# RF TEST REPORT

**For**

## Linksmart Technology(Zhongshan) Co..Ltd.

## Product Name: LCD projector

## Test Model(s): Y5N

| | | |
|---|---|---|
| **Report Reference No.** | : | **DACE250701005RL004** |
| **FCC ID** | : | **2BHDN-Y5N** |
| **Applicant's Name** | : | Linksmart Technology(Zhongshan) Co..Ltd. |
| **Address** | : | No,11,Yingbin Avenue, Banfu Town, Zhongshan City, China |
| **Testing Laboratory** | : | Shenzhen DACE Testing Technology Co., Ltd. |
| **Address** | : | 102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China |
| **Test Specification Standard** | : | **47 CFR Part 15E** |
| **Date of Receipt** | : | July 1, 2025 |
| **Date of Test** | : | July 1, 2025 to July 23, 2025 |
| **Data of Issue** | : | July 23, 2025 |
| **Result** | : | **Pass** |

# Apply for company information

| | | |
|---|---|---|
| **Applicant's Name** | : | Linksmart Technology(Zhongshan) Co..Ltd. |
| **Address** | : | No,11,Yingbin Avenue, Banfu Town, Zhongshan City, China |
| **Product Name** | : | LCD projector |
| **Test Model(s)** | : | Y5N |
| **Series Model(s)** | : | Y5N-1, Y5N-2, Y5N-3, Y5N-4 |
| **Test Specification Standard(s)** | : | 47 CFR Part 15E |

**NOTE1:**

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

| Compiled by: | Supervised by: | Approved by: |
|---|---|---|
| Keren Huang | Ben Tang | Machael Mo |
| Keren Huang / Test Engineer | Ben Tang / Project Engineer | Machael Mo / Manager |
| July 23, 2025 | July 23, 2025 | July 23, 2025 |

# Revision History Of Report

| Version | Description | REPORT No. | Issue Date |
|---|---|---|---|
| V1.0 | Original | DACE250701005RL004 | July 23, 2025 |
| | | | |
| | | | |
| | | | |
| | | | |

# CONTENTS

# 1 TEST SUMMARY

## 1.1 Test Standards

The tests were performed according to following standards:

**47 CFR Part 15E:** Unlicensed National Information Infrastructure Devices

## 1.2 Summary of Test Result

| Item | Standard | Method | Requirement | Result |
|---|---|---|---|---|
| Antenna requirement | 47 CFR Part 15E | | Part 15.203 | Pass |
| Duty Cycle | 47 CFR Part 15E | ANSI C63.10-2020 section 12.2 (b) | | Pass |
| Emission bandwidth and occupied bandwidth | 47 CFR Part 15E | ANSI C63.10-2020, section 6.9 & 12.5<br>KDB 789033 D02, Clause C.2 | U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.<br>47 CFR Part 15.407(e) | Pass |
| Maximum conducted output power | 47 CFR Part 15E | ANSI C63.10-2020, section 12.4 | 47 CFR Part 15.407(a)(1)(i)<br>47 CFR Part 15.407(a)(1)(ii)<br>47 CFR Part 15.407(a)(1)(iii)<br>47 CFR Part 15.407(a)(1)(iv)<br>47 CFR Part 15.407(a)(3)(i) | Pass |
| Power spectral density | 47 CFR Part 15E | ANSI C63.10-2020, section 12.6 | 47 CFR Part 15.407(a)(1)(i)<br>47 CFR Part 15.407(a)(1)(ii)<br>47 CFR Part 15.407(a)(1)(iii)<br>47 CFR Part 15.407(a)(1)(iv)<br>47 CFR Part 15.407(a)(3)(i) | Pass |
| Band edge emissions (Radiated) | 47 CFR Part 15E | ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7 | 47 CFR Part 15.407(b)(1)<br>47 CFR Part 15.407(b)(4)<br>47 CFR Part 15.407(b)(10) | Pass |
| Undesirable emission limits (below 1GHz) | 47 CFR Part 15E | ANSI C63.10-2020, section 12.7.4, 12.7.5 | 47 CFR Part 15.407(b)(9) | Pass |
| Undesirable emission limits (above 1GHz) | 47 CFR Part 15E | ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7 | 47 CFR Part 15.407(b)(1)<br>47 CFR Part 15.407(b)(4)<br>47 CFR Part 15.407(b)(10) | Pass |

# 2 GENERAL INFORMATION

## 2.1 Client Information

**Applicant's Name** : Linksmart Technology(Zhongshan) Co..Ltd.
**Address** : No,11,Yingbin Avenue, Banfu Town, Zhongshan City, China

**Manufacturer** : Linksmart Technology(Zhongshan) Co..Ltd.
**Address** : No,11,Yingbin Avenue, Banfu Town, Zhongshan City, China

## 2.2 Description of Device (EUT)

| | |
|---|---|
| Product Name: | LCD projector |
| Model/Type reference: | Y5N |
| Series Model: | Y5N-1, Y5N-2, Y5N-3, Y5N-4 |
| Model Difference: | The product has many models, only the model name and color is different, and the other parts such as the circuit principle, pcb and electrical structure are the same. |
| Trade Mark: | EXTRAVIS |
| Power Supply: | DC 32V/2.1A from adapter |
| Operation Frequency: | 802.11a/n(HT20)/ac(HT20)/ax(HE20):<br>U-NII Band 1: 5180MHz to 5240MHz;<br>U-NII Band 3: 5745MHz to 5825MHz;<br>802.11n(HT40)/ac(HT40)/ax(HE40):<br>U-NII Band 1: 5190MHz to 5230MHz;<br>U-NII Band 3: 5755MHz to 5795MHz;<br>802.11ac(HT80)/ax(HE80):<br>U-NII Band 1: 5210MHz;<br>U-NII Band 3: 5775MHz |
| Number of Channels: | 802.11a/n(HT20)/ac(HT20)/ax(HE20):<br>U-NII Band 1: 4;<br>U-NII Band 3: 5;<br>802.11n(HT40)/ac(HT40)/ax(HE40):<br>U-NII Band 1: 2;<br>U-NII Band 3: 2;<br>802.11ac(HT80)/ax(HE80):<br>U-NII Band 1: 1;<br>U-NII Band 3: 1 |
| Modulation Type: | 802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM);<br>802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM);<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM);<br>802.11ax: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) |
| Antenna Type: | FPC Antenna |
| Antenna Gain: | 3dBi |
| Hardware Version: | V1.0 |
| Software Version: | V1.0 |

Remark:The Antenna Gain is supplied by the customer.DACE is not responsible for this data and the related calculations associated with it

**Operation Frequency each of channel**

802.11a/n(HT20)/ac(HT20)/ax(HT20)

| | U-NII Band 1 | U-NII Band 3 |
|---|---|---|
| Channel | Frequency | Frequency |
| 1 | 5180 MHz | 5745 MHz |
| 2 | 5200 MHz | 5765 MHz |
| 3 | 5220 MHz | 5785 MHz |
| 4 | 5240 MHz | 5805 MHz |
| 5 | / | 5825 MHz |

802.11n(HT40)/ac(HT40)/ax(HT40)

| | U-NII Band 1 | U-NII Band 3 |
|---|---|---|
| Channel | Frequency | Frequency |
| 1 | 5190 MHz | 5755 MHz |
| 2 | 5230 MHz | 5795 MHz |

802.11ac(HT80)/ax(HT80)

| | U-NII Band 1 | U-NII Band 3 |
|---|---|---|
| Channel | Frequency | Frequency |
| 1 | 5210 MHz | 5775 MHz |

Note:

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

| 802.11a/n(HT20)/ac(HT20)/ax(HT20) | | |
|---|---|---|
| | U-NII Band 1 | U-NII Band 3 |
| **Test channel** | **Frequency (MHz)** | **Frequency (MHz)** |
| Lowest channel | 5180 MHz | 5745 MHz |
| Middle channel | 5200 MHz | 5785 MHz |
| Highest channel | 5240 MHz | 5825 MHz |

| 802.11n(HT40)/ac(HT40)/ax(HT40) | | |
|---|---|---|
| | U-NII Band 1 | U-NII Band 3 |
| **Test channel** | **Frequency (MHz)** | **Frequency (MHz)** |
| Lowest channel | 5190 MHz | 5755 MHz |
| Highest channel | 5230 MHz | 5795 MHz |

| 802.11ac(HT80)/ax(HT80) | | |
|---|---|---|
| | U-NII Band 1 | U-NII Band 3 |
| **Test channel** | **Frequency (MHz)** | **Frequency (MHz)** |
| Middle channel | 5210 MHz | 5775 MHz |

## 2.3 Description of Test Modes

| No | Title | Description |
|---|---|---|
| TM1 | 802.11a mode | Keep the EUT in continuously transmitting mode with 802.11a modulation type at lowest, middle and highest channel. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report. |
| TM2 | 802.11n mode | Keep the EUT in continuously transmitting mode with 802.11n modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. |
| TM3 | 802.11ac mode | Keep the EUT in continuously transmitting mode with 802.11ac modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. |
| TM4 | 802.11ax mode | Keep the EUT in continuously transmitting mode with 802.11ax modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. |
| Remark:were performed with duty cycle above 98%, meet the requirements of KDB789033.Only the data of the worst mode would be recorded in this report. | | |

## 2.4 Description of Support Units

The EUT was tested as an independent device.

## 2.5 Equipments Used During The Test

| Conducted Emission at AC power line | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| Power absorbing clamp | SCHWARZ BECK | MESS-ELEKTRONIK | / | 2025-04-23 | 2026-04-22 |
| Electric Network | SCHWARZ BECK | CAT5 8158 | CAT5 8158#207 | 2025-04-18 | 2026-04-17 |
| Cable | SCHWARZ BECK | / | / | 2025-04-18 | 2026-04-17 |
| Pulse Limiter | SCHWARZ BECK | VTSD 9561-F Pulse limiter 10dB Attenuation | 561-G071 | 2024-12-06 | 2025-12-05 |
| 50ΩCoaxial Switch | Anritsu | MP59B | M20531 | / | / |
| Test Receiver | Rohde & Schwarz | ESPI TEST RECEIVER | 1164.6607K03 -102109-MH | 2025-04-25 | 2026-04-24 |
| L.I.S.N | R&S | ESH3-Z5 | 831.5518.52 | 2025-04-18 | 2026-04-17 |
| L.I.S.N | SCHWARZ BECK | NSLK 8126 | 05055 | 2025-04-18 | 2026-04-17 |
| Pulse Limiter | CYBERTEK | EM5010A | / | 2024-09-27 | 2025-09-26 |
| EMI test software | EZ -EMC | EZ | V1.1.42 | / | / |

| **6dB Bandwidth**<br>**Maximum Conducted Output Power**<br>**Power Spectral Density**<br>**Emissions in non-restricted frequency bands** | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| RF Test Software | Tachoy Information Technology(shenzhen) Co.,Ltd. | RTS-01 | V1.0.0 | / | / |
| Power divider | MIDEWEST | PWD-2533 | SMA-79 | 2025-04-18 | 2026-05-10 |
| RF Sensor Unit | Tachoy Information Technology(shenzhen) Co.,Ltd. | TR1029-2 | 000001 | / | / |
| Wideband radio communication tester | R&S | CMW500 | 113410 | 2025-04-25 | 2026-04-24 |
| Vector Signal Generator | Keysight | N5181A | MY50143455 | 2024-12-06 | 2025-12-05 |
| Signal Generator | Keysight | N5182A | MY48180415 | 2024-12-06 | 2025-12-05 |
| Spectrum Analyzer | Keysight | N9020A | MY53420323 | 2024-12-06 | 2025-12-05 |

| Emissions in frequency bands (above 1GHz)<br>Band edge emissions (Radiated)<br>Emissions in frequency bands (below 1GHz) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| EMI Test software | Farad | EZ -EMC | V1.1.42 | / | / |
| Positioning Controller | MF | MF-7802 | / | / | / |
| Amplifier(18-40G) | COM-POWER | AH-1840 | 10100008-1 | 2024-04-26 | 2027-04-25 |
| Horn antenna | COM-POWER | AH-1840 (18-40G) | 10100008 | 2024-04-26 | 2027-04-25 |
| Loop antenna | ZHINAN | ZN30900C | ZN30900C | 2025-04-28 | 2026-04-27 |
| Cable(LF)#2 | Schwarzbeck | / | / | 2024-12-19 | 2025-12-18 |
| Cable(LF)#1 | Schwarzbeck | / | / | 2024-12-19 | 2025-12-18 |
| Cable(HF)#2 | Schwarzbeck | AK9515E | 96250 | 2025-04-25 | 2026-04-24 |
| Cable(HF)#1 | Schwarzbeck | SYV-50-3-1 | / | 2025-04-25 | 2026-04-24 |
| Power amplifier(LF) | Schwarzbeck | BBV9743 | 9743-151 | 2025-04-29 | 2026-04-28 |
| Power amplifier(HF) | Schwarzbeck | BBV9718 | 9718-282 | 2025-04-29 | 2026-04-28 |
| Wideband radio communication tester | R&S | CMW500 | 113410 | 2025-04-25 | 2026-04-24 |
| Spectrum Analyzer | R&S | FSP30 | 1321.3008K40 -101729-jR | 2025-04-18 | 2026-04-17 |
| Test Receiver | R&S | ESCI 3 | 1166.5950K03 -101431-Jq | 2025-04-18 | 2026-04-17 |
| Horn Antenna | Sunol Sciences | DRH-118 | A091114 | 2025-04-21 | 2026-04-20 |
| Broadband Antenna | Sunol Sciences | JB6 Antenna | A090414 | 2024-09-28 | 2026-09-27 |

## 2.6 Statement Of The Measurement Uncertainty

| Test Item | Measurement Uncertainty |
|---|---|
| Duty cycle | ±3.1% |
| Occupied Bandwidth | ±3.63% |
| RF conducted power | ±0.733dB |
| RF power density | ±0.234% |
| Radiated Emission (Above 1GHz) | ±5.46dB |
| Radiated Emission (Below 1GHz) | ±5.79dB |
| Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. | |

## 2.7 Identification of Testing Laboratory

| | |
|---|---|
| Company Name: | Shenzhen DACE Testing Technology Co., Ltd. |
| Address: | 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China |
| Phone Number: | +86-13267178997 |
| Fax Number: | 86-755-29113252 |

Identification of the Responsible Testing Location

| | |
|---|---|
| Company Name: | Shenzhen DACE Testing Technology Co., Ltd. |
| Address: | 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China |
| Phone Number: | +86-13267178997 |
| Fax Number: | 86-755-29113252 |
| Designation Number: | CN1342 |
| Test Firm Registration Number: | 778666 |
| A2LA Certificate Number: | 6270.01 |

## 2.8 Announcement

(1) The test report reference to the report template version v0.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

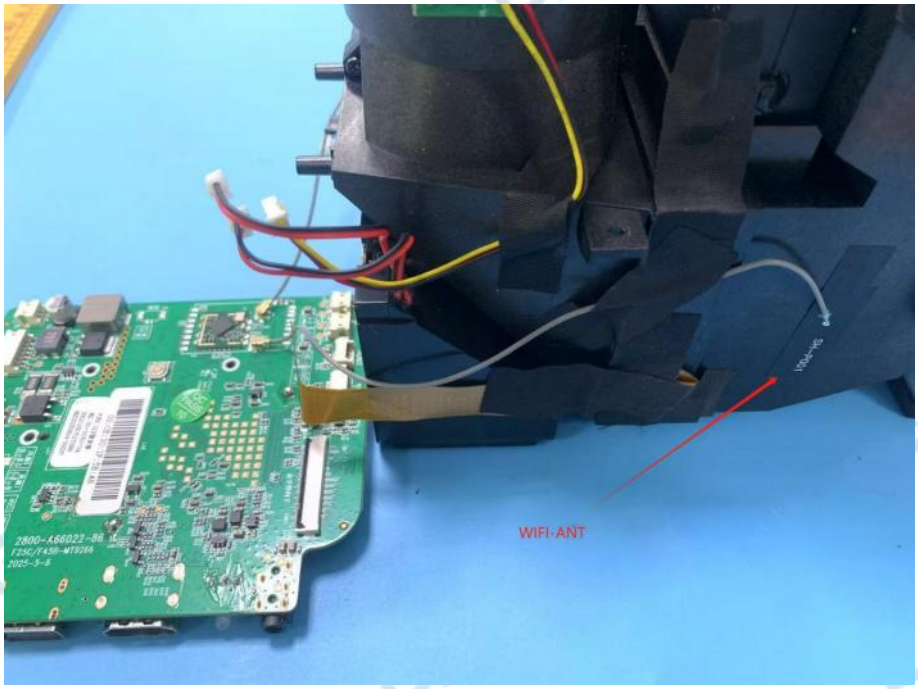
(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

# 3 Evaluation Results (Evaluation)

## 3.1 Antenna requirement

| | |
|---|---|
| Test Requirement: | Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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. |

### 3.1.1 Conclusion:



# 4 Radio Spectrum Matter Test Results (RF)

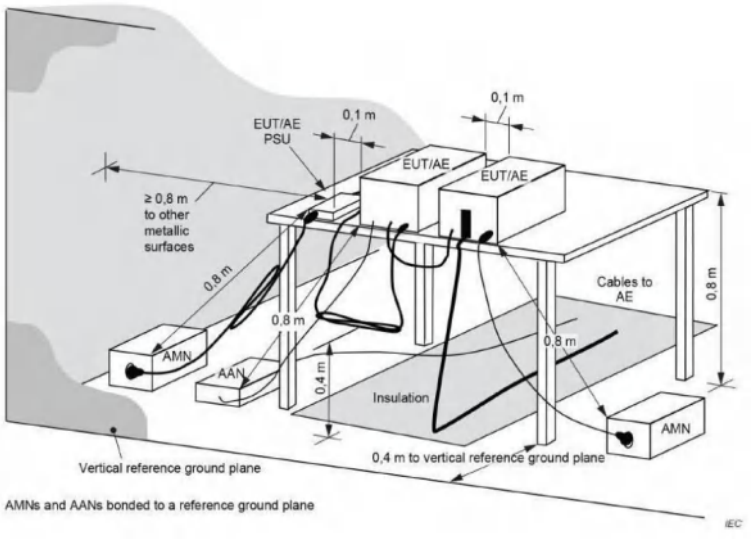
## 4.1 Conducted Emission at AC power line

| | |
|---|---|
| Test Requirement: | Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). |
| Test Limit: | Frequency of emission (MHz) / Conducted limit (dBμV): Quasi-peak / Average<br>0.15-0.5: 66 to 56* / 56 to 46*<br>0.5-5: 56 / 46<br>5-30: 60 / 50<br>*Decreases with the logarithm of the frequency. |
| Test Method: | ANSI C63.10-2020 section 6.2 |
| Procedure: | Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices |

### 4.1.1 E.U.T. Operation:

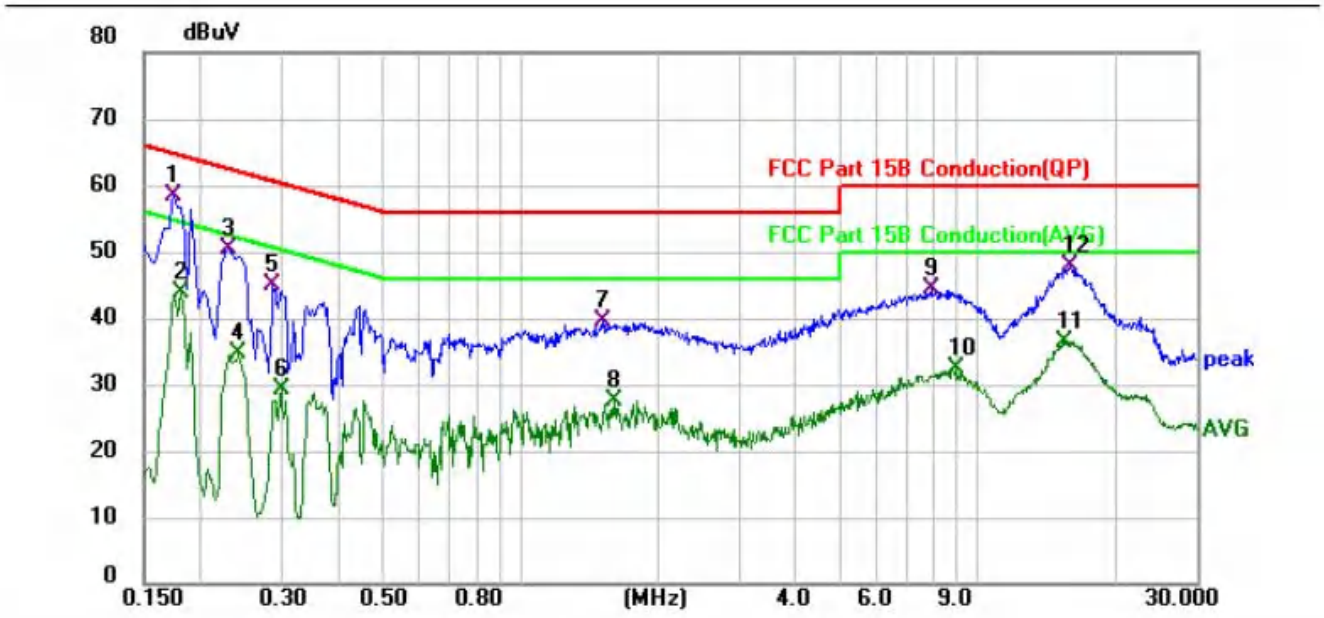
| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1 | | | | |
| Final test mode: | TM1 | | | | |

### 4.1.2 Test Setup Diagram:



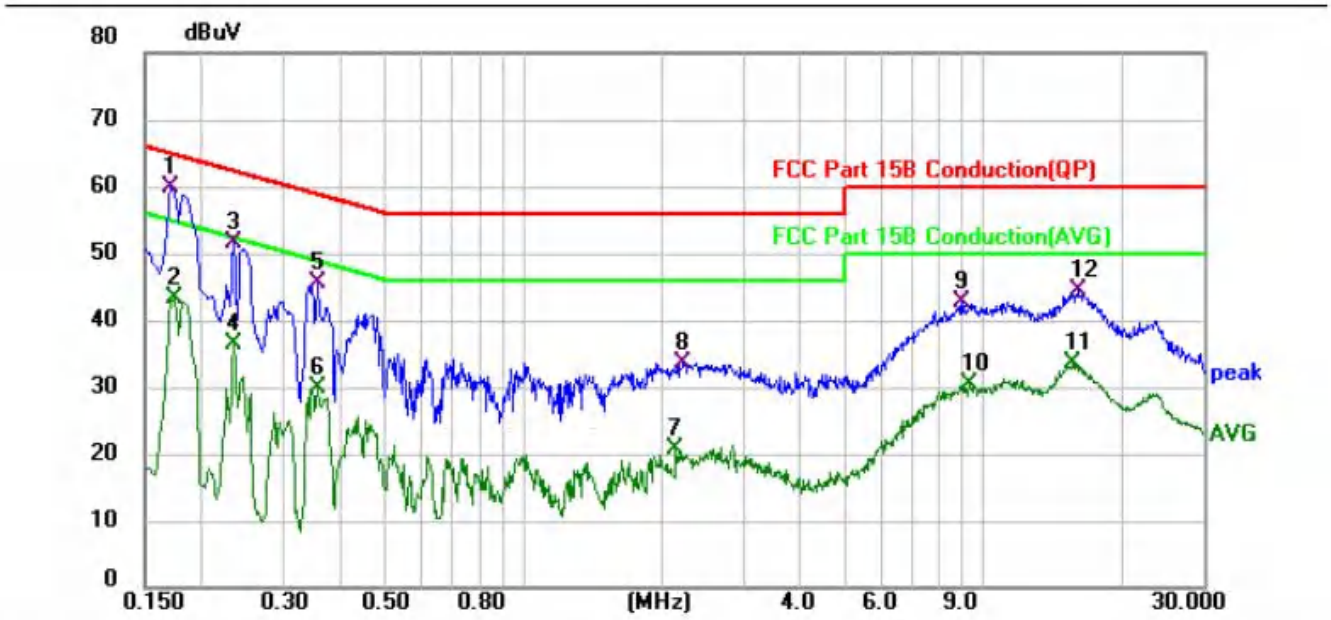
### 4.1.3 Test Data:

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 20 / CH: L




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1740 | 48.21 | 10.10 | 58.31 | 64.77 | -6.46 | QP | |
| 2 | | 0.1819 | 33.65 | 10.10 | 43.75 | 54.40 | -10.65 | AVG | |
| 3 | | 0.2300 | 40.26 | 10.09 | 50.35 | 62.45 | -12.10 | QP | |
| 4 | | 0.2420 | 24.56 | 10.09 | 34.65 | 52.03 | -17.38 | AVG | |
| 5 | | 0.2860 | 34.79 | 10.09 | 44.88 | 60.64 | -15.76 | QP | |
| 6 | | 0.2980 | 19.11 | 10.09 | 29.20 | 50.30 | -21.10 | AVG | |
| 7 | | 1.5180 | 29.53 | 10.06 | 39.59 | 56.00 | -16.41 | QP | |
| 8 | | 1.5940 | 17.66 | 10.05 | 27.71 | 46.00 | -18.29 | AVG | |
| 9 | | 7.8980 | 34.05 | 10.26 | 44.31 | 60.00 | -15.69 | QP | |
| 10 | | 8.9379 | 22.10 | 10.28 | 32.38 | 50.00 | -17.62 | AVG | |
| 11 | | 15.4100 | 26.02 | 10.51 | 36.53 | 50.00 | -13.47 | AVG | |
| 12 | | 15.9060 | 37.37 | 10.52 | 47.89 | 60.00 | -12.11 | QP | |

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 20 / CH: L




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1700 | 49.71 | 10.08 | 59.79 | 64.96 | -5.17 | QP | |
| 2 | | 0.1740 | 33.16 | 10.08 | 43.24 | 54.77 | -11.53 | AVG | |
| 3 | | 0.2340 | 41.54 | 10.08 | 51.62 | 62.31 | -10.69 | QP | |
| 4 | | 0.2340 | 26.36 | 10.08 | 36.44 | 52.31 | -15.87 | AVG | |
| 5 | | 0.3580 | 35.38 | 10.07 | 45.45 | 58.77 | -13.32 | QP | |
| 6 | | 0.3580 | 19.79 | 10.07 | 29.86 | 48.77 | -18.91 | AVG | |
| 7 | | 2.1420 | 10.73 | 10.01 | 20.74 | 46.00 | -25.26 | AVG | |
| 8 | | 2.2340 | 23.56 | 10.01 | 33.57 | 56.00 | -22.43 | QP | |
| 9 | | 8.9940 | 32.29 | 10.30 | 42.59 | 60.00 | -17.41 | QP | |
| 10 | | 9.2700 | 19.97 | 10.32 | 30.29 | 50.00 | -19.71 | AVG | |
| 11 | | 15.6700 | 22.97 | 10.49 | 33.46 | 50.00 | -16.54 | AVG | |
| 12 | | 15.9860 | 33.92 | 10.50 | 44.42 | 60.00 | -15.58 | QP | |

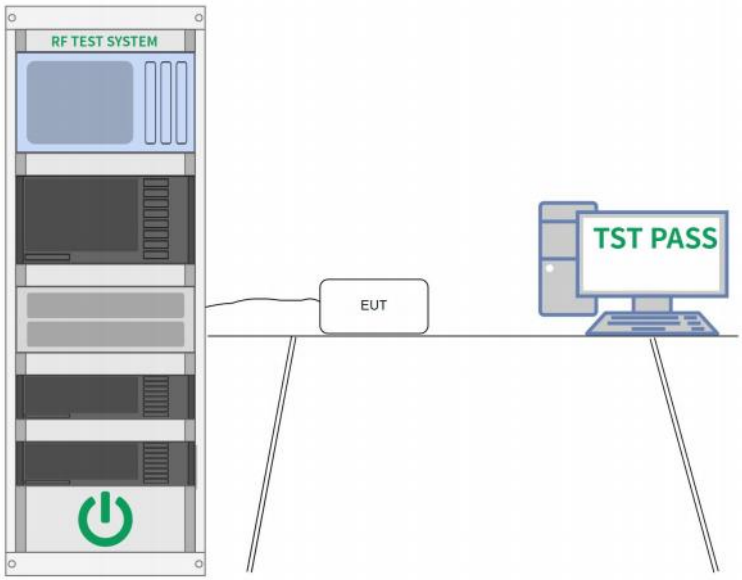
## 4.2 Duty Cycle

| | |
|---|---|
| Test Requirement: | All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation. |
| Test Limit: | No limits, only for report use. |
| Test Method: | ANSI C63.10-2020 section 12.2 (b) |
| Procedure: | i) Set the center frequency of the instrument to the center frequency of the transmission.<br>ii) Set RBW >= EBW if possible; otherwise, set RBW to the largest available value.<br>iii) Set VBW >= RBW.<br>iv) Set detector = peak.<br>v) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100. |

### 4.2.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

### 4.2.2 Test Setup Diagram:




### 4.2.3 Test Data:

Please Refer to Appendix for Details.

## 4.3 Emission bandwidth and occupied bandwidth

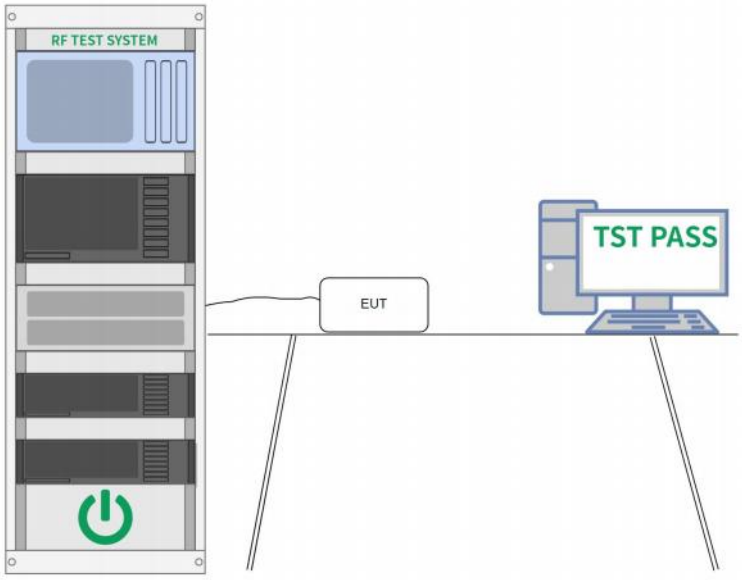
| | |
|---|---|
| Test Requirement: | U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.<br><br>U-NII 3, U-NII 4: 47 CFR Part 15.407(e) |
| Test Limit: | U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.<br><br>U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz. |
| Test Method: | ANSI C63.10-2020, section 6.9 & 12.5<br>KDB 789033 D02, Clause C.2 |
| Procedure: | Emission bandwidth:<br>a) Set RBW = approximately 1% of the emission bandwidth.<br>b) Set the VBW > RBW.<br>c) Detector = peak.<br>d) Trace mode = max hold.<br>e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission.<br>Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement<br>as needed until the RBW/EBW ratio is approximately 1%.<br><br>Occupied bandwidth:<br>a) The instrument center frequency is set to the nominal EUT channel center frequency. The<br>frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.<br>b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW,<br>and VBW shall be approximately three times the RBW, unless otherwise specified by the<br>applicable requirement.<br>c) Set the reference level of the instrument as required, keeping the signal from exceeding the<br>maximum input mixer level for linear operation. In general, the peak of the spectral envelope<br>shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given<br>in 4.1.5.2.<br>d) Step a) through step c) might require iteration to adjust within the specified range.<br>e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode<br>shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be<br>used.<br>f) Use the 99% power bandwidth function of the instrument (if available) and report the measured<br>bandwidth.<br>g) If the instrument does not have a 99% power bandwidth function, then the trace data points are<br>recovered and directly summed in linear power terms. The recovered amplitude data points,<br>beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached;<br>that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the<br>total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is |

| | |
|---|---|
| | the difference between these two frequencies.<br>h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument<br>display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may<br>be reported in addition to the plot(s).<br><br>6 dB emission bandwidth:<br>a) Set RBW = 100 kHz.<br>b) Set the video bandwidth (VBW) ≥ 3 >= RBW.<br>c) Detector = Peak.<br>d) Trace mode = max hold.<br>e) Sweep = auto couple.<br>f) Allow the trace to stabilize.<br>g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. |

### 4.3.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

### 4.3.2 Test Setup Diagram:




### 4.3.3 Test Data:

Please Refer to Appendix for Details.

