



# TEST REPORT

Applicant: ShenZhen Sdeeq Technology Co.,Ltd  
Address of Applicant: 301,D Building,HongYongFa Industrialpsrk ,No.460 XiangShanRoad, LuoTian  
YanLuo BaoAn ShenZhen City  
Manufacturer: ShenZhen Sdeeq Technology Co.,Ltd  
Address of Manufacturer: 301,D Building,HongYongFa Industrialpsrk ,No.460 XiangShanRoad, LuoTian  
YanLuo BaoAn ShenZhen City  
Product Name: Laptop Computer  
Model No.: HL110YP  
Trade Mark: N/A  
FCC ID: 2BPFC-HL110YP  
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407  
Date of Test: Apri.22, 2025-May.08, 2025  
Date of report issued: May.09, 2025

*Remark:*

*The results shown in this test report refer only to the sample(s) tested , this test report cannot be reproduced, except in full without prior written permission of the company.*

*The report would be invalid without specific stamp of test institute and the signatures of compiler and approver*

## Prepared By

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## 1 Test Summary

| Test Item                                    | Section in CFR 47                           | Result | Test by     |
|----------------------------------------------|---------------------------------------------|--------|-------------|
| Antenna requirement                          | 15.203                                      | Pass   | /           |
| AC Power Line Conducted Emission             | 15.207                                      | Pass   | Jason Huang |
| Conducted Output Power                       | 15.407 (a)(1)/(a)(3)                        | Pass   | Kara Wu     |
| 26dB Bandwidth and<br>99% Occupied Bandwidth | 15.407 (a)(12)                              | Pass   | Kara Wu     |
| 6dB Bandwidth                                | 15.407 (e)                                  | Pass   | Kara Wu     |
| Power Spectral Density                       | 15.407(a)(1)/(a)(3)                         | Pass   | Kara Wu     |
| Band Edge                                    | 15.407(b)(1)/(b)(4)                         | Pass   | Kara Wu     |
| Spurious Emission                            | 15.205/15.209<br>15.407(b)(1)/(b)(4)/(b)(8) | Pass   | Jason Huang |
| Frequency Stability                          | 15.407(g)                                   | Pass   | Kara Wu     |

### Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013
3. Note: Compliance determination rules
  - 1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacture. If measurement uncertainty is taken into account, the applicant/manufacture will bear all possible risks of non-compliance.
  - 2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

### 1.1 Measurement Uncertainty

| Test Item                         | Measurement Uncertainty | Notes |
|-----------------------------------|-------------------------|-------|
| Duty cycle                        | ±0.05%                  | (1)   |
| Occupied Channel Bandwidth        | 0.55%                   | (1)   |
| RF output power, conducted        | ±0.57 dB                | (1)   |
| Power Spectral Density, conducted | ±0.61 dB                | (1)   |
| Unwanted Emissions, conducted     | ±0.64 dB                | (1)   |
| AC Power Line Conducted Emission  | ± 2.55 dB               | (1)   |
| Radiated emissions 9K-30MHz       | ±3.79 dB                | (1)   |
| Radiated emissions 30M- 1GHz      | ± 4.24 dB               | (1)   |
| Radiated emissions 1GHz-18GHz     | ± 4.26 dB               | (1)   |
| Radiated emissions 18GHz-40GHz    | ±4.17 dB                | (1)   |
| Frequency error                   | Uc=1X10-7               | (1)   |

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 2 General Information

### 2.1 General Description of EUT

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:          | Laptop Computer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Model No.:             | HL110YP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Difference of model(s) | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Model:            | HL110YP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Hardware Version:      | REV31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Software Version:      | 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Sample(s) Status:      | Engineer sample                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Operation Frequency:   | <input checked="" type="checkbox"/> 5180-5240MHz for 802.11a/n(HT20)/ac20(VHT20);<br>5190-5230MHz for 802.11n(HT40)/ac40(VHT40);<br>5210MHz for 802.11 ac80(VHT40);<br><input checked="" type="checkbox"/> 5745-5825 MHz for 802.11a/n(HT20)/ac20(VHT20);<br>5755-5795 MHz for 802.11n(HT40)/ac40(VHT40);<br>5775MHz for 802.11 ac80(VHT40);                                                                                                                                                            |
| Channel numbers:       | <input checked="" type="checkbox"/> 4 channels for 802.11a/n20(HT20)/ac20(VHT20) in the 5180-5240MHz band;<br>2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5190-5230MHz band ;<br>1 channels for 802.11 ac80 in the 5210(VHT80)MHz band ;<br><input checked="" type="checkbox"/> 5 channels for 802.11802.11a/n20(HT20)/ac20(VHT20) in the 5745-5825MHz band ;<br>2 channels for 802.11 n40(HT40)/ac40(VHT40) in the 5755-5795MHz band ;<br>1 channels for 802.11 5210(VHT80) in the 5775MHz band |
| Channel bandwidth:     | 802.11a/802.11n(HT20)/ 802.11ac(VHT20): 20MHz<br>802.11n(HT40)/ 802.11ac(VHT40) : 40MHz<br>802.11ac(VHT80) : 80MHz                                                                                                                                                                                                                                                                                                                                                                                      |
| Data Rate              | 802.11a: 6,9,12,18,24,36,48,54Mbps;<br>802.11n(HT20/HT40):MCS0-MCS15;<br>802.11ac(VHT/20/40/80):NSS1, MCS0-MCS9                                                                                                                                                                                                                                                                                                                                                                                         |
| Modulation technology: | Orthogonal Frequency Division Multiplexing (OFDM)<br>with BPSK/QPSK/16QAM/64QAM/256QAM                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Antenna Type:          | FPC Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Antenna gain:          | 4.72 dBi(Declare by applicant)<br>Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.                                                                                                                                                                                                                                                                                                                                               |
| Battery                | DC 7.7V 3200mAh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Power supply:          | DC 14.8V From Battery or DC 18V From Adapter                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Adapter Model:         | Model: M120300-A078<br>Input:100-240V 50/60Hz 0.8A<br>Output: DC 12V 3A                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Operation Frequency each of channel |           |         |           |         |           |         |           |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 36                                  | 5180MHz   | 38      | 5190MHz   | 40      | 5200MHz   | 42      | 5210MHz   |
| 44                                  | 5220MHz   | 46      | 5230MHz   | 48      | 5240MHz   | /       | /         |
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 149                                 | 5745MHz   | 151     | 5755MHz   | 153     | 5765MHz   | 155     | 5775MHz   |
| 157                                 | 5785MHz   | 159     | 5795MHz   | 161     | 5805MHz   | /       | /         |
| 165                                 | 5825MHz   | /       |           |         |           |         |           |

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:

| Test channel    | Frequency (MHz)             |                          |                 |
|-----------------|-----------------------------|--------------------------|-----------------|
|                 | 802.11 a /n(HT20)/ac(VHT20) | 802.11 n(HT40)/ac(VHT40) | 802.11ac(VHT80) |
| Lowest channel  | 5180                        | 5190                     | 5210            |
| Middle channel  | 5200                        | X                        |                 |
| Highest channel | 5240                        |                          |                 |

| Test channel    | Frequency (MHz)             |                          |                 |
|-----------------|-----------------------------|--------------------------|-----------------|
|                 | 802.11 a /n(HT20)/ac(VHT20) | 802.11 n(HT40)/ac(VHT40) | 802.11ac(VHT80) |
| Lowest channel  | 5745                        | 5755                     | 5775            |
| Middle channel  | 5785                        | X                        |                 |
| Highest channel | 5825                        |                          |                 |

## 2.2 Test mode

|                                                                                                   |                                                                                   |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Transmitting mode                                                                                 | Keep the EUT in continuously transmitting mode(or with a duty cycle $\geq 98\%$ ) |
| <i>Remark: For battery operated equipment, the EUT was performed using a new DC 7.7V battery.</i> |                                                                                   |

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

| Pretest Mode | Description                                                                         |
|--------------|-------------------------------------------------------------------------------------|
| Mode 1       | 802.11a / n 20/ ac 20 CH36/ CH40/ CH 48<br>802.11a /n 20/ac 20 CH149/ CH157/ CH 165 |
| Mode 2       | 802.11n 40/ac 40 CH38/ CH 46<br>802.11n 40/ac 40 CH 151 / CH 159                    |
| Mode 3       | 802.11 ac80 CH 42/CH 155                                                            |
| Mode 4       | /                                                                                   |
| Mode 5       | Link Mode                                                                           |

| Conducted Emission |             |
|--------------------|-------------|
| Final Test Mode    | Description |
| Mode 5             | Link Mode   |

| For Radiated Emission |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Final Test Mode       | Description                                                                         |
| Mode 1                | 802.11a / n 20/ ac 20 CH36/ CH40/ CH 48<br>802.11a /n 20/ac 20 CH149/ CH157/ CH 165 |
| Mode 2                | 802.11n 40/ac 40 CH38/ CH 46<br>802.11n 40/ac 40 CH 151 / CH 159                    |
| Mode 3                | 802.11 ac80 CH 42/CH 155                                                            |
| Mode 4                | /                                                                                   |

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

## 2.3 Description of Support Units

| No. | Description | Manufacturer | Model  | Serial Number |
|-----|-------------|--------------|--------|---------------|
| 1   | monitor     | SKYWORTH     | 2BU1   | /             |
| 2   | mouse       | DELL         | MS116  | /             |
| 3   | keyboard    | DELL         | KB216t | /             |

## 2.4 Deviation from Standards

None.

## 2.5 Abnormalities from Standard Conditions

None.

## 2.6 Test Facility

Test laboratory: Shenzhen ETR Standard Technology Co., Ltd.  
CNAS Registration Number: L11864  
A2LA Certificate Number: 6640.01  
FCC Designation Number: CN1326  
FCC Test Firm Registration: 183064

## 2.7 Test Location

All tests were performed at:

Laboratory location: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China  
Telephone: +86 755 85259392

## 2.8 Additional Instructions

|                   |                    |
|-------------------|--------------------|
| Test Software     | MPTool.EXE(v10.00) |
| Power level setup | Default            |



### 3 Test Instruments list

#### Conducted Emission

| Item | Equipment name           | Manufacturer  | Model    | Serial No. | Calibration date | Due date  |
|------|--------------------------|---------------|----------|------------|------------------|-----------|
| 1    | EMI Test Receiver        | Rohde&schwarz | ESCI3    | 100605     | 2025.3.06        | 2026.3.05 |
| 2    | Artificial power network | schwarabeck   | NSLK8127 | 8127483    | 2025.3.06        | 2026.3.05 |
| 3    | Artificial power network | ETS           | 3186/2NM | 1132       | 2025.3.06        | 2026.3.05 |
| 4    | 10dB attenuator          | HUBER+SUHNER  | 10dB     | /          | 2025.3.06        | 2026.3.05 |
| 5    | Cable 4                  | HUBER SUNNER  | 3M       | /          | 2025.3.06        | 2026.3.05 |
| 6    | Absorbing Clamp          | schwarabeck   | MDS21    | D69250     | 2025.3.06        | 2026.3.05 |

#### Radiated Emission &RF Conducted test:

| Item | Equipment name           | Manufacturer        | Model          | Serial No.   | Calibration date | Due date  |
|------|--------------------------|---------------------|----------------|--------------|------------------|-----------|
| 1    | EMI Test Receiver        | Rohde&schwarz       | ESCI7          | 101032       | 2025.3.06        | 2026.3.05 |
| 2    | Broadband antenna        | schwarabeck         | VULB9168       | 1064         | 2024.3.26        | 2026.3.25 |
| 3    | Horn antenna             | schwarabeck         | BBHA9120D      | 9120D-1145   | 2024.3.22        | 2026.3.21 |
| 4    | Amplifier                | EMtrace             | RP01A          | 50117        | 2025.3.06        | 2026.3.05 |
| 5    | Amplifier                | Space-Dtronic       | EWLAN0118G-P40 | 19113001     | 2025.3.06        | 2026.3.05 |
| 6    | Spectrum analyzer        | KEYSIGHT            | N9020A         | MY55370280   | 2025.3.06        | 2026.3.05 |
| 7    | Power detector meter     | MWRFtest            | MW100-PSB      | MW201020JYT  | 2025.3.06        | 2026.3.05 |
| 8    | Signal generator         | Agilent             | N5182A         | MY49060455   | 2025.3.06        | 2026.3.05 |
| 9    | Spectrum analyzer        | Rohde&schwarz       | FSU40          | 1166.1660K43 | 2025.3.06        | 2026.3.05 |
| 10   | Amplifier                | SKET                | LNPA_1840-50   | SK2019040302 | 2025.3.06        | 2026.3.05 |
| 11   | Horn antenna             | schwarabeck         | BBHA 9170      | 946          | 2024.3.22        | 2026.3.21 |
| 12   | Loop antenna             | schwarabeck         | FMZB 1519 B    | 1519         | 2024.3.22        | 2026.3.21 |
| 13   | Cable 6                  | HUBER SUNNER        | 0.5M           | /            | 2025.3.06        | 2026.3.05 |
| 14   | Cable7                   | HUBER SUNNER        | 2.0M           | /            | 2025.3.06        | 2026.3.05 |
| 15   | Cable8                   | HUBER SUNNER        | 6.0M           | /            | 2025.3.06        | 2026.3.05 |
| 16   | Filter                   | Xin bo              | XBLBQ-GTA29    | 210410-3-2   | 2025.3.06        | 2026.3.05 |
| 17   | Power Sensor             | Keysight            | U2021XA        | MY54111006   | 2025.3.06        | 2026.3.05 |
| 18   | Temp. & Humidity Chamber | Jiecheng Instrument | QA-LP-80       | 20160705001  | 2025/3/07        | 2026/3/06 |

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

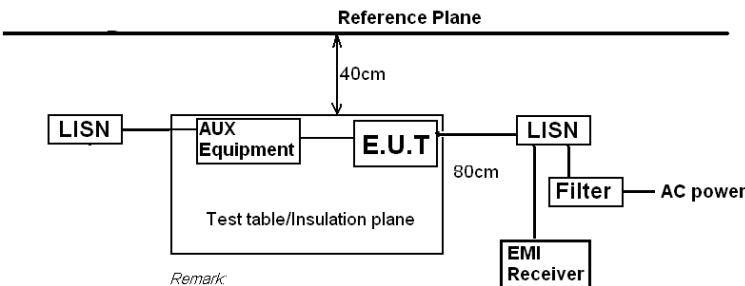
| Software Name           | Manufacturer | Model    | Version           |
|-------------------------|--------------|----------|-------------------|
| RF test software        | MWRFtest     | MTS 8310 | V2.0.0.0          |
| Conducted test software | EZ-EMC       | Farad    | Ver.EMC-CON 3A1.1 |
| Radiated test software  | EZ-EMC       | Farad    | Ver.FA-03A2 RE    |

## 4 Test results and Measurement Data

### 4.1 Antenna requirement

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Standard requirement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FCC Part15 C Section 15.203 |
| <i>15.203 requirement:<br/>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i> |                             |
| <b>E.U.T Antenna:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |
| <i>The antennas are FPC Antenna, the best case gain of the antennas are 4.72dBi, reference to the appendix II for details</i>                                                                                                                                                                                                                                                                                                                                                     |                             |

## 4.2 Conducted Emissions

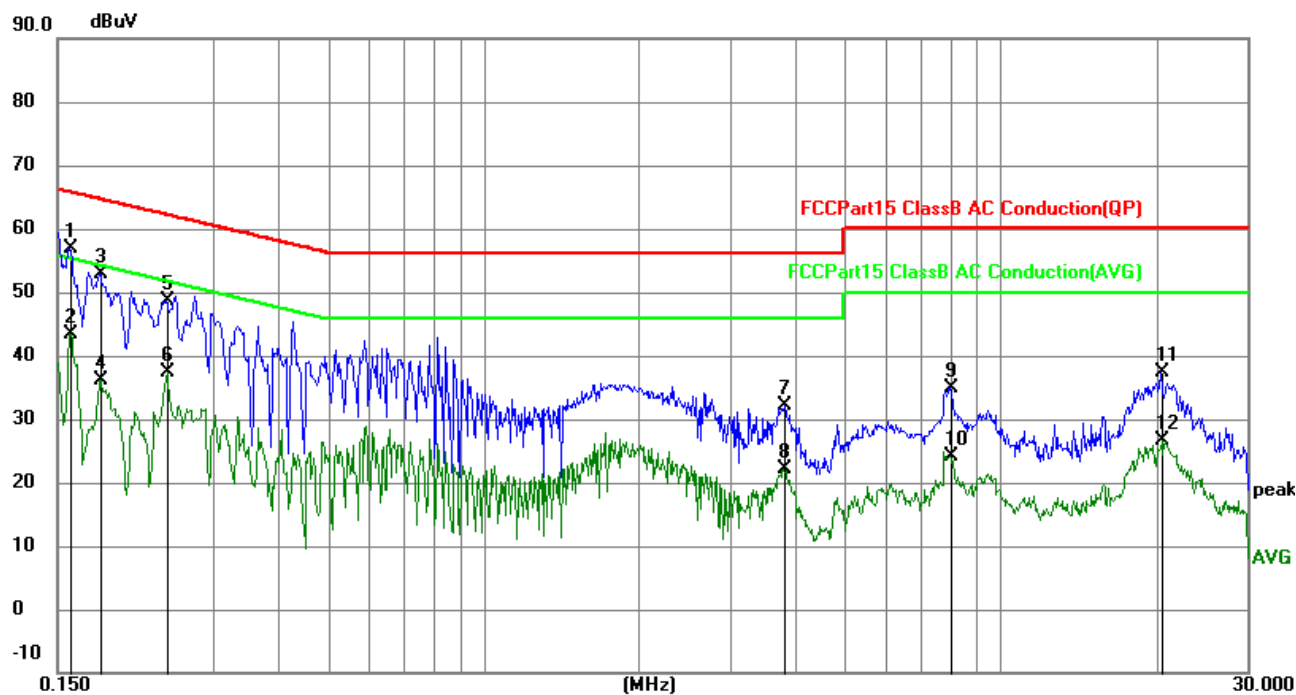
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |              |     |           |          |  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|-----|-----------|----------|--|
| Test Requirement:     | FCC Part15 C Section 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |              |     |           |          |  |
| Test Method:          | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |              |     |           |          |  |
| Test Frequency Range: | 150KHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |              |     |           |          |  |
| Class / Severity:     | Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |              |     |           |          |  |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |              |     |           |          |  |
| Limit:                | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | Limit (dBuV) |     |           |          |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | Quasi-peak   |     | Average   |          |  |
|                       | 0.15-0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        | 66 to 56*    |     | 56 to 46* |          |  |
|                       | 0.5-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 56           |     | 46        |          |  |
|                       | 5-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 60           |     | 50        |          |  |
|                       | * Decreases with the logarithm of the frequency.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |              |     |           |          |  |
| Test setup:           | <div><p style="text-align: center;">Reference Plane</p><p>Remark<br/>E.U.T: Equipment Under Test<br/>LISN: Line Impedance Stabilization Network<br/>Test table height=0.8m</p></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |              |     |           |          |  |
| Test procedure:       | <div><div>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</div></div> |        |              |     |           |          |  |
| Test Instruments:     | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |              |     |           |          |  |
| Test mode:            | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |              |     |           |          |  |
| Test environment:     | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 25.7°C | Humid.:      | 58% | Press.:   | 1012mbar |  |
| Test voltage:         | AC 120V 60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |              |     |           |          |  |
| Test results:         | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |              |     |           |          |  |

### Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
2. All mode have been tested, the report only shows the worst mode (802.11a 5180MHz)

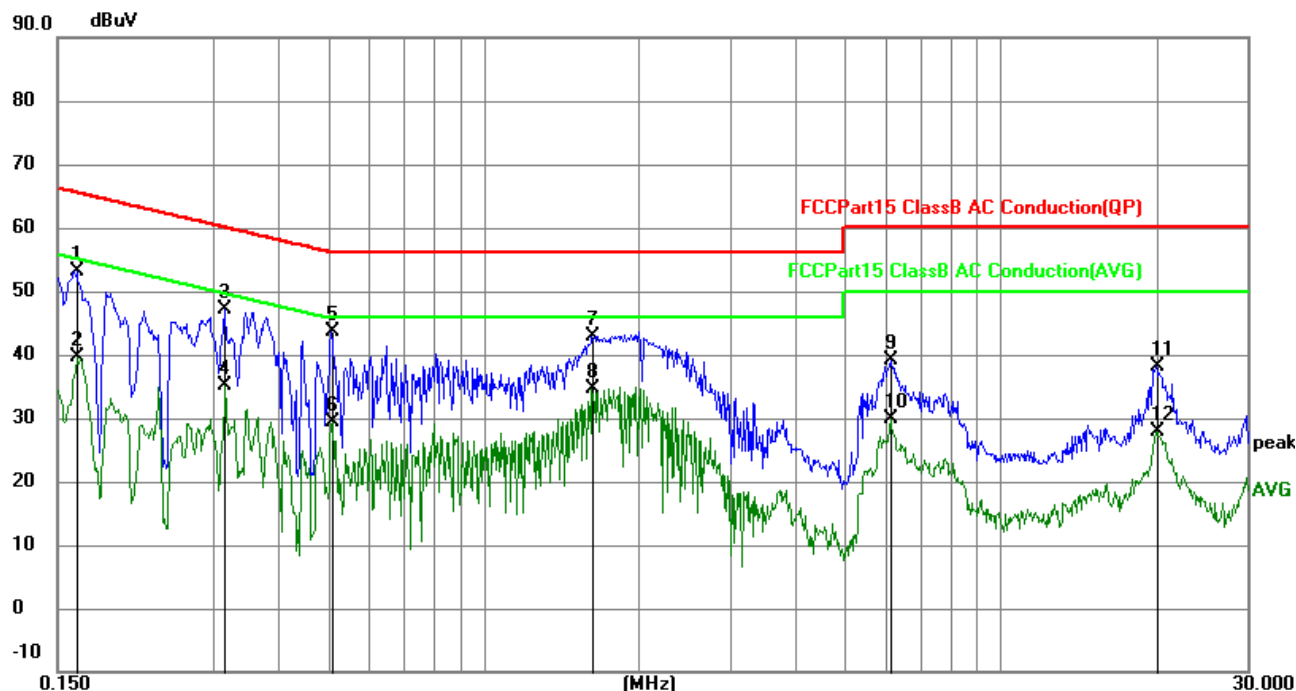
## Measurement Result

Line:



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1   | 0.1590          | 47.03          | 9.80        | 56.83        | 65.52        | -8.69       | QP       |
| 2   | 0.1590          | 33.67          | 9.80        | 43.47        | 55.52        | -12.05      | AVG      |
| 3   | 0.1814          | 43.11          | 9.81        | 52.92        | 64.42        | -11.50      | QP       |
| 4   | 0.1814          | 26.38          | 9.81        | 36.19        | 54.42        | -18.23      | AVG      |
| 5   | 0.2444          | 38.75          | 9.82        | 48.57        | 61.95        | -13.38      | QP       |
| 6   | 0.2444          | 27.63          | 9.82        | 37.45        | 51.95        | -14.50      | AVG      |
| 7   | 3.7995          | 22.19          | 9.84        | 32.03        | 56.00        | -23.97      | QP       |
| 8   | 3.7995          | 12.34          | 9.84        | 22.18        | 46.00        | -23.82      | AVG      |
| 9   | 8.0022          | 25.13          | 9.84        | 34.97        | 60.00        | -25.03      | QP       |
| 10  | 8.0022          | 14.33          | 9.84        | 24.17        | 50.00        | -25.83      | AVG      |
| 11  | 20.5395         | 27.72          | 9.65        | 37.37        | 60.00        | -22.63      | QP       |
| 12  | 20.5395         | 16.87          | 9.65        | 26.52        | 50.00        | -23.48      | AVG      |

### Neutral:

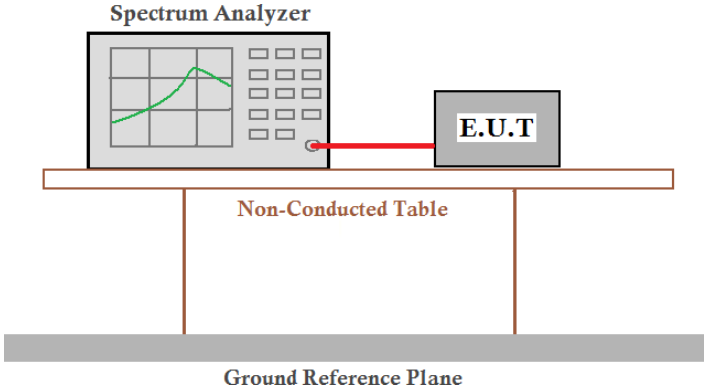


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1   | 0.1635          | 43.45          | 9.80        | 53.25        | 65.28        | -12.03      | QP       |
| 2   | 0.1635          | 29.72          | 9.80        | 39.52        | 55.28        | -15.76      | AVG      |
| 3   | 0.3165          | 37.18          | 9.87        | 47.05        | 59.80        | -12.75      | QP       |
| 4   | 0.3165          | 25.17          | 9.87        | 35.04        | 49.80        | -14.76      | AVG      |
| 5   | 0.5100          | 33.76          | 9.94        | 43.70        | 56.00        | -12.30      | QP       |
| 6   | 0.5100          | 19.41          | 9.94        | 29.35        | 46.00        | -16.65      | AVG      |
| 7   | 1.6255          | 33.02          | 9.90        | 42.92        | 56.00        | -13.08      | QP       |
| 8   | 1.6255          | 24.77          | 9.90        | 34.67        | 46.00        | -11.33      | AVG      |
| 9   | 6.1528          | 29.30          | 9.83        | 39.13        | 60.00        | -20.87      | QP       |
| 10  | 6.1528          | 20.12          | 9.83        | 29.95        | 50.00        | -20.05      | AVG      |
| 11  | 20.0085         | 28.59          | 9.66        | 38.25        | 60.00        | -21.75      | QP       |
| 12  | 20.0085         | 18.23          | 9.66        | 27.89        | 50.00        | -22.11      | AVG      |

### Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

### 4.3 Duty cycle

|                   |                                                                                                                                                                                                                                                                                                                                                                                                             |               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Method :     | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Limit:            | /                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane, which is represented by a thick grey bar at the bottom.</p> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                            |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                            |               |
| Test environment: | Temp.: 23.1°C                                                                                                                                                                                                                                                                                                                                                                                               | Humid.: 64%RH |
| Test voltage:     | DC 7.7V From Battery                                                                                                                                                                                                                                                                                                                                                                                        |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                        |               |

## Measurement Result

5180-5240MHz

| Mode               | Duty cycle (%) | Correction Factor (dB) |
|--------------------|----------------|------------------------|
| TX 802.11a Mode    | 84.21          | 0.75                   |
| TX 802.11n20 Mode  | 93.89          | 0.27                   |
| TX 802.11ac20 Mode | 84.77          | 0.72                   |
| TX 802.11n40 Mode  | 91.67          | 0.38                   |
| TX 802.11ac40 Mode | 93.76          | 0.28                   |
| TX 802.11ac80 Mode | 89.75          | 0.47                   |

5745-5825 MHz

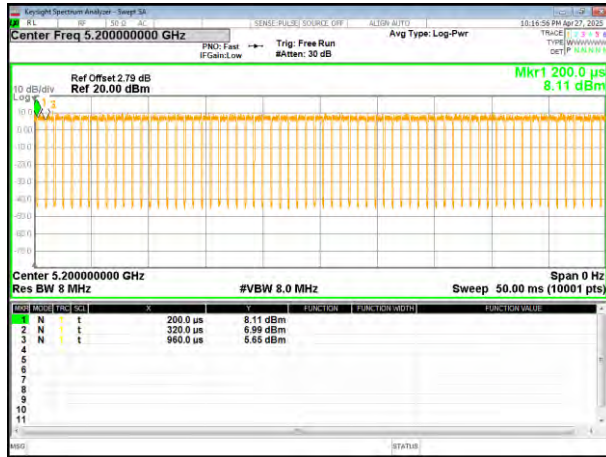
| Mode               | Duty cycle (%) | Correction Factor (dB) |
|--------------------|----------------|------------------------|
| TX 802.11a Mode    | 85.42          | 0.68                   |
| TX 802.11n20 Mode  | 82.61          | 0.83                   |
| TX 802.11ac20 Mode | 84.44          | 0.73                   |
| TX 802.11n40 Mode  | 91.25          | 0.40                   |
| TX 802.11ac40 Mode | 94.05          | 0.27                   |
| TX 802.11ac80 Mode | 88.89          | 0.51                   |



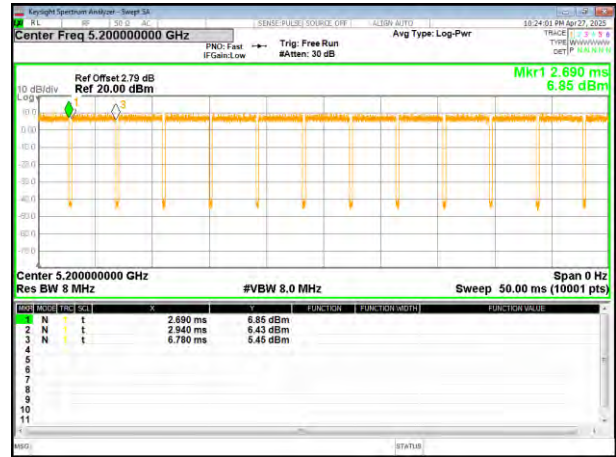
Test plot

5180-5240MHz

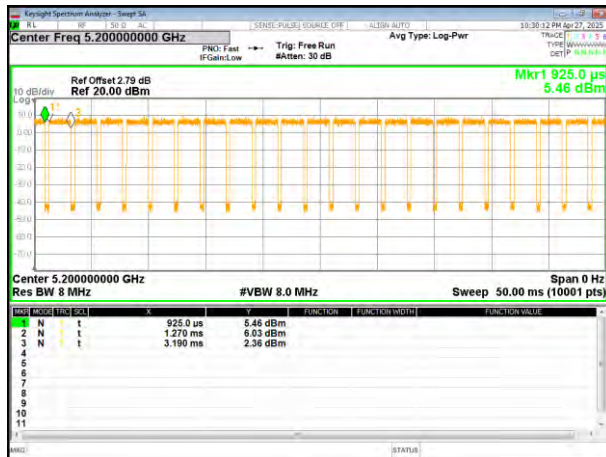
(802.11a) plot



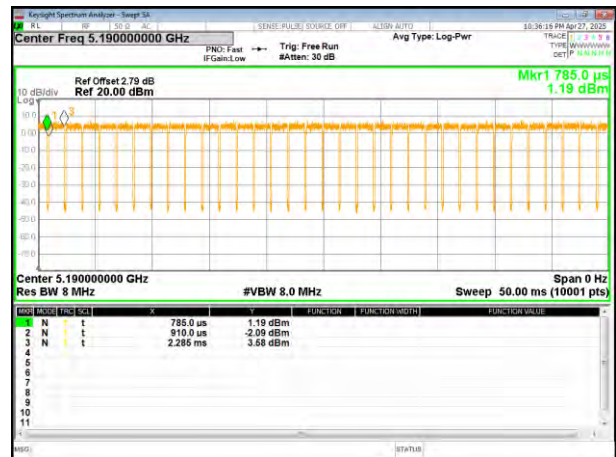
(802.11 n20) plot



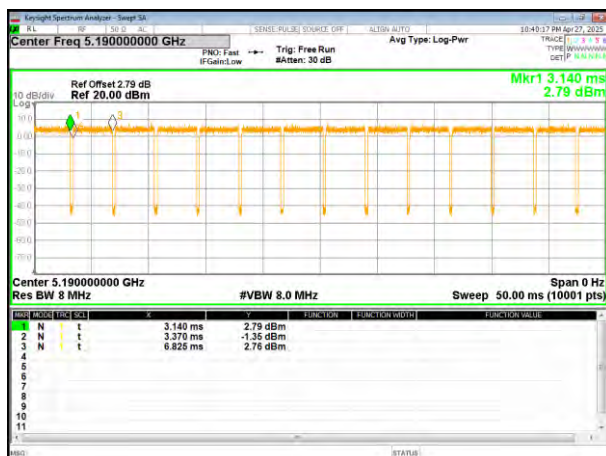
(802.11ac20) plot



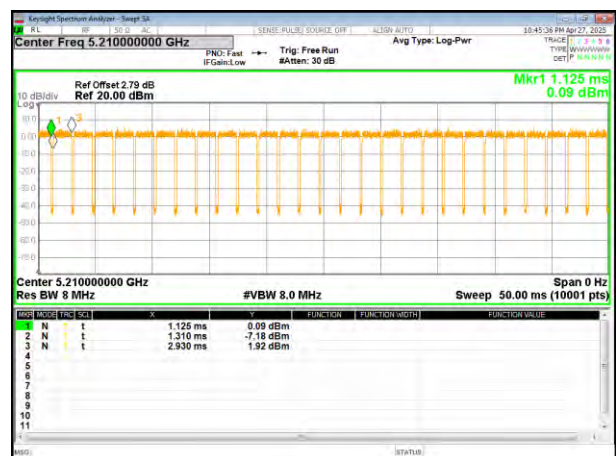
(802.11 n40) plot



(802.11ac40) plot



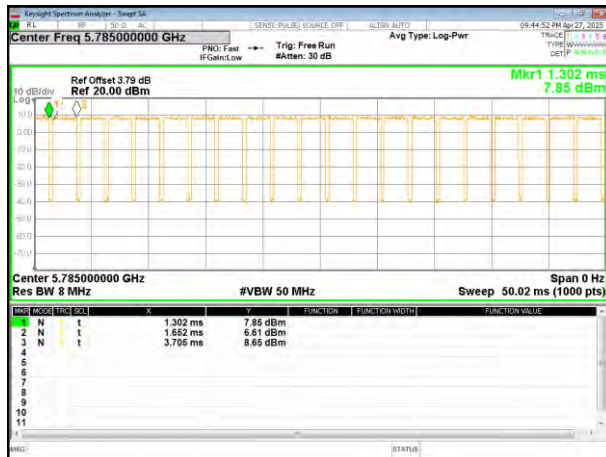
(802.11ac80) plot



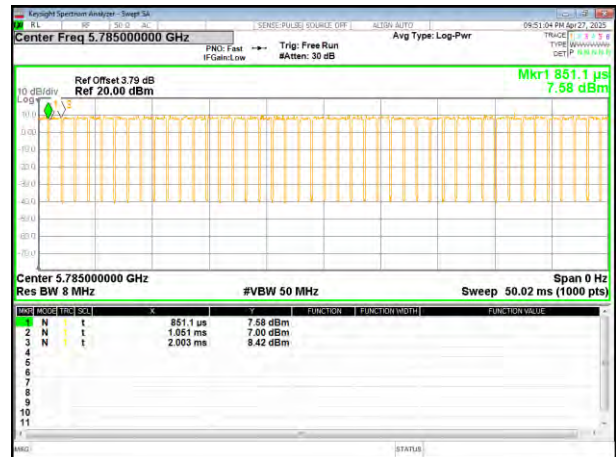


5745-5825 MHz

(802.11a) plot



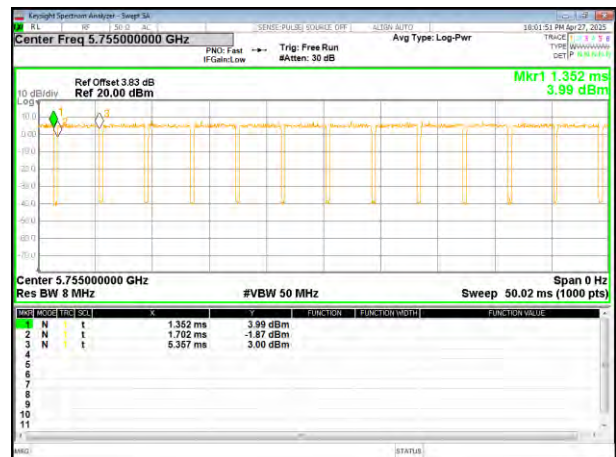
(802.11 n20) plot



(802.11ac20) plot



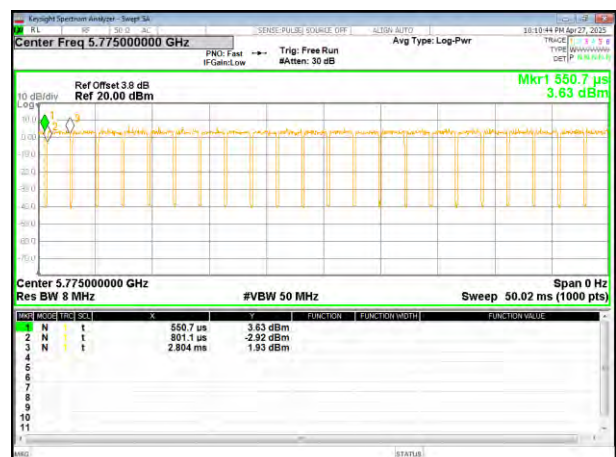
(802.11 n40) plot



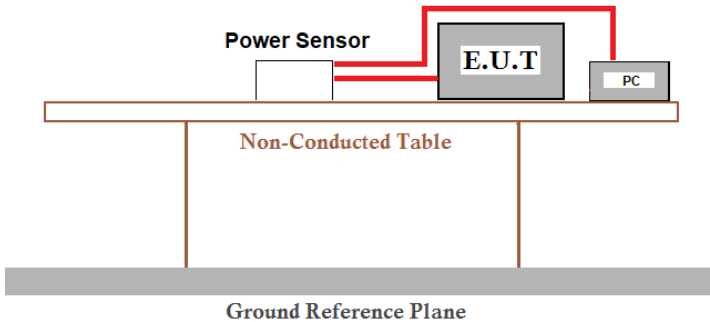
(802.11ac40) plot



(802.11ac80) plot



#### 4.4 Conducted Output Power

|                   |                                                                                                                                                                                                                                                                                                                          |               |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | FCC Part15 E Section 15.407 (a)(1)/(a)(3)                                                                                                                                                                                                                                                                                |               |
| Test Method:      | ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01                                                                                                                                                                                                                                       |               |
| Limit:            | 5150-5250MHz : 250mW<br>5725~5850MHz : 1W                                                                                                                                                                                                                                                                                |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Power Sensor is connected via red wires to an E.U.T. (Equipment Under Test) and a PC. The E.U.T. is placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                         |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                         |               |
| Test environment: | Temp.: 23.1°C                                                                                                                                                                                                                                                                                                            | Humid.: 64%RH |
| Test voltage:     | DC 7.7V From Battery                                                                                                                                                                                                                                                                                                     |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                     |               |

## Measurement Result

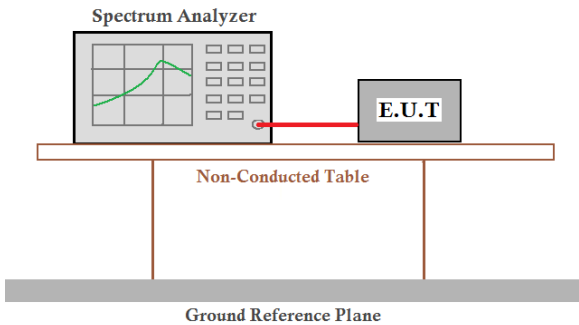
### 5180-5240MHz

| Test Channel        | Frequency | Correction Factor | Maximum output power | Total Power | LIMIT | Result |
|---------------------|-----------|-------------------|----------------------|-------------|-------|--------|
|                     | (MHz)     | (dB)              | (dBm)                | (dBm)       | dBm   |        |
| TX 802.11a Mode     |           |                   |                      |             |       |        |
| CH36                | 5180      | 0.75              | 6.64                 | 7.39        | 23.98 | Pass   |
| CH40                | 5200      | 0.75              | 6.60                 | 7.35        | 23.98 | Pass   |
| CH48                | 5240      | 0.75              | 6.35                 | 7.10        | 23.98 | Pass   |
| TX 802.11 n20 Mode  |           |                   |                      |             |       |        |
| CH36                | 5180      | 0.27              | 6.96                 | 7.23        | 23.98 | Pass   |
| CH40                | 5200      | 0.27              | 6.93                 | 7.20        | 23.98 | Pass   |
| CH48                | 5240      | 0.27              | 6.65                 | 6.92        | 23.98 | Pass   |
| TX 802.11 ac20 Mode |           |                   |                      |             |       |        |
| CH36                | 5180      | 0.72              | 6.21                 | 6.93        | 23.98 | Pass   |
| CH40                | 5200      | 0.72              | 6.46                 | 7.18        | 23.98 | Pass   |
| CH48                | 5240      | 0.72              | 6.31                 | 7.03        | 23.98 | Pass   |
| TX 802.11 n40 Mode  |           |                   |                      |             |       |        |
| CH38                | 5190      | 0.38              | 6.59                 | 6.97        | 23.98 | Pass   |
| CH46                | 5230      | 0.38              | 6.58                 | 6.96        | 23.98 | Pass   |
| TX 802.11 ac40 Mode |           |                   |                      |             |       |        |
| CH38                | 5190      | 0.28              | 6.97                 | 7.25        | 23.98 | Pass   |
| CH46                | 5230      | 0.28              | 6.89                 | 7.17        | 23.98 | Pass   |
| TX 802.11 ac80 Mode |           |                   |                      |             |       |        |
| CH42                | 5210      | 0.47              | 6.61                 | 7.08        | 23.98 | Pass   |

### 5745-5825 MHz

| Test Channel        | Frequency | Correction Factor | Maximum output power | Total Power | LIMIT | Result |
|---------------------|-----------|-------------------|----------------------|-------------|-------|--------|
|                     | (MHz)     | (dB)              | (dBm)                | (dBm)       | dBm   |        |
| TX 802.11a Mode     |           |                   |                      |             |       |        |
| CH149               | 5745      | 0.68              | 6.66                 | 7.34        | 30    | Pass   |
| CH157               | 5785      | 0.68              | 6.38                 | 7.06        | 30    | Pass   |
| CH165               | 5825      | 0.68              | 6.63                 | 7.31        | 30    | Pass   |
| TX 802.11 n20 Mode  |           |                   |                      |             |       |        |
| CH149               | 5745      | 0.83              | 6.15                 | 6.98        | 30    | Pass   |
| CH157               | 5785      | 0.83              | 6.17                 | 7.00        | 30    | Pass   |
| CH165               | 5825      | 0.83              | 6.39                 | 7.22        | 30    | Pass   |
| TX 802.11 ac20 Mode |           |                   |                      |             |       |        |
| CH149               | 5745      | 0.73              | 6.24                 | 6.97        | 30    | Pass   |
| CH157               | 5785      | 0.73              | 6.43                 | 7.16        | 30    | Pass   |
| CH165               | 5825      | 0.73              | 6.67                 | 7.40        | 30    | Pass   |
| TX 802.11 n40 Mode  |           |                   |                      |             |       |        |
| CH151               | 5755      | 0.4               | 6.70                 | 7.10        | 30    | Pass   |
| CH159               | 5795      | 0.4               | 6.78                 | 7.18        | 30    | Pass   |
| TX 802.11 ac40 Mode |           |                   |                      |             |       |        |
| CH151               | 5755      | 0.27              | 6.91                 | 7.18        | 30    | Pass   |
| CH159               | 5795      | 0.27              | 6.77                 | 7.04        | 30    | Pass   |
| TX 802.11 ac80 Mode |           |                   |                      |             |       |        |
| CH155               | 5775      | 0.51              | 6.73                 | 7.24        | 30    | Pass   |

#### 4.5 Bandwidth & 99% Occupy Bandwidth

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | FCC Part15 E Section 15.407(a)(12)&15.407(e)                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Test Method:      | ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01                                                                                                                                                                                                                                                                                                                                                          |               |
| Limit:            | Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth. |               |
| Test setup:       |                                                                                                                                                                                                                                                                                                                                                           |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Test environment: | Temp.: 23.1°C                                                                                                                                                                                                                                                                                                                                                                                                                               | Humid.: 64%RH |
| Test voltage:     | DC 7.7V From Battery                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |

#### Measurement Result

5180-5240MHz

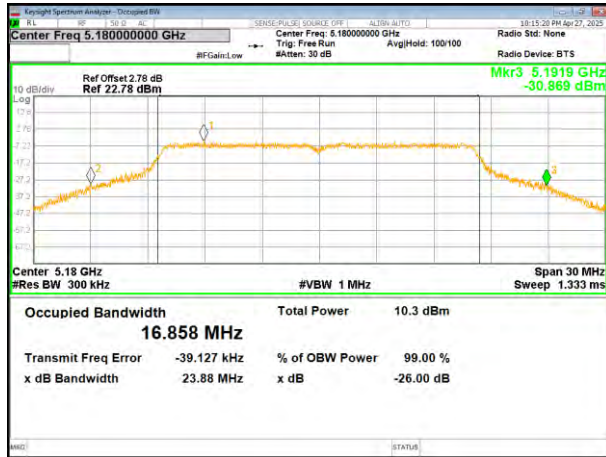
| Test CH | -26dB Channel Bandwidth (MHz) |                |                  |                |                  |                  | Result |
|---------|-------------------------------|----------------|------------------|----------------|------------------|------------------|--------|
|         | 802.11a                       | 802.11n (HT20) | 802.11ac (VHT20) | 802.11n (HT40) | 802.11ac (VHT40) | 802.11ac (VHT80) |        |
| Lowest  | 23.88                         | 21.72          | 24.49            | 41.52          | 41.97            | --               | Pass   |
| Middle  | 23.45                         | 21.86          | 24.66            | --             | --               | 80.23            |        |
| Highest | 23.45                         | 22.20          | 24.30            | 41.42          | 41.25            | --               |        |

| Test CH | 99% Occupy Bandwidth (MHz) |                |                  |                |                  |                  | Result |
|---------|----------------------------|----------------|------------------|----------------|------------------|------------------|--------|
|         | 802.11a                    | 802.11n (HT20) | 802.11ac (VHT20) | 802.11n (HT40) | 802.11ac (VHT40) | 802.11ac (VHT80) |        |
| Lowest  | 16.661                     | 17.727         | 17.830           | 36.363         | 36.409           | --               | Pass   |
| Middle  | 16.692                     | 17.720         | 17.879           | --             | --               | 74.972           |        |
| Highest | 16.697                     | 17.733         | 17.829           | 36.332         | 36.291           | --               |        |

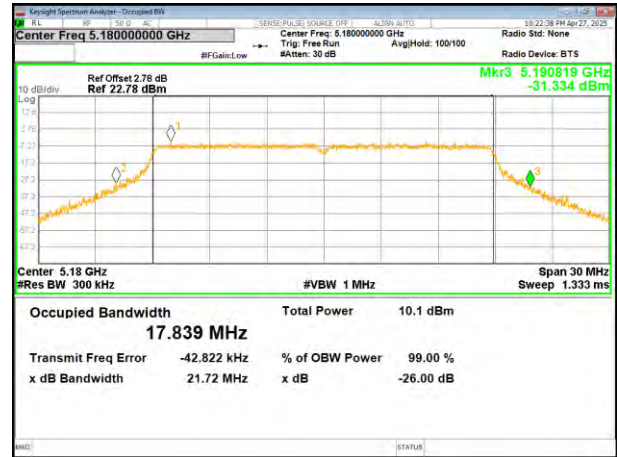


Test plot -26dB Channel Bandwidth

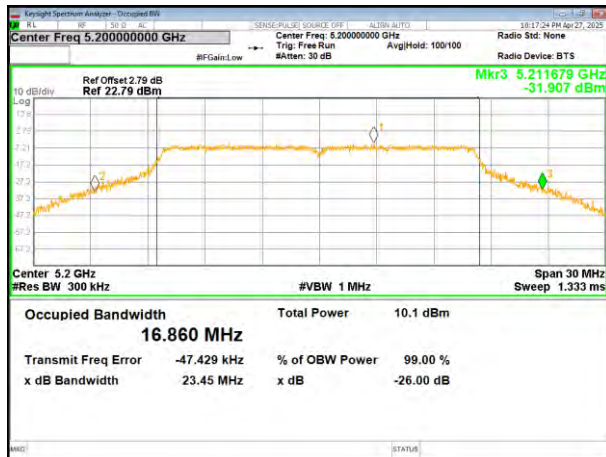
(802.11a) plot on channel 36



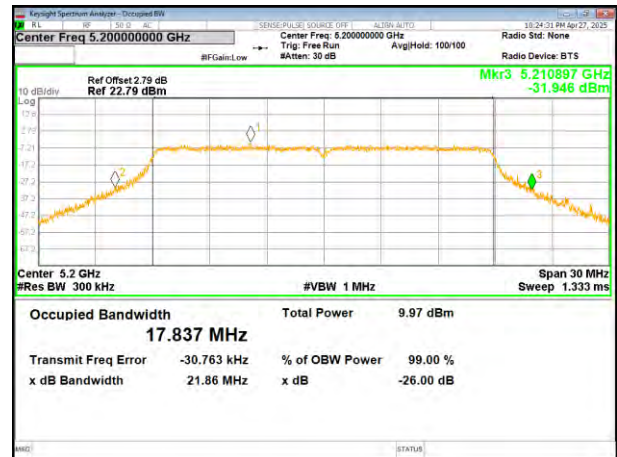
(802.11 n20) plot on channel 36



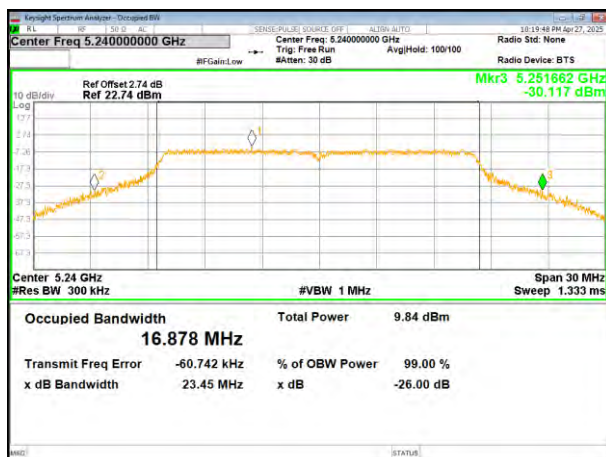
(802.11a) plot on channel 40



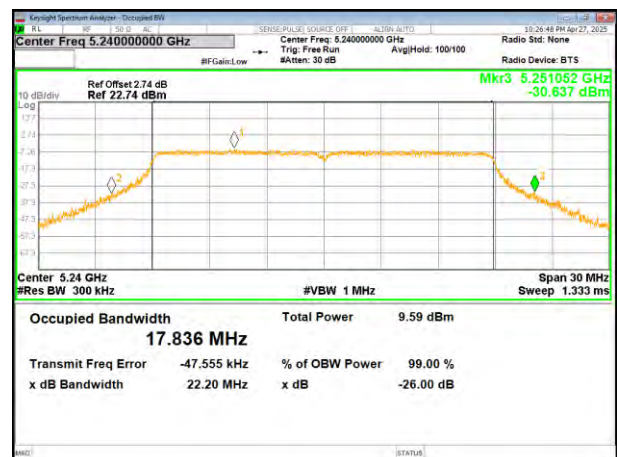
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

