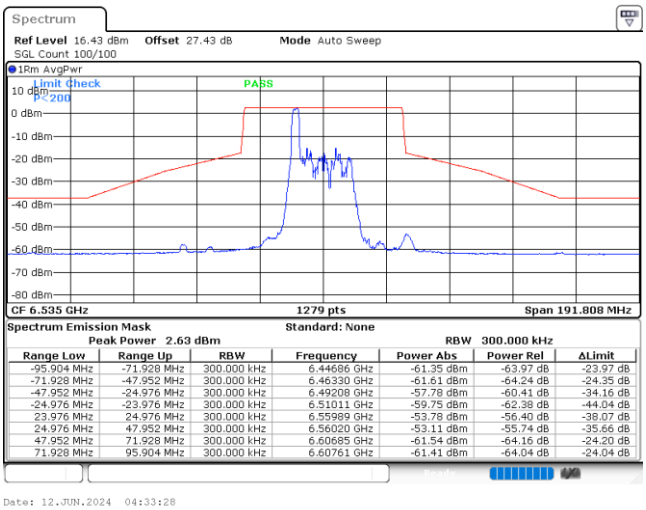



| EUT Mode | 802.11ax HE20 26RU0 |
|---|---|

### Plot on Channel 5955 MHz

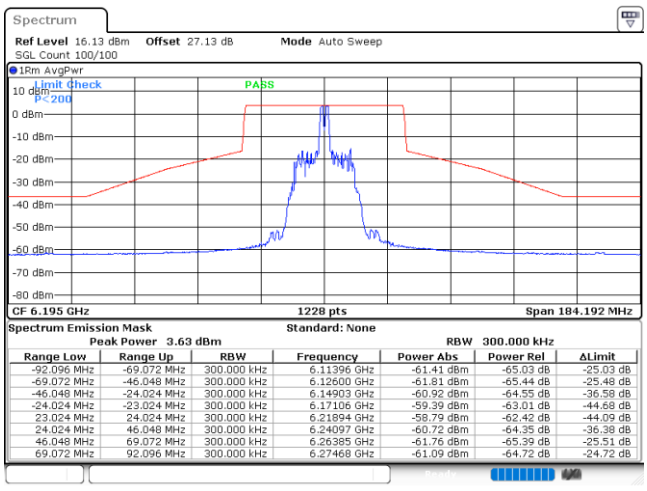



### Plot on Channel 6535 MHz

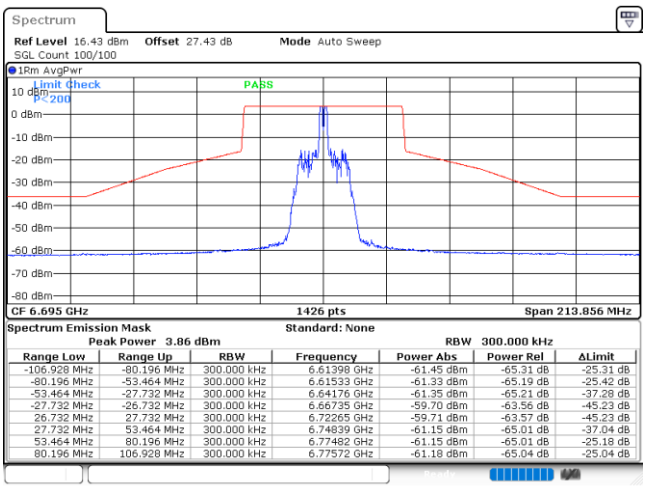


| EUT Mode | 802.11ax HE20 26RU4 |
|---|---|

### Plot on Channel 6195 MHz

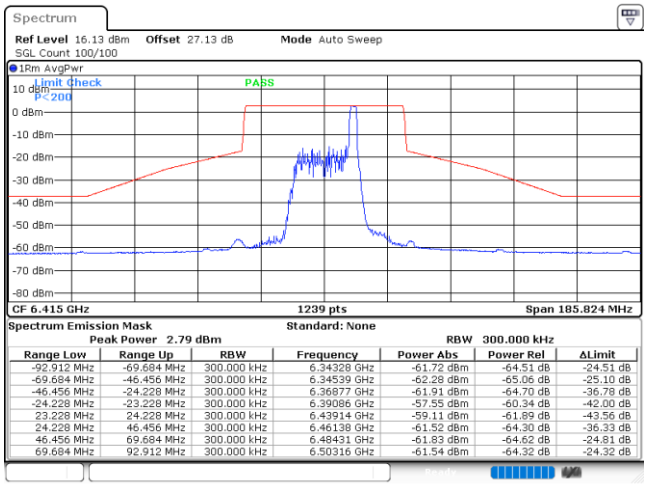



### Plot on Channel 6695 MHz

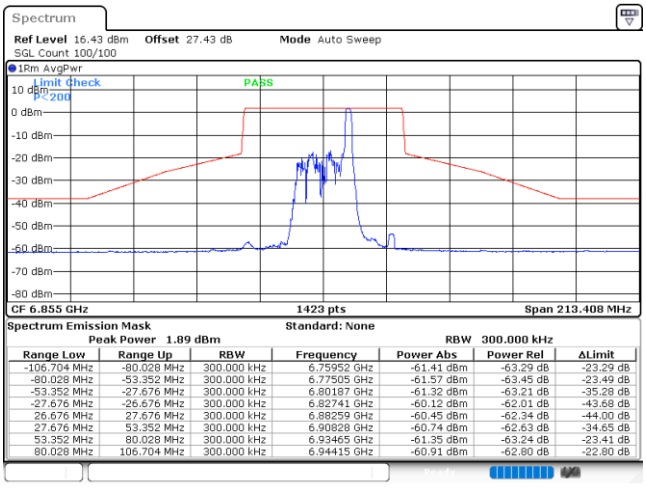



| EUT Mode | 802.11ax HE20 26RU8 |
|---|---|

### Plot on Channel 6415 MHz

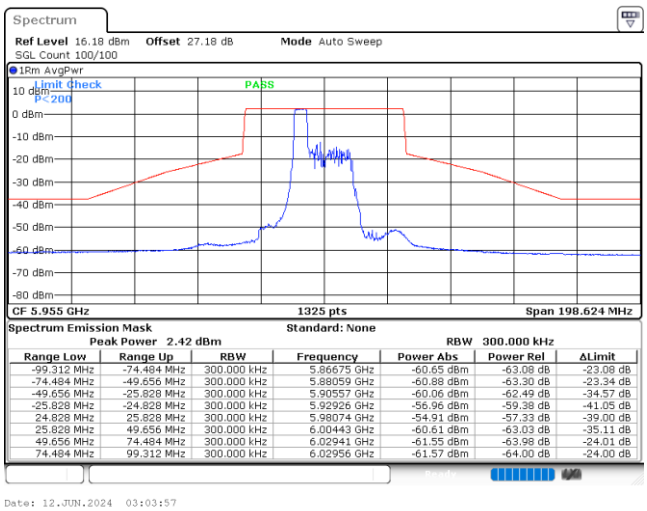



### Plot on Channel 6855 MHz



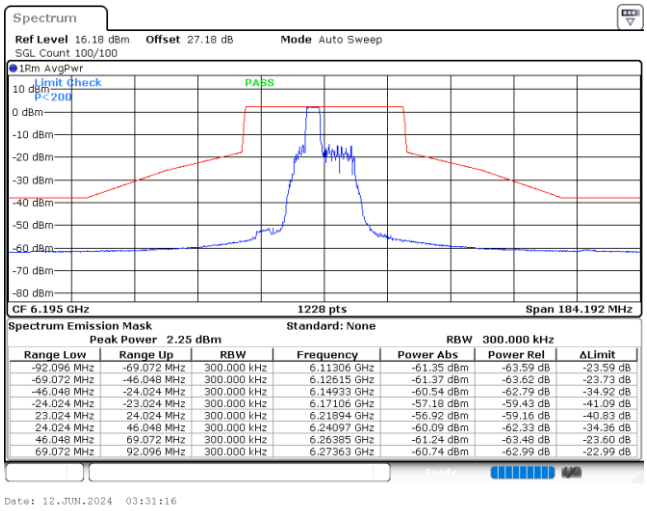
| EUT Mode | 802.11ax HE20 52RU37 |
|---|---|

### Plot on Channel 5955 MHz

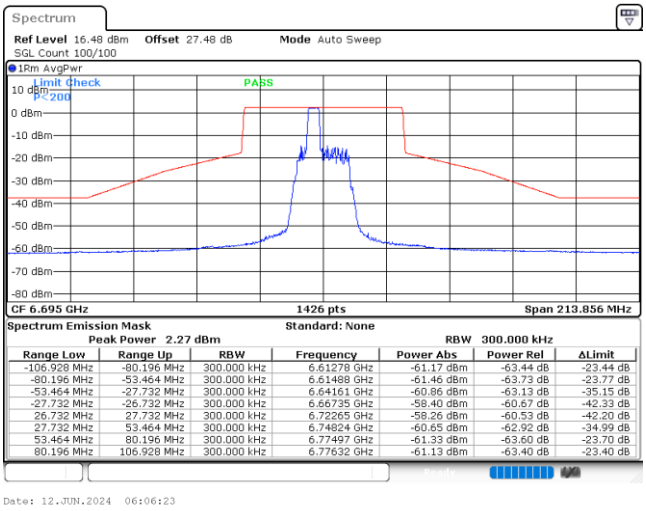



| EUT Mode | 802.11ax HE20 52RU38 |
|---|---|

### Plot on Channel 6195 MHz

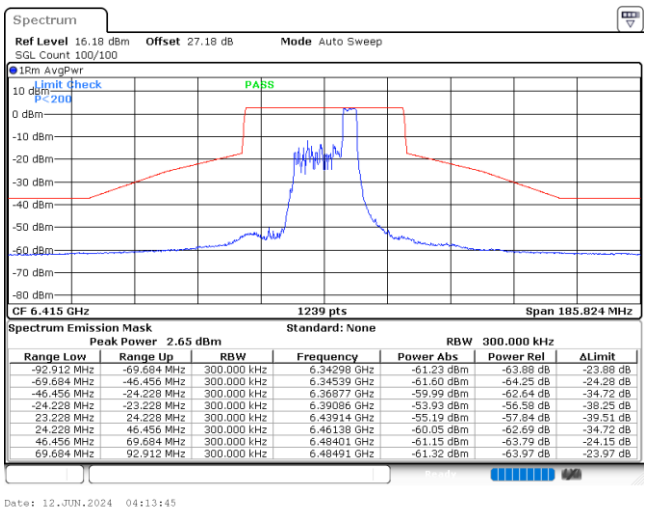



### Plot on Channel 6695 MHz



| EUT Mode | 802.11ax HE20 52RU40 |