## 4.4 Maximum conducted output power

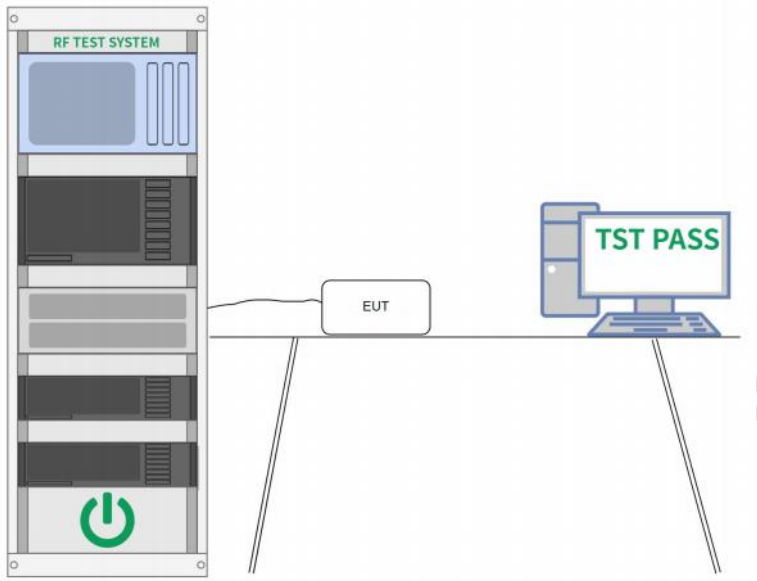
| | |
|---|---|
| Test Requirement: | 47 CFR Part 15.407(a)(1)(i)<br>47 CFR Part 15.407(a)(1)(ii)<br>47 CFR Part 15.407(a)(1)(iii)<br>47 CFR Part 15.407(a)(1)(iv)<br>47 CFR Part 15.407(a)(3)(i) |
| Test Limit: | For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).<br><br>For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br>For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.<br>Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power.<br>For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi.<br>Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.<br><br>For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br>For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br>However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. |

| | |
|---|---|
| Test Method: | ANSI C63.10-2020, section 12.4 |
| Procedure: | Refer to ANSI C63.10-2020 section 12.4 |

### 4.4.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

### 4.4.2 Test Setup Diagram:




### 4.4.3 Test Data:

Please Refer to Appendix for Details.

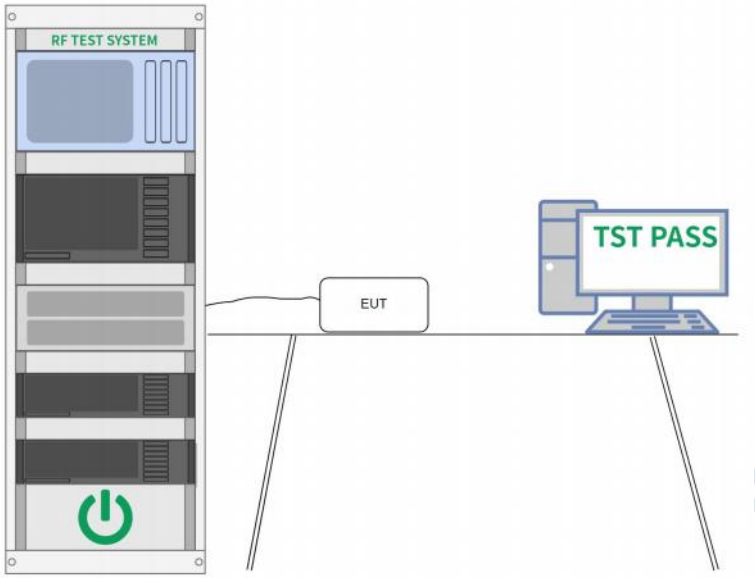
## 4.5 Power spectral density

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15.407(a)(1)(i)<br>47 CFR Part 15.407(a)(1)(ii)<br>47 CFR Part 15.407(a)(1)(iii)<br>47 CFR Part 15.407(a)(1)(iv)<br>47 CFR Part 15.407(a)(3)(i) |
| Test Limit: | For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br>For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br>For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.<br>Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum power spectral density.<br>For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.<br>Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.<br><br>For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br>For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.<br>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.<br>Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. |
| Test Method: | ANSI C63.10-2020, section 12.6 |
| Procedure: | Refer to ANSI C63.10-2020, section 12.6 |

### 4.5.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

### 4.5.2 Test Setup Diagram:




### 4.5.3 Test Data:

Please Refer to Appendix for Details.

## 4.6 Band edge emissions (Radiated)

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15.407(b)(1)<br>47 CFR Part 15.407(b)(4)<br>47 CFR Part 15.407(b)(10) |
| Test Limit: | For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.<br><br>For transmitters operating solely in the 5.725-5.850 GHz band:<br>All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| [1] 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | ([2]) |
| 13.36-13.41 | | | |

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

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

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| | |
|---|---|
| | <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.<br>In the emission table above, the tighter limit applies at the band edges.<br>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. |
| Test Method: | ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7 |
| Procedure: | Above 1GHz:<br>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.<br>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.<br>i. Repeat above procedures until all frequencies measured was complete.<br>Remark:<br>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor<br>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.<br>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB |

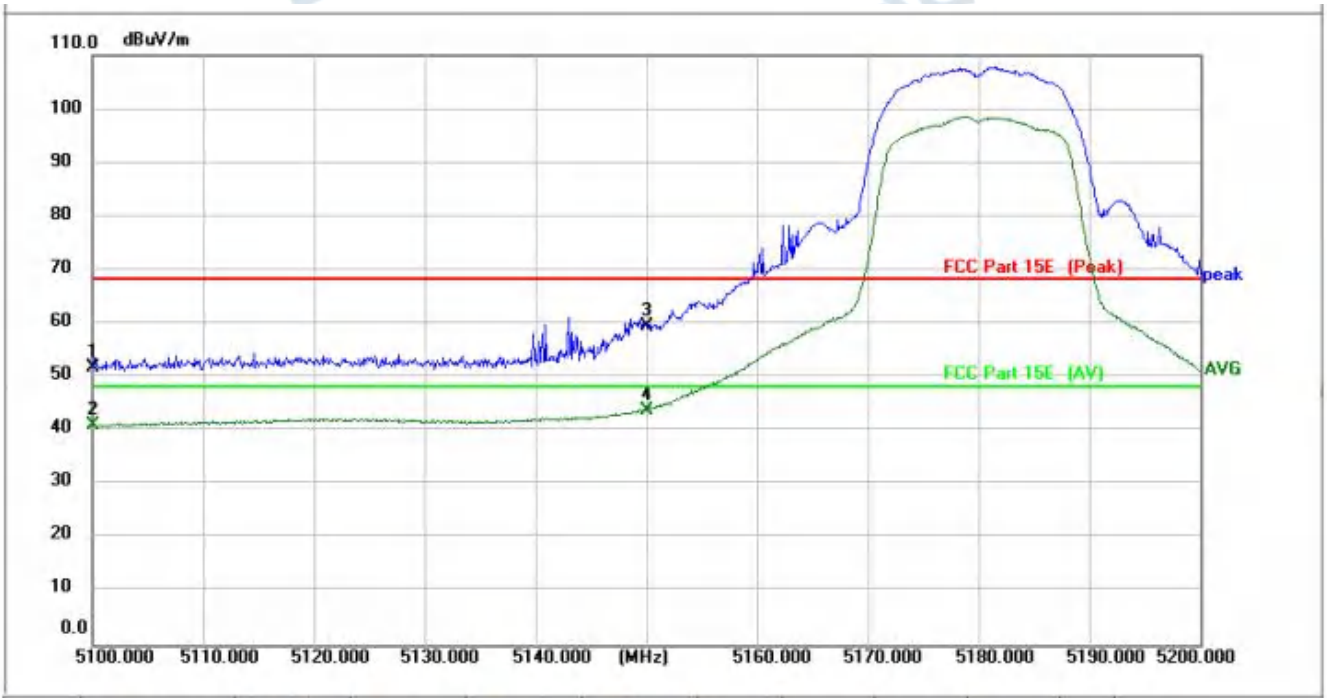
| | |
|---|---|
| | under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.<br>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. |

### 4.6.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

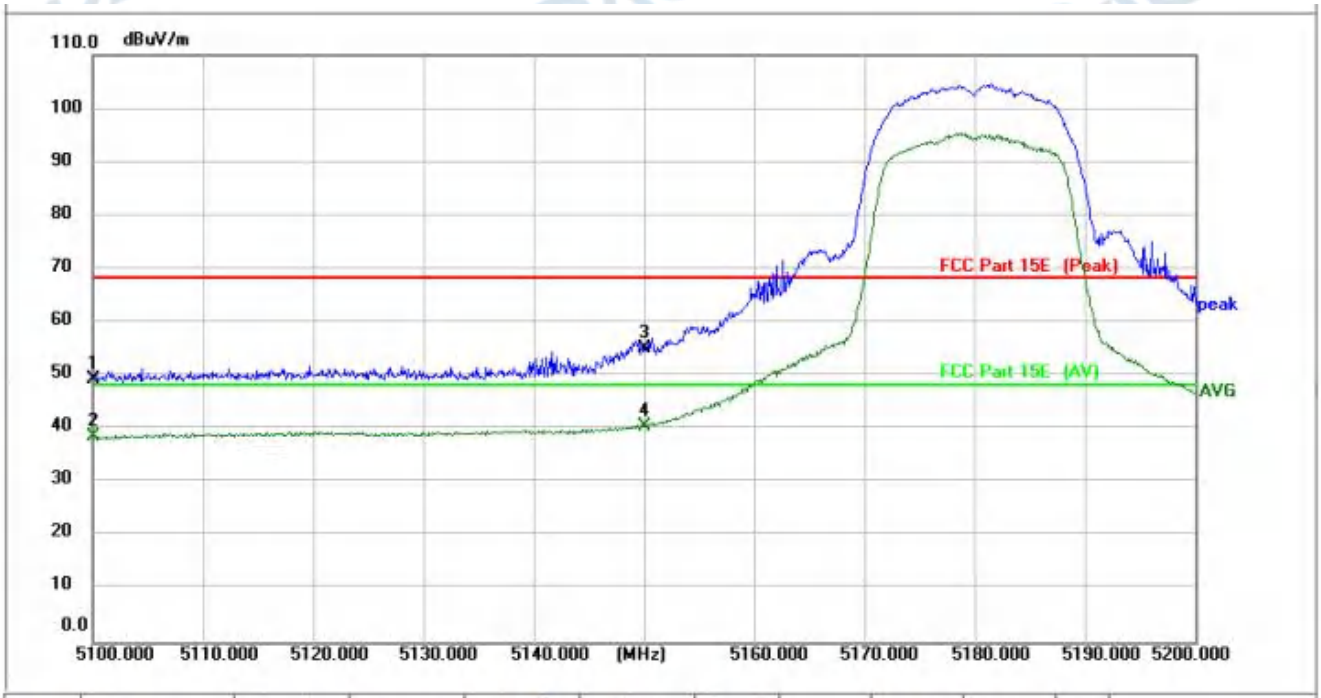
### 4.6.2 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



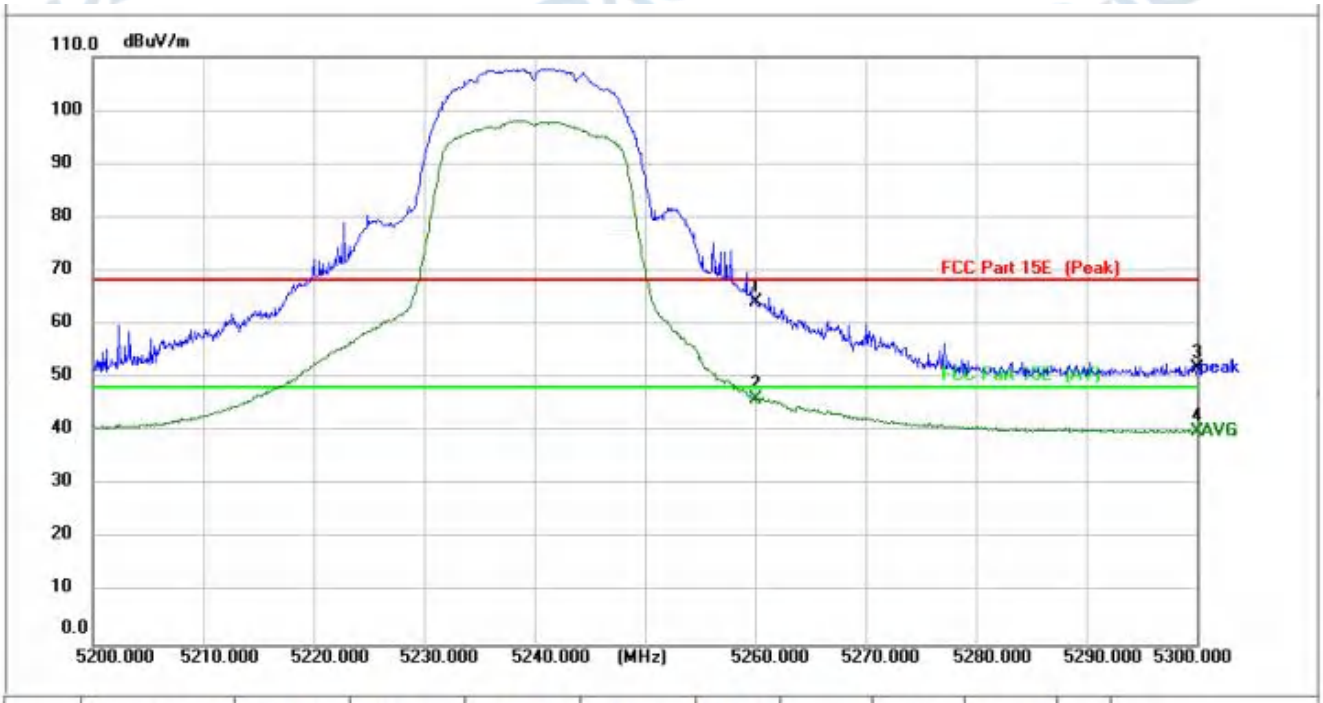

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5100.000 | 47.61 | 4.26 | 51.87 | 68.20 | -16.33 | peak | 150 | | P | |
| 2 | 5100.000 | 36.84 | 4.26 | 41.10 | 48.20 | -7.10 | AVG | 150 | | P | |
| 3 | 5150.000 | 55.26 | 4.40 | 59.66 | 68.20 | -8.54 | peak | 150 | | P | |
| 4 * | 5150.000 | 39.57 | 4.40 | 43.97 | 48.20 | -4.23 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L



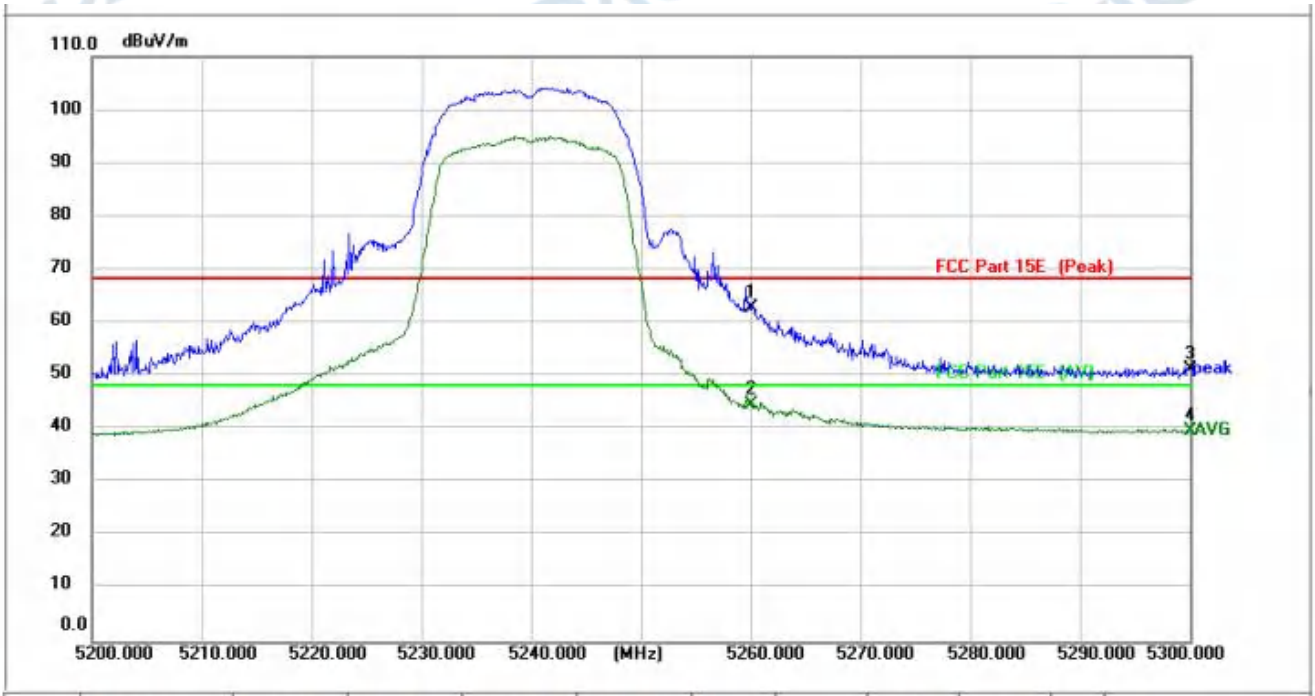

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5100.000 | 45.07 | 4.26 | 49.33 | 68.20 | -18.87 | peak | 150 | | P | |
| 2 | 5100.000 | 34.42 | 4.26 | 38.68 | 48.20 | -9.52 | AVG | 150 | | P | |
| 3 | 5150.000 | 50.77 | 4.40 | 55.17 | 68.20 | -13.03 | peak | 150 | | P | |
| 4 * | 5150.000 | 36.25 | 4.40 | 40.65 | 48.20 | -7.55 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H



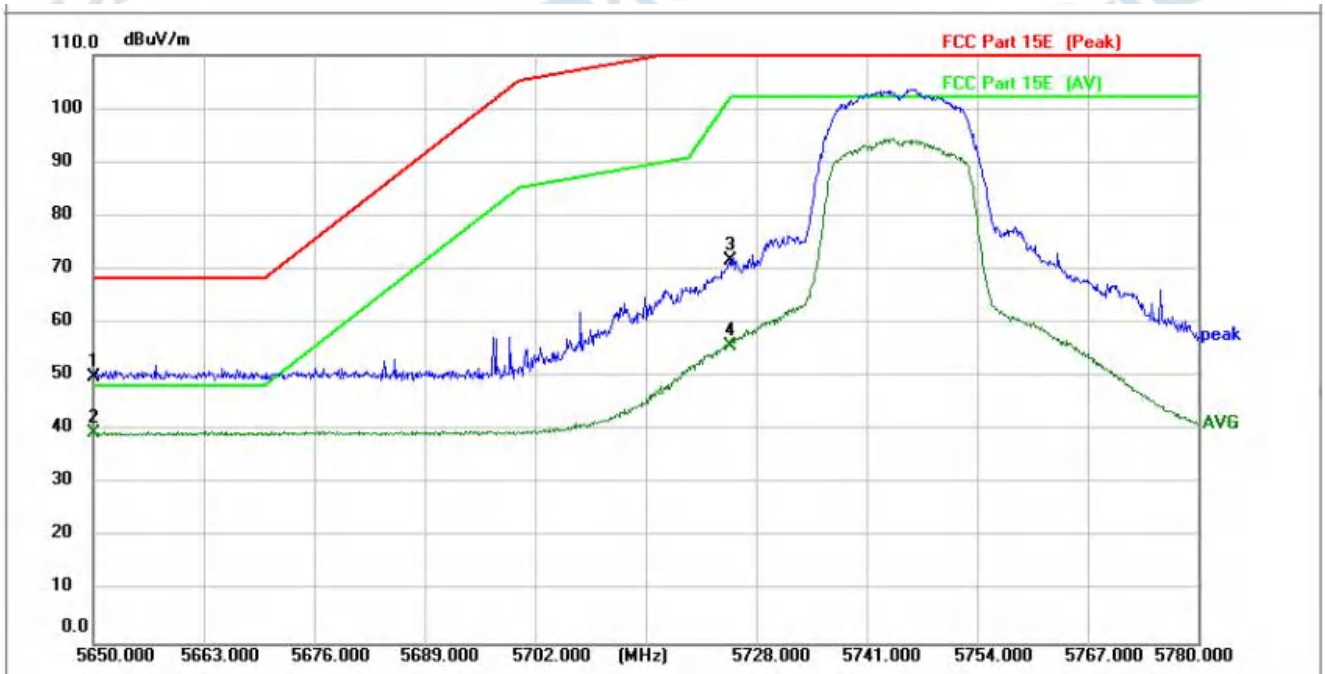

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5260.000 | 59.45 | 4.73 | 64.18 | 68.20 | -4.02 | peak | 150 | | P | |
| 2 * | 5260.000 | 41.27 | 4.73 | 46.00 | 48.20 | -2.20 | AVG | 150 | | P | |
| 3 | 5300.000 | 46.95 | 4.85 | 51.80 | 68.20 | -16.40 | peak | 150 | | P | |
| 4 | 5300.000 | 35.12 | 4.85 | 39.97 | 48.20 | -8.23 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H



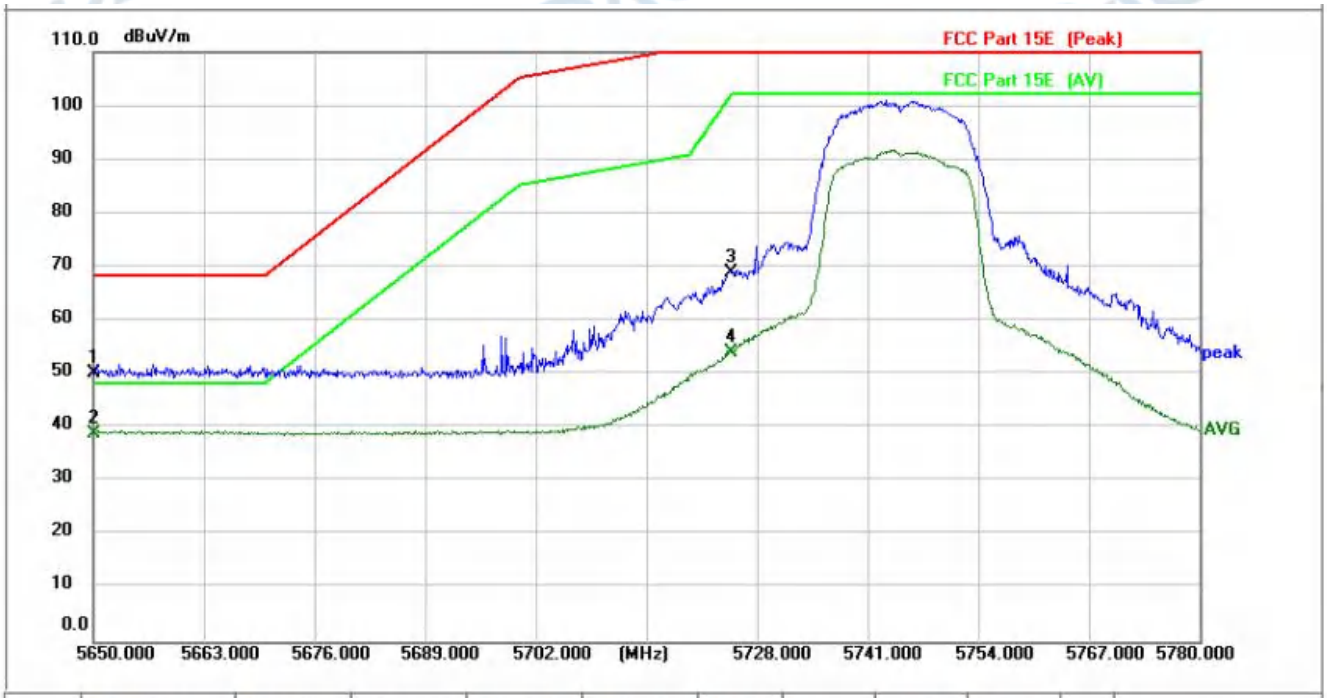

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5260.000 | 58.16 | 4.73 | 62.89 | 68.20 | -5.31 | peak | 150 | | P | |
| 2 * | 5260.000 | 40.05 | 4.73 | 44.78 | 48.20 | -3.42 | AVG | 150 | | P | |
| 3 | 5300.000 | 46.39 | 4.85 | 51.24 | 68.20 | -16.96 | peak | 150 | | P | |
| 4 | 5300.000 | 34.77 | 4.85 | 39.62 | 48.20 | -8.58 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L



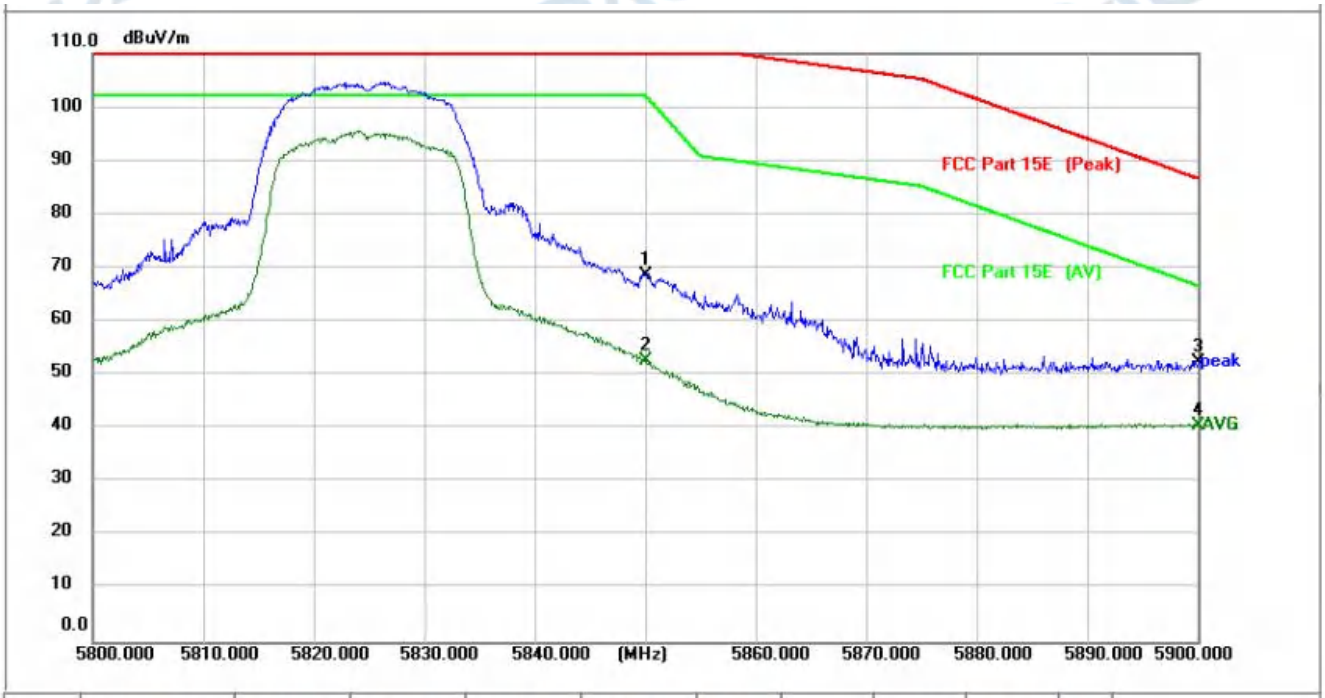

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5650.000 | 44.05 | 5.74 | 49.79 | 68.20 | -18.41 | peak | 150 | | P | |
| 2 * | 5650.000 | 33.61 | 5.74 | 39.35 | 48.20 | -8.85 | AVG | 150 | | P | |
| 3 | 5725.000 | 65.81 | 5.90 | 71.71 | 122.20 | -50.49 | peak | 150 | | P | |
| 4 | 5725.000 | 49.76 | 5.90 | 55.66 | 102.20 | -46.54 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L



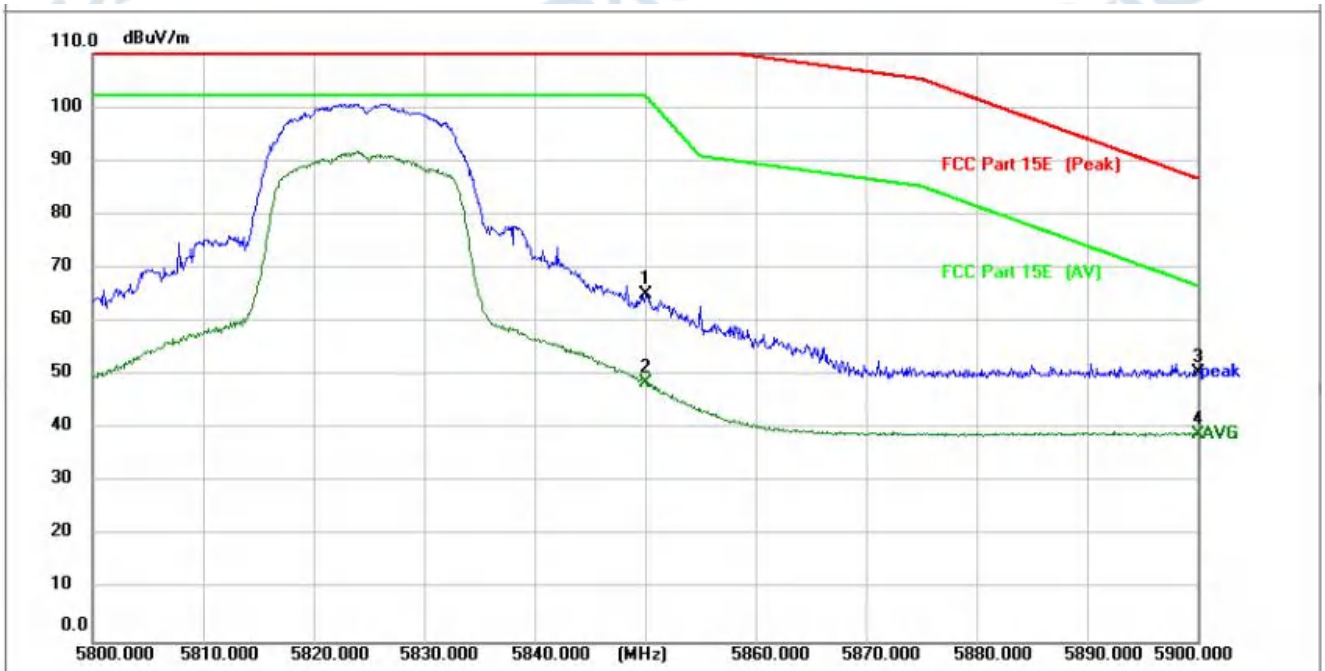

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5650.000 | 44.49 | 5.74 | 50.23 | 68.20 | -17.97 | peak | 150 | | P | |
| 2 * | 5650.000 | 33.28 | 5.74 | 39.02 | 48.20 | -9.18 | AVG | 150 | | P | |
| 3 | 5725.000 | 62.96 | 5.90 | 68.86 | 122.20 | -53.34 | peak | 150 | | P | |
| 4 | 5725.000 | 48.23 | 5.90 | 54.13 | 102.20 | -48.07 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5850.000 | 62.43 | 6.18 | 68.61 | 122.20 | -53.59 | peak | 150 | | P | |
| 2 | 5850.000 | 46.45 | 6.18 | 52.63 | 102.20 | -49.57 | AVG | 150 | | P | |
| 3 | 5900.000 | 46.07 | 6.28 | 52.35 | 86.66 | -34.31 | peak | 150 | | P | |
| 4 * | 5900.000 | 34.38 | 6.28 | 40.66 | 66.66 | -26.00 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5850.000 | 58.96 | 6.18 | 65.14 | 122.20 | -57.06 | peak | 150 | | P | |
| 2 | 5850.000 | 42.49 | 6.18 | 48.67 | 102.20 | -53.53 | AVG | 150 | | P | |
| 3 | 5900.000 | 44.06 | 6.28 | 50.34 | 86.66 | -36.32 | peak | 150 | | P | |
| 4 * | 5900.000 | 32.75 | 6.28 | 39.03 | 66.66 | -27.63 | AVG | 150 | | P | |

## 4.7 Undesirable emission limits (below 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15.407(b)(9)</td></tr>
<tr><td>Test Limit:</td><td>Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.<br><br>Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.<br>In the emission table above, the tighter limit applies at the band edges.<br>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2020, section 12.7.4, 12.7.5</td></tr>
<tr><td>Procedure:</td><td>Below 1GHz:<br>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.<br>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.<br>i. Repeat above procedures until all frequencies measured was complete.<br>Remark:<br>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</td></tr>
</table>

| | |
|---|---|
| | 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.<br>3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.<br><br>Above 1GHz:<br>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.<br>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.<br>i. Repeat above procedures until all frequencies measured was complete.<br>Remark:<br>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor<br>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.<br>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.<br>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. |

**4.7.1 E.U.T. Operation:**

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

### 4.7.2 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 63.9828 | 43.92 | -13.92 | 30.00 | 40.00 | -10.00 | peak | 100 | | P | |
| 2 | 109.4116 | 38.55 | -7.28 | 31.27 | 43.50 | -12.23 | peak | 100 | | P | |
| 3 * | 146.8877 | 41.92 | -7.57 | 34.35 | 43.50 | -9.15 | peak | 100 | | P | |
| 4 | 187.7530 | 44.15 | -9.90 | 34.25 | 43.50 | -9.25 | peak | 100 | | P | |
| 5 | 230.0985 | 45.59 | -10.91 | 34.68 | 46.00 | -11.32 | peak | 100 | | P | |
| 6 | 284.9767 | 42.62 | -7.86 | 34.76 | 46.00 | -11.24 | peak | 100 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 ! | 48.5015 | 48.16 | -12.54 | 35.62 | 40.00 | -4.38 | QP | | | P | |
| 2 ! | 68.1514 | 50.73 | -13.02 | 37.71 | 40.00 | -2.29 | QP | | | P | |
| 3 * | 146.8876 | 49.36 | -7.89 | 41.47 | 43.50 | -2.03 | QP | | | P | |
| 4 ! | 153.2003 | 46.16 | -8.23 | 37.93 | 43.50 | -5.57 | QP | | | P | |
| 5 | 181.2834 | 44.81 | -8.99 | 35.82 | 43.50 | -7.68 | QP | | | P | |
| 6 ! | 187.7530 | 48.93 | -9.41 | 39.52 | 43.50 | -3.98 | QP | | | P | |