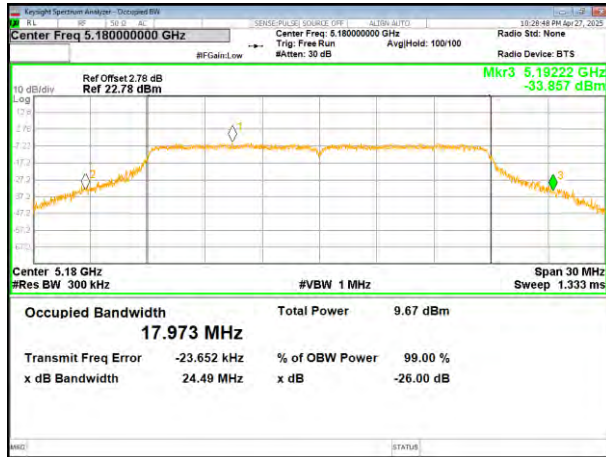


(802.11 n20) plot on channel 48

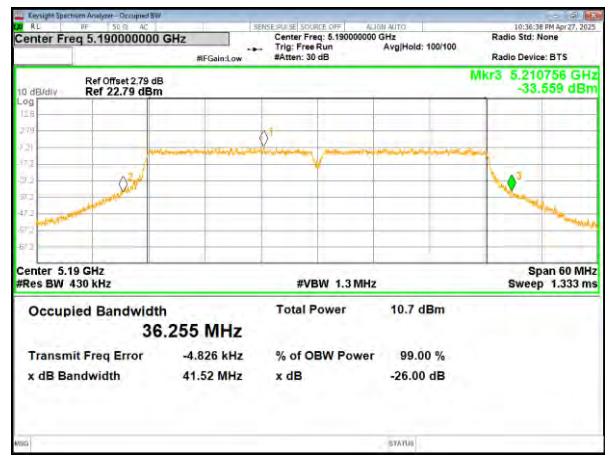


Test plot

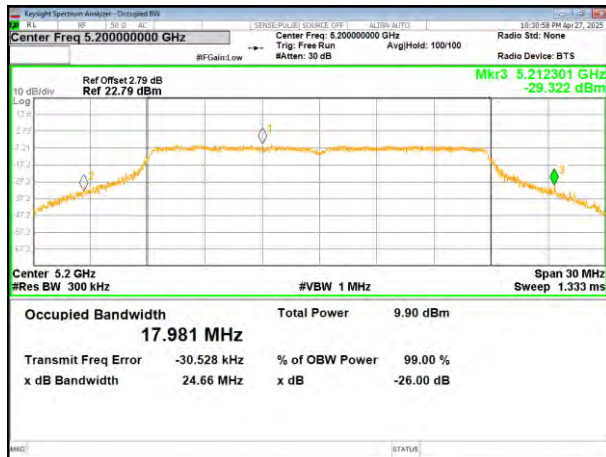
(802.11ac20) plot on channel 36



(802.11 n40) plot on channel 38



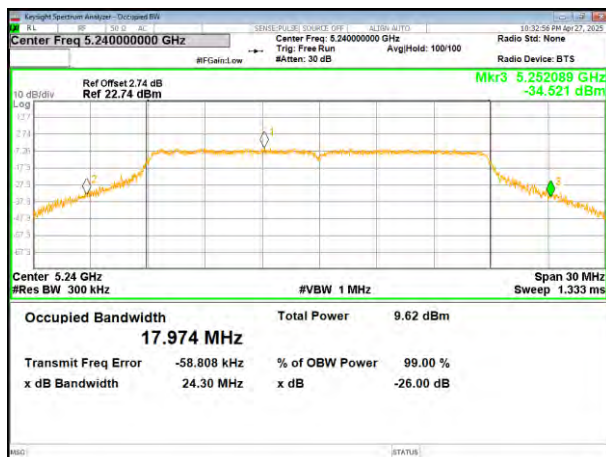
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

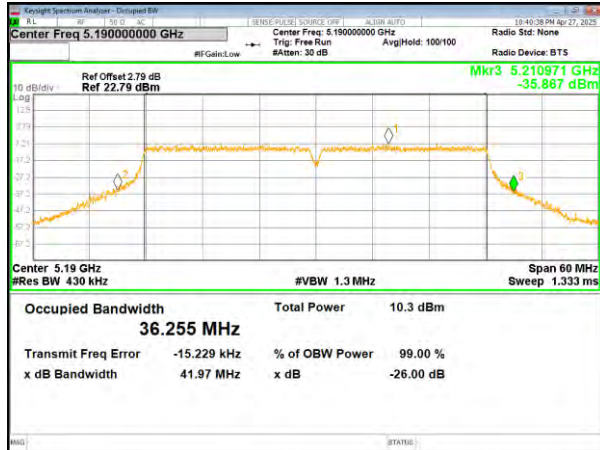


(802.11ac20) plot on channel 48

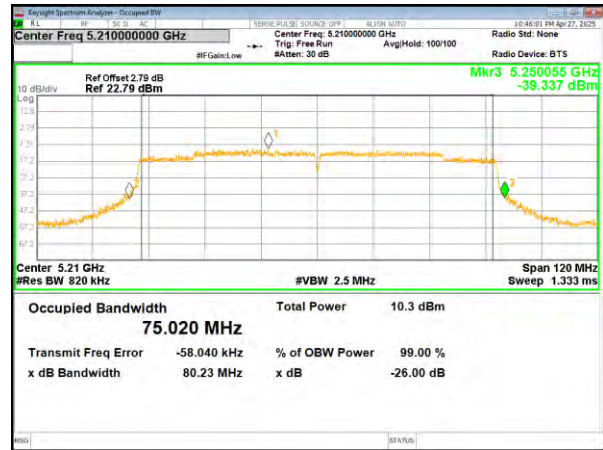


Test plot

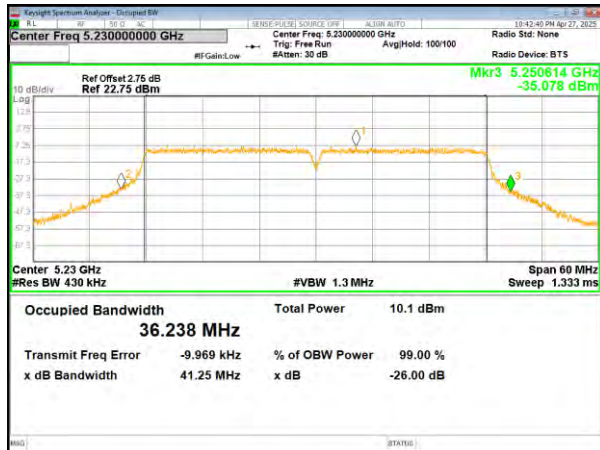
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



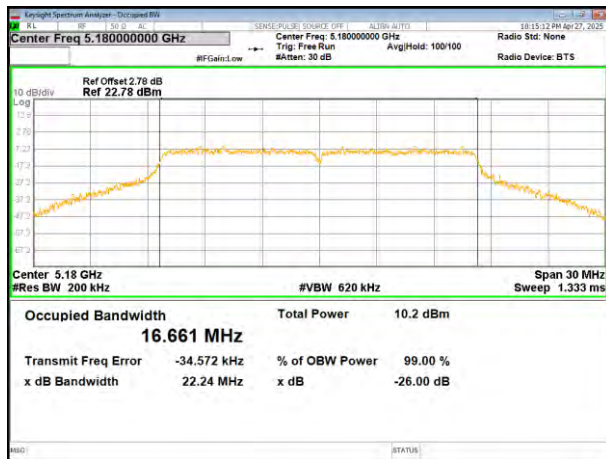
(802.11ac40) plot on channel 46



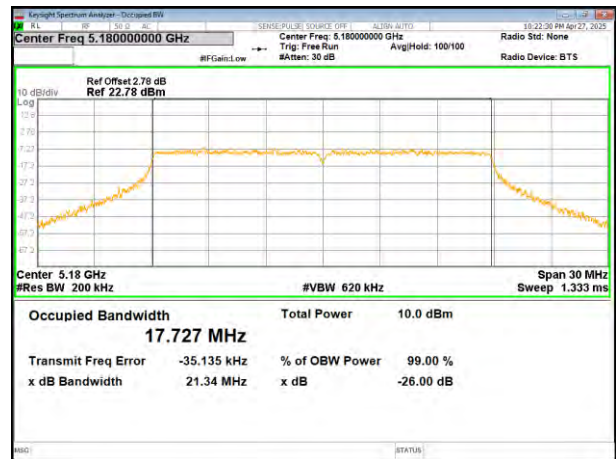


Test plot 99% Occupy Bandwidth

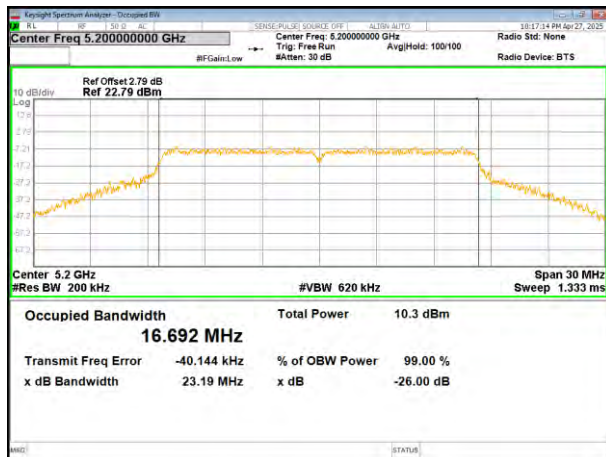
(802.11a) plot on channel 36



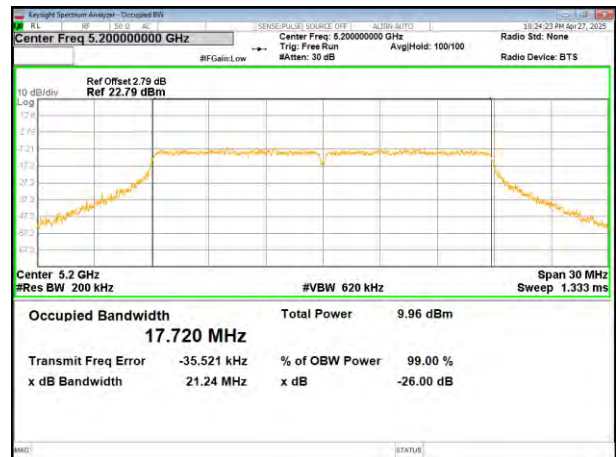
(802.11 n20) plot on channel 36



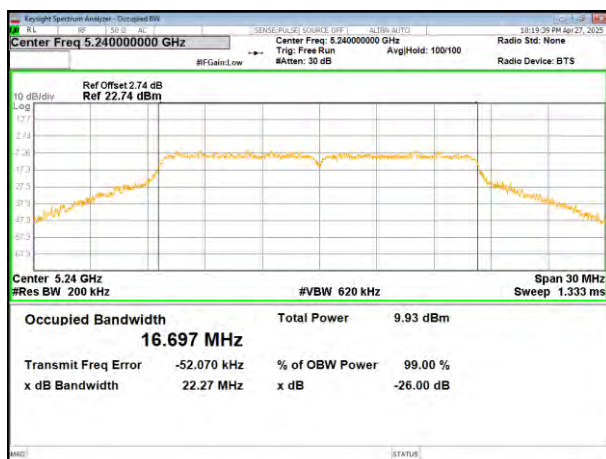
(802.11a) plot on channel 40



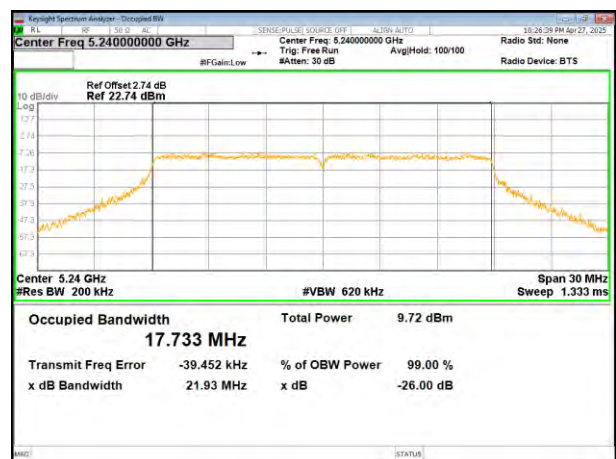
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48



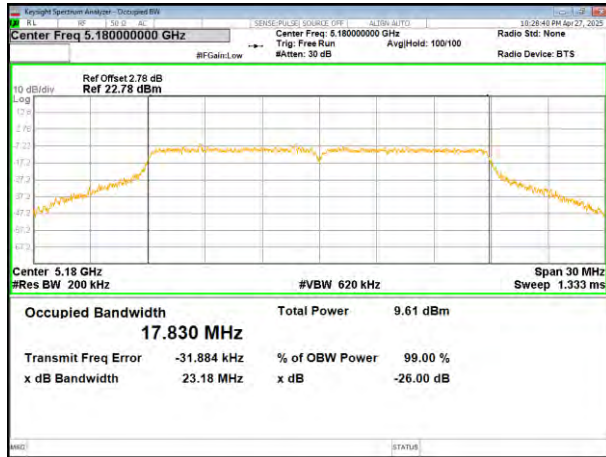
(802.11 n20) plot on channel 48



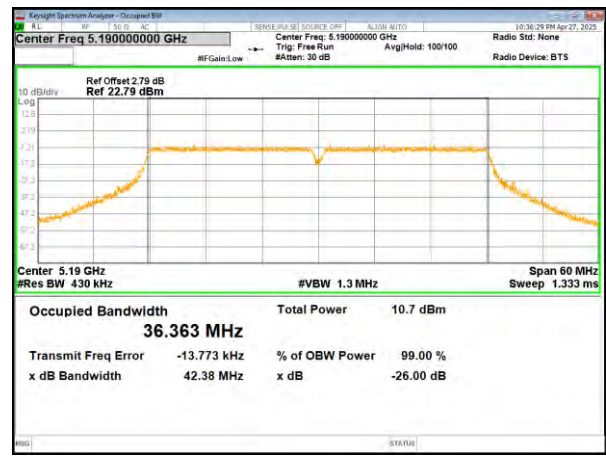


### Test plot

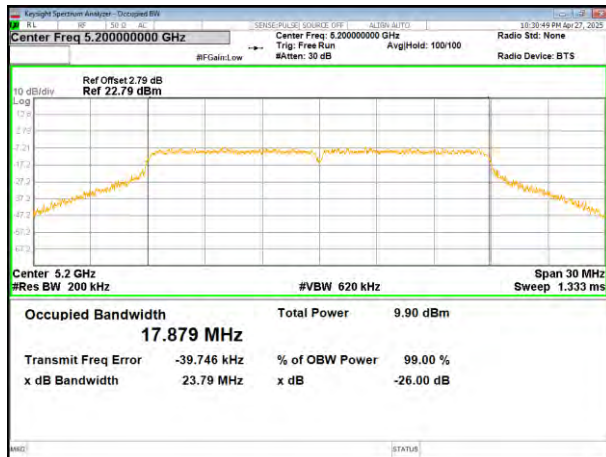
(802.11ac20) plot on channel 36



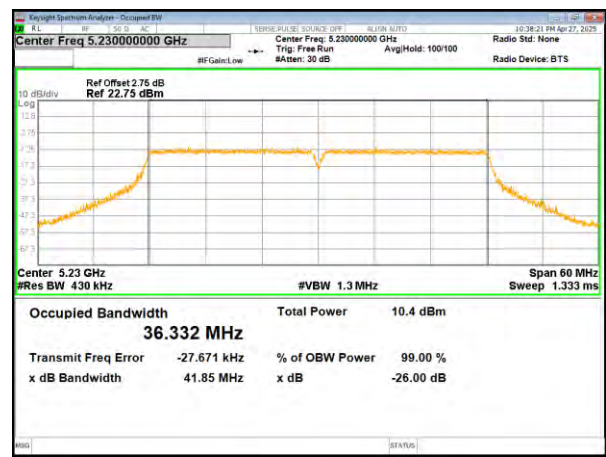
(802.11 n40) plot on channel 38



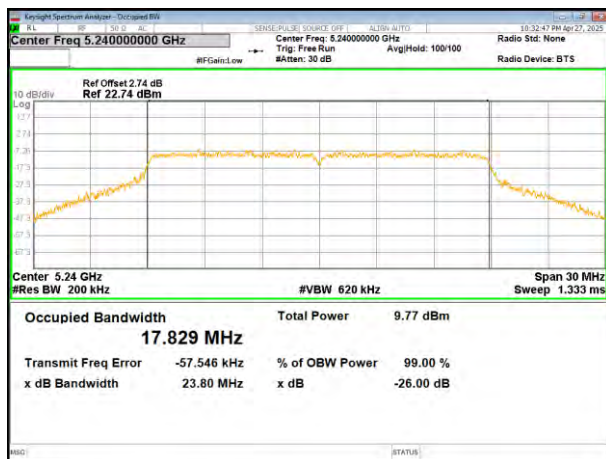
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

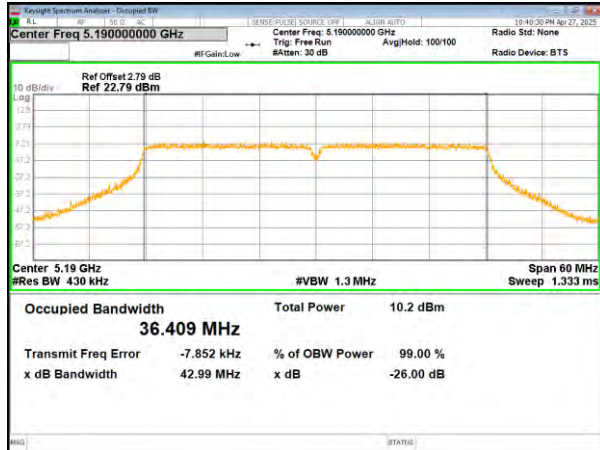


(802.11ac20) plot on channel 48

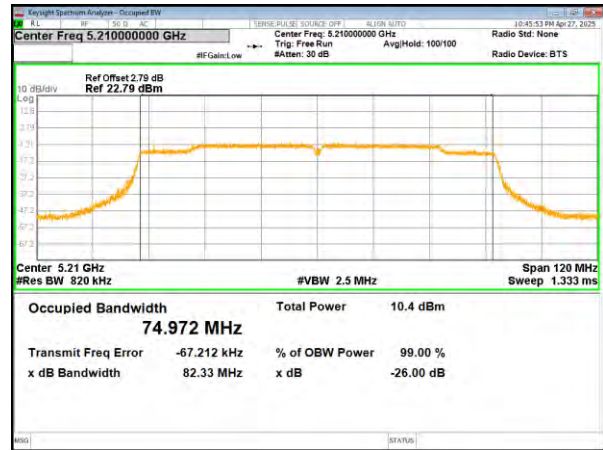


### Test plot

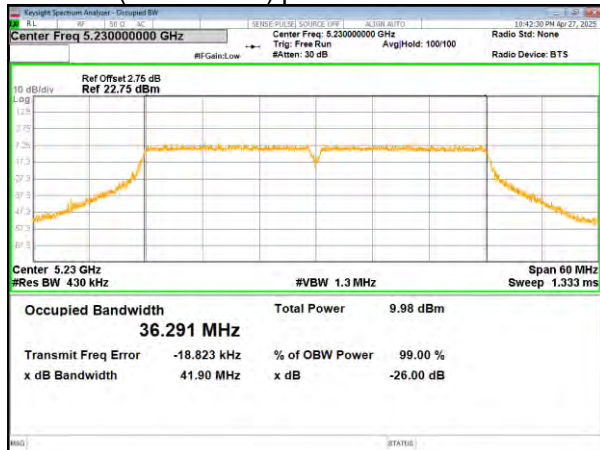
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



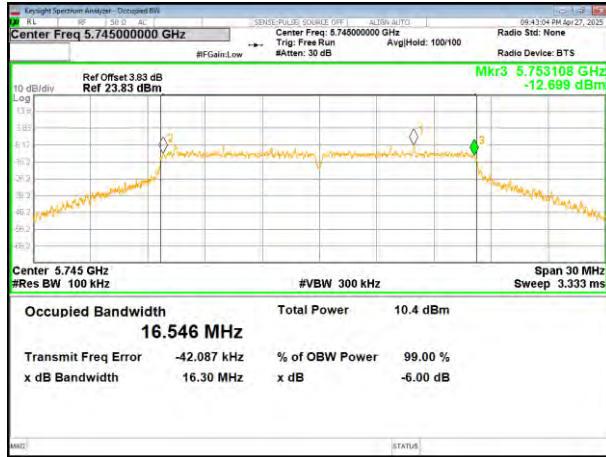
5745-5825MHz

| Test CH | -6dB Channel Bandwidth (MHz) |                |                  |                |                  |                  | Limit (KHz) | Result |
|---------|------------------------------|----------------|------------------|----------------|------------------|------------------|-------------|--------|
|         | 802.11a                      | 802.11n (HT20) | 802.11ac (VHT20) | 802.11n (HT40) | 802.11ac (VHT40) | 802.11ac (VHT80) |             |        |
| Lowest  | 16.30                        | 17.61          | 17.60            | 36.38          | 36.14            | --               | >500        | Pass   |
| Middle  | 16.34                        | 17.63          | 17.54            | --             | --               | 75.04            |             |        |
| Highest | 16.31                        | 17.60          | 17.43            | 36.37          | 36.36            | --               |             |        |

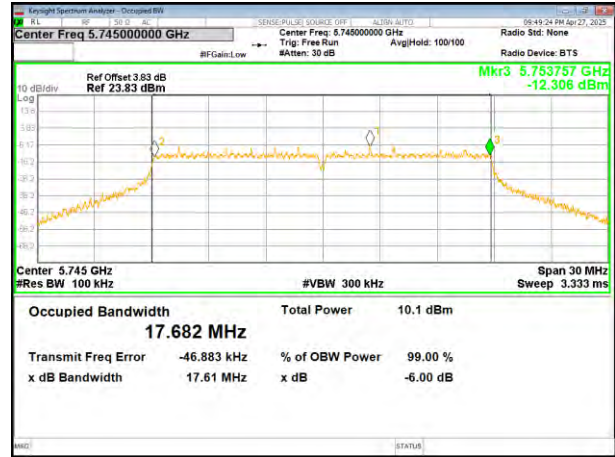
Remark: "---"is not applicable

### Test plot

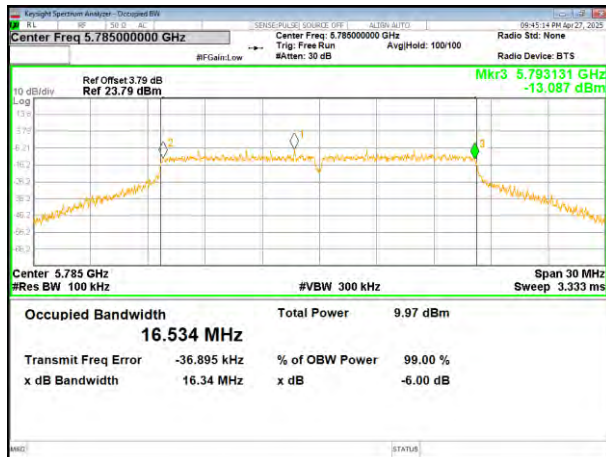
(802.11a) plot on channel 149



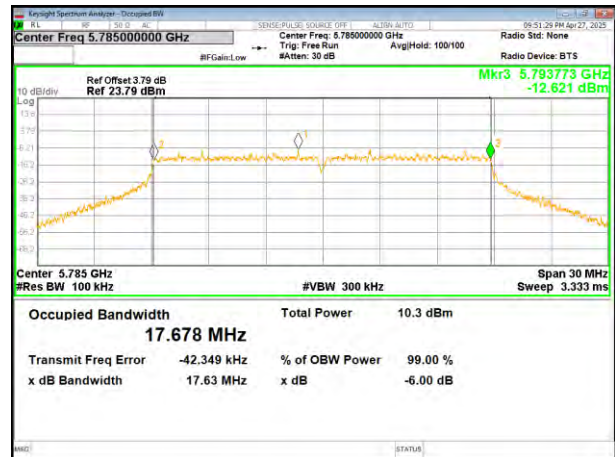
(802.11 n20) plot on channel 149



(802.11a) plot on channel 157



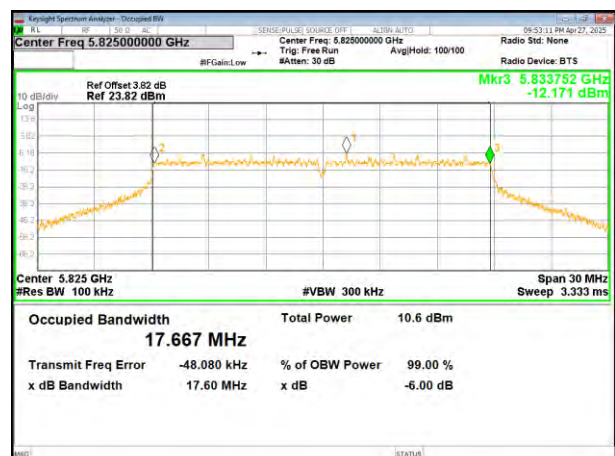
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165



