



## FCC PART 15.407 TEST REPORT

On Behalf of

**Shenzhen Qunyu E-commerce Co., Ltd**

403, No. 254, Zone 5, Longsheng New Village, Longsheng Community, Dalang Street,  
Longhua District, Shenzhen City, China

**FCC ID: 2BR3D-WHD01**

**Model:** WHD01, WHD02, WHD03, WHD04, WHD05,  
WHD06, WHD07, WHD08, WHD09, WHD10

September 19, 2025

**This Report Concerns:**

☒ Original Report

**Equipment Type:**

Wireless HDMI Transmitter And Receiver

**Test Engineer:**

Fan Yang / *Fan Yang*

**Report Number:**

**QCT25IR-1940E-01**

**Test Date:**

September 13~17, 2025

**Test Result:**

Pass

**Reviewed By:**

Vincent Yang / *Vincent Yang*

**Approved By:**

Kendy Wang / *Kendy Wang*

**Prepared By:**

**Shenzhen QC Testing Laboratory Co., Ltd.**

East of 1/F., Building E, Xinghong Science Park, No.111,  
Shuiku Road, Fenghuanggang, Xixiang Street, Bao'an  
District, Shenzhen, Guangdong, China

**Tel: 0755-23008269**

**Fax: 0755-23726780**





# Table of Contents

|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1. GENERAL INFORMATION</b>                          | <b>5</b>  |
| 1.1 Product Description for Equipment under Test (EUT) | 5         |
| 1.2 System Test Configuration                          | 6         |
| 1.3 Test Facility                                      | 8         |
| 1.4 Measurement Uncertainty                            | 8         |
| <b>2. SUMMARY OF TEST RESULTS</b>                      | <b>9</b>  |
| <b>3. LIST OF TEST AND MEASUREMENT INSTRUMENTS</b>     | <b>10</b> |
| 3.1 Conducted Emission Test                            | 10        |
| 3.2 Radiated Emission Test                             | 10        |
| 3.3 RF Conducted test                                  | 11        |
| <b>4. ANTENNA REQUIREMENT</b>                          | <b>12</b> |
| <b>5. CONDUCTED EMISSIONS</b>                          | <b>13</b> |
| 5.1 Applicable Standard                                | 13        |
| 5.2 Limit                                              | 13        |
| 5.3 Test setup                                         | 13        |
| 5.4 EMI Test Receiver Setup                            | 13        |
| 5.5 Test procedure                                     | 13        |
| 5.6 Test Data                                          | 13        |
| <b>6. EMISSION BANDWIDTH</b>                           | <b>16</b> |
| 6.1 Test Method of -26dB Bandwidth                     | 16        |
| 6.2 Test Method of -6dB Bandwidth                      | 16        |
| 6.3 Test Method of 99% Bandwidth                       | 16        |
| 6.4 Test setup                                         | 17        |
| 6.5 Test Data                                          | 17        |
| <b>7. MAXIMUM CONDUCTED OUTPUT POWER</b>               | <b>33</b> |
| 7.1 Test Method                                        | 33        |
| 7.2 Limit                                              | 33        |
| 7.3 Test setup                                         | 33        |
| 7.4 Test Procedure                                     | 33        |
| 7.5 Test Data                                          | 33        |
| <b>8. MAXIMUM POWER SPECTRAL DENSITY</b>               | <b>42</b> |
| 8.1 Applicable Standard                                | 42        |
| 8.2 Limit                                              | 42        |
| 8.3 Test setup                                         | 42        |
| 8.4 Test Procedure                                     | 42        |
| 8.5 Test Data                                          | 42        |



|                                     |           |
|-------------------------------------|-----------|
| <b>9. BAND EDGE</b>                 | <b>51</b> |
| 9.1 Applicable Standard             | 51        |
| 9.2 Limit                           | 51        |
| 9.3 EMI Test Receiver Setup         | 51        |
| 9.4 Test setup                      | 51        |
| 9.5 Test Procedure                  | 51        |
| 9.6 Test Data                       | 52        |
| <b>10. RADIATED EMISSION METHOD</b> | <b>61</b> |
| 10.1 Applicable Standard            | 61        |
| 10.2 Limit                          | 61        |
| 10.3 Test setup                     | 61        |
| 10.4 EMI Test Receiver Setup        | 62        |
| 10.5 Test procedure                 | 62        |
| 10.6 Test Data                      | 63        |
| <b>11. FREQUENCIES STABILITY</b>    | <b>67</b> |
| 11.1 Applicable Standard            | 67        |
| 11.2 Limit                          | 67        |
| 11.3 Test setup                     | 67        |
| 11.4 Test Procedure                 | 67        |
| 11.5 Test Data                      | 68        |



## Revision History of This Test Report

[illegible]



## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

|                      |                                                                                                                                                                                                                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Description      | Wireless HDMI Transmitter And Receiver                                                                                                                                                                                                                                                                                                         |
| Model No.            | WHD01, WHD02, WHD03, WHD04, WHD05, WHD06, WHD07, WHD08, WHD09, WHD10                                                                                                                                                                                                                                                                           |
| Model Difference     | All the models are electrical identical including the same software parameter and hardware design (i.e., circuit design, PCB Layout, RF module/circuit, antenna type and antenna location, components on PCB, etc.), same mechanical structure and design (including product enclosure, materials, etc.), the only differences are model name. |
| Tested Model         | WHD01                                                                                                                                                                                                                                                                                                                                          |
| Sample(s) Status     | Engineer sample                                                                                                                                                                                                                                                                                                                                |
| Operation Frequency: | U-NII-1: 5180MHz~5240MHz<br>U-NII-3: 5745MHz~5825MHz                                                                                                                                                                                                                                                                                           |
| Modulation type:     | 802.11a/802.11n: OFDM                                                                                                                                                                                                                                                                                                                          |
| Antenna Type:        | PCB Antenna                                                                                                                                                                                                                                                                                                                                    |
| Antenna gain*1:      | U-NII-1:1.78dBi<br>U-NII-3:2.5dBi                                                                                                                                                                                                                                                                                                              |
| Power supply:        | 5V DC                                                                                                                                                                                                                                                                                                                                          |
| TPC Support          | No                                                                                                                                                                                                                                                                                                                                             |
| Trade Mark:          | N/A                                                                                                                                                                                                                                                                                                                                            |
| Applicant            | Shenzhen Qunyu E-commerce Co., Ltd                                                                                                                                                                                                                                                                                                             |
| Address              | 403, No. 254, Zone 5, Longsheng New Village, Longsheng Community, Dalang Street, Longhua District, Shenzhen City, China                                                                                                                                                                                                                        |
| Manufacturer         | Shenzhen GiantPu Technology Co., Ltd.                                                                                                                                                                                                                                                                                                          |
| Address              | Room 501, Building C11, Fuyuan Industrial City, No. 598 Zhoushi Road, Jiuwei Community, Hangcheng Street, Baoan District, Shenzhen City                                                                                                                                                                                                        |
| Sample No.           | Y25I1940E01YN                                                                                                                                                                                                                                                                                                                                  |

Note: \*1 This information provided by Manufacturer, SZ QC Lab is not responsible for the accuracy of this information.

## 1.2 System Test Configuration

### 1.2.1 Channel List

| Frequency Band            | Channel No. | Frequency | Channel No. | Frequency |
|---------------------------|-------------|-----------|-------------|-----------|
| 5180~5240MHz<br>(U-NII-1) | 36          | 5180 MHz  | 44          | 5220 MHz  |
|                           | 38          | 5190 MHz  | 46          | 5230 MHz  |
|                           | 40          | 5200 MHz  | 48          | 5240 MHz  |
|                           | 42          | 5210 MHz  |             |           |

For 20 MHz Bandwidth, use channel 36, 40, 44, 48.

| Frequency Band            | Channel No. | Frequency | Channel No. | Frequency |
|---------------------------|-------------|-----------|-------------|-----------|
| 5745~5825MHz<br>(U-NII-3) | 149         | 5745 MHz  | 157         | 5785 MHz  |
|                           | 151         | 5755 MHz  | 159         | 5795 MHz  |
|                           | 153         | 5765 MHz  | 161         | 5805 MHz  |
|                           | 155         | 5775 MHz  | 165         | 5825 MHz  |

For 20 MHz Bandwidth, use channel 149, 153, 157, 161, 165.

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 Mode               | Channel (MHz)   |                 |                 |
|-------------------------|-----------------|-----------------|-----------------|
|                         | 5G Wi-Fi UNII-1 |                 |                 |
| 802.11a<br>802.11n HT20 | CH36 (5180MHz)  | CH40 (5200MHz)  | CH48 (5240MHz)  |
| Test Mode               | Channel (MHz)   |                 |                 |
|                         | 5G Wi-Fi UNII-3 |                 |                 |
| 802.11a<br>802.11n HT20 | CH149 (5745MHz) | CH157 (5785MHz) | CH165 (5825MHz) |

### 1.2.2 EUT Exercise Software

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

| Mode      | Data Rate (Mbps) | Power Level |
|-----------|------------------|-------------|
| 802.11a   | 6                | default     |
| 802.11n20 | MCS0             | default     |

The software and power level was provided by the applicant.



### 1.2.3 Support Equipment

| Manufacturer | Description                   | Model               | Remark      |
|--------------|-------------------------------|---------------------|-------------|
| Dell         | Notebook PC                   | Inspiron 15<br>3511 | 13764488907 |
| Dell         | Notebook PC<br>65W-AC ADAPTER | HA65NS5-00          | A065R073L   |

### 1.2.4 Test mode and test voltage

1. Transmitting mode: Keep the EUT in continuously transmitting.
2. Test voltage: 5V DC



### 1.3 Test Facility

Test Firm : Shenzhen QC Testing Laboratory Co., Ltd.

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

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

CNAS – Registration No.: L8464

The EMC Laboratory has been accredited by CNAS, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

A2LA Certificate Number: 6759.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 561109

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 29628

CAB identifier: CN0141

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

### 1.4 Measurement Uncertainty

| Parameter                                          | Uncertainty                 |
|----------------------------------------------------|-----------------------------|
| Occupied Channel Bandwidth                         | $\pm 1.42 \times 10^{-4}\%$ |
| RF output power, conducted                         | $\pm 1.06\text{dB}$         |
| Power Spectral Density, conducted                  | $\pm 1.06\text{dB}$         |
| Unwanted Emissions, conducted                      | $\pm 2.51\text{dB}$         |
| AC Power Line Conducted Emission                   | $\pm 1.80\text{dB}$         |
| Radiated Spurious Emission test (9kHz-30MHz)       | $\pm 2.66\text{dB}$         |
| Radiated Spurious Emission test (30MHz-1000MHz)    | $\pm 4.04\text{dB}$         |
| Radiated Spurious Emission test (1000MHz-18000MHz) | $\pm 4.70\text{ dB}$        |
| Radiated Spurious Emission test (18GHz-40GHz)      | $\pm 4.80\text{dB}$         |
| Temperature                                        | $\pm 0.8^{\circ}\text{C}$   |
| Humidity                                           | $\pm 3.2\%$                 |
| DC and low frequency voltages                      | $\pm 0.1\%$                 |
| Time                                               | $\pm 5\%$                   |
| Duty cycle                                         | $\pm 5\%$                   |

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$



## 2. Summary of Test Results

| Test Item                        | Section                                               | Result |
|----------------------------------|-------------------------------------------------------|--------|
| Antenna Requirement              | §15.203                                               | Pass   |
| AC Power Line Conducted Emission | §15.207                                               | Pass   |
| Maximum Conducted Output Power   | §15.407(a)(1), (a)(3)                                 | Pass   |
| Emission Bandwidth               | §15.407(a)(2)                                         | Pass   |
| Maximum Power Spectral Density   | §15.407(a)(1), (a)(3)                                 | Pass   |
| Band Edge                        | §15.407(b)(1), (b)(4)                                 | Pass   |
| Unwanted Emission                | §15.205/§15.209/§15.407(b)(1), (b)(4), (b)(8), (b)(9) | Pass   |
| Frequencies Stability            | §15.407(g)                                            | Pass   |

- Note:
1. In the configuration tested, the EUT complied with the standards specified above;
  2. Test according to ANSI C63.10: 2020;
  3. The Frequency Stability item is declared by the manufacturer;
  4. All indications of Pass/Fail in this report are opinions expressed by Shenzhen QC Testing Laboratory Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.