|---|---|

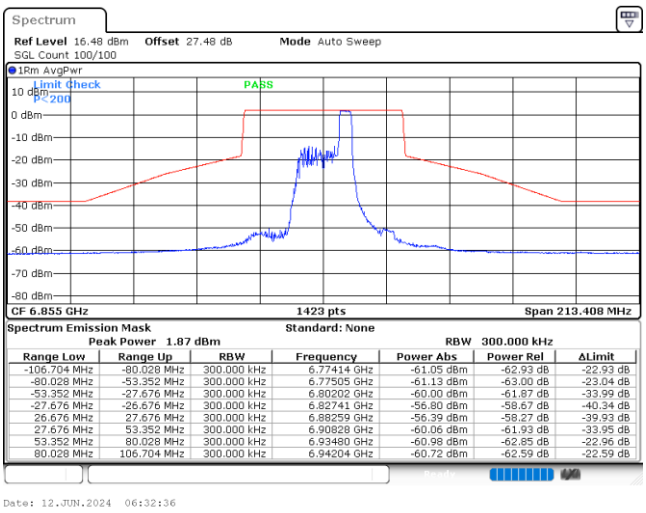
### Plot on Channel 6415 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -92.912 MHz | -69.684 MHz | 300.000 kHz | 6.34298 GHz | -61.23 dBm | -63.88 dB | -23.88 dB |
| -69.684 MHz | -46.456 MHz | 300.000 kHz | 6.34539 GHz | -61.60 dBm | -64.25 dB | -24.28 dB |
| -46.456 MHz | -24.228 MHz | 300.000 kHz | 6.36877 GHz | -59.99 dBm | -62.64 dB | -34.72 dB |
| -24.228 MHz | -23.228 MHz | 300.000 kHz | 6.39086 GHz | -53.93 dBm | -56.58 dB | -38.25 dB |
| 23.228 MHz | 24.228 MHz | 300.000 kHz | 6.43914 GHz | -55.19 dBm | -57.84 dB | -39.51 dB |
| 24.228 MHz | 46.456 MHz | 300.000 kHz | 6.46138 GHz | -60.05 dBm | -62.69 dB | -34.72 dB |
| 46.456 MHz | 69.684 MHz | 300.000 kHz | 6.48401 GHz | -61.15 dBm | -63.79 dB | -24.15 dB |
| 69.684 MHz | 92.912 MHz | 300.000 kHz | 6.48491 GHz | -61.32 dBm | -63.97 dB | -23.97 dB |