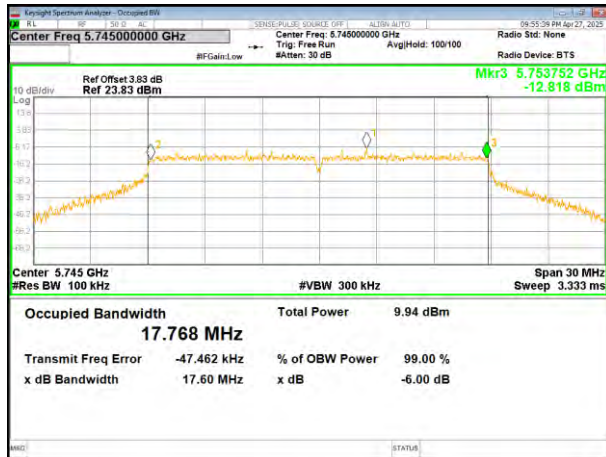
(802.11 n20) plot on channel 165



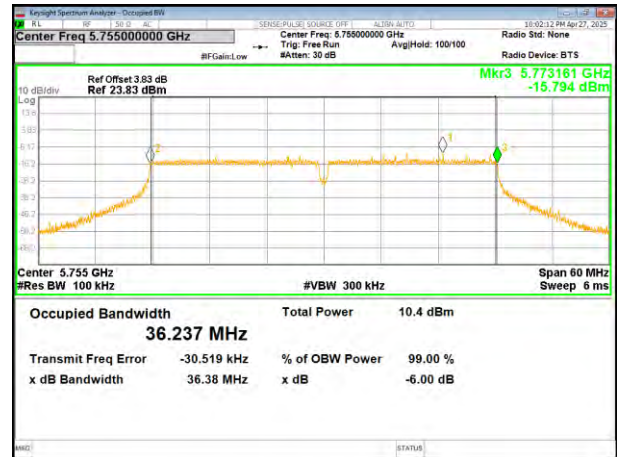


Test plot

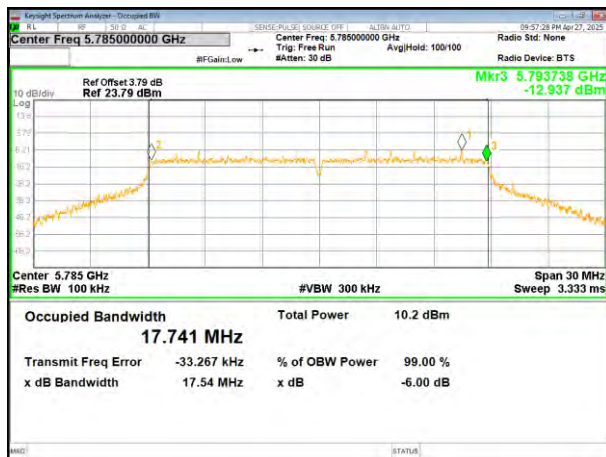
(802.11ac20) plot on channel 149



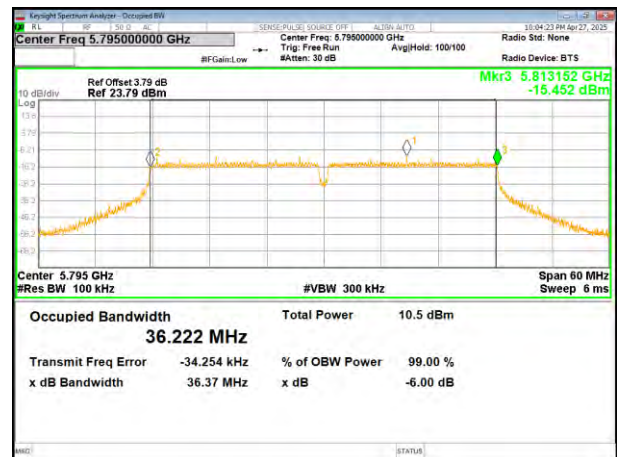
(802.11 n40) plot on channel 151



(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

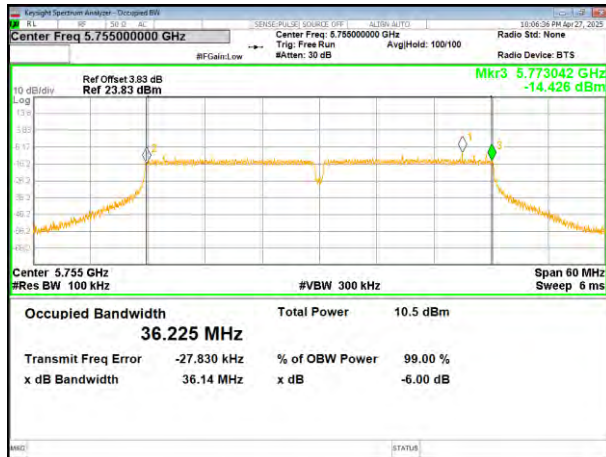


(802.11ac20) plot on channel 165

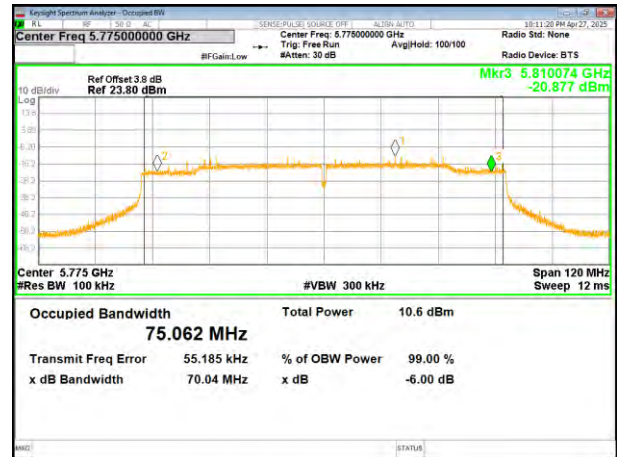


### Test plot

(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155

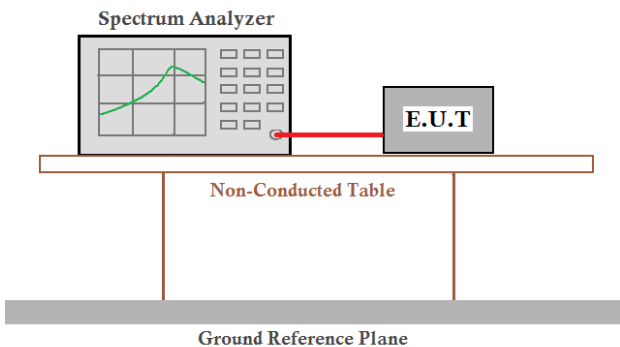


(802.11 ac40) plot on channel 159





## 4.6 Power Spectral Density

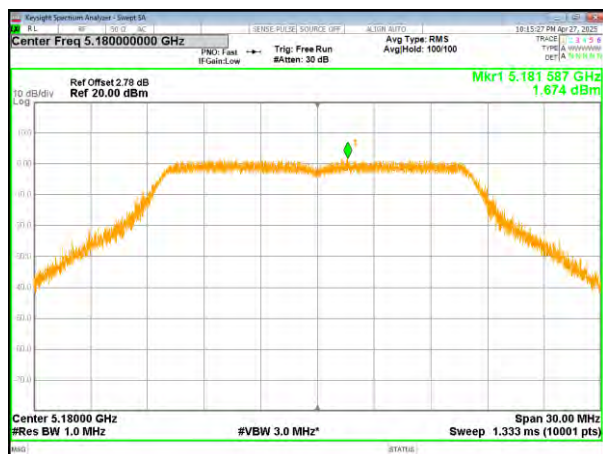
|                   |                                                                                     |                               |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------|
| Test Requirement: | FCC Part15 E Section 15.407(a)(1)/ (a)(3)                                           |                               |
| Test Method:      | ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01  |                               |
| Limit:            | Frequency band (MHz)                                                                | Limit                         |
|                   | 5150-5250                                                                           | ≤17dBm/1MHz for master device |
|                   |                                                                                     | ≤11dBm/1MHz for client device |
|                   | 5250-5350                                                                           | ≤11dBm/1MHz for client device |
|                   | 5470-5725                                                                           | ≤11dBm/1MHz for client device |
|                   | 5725-5850                                                                           | ≤30dBm/500kHz                 |
| Test setup:       |  |                               |
| Test Instruments: | Refer to section 3.0 for details                                                    |                               |
| Test mode:        | Refer to section 2.2 for details                                                    |                               |
| Test environment: | Temp.: 23.1°C                                                                       | Humid.: 64%RH                 |
| Test voltage:     | DC 7.7V From Battery                                                                |                               |
| Test results:     | Pass                                                                                |                               |

### Measurement Result

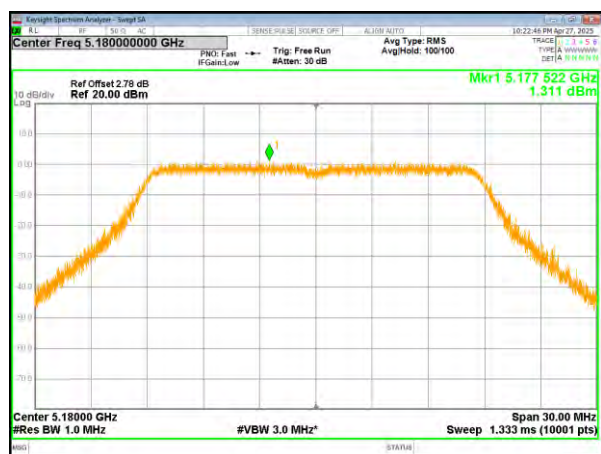
#### 5180-5240MHz

| Mode        | Frequency | Measured Power Density (dBm/MHz) | Correction Factor (dB) | Total Measured Power Density (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------|----------------------------------|------------------------|----------------------------------------|-----------------|
| 802.11 a    | 5180 MHz  | 1.674                            | 0.750                  | 2.424                                  | 11              |
|             | 5200 MHz  | 1.468                            | 0.750                  | 2.218                                  | 11              |
|             | 5240 MHz  | 1.315                            | 0.750                  | 2.065                                  | 11              |
| 802.11 n20  | 5180 MHz  | 1.311                            | 0.270                  | 1.581                                  | 11              |
|             | 5200 MHz  | 1.052                            | 0.270                  | 1.322                                  | 11              |
|             | 5240 MHz  | 1.687                            | 0.270                  | 1.957                                  | 11              |
| 802.11 ac20 | 5180 MHz  | 0.901                            | 0.720                  | 1.621                                  | 11              |
|             | 5200 MHz  | 1.401                            | 0.720                  | 2.121                                  | 11              |
|             | 5240 MHz  | 0.623                            | 0.720                  | 1.343                                  | 11              |
| 802.11 n40  | 5190 MHz  | -0.842                           | 0.380                  | -0.462                                 | 11              |
|             | 5230 MHz  | -0.687                           | 0.380                  | -0.307                                 | 11              |
| 802.11 ac40 | 5190 MHz  | -1.196                           | 0.280                  | -0.916                                 | 11              |
|             | 5230 MHz  | -0.892                           | 0.280                  | -0.612                                 | 11              |
| 802.11 ac80 | 5210 MHz  | -3.837                           | 0.470                  | -3.367                                 | 11              |

(802.11a) PSD plot on channel 36



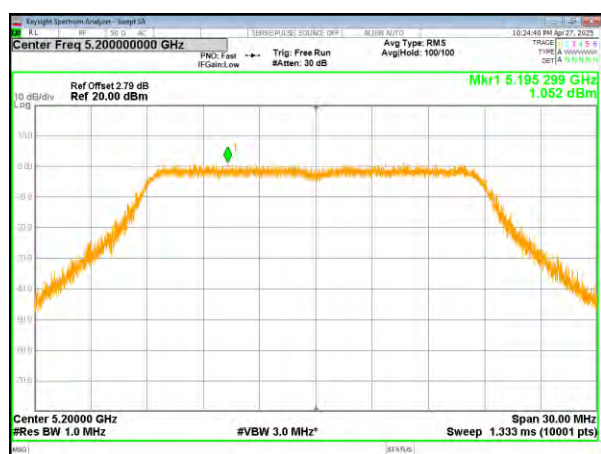
(802.11n20) PSD plot on channel 36



(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40



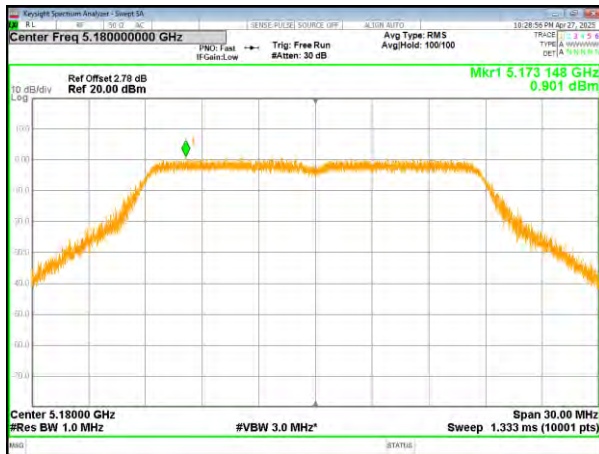
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



(802.11ac20) PSD plot on channel 36



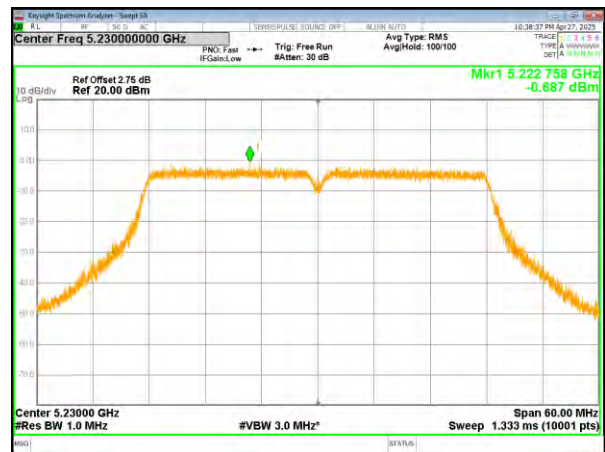
(802.11n40) PSD plot on channel 38



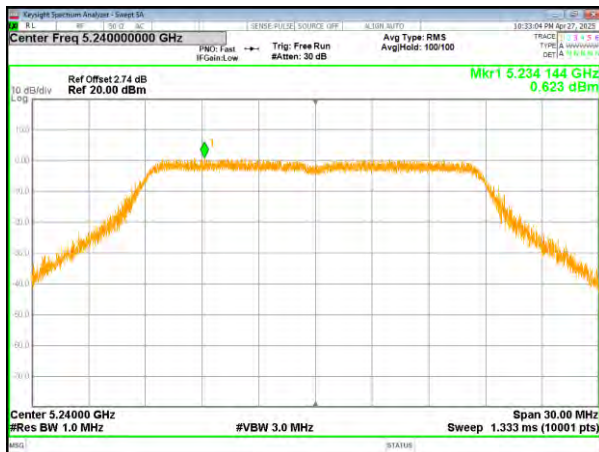
(802.11ac20) PSD plot on channel 40



(802.11n40) PSD plot on channel 46



(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46





| Mode       | Frequency | Measured Power Density (dBm/510KHz) | Measured Power Density (dBm/500KHz) | Correction Factor (dB) | Total Measured Power Density (dBm/500KHz) | Limit (dBm/MHz) |
|------------|-----------|-------------------------------------|-------------------------------------|------------------------|-------------------------------------------|-----------------|
| 802.11 a   | 5745 MHz  | -2.150                              | -2.236                              | 0.680                  | -1.556                                    | 30              |
|            | 5785 MHz  | -2.392                              | -2.478                              | 0.680                  | -1.798                                    | 30              |
|            | 5825 MHz  | -2.367                              | -2.453                              | 0.680                  | -1.773                                    | 30              |
| 802.11 n20 | 5745 MHz  | -1.667                              | -1.753                              | 0.830                  | -0.923                                    | 30              |
|            | 5785 MHz  | -1.671                              | -1.757                              | 0.830                  | -0.927                                    | 30              |
|            | 5825 MHz  | -1.640                              | -1.726                              | 0.830                  | -0.896                                    | 30              |
| 802.11ac20 | 5745 MHz  | -3.122                              | -3.208                              | 0.730                  | -2.478                                    | 30              |
|            | 5785 MHz  | -1.686                              | -1.772                              | 0.730                  | -1.042                                    | 30              |
|            | 5825 MHz  | -1.894                              | -1.980                              | 0.730                  | -1.250                                    | 30              |
| 802.11 n40 | 5755 MHz  | -3.999                              | -4.085                              | 0.400                  | -3.685                                    | 30              |
|            | 5795 MHz  | -4.393                              | -4.479                              | 0.400                  | -4.079                                    | 30              |
| 802.11ac40 | 5755 MHz  | -4.853                              | -4.939                              | 0.270                  | -4.669                                    | 30              |
|            | 5795 MHz  | -4.499                              | -4.585                              | 0.270                  | -4.315                                    | 30              |
| 802.11ac80 | 5775 MHz  | -7.298                              | -7.384                              | 0.510                  | -6.874                                    | 30              |

Note: 1. If the measurement is X dBm/510kHz, thus  $X \text{ dBm/510kHz} = (10^{X/10}) \cdot (500 / 510) \text{ dBm/500kHz}$

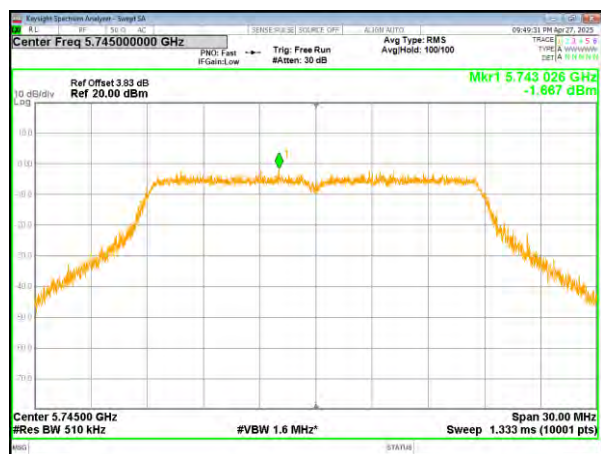
2. Correction Factor (dB)= duty cycle factor