## 4.8 Undesirable emission limits (above 1GHz)

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15.407(b)(1)<br>47 CFR Part 15.407(b)(4)<br>47 CFR Part 15.407(b)(10) |
| Test Limit: | For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.<br><br>For transmitters operating solely in the 5.725-5.850 GHz band:<br>All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| [1] 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | ([2]) |
| 13.36-13.41 | | | |

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

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

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| | |
|---|---|
| | <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.<br>In the emission table above, the tighter limit applies at the band edges.<br>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. |
| Test Method: | ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7 |
| Procedure: | Above 1GHz:<br>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.<br>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.<br>i. Repeat above procedures until all frequencies measured was complete.<br>Remark:<br>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor<br>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.<br>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB |

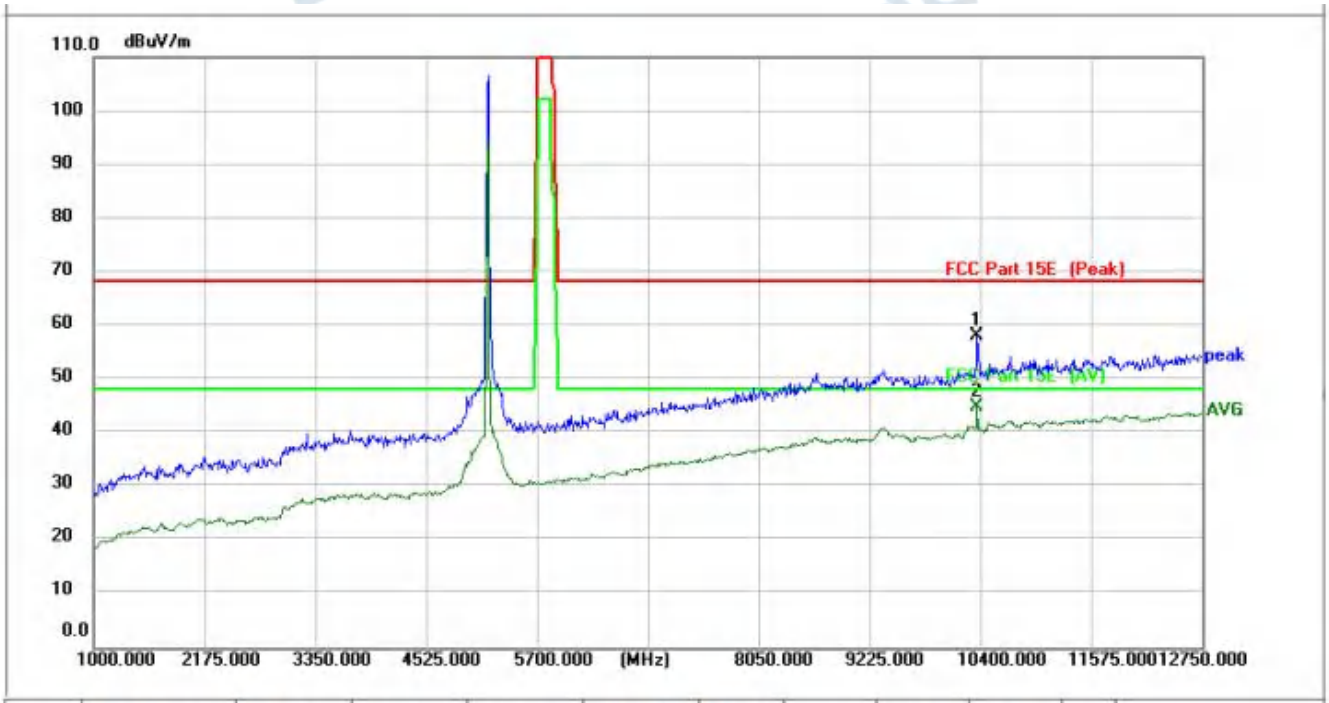
| | |
|---|---|
| | under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.<br>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. |

### 4.8.1 E.U.T. Operation:

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 23.4 °C | Humidity: | 50 % | Atmospheric Pressure: | 102 kPa |
| Pretest mode: | TM1, TM2, TM3, TM4 | | | | |
| Final test mode: | TM1, TM2, TM3, TM4 | | | | |

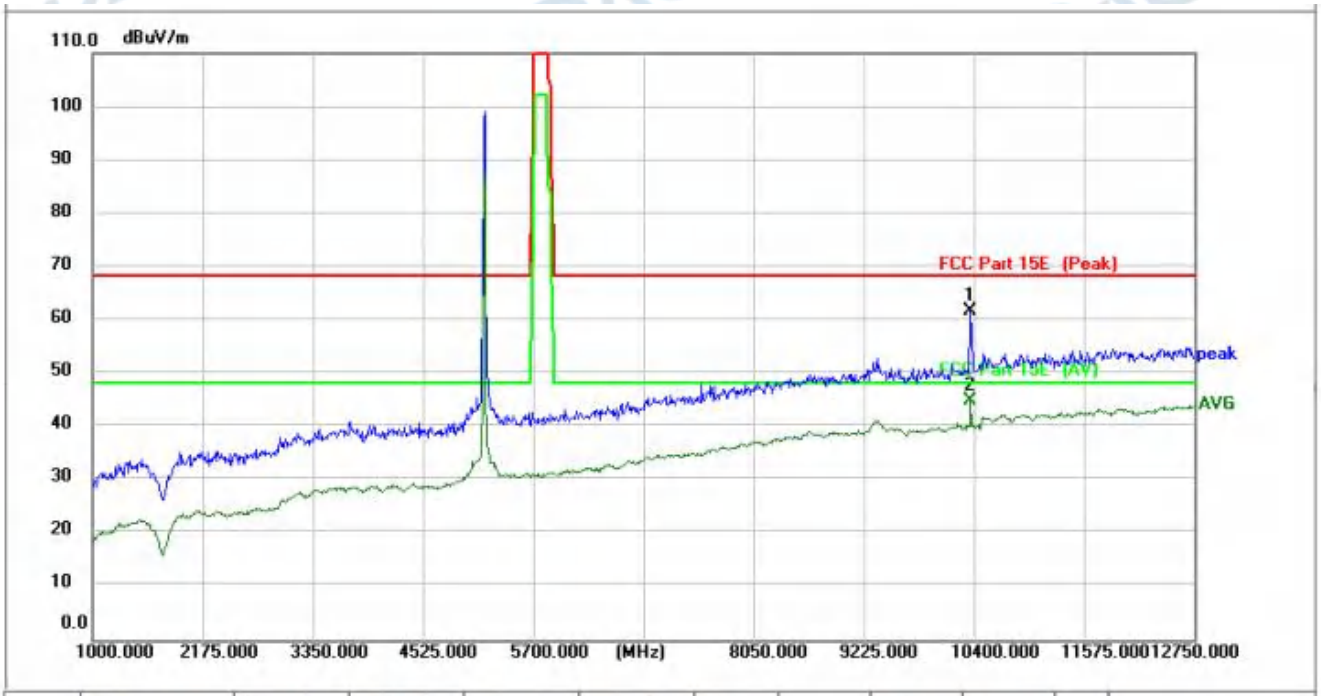
### 4.8.2 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



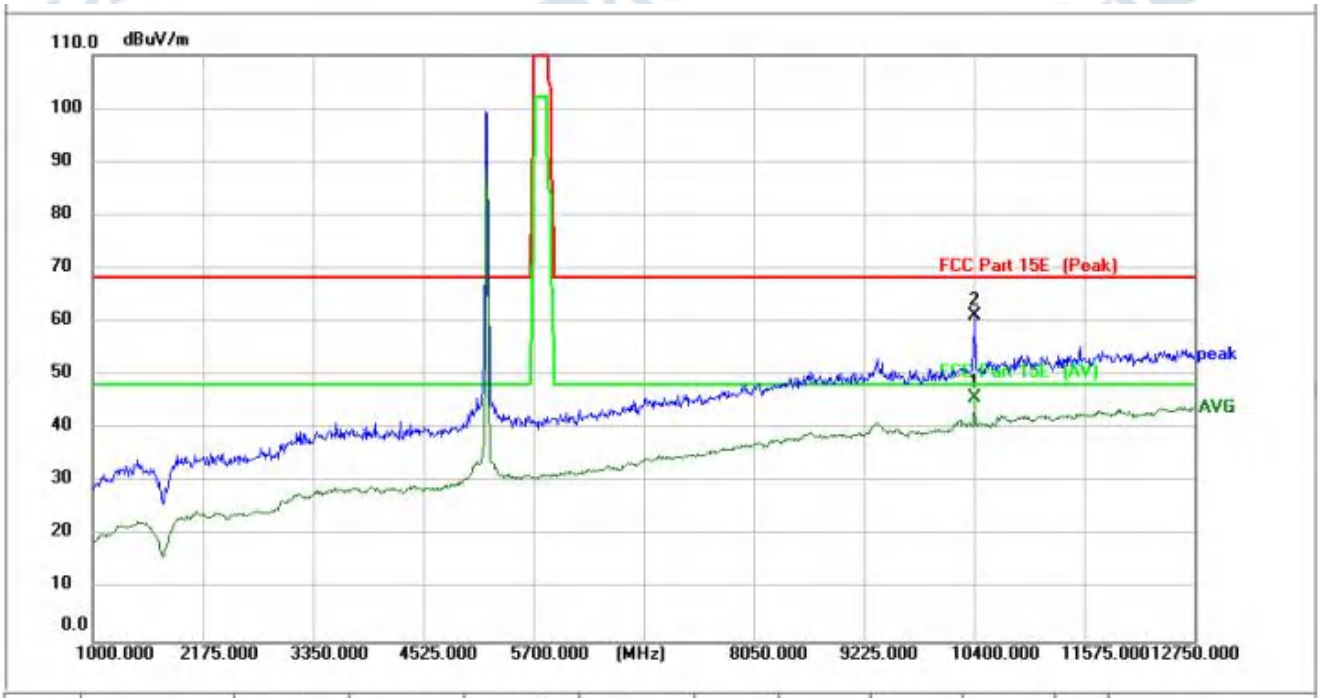

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10364.750 | 42.06 | 16.13 | 58.19 | 68.20 | -10.01 | peak | 150 | | P | |
| 2 * | 10364.750 | 28.75 | 16.13 | 44.88 | 48.20 | -3.32 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L



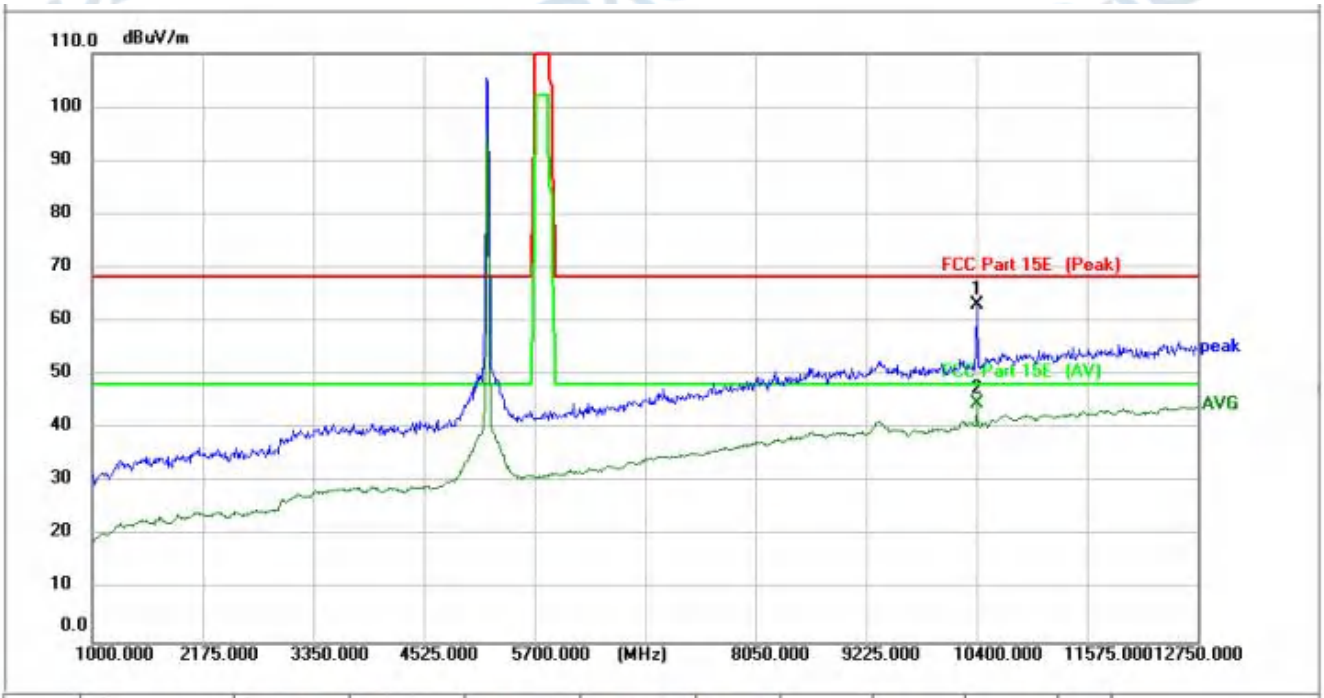

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10364.750 | 45.49 | 16.13 | 61.62 | 68.20 | -6.58 | peak | 150 | | P | |
| 2 * | 10364.750 | 28.81 | 16.13 | 44.94 | 48.20 | -3.26 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: M



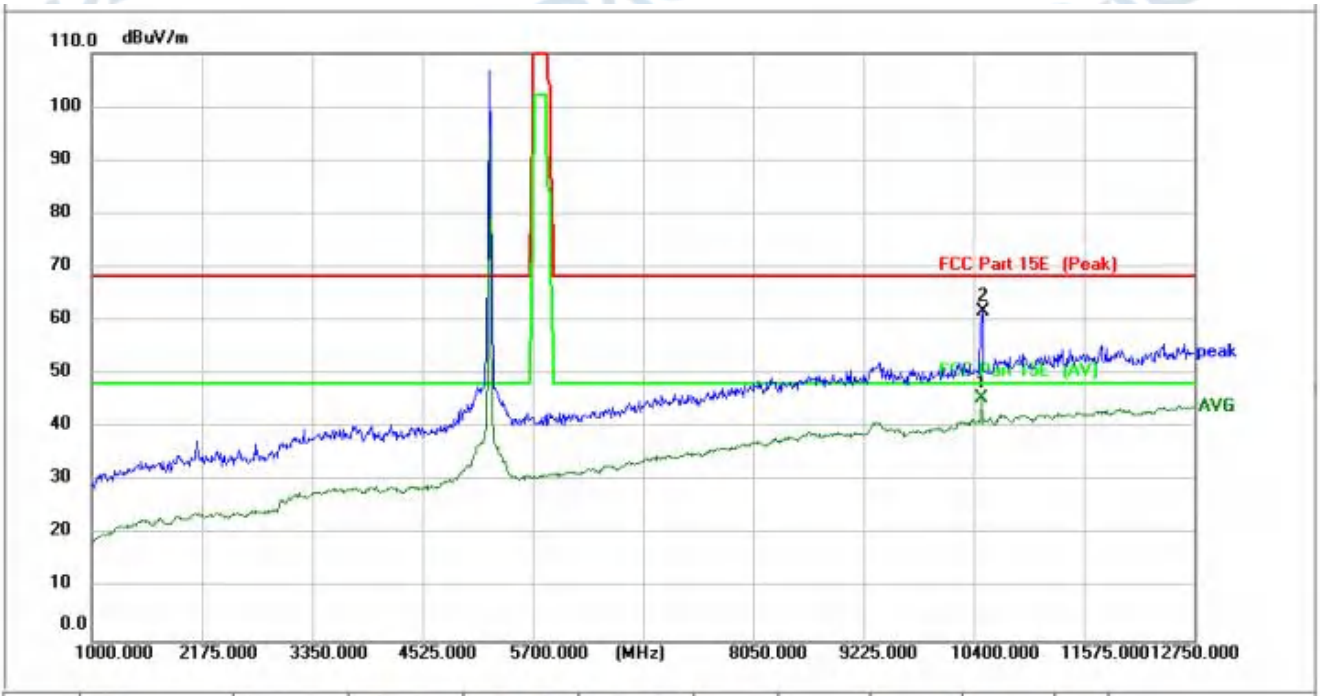

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 * | 10400.000 | 29.47 | 16.22 | 45.69 | 48.20 | -2.51 | AVG | 150 | | P | |
| 2 | 10411.750 | 44.96 | 16.25 | 61.21 | 68.20 | -6.99 | peak | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: M



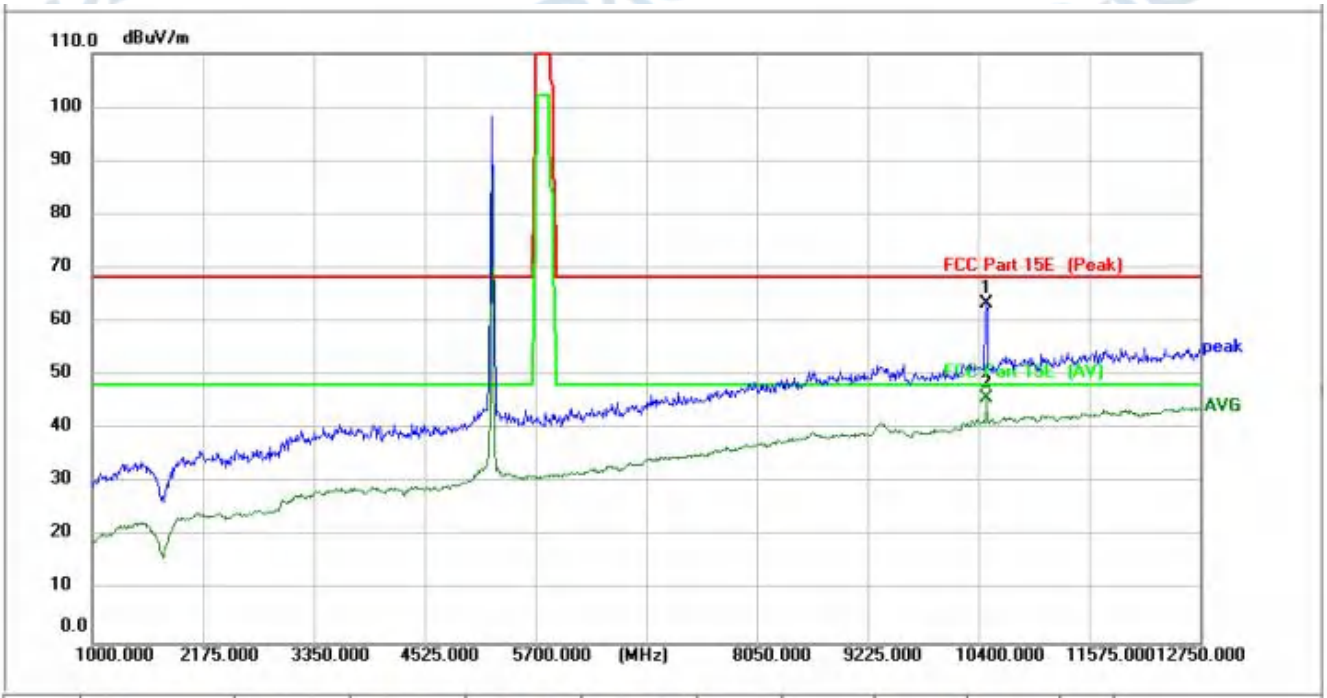

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10400.000 | 46.77 | 16.22 | 62.99 | 68.20 | -5.21 | peak | 150 | | P | |
| 2 * | 10400.000 | 28.47 | 16.22 | 44.69 | 48.20 | -3.51 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H



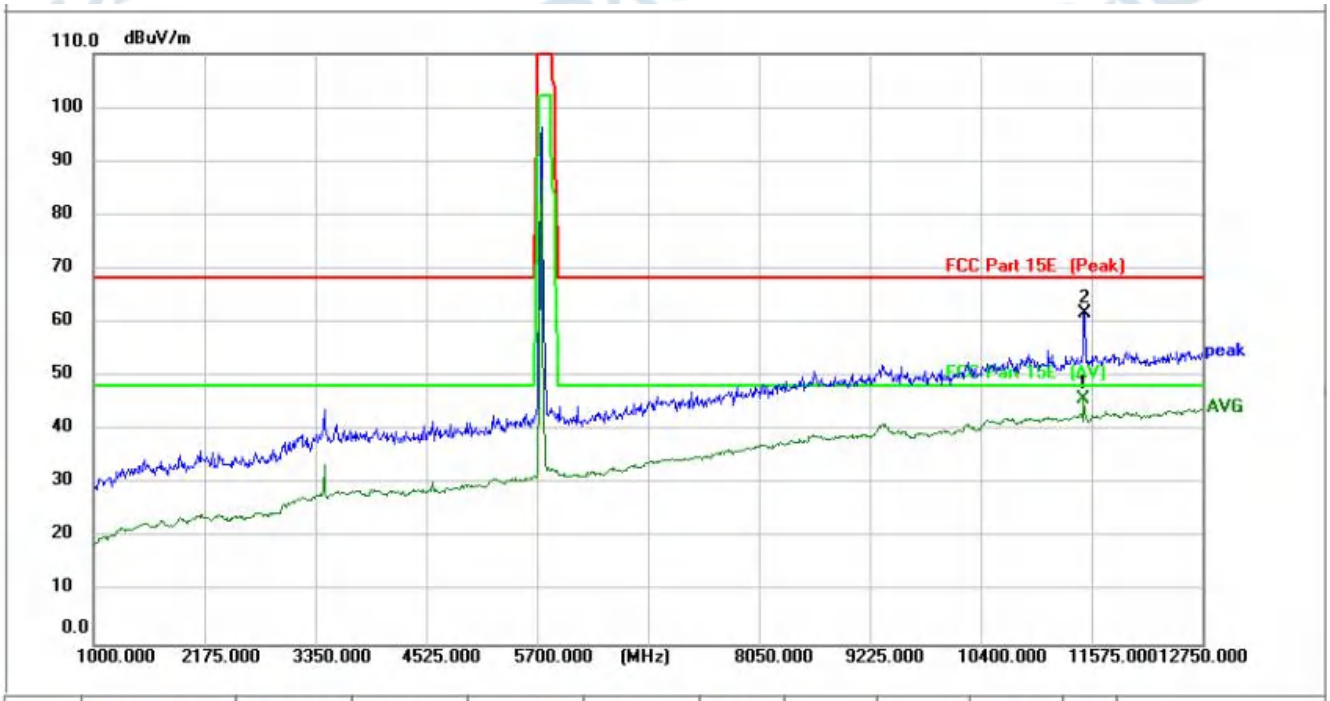

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 * | 10482.250 | 28.93 | 16.46 | 45.39 | 48.20 | -2.81 | AVG | 150 | | P | |
| 2 | 10494.000 | 45.18 | 16.49 | 61.67 | 68.20 | -6.53 | peak | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H



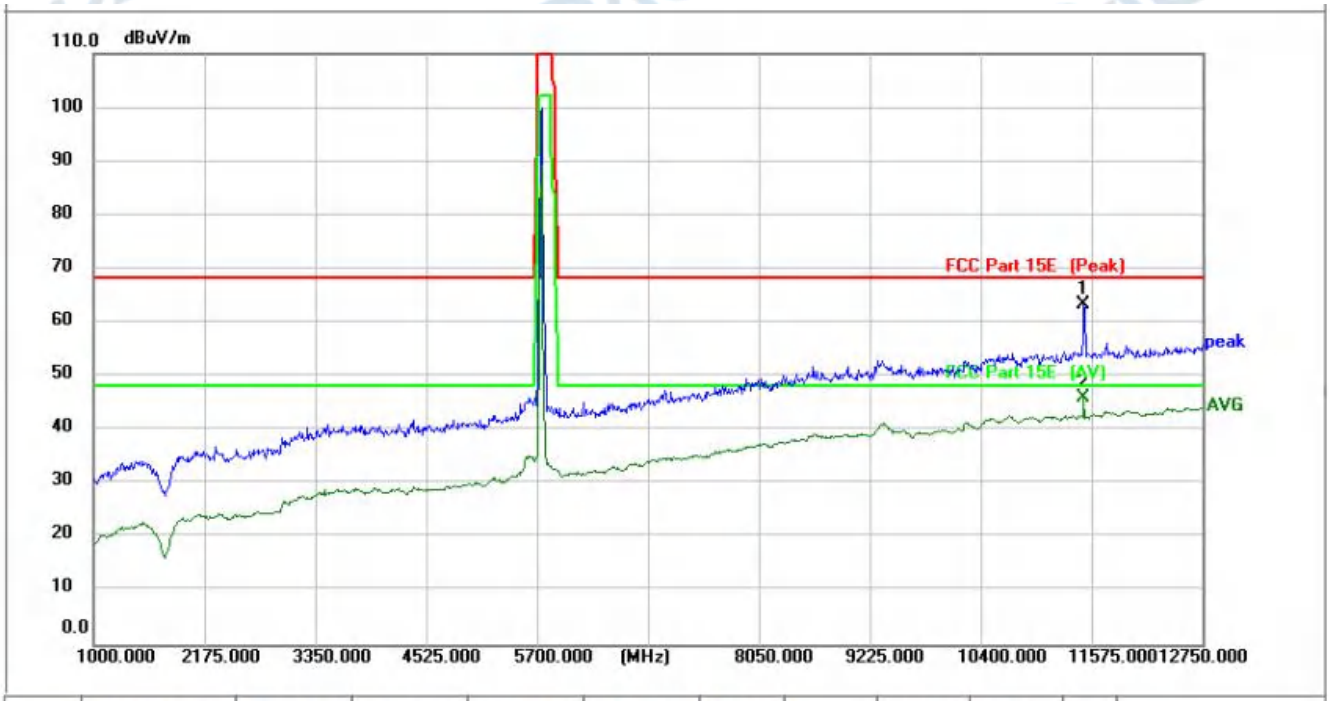

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10482.250 | 46.87 | 16.46 | 63.33 | 68.20 | -4.87 | peak | 150 | | P | |
| 2 * | 10482.250 | 29.43 | 16.46 | 45.89 | 48.20 | -2.31 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L



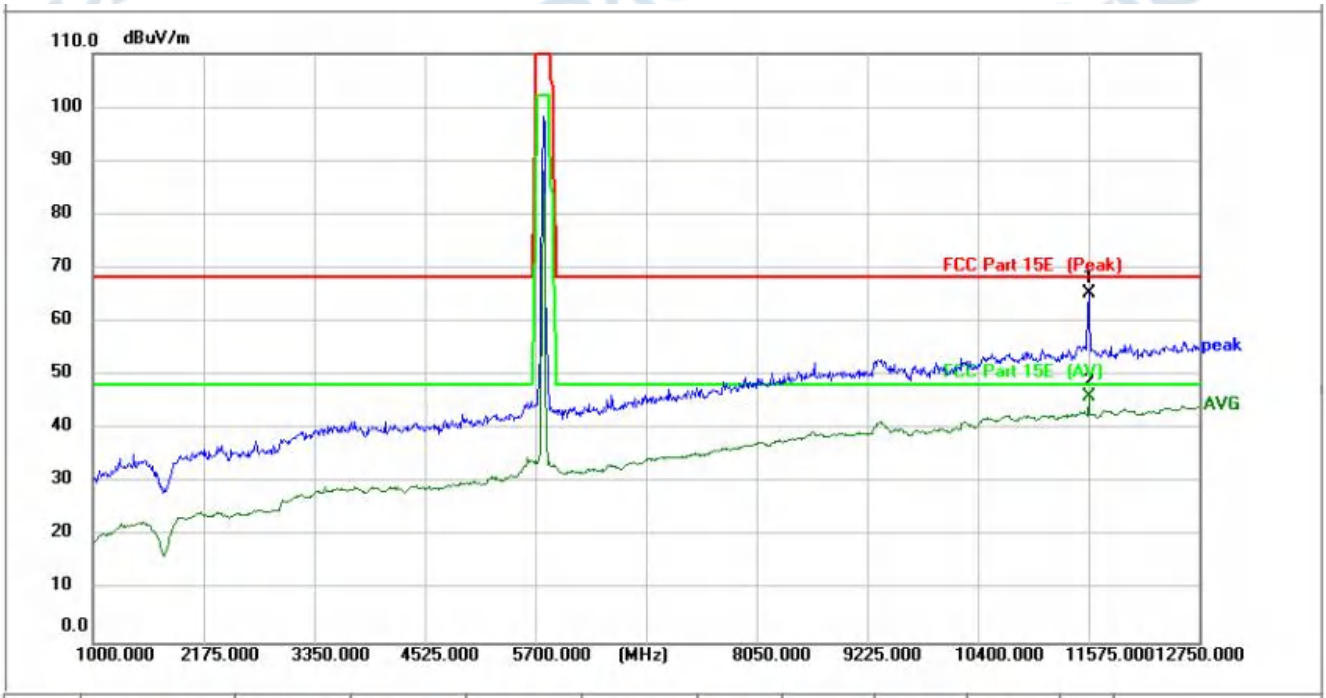

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 * | 11492.750 | 28.01 | 17.66 | 45.67 | 48.20 | -2.53 | AVG | 150 | | P | |
| 2 | 11504.500 | 44.07 | 17.67 | 61.74 | 68.20 | -6.46 | peak | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L



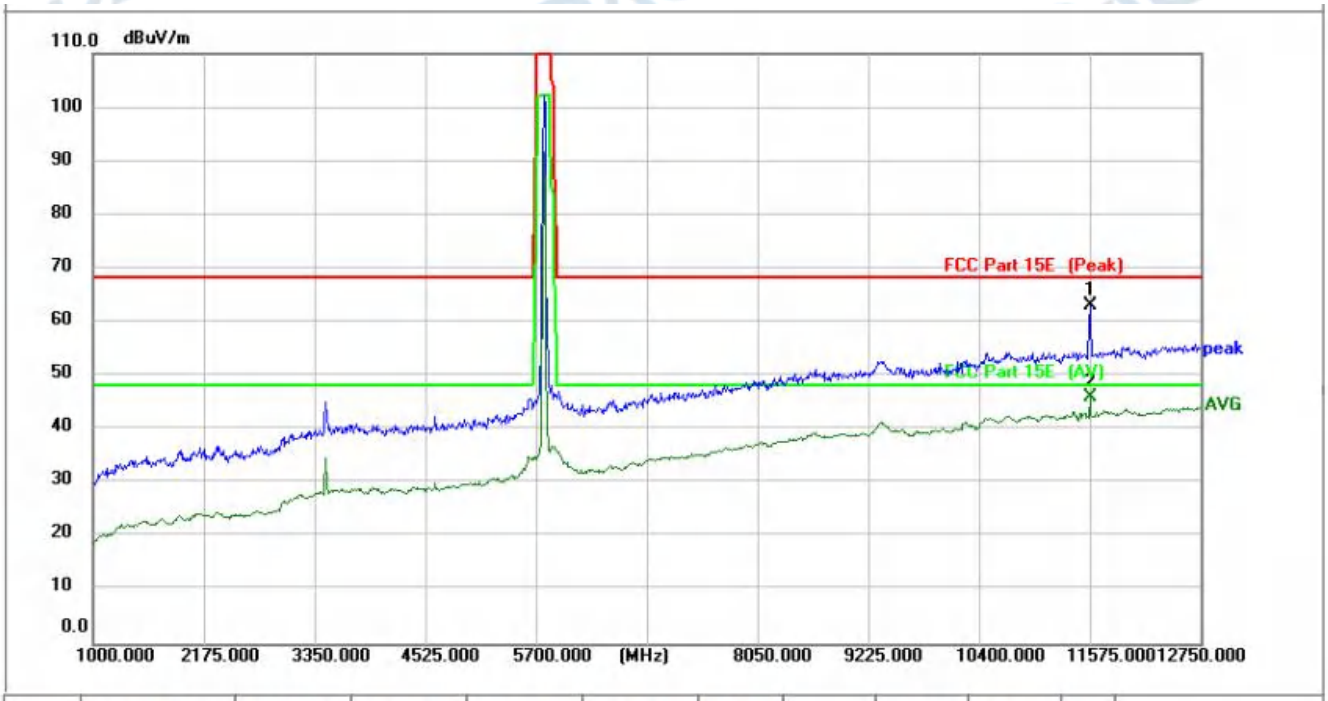

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11492.750 | 45.66 | 17.66 | 63.32 | 68.20 | -4.88 | peak | 150 | | P | |
| 2 * | 11492.750 | 28.51 | 17.66 | 46.17 | 48.20 | -2.03 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: M