Date: 12.JUN.2024 04:13:45

### Plot on Channel 6855 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -106.704 MHz | -80.028 MHz | 300.000 kHz | 6.77414 GHz | -61.05 dBm | -62.93 dB | -22.93 dB |
| -80.028 MHz | -53.352 MHz | 300.000 kHz | 6.77505 GHz | -61.13 dBm | -63.00 dB | -23.04 dB |
| -53.352 MHz | -27.676 MHz | 300.000 kHz | 6.80202 GHz | -60.00 dBm | -61.87 dB | -33.99 dB |
| -27.676 MHz | -26.676 MHz | 300.000 kHz | 6.82741 GHz | -56.80 dBm | -58.67 dB | -40.34 dB |
| 26.676 MHz | 27.676 MHz | 300.000 kHz | 6.88259 GHz | -56.39 dBm | -58.27 dB | -39.93 dB |
| 27.676 MHz | 53.352 MHz | 300.000 kHz | 6.90828 GHz | -60.06 dBm | -61.93 dB | -33.95 dB |
| 53.352 MHz | 80.028 MHz | 300.000 kHz | 6.93480 GHz | -60.98 dBm | -62.85 dB | -22.96 dB |
| 80.028 MHz | 106.704 MHz | 300.000 kHz | 6.94204 GHz | -60.72 dBm | -62.59 dB | -22.59 dB |

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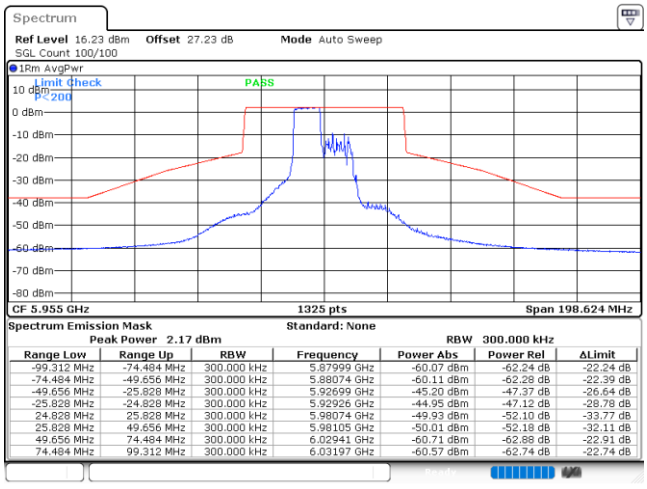
| EUT Mode | 802.11ax HE20 106RU53 |
|---|---|

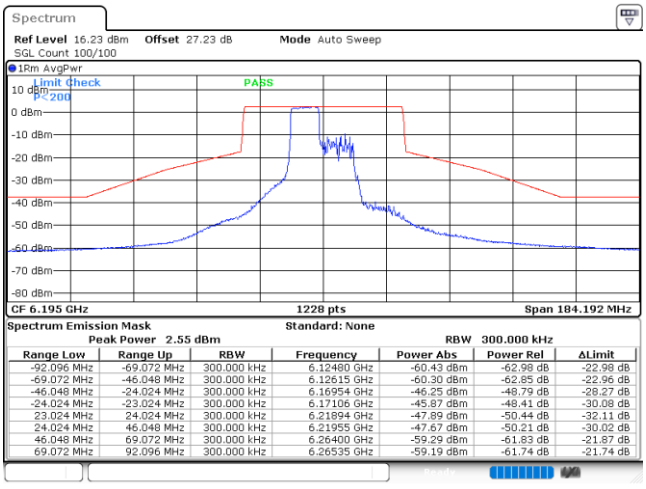
### Plot on Channel 5955 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -99.312 MHz | -74.484 MHz | 300.000 kHz | 5.87999 GHz | -60.07 dBm | -62.24 dB | -22.24 dB |
| -74.484 MHz | -49.656 MHz | 300.000 kHz | 5.88074 GHz | -60.11 dBm | -62.28 dB | -22.39 dB |
| -49.656 MHz | -25.828 MHz | 300.000 kHz | 5.92699 GHz | -45.20 dBm | -47.37 dB | -26.64 dB |
| -25.828 MHz | -24.828 MHz | 300.000 kHz | 5.92926 GHz | -44.95 dBm | -47.12 dB | -28.78 dB |
| 24.828 MHz | 25.828 MHz | 300.000 kHz | 5.98074 GHz | -49.93 dBm | -52.10 dB | -33.77 dB |
| 25.828 MHz | 49.656 MHz | 300.000 kHz | 5.98105 GHz | -50.01 dBm | -52.18 dB | -32.11 dB |
| 49.656 MHz | 74.484 MHz | 300.000 kHz | 6.02941 GHz | -60.71 dBm | -62.88 dB | -22.91 dB |
| 74.484 MHz | 99.312 MHz | 300.000 kHz | 6.03197 GHz | -60.57 dBm | -62.74 dB | -22.74 dB |