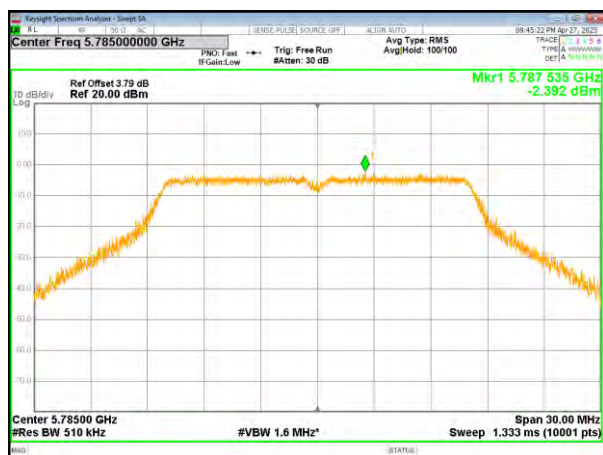
(802.11a) PSD plot on channel 149



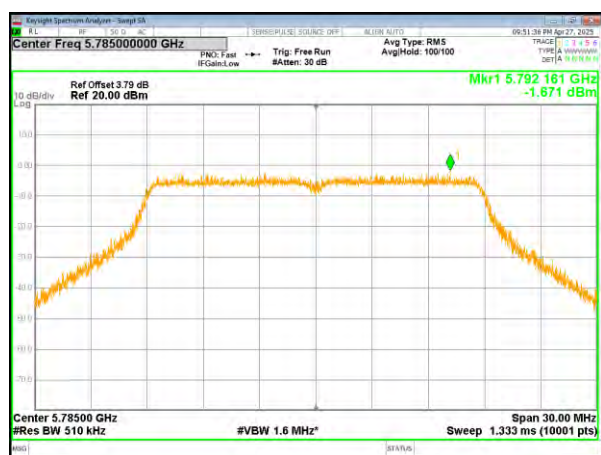
(802.11n20) PSD plot on channel 149



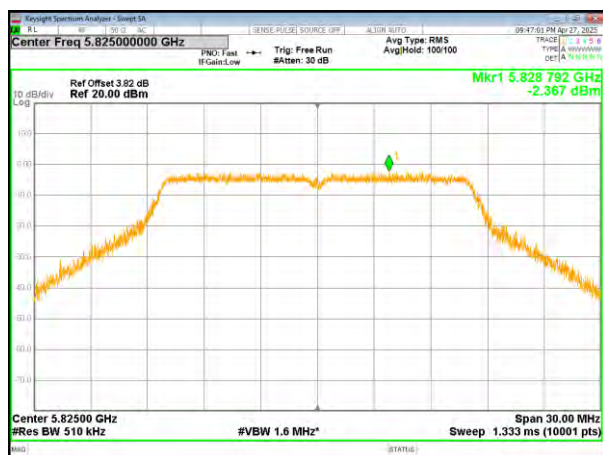
(802.11a) PSD plot on channel 157



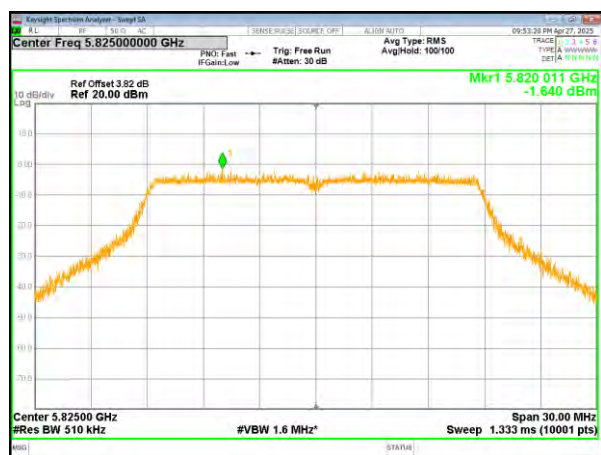
(802.11n20) PSD plot on channel 157



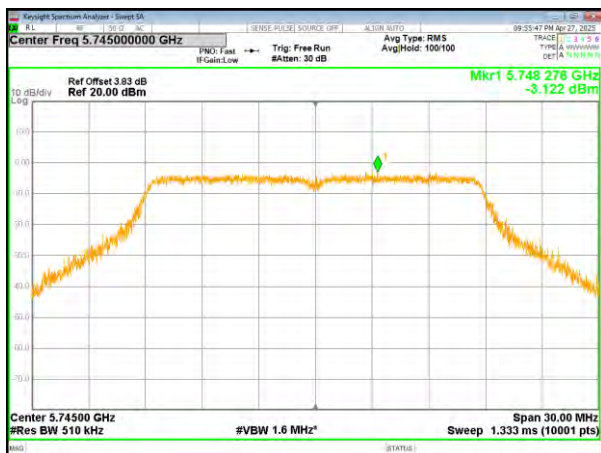
(802.11a) PSD plot on channel 165



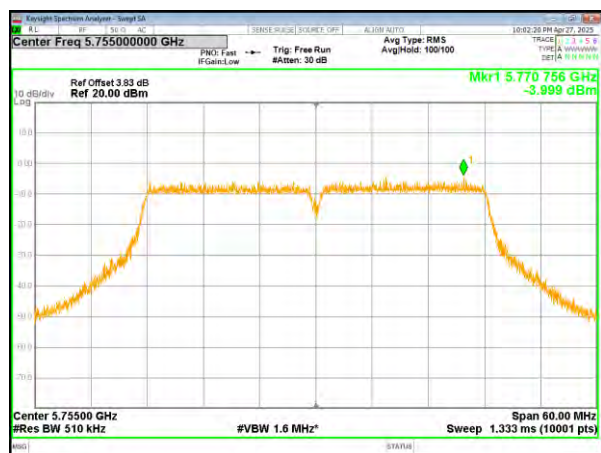
(802.11n20) PSD plot on channel 165



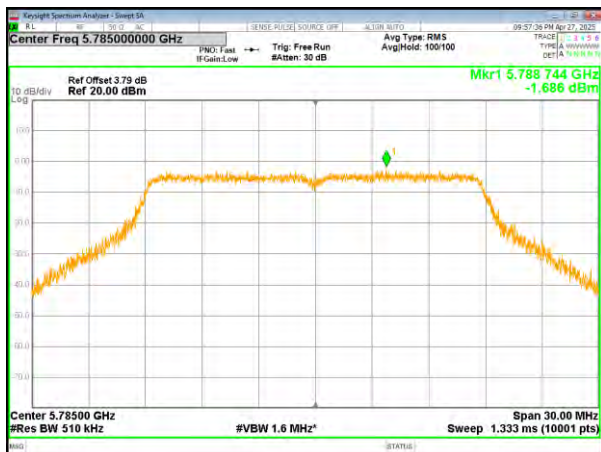
(802.11ac20) PSD plot on channel 149



(802.11n40) PSD plot on channel 151



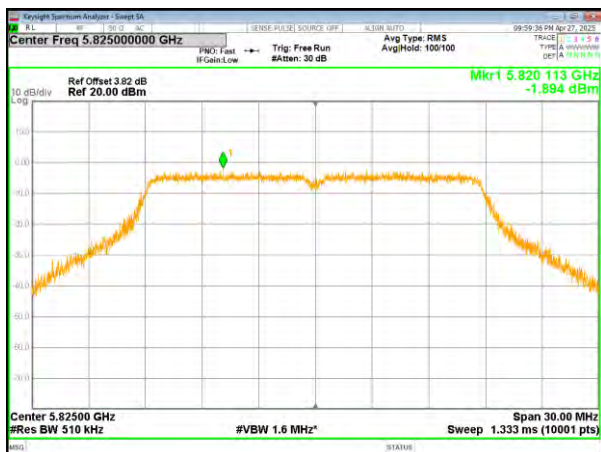
(802.11ac20) PSD plot on channel 157



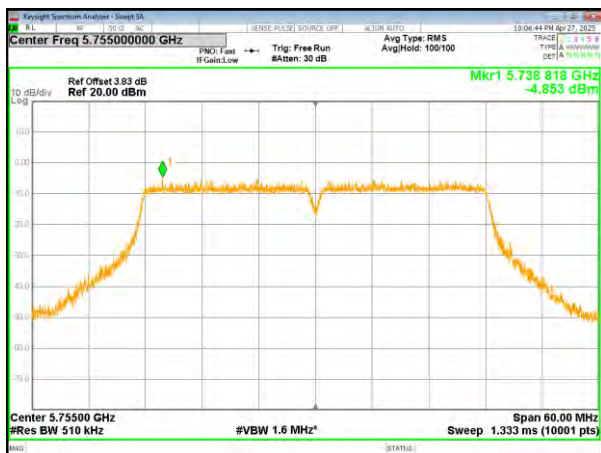
(802.11n40) PSD plot on channel 159



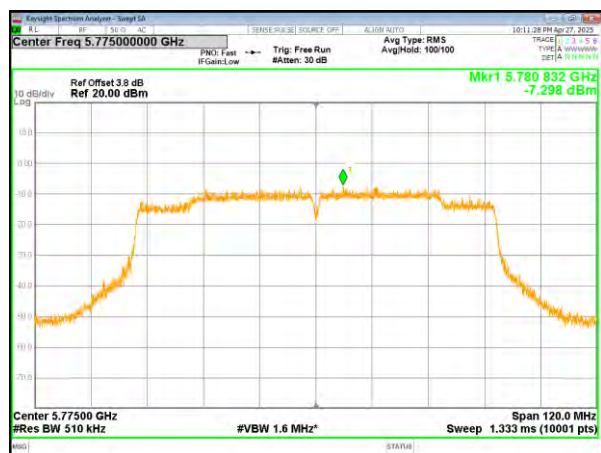
(802.11ac20) PSD plot on channel 165



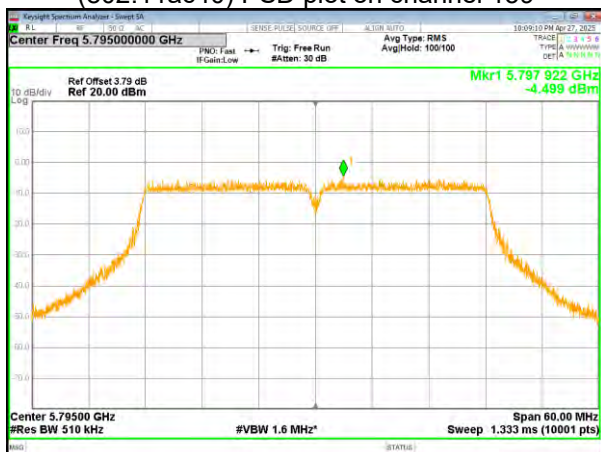
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

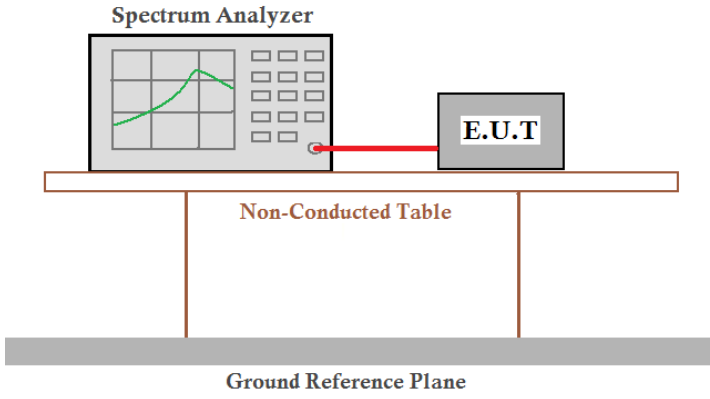


(802.11ac40) PSD plot on channel 159



## 4.7 Band edge

### 4.7.1 Conducted test Method

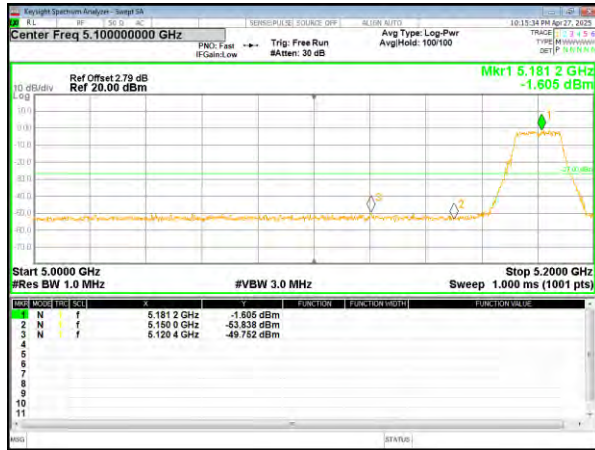
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | FCC Part15 C Section 15.209 and 15.205                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Test Method:      | ANSI C63.10: 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
| Limit:            | 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.                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.</li> <li>2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.</li> <li>3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.</li> <li>4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.</li> <li>5. Repeat above procedures until all measured frequencies were complete..</li> </ol> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Test environment: | Temp.: 23.1°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humid.: 64%RH |
| Test voltage:     | DC 7.7V From Battery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |

*Remark: Due to the margin value of the sideband test being greater than the antenna gain value, the test meets the requirements*

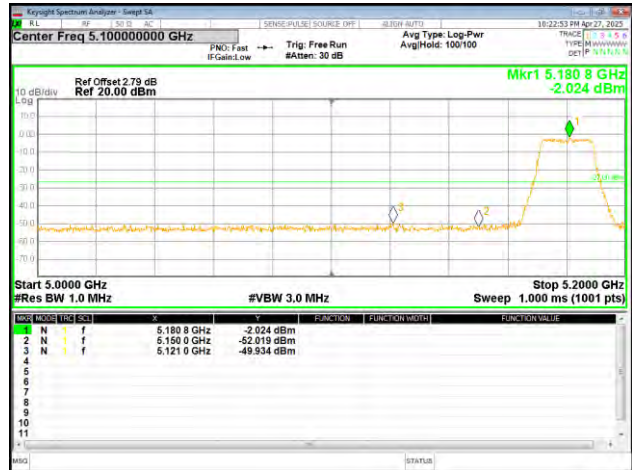


## 5.180~5.240 GHz

(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side



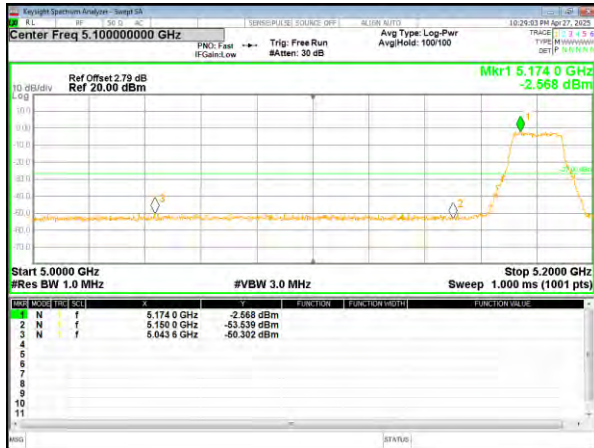
(802.11n20) Band Edge, Right Side



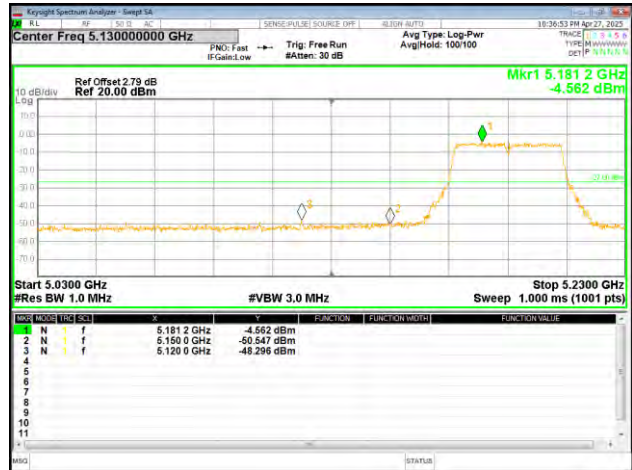
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements



(802.11ac20) Band Edge, Left Side



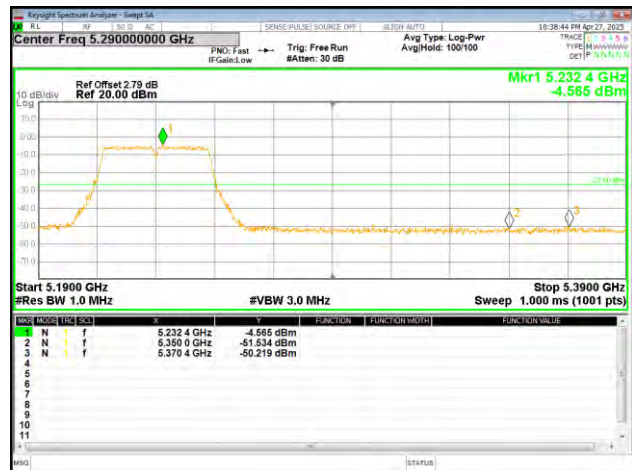
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

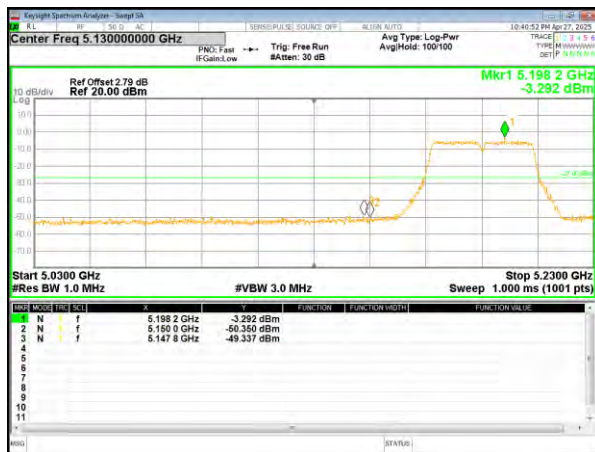


(802.11n40) Band Edge, Right Side



Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

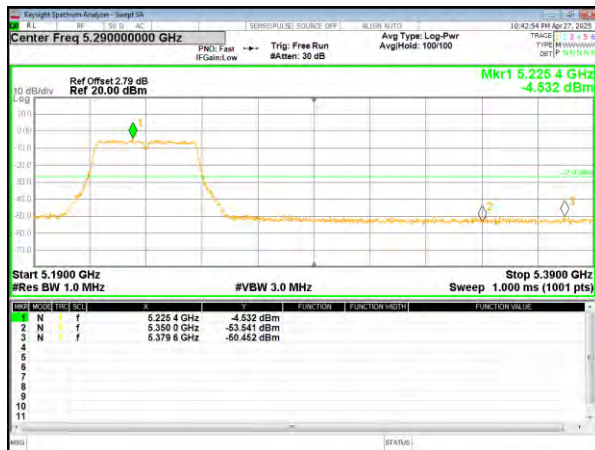
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



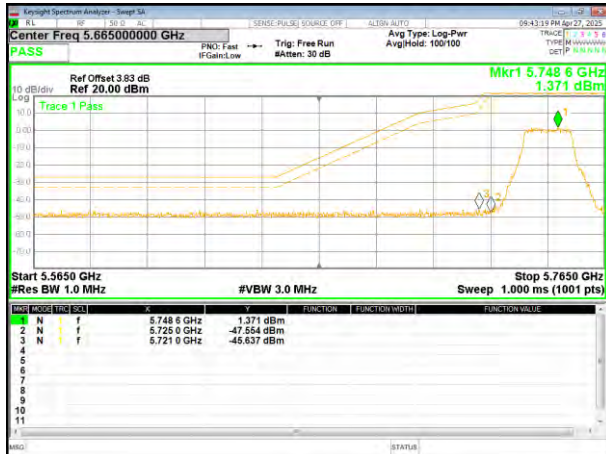
(802.11ac40) Band Edge, Right Side



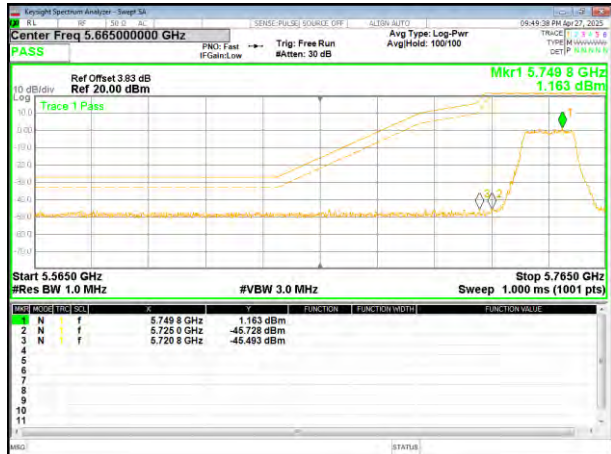
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

### 5.745~5.825 GHz

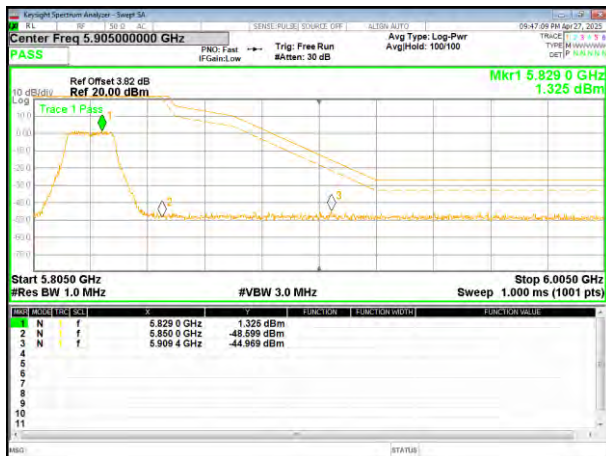
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side



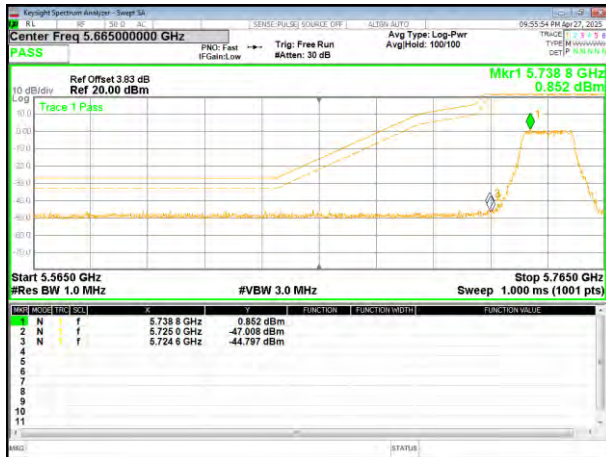
(802.11n20) Band Edge, Right Side



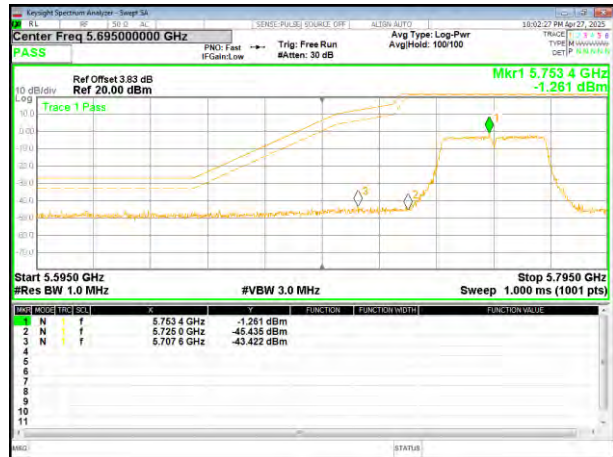
Remark: Antenna gain and cable loss data included in Offset.



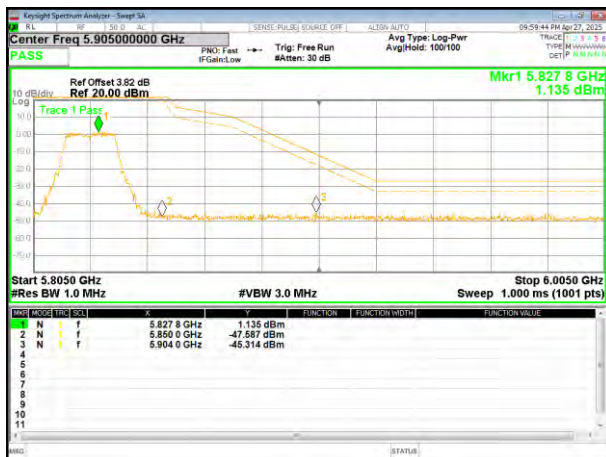
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

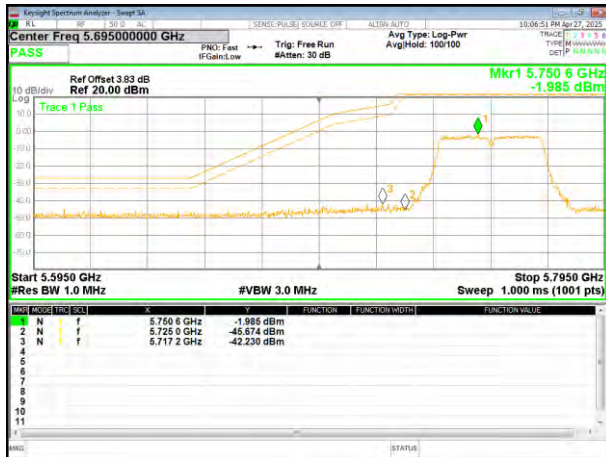


(802.11n40) Band Edge, Right Side



Remark: Antenna gain and cable loss data included in Offset.

(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



(802.11ac40) Band Edge, Right Side

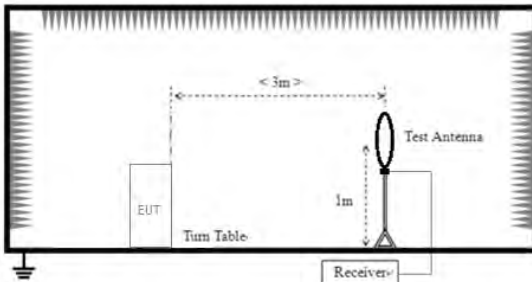
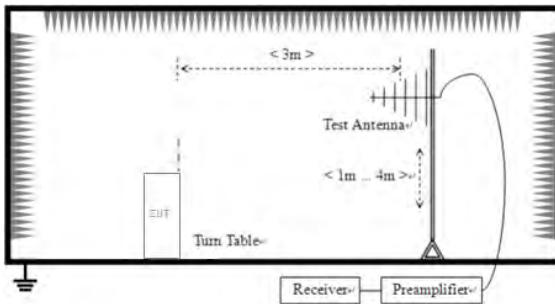


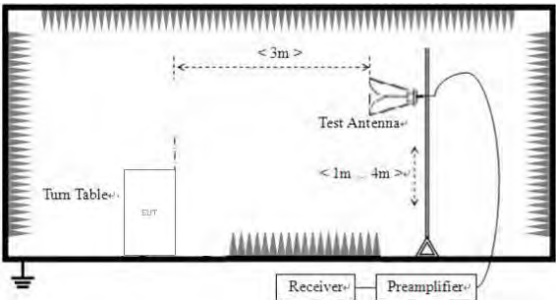
Remark: Antenna gain and cable loss data included in Offset.



## 4.8 Spurious Emission

### 4.8.1 Radiated Emission Method

|                       |                                                                                      |                 |            |                      |                  |
|-----------------------|--------------------------------------------------------------------------------------|-----------------|------------|----------------------|------------------|
| Test Requirement:     | FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)                           |                 |            |                      |                  |
| Test Method:          | ANSI C63.10:2013                                                                     |                 |            |                      |                  |
| Test Frequency Range: | 9kHz to 40GHz                                                                        |                 |            |                      |                  |
| Test site:            | Measurement Distance: 3m                                                             |                 |            |                      |                  |
| Receiver setup:       | Frequency                                                                            | Detector        | RBW        | VBW                  | Value            |
|                       | 9kHz-150KHz                                                                          | Quasi-peak      | 200Hz      | 1kHz                 | Quasi-peak Value |
|                       | 150kHz-30MHz                                                                         | Quasi-peak      | 9kHz       | 30kHz                | Quasi-peak Value |
|                       | 30MHz-1GHz                                                                           | Quasi-peak      | 120KHz     | 300KHz               | Quasi-peak Value |
|                       | Above 1GHz                                                                           | Peak            | 1MHz       | 3MHz                 | Peak Value       |
|                       |                                                                                      | AV              | 1MHz       | 3MHz                 | Average Value    |
| Limit:                | Frequency                                                                            | Limit (uV/m)    | Value      | Measurement Distance |                  |
|                       | 0.009MHz-0.490MHz                                                                    | 2400/F(KHz)     | QP         | 300m                 |                  |
|                       | 0.490MHz-1.705MHz                                                                    | 24000/F(KHz)    | QP         | 300m                 |                  |
|                       | 1.705MHz-30MHz                                                                       | 30              | QP         | 30m                  |                  |
|                       | 30MHz-88MHz                                                                          | 100             | QP         | 3m                   |                  |
|                       | 88MHz-216MHz                                                                         | 150             | QP         |                      |                  |
|                       | 216MHz-960MHz                                                                        | 200             | QP         |                      |                  |
|                       | 960MHz-1GHz                                                                          | 500             | QP         |                      |                  |
|                       | Frequency                                                                            | Limit (dBm/MHz) | Remark     |                      |                  |
|                       | Above 1GHz                                                                           | -27.0           | Peak Value |                      |                  |
| Test setup:           | For radiated emissions from 9kHz to 30MHz                                            |                 |            |                      |                  |
|                       |  |                 |            |                      |                  |
|                       | For radiated emissions from 30MHz to 1GHz                                            |                 |            |                      |                  |
|                       |  |                 |            |                      |                  |
|                       | For radiated emissions above 1GHz                                                    |                 |            |                      |                  |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Test Procedure:</b>   | <ol style="list-style-type: none"> <li>1. Place the EUT on a rotating table on a horizontal surface. Rotate the table 360 degrees to determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>3. 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.</li> <li>4. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>6. 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, quasi-peak or average method as specified and then reported in a data sheet.</li> </ol> <p>The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</p> |
| <b>Test Instruments:</b> | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Test mode:</b>        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Test results:</b>     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**Remarks:**

1. The report only shows the worst mode.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

**Measurement Data:**
**9 kHz ~ 30 MHz**

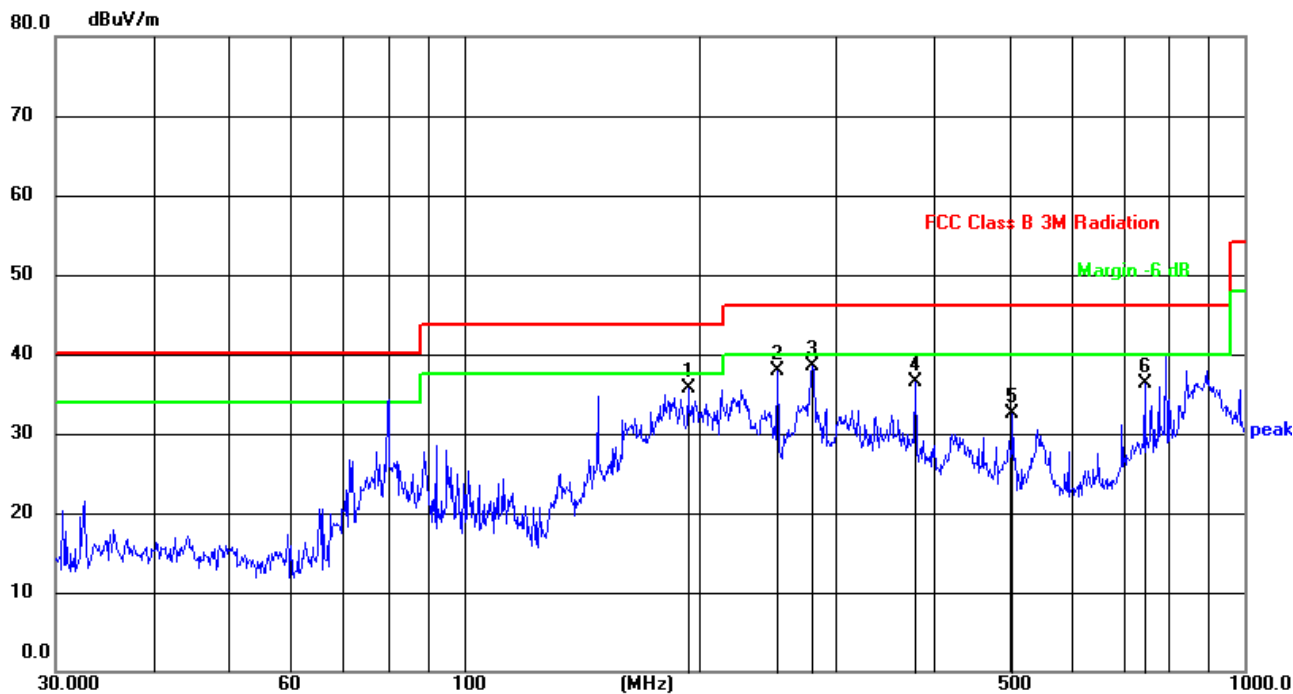
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

## Below 1GHz

Remark: The test data shows only the worst case 802.11a mode.