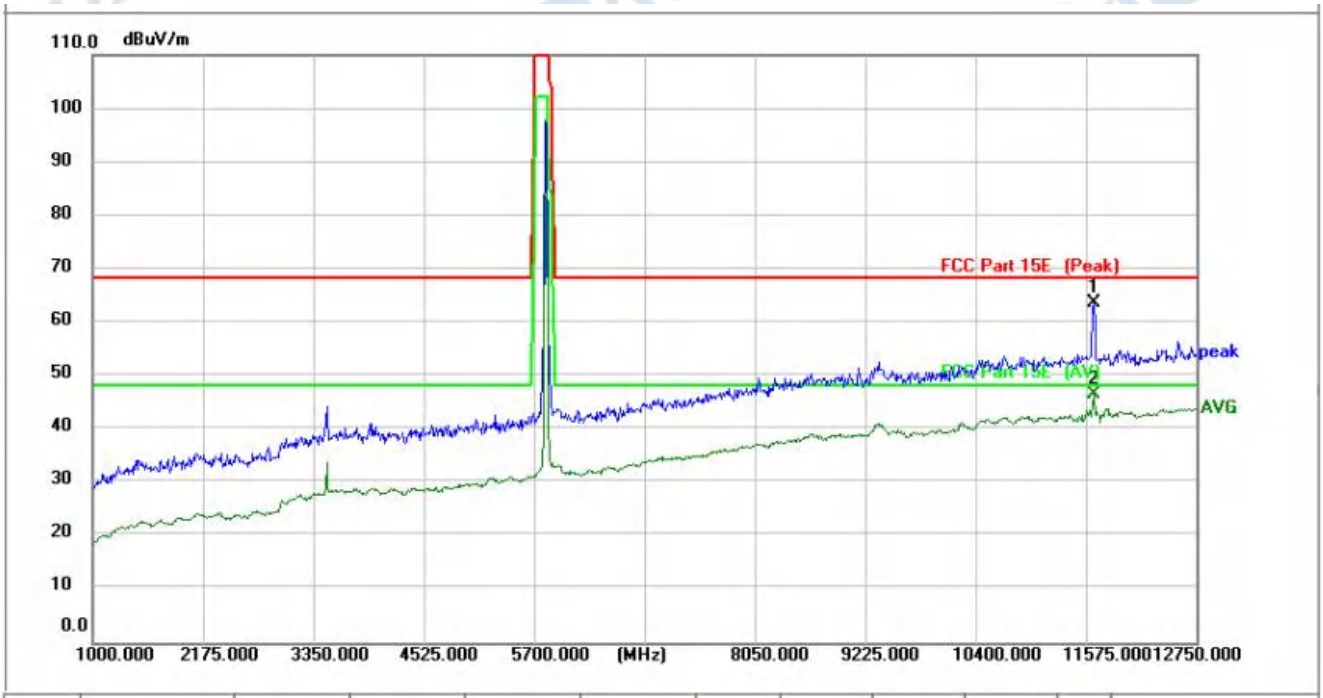

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11575.000 | 47.56 | 17.72 | 65.28 | 68.20 | -2.92 | peak | 150 | | P | |
| 2 * | 11575.000 | 28.38 | 17.72 | 46.10 | 48.20 | -2.10 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: M



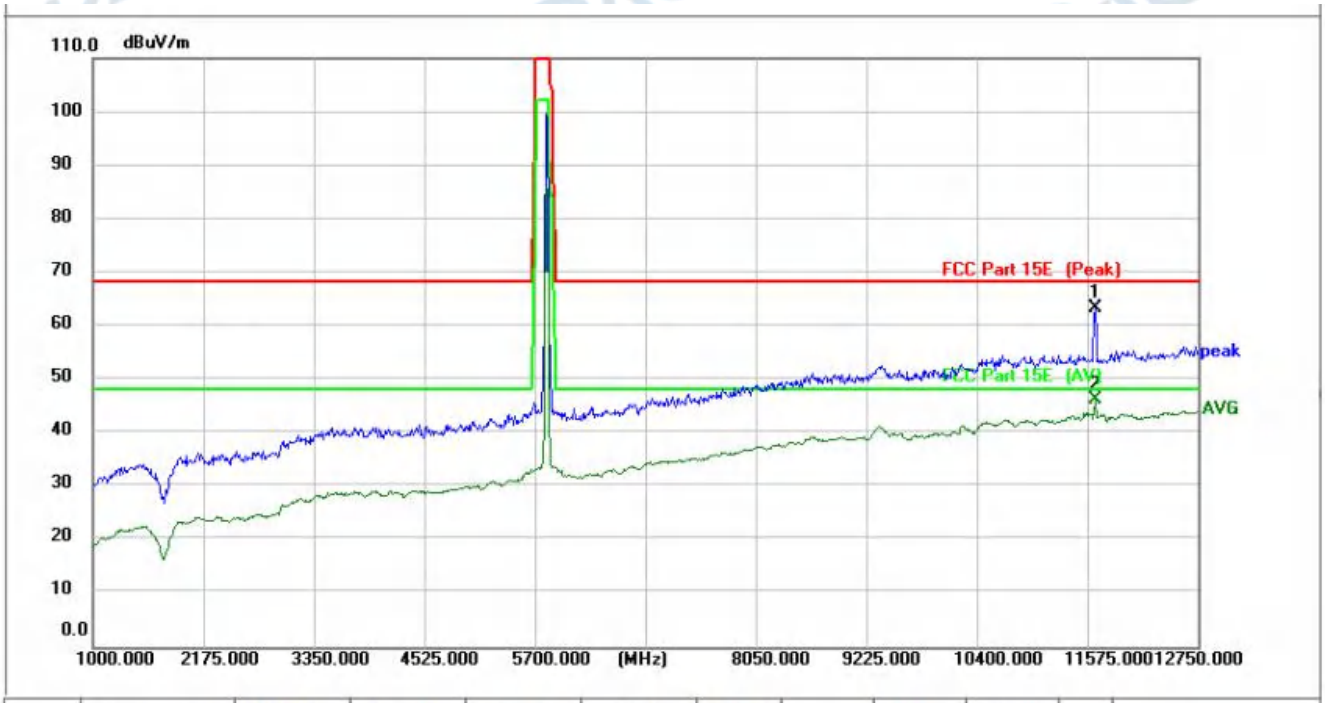

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11575.000 | 45.46 | 17.72 | 63.18 | 68.20 | -5.02 | peak | 150 | | P | |
| 2 * | 11575.000 | 28.36 | 17.72 | 46.08 | 48.20 | -2.12 | AVG | 150 | | P | |

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11657.250 | 45.79 | 17.77 | 63.56 | 68.20 | -4.64 | peak | 150 | | P | |
| 2 * | 11657.250 | 28.81 | 17.77 | 46.58 | 48.20 | -1.62 | AVG | 150 | | P | |

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11657.250 | 45.54 | 17.77 | 63.31 | 68.20 | -4.89 | peak | 150 | | P | |
| 2 * | 11657.250 | 28.50 | 17.77 | 46.27 | 48.20 | -1.93 | AVG | 150 | | P | |

# 5 TEST SETUP PHOTOS

Please refer to Setup Photo file

# 6 PHOTOS OF THE EUT

Please refer to external photos file and internal photos file

# Appendix-5.2G_WIFI

# HT250701003--Y5N--5.2G--FCC
# FCC_5.2G_WIFI (Part15.407) Test Data

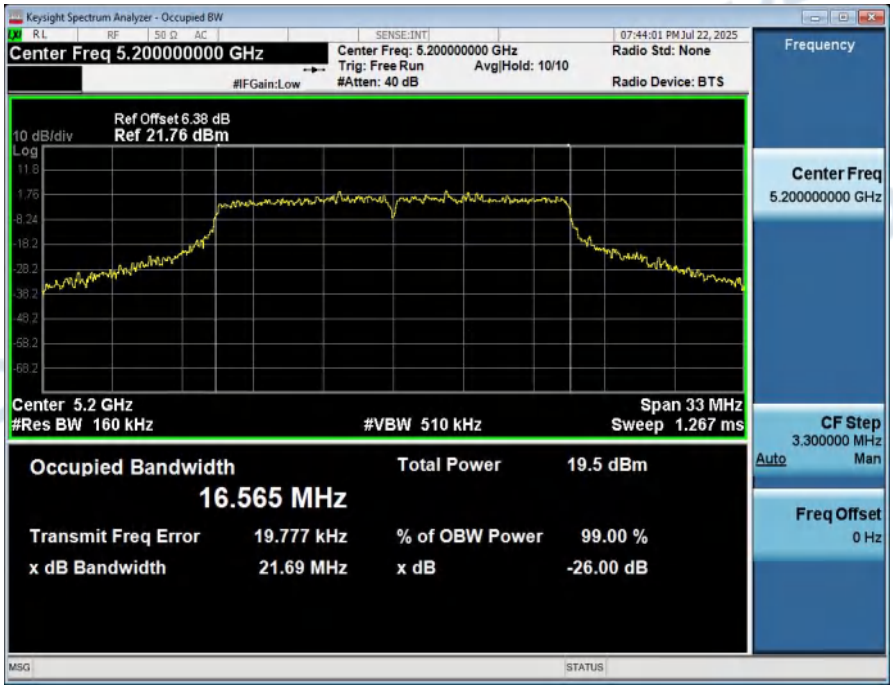
## 1. -26dB and 99% Emission Bandwidth

| Condition | Antenna | Modulation | Frequency(MHz) | -26dB_Emission_Bandwidth(MHz) | Occupied Bandwidth(MHz) |
|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5180.00 | 23.78 | 16.57 |
| NVNT | ANT1 | 802.11a | 5200.00 | 24.10 | 16.57 |
| NVNT | ANT1 | 802.11a | 5240.00 | 23.87 | 17.02 |
| NVNT | ANT1 | 802.11ax(HE20) | 5180.00 | 25.70 | 18.92 |
| NVNT | ANT1 | 802.11ax(HE20) | 5200.00 | 23.97 | 17.67 |
| NVNT | ANT1 | 802.11ax(HE20) | 5240.00 | 27.16 | 18.91 |
| NVNT | ANT1 | 802.11ax(HE40) | 5190.00 | 46.62 | 37.40 |
| NVNT | ANT1 | 802.11ax(HE40) | 5230.00 | 44.51 | 37.91 |

**99%_OCB_NVNT_ANT1_802_11a_5180**

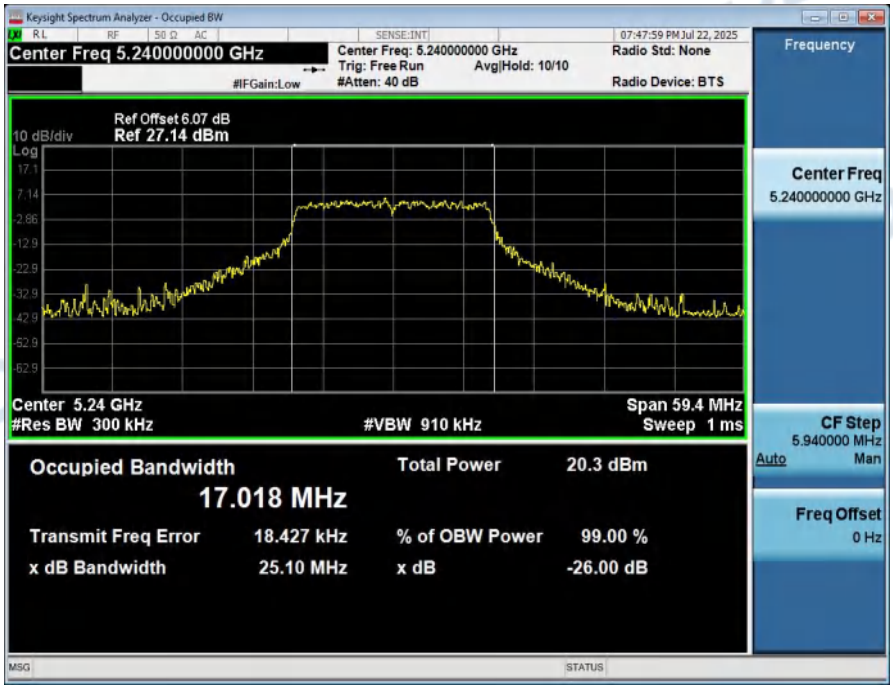
**-26BW_NVNT_ANT1_802_11a_5180**


**99%_OCB_NVNT_ANT1_802_11a_5200**

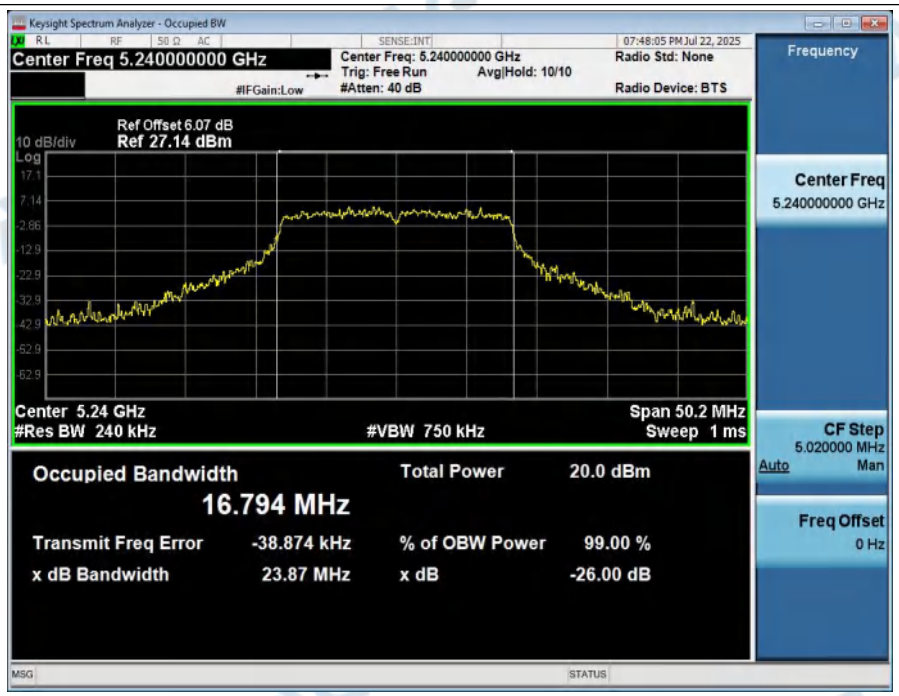


**-26BW_NVNT_ANT1_802_11a_5200**

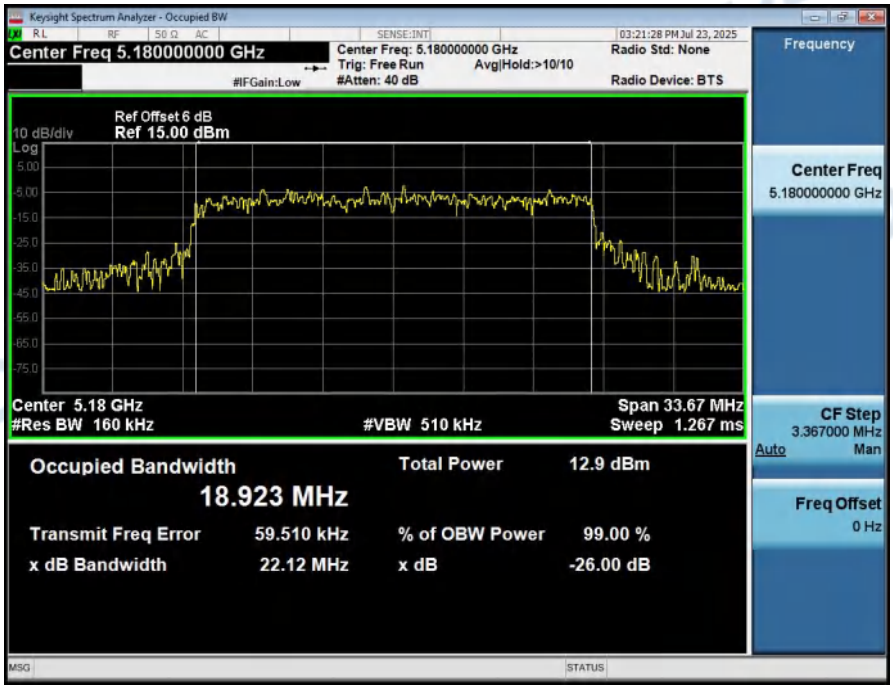

**99%_OCB_NVNT_ANT1_802_11a_5240**



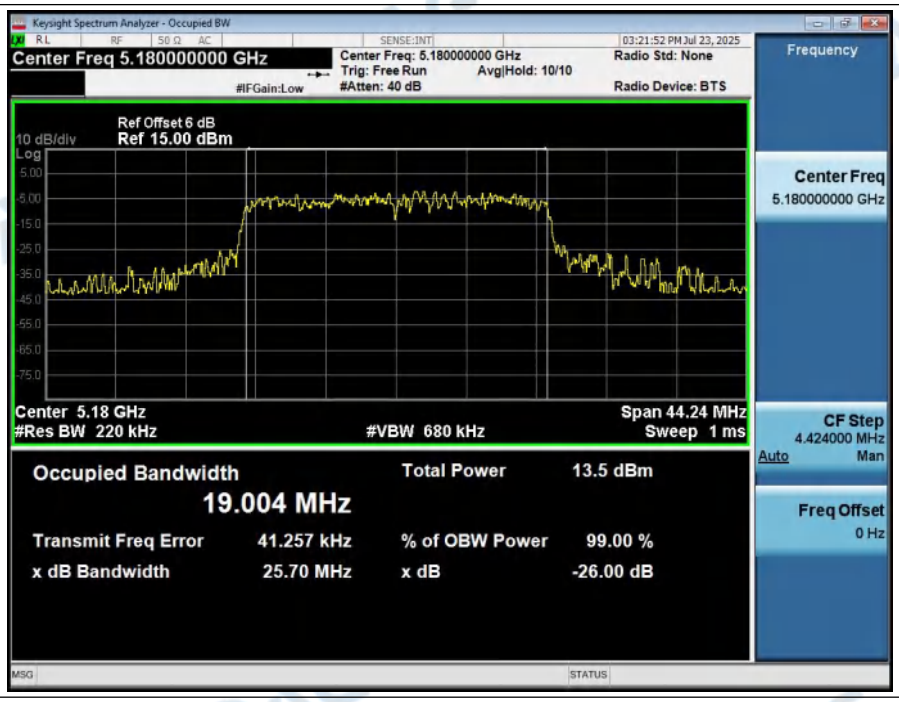
**-26BW_NVNT_ANT1_802_11a_5240**



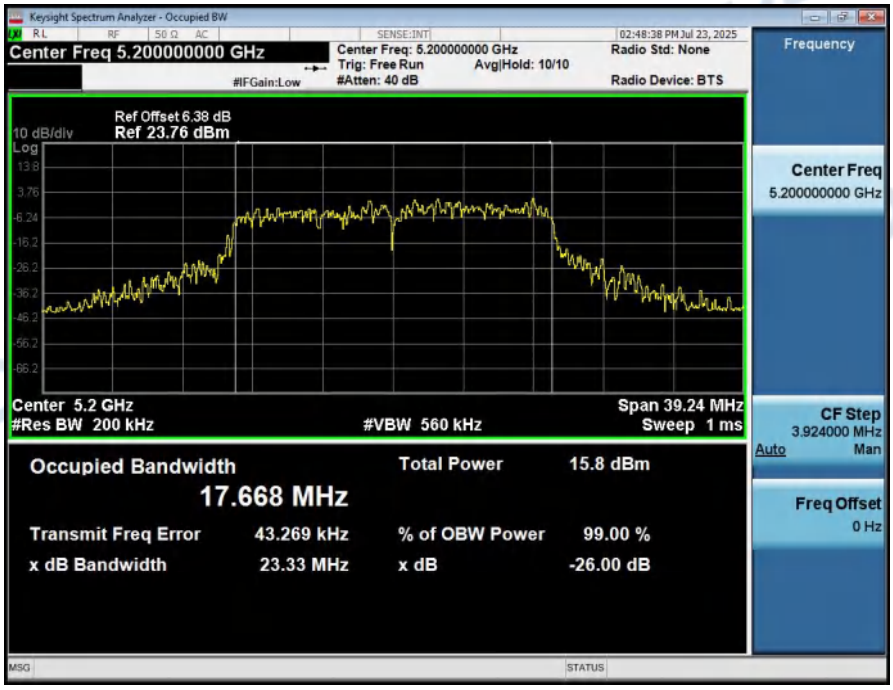

**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5180**



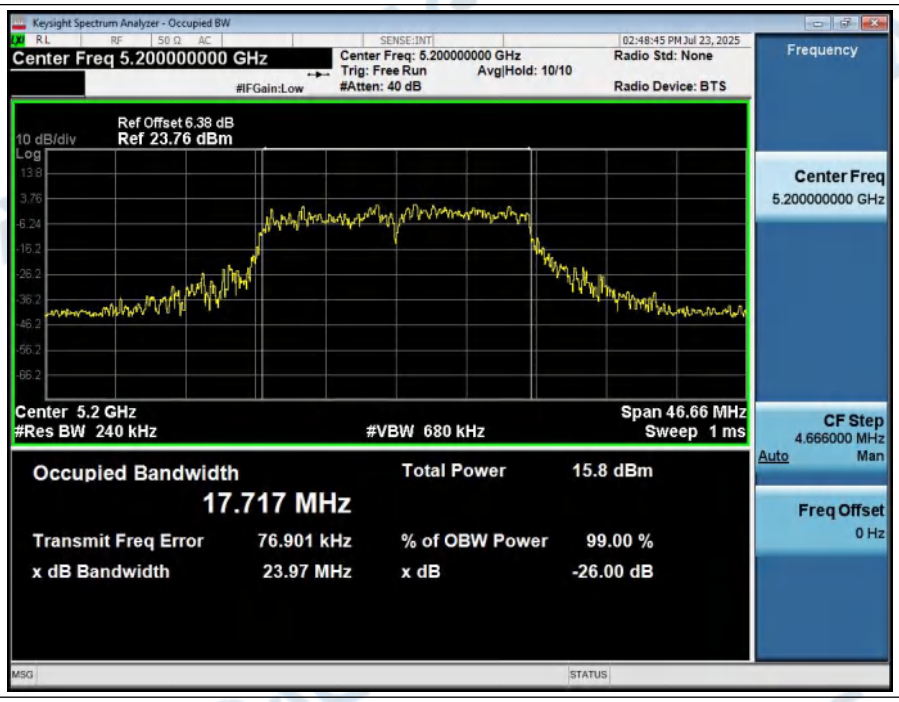
**-26BW_NVNT_ANT1_802_11ax(HE20)_5180**



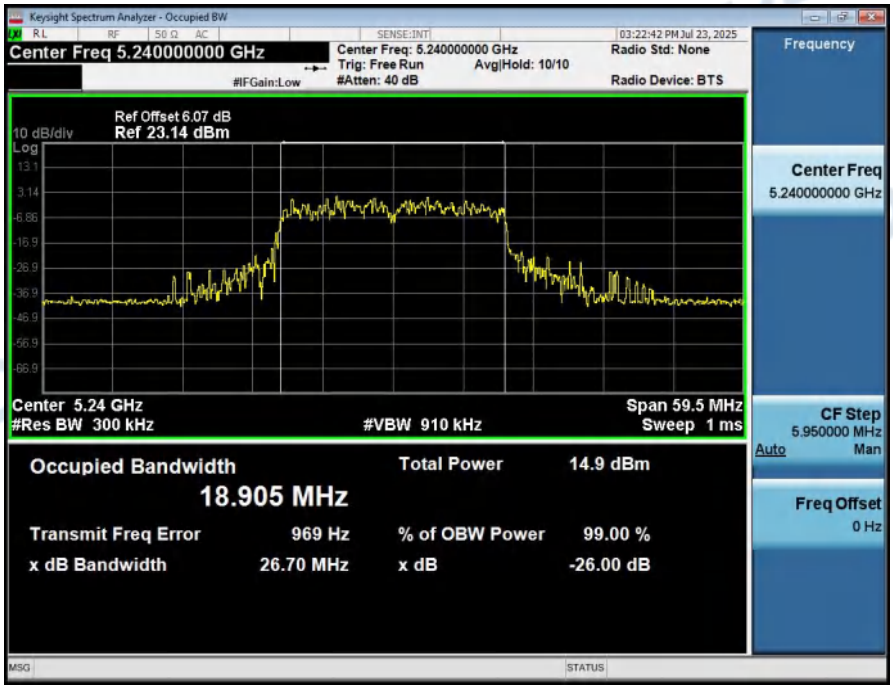

**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5200**



**-26BW_NVNT_ANT1_802_11ax(HE20)_5200**

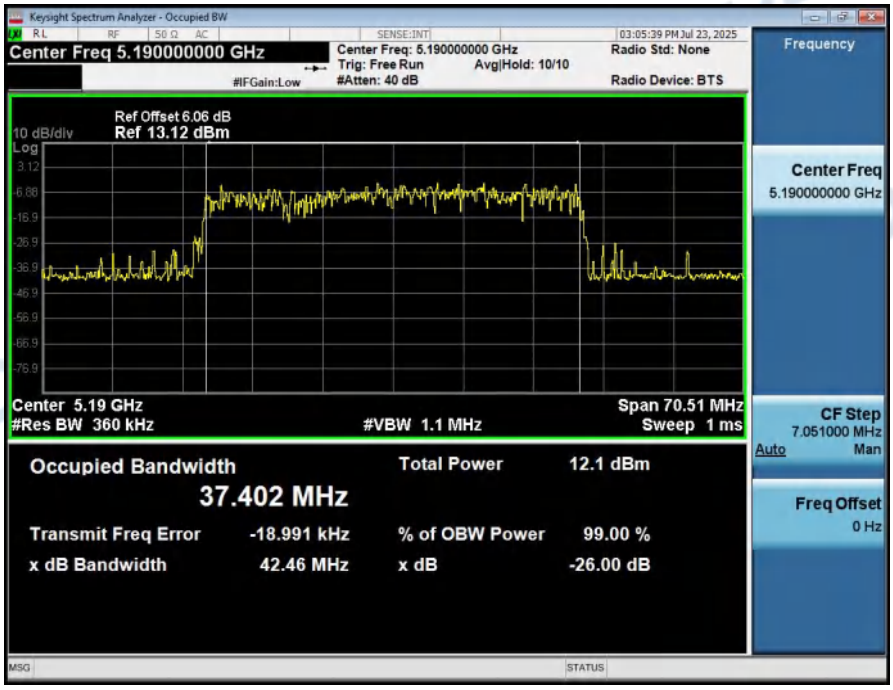



**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5240**

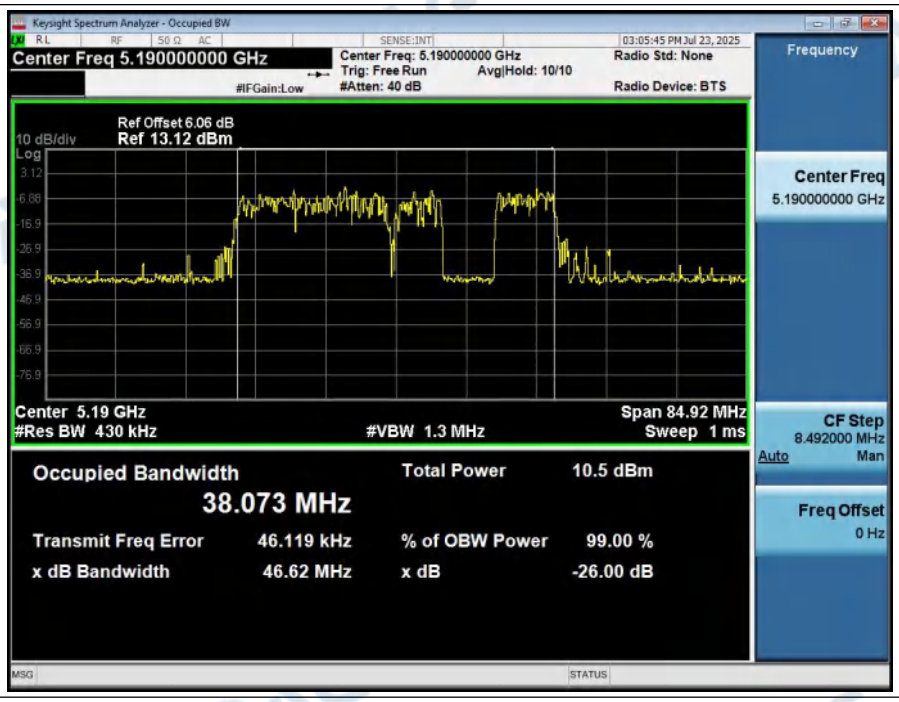


**-26BW_NVNT_ANT1_802_11ax(HE20)_5240**

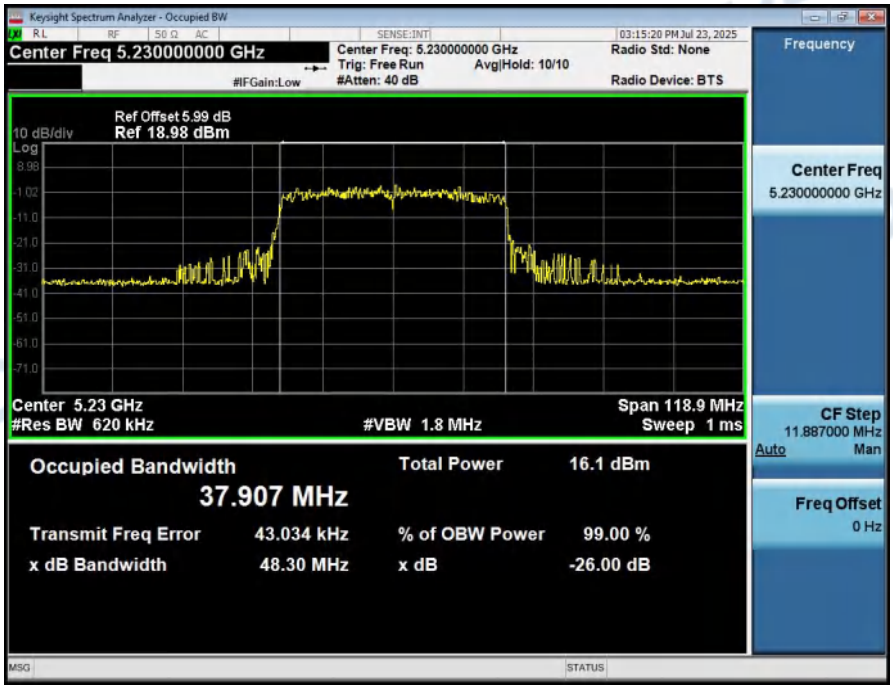

**99%_OCB_NVNT_ANT1_802_11ax(HE40)_5190**



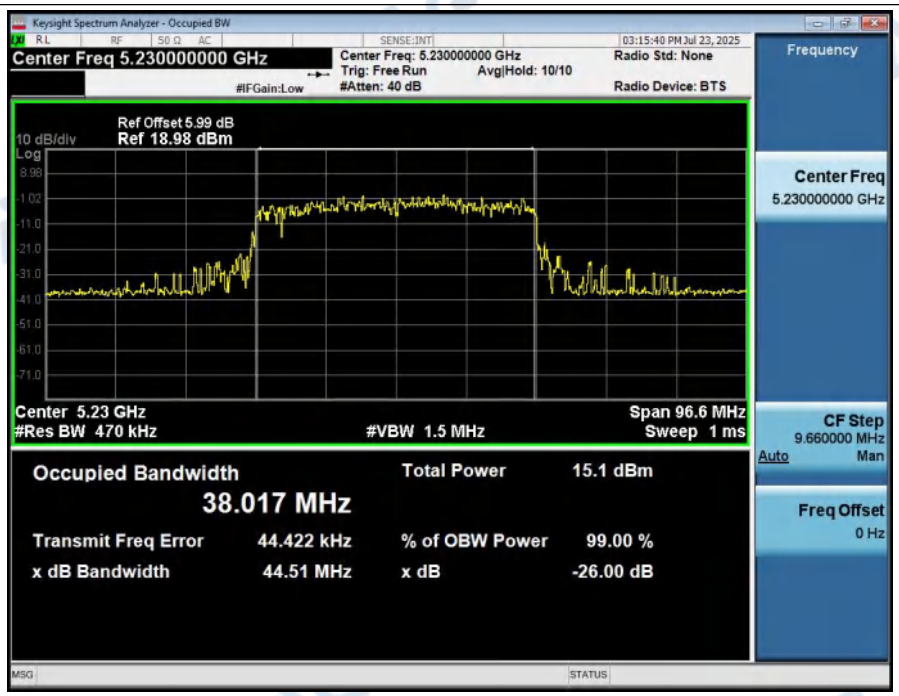
**-26BW_NVNT_ANT1_802_11ax(HE40)_5190**




**99%_OCB_NVNT_ANT1_802_11ax(HE40)_5230**



**-26BW_NVNT_ANT1_802_11ax(HE40)_5230**



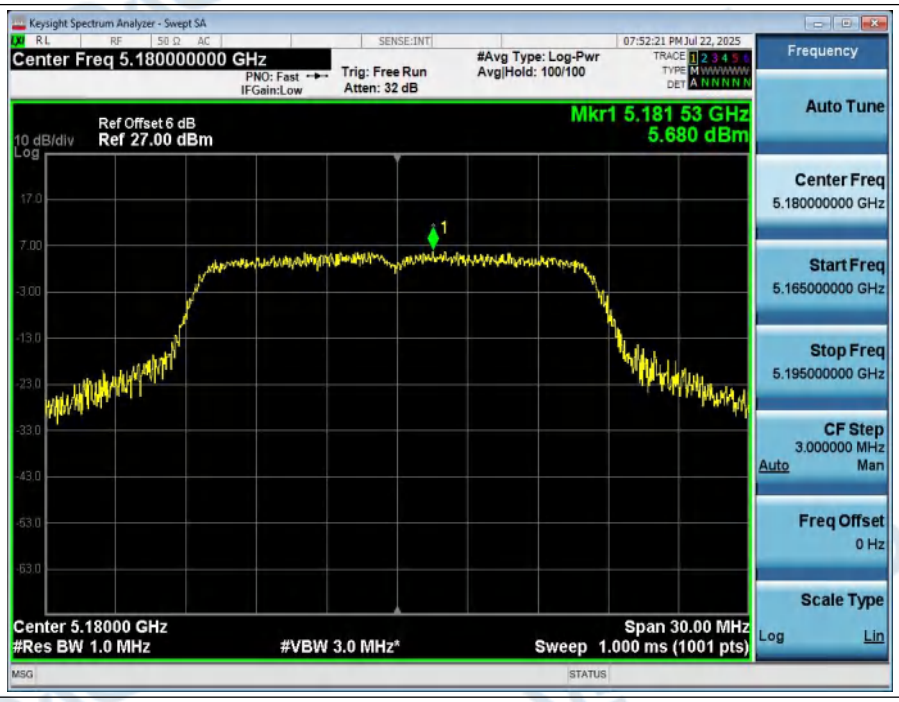
## 2. Maximum Conducted Output Power

| Condition | Antenna | Modulation | Frequency (MHz) | Conducted Power(dBm) | Duty factor(dB) | Total Power(dBm) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5180.00 | 12.33 | 0.00 | 12.33 | 24 | Pass |
| NVNT | ANT1 | 802.11a | 5200.00 | 12.53 | 0.00 | 12.53 | 24 | Pass |
| NVNT | ANT1 | 802.11a | 5240.00 | 14.81 | 0.00 | 14.81 | 24 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5180.00 | 10.49 | 0.00 | 10.49 | 24 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5200.00 | 10.35 | 0.00 | 10.35 | 24 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5240.00 | 10.85 | 0.00 | 10.85 | 24 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5180.00 | 9.61 | 0.00 | 9.61 | 24 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5200.00 | 9.42 | 0.00 | 9.42 | 24 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5240.00 | 9.91 | 0.00 | 9.91 | 24 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5180.00 | 9.38 | 0.00 | 9.38 | 24 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5200.00 | 9.99 | 0.00 | 9.99 | 24 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5240.00 | 9.30 | 0.00 | 9.30 | 24 | Pass |
| NVNT | ANT1 | 802.11n(HT40) | 5190.00 | 8.26 | 0.00 | 8.26 | 24 | Pass |
| NVNT | ANT1 | 802.11n(HT40) | 5230.00 | 8.61 | 0.00 | 8.61 | 24 | Pass |
| NVNT | ANT1 | 802.11ac(VHT40) | 5190.00 | 8.19 | 0.00 | 8.19 | 24 | Pass |
| NVNT | ANT1 | 802.11ac(VHT40) | 5230.00 | 8.98 | 0.00 | 8.98 | 24 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5190.00 | 8.54 | 0.00 | 8.54 | 24 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5230.00 | 8.82 | 0.00 | 8.82 | 24 | Pass |