Date: 12.JUN.2024 03:09:43

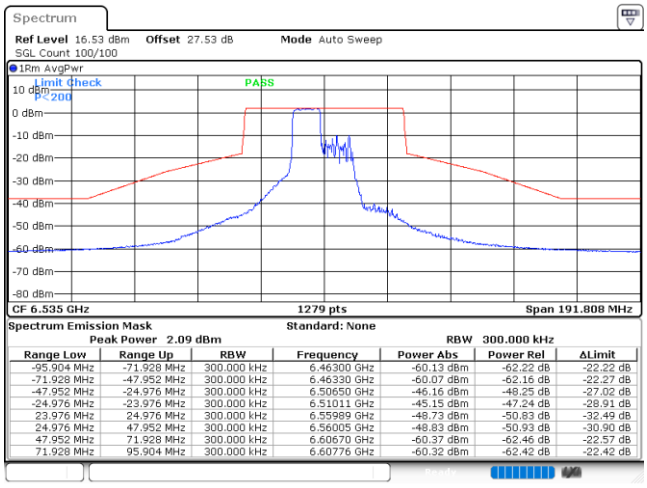
### Plot on Channel 6195 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -92.096 MHz | -69.072 MHz | 300.000 kHz | 6.12480 GHz | -60.43 dBm | -62.98 dB | -22.98 dB |
| -69.072 MHz | -46.048 MHz | 300.000 kHz | 6.12615 GHz | -60.30 dBm | -62.85 dB | -22.96 dB |
| -46.048 MHz | -24.024 MHz | 300.000 kHz | 6.16954 GHz | -46.25 dBm | -48.79 dB | -28.27 dB |
| -24.024 MHz | -23.024 MHz | 300.000 kHz | 6.17106 GHz | -45.87 dBm | -48.41 dB | -30.08 dB |
| 23.024 MHz | 24.024 MHz | 300.000 kHz | 6.21894 GHz | -47.89 dBm | -50.44 dB | -32.11 dB |
| 24.024 MHz | 46.048 MHz | 300.000 kHz | 6.21955 GHz | -47.67 dBm | -50.21 dB | -30.02 dB |
| 46.048 MHz | 69.072 MHz | 300.000 kHz | 6.26400 GHz | -59.29 dBm | -61.83 dB | -21.87 dB |
| 69.072 MHz | 92.096 MHz | 300.000 kHz | 6.26535 GHz | -59.19 dBm | -61.74 dB | -21.74 dB |

Date: 12.JUN.2024 03:43:20

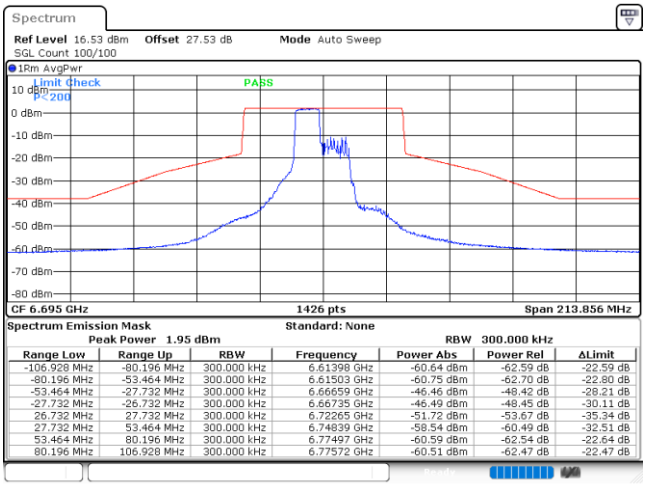
### Plot on Channel 6535 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -95.904 MHz | -71.928 MHz | 300.000 kHz | 6.46300 GHz | -60.13 dBm | -62.22 dB | -22.22 dB |
| -71.928 MHz | -47.952 MHz | 300.000 kHz | 6.46330 GHz | -60.07 dBm | -62.16 dB | -22.27 dB |
| -47.952 MHz | -24.976 MHz | 300.000 kHz | 6.50650 GHz | -46.16 dBm | -48.25 dB | -27.02 dB |
| -24.976 MHz | -23.976 MHz | 300.000 kHz | 6.51011 GHz | -45.15 dBm | -47.24 dB | -28.91 dB |
| 23.976 MHz | 24.976 MHz | 300.000 kHz | 6.55989 GHz | -48.73 dBm | -50.83 dB | -32.49 dB |
| 24.976 MHz | 47.952 MHz | 300.000 kHz | 6.56005 GHz | -48.83 dBm | -50.93 dB | -30.90 dB |
| 47.952 MHz | 71.928 MHz | 300.000 kHz | 6.60670 GHz | -60.37 dBm | -62.46 dB | -22.57 dB |
| 71.928 MHz | 95.904 MHz | 300.000 kHz | 6.60776 GHz | -60.32 dBm | -62.42 dB | -22.42 dB |

Date: 12.JUN.2024 05:04:03

### Plot on Channel 6695 MHz

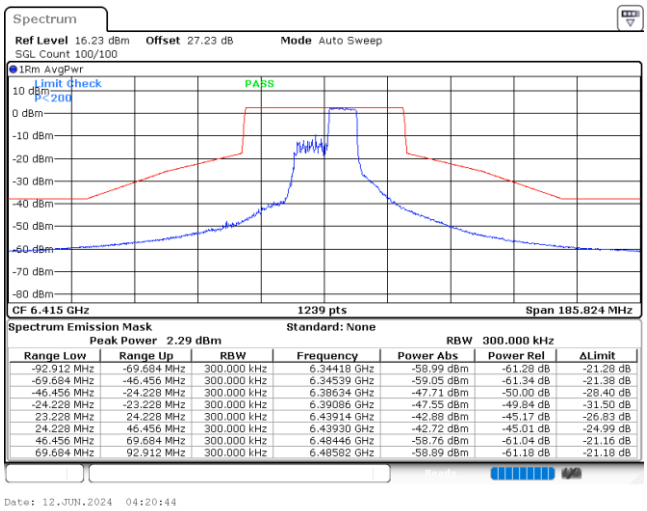



| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -106.928 MHz | -80.196 MHz | 300.000 kHz | 6.61398 GHz | -60.64 dBm | -62.59 dB | -22.59 dB |
| -80.196 MHz | -53.464 MHz | 300.000 kHz | 6.61503 GHz | -60.75 dBm | -62.70 dB | -22.80 dB |
| -53.464 MHz | -27.732 MHz | 300.000 kHz | 6.66659 GHz | -46.46 dBm | -48.42 dB | -28.21 dB |
| -27.732 MHz | -26.732 MHz | 300.000 kHz | 6.66735 GHz | -46.49 dBm | -48.45 dB | -30.11 dB |
| 26.732 MHz | 27.732 MHz | 300.000 kHz | 6.72265 GHz | -51.72 dBm | -53.67 dB | -35.34 dB |
| 27.732 MHz | 53.464 MHz | 300.000 kHz | 6.74839 GHz | -58.54 dBm | -60.49 dB | -32.51 dB |
| 53.464 MHz | 80.196 MHz | 300.000 kHz | 6.77497 GHz | -60.59 dBm | -62.54 dB | -22.64 dB |
| 80.196 MHz | 106.928 MHz | 300.000 kHz | 6.77572 GHz | -60.51 dBm | -62.47 dB | -22.47 dB |