### 3. List of Test and Measurement Instruments

#### 3.1 Conducted Emission Test

| Item | Equipment                | Manufacturer  | Model No. | Serial No. | Last Cal.  | Cal.Due    |
|------|--------------------------|---------------|-----------|------------|------------|------------|
| 1    | EMI Test Receiver        | Rohde&Schwarz | ESIB 7    | 2277573376 | 2025.03.17 | 2026.03.16 |
| 2    | EMI Test Receiver        | Rohde&Schwarz | ESCI3     | 101820     | 2025.03.17 | 2026.03.16 |
| 3    | Artificial Mains Network | SCHWARZBECK   | NSLK8126  | 8126200    | 2025.03.17 | 2026.03.16 |
| 4    | PULSE LIMITER            | Rohde&Schwarz | ESH3-Z2   | 100058     | 2025.03.18 | 2026.03.17 |

Conducted Emission Measurement Software: TS+ JS32-CE Ver 5.0.0

#### 3.2 Radiated Emission Test

| Item | Equipment                     | Manufacturer  | Model No.           | Serial No.   | Last Cal.  | Cal.Due    |
|------|-------------------------------|---------------|---------------------|--------------|------------|------------|
| 1.   | EMI Test Receiver             | Rohde&Schwarz | ESIB 7              | 2277573376   | 2025.03.17 | 2026.03.16 |
| 2.   | EMI Test Receiver             | Rohde&Schwarz | ESPI3               | 101131       | 2025.03.17 | 2026.03.16 |
| 3.   | Spectrum Analyzer             | Rohde&Schwarz | FSV 40              | 101458       | 2025.03.18 | 2026.03.17 |
| 4.   | TRILOG Broadband Test-Antenna | SCHWARZBECK   | VULB9168            | VULB9168-588 | 2025.03.22 | 2026.03.21 |
| 5.   | Loop Antenna                  | EMCO          | 6502                | 2133         | 2025.03.19 | 2026.03.18 |
| 6.   | horn antenna                  | SCHWARZBECK   | BBHA9120D           | 2069         | 2025.08.16 | 2026.08.15 |
| 7.   | Horn Antenna                  | COM-MW        | ZLB7-18-40G-950     | 12221225     | 2025.08.16 | 2026.08.15 |
| 8.   | Pre-amplifier                 | MITEQ         | TTA0001-18          | 2063645      | 2025.03.17 | 2026.03.16 |
| 9.   | Pre-amplifier                 | MITEQ         | TTA1800-30-HG       | 2063644      | 2025.03.17 | 2026.03.16 |
| 10.  | Pre-amplifier                 | COM-MW        | DLAN-18000-40000-02 | 10229104     | 2025.03.22 | 2026.03.21 |
| 11.  | 966 Camber                    | ZhongYU       | 9*6*6               | /            | 2023.05.08 | 2026.05.07 |

Radiated Emission Measurement Software: EZ\_EMC Ver QCT03A2 RE+



### 3.3 RF Conducted test

| Item                                                    | Equipment                           | Manufacturer    | Model No.                | Serial No. | Last Cal.  | Cal.Due    |
|---------------------------------------------------------|-------------------------------------|-----------------|--------------------------|------------|------------|------------|
| 1.                                                      | Wideband Radio Communication Tester | Rohde & Schwarz | CW500                    | 151583     | 2025.03.18 | 2026.03.17 |
| 2.                                                      | Spectrum Analyzer                   | ROHDE & SCHWARZ | FSV 40                   | 101458     | 2025.03.18 | 2026.03.17 |
| 3.                                                      | Signal Generator                    | Agilent         | N5182A                   | MY50141563 | 2025.03.18 | 2026.03.17 |
| 4.                                                      | RF Automatic Test System            | MW              | MW100-RFCB/<br>MW100-PSB | MW2007004  | 2025.03.18 | 2026.03.17 |
| RF Conducted Measurement Software: MTS 8310 Ver 2.0.0.0 |                                     |                 |                          |            |            |            |



## 4. Antenna requirement

**Standard requirement:** FCC Part15 C Section 15.203

15.203 requirement:

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.

**EUT Antenna:** The Antenna is PCB Antenna, reference to the Internal photo for details.

## 5. Conducted Emissions

### 5.1 Applicable Standard

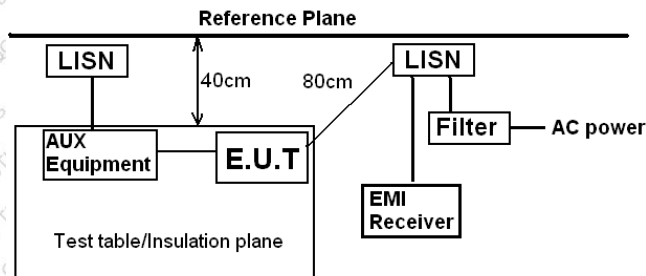
FCC Part15 C Section 15.207

### 5.2 Limit

| Frequency range (MHz) | Limit (dBμV) |           |
|-----------------------|--------------|-----------|
|                       | Quasi-peak   | Average   |
| 0.15-0.5              | 66 to 56*    | 56 to 46* |
| 0.5-5                 | 56           | 46        |
| 5-30                  | 60           | 50        |

Note \*: The level decreases linearly with the logarithm of the frequency.

### 5.3 Test setup



Remark:  
E.U.T: Equipment Under Test  
LISN: Line Impedance Stabilization Network  
Test table height=0.8m

### 5.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.  
RBW=9 kHz, VBW=30 kHz, Sweep time=auto

### 5.5 Test procedure

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.
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).
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: 2020 on conducted measurement.

### 5.6 Test Data

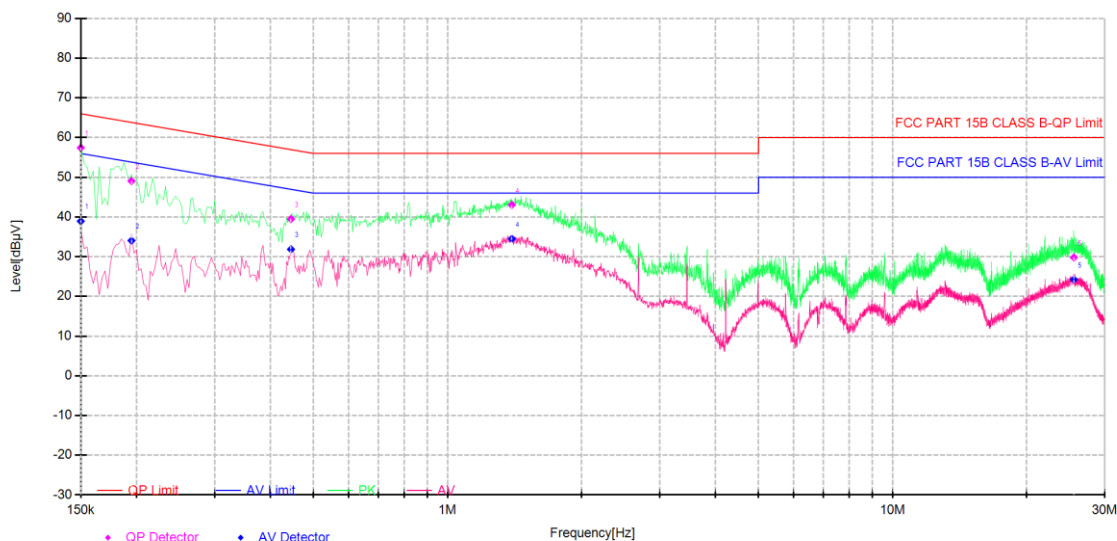
|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 26.1°C   | Humidity     | 59%        |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |



### Measurement data:

Pre-scan all test modes, found worst case at 802.11a 5745MHz TX, and so only show the test result of 802.11a 5745MHz TX.

### Line:

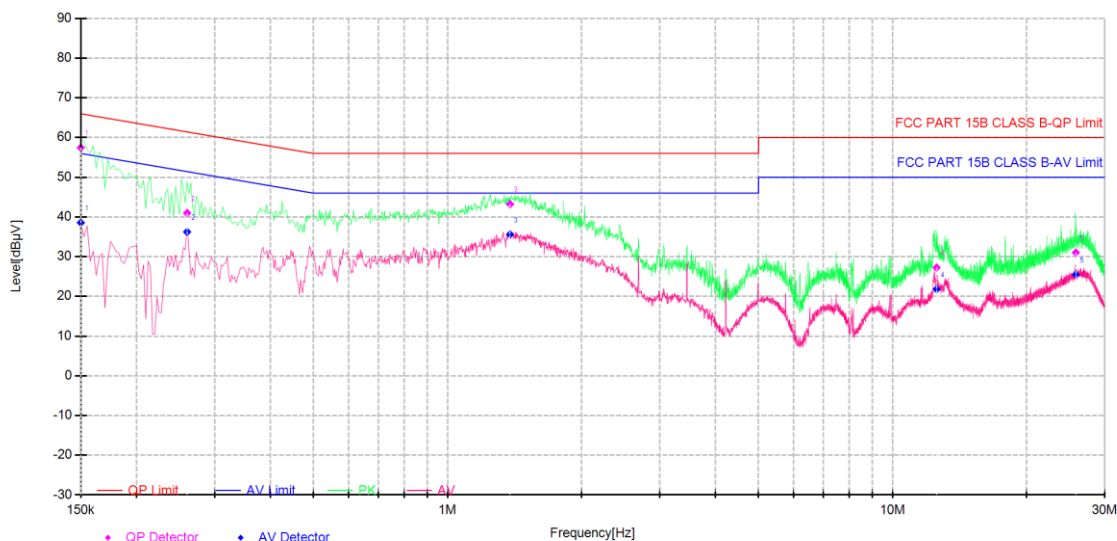


### Final Data List

| NO. | Freq. [MHz] | Factor[dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Phase | Verdict |
|-----|-------------|------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|-------|---------|
| 1   | 0.1500      | 10.58      | 57.44           | 66.00           | 8.56           | 38.94           | 56.00           | 17.06          | L     | PASS    |
| 2   | 0.1950      | 10.66      | 49.06           | 63.82           | 14.76          | 34.06           | 53.82           | 19.76          | L     | PASS    |
| 3   | 0.4450      | 10.75      | 39.49           | 56.97           | 17.48          | 31.86           | 46.97           | 15.11          | L     | PASS    |
| 4   | 1.3950      | 10.66      | 43.04           | 56.00           | 12.96          | 34.49           | 46.00           | 11.51          | L     | PASS    |
| 5   | 25.5530     | 10.83      | 29.81           | 60.00           | 30.19          | 24.26           | 50.00           | 25.74          | L     | PASS    |



Neutral:



## Final Data List

| NO. | Freq. [MHz] | Factor[dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Phase | Verdict |
|-----|-------------|------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|-------|---------|
| 1   | 0.1500      | 10.48      | 57.46           | 66.00           | 8.54           | 38.56           | 56.00           | 17.44          | N     | PASS    |
| 2   | 0.2600      | 10.71      | 41.00           | 61.43           | 20.43          | 36.25           | 51.43           | 15.18          | N     | PASS    |
| 3   | 1.3825      | 10.63      | 43.24           | 56.00           | 12.76          | 35.61           | 46.00           | 10.39          | N     | PASS    |
| 4   | 12.5615     | 10.89      | 27.26           | 60.00           | 32.74          | 21.81           | 50.00           | 28.19          | N     | PASS    |
| 5   | 25.8185     | 10.81      | 31.03           | 60.00           | 28.97          | 25.52           | 50.00           | 24.48          | N     | PASS    |

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.



## 6. Emission Bandwidth

### 6.1. Test Method of -26dB Bandwidth

According to KDB789033 D02

- a) Set RBW= shall be in the range of 1% to 5% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

**Limit: No limit**

### 6.2. Test Method of -6dB Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency.
- b) Set RBW= 100kHz.
- c) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW
- d) Detector = Peak.
- e) Trace mode = max hold.
- f) Sweep= No faster than coupled (auto) time.
- g) Allow the trace to stabilize.
- h) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- i) Record the results in the test report.