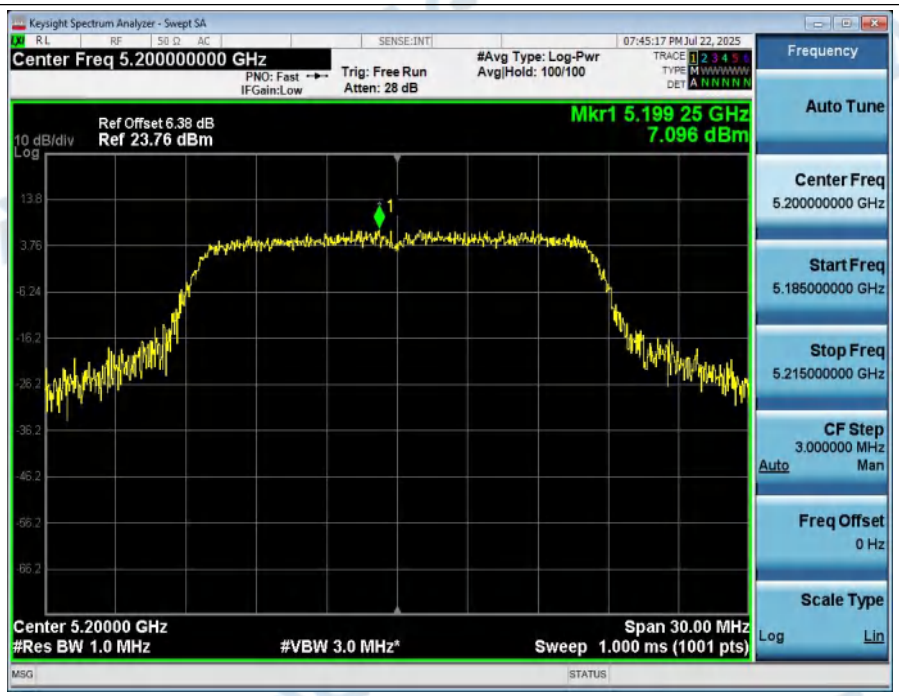
## 3. Power Spectral Density

| Condition | Antenna | Modulation | Frequency (MHz) | PSD(dBm/MHz) | Duty factor(dB) | Total PSD(dBm/MHz) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5180.00 | 5.68 | 7.75 | 13.43 | 11 | Pass |
| NVNT | ANT1 | 802.11a | 5200.00 | 7.10 | 7.72 | 14.82 | 11 | Pass |
| NVNT | ANT1 | 802.11a | 5240.00 | 8.24 | 7.75 | 15.99 | 11 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5180.00 | 3.71 | 17.08 | 20.79 | 11 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5200.00 | 5.12 | 17.08 | 22.20 | 11 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5240.00 | 6.16 | 17.54 | 23.70 | 11 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5190.00 | -0.96 | 20.05 | 19.09 | 11 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5230.00 | 0.74 | 20.05 | 20.79 | 11 | Pass |

**Power_Spectral_Density_NVNT_ANT1_802_11a_5180**



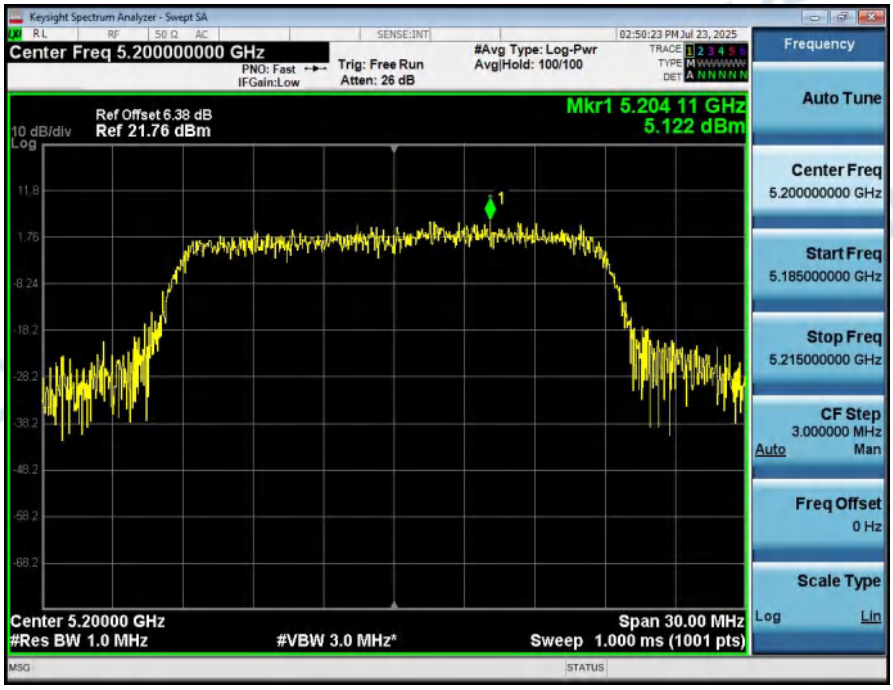
**Power_Spectral_Density_NVNT_ANT1_802_11a_5200**




**Power_Spectral_Density_NVNT_ANT1_802_11a_5240**

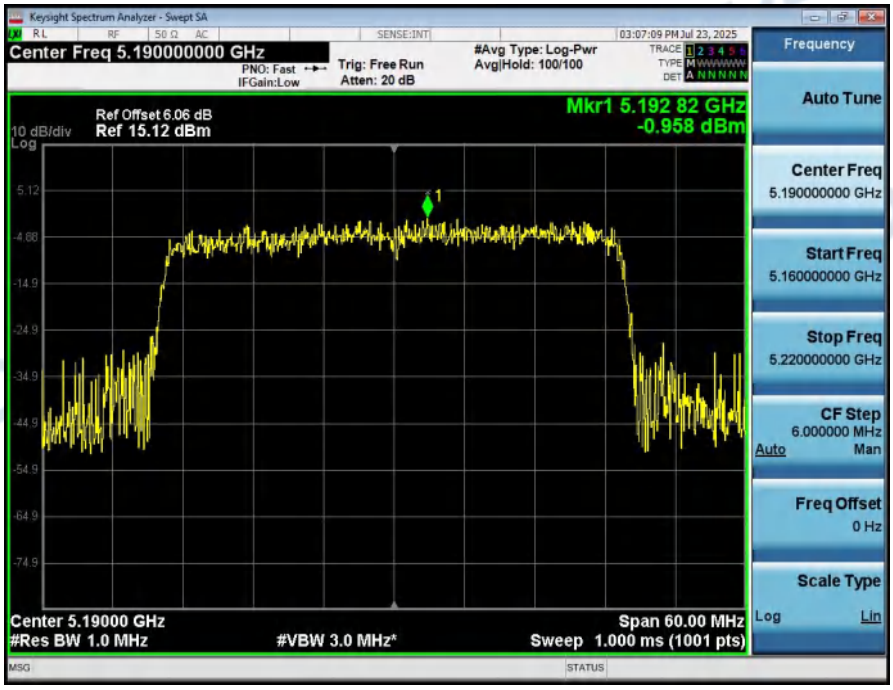
**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5180**

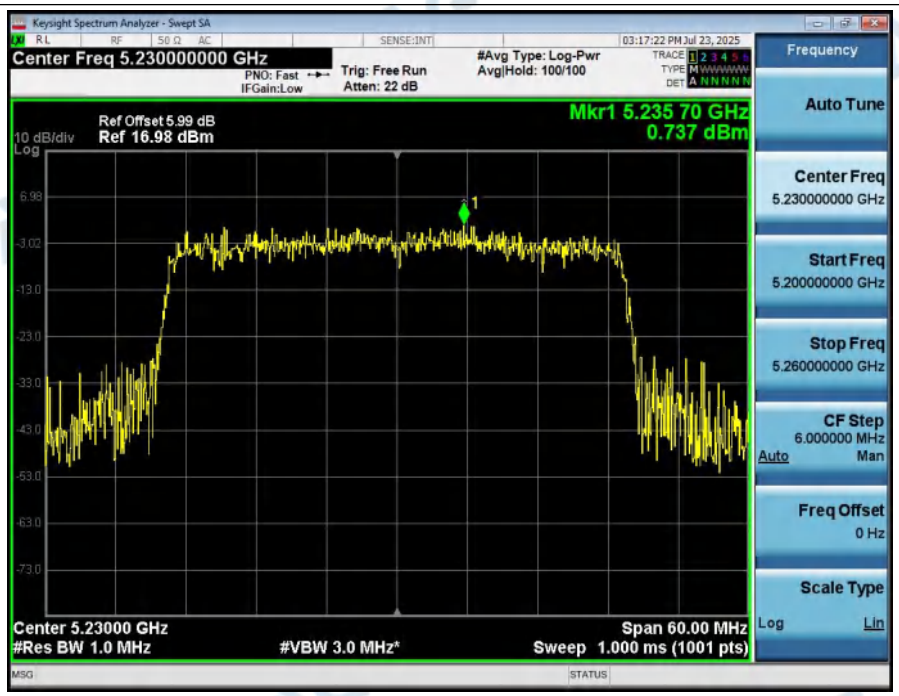

**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5200**



**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5240**


**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE40)_5190**

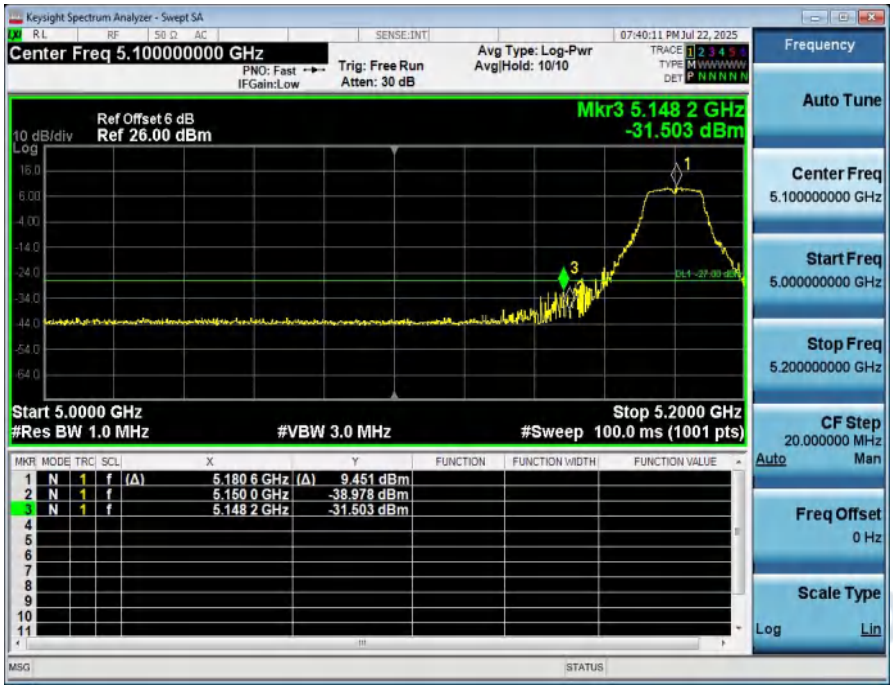


| Power_Spectral_Density_NVNT_ANT1_802_11ax(HE40)_5230 |
| --- |
|  |

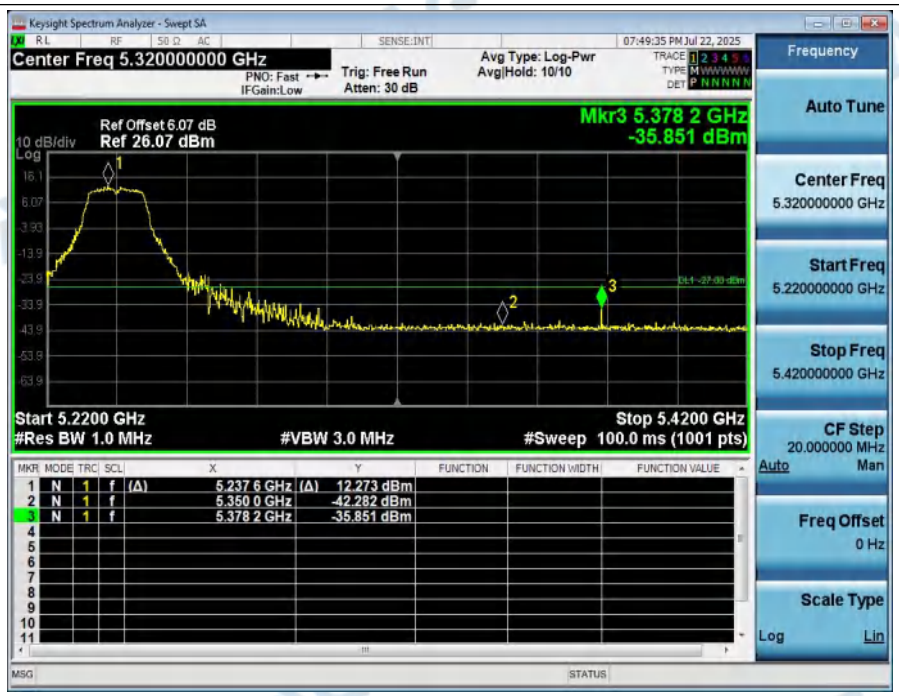
## 4. Bandedge

| Condition | Antenna | Modulation | TX_Frequency (MHz) | Max. Mark Frequency(MHz) | Spurious level(dBm) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5180.00 | 5148.20 | -31.50 | -27 | Pass |
| NVNT | ANT1 | 802.11a | 5240.00 | 5378.20 | -35.85 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5180.00 | 5147.60 | -35.31 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5240.00 | 5374.20 | -37.33 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5190.00 | 5149.94 | -31.14 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5230.00 | 5356.79 | -36.44 | -27 | Pass |

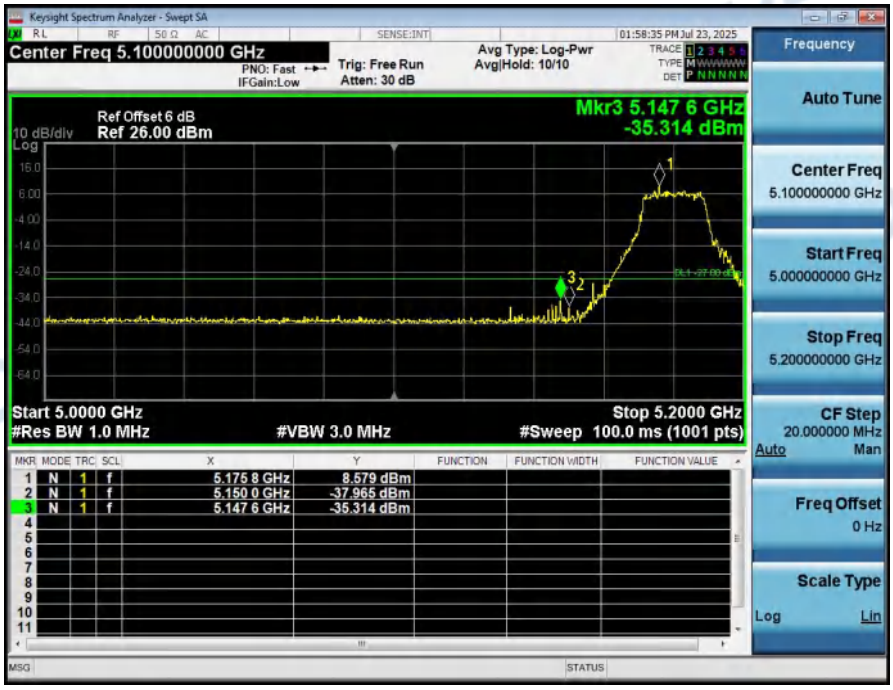
**Bandedge_NVNT_ANT1_802_11a_5180**



**Bandedge_NVNT_ANT1_802_11a_5240**

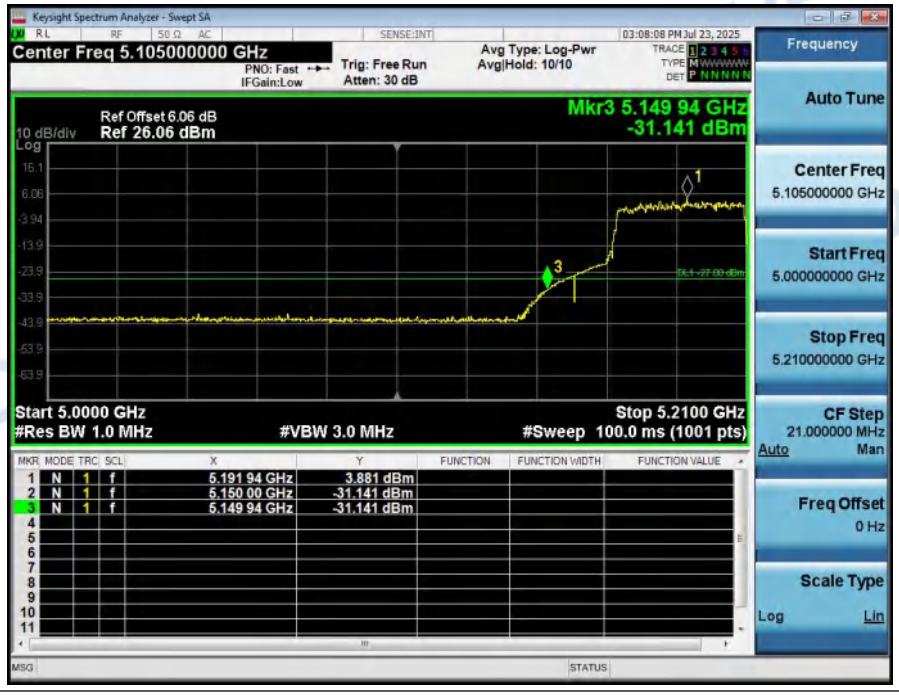



**Bandedge_NVNT_ANT1_802_11ax(HE20)_5180**



**Bandedge_NVNT_ANT1_802_11ax(HE20)_5240**


**Bandedge_NVNT_ANT1_802_11ax(HE40)_5190**

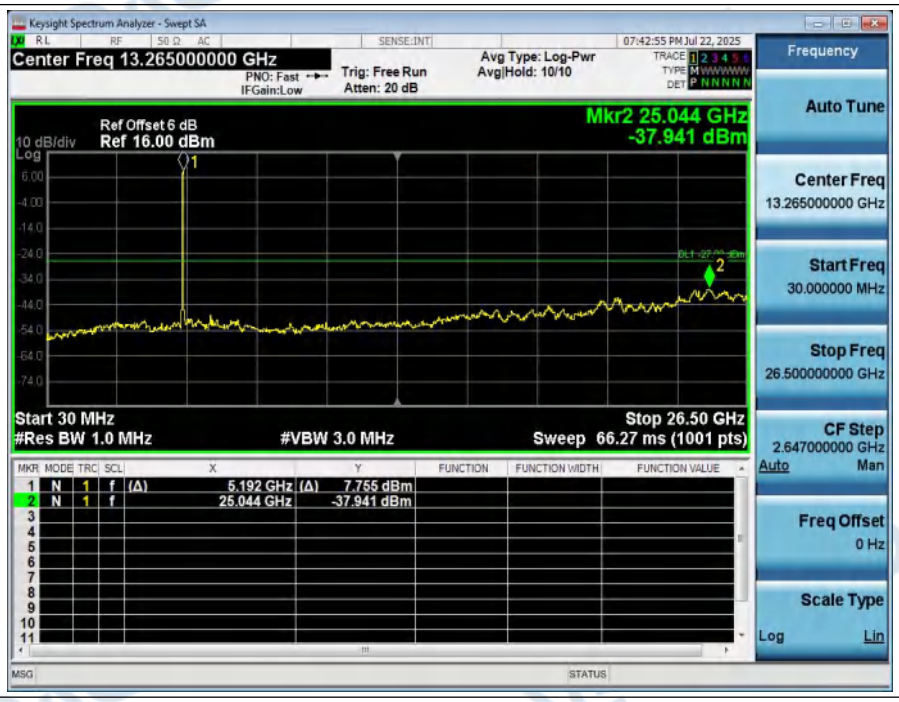


**Bandedge_NVNT_ANT1_802_11ax(HE40)_5230**

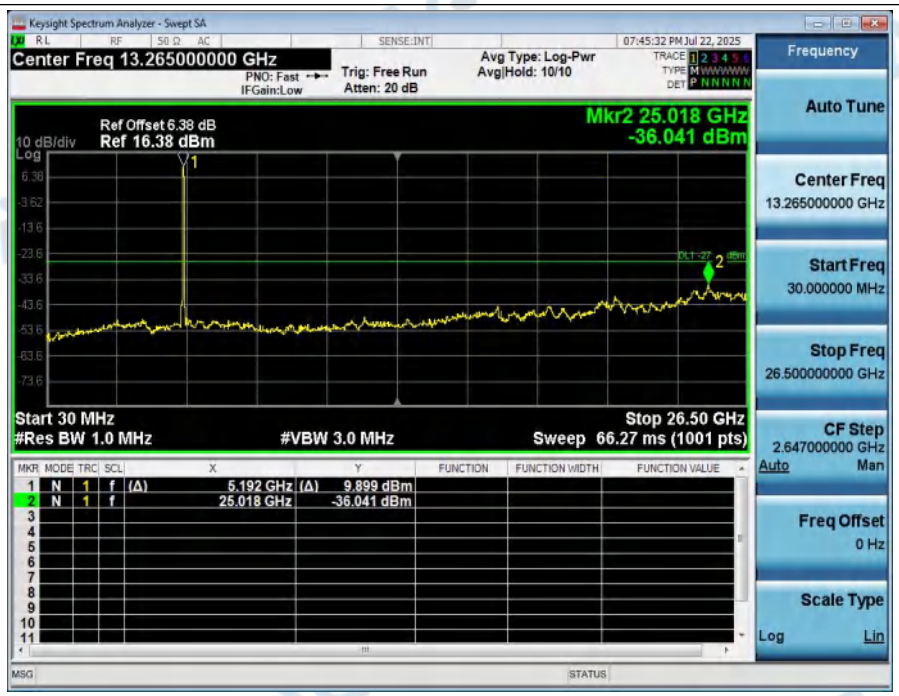
## 5. Spurious Emission

| Condition | Antenna | Modulation | TX_Frequency (MHz) | Max. Mark Frequency(MHz) | Spurious level(dBm) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5180.00 | 25044.15 | -37.94 | -27 | Pass |
| NVNT | ANT1 | 802.11a | 5200.00 | 25017.68 | -36.04 | -27 | Pass |
| NVNT | ANT1 | 802.11a | 5240.00 | 25044.15 | -37.08 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5180.00 | 25176.50 | -36.79 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5200.00 | 25044.15 | -36.58 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5240.00 | 24964.74 | -36.97 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5190.00 | 25123.56 | -27.04 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5230.00 | 25070.62 | -27.11 | -27 | Pass |

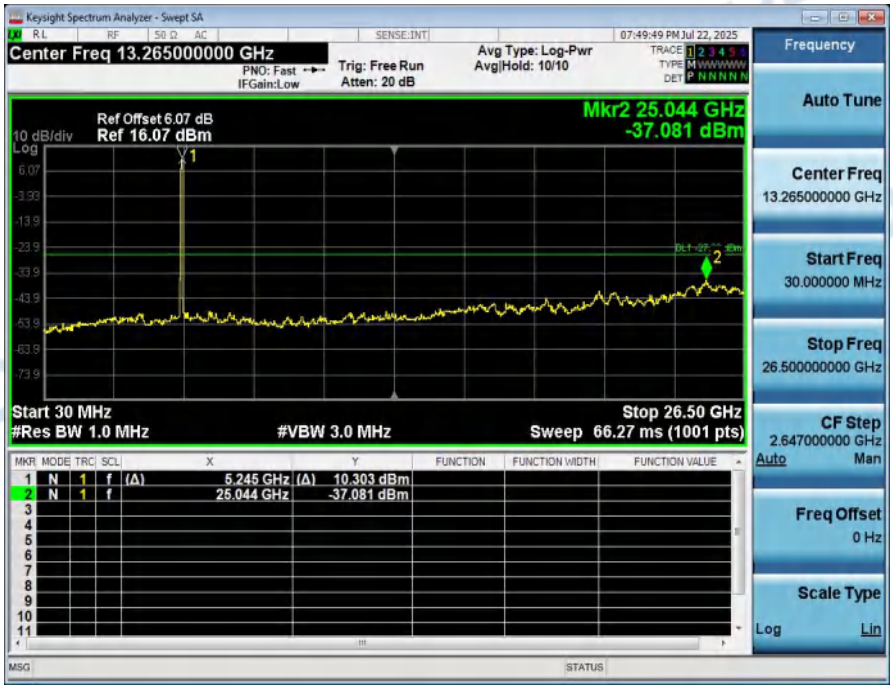
**Spurious_Emission_NVNT_ANT1_802_11a_5180_20M**



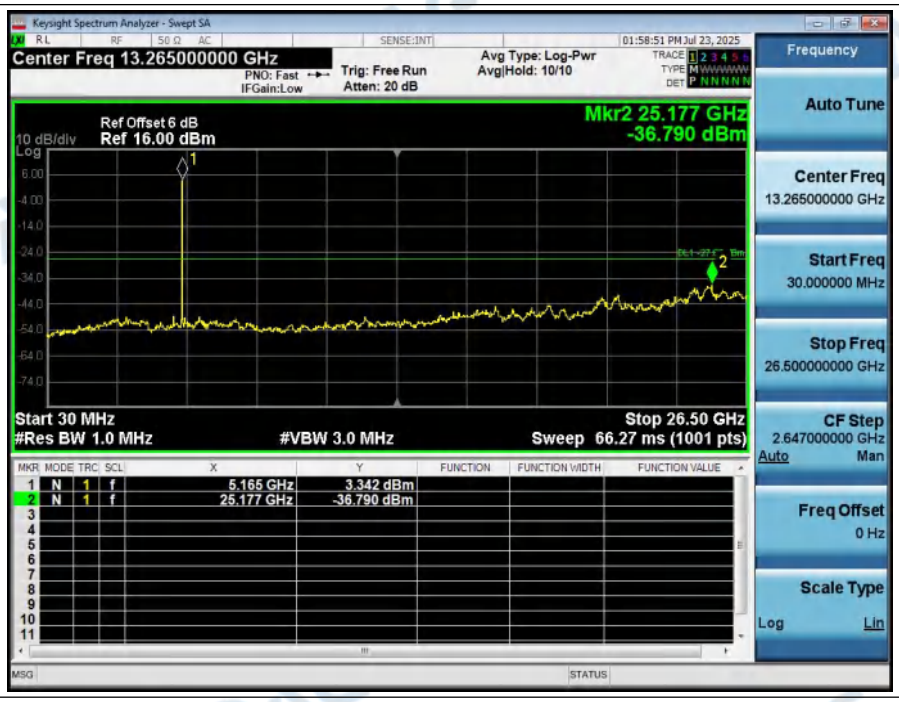
**Spurious_Emission_NVNT_ANT1_802_11a_5200_20M**



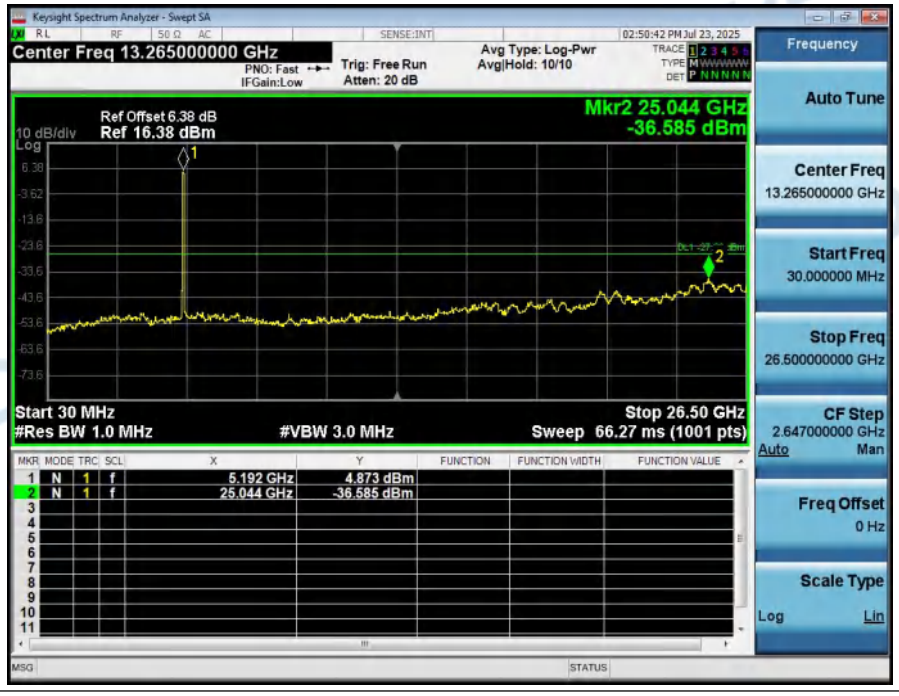

**Spurious_Emission_NVNT_ANT1_802_11a_5240_20M**



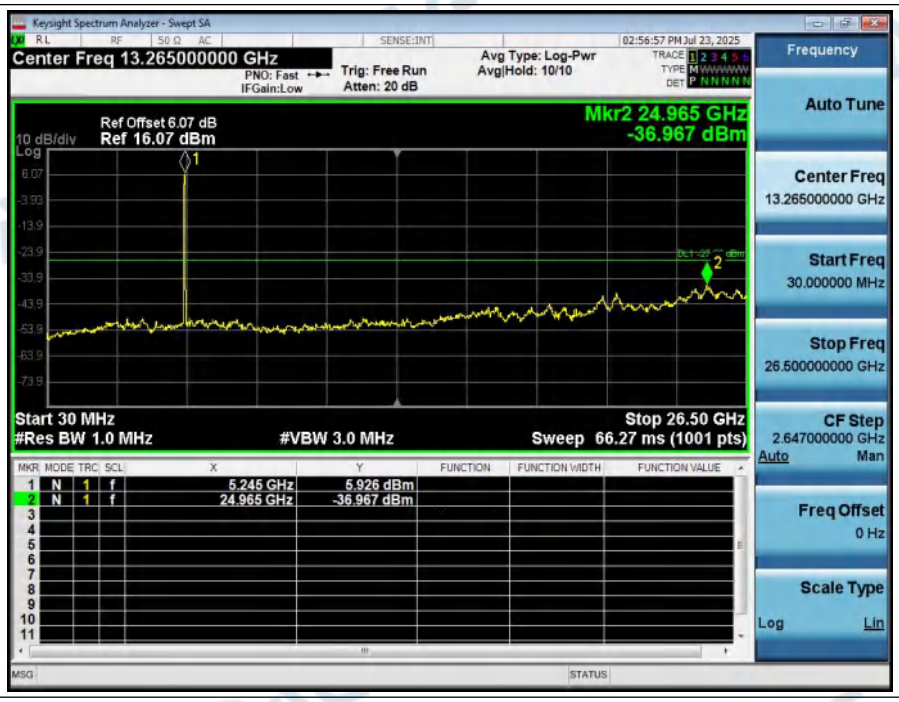
**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5180_20M**