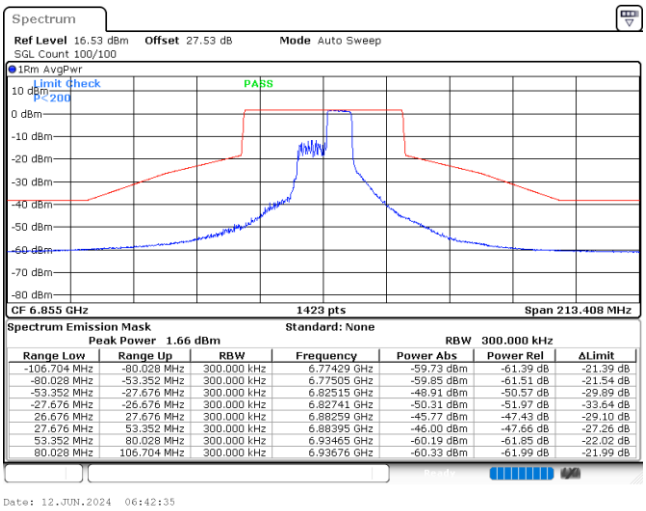
Date: 12.JUN.2024 06:16:15

| EUT Mode | 802.11ax HE20 106RU54 |
|---|---|

### Plot on Channel 6415 MHz



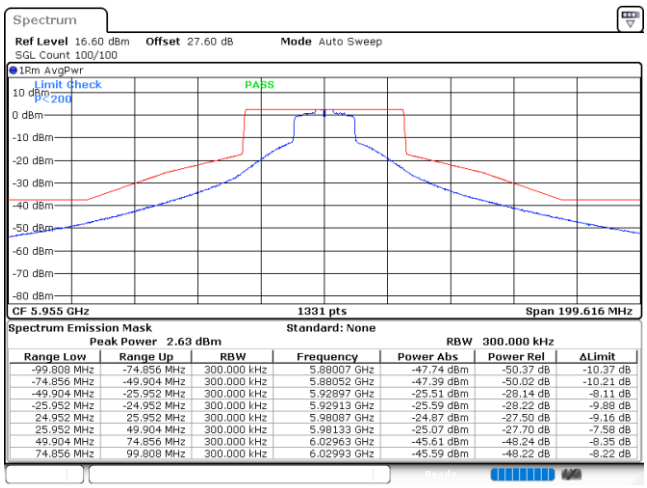

### Plot on Channel 6855 MHz



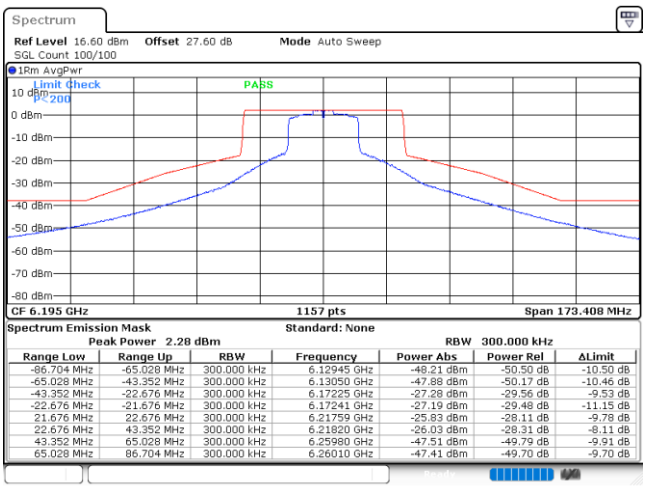
**MIMO <Ant. 4+3(3)>**

| EUT Mode | 802.11ax HE20 Full RU |
|---|---|

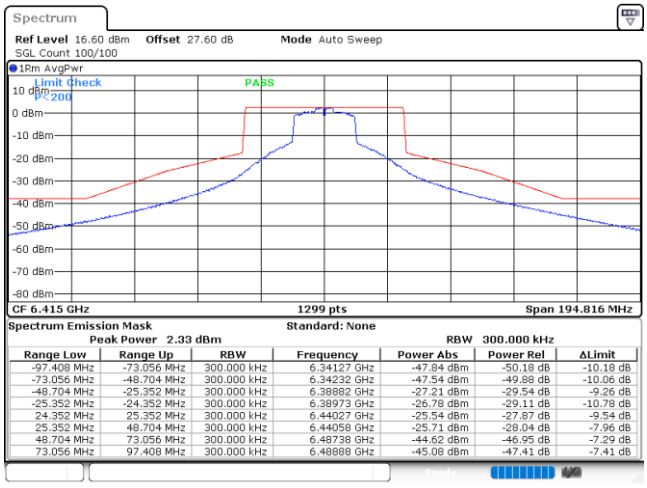
### Plot on Channel 5955 MHz



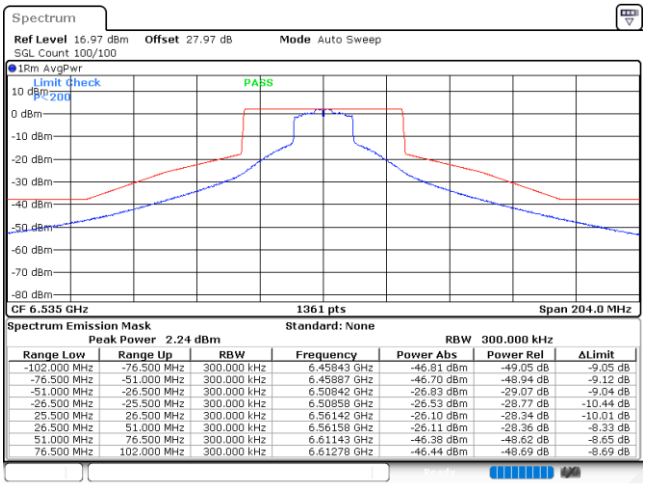