**Limit:  $\geq 500\text{kHz}$**

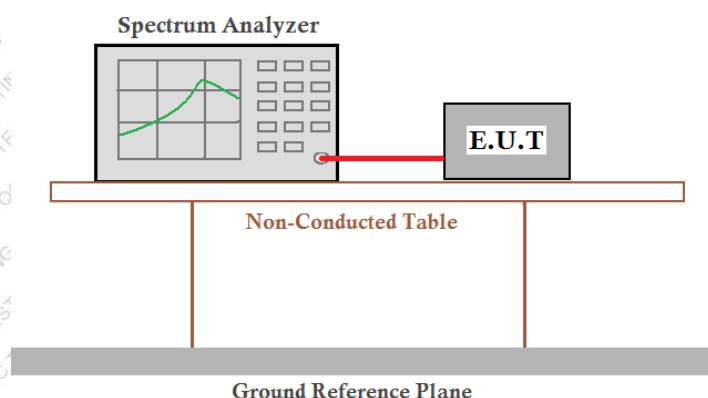
### 6.3. Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW= 1 % to 5% of the OBW
- d) Set VBW  $\geq 3$  RBW
- e) Trace mode=max hold.
- f) Sweep auto couple.
- g) Allow the trace to stabilize.
- h) Use the 99 % power bandwidth function of the instrument.
- i) Record the results in the test report.

**Limit: No limit**

#### 6.4. Test setup



The EUT was placed on 0.8m height table, the RE output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

#### 6.5. Test Data

|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 24.9 °C  | Humidity     | 49 %       |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |

Please refer to following table and plots.

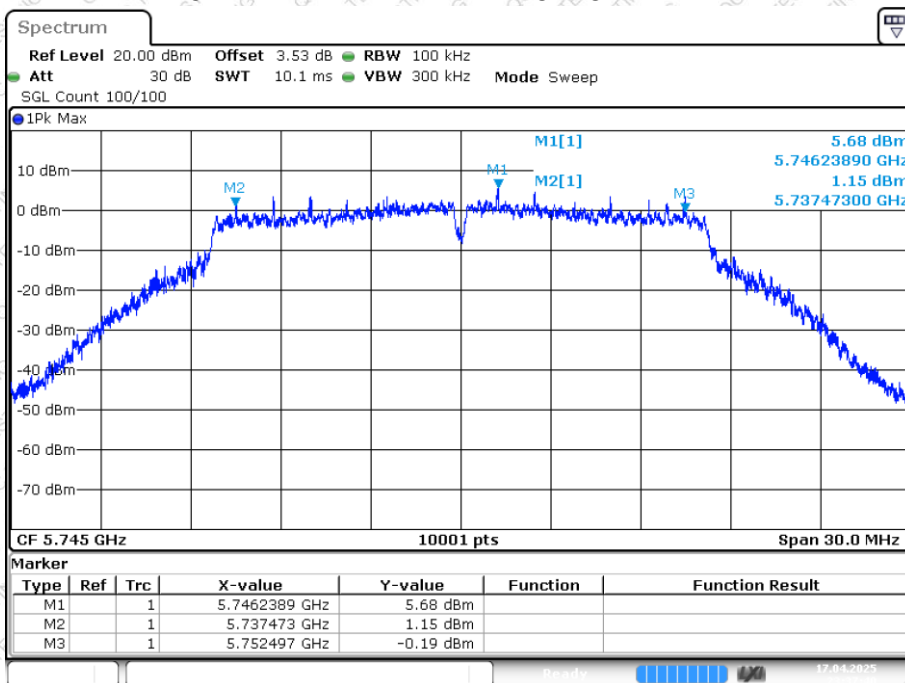


**-6dB Bandwidth Test result:**

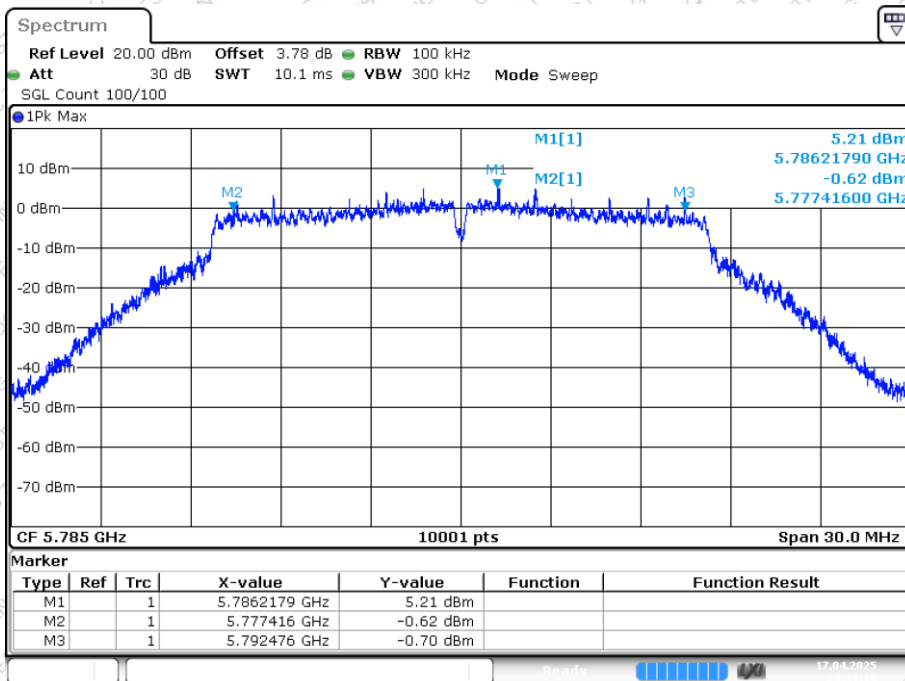
| Mode | Frequency (MHz) | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|------|-----------------|-----------------------|-----------------------------|---------|
| a    | 5745            | 15.024                | $\geq 0.5$                  | Pass    |
| a    | 5785            | 15.06                 | $\geq 0.5$                  | Pass    |
| a    | 5825            | 15.063                | $\geq 0.5$                  | Pass    |
| n20  | 5745            | 17.568                | $\geq 0.5$                  | Pass    |
| n20  | 5785            | 17.148                | $\geq 0.5$                  | Pass    |
| n20  | 5825            | 16.104                | $\geq 0.5$                  | Pass    |