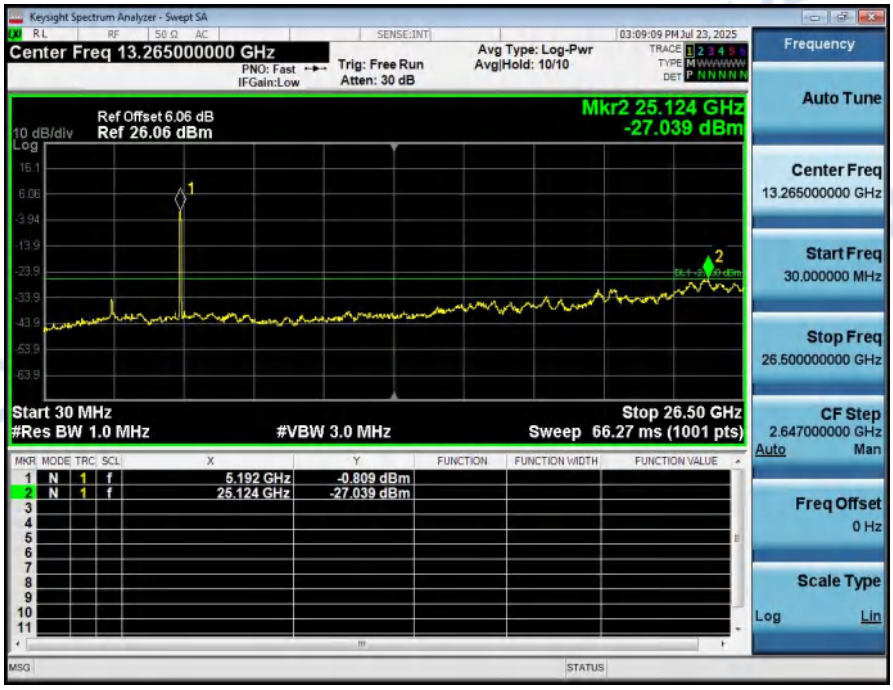

**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5200_20M**



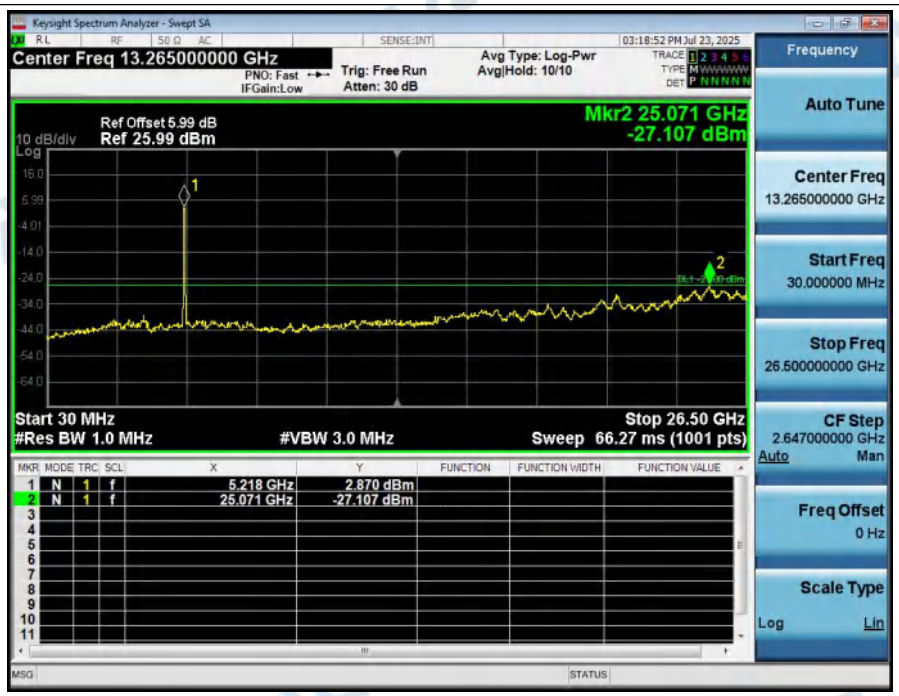
**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5240_20M**




**Spurious_Emission_NVNT_ANT1_802_11ax(HE40)_5190_40M**



**Spurious_Emission_NVNT_ANT1_802_11ax(HE40)_5230_40M**



## 6. Frequency Stability

| Condition | Antenna | Modulation | Frequency (MHz) | Fc(MHz) | Fl(MHz) | Fh(MHz) | Limit(MHz) | Result |
|---|---|---|---|---|---|---|---|---|
| 55degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5179.934 | 5171.040 | 5188.828 | 5150~5250 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5179.980 | 5171.568 | 5188.392 | 5150~5250 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5180.034 | 5171.728 | 5188.340 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5179.988 | 5171.828 | 5188.148 | 5150~5250 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5179.996 | 5171.892 | 5188.100 | 5150~5250 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5180.018 | 5171.960 | 5188.076 | 5150~5250 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5180.000 | 5172.012 | 5187.988 | 5150~5250 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5179.992 | 5172.060 | 5187.924 | 5150~5250 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5180.00 | 5179.968 | 5172.116 | 5187.820 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5180.00 | 5180.020 | 5172.168 | 5187.872 | 5150~5250 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5180.00 | 5179.992 | 5172.200 | 5187.784 | 5150~5250 | Pass |
| 55degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.114 | 5191.168 | 5209.060 | 5150~5250 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.032 | 5191.612 | 5208.452 | 5150~5250 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.032 | 5191.780 | 5208.284 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.040 | 5191.868 | 5208.212 | 5150~5250 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.018 | 5191.940 | 5208.096 | 5150~5250 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.020 | 5192.008 | 5208.032 | 5150~5250 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.038 | 5192.048 | 5208.028 | 5150~5250 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.038 | 5192.104 | 5207.972 | 5150~5250 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5200.00 | 5200.036 | 5192.156 | 5207.916 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5200.00 | 5200.058 | 5192.228 | 5207.888 | 5150~5250 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5200.00 | 5200.064 | 5192.276 | 5207.852 | 5150~5250 | Pass |
| 55degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.956 | 5231.036 | 5248.876 | 5150~5250 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.966 | 5231.532 | 5248.400 | 5150~5250 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.972 | 5231.724 | 5248.220 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.982 | 5231.824 | 5248.140 | 5150~5250 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.992 | 5231.892 | 5248.092 | 5150~5250 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.974 | 5231.948 | 5248.000 | 5150~5250 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.958 | 5232.000 | 5247.916 | 5150~5250 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.996 | 5232.056 | 5247.936 | 5150~5250 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5240.00 | 5239.980 | 5232.112 | 5247.848 | 5150~5250 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5240.00 | 5239.990 | 5232.164 | 5247.816 | 5150~5250 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5240.00 | 5239.960 | 5232.208 | 5247.712 | 5150~5250 | Pass |

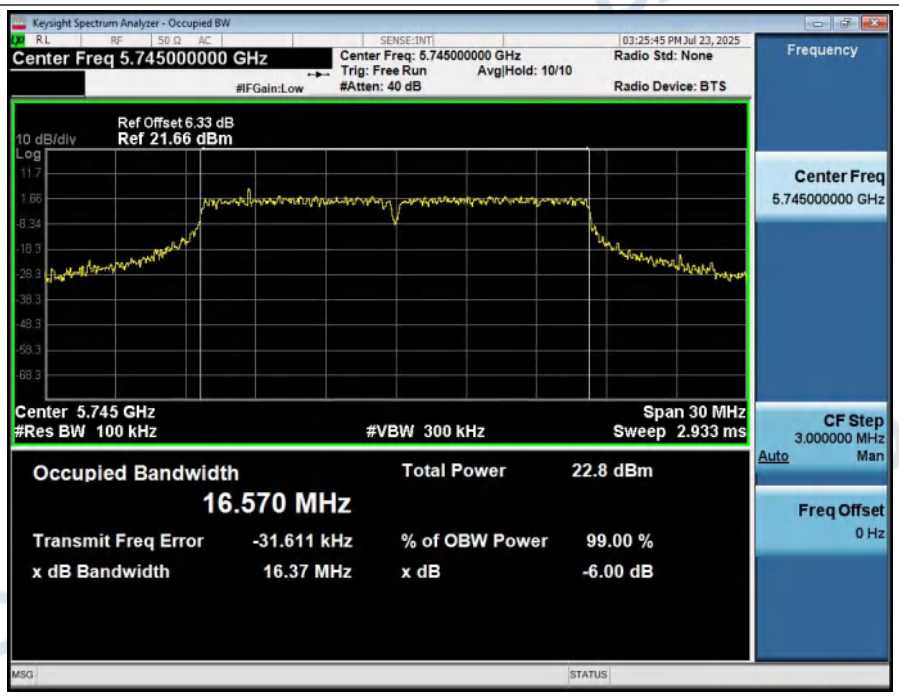
# Appendix-5.8G_WIFI

# HT250701003--Y5N--5.8G--FCC
# FCC_5.8G_WIFI (Part15.407) Test Data

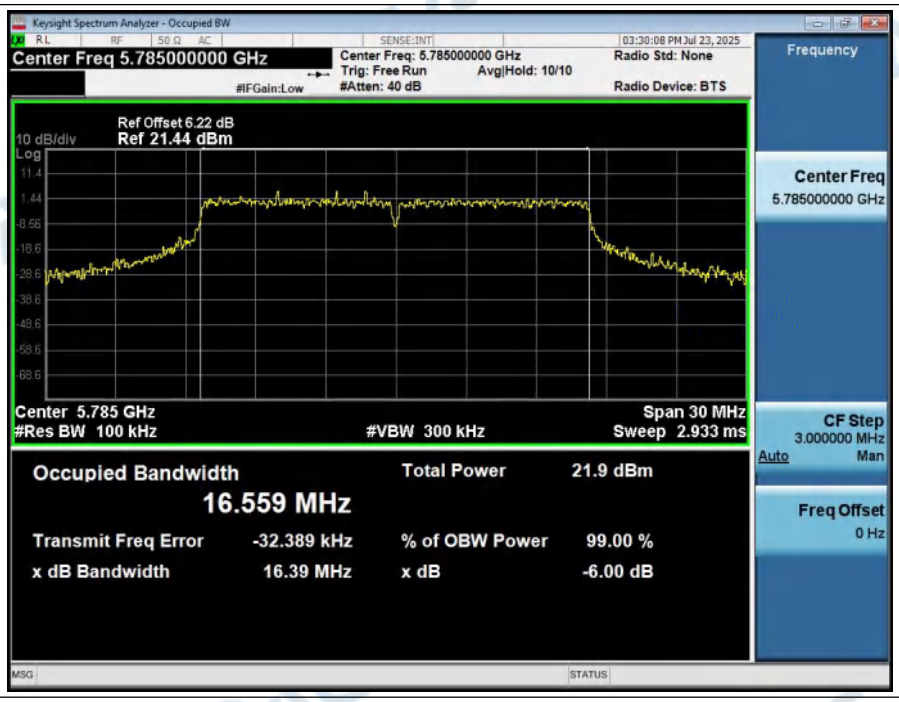
## 1. -6dB Emission Bandwidth

| Condition | Antenna | Mode | Frequency(MHz) | -6dB_Emission_Bandwidth(MHz) | Limit(MHz) | Result |
|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5745.00 | 16.366 | 0.500 | Pass |
| NVNT | ANT1 | 802.11a | 5785.00 | 16.390 | 0.500 | Pass |
| NVNT | ANT1 | 802.11a | 5825.00 | 16.394 | 0.500 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5745.00 | 19.035 | 0.500 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5785.00 | 18.530 | 0.500 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5825.00 | 18.875 | 0.500 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5755.00 | 37.473 | 0.500 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5795.00 | 37.792 | 0.500 | Pass |

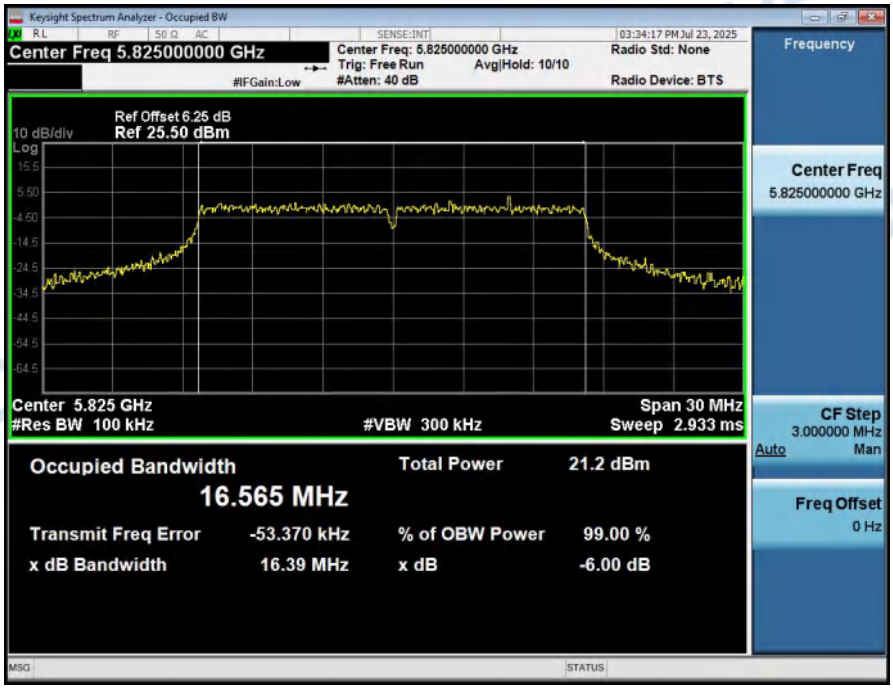
**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11a_5745_20M**



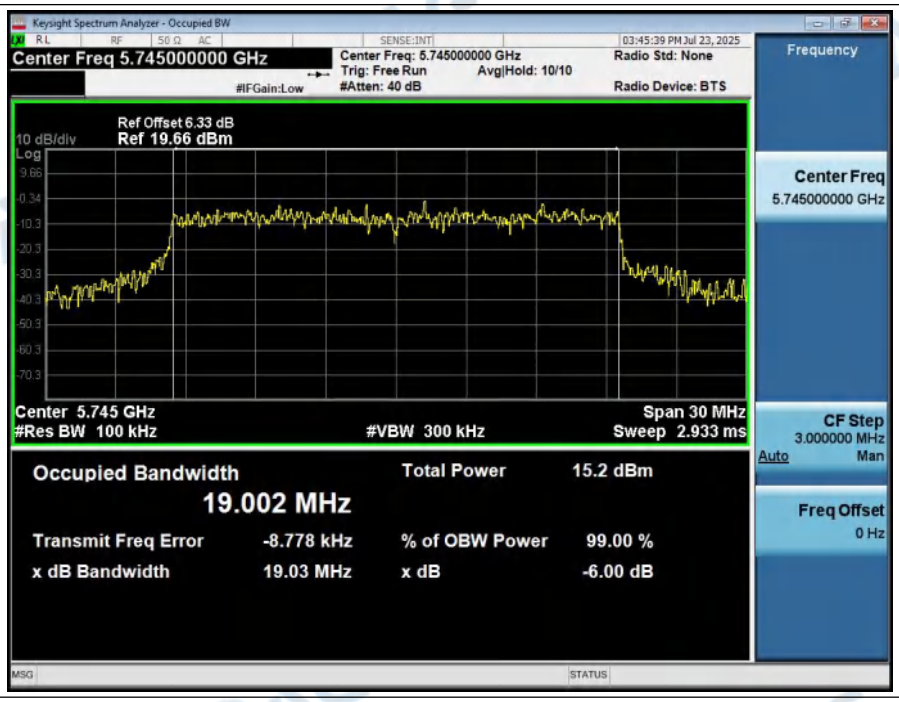
**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11a_5785_20M**



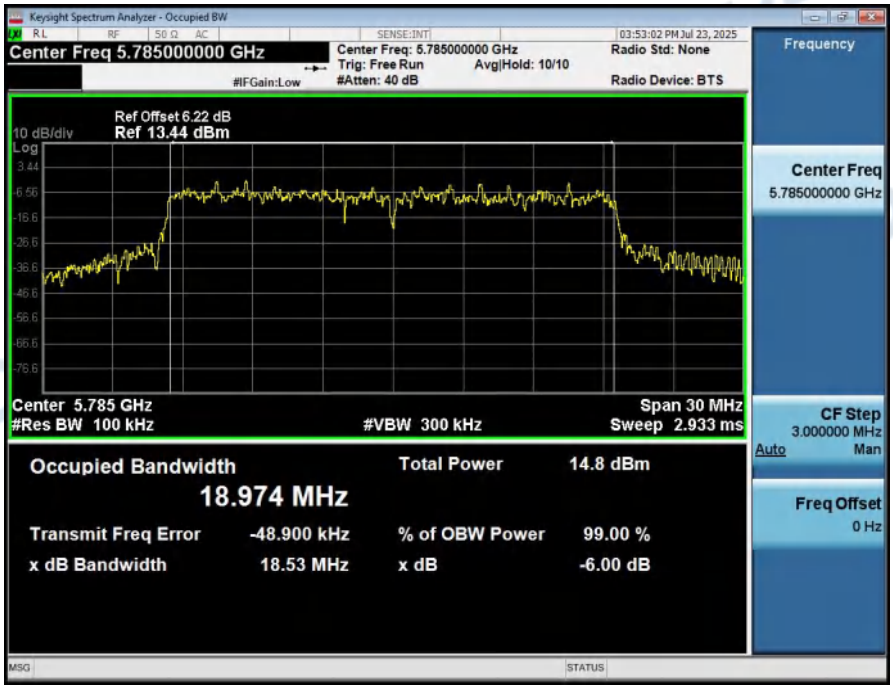

**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11a_5825_20M**



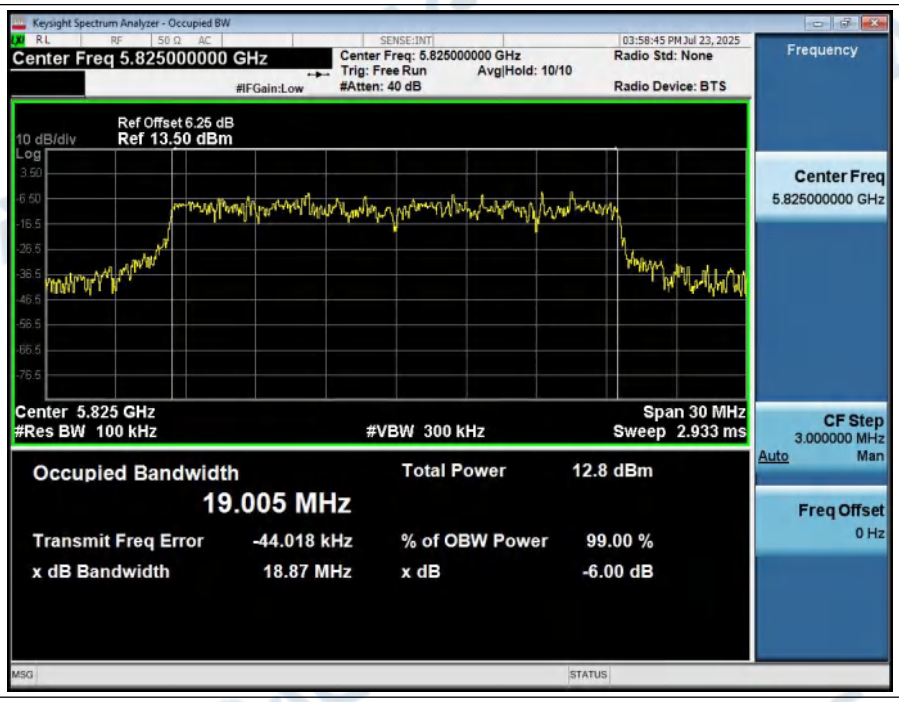
**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11ax(HE20)_5745_20M**



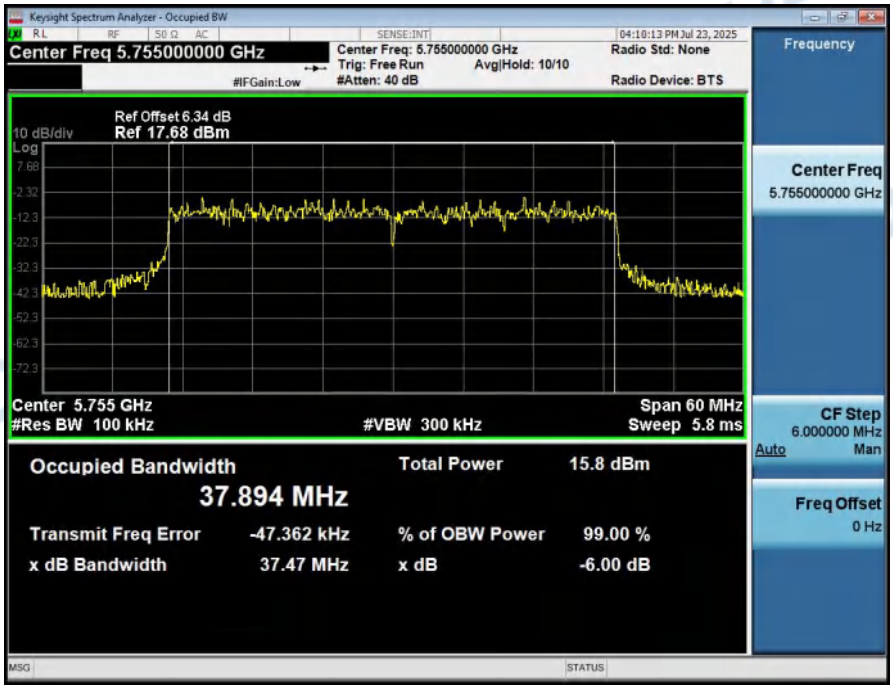

**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11ax(HE20)_5785_20M**



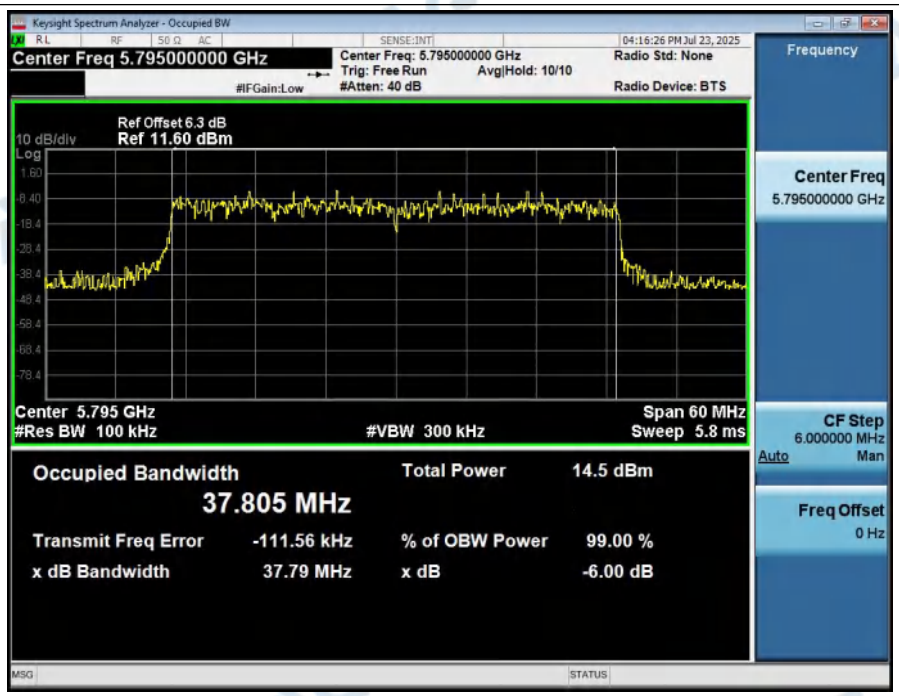
**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11ax(HE20)_5825_20M**




**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11ax(HE40)_5755_40M**



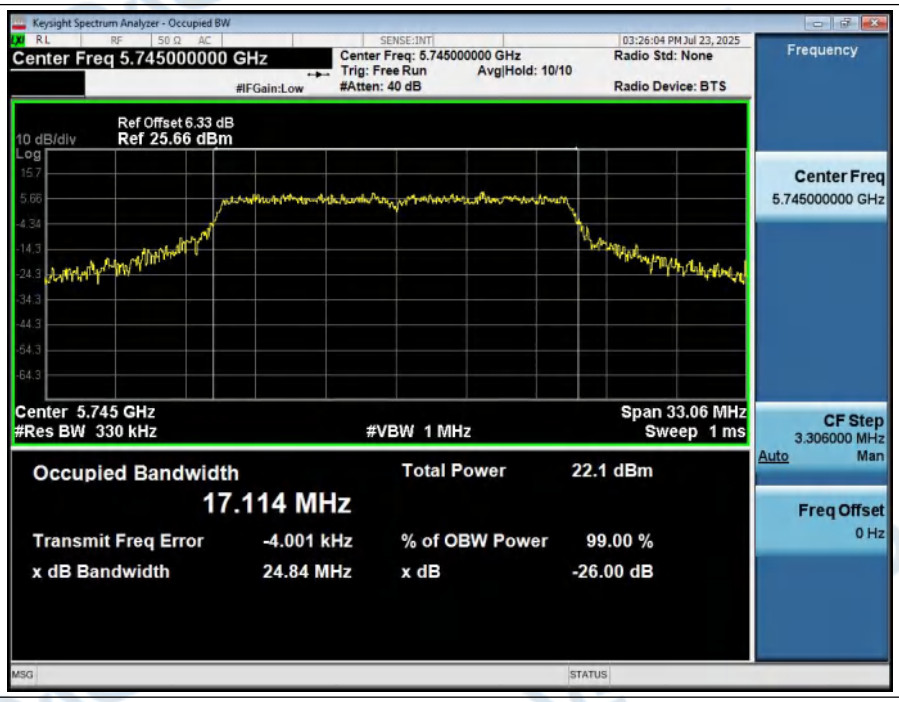
**-6dB_Emission_Bandwidth_NVNT_ANT1_802_11ax(HE40)_5795_40M**



## 2. -26dB and 99% Emission Bandwidth

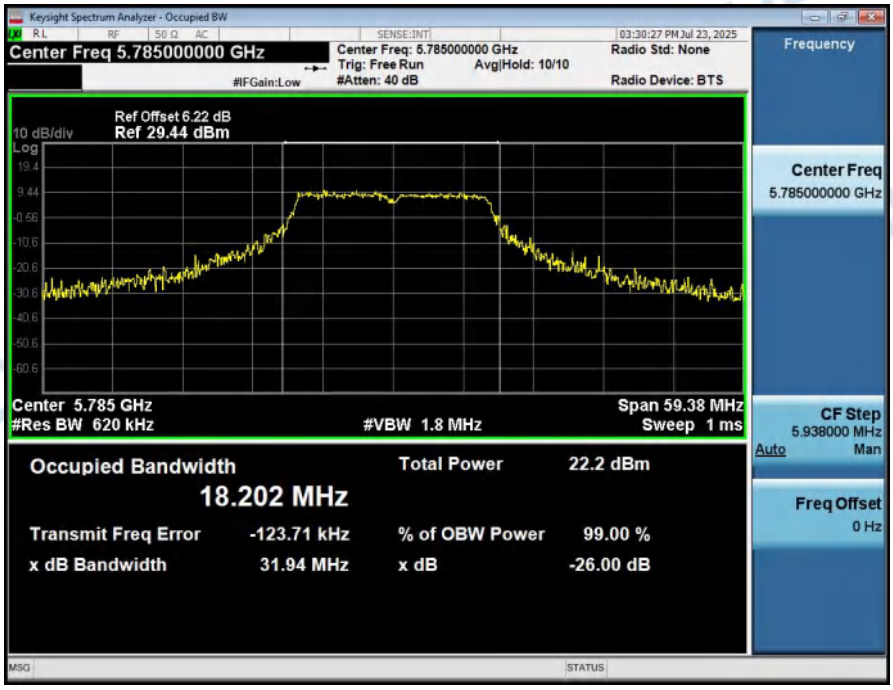
| Condition | Antenna | Modulation | Frequency(MHz) | -26dB_Emission_Bandwidth(MHz) | Occupied Bandwidth(MHz) |
|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5745.00 | 24.75 | 17.11 |
| NVNT | ANT1 | 802.11a | 5785.00 | 26.29 | 18.20 |
| NVNT | ANT1 | 802.11a | 5825.00 | 25.79 | 17.18 |
| NVNT | ANT1 | 802.11ax(HE20) | 5745.00 | 29.26 | 19.69 |
| NVNT | ANT1 | 802.11ax(HE20) | 5785.00 | 28.74 | 19.19 |
| NVNT | ANT1 | 802.11ax(HE20) | 5825.00 | 26.54 | 19.03 |
| NVNT | ANT1 | 802.11ax(HE40) | 5755.00 | 53.78 | 38.72 |
| NVNT | ANT1 | 802.11ax(HE40) | 5795.00 | 51.93 | 38.22 |