### Plot on Channel 6195 MHz



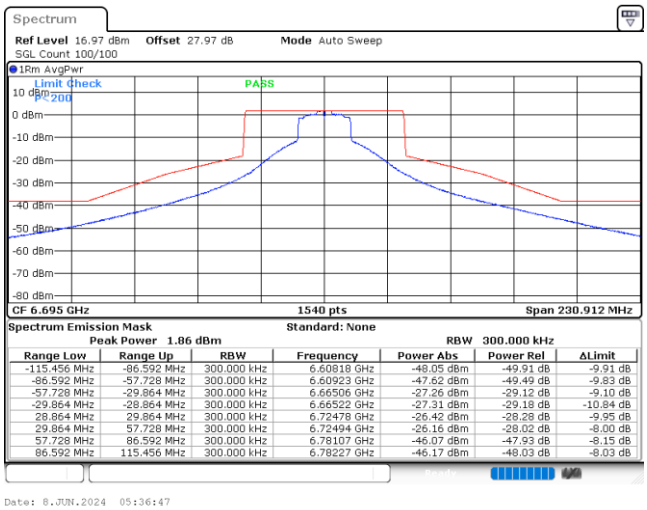

### Plot on Channel 6415 MHz



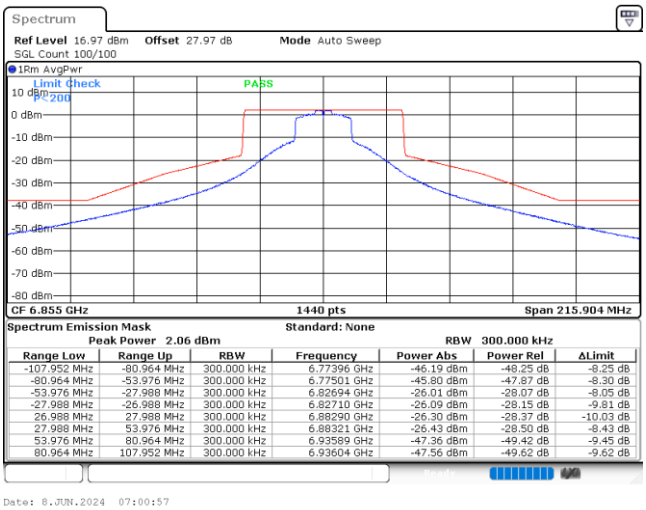

### Plot on Channel 6535 MHz



### Plot on Channel 6695 MHz

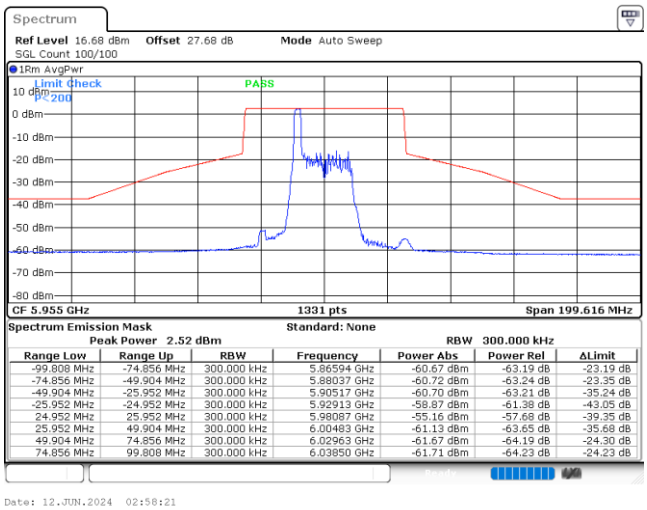



### Plot on Channel 6855 MHz

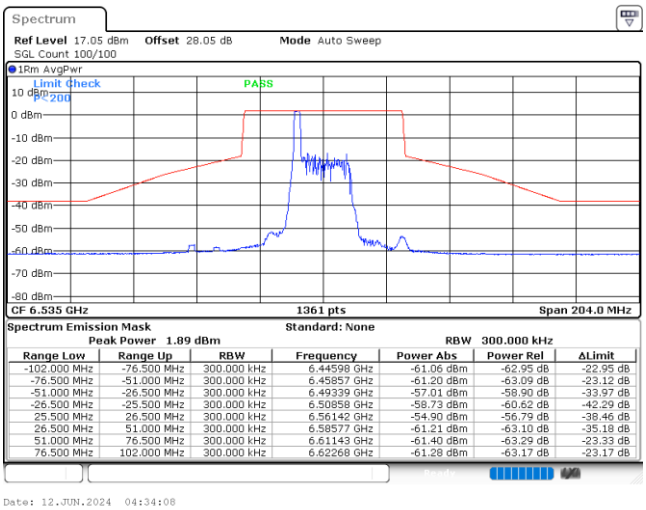



| EUT Mode | 802.11ax HE20 26RU0 |
|---|---|

### Plot on Channel 5955 MHz

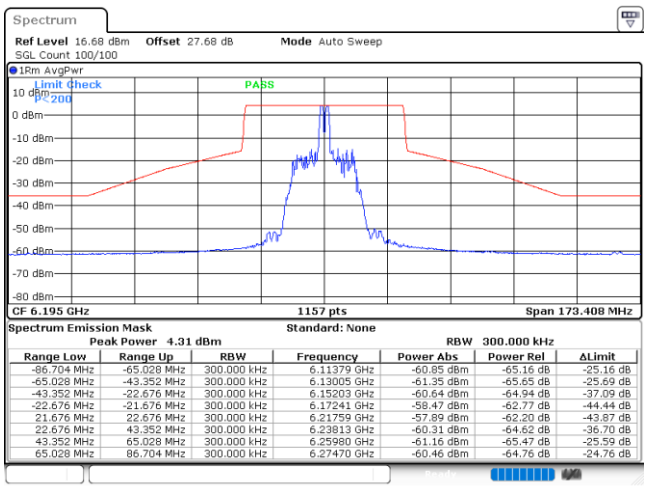



### Plot on Channel 6535 MHz

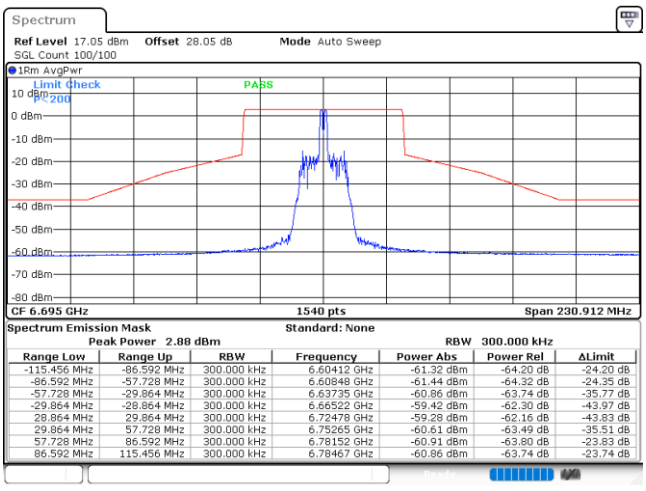