### -6dB Bandwidth NVNT a 5745MHz Ant1

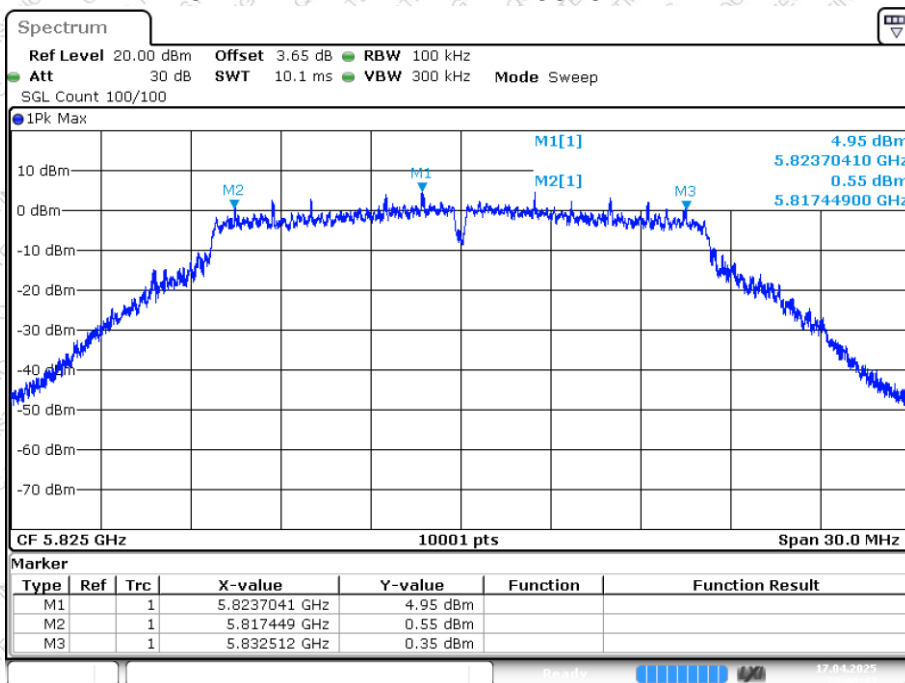


### -6dB Bandwidth NVNT a 5785MHz Ant1

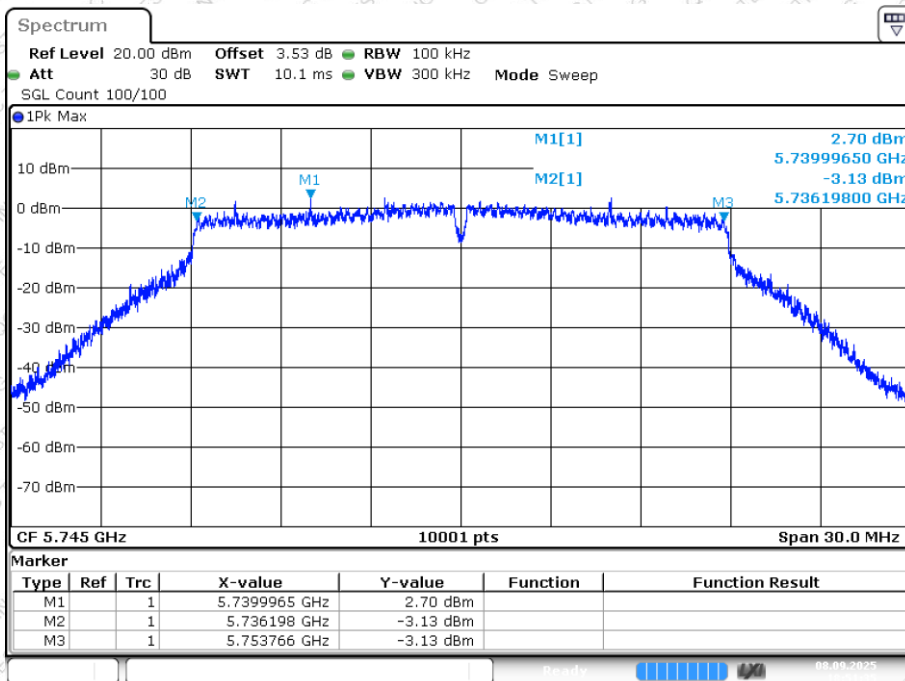




### -6dB Bandwidth NVNT a 5825MHz Ant1

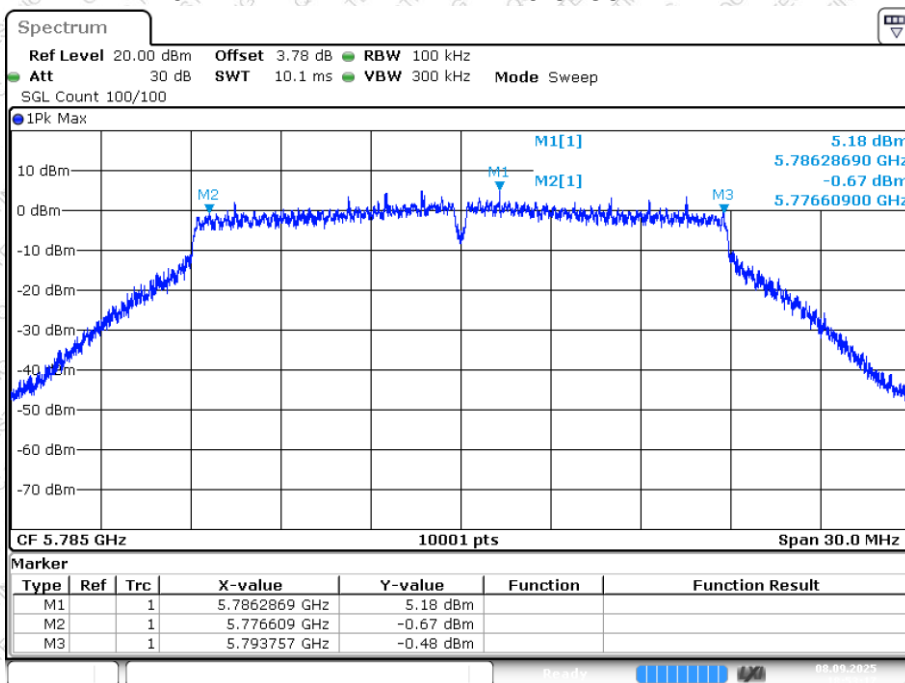


### -6dB Bandwidth NVNT n20 5745MHz Ant1

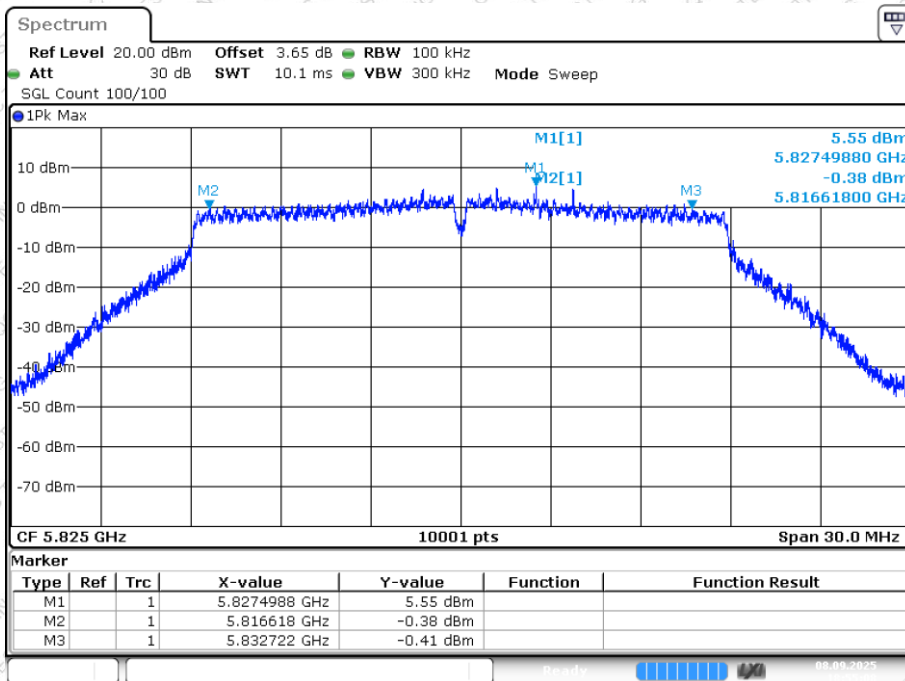




### -6dB Bandwidth NVNT n20 5785MHz Ant1



### -6dB Bandwidth NVNT n20 5825MHz Ant1



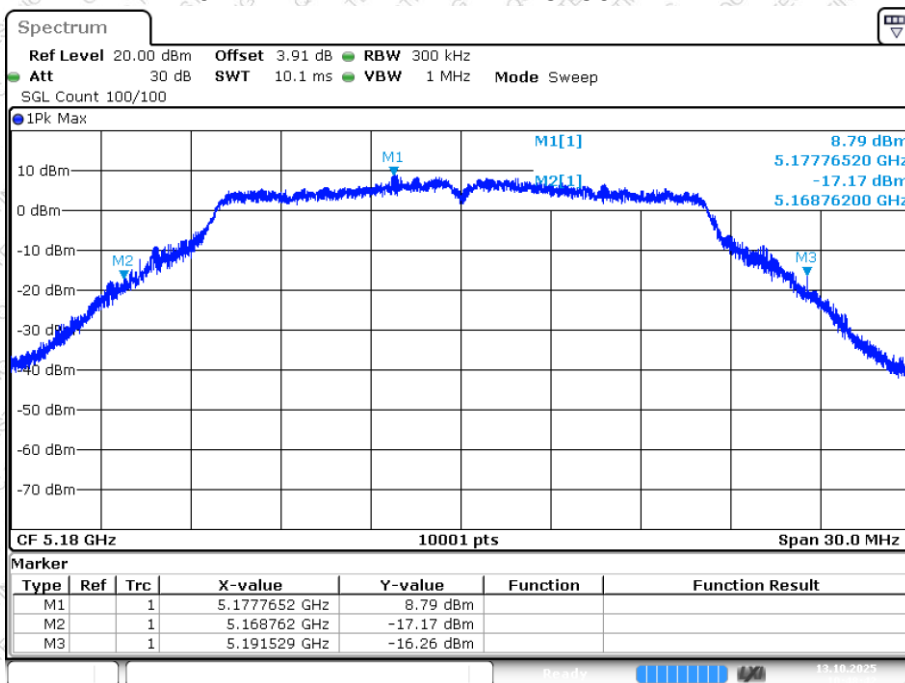


**-26dB Bandwidth:**

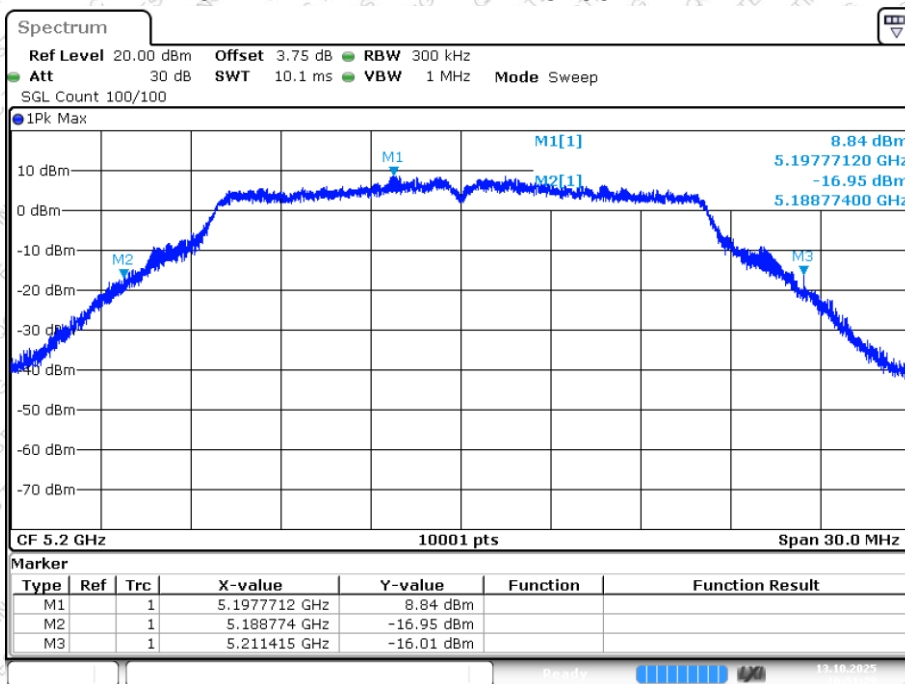
| Mode | Frequency (MHz) | -26dB Bandwidth (MHz) | Verdict |
|------|-----------------|-----------------------|---------|
| a    | 5180            | 22.767                | Pass    |
| a    | 5200            | 22.641                | Pass    |
| a    | 5240            | 22.785                | Pass    |
| n20  | 5180            | 23.088                | Pass    |
| n20  | 5200            | 23.079                | Pass    |
| n20  | 5240            | 23.082                | Pass    |



### -26dB Bandwidth NVNT a 5180MHz Ant1

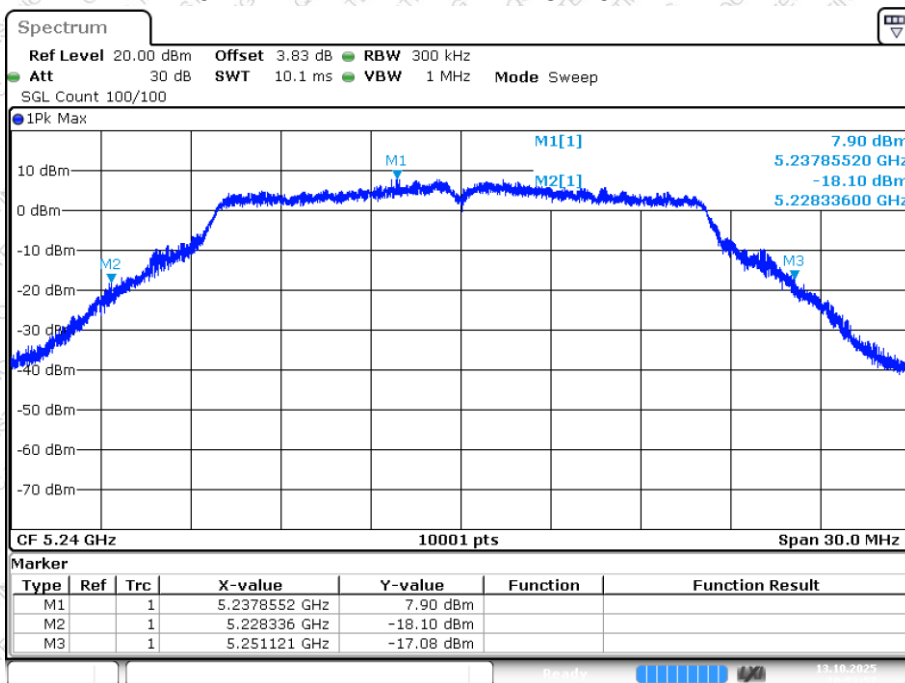


### -26dB Bandwidth NVNT a 5200MHz Ant1



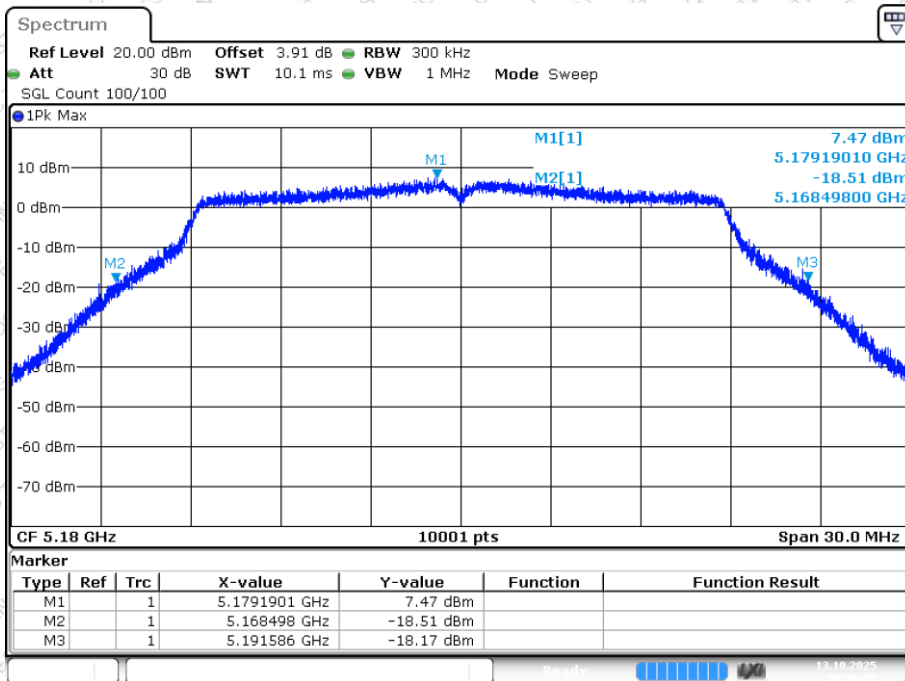


### -26dB Bandwidth NVNT a 5240MHz Ant1



Date: 13.OCT.2025 10:53:58

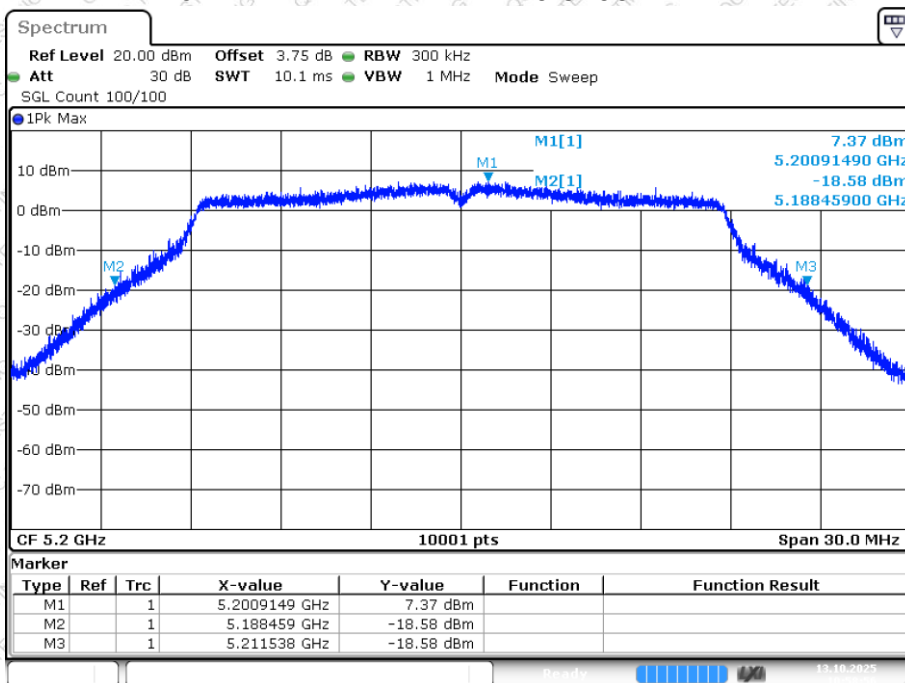
### -26dB Bandwidth NVNT n20 5180MHz Ant1