**99%_OCB_NVNT_ANT1_802_11a_5745**

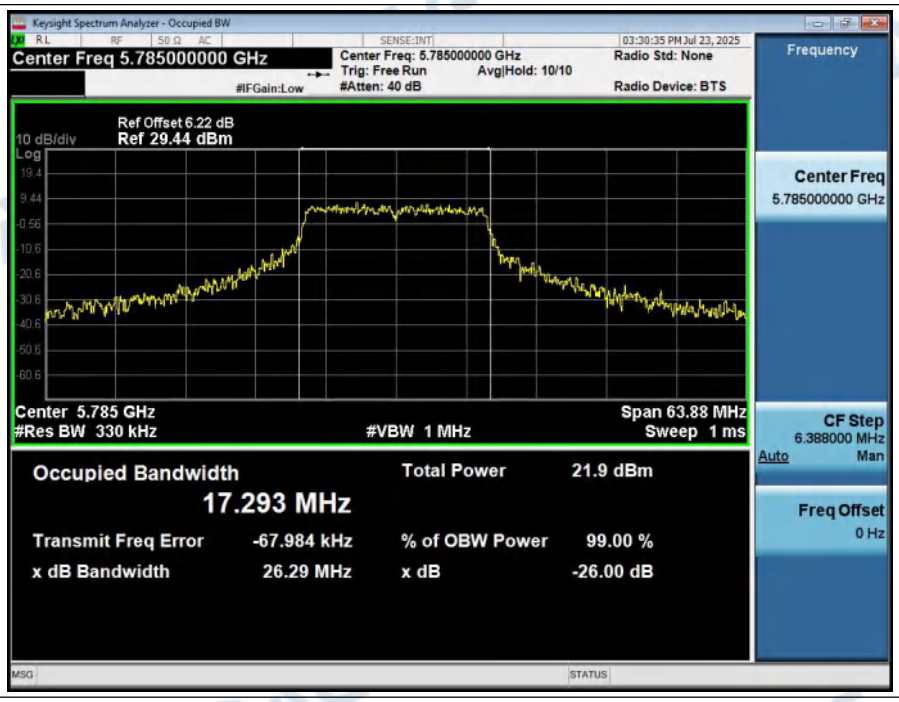


**-26BW_NVNT_ANT1_802_11a_5745**

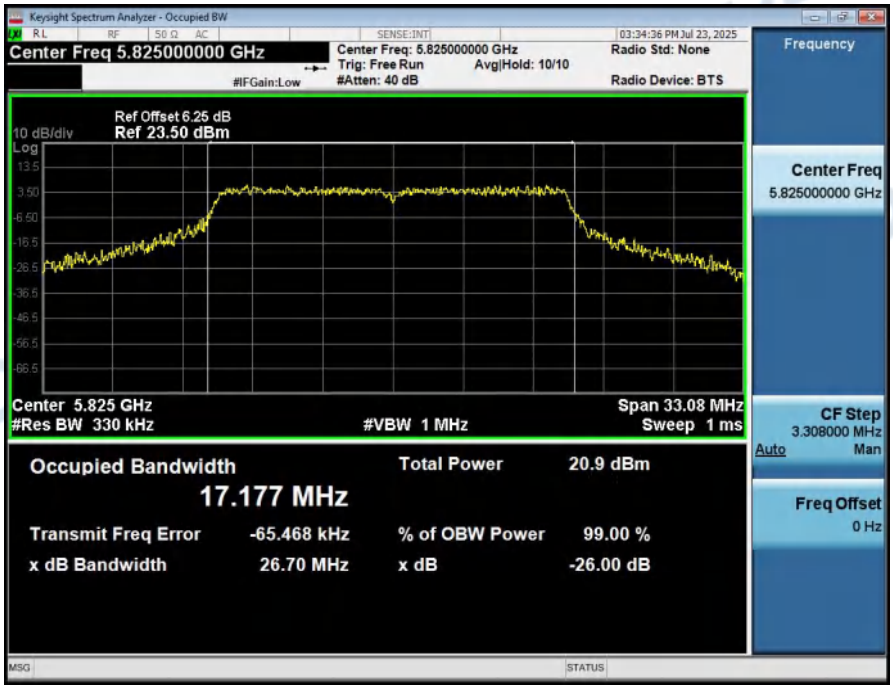

**99%_OCB_NVNT_ANT1_802_11a_5785**



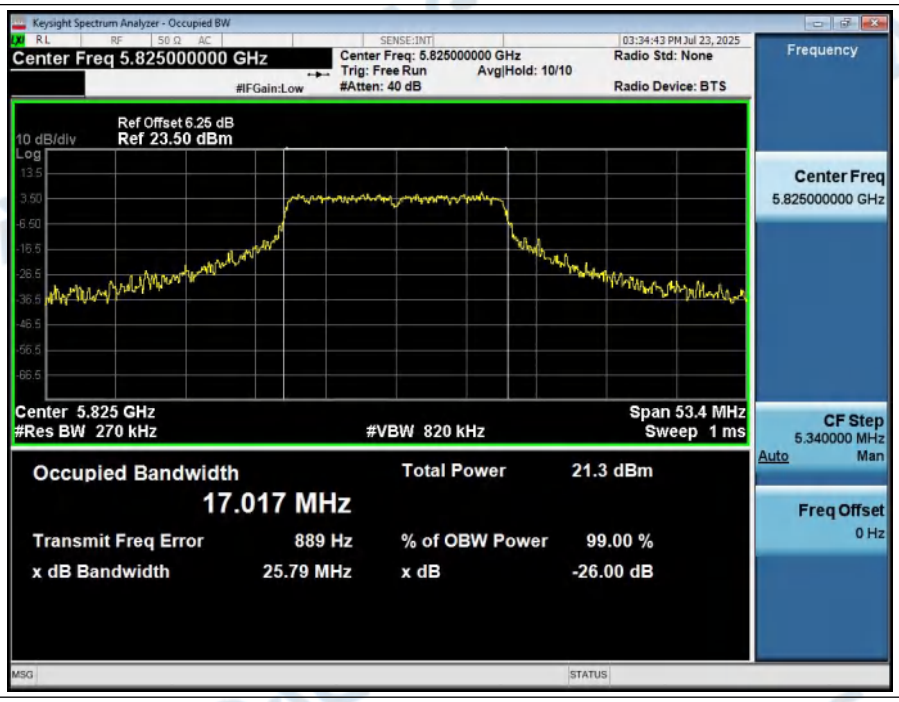
**-26BW_NVNT_ANT1_802_11a_5785**



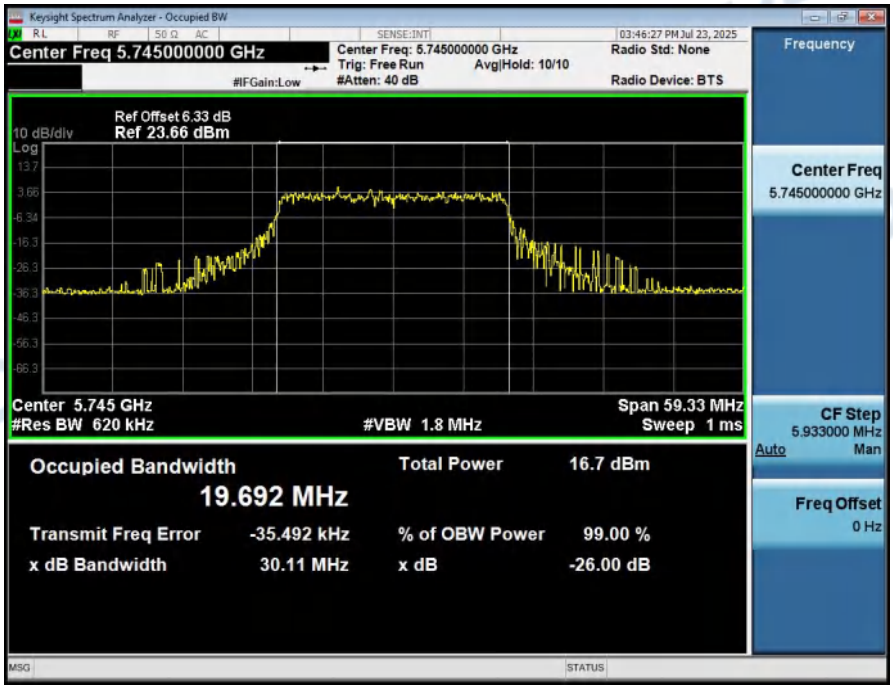

**99%_OCB_NVNT_ANT1_802_11a_5825**



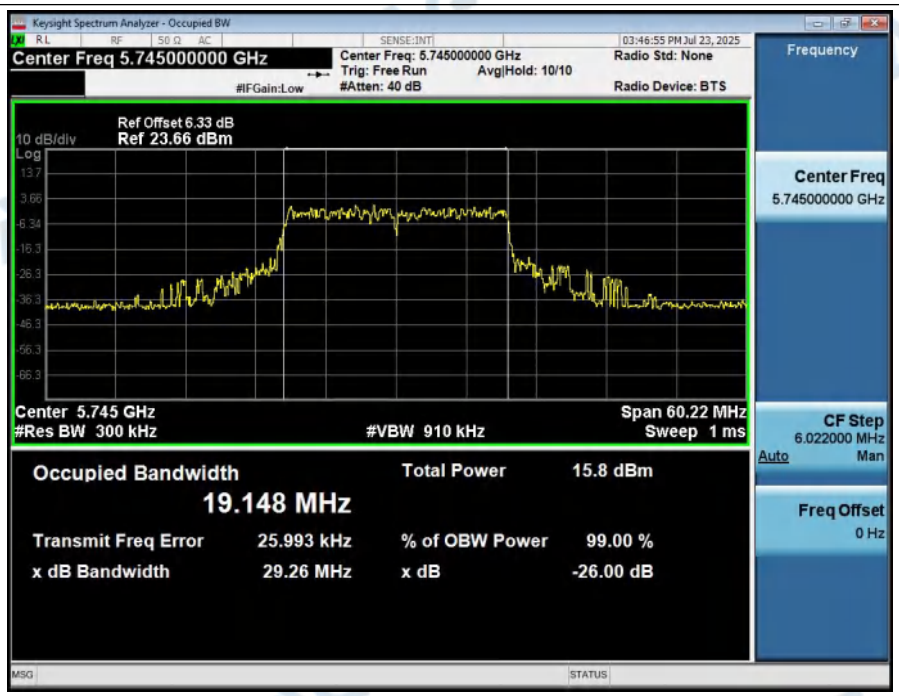
**-26BW_NVNT_ANT1_802_11a_5825**



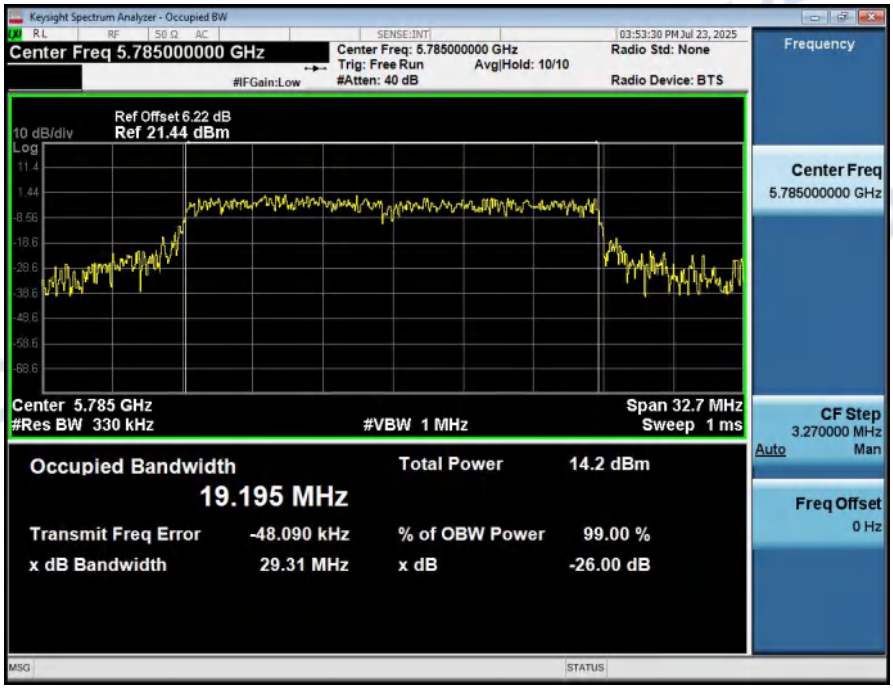

**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5745**



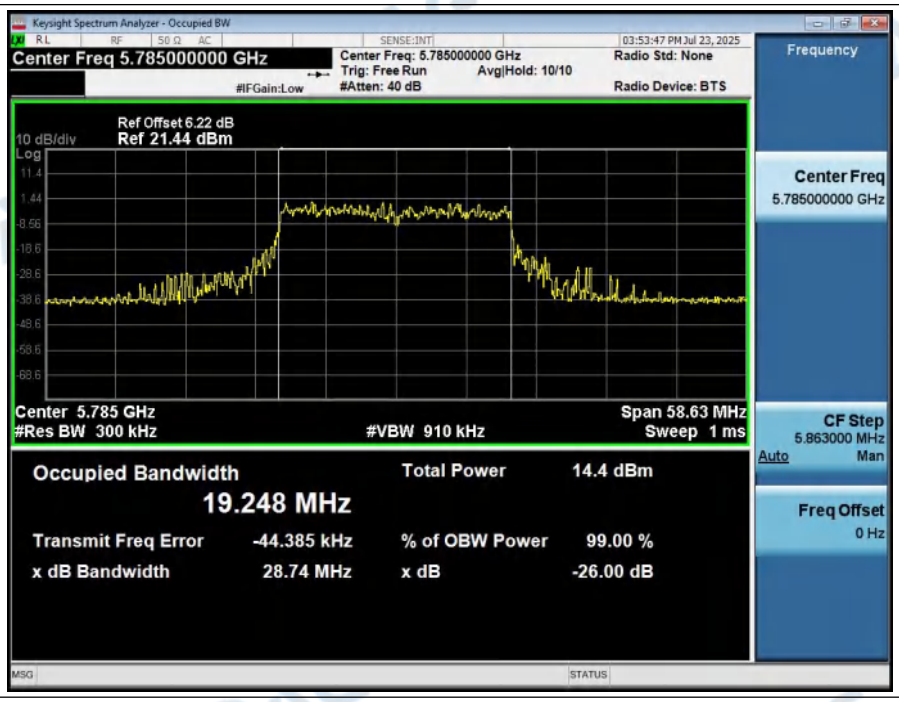
**-26BW_NVNT_ANT1_802_11ax(HE20)_5745**



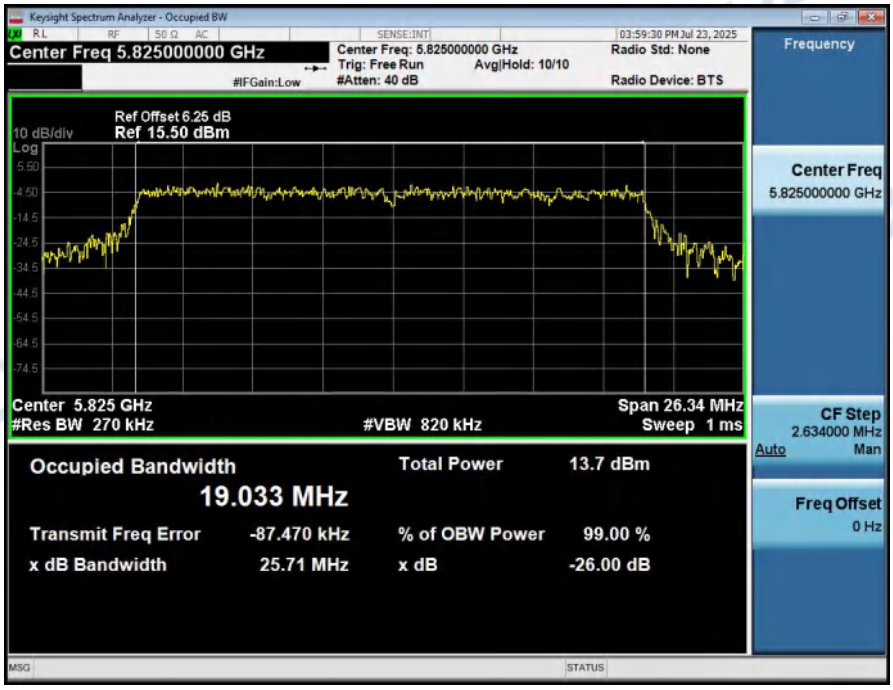

**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5785**

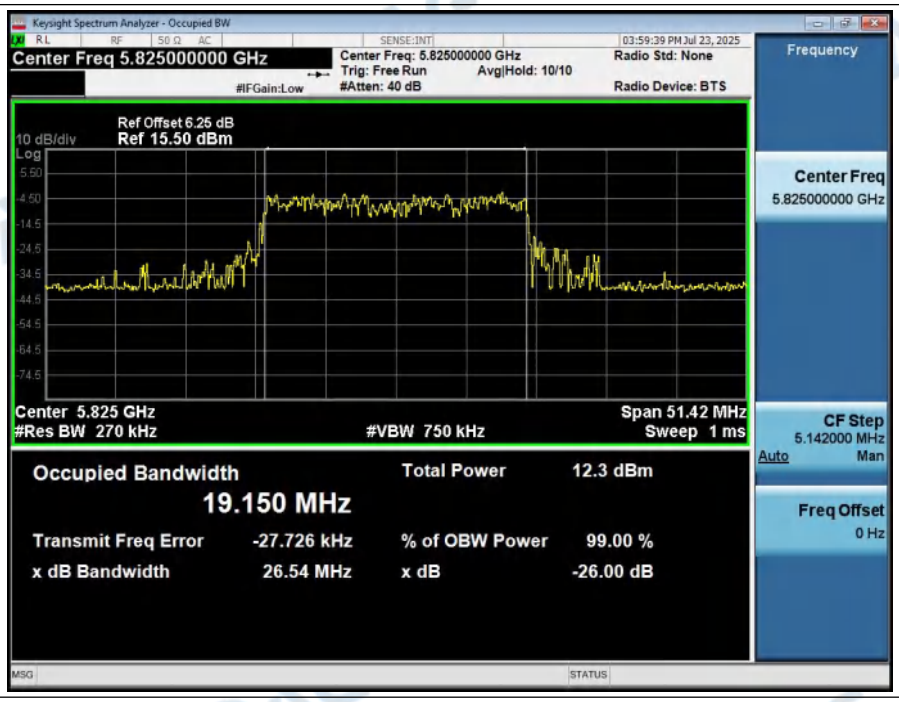


**-26BW_NVNT_ANT1_802_11ax(HE20)_5785**

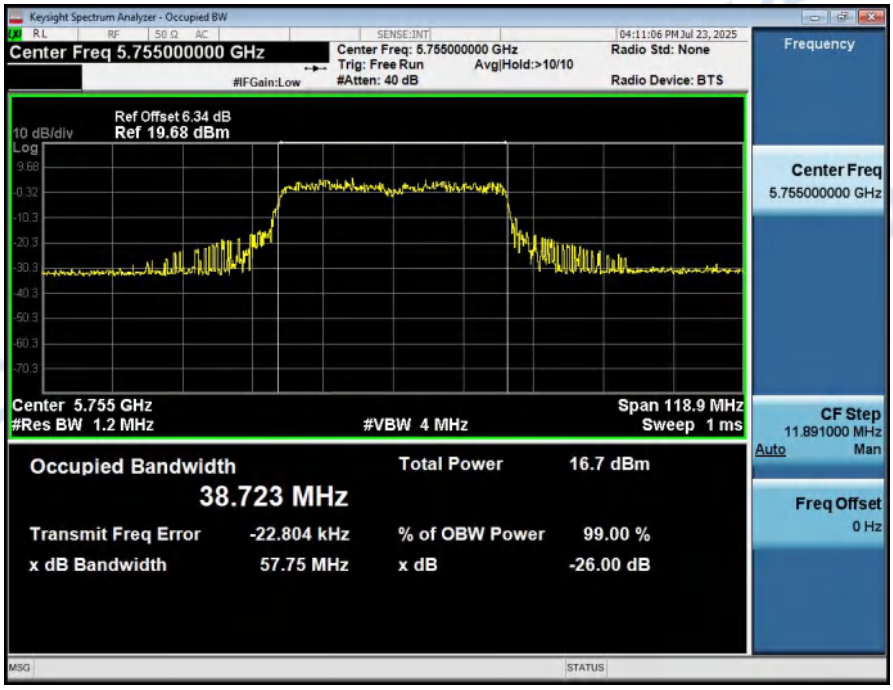



**99%_OCB_NVNT_ANT1_802_11ax(HE20)_5825**

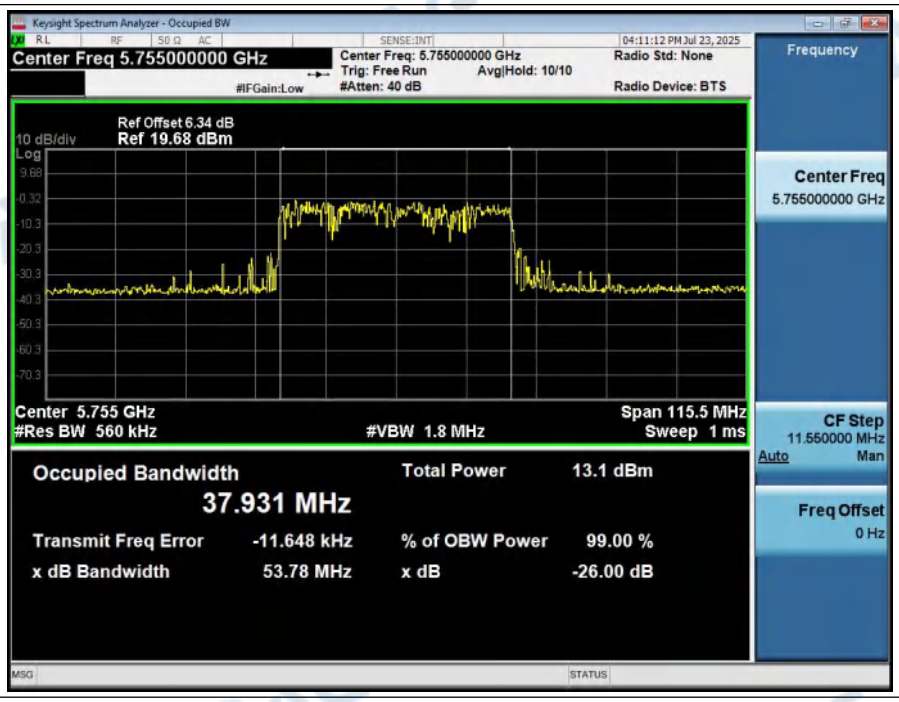


| -26BW_NVNT_ANT1_802_11ax(HE20)_5825 |
| --- |
|  |

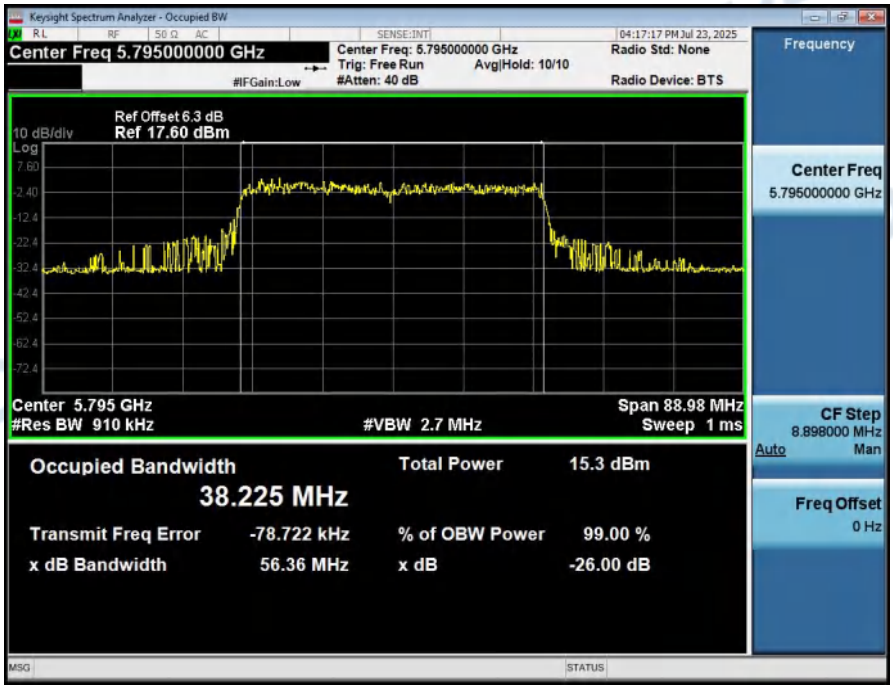


| 99%_OCB_NVNT_ANT1_802_11ax(HE40)_5755 |
| --- |
|  |

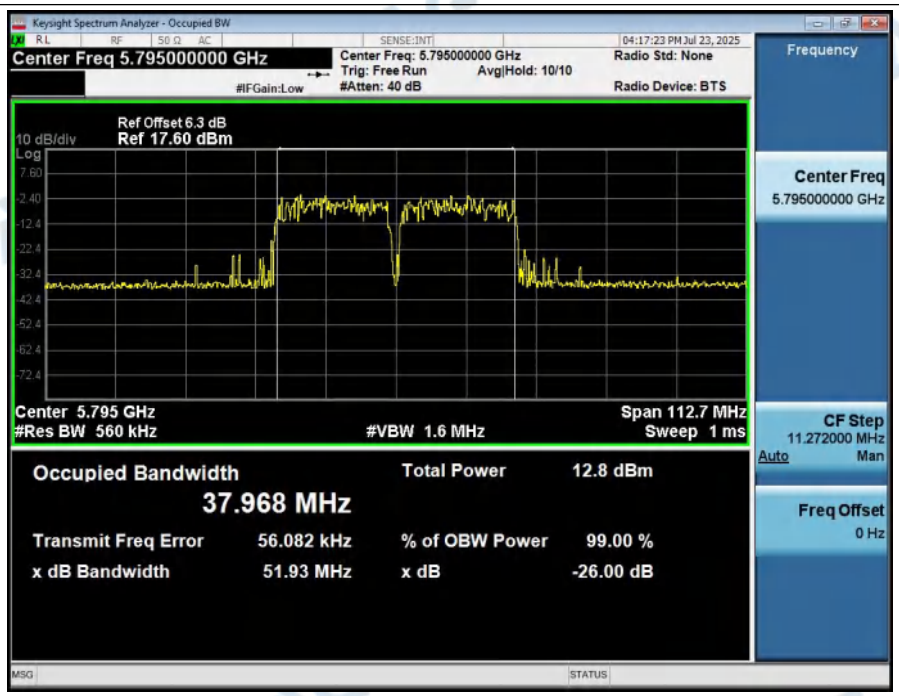
**-26BW_NVNT_ANT1_802_11ax(HE40)_5755**




**99%_OCB_NVNT_ANT1_802_11ax(HE40)_5795**



**-26BW_NVNT_ANT1_802_11ax(HE40)_5795**



## 3. Maximum Conducted Output Power

| Condition | Antenna | Modulation | Frequency (MHz) | Conducted Power(dBm) | Duty factor(dB) | Total Power(dBm) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5745.00 | 17.41 | 0.00 | 17.41 | 30 | Pass |
| NVNT | ANT1 | 802.11a | 5785.00 | 17.05 | 0.00 | 17.05 | 30 | Pass |
| NVNT | ANT1 | 802.11a | 5825.00 | 15.93 | 0.00 | 15.93 | 30 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5745.00 | 8.17 | 0.00 | 8.17 | 30 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5785.00 | 6.64 | 0.00 | 6.64 | 30 | Pass |
| NVNT | ANT1 | 802.11n(HT20) | 5825.00 | 7.06 | 0.00 | 7.06 | 30 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5745.00 | 9.19 | 0.00 | 9.19 | 30 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5785.00 | 8.30 | 0.00 | 8.30 | 30 | Pass |
| NVNT | ANT1 | 802.11ac(VHT20) | 5825.00 | 7.18 | 0.00 | 7.18 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5745.00 | 11.47 | 0.00 | 11.47 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5785.00 | 9.81 | 0.00 | 9.81 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5825.00 | 7.53 | 0.00 | 7.53 | 30 | Pass |
| NVNT | ANT1 | 802.11n(HT40) | 5755.00 | 6.42 | 0.00 | 6.42 | 30 | Pass |
| NVNT | ANT1 | 802.11n(HT40) | 5795.00 | 5.50 | 0.00 | 5.50 | 30 | Pass |
| NVNT | ANT1 | 802.11ac(VHT40) | 5755.00 | 5.89 | 0.00 | 5.89 | 30 | Pass |
| NVNT | ANT1 | 802.11ac(VHT40) | 5795.00 | 5.60 | 0.00 | 5.60 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5755.00 | 8.74 | 0.00 | 8.74 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5795.00 | 9.53 | 0.00 | 9.53 | 30 | Pass |

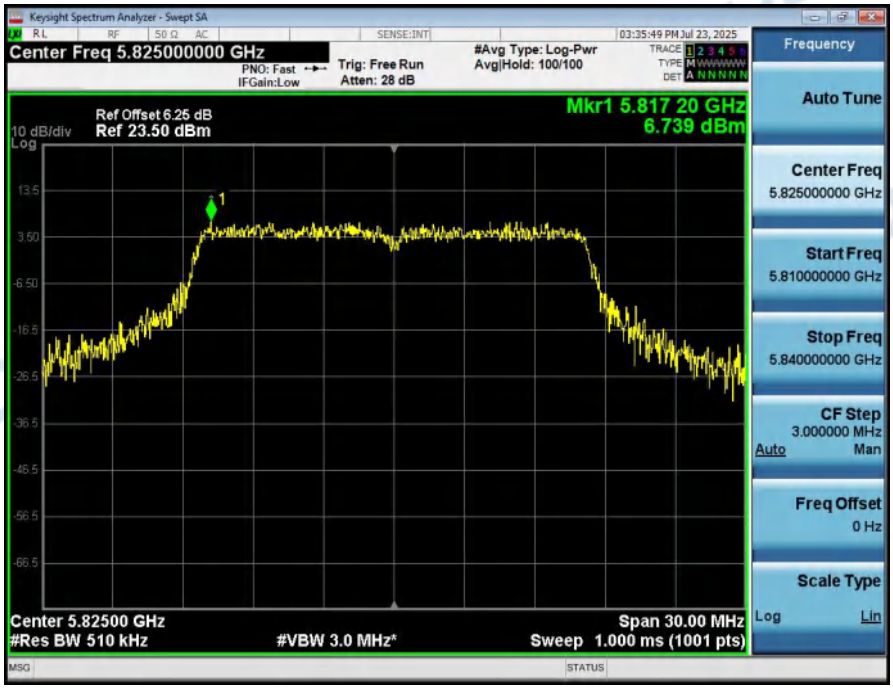
## 4. Power Spectral Density

| Condition | Antenna | Modulation | Frequency (MHz) | PSD_SA (dBm/RBW) | Duty factor(dB) | RB factor(dB) | PSD(dBm/500kHz) | limit(dBm/500kHz) | Result |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5745.00 | 8.68 | 7.75 | -0.09 | 16.35 | 30 | Pass |
| NVNT | ANT1 | 802.11a | 5785.00 | 8.16 | 7.72 | -0.09 | 15.80 | 30 | Pass |
| NVNT | ANT1 | 802.11a | 5825.00 | 6.74 | 7.72 | -0.09 | 14.37 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5745.00 | 3.04 | 18.61 | -0.09 | 21.56 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5785.00 | 1.33 | 18.61 | -0.09 | 19.85 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5825.00 | 0.28 | 18.61 | -0.09 | 18.81 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5755.00 | -1.17 | 20.05 | -0.09 | 18.80 | 30 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5795.00 | -1.48 | 20.05 | -0.09 | 18.48 | 30 | Pass |

**Power_Spectral_Density_NVNT_ANT1_802_11a_5745**

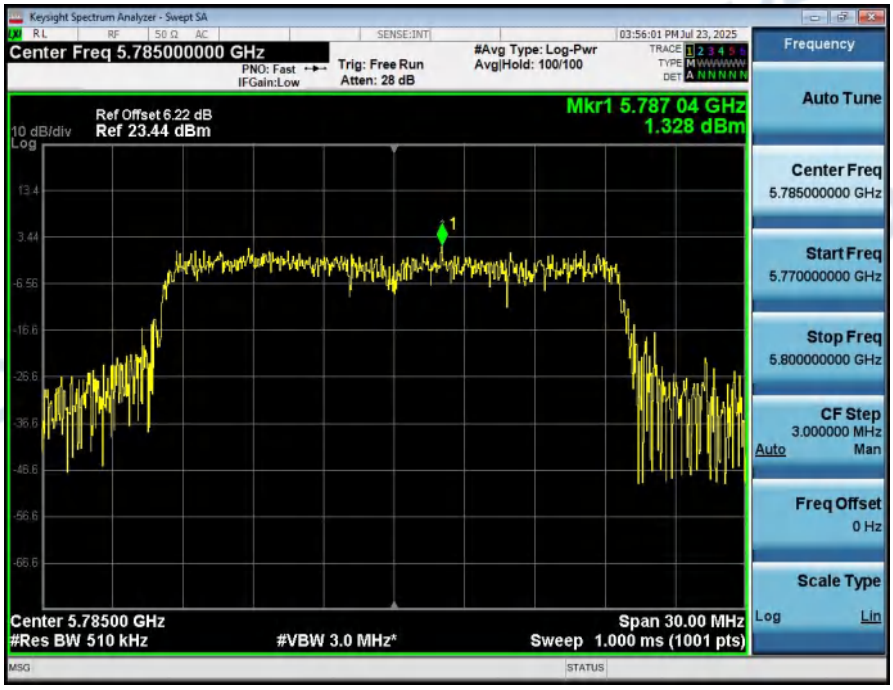
**Power_Spectral_Density_NVNT_ANT1_802_11a_5785**


**Power_Spectral_Density_NVNT_ANT1_802_11a_5825**



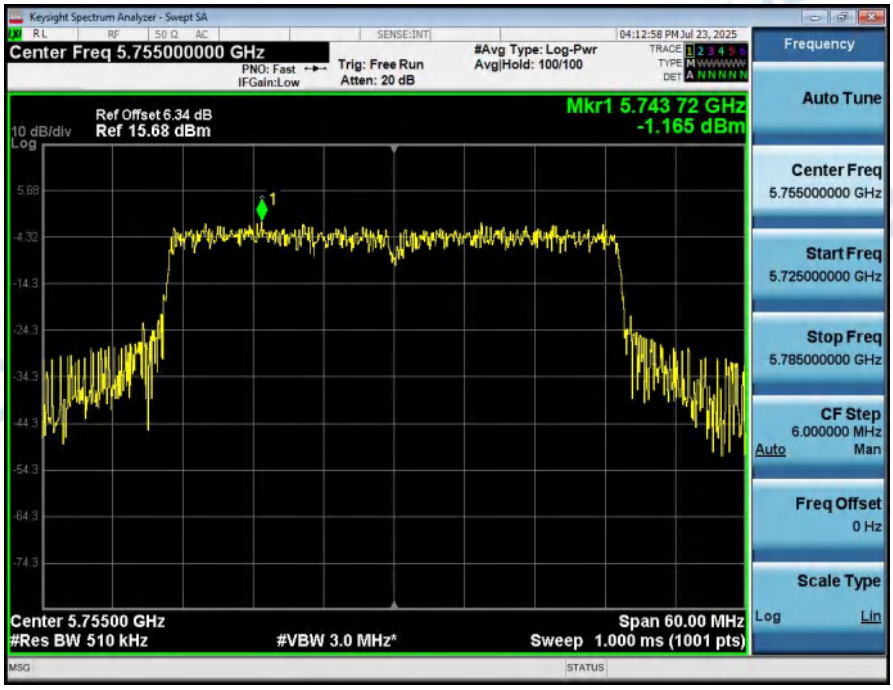
**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5745**