| EUT Mode | 802.11ax HE20 26RU4 |
|---|---|

### Plot on Channel 6195 MHz

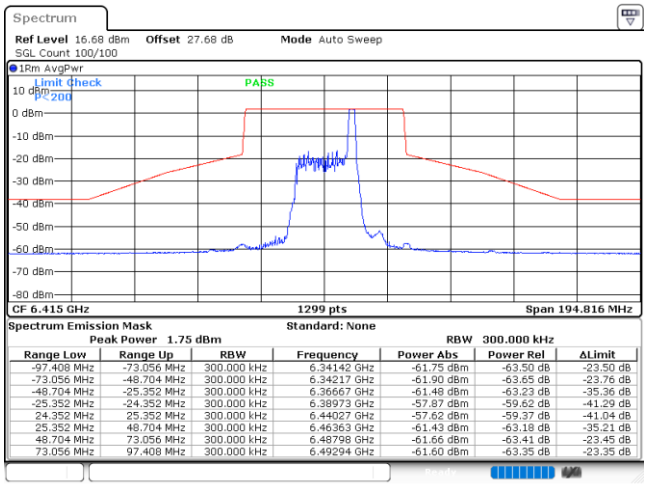



### Plot on Channel 6695 MHz

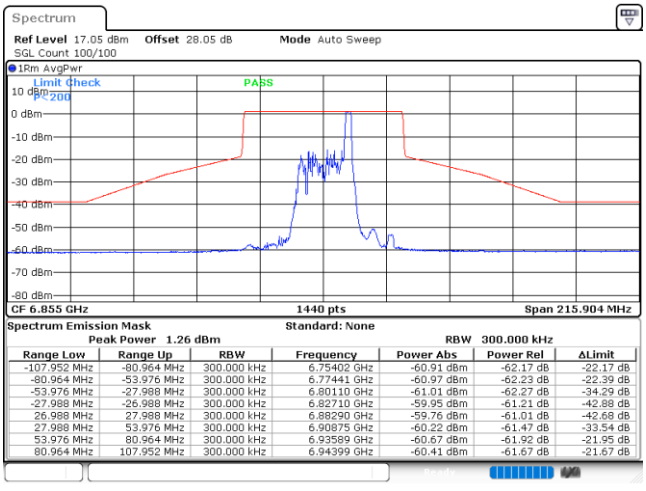



| EUT Mode | 802.11ax HE20 26RU8 |
|---|---|

### Plot on Channel 6415 MHz

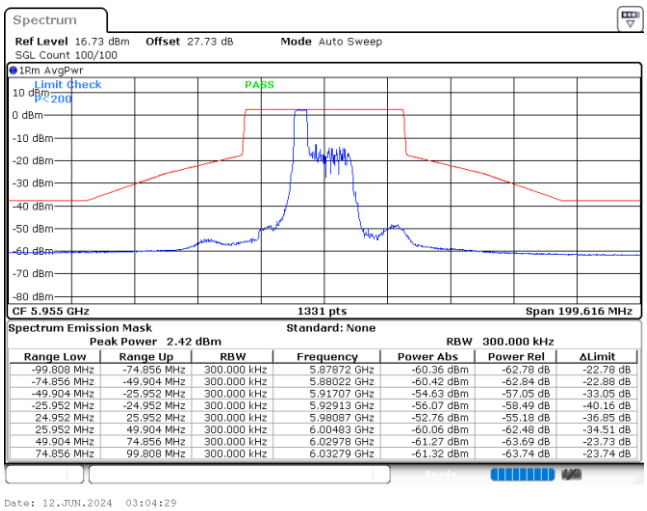



### Plot on Channel 6855 MHz



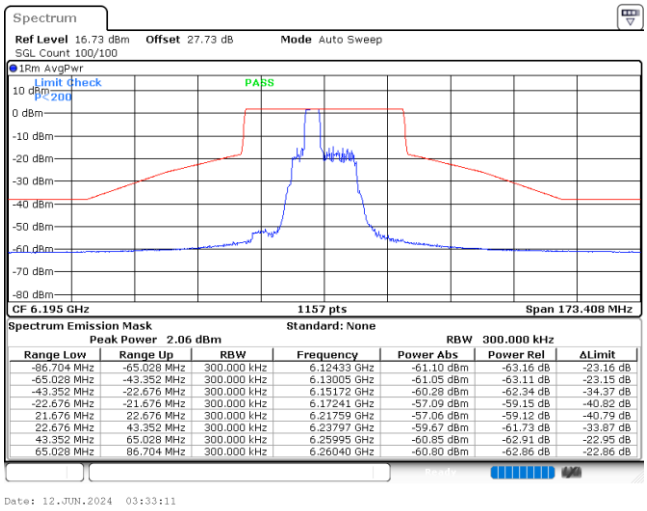
| EUT Mode | 802.11ax HE20 52RU37 |
|---|---|