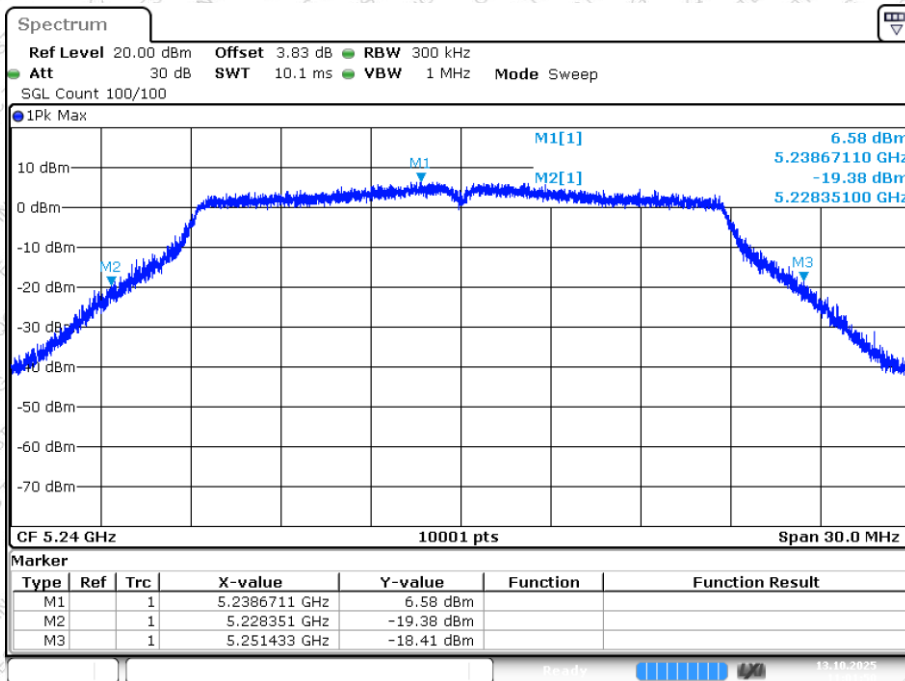
Date: 13.OCT.2025 10:56:53



### -26dB Bandwidth NVNT n20 5200MHz Ant1



### -26dB Bandwidth NVNT n20 5240MHz Ant1





**99% Bandwidth Test result:**

**UNII-1:**

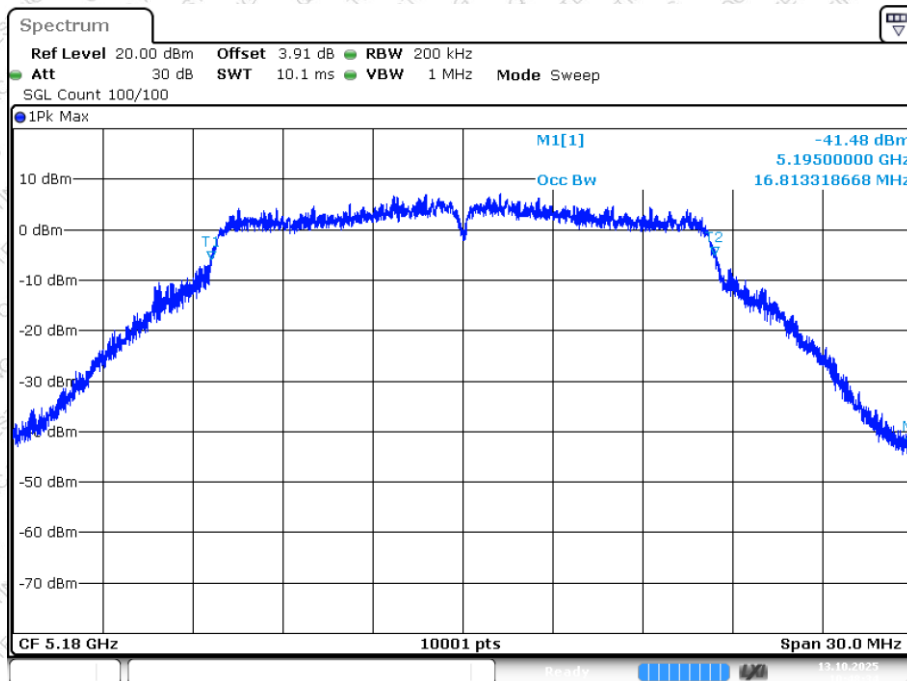
| Mode | Frequency (MHz) | 99% OBW (MHz) | Limit 99% OBW (MHz) | Verdict |
|------|-----------------|---------------|---------------------|---------|
| a    | 5180            | 16.813        | /                   | Pass    |
| a    | 5200            | 16.852        | /                   | Pass    |
| a    | 5240            | 16.882        | /                   | Pass    |
| n20  | 5180            | 17.812        | /                   | Pass    |
| n20  | 5200            | 17.803        | /                   | Pass    |
| n20  | 5240            | 17.827        | /                   | Pass    |

**UNII-3:**

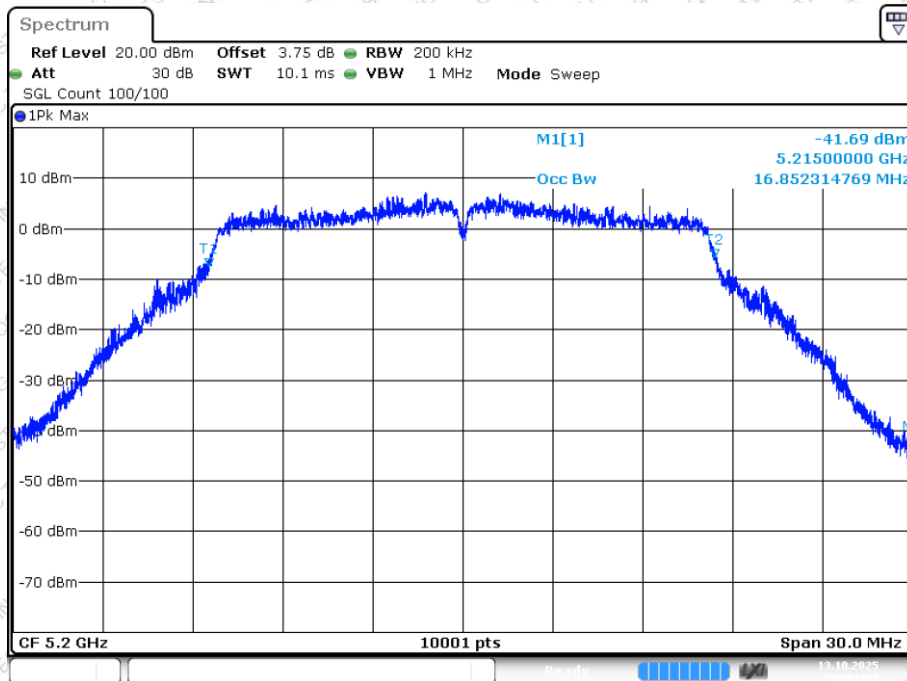
| Mode | Frequency (MHz) | 99% OBW (MHz) | Limit 99% OBW (MHz) | Verdict |
|------|-----------------|---------------|---------------------|---------|
| a    | 5745            | 16.867        | /                   | Pass    |
| a    | 5785            | 16.789        | /                   | Pass    |
| a    | 5825            | 16.822        | /                   | Pass    |
| n20  | 5745            | 17.842        | /                   | Pass    |
| n20  | 5785            | 17.806        | /                   | Pass    |
| n20  | 5825            | 17.785        | /                   | Pass    |