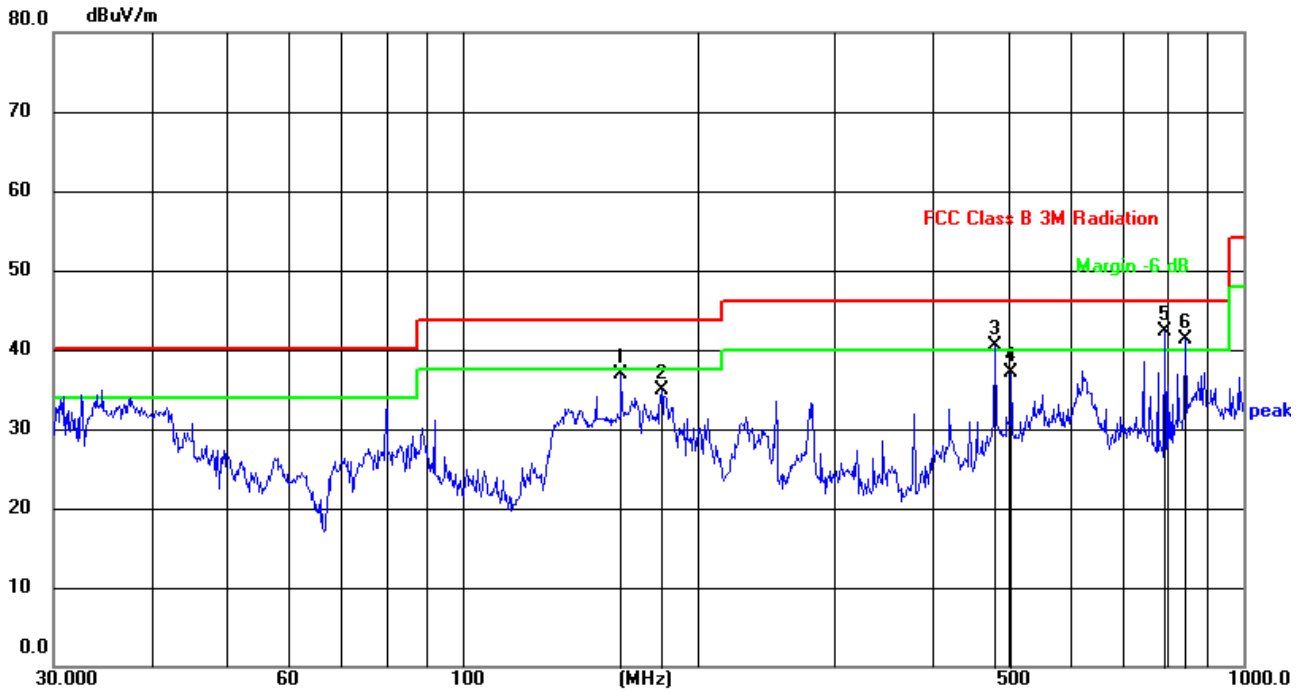
|              |                           |                    |                      |
|--------------|---------------------------|--------------------|----------------------|
| Temperature: | 23.1°C                    | Relative Humidity: | 64%                  |
| Pressure:    | 101.2kPa                  | Test Voltage :     | DC 7.7V From Battery |
| Test Mode :  | 5.2G TX- 802.11a(5180MHz) |                    |                      |

### Horizontal:



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 193.7726        | 58.83          | -23.21        | 35.62          | 43.50          | -7.88       | QP       |
| 2   | 252.0627        | 60.11          | -22.23        | 37.88          | 46.00          | -8.12       | QP       |
| 3   | 280.0237        | 59.77          | -21.36        | 38.41          | 46.00          | -7.59       | QP       |
| 4   | 378.5842        | 54.50          | -18.03        | 36.47          | 46.00          | -9.53       | QP       |
| 5   | 504.7062        | 46.55          | -14.08        | 32.47          | 46.00          | -13.53      | QP       |
| 6   | 744.8659        | 44.60          | -8.21         | 36.39          | 46.00          | -9.61       | QP       |

Vertical:



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 159.7844        | 57.52          | -20.58        | 36.94          | 43.50          | -6.56       | QP       |
| 2   | 180.0164        | 57.43          | -22.53        | 34.90          | 43.50          | -8.60       | QP       |
| 3   | 480.5276        | 55.78          | -15.24        | 40.54          | 46.00          | -5.46       | QP       |
| 4   | 504.7062        | 51.13          | -14.08        | 37.05          | 46.00          | -8.95       | QP       |
| 5   | 793.3958        | 49.09          | -6.71         | 42.38          | 46.00          | -3.62       | QP       |
| 6   | 842.1295        | 47.51          | -6.30         | 41.21          | 46.00          | -4.79       | QP       |

Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The test data shows only the worst case 802.11a mode

Above 1GHz:

Remark: The test data shows only the worst case 802.11a mode.

|              |                  |                    |                      |
|--------------|------------------|--------------------|----------------------|
| Temperature: | 23.1°C           | Relative Humidity: | 64%                  |
| Pressure:    | 101.2kPa         | Test Voltage :     | DC 7.7V From Battery |
| Test Mode :  | 5.2G TX- 802.11a |                    |                      |

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-<br>amplifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------|--------|----------------------|
|                     | MHz       | dBuV             | dB                | dB            | dB                | dBuV/m            | dBuV/m | dB     |                      |
| Low Channel:5180MHz |           |                  |                   |               |                   |                   |        |        |                      |
| V                   | 10360.00  | 44.00            | 46.20             | 8.27          | 38.50             | 44.57             | 68.20  | -23.63 | PK                   |
| V                   | 10360.00  | 39.14            | 46.20             | 8.27          | 38.50             | 39.71             | 54.00  | -14.29 | AV                   |
| V                   | 15540.00  | 48.84            | 46.30             | 10.35         | 38.70             | 51.59             | 74.00  | -22.41 | PK                   |
| V                   | 15540.00  | 37.63            | 46.30             | 10.35         | 38.70             | 40.38             | 54.00  | -13.62 | AV                   |
| V                   | 20720.00  | 54.63            | 57.40             | 11.93         | 37.80             | 46.96             | 68.20  | -21.25 | PK                   |
| V                   | 20720.00  | 49.88            | 57.40             | 11.93         | 37.80             | 42.21             | 54.00  | -11.79 | AV                   |
| V                   | 25900.00  | 51.11            | 56.50             | 13.45         | 39.70             | 47.76             | 68.20  | -20.44 | PK                   |
| V                   | 25900.00  | 45.57            | 56.50             | 13.45         | 39.70             | 42.22             | 54.00  | -11.78 | AV                   |
| V                   | 31080.00  | 47.93            | 56.10             | 16.12         | 41.60             | 49.55             | 68.20  | -18.65 | PK                   |
| V                   | 31080.00  | 42.93            | 56.10             | 16.12         | 41.60             | 44.55             | 54.00  | -9.45  | AV                   |
| V                   | 36260.00  | 44.84            | 56.80             | 18.29         | 42.80             | 49.13             | 68.20  | -19.07 | PK                   |
| V                   | 36260.00  | 39.81            | 56.80             | 18.29         | 42.80             | 44.10             | 54.00  | -9.91  | AV                   |
| H                   | 10360.00  | 43.43            | 46.20             | 8.27          | 38.50             | 44.00             | 68.20  | -24.20 | PK                   |
| H                   | 10360.00  | 38.59            | 46.20             | 8.27          | 38.50             | 39.16             | 54.00  | -14.84 | AV                   |
| H                   | 15540.00  | 48.61            | 46.30             | 10.35         | 38.70             | 51.36             | 74.00  | -22.64 | PK                   |
| H                   | 15540.00  | 38.04            | 46.30             | 10.35         | 38.70             | 40.79             | 54.00  | -13.21 | AV                   |
| H                   | 20720.00  | 54.40            | 57.40             | 11.93         | 37.80             | 46.73             | 68.20  | -21.47 | PK                   |
| H                   | 20720.00  | 48.95            | 57.40             | 11.93         | 37.80             | 41.28             | 54.00  | -12.72 | AV                   |
| H                   | 25900.00  | 51.09            | 56.50             | 13.45         | 39.70             | 47.74             | 68.20  | -20.46 | PK                   |
| H                   | 25900.00  | 45.98            | 56.50             | 13.45         | 39.70             | 42.63             | 54.00  | -11.37 | AV                   |
| H                   | 31080.00  | 47.14            | 56.10             | 16.12         | 41.60             | 48.76             | 68.20  | -19.44 | PK                   |
| H                   | 31080.00  | 41.72            | 56.10             | 16.12         | 41.60             | 43.34             | 54.00  | -10.66 | AV                   |
| H                   | 36260.00  | 44.71            | 56.80             | 18.29         | 42.80             | 49.00             | 68.20  | -19.20 | PK                   |
| H                   | 36260.00  | 40.31            | 56.80             | 18.29         | 42.80             | 44.60             | 54.00  | -9.40  | AV                   |



| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-<br>amplifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits   | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|----------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/m) | (dB)   |                      |
| Middle Channel:5200MHz |           |                  |                   |               |                   |                   |          |        |                      |
| V                      | 10400.00  | 43.42            | 46.20             | 8.27          | 38.50             | 43.99             | 68.20    | -24.22 | PK                   |
| V                      | 10400.00  | 38.99            | 46.20             | 8.27          | 38.50             | 39.56             | 54.00    | -14.44 | AV                   |
| V                      | 15600.00  | 48.32            | 46.30             | 10.35         | 38.40             | 50.77             | 74.00    | -23.23 | PK                   |
| V                      | 15600.00  | 37.27            | 46.30             | 10.35         | 38.40             | 39.72             | 54.00    | -14.28 | AV                   |
| V                      | 20800.00  | 54.39            | 57.40             | 11.93         | 37.80             | 46.72             | 68.20    | -21.48 | PK                   |
| V                      | 20800.00  | 49.14            | 57.40             | 11.93         | 37.80             | 41.47             | 54.00    | -12.53 | AV                   |
| V                      | 26000.00  | 51.24            | 56.50             | 13.45         | 39.80             | 47.99             | 68.20    | -20.21 | PK                   |
| V                      | 26000.00  | 45.77            | 56.50             | 13.45         | 39.80             | 42.52             | 54.00    | -11.48 | AV                   |
| V                      | 31200.00  | 47.25            | 56.10             | 16.12         | 41.60             | 48.87             | 68.20    | -19.33 | PK                   |
| V                      | 31200.00  | 42.09            | 56.10             | 16.12         | 41.60             | 43.71             | 54.00    | -10.30 | AV                   |
| V                      | 36400.00  | 44.84            | 56.80             | 18.29         | 42.80             | 49.13             | 68.20    | -19.07 | PK                   |
| V                      | 36400.00  | 40.32            | 56.80             | 18.29         | 42.80             | 44.61             | 54.00    | -9.39  | AV                   |
| H                      | 10400.00  | 43.90            | 46.20             | 8.27          | 38.50             | 44.47             | 68.20    | -23.73 | PK                   |
| H                      | 10400.00  | 39.69            | 46.20             | 8.27          | 38.50             | 40.26             | 54.00    | -13.74 | AV                   |
| H                      | 15600.00  | 50.07            | 46.30             | 10.35         | 38.40             | 52.52             | 74.00    | -21.48 | PK                   |
| H                      | 15600.00  | 39.16            | 46.30             | 10.35         | 38.40             | 41.61             | 54.00    | -12.39 | AV                   |
| H                      | 20800.00  | 55.43            | 57.40             | 11.93         | 37.80             | 47.76             | 68.20    | -20.44 | PK                   |
| H                      | 20800.00  | 49.87            | 57.40             | 11.93         | 37.80             | 42.20             | 54.00    | -11.80 | AV                   |
| H                      | 26000.00  | 49.02            | 56.50             | 13.45         | 39.80             | 45.77             | 68.20    | -22.43 | PK                   |
| H                      | 26000.00  | 36.06            | 56.50             | 13.45         | 39.80             | 32.81             | 54.00    | -21.19 | AV                   |
| H                      | 31200.00  | 47.10            | 56.10             | 16.12         | 41.60             | 48.72             | 68.20    | -19.48 | PK                   |
| H                      | 31200.00  | 41.70            | 56.10             | 16.12         | 41.60             | 43.32             | 54.00    | -10.68 | AV                   |
| H                      | 36400.00  | 44.56            | 56.80             | 18.29         | 42.80             | 48.85             | 68.20    | -19.35 | PK                   |
| H                      | 36400.00  | 39.41            | 56.80             | 18.29         | 42.80             | 43.70             | 54.00    | -10.30 | AV                   |

| Polar<br>(H/V)       | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Detect<br>or<br>Type |
|----------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|--------------------|----------------|----------------------|
| High Channel:5240MHz |                    |                            |                           |                       |                           |                               |                    |                |                      |
| V                    | 10480.00           | 42.03                      | 46.20                     | 8.27                  | 38.60                     | 42.70                         | 68.20              | -25.50         | PK                   |
| V                    | 10480.00           | 37.36                      | 46.20                     | 8.27                  | 38.60                     | 38.03                         | 54.00              | -15.97         | AV                   |
| V                    | 15720.00           | 44.07                      | 46.30                     | 10.35                 | 38.40                     | 46.52                         | 74.00              | -27.48         | PK                   |
| V                    | 15720.00           | 34.30                      | 46.30                     | 10.35                 | 38.40                     | 36.75                         | 54.00              | -17.25         | AV                   |
| V                    | 20960.00           | 50.98                      | 57.40                     | 11.93                 | 37.50                     | 43.01                         | 68.20              | -25.19         | PK                   |
| V                    | 20960.00           | 46.07                      | 57.40                     | 11.93                 | 37.50                     | 38.10                         | 54.00              | -15.90         | AV                   |
| V                    | 26200.00           | 46.97                      | 56.50                     | 13.45                 | 40.10                     | 44.02                         | 68.20              | -24.18         | PK                   |
| V                    | 26200.00           | 42.80                      | 56.50                     | 13.45                 | 40.10                     | 39.85                         | 54.00              | -14.15         | AV                   |
| V                    | 31440.00           | 44.17                      | 56.10                     | 16.12                 | 41.30                     | 45.49                         | 68.20              | -22.71         | PK                   |
| V                    | 31440.00           | 39.37                      | 56.10                     | 16.12                 | 41.30                     | 40.69                         | 54.00              | -13.31         | AV                   |
| V                    | 36680.00           | 41.24                      | 56.80                     | 18.29                 | 43.10                     | 45.83                         | 68.20              | -22.37         | PK                   |
| V                    | 36680.00           | 37.11                      | 56.80                     | 18.29                 | 43.10                     | 41.70                         | 54.00              | -12.30         | AV                   |
| H                    | 10480.00           | 41.22                      | 46.20                     | 8.27                  | 38.60                     | 41.89                         | 68.20              | -26.31         | PK                   |
| H                    | 10480.00           | 36.42                      | 46.20                     | 8.27                  | 38.60                     | 37.09                         | 54.00              | -16.91         | AV                   |
| H                    | 15720.00           | 45.40                      | 46.30                     | 10.35                 | 38.40                     | 47.85                         | 74.00              | -26.15         | PK                   |
| H                    | 15720.00           | 35.25                      | 46.30                     | 10.35                 | 38.40                     | 37.70                         | 54.00              | -16.30         | AV                   |
| H                    | 20960.00           | 51.72                      | 57.40                     | 11.93                 | 37.50                     | 43.75                         | 68.20              | -24.45         | PK                   |
| H                    | 20960.00           | 46.40                      | 57.40                     | 11.93                 | 37.50                     | 38.43                         | 54.00              | -15.57         | AV                   |
| H                    | 26200.00           | 47.40                      | 56.50                     | 13.45                 | 40.10                     | 44.45                         | 68.20              | -23.75         | PK                   |
| H                    | 26200.00           | 43.48                      | 56.50                     | 13.45                 | 40.10                     | 40.53                         | 54.00              | -13.47         | AV                   |
| H                    | 31440.00           | 44.40                      | 56.10                     | 16.12                 | 41.30                     | 45.72                         | 68.20              | -22.48         | PK                   |
| H                    | 31440.00           | 40.38                      | 56.10                     | 16.12                 | 41.30                     | 41.70                         | 54.00              | -12.30         | AV                   |
| H                    | 36680.00           | 42.25                      | 56.80                     | 18.29                 | 43.10                     | 46.84                         | 68.20              | -21.36         | PK                   |
| H                    | 36680.00           | 42.03                      | 56.80                     | 18.29                 | 43.10                     | 46.62                         | 54.00              | -7.38          | AV                   |

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,  
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

|              |                   |                    |                      |
|--------------|-------------------|--------------------|----------------------|
| Temperature: | 23.1°C            | Relative Humidity: | 64%                  |
| Pressure:    | 101.2kPa          | Test Voltage :     | DC 7.7V From Battery |
| Test Mode :  | 5.8G TX- 802.11ac |                    |                      |

| Polar<br>(H/V)      | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenn<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Detect<br>or<br>Typ |
|---------------------|--------------------|----------------------------|---------------------------|-----------------------|--------------------------|-------------------------------|--------------------|----------------|---------------------|
| Low Channel:5745MHz |                    |                            |                           |                       |                          |                               |                    |                |                     |
| V                   | 11490.00           | 48.01                      | 46.10                     | 8.77                  | 39.10                    | 49.78                         | 74.00              | -24.22         | PK                  |
| V                   | 11490.00           | 38.28                      | 46.10                     | 8.77                  | 39.10                    | 40.05                         | 54.00              | -13.95         | AV                  |
| V                   | 17235.00           | 44.30                      | 47.60                     | 11.10                 | 38.70                    | 46.50                         | 68.20              | -21.70         | PK                  |
| V                   | 17235.00           | 38.88                      | 47.60                     | 11.10                 | 38.70                    | 41.08                         | 54.00              | -12.92         | AV                  |
| V                   | 22980.00           | 56.68                      | 56.90                     | 12.73                 | 37.70                    | 50.21                         | 74.00              | -23.79         | PK                  |
| V                   | 22980.00           | 46.97                      | 56.90                     | 12.73                 | 37.70                    | 40.50                         | 54.00              | -13.50         | AV                  |
| V                   | 28725.00           | 48.96                      | 55.60                     | 14.25                 | 40.30                    | 47.91                         | 68.20              | -20.29         | PK                  |
| V                   | 28725.00           | 43.64                      | 55.60                     | 14.25                 | 40.30                    | 42.59                         | 54.00              | -11.41         | AV                  |
| V                   | 34470.00           | 44.99                      | 55.90                     | 17.26                 | 42.10                    | 48.45                         | 68.20              | -19.75         | PK                  |
| V                   | 34470.00           | 40.25                      | 55.90                     | 17.26                 | 42.10                    | 43.71                         | 54.00              | -10.29         | AV                  |
| H                   | 11490.00           | 48.33                      | 46.10                     | 8.77                  | 39.10                    | 50.10                         | 74.00              | -23.90         | PK                  |
| H                   | 11490.00           | 37.60                      | 46.10                     | 8.77                  | 39.10                    | 39.37                         | 54.00              | -14.63         | AV                  |
| H                   | 17235.00           | 42.77                      | 47.60                     | 11.10                 | 38.70                    | 44.97                         | 68.20              | -23.23         | PK                  |
| H                   | 17235.00           | 37.51                      | 47.60                     | 11.10                 | 38.70                    | 39.71                         | 54.00              | -14.29         | AV                  |
| H                   | 22980.00           | 59.03                      | 56.90                     | 12.73                 | 37.70                    | 52.56                         | 74.00              | -21.44         | PK                  |
| H                   | 22980.00           | 47.89                      | 56.90                     | 12.73                 | 37.70                    | 41.42                         | 54.00              | -12.58         | AV                  |
| H                   | 28725.00           | 48.94                      | 55.60                     | 14.25                 | 40.30                    | 47.89                         | 68.20              | -20.31         | PK                  |
| H                   | 28725.00           | 44.49                      | 55.60                     | 14.25                 | 40.30                    | 43.44                         | 54.00              | -10.56         | AV                  |
| H                   | 34470.00           | 45.39                      | 55.90                     | 17.26                 | 42.10                    | 48.85                         | 68.20              | -19.35         | PK                  |
| H                   | 34470.00           | 41.06                      | 55.90                     | 17.26                 | 42.10                    | 44.52                         | 54.00              | -9.48          | AV                  |

| Polar<br>(H/V)         | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Detect<br>or<br>Type |
|------------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|--------------------|----------------|----------------------|
| Middle Channel:5785MHz |                    |                            |                           |                       |                           |                               |                    |                |                      |
| V                      | 11570.00           | 48.71                      | 46.10                     | 8.77                  | 39.10                     | 50.48                         | 74.00              | -23.52         | PK                   |
| V                      | 11570.00           | 38.01                      | 46.10                     | 8.77                  | 39.10                     | 39.78                         | 54.00              | -14.22         | AV                   |
| V                      | 17355.00           | 44.27                      | 47.60                     | 11.10                 | 38.70                     | 46.47                         | 68.20              | -21.73         | PK                   |
| V                      | 17355.00           | 39.46                      | 47.60                     | 11.10                 | 38.70                     | 41.66                         | 54.00              | -12.34         | AV                   |
| V                      | 23140.00           | 56.33                      | 56.90                     | 12.73                 | 37.70                     | 49.86                         | 74.00              | -24.14         | PK                   |
| V                      | 23140.00           | 46.27                      | 56.90                     | 12.73                 | 37.70                     | 39.80                         | 54.00              | -14.20         | AV                   |
| V                      | 28925.00           | 48.45                      | 55.60                     | 14.25                 | 40.30                     | 47.40                         | 68.20              | -20.80         | PK                   |
| V                      | 28925.00           | 44.60                      | 55.60                     | 14.25                 | 40.30                     | 43.55                         | 54.00              | -10.45         | AV                   |
| V                      | 34710.00           | 44.77                      | 55.90                     | 17.26                 | 42.40                     | 48.53                         | 68.20              | -19.67         | PK                   |
| V                      | 34710.00           | 39.85                      | 55.90                     | 17.26                 | 42.40                     | 43.61                         | 54.00              | -10.39         | AV                   |
| H                      | 11570.00           | 49.54                      | 46.10                     | 8.77                  | 39.10                     | 51.31                         | 74.00              | -22.69         | PK                   |
| H                      | 11570.00           | 39.01                      | 46.10                     | 8.77                  | 39.10                     | 40.78                         | 54.00              | -13.22         | AV                   |
| H                      | 17355.00           | 42.57                      | 47.60                     | 11.10                 | 38.70                     | 44.77                         | 68.20              | -23.43         | PK                   |
| H                      | 17355.00           | 38.95                      | 47.60                     | 11.10                 | 38.70                     | 41.15                         | 54.00              | -12.85         | AV                   |
| H                      | 23140.00           | 59.32                      | 56.90                     | 12.73                 | 37.70                     | 52.85                         | 74.00              | -21.15         | PK                   |
| H                      | 23140.00           | 47.95                      | 56.90                     | 12.73                 | 37.70                     | 41.48                         | 54.00              | -12.52         | AV                   |
| H                      | 28925.00           | 48.72                      | 55.60                     | 14.25                 | 40.30                     | 47.67                         | 68.20              | -20.53         | PK                   |
| H                      | 28925.00           | 45.25                      | 55.60                     | 14.25                 | 40.30                     | 44.20                         | 54.00              | -9.80          | AV                   |
| H                      | 34710.00           | 46.48                      | 55.90                     | 17.26                 | 42.40                     | 50.24                         | 68.20              | -17.96         | PK                   |
| H                      | 34710.00           | 41.84                      | 55.90                     | 17.26                 | 42.40                     | 45.60                         | 54.00              | -8.40          | AV                   |