### Plot on Channel 5955 MHz

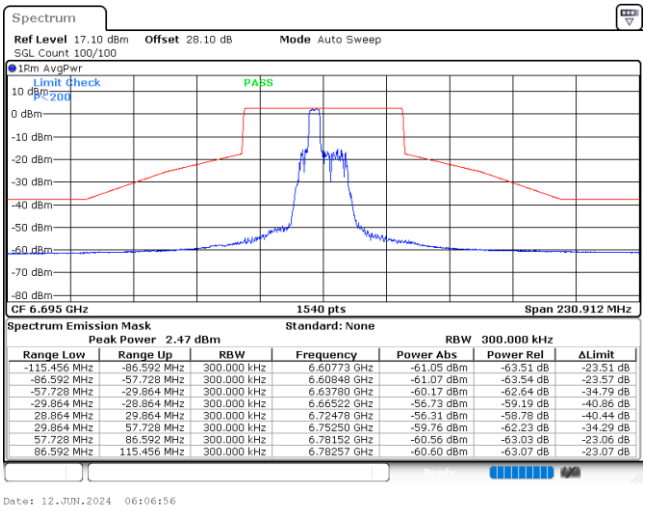



| EUT Mode | 802.11ax HE20 52RU38 |
|---|---|

### Plot on Channel 6195 MHz

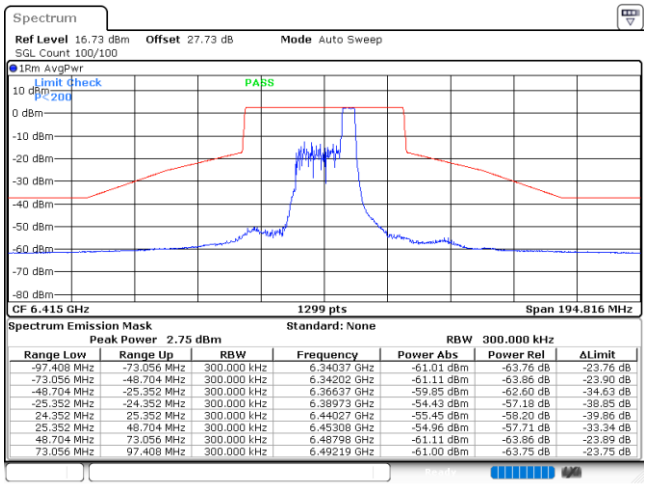



### Plot on Channel 6695 MHz



| EUT Mode | 802.11ax HE20 52RU40 |
|---|---|

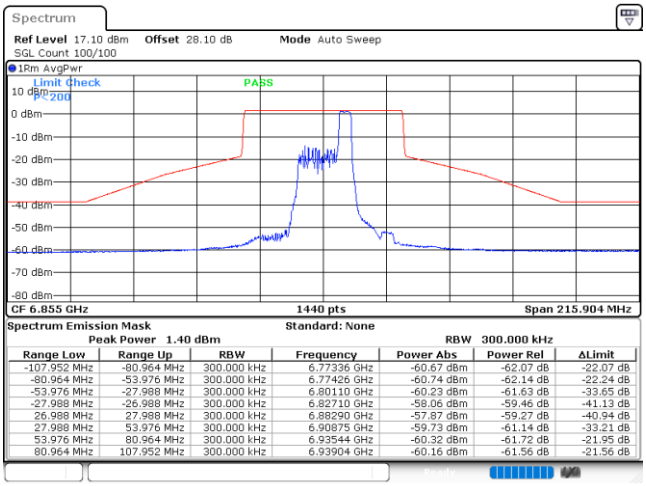
### Plot on Channel 6415 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -97.408 MHz | -73.056 MHz | 300.000 kHz | 6.34037 GHz | -61.01 dBm | -63.76 dB | -23.76 dB |
| -73.056 MHz | -48.704 MHz | 300.000 kHz | 6.34202 GHz | -61.11 dBm | -63.86 dB | -23.90 dB |
| -48.704 MHz | -25.352 MHz | 300.000 kHz | 6.36637 GHz | -59.85 dBm | -62.60 dB | -34.63 dB |
| -25.352 MHz | -24.352 MHz | 300.000 kHz | 6.38973 GHz | -54.43 dBm | -57.18 dB | -38.85 dB |
| 24.352 MHz | 25.352 MHz | 300.000 kHz | 6.44027 GHz | -55.45 dBm | -58.20 dB | -39.86 dB |
| 25.352 MHz | 48.704 MHz | 300.000 kHz | 6.45308 GHz | -54.96 dBm | -57.71 dB | -33.34 dB |
| 48.704 MHz | 73.056 MHz | 300.000 kHz | 6.48798 GHz | -61.11 dBm | -63.86 dB | -23.89 dB |
| 73.056 MHz | 97.408 MHz | 300.000 kHz | 6.49219 GHz | -61.00 dBm | -63.75 dB | -23.75 dB |

Date: 12.JUN.2024 04:14:19

### Plot on Channel 6855 MHz




| Range Low | Range Up | RBW | Frequency | Power Abs | Power Rel | ΔLimit |
|---|---|---|---|---|---|---|
| -107.952 MHz | -80.964 MHz | 300.000 kHz | 6.77336 GHz | -60.67 dBm | -62.07 dB | -22.07 dB |
| -80.964 MHz | -53.976 MHz | 300.000 kHz | 6.77426 GHz | -60.74 dBm | -62.14 dB | -22.24 dB |
| -53.976 MHz | -27.988 MHz | 300.000 kHz | 6.80110 GHz | -60.23 dBm | -61.63 dB | -33.65 dB |
| -27.988 MHz | -26.988 MHz | 300.000 kHz | 6.82710 GHz | -58.06 dBm | -59.46 dB | -41.13 dB |
| 26.988 MHz | 27.988 MHz | 300.000 kHz | 6.88290 GHz | -57.87 dBm | -59.27 dB | -40.94 dB |
| 27.988 MHz | 53.976 MHz | 300.000 kHz | 6.90875 GHz | -59.73 dBm | -61.14 dB | -33.21 dB |
| 53.976 MHz | 80.964 MHz | 300.000 kHz | 6.93544 GHz | -60.32 dBm | -61.72 dB | -21.95 dB |
| 80.964 MHz | 107.952 MHz | 300.000 kHz | 6.93904 GHz | -60.16 dBm | -61.56 dB | -21.56 dB |

Date: 12.JUN.2024 06:33:17