## OBW NVNT a 5180MHz Ant1

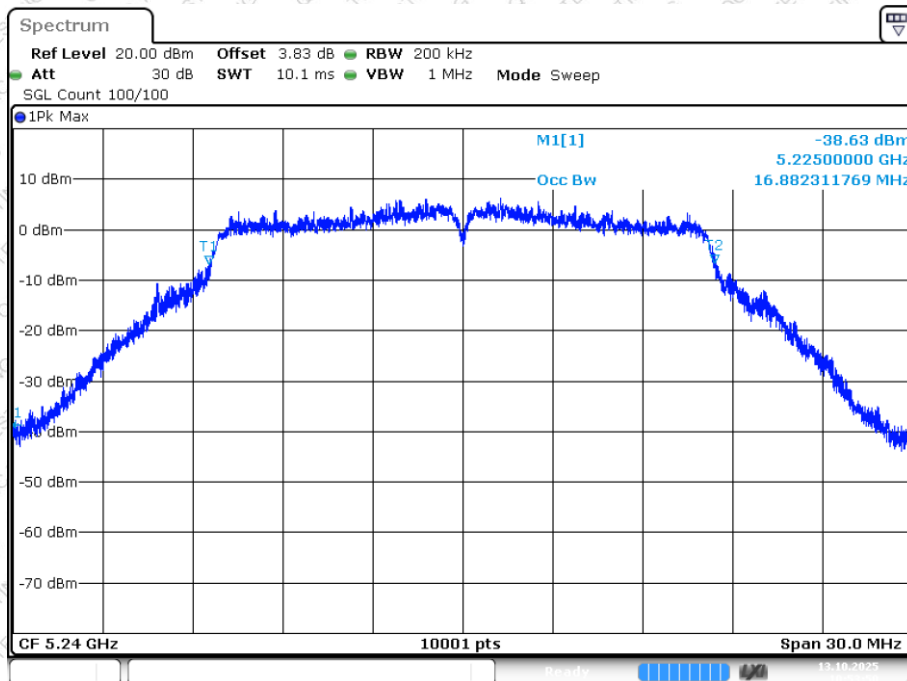


## OBW NVNT a 5200MHz Ant1

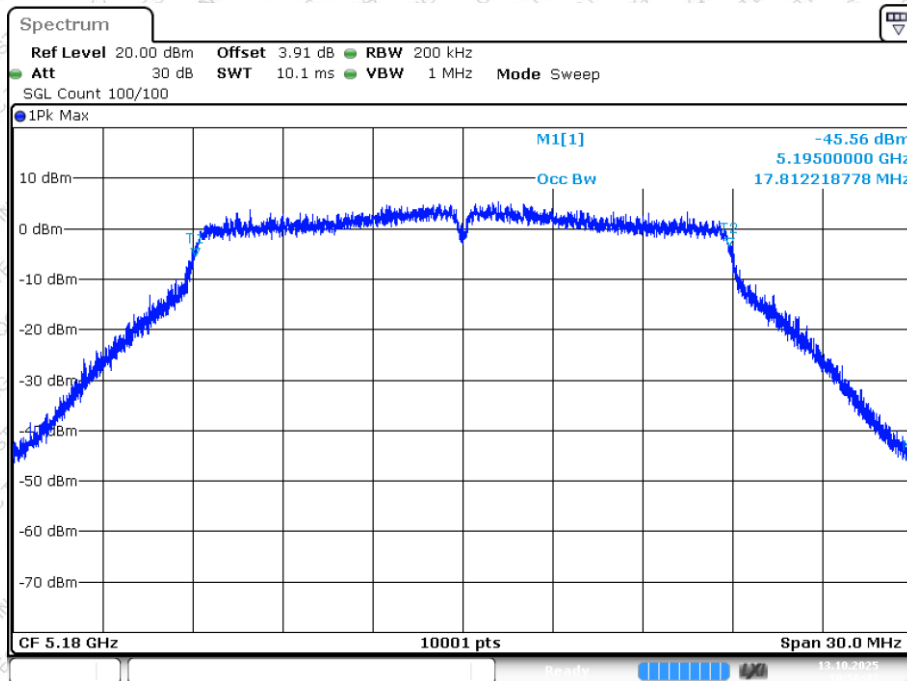




## OBW NVNT a 5240MHz Ant1

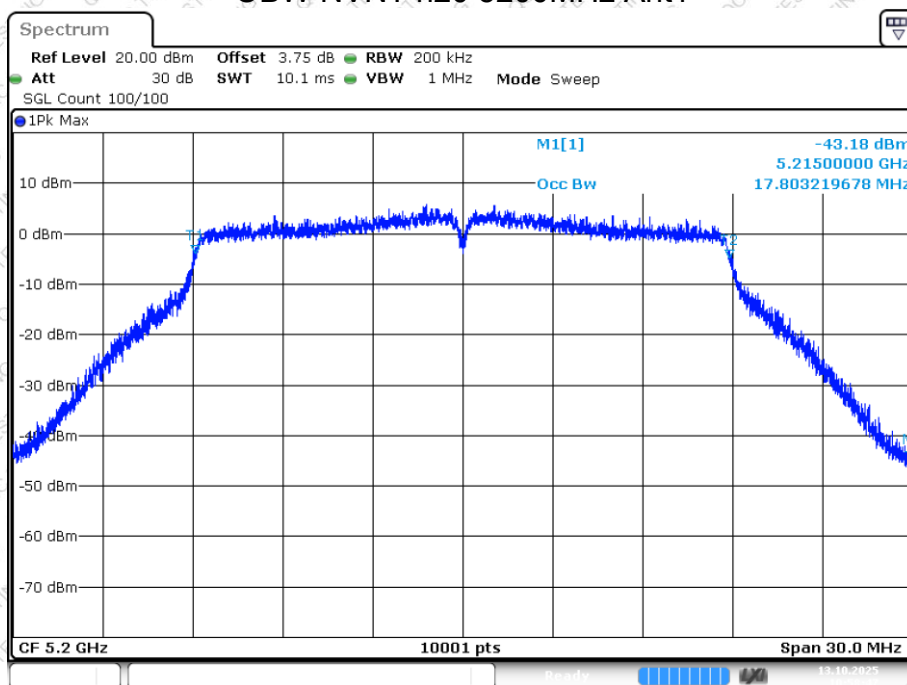


## OBW NVNT n20 5180MHz Ant1



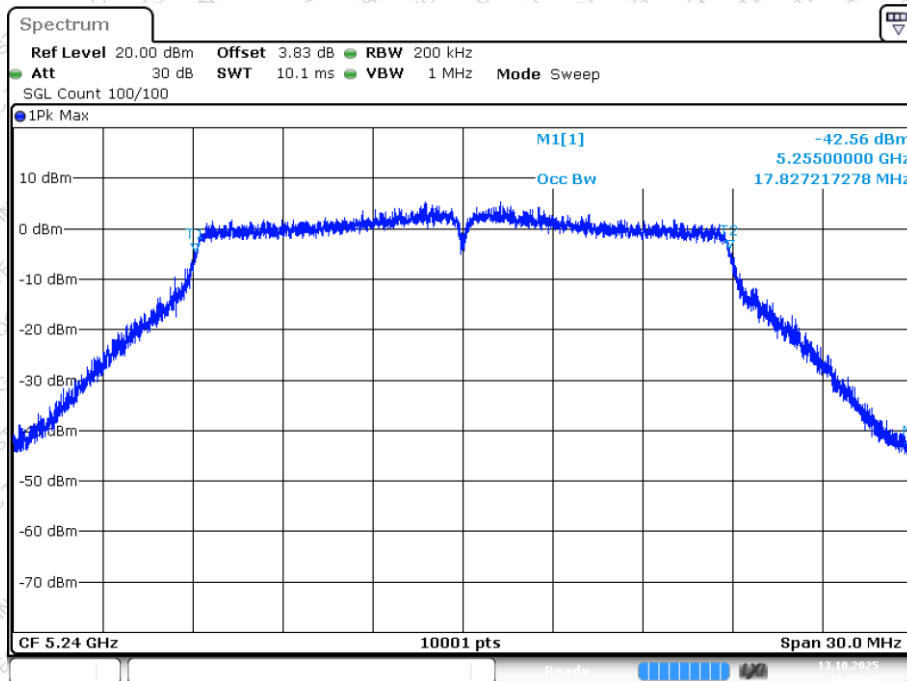


## OBW NVNT n20 5200MHz Ant1



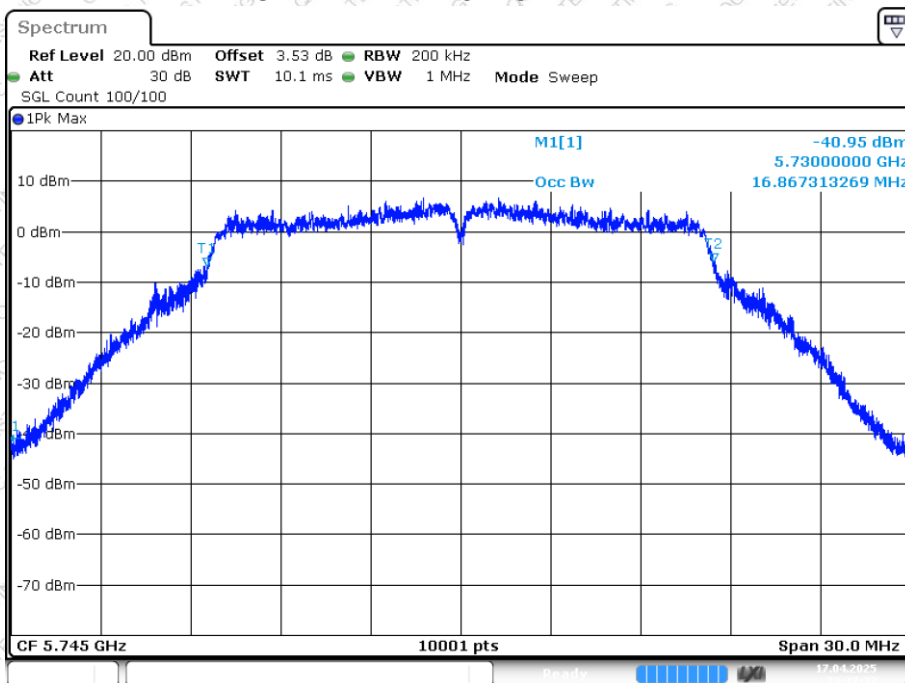
Date: 13.OCT.2025 10:58:47

## OBW NVNT n20 5240MHz Ant1



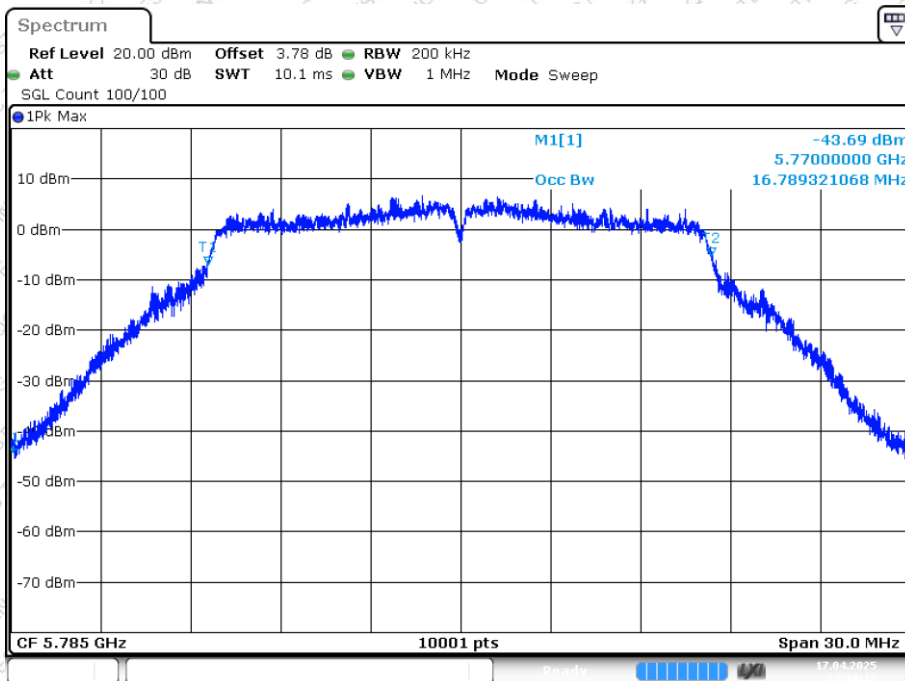
Date: 13.OCT.2025 11:01:42

## OBW NVNT a 5745MHz Ant1



Date: 8.SEP.2025 23:37:33

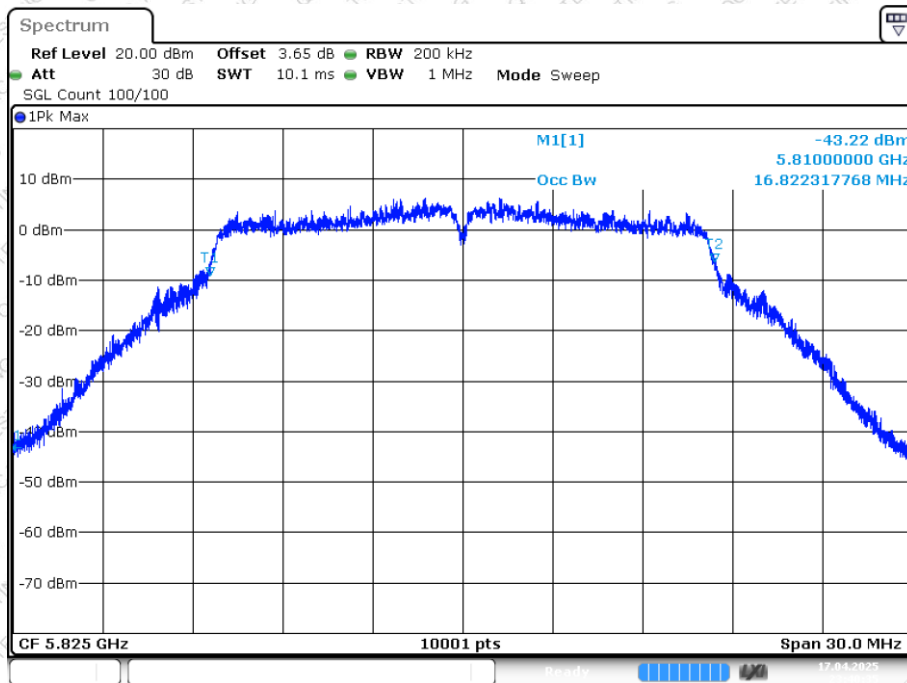
## OBW NVNT a 5785MHz Ant1



Date: 8,SEP,2025 23:39:12

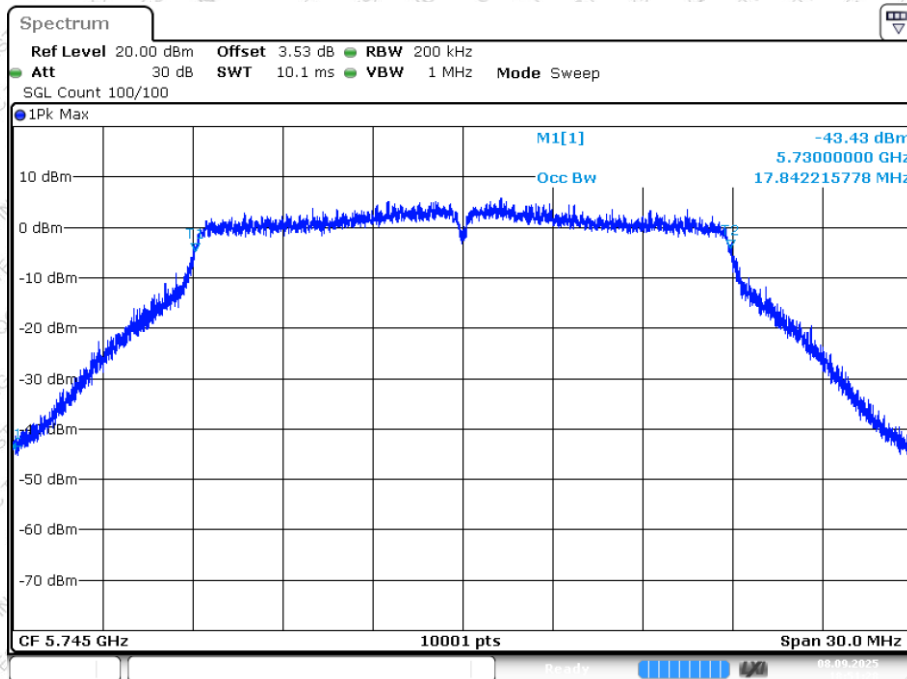


## OBW NVNT a 5825MHz Ant1



Date: 8.SEP.2025 23:40:36

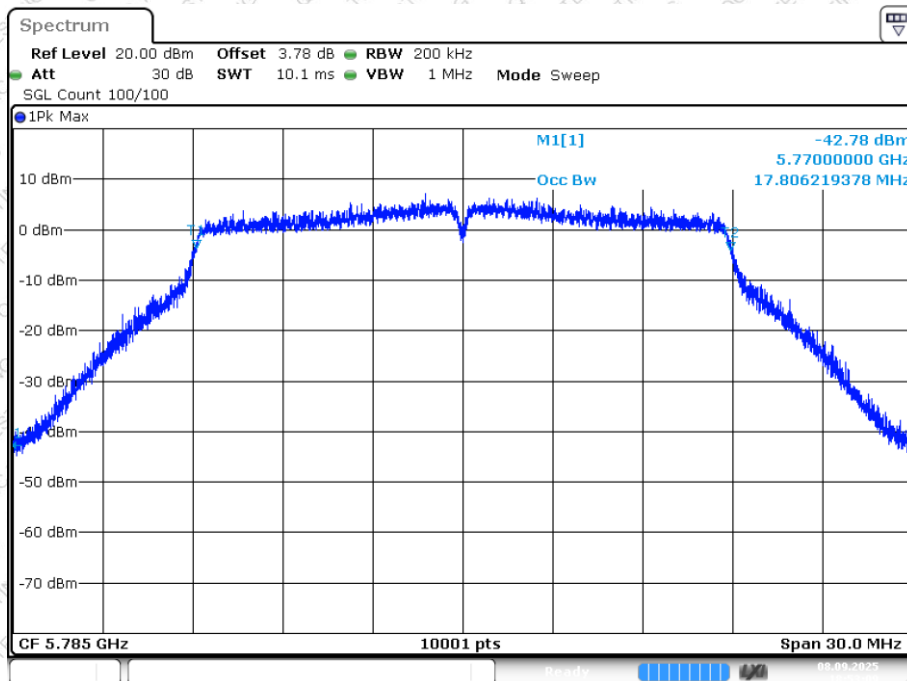
## OBW NVNT n20 5745MHz Ant1



Date: 8.SEP.2025 18:51:28

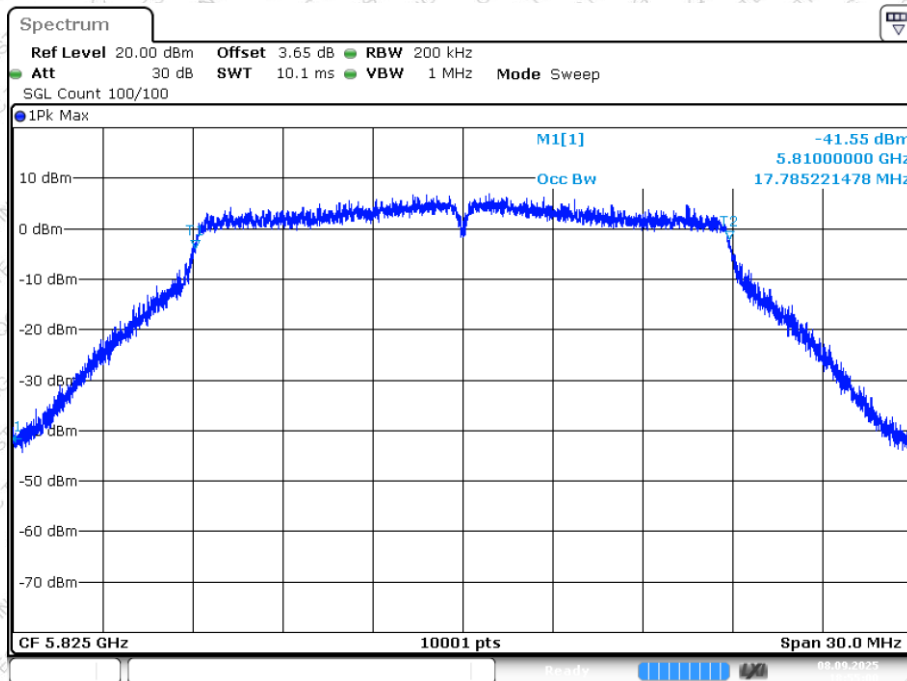


## OBW NVNT n20 5785MHz Ant1



Date: 8.SEP.2025 18:53:09

## OBW NVNT n20 5825MHz Ant1



Date: 8.SEP.2025 18:55:00

## 7. Maximum conducted output power

### 7.1. Test Method

According to KDB789033 D02

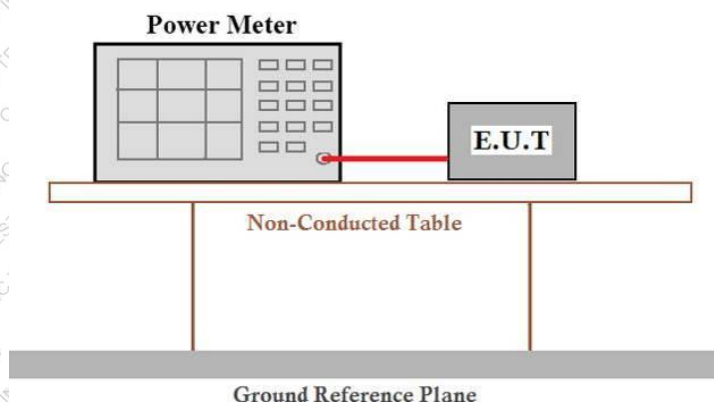
### 7.2. Limit

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

### 7.3. Test setup



### 7.4. Test Procedure

#### Measurement using an RF average power meter

- (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied
  - a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
  - b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
  - c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).
- (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
- (iv) Adjust the measurement in dBm by adding  $10 \log(1/x)$  where x is the duty cycle (e.g.,  $10 \log(1/0.25)$  if the duty cycle is 25 percent).