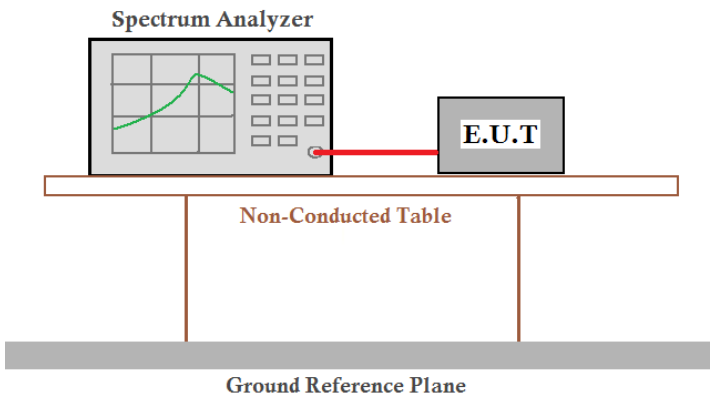
| Polar<br>(H/V)       | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Detect<br>or<br>Type |
|----------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|--------------------|----------------|----------------------|
| High Channel:5825MHz |                    |                            |                           |                       |                           |                               |                    |                |                      |
| V                    | 11650.00           | 47.03                      | 46.10                     | 8.77                  | 39.10                     | 48.80                         | 74.00              | -25.20         | PK                   |
| V                    | 11650.00           | 37.37                      | 46.10                     | 8.77                  | 39.10                     | 39.14                         | 54.00              | -14.86         | AV                   |
| V                    | 17475.00           | 43.56                      | 47.90                     | 11.23                 | 38.90                     | 45.79                         | 68.20              | -22.41         | PK                   |
| V                    | 17475.00           | 38.94                      | 47.90                     | 11.23                 | 38.90                     | 41.17                         | 54.00              | -12.83         | AV                   |
| V                    | 23300.00           | 54.50                      | 57.10                     | 12.73                 | 37.80                     | 47.93                         | 68.20              | -20.27         | PK                   |
| V                    | 23300.00           | 49.02                      | 57.10                     | 12.73                 | 37.80                     | 42.45                         | 54.00              | -11.55         | AV                   |
| V                    | 29125.00           | 48.93                      | 55.80                     | 14.25                 | 40.50                     | 47.88                         | 68.20              | -20.33         | PK                   |
| V                    | 29125.00           | 43.30                      | 55.80                     | 14.25                 | 40.50                     | 42.25                         | 54.00              | -11.75         | AV                   |
| V                    | 34950.00           | 43.28                      | 56.30                     | 17.91                 | 42.50                     | 47.39                         | 68.20              | -20.81         | PK                   |
| V                    | 34950.00           | 39.44                      | 56.30                     | 17.91                 | 42.50                     | 43.55                         | 54.00              | -10.45         | AV                   |
| H                    | 11650.00           | 49.99                      | 46.10                     | 8.77                  | 39.10                     | 51.76                         | 74.00              | -22.24         | PK                   |
| H                    | 11650.00           | 38.85                      | 46.10                     | 8.77                  | 39.10                     | 40.62                         | 54.00              | -13.38         | AV                   |
| H                    | 17475.00           | 41.64                      | 47.90                     | 11.23                 | 38.90                     | 43.87                         | 68.20              | -24.33         | PK                   |
| H                    | 17475.00           | 37.81                      | 47.90                     | 11.23                 | 38.90                     | 40.04                         | 54.00              | -13.96         | AV                   |
| H                    | 23300.00           | 53.46                      | 57.10                     | 12.73                 | 37.80                     | 46.89                         | 68.20              | -21.31         | PK                   |
| H                    | 23300.00           | 49.88                      | 57.10                     | 12.73                 | 37.80                     | 43.31                         | 54.00              | -10.69         | AV                   |
| H                    | 29125.00           | 49.83                      | 55.80                     | 14.25                 | 40.50                     | 48.78                         | 68.20              | -19.42         | PK                   |
| H                    | 29125.00           | 45.21                      | 55.80                     | 14.25                 | 40.50                     | 44.16                         | 54.00              | -9.84          | AV                   |
| H                    | 34950.00           | 47.03                      | 56.30                     | 17.91                 | 42.50                     | 51.14                         | 68.20              | -17.06         | PK                   |
| H                    | 34950.00           | 37.37                      | 56.30                     | 17.91                 | 42.50                     | 41.48                         | 54.00              | -12.52         | AV                   |

#### Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,  
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



#### 4.8.2 Conducted Emission Method

|                   |                                                                                    |               |
|-------------------|------------------------------------------------------------------------------------|---------------|
| Test Requirement: | FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)                         |               |
| Test Method:      | ANSI C63.10:2013                                                                   |               |
| Limit:            | -27dBm/MHz                                                                         |               |
| Test setup:       |  |               |
| Test Instruments: | Refer to section 3.0 for details                                                   |               |
| Test mode:        | Refer to section 2.2 for details                                                   |               |
| Test environment: | Temp.: 23.1°C                                                                      | Humid.: 64%RH |
| Test voltage:     | DC 7.7V From Battery                                                               |               |
| Test results:     | Pass                                                                               |               |

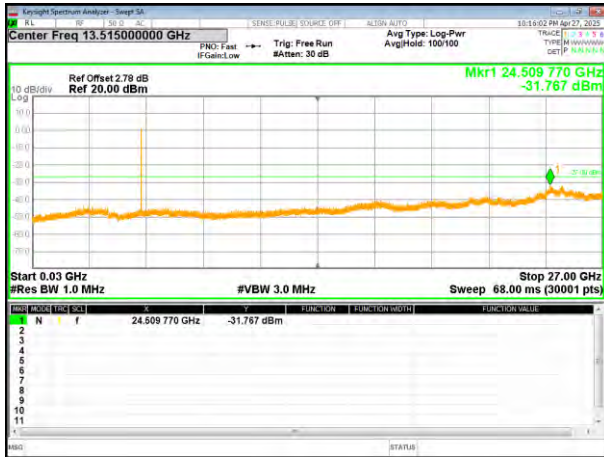
#### Remark:

1. Antenna gain and cable loss data included in Offset.
2. We tested 30MHz-40GHz frequency and found 27GHz-40GHz test data was very lower (close to the noise of the spectrum analyzer). The test report only showed data for 30MHz-27GHz.