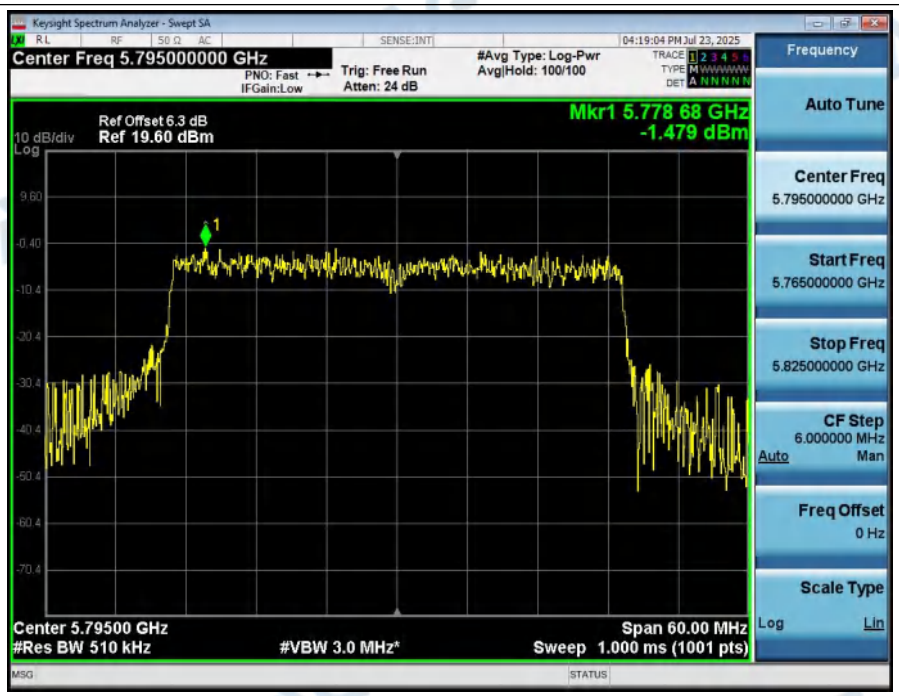

**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5785**



**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE20)_5825**


**Power_Spectral_Density_NVNT_ANT1_802_11ax(HE40)_5755**

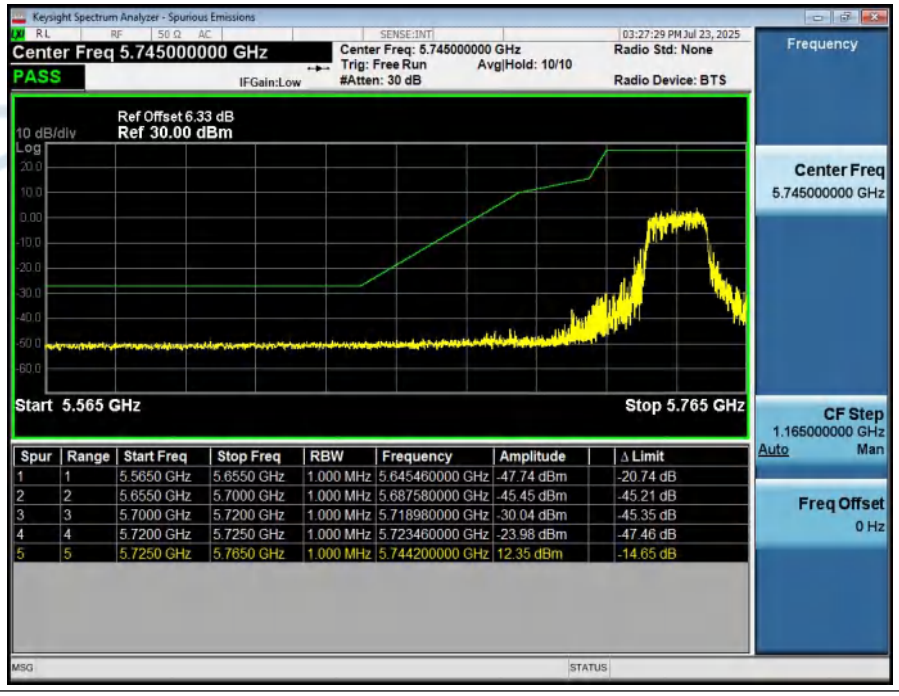


| Power_Spectral_Density_NVNT_ANT1_802_11ax(HE40)_5795 |
| --- |
|  |

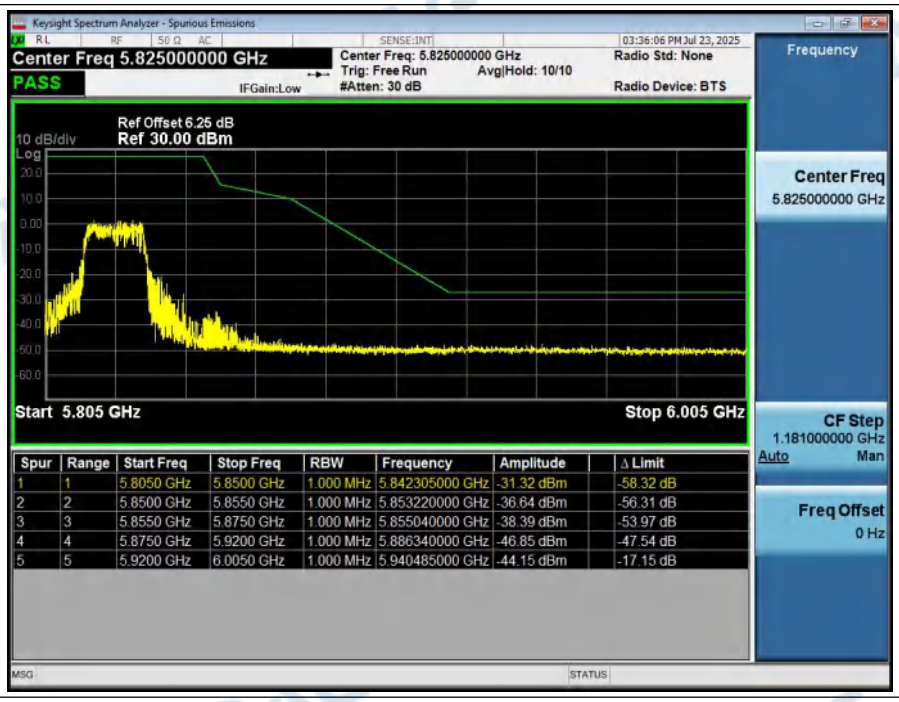
## 5. Bandedge

| Condition | Antenna | Modulation | TX_Frequency (MHz) | Frequency Area(MHz) | Frequency(MHz) | Amplitude(dBm) | Limit(dBm) | Result |
|---|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | LCH | 5565-5655 | 5645.460 | -47.74 | -27.00 | Pass |
| NVNT | ANT1 | 802.11a | LCH | 5655-5700 | 5687.580 | -45.45 | -0.21 | Pass |
| NVNT | ANT1 | 802.11a | LCH | 5700-5720 | 5718.980 | -30.04 | 15.31 | Pass |
| NVNT | ANT1 | 802.11a | LCH | 5720-5725 | 5723.460 | -23.98 | 23.49 | Pass |
| NVNT | ANT1 | 802.11a | HCH | 5850-5855 | 5853.220 | -36.64 | 19.66 | Pass |
| NVNT | ANT1 | 802.11a | HCH | 5855-5875 | 5855.040 | -38.39 | 15.59 | Pass |
| NVNT | ANT1 | 802.11a | HCH | 5875-5920 | 5886.340 | -46.85 | 0.68 | Pass |
| NVNT | ANT1 | 802.11a | HCH | 5920-6005 | 5940.485 | -44.15 | -27.00 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | LCH | 5565-5655 | 5630.970 | -48.34 | -27.00 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | LCH | 5655-5700 | 5656.080 | -48.43 | -26.11 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | LCH | 5700-5720 | 5701.180 | -47.51 | 10.33 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | LCH | 5720-5725 | 5721.295 | -38.87 | 18.55 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | HCH | 5850-5855 | 5854.990 | -47.36 | 15.62 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | HCH | 5855-5875 | 5871.720 | -47.53 | 10.92 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | HCH | 5875-5920 | 5919.370 | -48.08 | -26.48 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | HCH | 5920-6005 | 5937.680 | -43.34 | -27.00 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | LCH | 5595-5655 | 5624.640 | -47.99 | -27.00 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | LCH | 5655-5700 | 5657.655 | -48.45 | -24.82 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | LCH | 5700-5720 | 5702.660 | -48.43 | 10.74 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | LCH | 5720-5725 | 5721.440 | -48.11 | 18.88 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | HCH | 5850-5855 | 5854.945 | -47.63 | 15.73 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | HCH | 5855-5875 | 5874.140 | -47.50 | 10.24 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | HCH | 5875-5920 | 5913.025 | -47.73 | -21.26 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | HCH | 5920-5955 | 5941.420 | -44.34 | -27.00 | Pass |

**Bandedge_NVNT_ANT1_802_11a_5745**

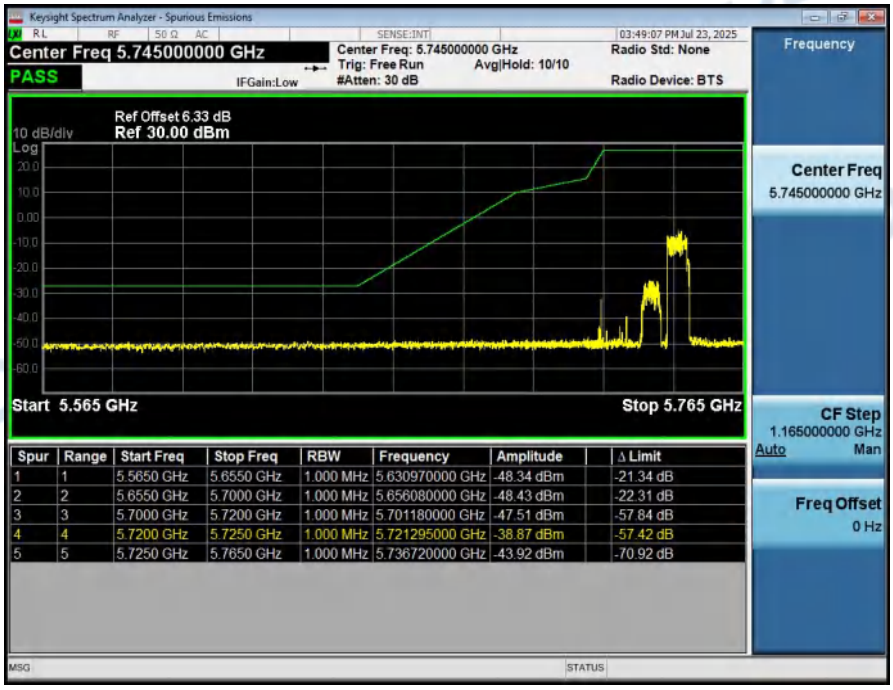


**Bandedge_NVNT_ANT1_802_11a_5825**



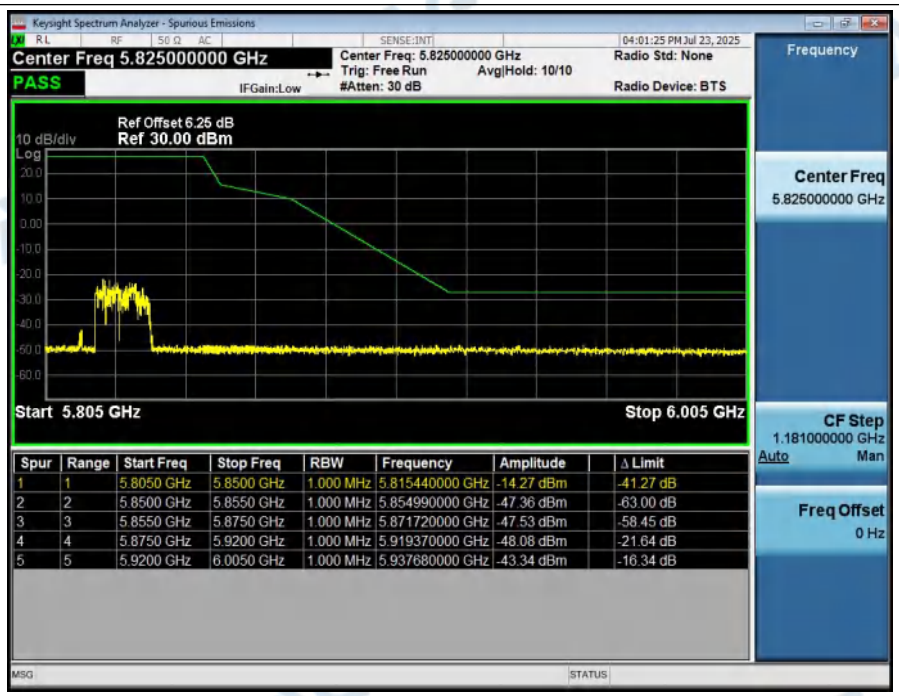

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5.8050 GHz | 5.8500 GHz | 1.000 MHz | 5.842305000 GHz | -31.32 dBm | -58.32 dB |
| 2 | 2 | 5.8500 GHz | 5.8550 GHz | 1.000 MHz | 5.853220000 GHz | -36.64 dBm | -56.31 dB |
| 3 | 3 | 5.8550 GHz | 5.8750 GHz | 1.000 MHz | 5.855040000 GHz | -38.39 dBm | -53.97 dB |
| 4 | 4 | 5.8750 GHz | 5.9200 GHz | 1.000 MHz | 5.886340000 GHz | -46.85 dBm | -47.54 dB |
| 5 | 5 | 5.9200 GHz | 6.0050 GHz | 1.000 MHz | 5.940485000 GHz | -44.15 dBm | -17.15 dB |

**Bandedge_NVNT_ANT1_802_11ax(HE20)_5745**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5.5650 GHz | 5.6550 GHz | 1.000 MHz | 5.630970000 GHz | -48.34 dBm | -21.34 dB |
| 2 | 2 | 5.6550 GHz | 5.7000 GHz | 1.000 MHz | 5.656080000 GHz | -48.43 dBm | -22.31 dB |
| 3 | 3 | 5.7000 GHz | 5.7200 GHz | 1.000 MHz | 5.701180000 GHz | -47.51 dBm | -57.84 dB |
| 4 | 4 | 5.7200 GHz | 5.7250 GHz | 1.000 MHz | 5.721295000 GHz | -38.87 dBm | -57.42 dB |
| 5 | 5 | 5.7250 GHz | 5.7650 GHz | 1.000 MHz | 5.736720000 GHz | -43.92 dBm | -70.92 dB |

**Bandedge_NVNT_ANT1_802_11ax(HE20)_5825**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5.8050 GHz | 5.8500 GHz | 1.000 MHz | 5.815440000 GHz | -14.27 dBm | -41.27 dB |
| 2 | 2 | 5.8500 GHz | 5.8550 GHz | 1.000 MHz | 5.854990000 GHz | -47.36 dBm | -63.00 dB |
| 3 | 3 | 5.8550 GHz | 5.8750 GHz | 1.000 MHz | 5.871720000 GHz | -47.53 dBm | -58.45 dB |
| 4 | 4 | 5.8750 GHz | 5.9200 GHz | 1.000 MHz | 5.919370000 GHz | -48.08 dBm | -21.64 dB |
| 5 | 5 | 5.9200 GHz | 6.0050 GHz | 1.000 MHz | 5.937680000 GHz | -43.34 dBm | -16.34 dB |

**Bandedge_NVNT_ANT1_802_11ax(HE40)_5755**


| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5.5950 GHz | 5.6550 GHz | 1.000 MHz | 5.624640000 GHz | -47.99 dBm | -20.99 dB |
| 2 | 2 | 5.6550 GHz | 5.7000 GHz | 1.000 MHz | 5.657655000 GHz | -48.45 dBm | -23.63 dB |
| 3 | 3 | 5.7000 GHz | 5.7200 GHz | 1.000 MHz | 5.702660000 GHz | -48.43 dBm | -59.17 dB |
| 4 | 4 | 5.7200 GHz | 5.7250 GHz | 1.000 MHz | 5.721440000 GHz | -48.11 dBm | -66.99 dB |
| 5 | 5 | 5.7250 GHz | 5.7950 GHz | 1.000 MHz | 5.766370000 GHz | -43.06 dBm | -70.06 dB |

**Bandedge_NVNT_ANT1_802_11ax(HE40)_5795**

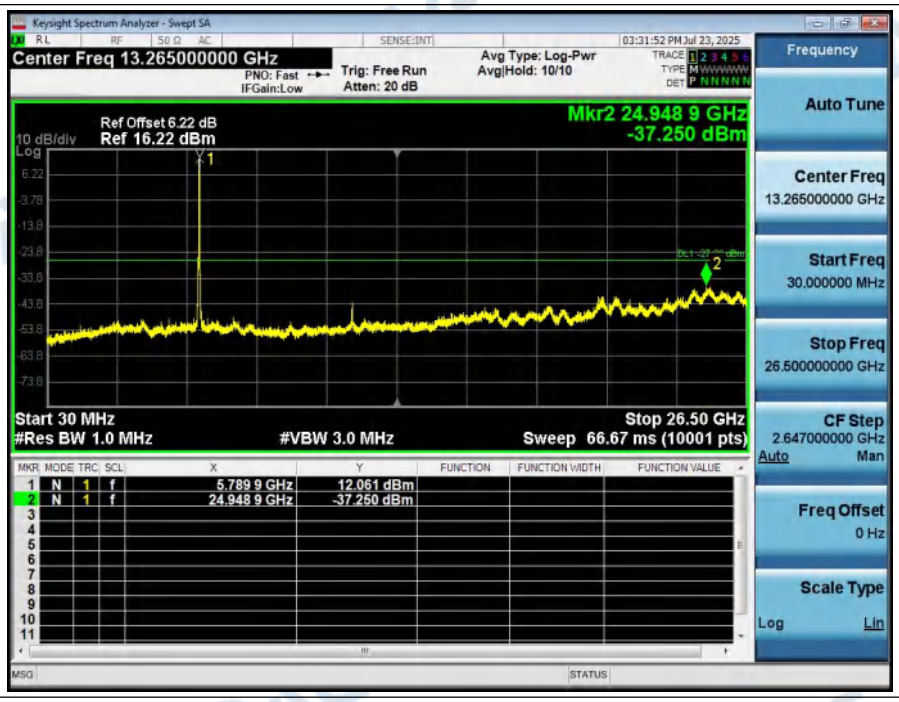

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5.7550 GHz | 5.8500 GHz | 1.000 MHz | 5.805160000 GHz | -9.460 dBm | -36.46 dB |
| 2 | 2 | 5.8500 GHz | 5.8550 GHz | 1.000 MHz | 5.854945000 GHz | -47.63 dBm | -63.37 dB |
| 3 | 3 | 5.8550 GHz | 5.8750 GHz | 1.000 MHz | 5.874140000 GHz | -47.50 dBm | -57.74 dB |
| 4 | 4 | 5.8750 GHz | 5.9200 GHz | 1.000 MHz | 5.913025000 GHz | -47.73 dBm | -26.50 dB |
| 5 | 5 | 5.9200 GHz | 5.9550 GHz | 1.000 MHz | 5.941420000 GHz | -44.34 dBm | -17.34 dB |

## 6. Spurious Emission

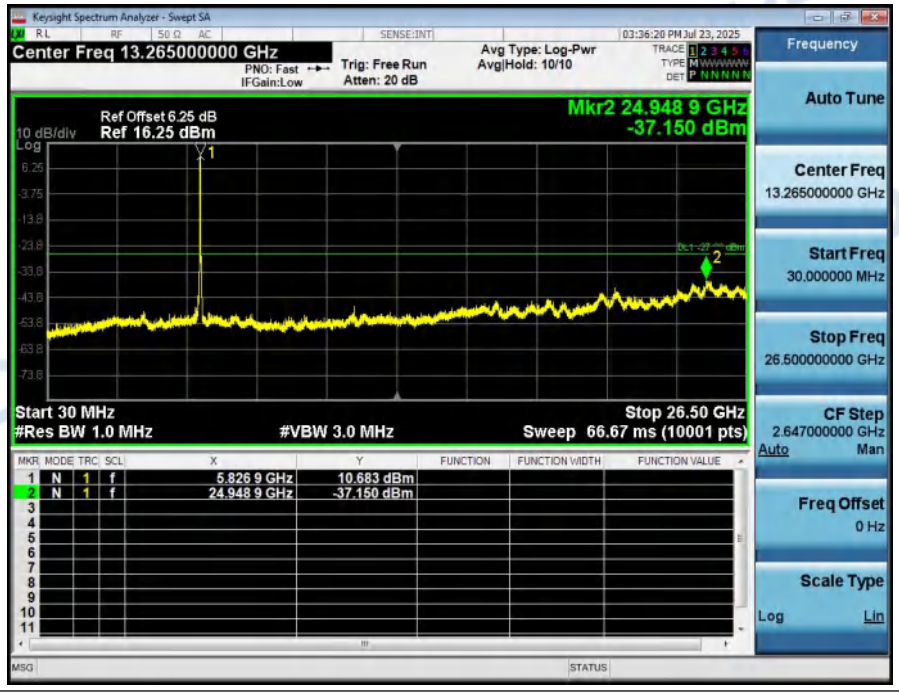
| Condition | Antenna | Modulation | TX_Frequency (MHz) | Max. Mark Frequency(MHz) | Spurious level(dBm) | limit(dBm) | Result |
|---|---|---|---|---|---|---|---|
| NVNT | ANT1 | 802.11a | 5745.00 | 24461.81 | -37.80 | -27 | Pass |
| NVNT | ANT1 | 802.11a | 5785.00 | 24948.86 | -37.25 | -27 | Pass |
| NVNT | ANT1 | 802.11a | 5825.00 | 24948.86 | -37.15 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5745.00 | 25075.91 | -37.02 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5785.00 | 25083.85 | -36.58 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE20) | 5825.00 | 26140.01 | -37.36 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5755.00 | 25094.44 | -36.73 | -27 | Pass |
| NVNT | ANT1 | 802.11ax(HE40) | 5795.00 | 25012.39 | -36.28 | -27 | Pass |

**Spurious_Emission_NVNT_ANT1_802_11a_5745**

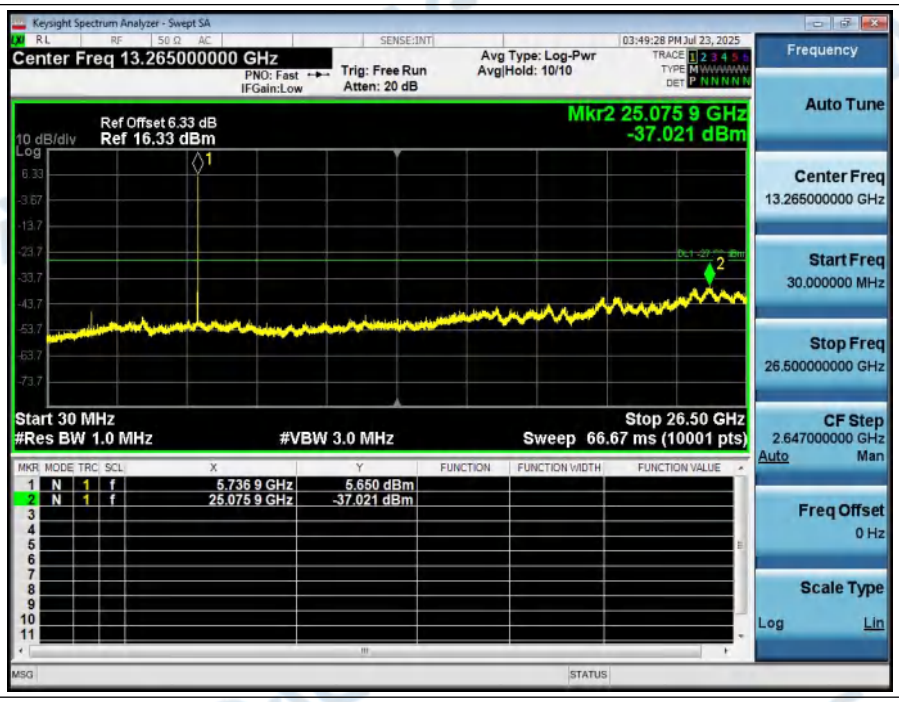
**Spurious_Emission_NVNT_ANT1_802_11a_5785**



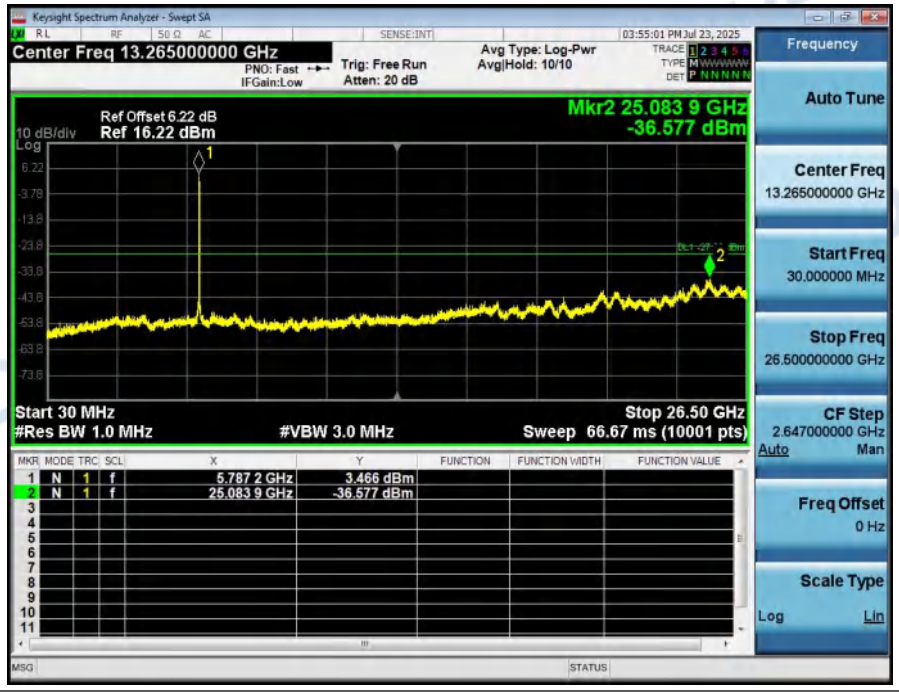

**Spurious_Emission_NVNT_ANT1_802_11a_5825**



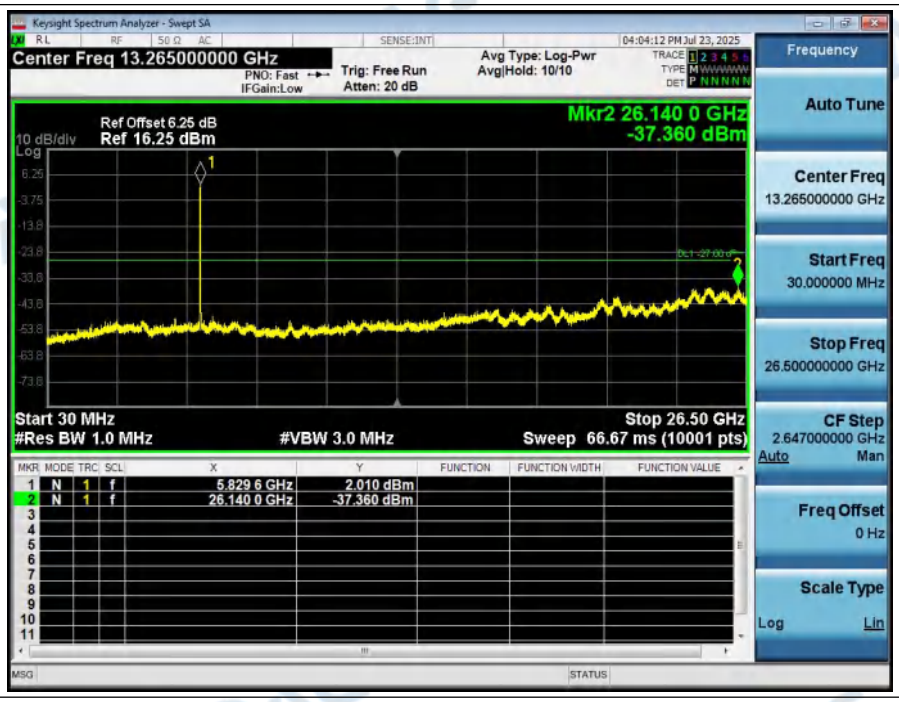
**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5745**



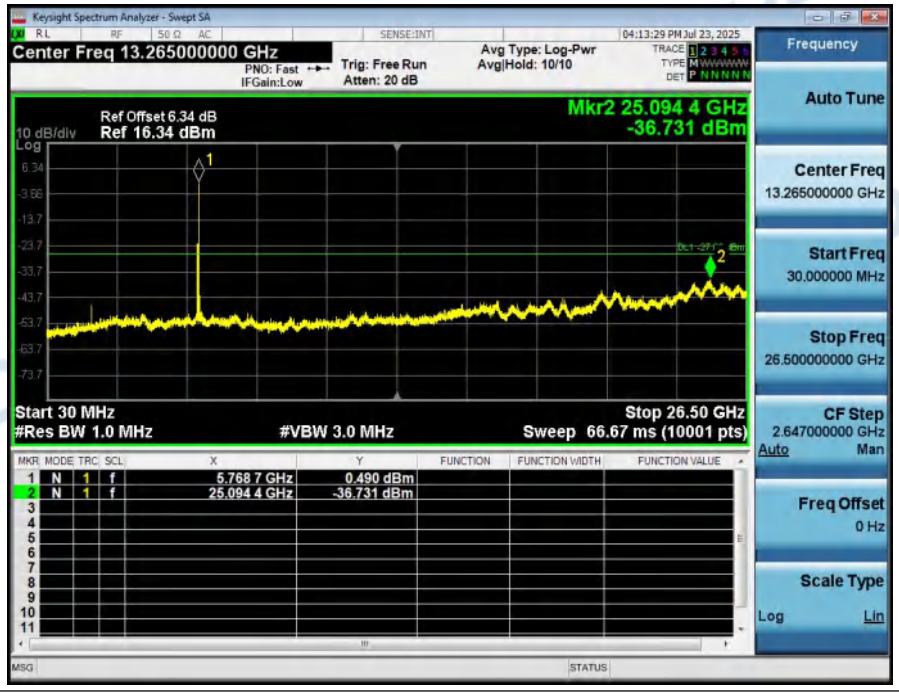

**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5785**



**Spurious_Emission_NVNT_ANT1_802_11ax(HE20)_5825**




**Spurious_Emission_NVNT_ANT1_802_11ax(HE40)_5755**



| Spurious_Emission_NVNT_ANT1_802_11ax(HE40)_5795 |
|---|

## 7. Frequency Stability

| Condition | Antenna | Modulation | Frequency (MHz) | Fc(MHz) | Fl(MHz) | Fh(MHz) | Limit(MHz) | Result |
|---|---|---|---|---|---|---|---|---|
| 55degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5745.024 | 5735.984 | 5754.064 | 5725~5850 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.984 | 5736.500 | 5753.468 | 5725~5850 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.996 | 5736.712 | 5753.280 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.978 | 5736.788 | 5753.168 | 5725~5850 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.998 | 5736.856 | 5753.140 | 5725~5850 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.996 | 5736.916 | 5753.076 | 5725~5850 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.972 | 5736.956 | 5752.988 | 5725~5850 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.978 | 5736.992 | 5752.964 | 5725~5850 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5745.00 | 5744.990 | 5737.028 | 5752.952 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5745.00 | 5744.984 | 5737.076 | 5752.892 | 5725~5850 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5745.00 | 5744.984 | 5737.124 | 5752.844 | 5725~5850 | Pass |
| 55degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.930 | 5775.836 | 5794.024 | 5725~5850 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.952 | 5776.504 | 5793.400 | 5725~5850 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.992 | 5776.684 | 5793.300 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.996 | 5776.788 | 5793.204 | 5725~5850 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.998 | 5776.868 | 5793.128 | 5725~5850 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.998 | 5776.928 | 5793.068 | 5725~5850 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.992 | 5776.972 | 5793.012 | 5725~5850 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5784.984 | 5777.020 | 5792.948 | 5725~5850 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5785.00 | 5784.980 | 5777.060 | 5792.900 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5785.00 | 5785.002 | 5777.120 | 5792.884 | 5725~5850 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5785.00 | 5785.006 | 5777.164 | 5792.848 | 5725~5850 | Pass |
| 55degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.952 | 5815.844 | 5834.060 | 5725~5850 | Pass |
| 45degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.966 | 5816.452 | 5833.480 | 5725~5850 | Pass |
| 35degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.968 | 5816.676 | 5833.260 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.970 | 5816.776 | 5833.164 | 5725~5850 | Pass |
| 15degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.972 | 5816.828 | 5833.116 | 5725~5850 | Pass |
| 5degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.972 | 5816.884 | 5833.060 | 5725~5850 | Pass |
| -5degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.974 | 5816.932 | 5833.016 | 5725~5850 | Pass |
| -15degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.958 | 5816.972 | 5832.944 | 5725~5850 | Pass |
| 25degrees C&&4.37V | ANT1 | 802.11a | 5825.00 | 5824.962 | 5817.008 | 5832.916 | 5725~5850 | Pass |
| 25degrees C&&3.80V | ANT1 | 802.11a | 5825.00 | 5824.978 | 5817.060 | 5832.896 | 5725~5850 | Pass |
| 25degrees C&&3.23V | ANT1 | 802.11a | 5825.00 | 5824.940 | 5817.108 | 5832.772 | 5725~5850 | Pass |

********** End of Report **********