### 7.5. Test Data

|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 24.9 °C  | Humidity     | 52%        |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |



UNII-1:

Maximum conducted power:

| Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| a    | 5180            | Ant1    | 15.7                  | 0.01             | 15.71             | 24          | Pass    |
| a    | 5200            | Ant1    | 15.68                 | 0.01             | 15.69             | 24          | Pass    |
| a    | 5240            | Ant1    | 14.93                 | 0.01             | 14.94             | 24          | Pass    |
| n20  | 5180            | Ant1    | 14.76                 | 0                | 14.76             | 24          | Pass    |
| n20  | 5200            | Ant1    | 14.79                 | 0                | 14.79             | 24          | Pass    |
| n20  | 5240            | Ant1    | 14.03                 | 0                | 14.03             | 24          | Pass    |

Remark: Conducted Output Power=Measured Output Power+Duty Factor

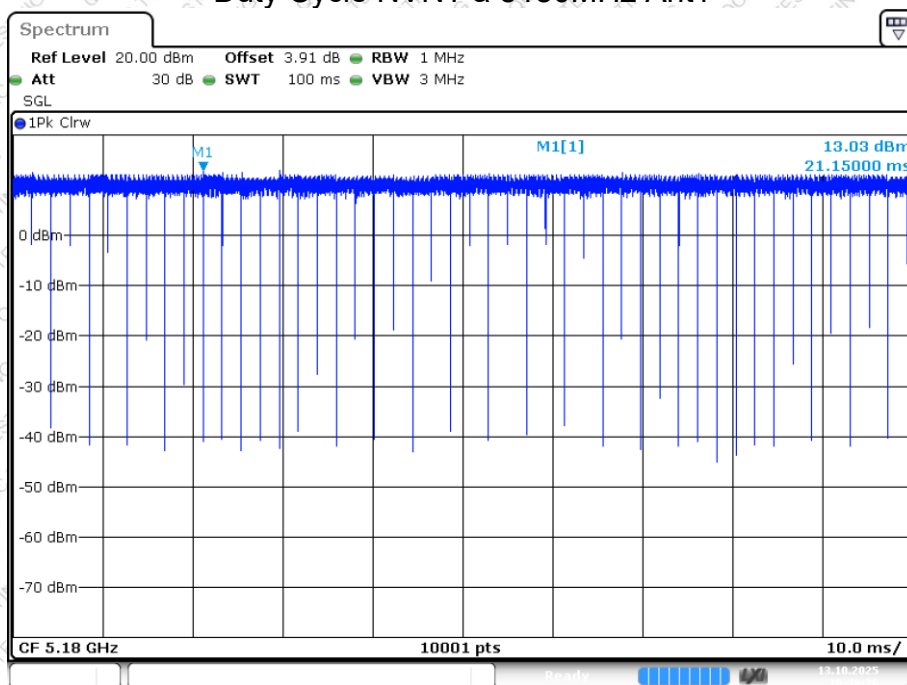
Duty Cycle:

| Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) |
|------|-----------------|---------|----------------|------------------------|
| a    | 5180            | Ant1    | 99.77          | 0.01                   |
| a    | 5200            | Ant1    | 99.78          | 0.01                   |
| a    | 5240            | Ant1    | 99.82          | 0.01                   |
| n20  | 5180            | Ant1    | 99.93          | 0                      |
| n20  | 5200            | Ant1    | 99.89          | 0                      |
| n20  | 5240            | Ant1    | 99.9           | 0                      |

Remark: Duty Factor=10log(1/duty Cycle)