5180-5240MHz

### Test Plot

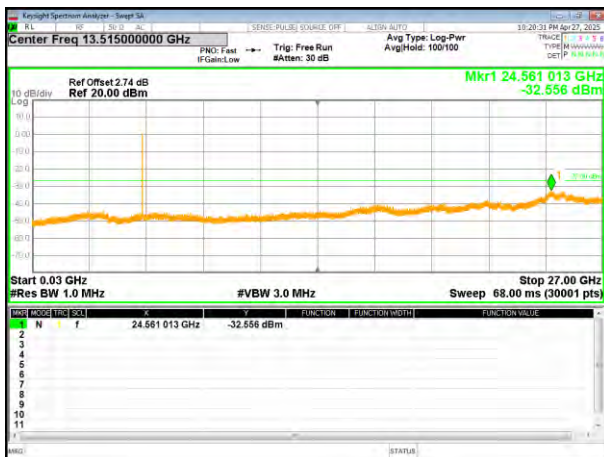
802.11a on channel 36



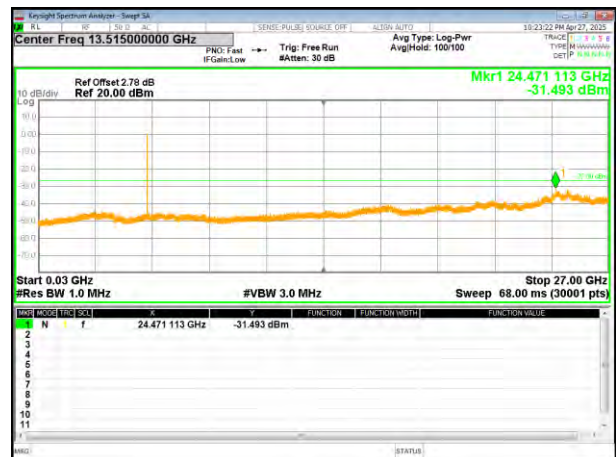
802.11a on channel 40



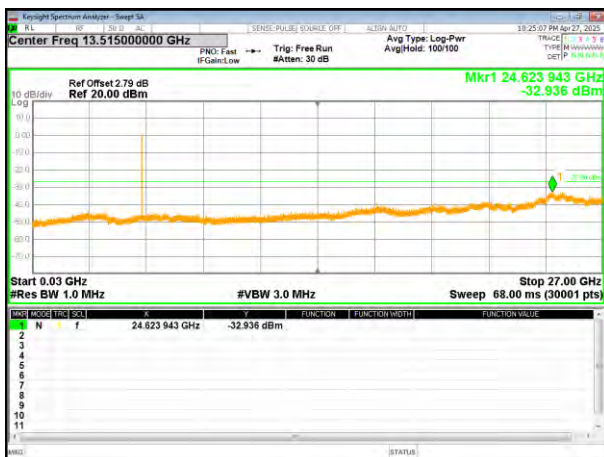
802.11a on channel 48



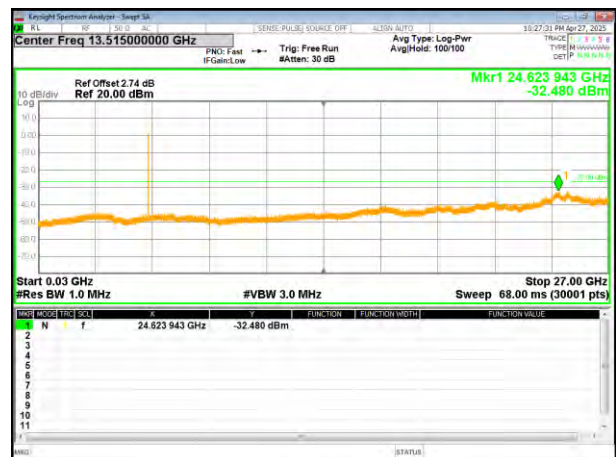
802.11n20 on channel 36



802.11n20 on channel 40

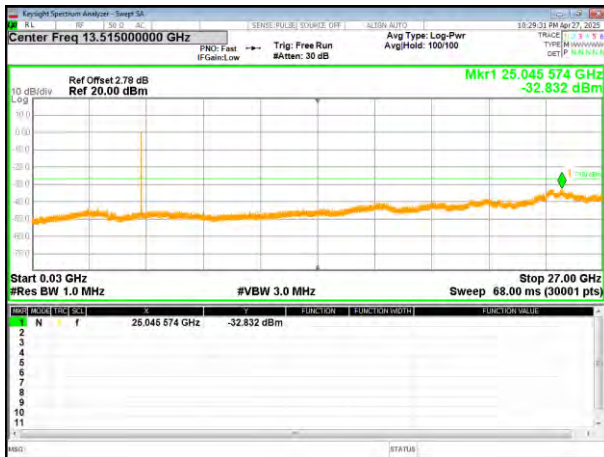


802.11n20 on channel 48

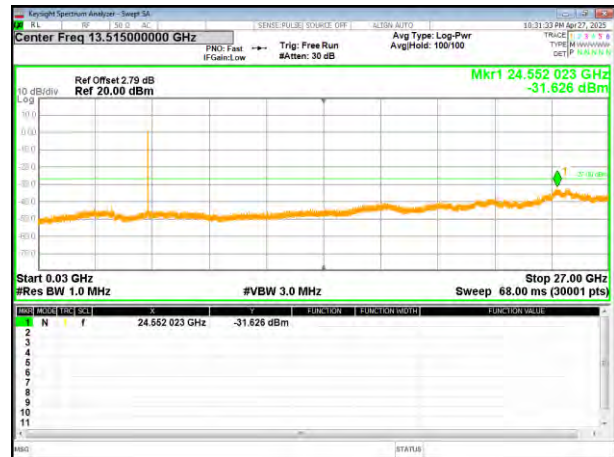


### Test Plot

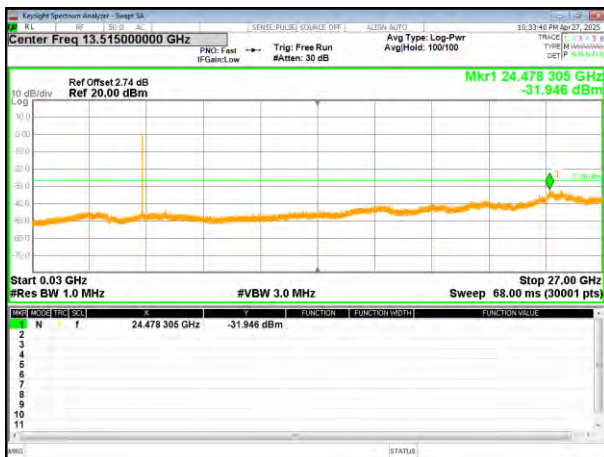
802.11ac20 on channel 36



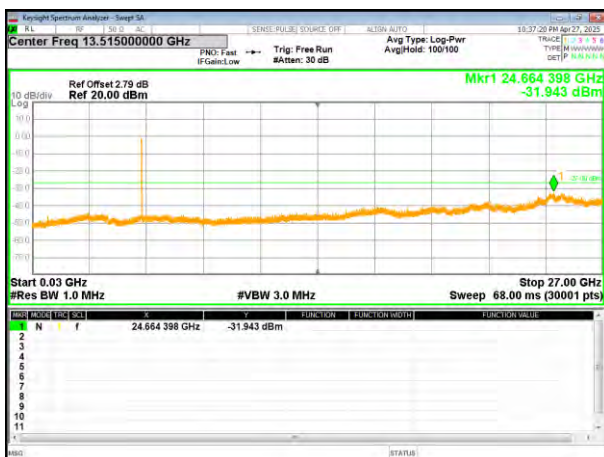
802.11ac20 on channel 40



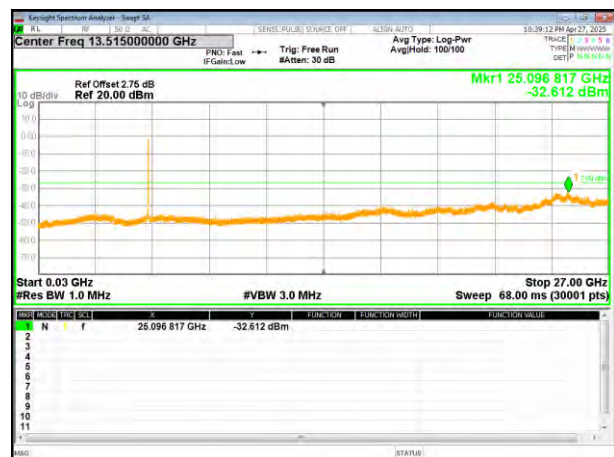
802.11ac20 on channel 48



802.11n40 on channel 38

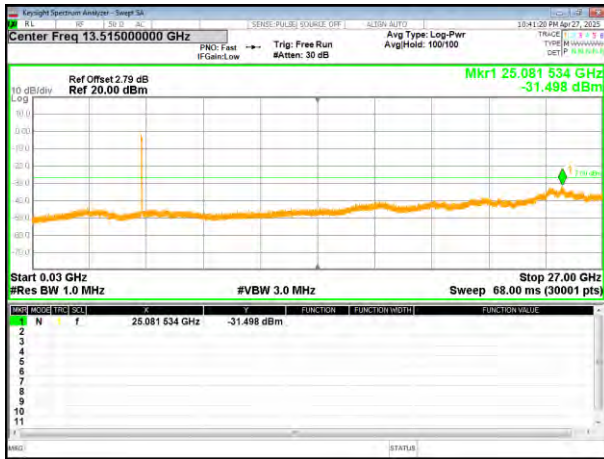


802.11n40 on channel 46

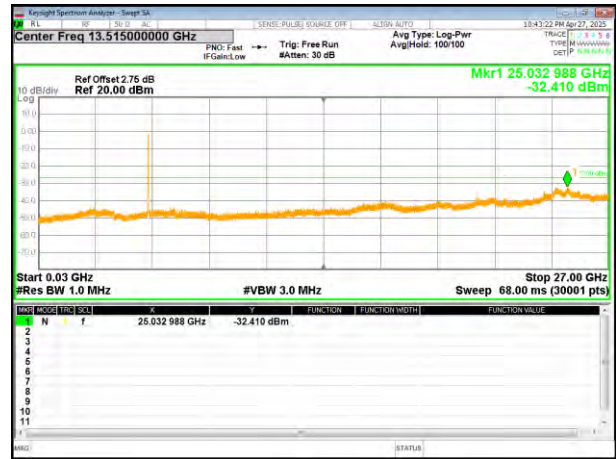


### Test Plot

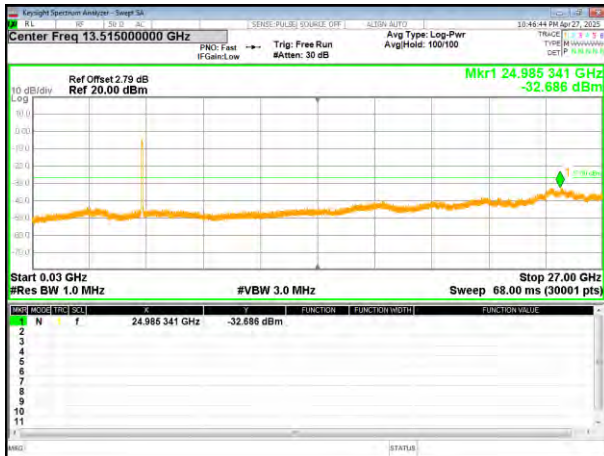
802.11ac40 on channel 38



802.11ac40 on channel 46



802.11ac80 on channel 42

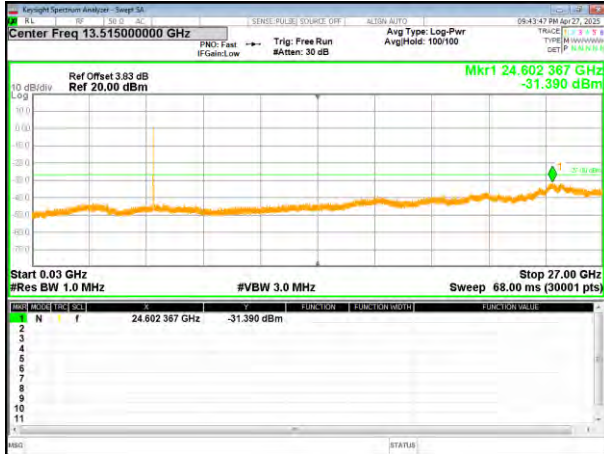




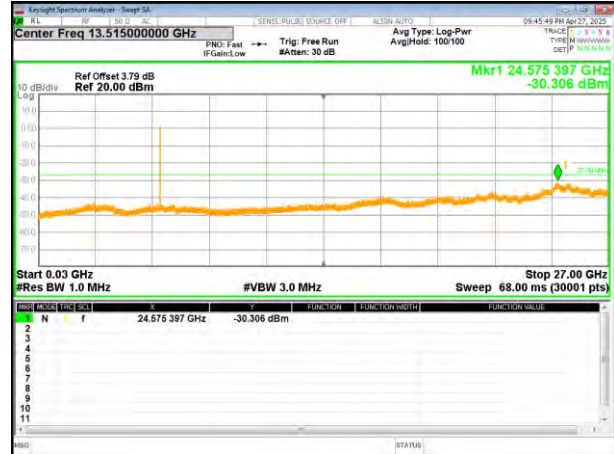
5745-5825MHz

### Test Plot

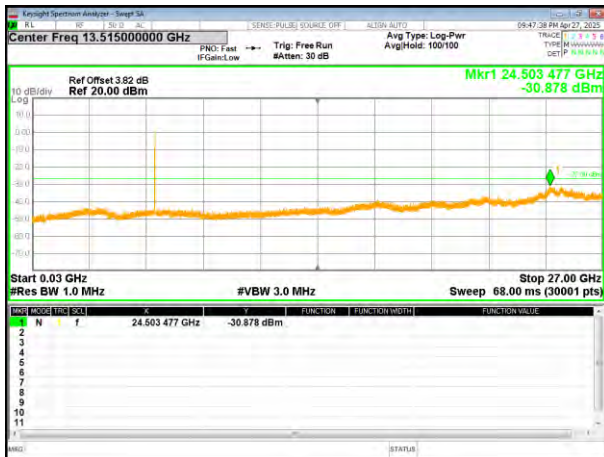
802.11a on channel 149



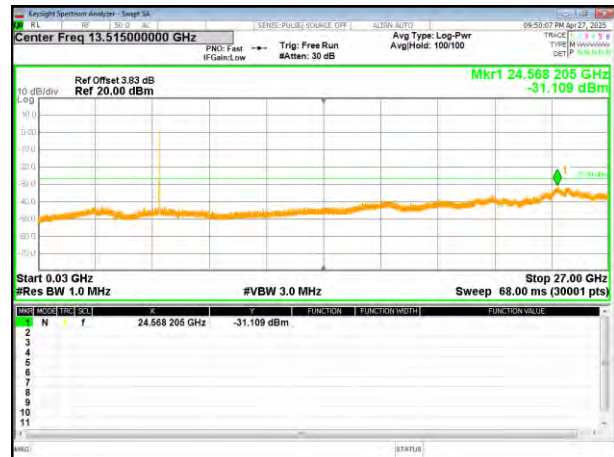
802.11a on channel 157



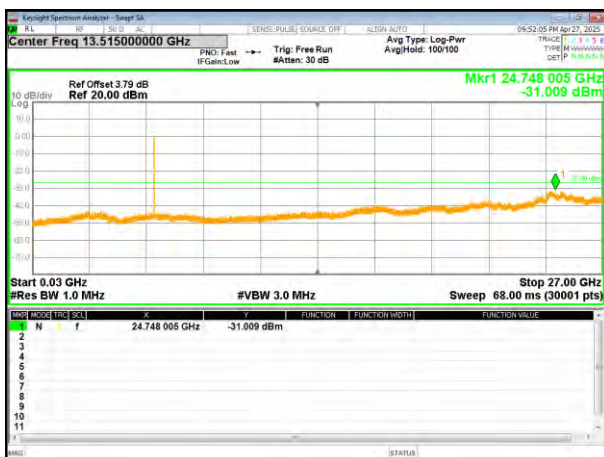
802.11a on channel 165



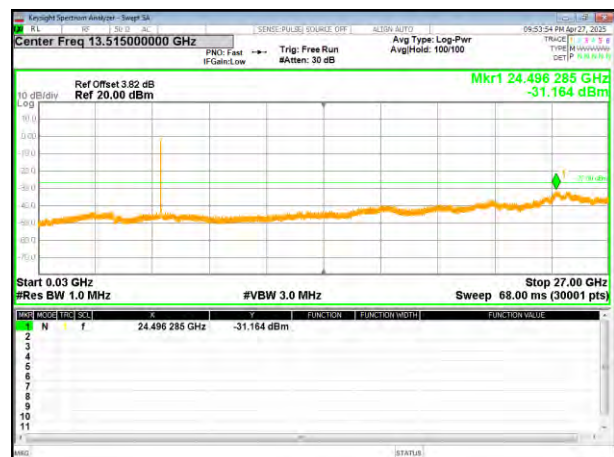
802.11n20 on channel 149



802.11n20 on channel 157



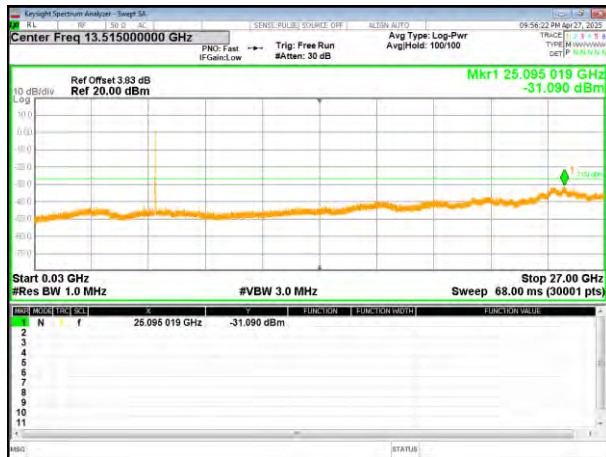
802.11n20 on channel 165



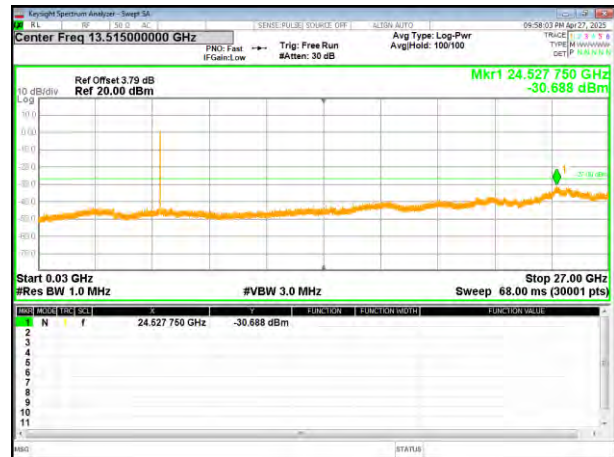


## Test Plot

802.11ac20 on channel 149



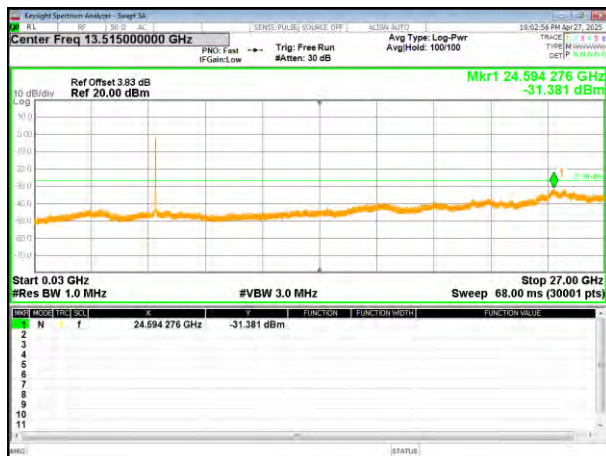
802.11ac20 on channel 157



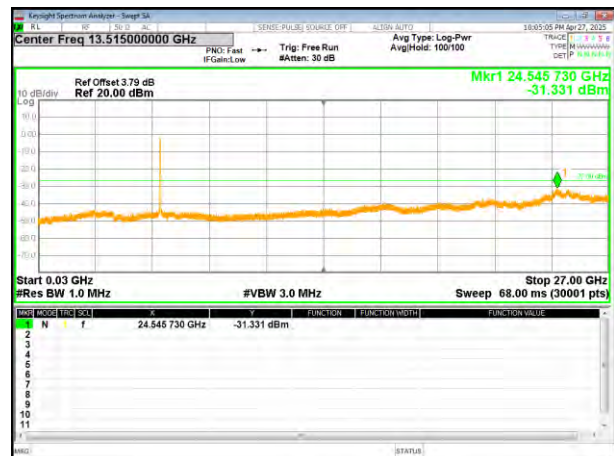
802.11ac20 on channel 165



802.11n40 on channel 151

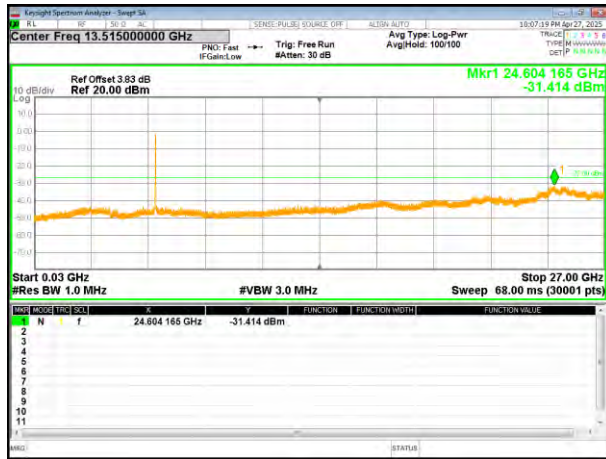


802.11n40 on channel 159

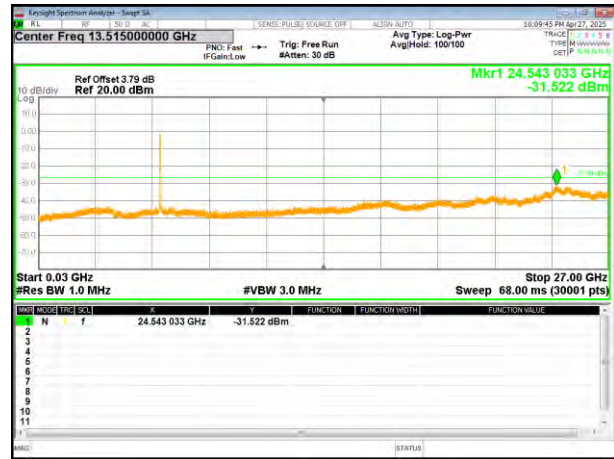


### Test Plot

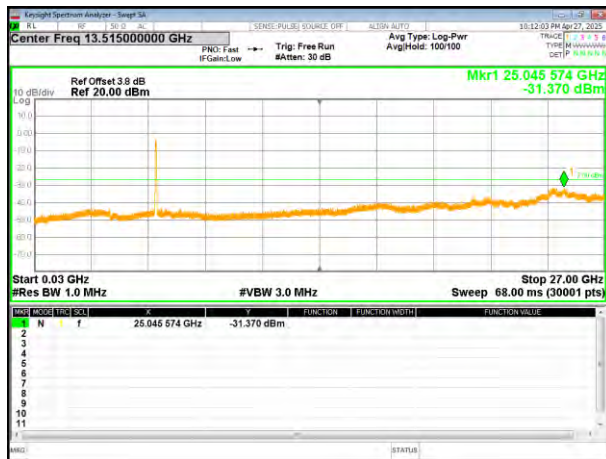
802.11ac40 on channel 151



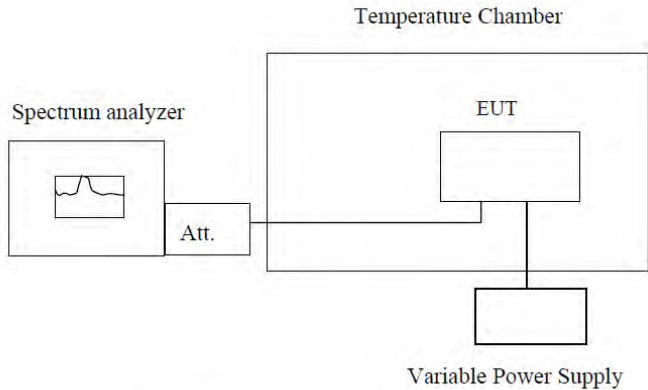
802.11ac40 on channel 159



802.11ac80 on channel 155



## 4.9 Frequency stability

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.407(g)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test Method:      | ANSI C63.10:2013, FCC Part 2.1055                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Limit:            | Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test Procedure:   | <p>a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.</p> <p>b. Turn the EUT on and couple its output to a spectrum analyzer.</p> <p>c. Turn the EUT off and set the chamber to the highest temperature specified.</p> <p>d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.</p> <p>e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.</p> <p>f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minute</p> <p>s. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.</p> |
| Test setup:       |  <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

*Remark: Set the EUT transmits at un-modulation mode to test frequency stability.*

**Measurement data:**

| Frequency stability versus Temp. |                           |                          |                          |                          |                          |
|----------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Power Supply: DC 7.7V            |                           |                          |                          |                          |                          |
| Temp. (°C)                       | Operating Frequency (MHz) | 0 minute                 | 2 minute                 | 5 minute                 | 10 minute                |
|                                  |                           | Measured Frequency (MHz) | Measured Frequency (MHz) | Measured Frequency (MHz) | Measured Frequency (MHz) |
| -30                              | 5180                      | 5180.002                 | 5180.003                 | 5180.026                 | 5180.094                 |
|                                  | 5190                      | 5189.992                 | 5190.033                 | 5190.026                 | 5190.094                 |
|                                  | 5200                      | 5200.002                 | 5200.053                 | 5200.016                 | 5200.084                 |
|                                  | 5210                      | 5209.992                 | 5210.033                 | 5300.026                 | 5210.074                 |
|                                  | 5220                      | 5220.012                 | 5220.033                 | 5220.016                 | 5220.084                 |
|                                  | 5230                      | 5229.992                 | 5230.053                 | 5230.036                 | 5300.086                 |
|                                  | 5240                      | 5240.012                 | 5240.043                 | 5240.016                 | 5240.085                 |
| -20                              | 5180                      | 5180.012                 | 5180.033                 | 5180.026                 | 5180.044                 |
|                                  | 5190                      | 5190.012                 | 5190.033                 | 5190.016                 | 5190.074                 |
|                                  | 5200                      | 5200.002                 | 5200.033                 | 5200.026                 | 5200.104                 |
|                                  | 5210                      | 5210.012                 | 5300.033                 | 5210.016                 | 5210.084                 |
|                                  | 5220                      | 5220.002                 | 5220.033                 | 5220.036                 | 5220.074                 |
|                                  | 5230                      | 5230.002                 | 5230.053                 | 5230.016                 | 5230.105                 |
|                                  | 5240                      | 5239.972                 | 5240.023                 | 5240.036                 | 5240.095                 |
| -10                              | 5180                      | 5179.962                 | 5180.033                 | 5180.026                 | 5180.094                 |
|                                  | 5190                      | 5189.992                 | 5190.033                 | 5190.016                 | 5190.094                 |
|                                  | 5200                      | 5200.022                 | 5200.033                 | 5200.026                 | 5200.084                 |
|                                  | 5210                      | 5210.002                 | 5300.033                 | 5210.016                 | 5210.094                 |
|                                  | 5220                      | 5219.992                 | 5220.033                 | 5220.036                 | 5220.084                 |
|                                  | 5230                      | 5230.022                 | 5230.053                 | 5230.016                 | 5230.085                 |
|                                  | 5240                      | 5240.012                 | 5240.023                 | 5240.036                 | 5240.055                 |
| 0                                | 5180                      | 5180.002                 | 5180.003                 | 5180.026                 | 5180.094                 |
|                                  | 5190                      | 5189.992                 | 5190.033                 | 5190.026                 | 5190.094                 |
|                                  | 5200                      | 5200.002                 | 5200.053                 | 5200.016                 | 5200.084                 |
|                                  | 5210                      | 5209.992                 | 5210.033                 | 5300.026                 | 5210.074                 |
|                                  | 5220                      | 5220.012                 | 5220.033                 | 5220.016                 | 5220.084                 |
|                                  | 5230                      | 5229.992                 | 5230.053                 | 5230.036                 | 5300.086                 |
|                                  | 5240                      | 5240.012                 | 5240.043                 | 5240.016                 | 5240.085                 |
| 10                               | 5180                      | 5179.992                 | 5180.033                 | 5180.026                 | 5180.094                 |
|                                  | 5190                      | 5190.002                 | 5190.033                 | 5190.016                 | 5180.094                 |
|                                  | 5200                      | 5199.992                 | 5200.033                 | 5200.026                 | 5190.094                 |
|                                  | 5210                      | 5209.992                 | 5210.033                 | 5210.016                 | 5200.084                 |
|                                  | 5220                      | 5220.002                 | 5220.053                 | 5220.036                 | 5210.094                 |
|                                  | 5230                      | 5230.022                 | 5230.023                 | 5230.016                 | 5220.084                 |
|                                  | 5240                      | 5239.992                 | 5240.043                 | 5240.036                 | 5230.085                 |
| 20                               | 5180                      | 5180.012                 | 5180.033                 | 5180.026                 | 5180.044                 |
|                                  | 5190                      | 5190.012                 | 5190.033                 | 5190.016                 | 5190.074                 |

|    |      |          |          |          |          |
|----|------|----------|----------|----------|----------|
|    | 5200 | 5200.002 | 5200.033 | 5200.026 | 5200.104 |
|    | 5210 | 5210.012 | 5300.033 | 5210.016 | 5210.084 |
|    | 5220 | 5220.002 | 5220.033 | 5220.036 | 5220.074 |
|    | 5230 | 5230.002 | 5230.053 | 5230.016 | 5230.105 |
|    | 5240 | 5239.972 | 5240.023 | 5240.036 | 5240.095 |
| 30 | 5180 | 5180.012 | 5180.033 | 5180.026 | 5180.044 |
|    | 5190 | 5190.012 | 5190.033 | 5190.016 | 5190.074 |
|    | 5200 | 5200.002 | 5200.033 | 5200.026 | 5200.104 |
|    | 5210 | 5210.012 | 5300.033 | 5210.016 | 5210.084 |
|    | 5220 | 5220.002 | 5220.033 | 5220.036 | 5220.074 |
|    | 5230 | 5230.002 | 5230.053 | 5230.016 | 5230.105 |
|    | 5240 | 5239.972 | 5240.023 | 5240.036 | 5240.095 |
| 40 | 5180 | 5180.002 | 5180.023 | 5180.026 | 5180.084 |
|    | 5190 | 5190.002 | 5190.033 | 5190.016 | 5190.084 |
|    | 5200 | 5199.992 | 5200.023 | 5200.026 | 5200.074 |
|    | 5210 | 5300.003 | 5210.033 | 5210.016 | 5300.086 |
|    | 5220 | 5219.992 | 5220.033 | 5220.036 | 5220.074 |
|    | 5230 | 5230.012 | 5230.053 | 5230.016 | 5230.095 |
|    | 5240 | 5239.992 | 5240.023 | 5240.036 | 5240.075 |
| 50 | 5180 | 5179.962 | 5180.033 | 5180.016 | 5180.204 |
|    | 5190 | 5189.992 | 5190.033 | 5190.026 | 5200.084 |
|    | 5200 | 5200.022 | 5200.033 | 5200.016 | 5200.104 |
|    | 5210 | 5210.002 | 5300.033 | 5210.016 | 5210.084 |
|    | 5220 | 5219.992 | 5220.033 | 5220.026 | 5220.104 |
|    | 5230 | 5230.022 | 5230.053 | 5230.046 | 5230.095 |
|    | 5240 | 5240.012 | 5240.023 | 5240.016 | 5240.105 |



| Frequency stability versus Voltage |                           |                                      |                                      |                                      |                                       |
|------------------------------------|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|
| Temperature: 25°C                  |                           |                                      |                                      |                                      |                                       |
| Power Supply (VAC)                 | Operating Frequency (MHz) | 0 minute<br>Measured Frequency (MHz) | 2 minute<br>Measured Frequency (MHz) | 5 minute<br>Measured Frequency (MHz) | 10 minute<br>Measured Frequency (MHz) |
| DC 6.54V                           | 5180                      | 5180.002                             | 5180.023                             | 5180.036                             | 5180.094                              |
|                                    | 5190                      | 5189.992                             | 5190.033                             | 5190.036                             | 5190.074                              |
|                                    | 5200                      | 5200.002                             | 5200.023                             | 5200.026                             | 5200.074                              |
|                                    | 5210                      | 5210.012                             | 5210.033                             | 5210.036                             | 5210.094                              |
|                                    | 5220                      | 5219.992                             | 5220.033                             | 5220.026                             | 5220.084                              |
|                                    | 5230                      | 5229.992                             | 5230.053                             | 5230.026                             | 5230.095                              |
|                                    | 5240                      | 5180.132                             | 5180.043                             | 5180.026                             | 5180.074                              |
| DC 7.7V                            | 5180                      | 5200.002                             | 5190.033                             | 5190.016                             | 5190.084                              |
|                                    | 5190                      | 5200.032                             | 5200.033                             | 5200.026                             | 5200.074                              |
|                                    | 5200                      | 5210.002                             | 5210.043                             | 5210.016                             | 5210.074                              |
|                                    | 5210                      | 5220.022                             | 5220.043                             | 5220.036                             | 5220.084                              |
|                                    | 5220                      | 5230.012                             | 5300.043                             | 5230.016                             | 5230.105                              |
|                                    | 5230                      | 5240.022                             | 5240.043                             | 5240.036                             | 5240.085                              |
|                                    | 5240                      | 5180.132                             | 5180.043                             | 5180.026                             | 5180.074                              |
| DC 8.86V                           | 5180                      | 5180.012                             | 5180.043                             | 5180.016                             | 5180.074                              |
|                                    | 5190                      | 5190.012                             | 5190.043                             | 5190.026                             | 5190.084                              |
|                                    | 5200                      | 5200.002                             | 5200.033                             | 5200.016                             | 5200.074                              |
|                                    | 5210                      | 5210.012                             | 5210.043                             | 5210.016                             | 5210.074                              |
|                                    | 5220                      | 5220.002                             | 5220.043                             | 5220.026                             | 5220.084                              |
|                                    | 5230                      | 5230.002                             | 5230.033                             | 5230.046                             | 5230.105                              |
|                                    | 5240                      | 5239.972                             | 5240.013                             | 5240.016                             | 5240.075                              |

| Frequency stability versus Temp. |                                 |                                         |                                         |                                         |                                          |
|----------------------------------|---------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|
| Power Supply: DC 7.7V            |                                 |                                         |                                         |                                         |                                          |
| Temp.<br>(°C)                    | Operating<br>Frequency<br>(MHz) | 0 minute<br>Measured<br>Frequency (MHz) | 2 minute<br>Measured<br>Frequency (MHz) | 5 minute<br>Measured<br>Frequency (MHz) | 10 minute<br>Measured<br>Frequency (MHz) |
| -30                              | 5745                            | 5745.027                                | 5745.022                                | 5744.647                                | 5745.065                                 |
|                                  | 5755                            | 5744.977                                | 5755.032                                | 5755.037                                | 5755.085                                 |
|                                  | 5775                            | 5754.998                                | 5775.032                                | 5775.037                                | 5775.095                                 |
|                                  | 5785                            | 5775.008                                | 5785.032                                | 5785.037                                | 5785.086                                 |
|                                  | 5795                            | 5784.998                                | 5795.042                                | 5795.017                                | 5795.096                                 |
|                                  | 5825                            | 5795.008                                | 5825.032                                | 5825.017                                | 5825.106                                 |
| -20                              | 5745                            | 5744.997                                | 5745.022                                | 5745.027                                | 5745.085                                 |
|                                  | 5755                            | 5755.018                                | 5755.032                                | 5755.027                                | 5755.115                                 |
|                                  | 5775                            | 5774.998                                | 5775.032                                | 5775.037                                | 5775.105                                 |
|                                  | 5785                            | 5785.008                                | 5785.032                                | 5785.027                                | 5785.096                                 |
|                                  | 5795                            | 5795.008                                | 5795.042                                | 5795.017                                | 5795.086                                 |
|                                  | 5825                            | 5825.018                                | 5825.032                                | 5825.027                                | 5825.016                                 |
| -10                              | 5745                            | 5744.997                                | 5745.032                                | 5745.017                                | 5745.155                                 |
|                                  | 5755                            | 5755.008                                | 5755.032                                | 5755.037                                | 5744.715                                 |
|                                  | 5775                            | 5774.998                                | 5775.052                                | 5775.017                                | 5755.105                                 |
|                                  | 5785                            | 5784.988                                | 5785.032                                | 5785.027                                | 5775.105                                 |
|                                  | 5795                            | 5794.998                                | 5795.022                                | 5795.027                                | 5785.106                                 |
|                                  | 5825                            | 5824.928                                | 5825.032                                | 5825.037                                | 5795.086                                 |
| 0                                | 5745                            | 5744.997                                | 5745.032                                | 5745.017                                | 5745.085                                 |
|                                  | 5755                            | 5755.008                                | 5755.032                                | 5755.027                                | 5755.075                                 |
|                                  | 5775                            | 5775.028                                | 5775.022                                | 5775.047                                | 5775.085                                 |
|                                  | 5785                            | 5784.998                                | 5785.022                                | 5785.017                                | 5785.096                                 |
|                                  | 5795                            | 5794.998                                | 5795.022                                | 5795.017                                | 5795.116                                 |
|                                  | 5825                            | 5824.998                                | 5824.952                                | 5825.017                                | 5825.106                                 |
| 10                               | 5745                            | 5744.987                                | 5745.042                                | 5745.017                                | 5745.095                                 |
|                                  | 5755                            | 5755.008                                | 5755.042                                | 5755.037                                | 5755.115                                 |
|                                  | 5775                            | 5775.008                                | 5775.042                                | 5775.017                                | 5775.095                                 |
|                                  | 5785                            | 5785.008                                | 5785.032                                | 5785.027                                | 5785.086                                 |
|                                  | 5795                            | 5795.018                                | 5795.022                                | 5795.027                                | 5795.076                                 |
|                                  | 5825                            | 5824.998                                | 5825.032                                | 5825.037                                | 5825.117                                 |
| 20                               | 5745                            | 5745.007                                | 5745.052                                | 5745.027                                | 5745.085                                 |
|                                  | 5755                            | 5755.028                                | 5755.022                                | 5755.047                                | 5755.105                                 |
|                                  | 5775                            | 5775.008                                | 5775.052                                | 5775.027                                | 5775.085                                 |
|                                  | 5785                            | 5784.998                                | 5785.052                                | 5785.017                                | 5785.116                                 |
|                                  | 5795                            | 5794.988                                | 5795.042                                | 5795.007                                | 5795.106                                 |
|                                  | 5825                            | 5825.028                                | 5825.052                                | 5825.047                                | 5825.117                                 |
| 30                               | 5745                            | 5744.987                                | 5745.042                                | 5745.017                                | 5745.095                                 |
|                                  | 5755                            | 5755.008                                | 5755.042                                | 5755.037                                | 5755.115                                 |
|                                  | 5775                            | 5775.008                                | 5775.042                                | 5775.017                                | 5775.095                                 |
|                                  | 5785                            | 5785.008                                | 5785.032                                | 5785.027                                | 5785.086                                 |
|                                  | 5795                            | 5795.018                                | 5795.022                                | 5795.027                                | 5795.076                                 |
|                                  | 5825                            | 5824.998                                | 5825.032                                | 5825.037                                | 5825.117                                 |
| 40                               | 5745                            | 5745.007                                | 5745.032                                | 5745.017                                | 5745.085                                 |
|                                  | 5755                            | 5755.018                                | 5755.042                                | 5755.037                                | 5755.105                                 |
|                                  | 5775                            | 5775.018                                | 5775.042                                | 5775.017                                | 5775.085                                 |

|    |      |          |          |          |          |
|----|------|----------|----------|----------|----------|
|    | 5785 | 5785.008 | 5785.032 | 5785.027 | 5785.096 |
|    | 5795 | 5794.998 | 5795.042 | 5795.027 | 5795.096 |
|    | 5825 | 5825.008 | 5825.042 | 5825.037 | 5825.106 |
| 50 | 5745 | 5744.997 | 5745.032 | 5745.017 | 5745.085 |
|    | 5755 | 5755.018 | 5755.042 | 5755.027 | 5755.095 |
|    | 5775 | 5774.998 | 5775.042 | 5775.017 | 5775.116 |
|    | 5785 | 5785.008 | 5785.032 | 5785.007 | 5785.086 |
|    | 5795 | 5795.008 | 5795.042 | 5795.017 | 5795.086 |
|    | 5825 | 5825.018 | 5825.042 | 5824.947 | 5825.086 |

| Frequency stability versus Voltage |                           |                                   |                                   |                                   |                                    |
|------------------------------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| Temperature: 25°C                  |                           |                                   |                                   |                                   |                                    |
| Power Supply (VAC)                 | Operating Frequency (MHz) | 0 minute Measured Frequency (MHz) | 2 minute Measured Frequency (MHz) | 5 minute Measured Frequency (MHz) | 10 minute Measured Frequency (MHz) |
| DC 6.54V                           | 5745                      | 5744.987                          | 5745.032                          | 5745.017                          | 5745.085                           |
|                                    | 5755                      | 5755.008                          | 5755.032                          | 5755.037                          | 5755.105                           |
|                                    | 5775                      | 5775.008                          | 5775.022                          | 5775.037                          | 5775.085                           |
|                                    | 5785                      | 5785.008                          | 5785.022                          | 5785.017                          | 5785.096                           |
|                                    | 5795                      | 5795.018                          | 5795.022                          | 5795.037                          | 5795.096                           |
|                                    | 5825                      | 5824.998                          | 5824.952                          | 5825.037                          | 5825.106                           |
| DC 7.7V                            | 5745                      | 5744.987                          | 5745.042                          | 5745.017                          | 5745.095                           |
|                                    | 5755                      | 5755.008                          | 5755.042                          | 5755.037                          | 5755.115                           |
|                                    | 5775                      | 5775.008                          | 5775.042                          | 5775.017                          | 5775.095                           |
|                                    | 5785                      | 5785.008                          | 5785.032                          | 5785.027                          | 5785.086                           |
|                                    | 5795                      | 5795.018                          | 5795.022                          | 5795.027                          | 5795.076                           |
|                                    | 5825                      | 5824.998                          | 5825.032                          | 5825.037                          | 5825.117                           |
| DC 8.86V                           | 5745                      | 5745.007                          | 5745.052                          | 5745.027                          | 5745.085                           |
|                                    | 5755                      | 5755.028                          | 5755.022                          | 5755.047                          | 5755.105                           |
|                                    | 5775                      | 5775.008                          | 5775.052                          | 5775.027                          | 5775.085                           |
|                                    | 5785                      | 5784.998                          | 5785.052                          | 5785.017                          | 5785.116                           |
|                                    | 5795                      | 5794.988                          | 5795.042                          | 5795.007                          | 5795.106                           |
|                                    | 5825                      | 5825.028                          | 5825.052                          | 5825.047                          | 5825.117                           |

## 5 Test Setup Photo

Reference to the **appendix I** for details.

## 6 EUT Constructional Details

Reference to the **appendix II** for details.

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