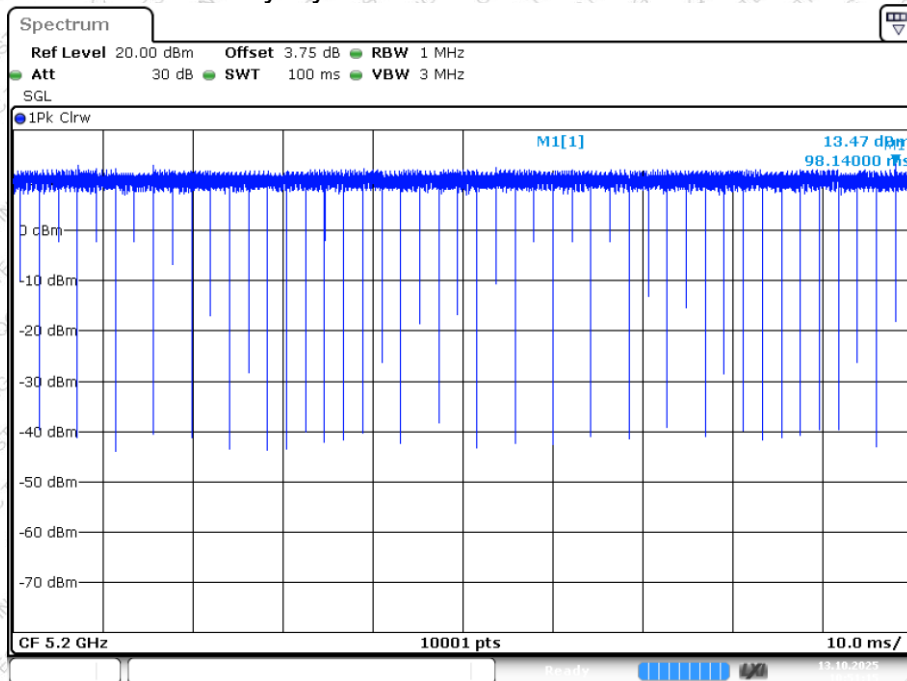


## Duty Cycle NVNT a 5180MHz Ant1



Date: 13.OCT.2025 10:48:26

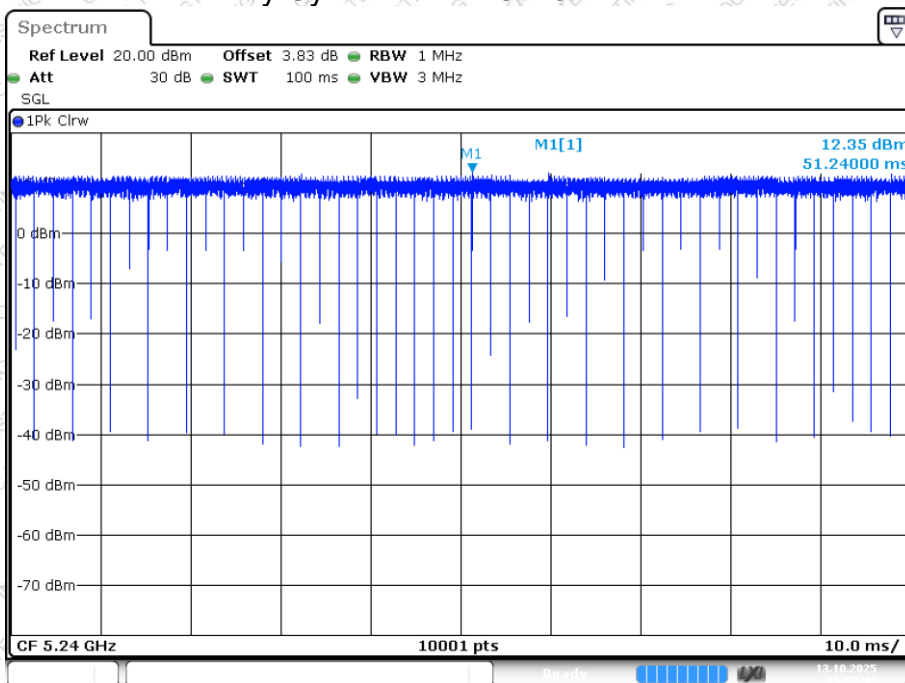
## Duty Cycle NVNT a 5200MHz Ant1



Date: 13.OCT.2025 10:51:16

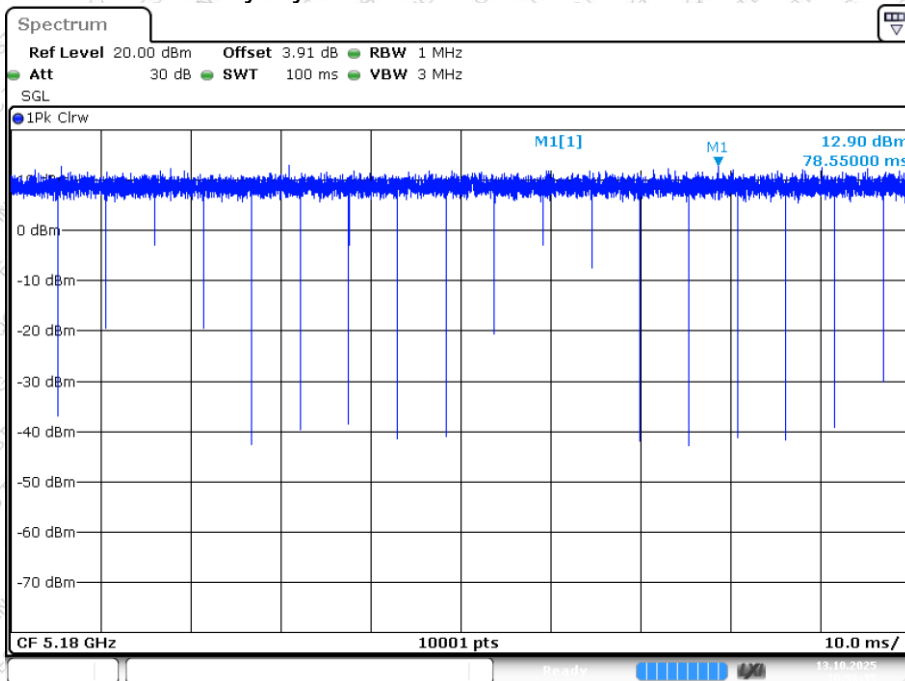


### Duty Cycle NVNT a 5240MHz Ant1



Date: 13.OCT.2025 10:53:44

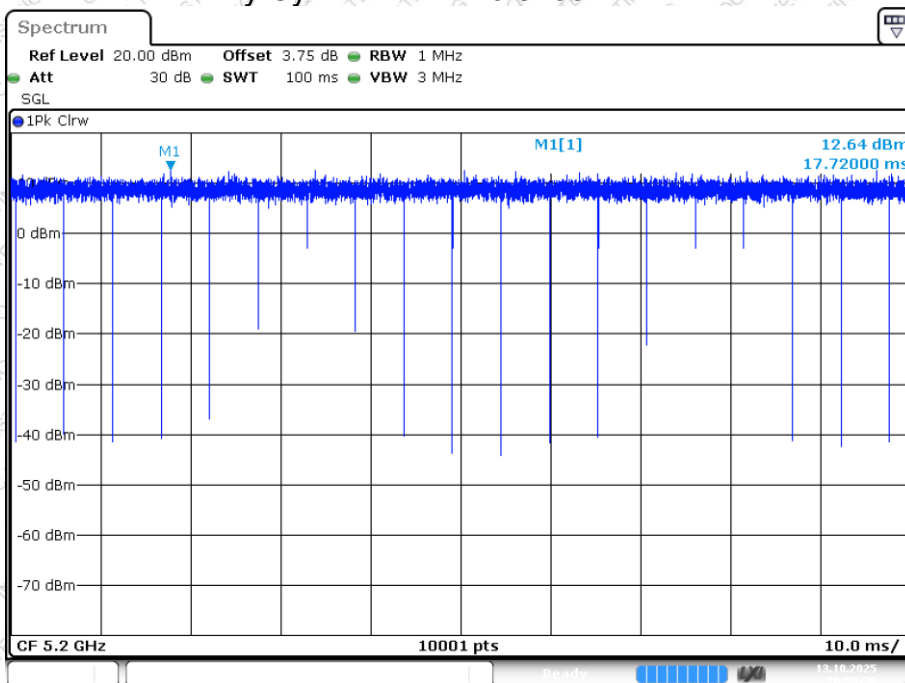
### Duty Cycle NVNT n20 5180MHz Ant1



Date: 13.OCT.2025 10:56:35

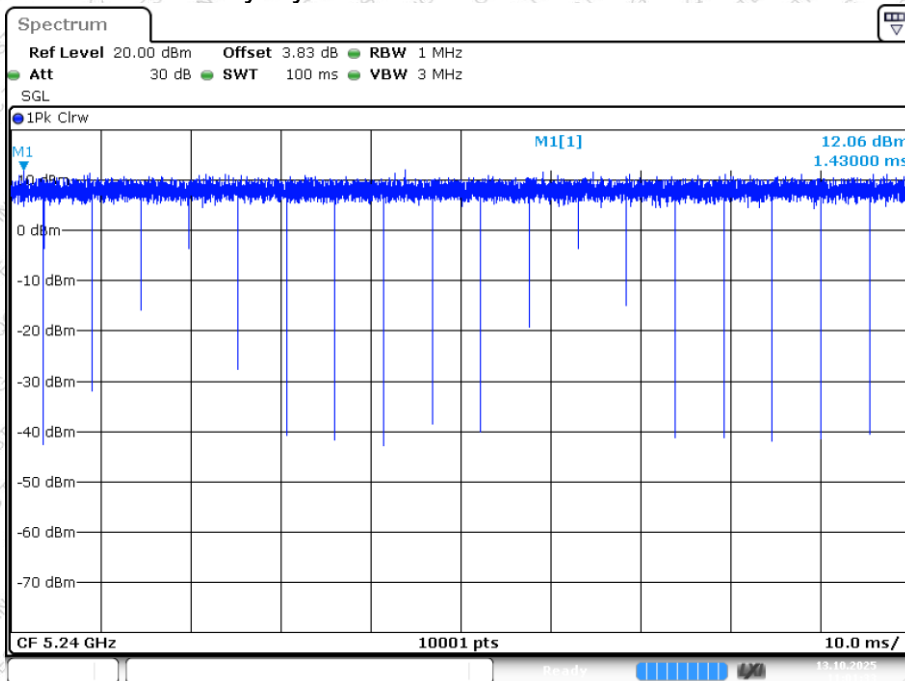


### Duty Cycle NVNT n20 5200MHz Ant1



Date: 13.OCT.2025 10:58:39

### Duty Cycle NVNT n20 5240MHz Ant1



Date: 13.OCT.2025 11:01:33

**UNII-3:****Maximum conducted power:**

| Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| a    | 5745            | Ant1    | 15.48                 | 0.01             | 15.49             | 30          | Pass    |
| a    | 5785            | Ant1    | 15.24                 | 0.01             | 15.25             | 30          | Pass    |
| a    | 5825            | Ant1    | 14.9                  | 0.01             | 14.91             | 30          | Pass    |
| n20  | 5745            | Ant1    | 14.76                 | 0                | 14.76             | 30          | Pass    |
| n20  | 5785            | Ant1    | 15.74                 | 0                | 15.74             | 30          | Pass    |
| n20  | 5825            | Ant1    | 16.12                 | 0                | 16.12             | 30          | Pass    |

**Remark:** Conducted Output Power=Measured Output Power+Duty Factor

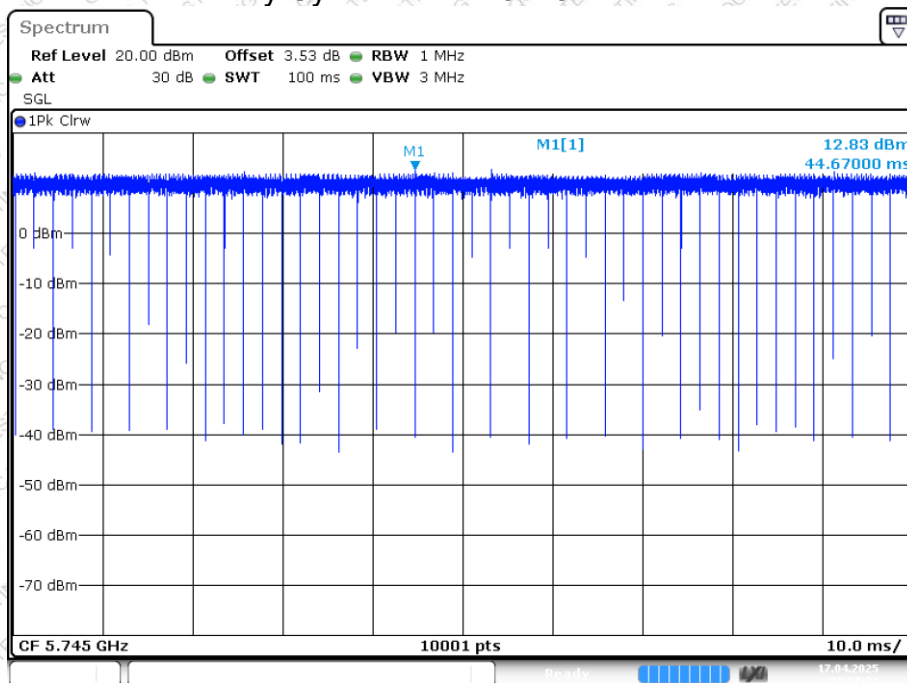
**Duty Cycle:**

| Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) |
|------|-----------------|---------|----------------|------------------------|
| a    | 5745            | Ant1    | 99.81          | 0.01                   |
| a    | 5785            | Ant1    | 99.86          | 0.01                   |
| a    | 5825            | Ant1    | 99.8           | 0.01                   |
| n20  | 5745            | Ant1    | 99.92          | 0                      |
| n20  | 5785            | Ant1    | 99.97          | 0                      |
| n20  | 5825            | Ant1    | 99.93          | 0                      |

**Remark:** Duty Factor=10log(1/duty Cycle)

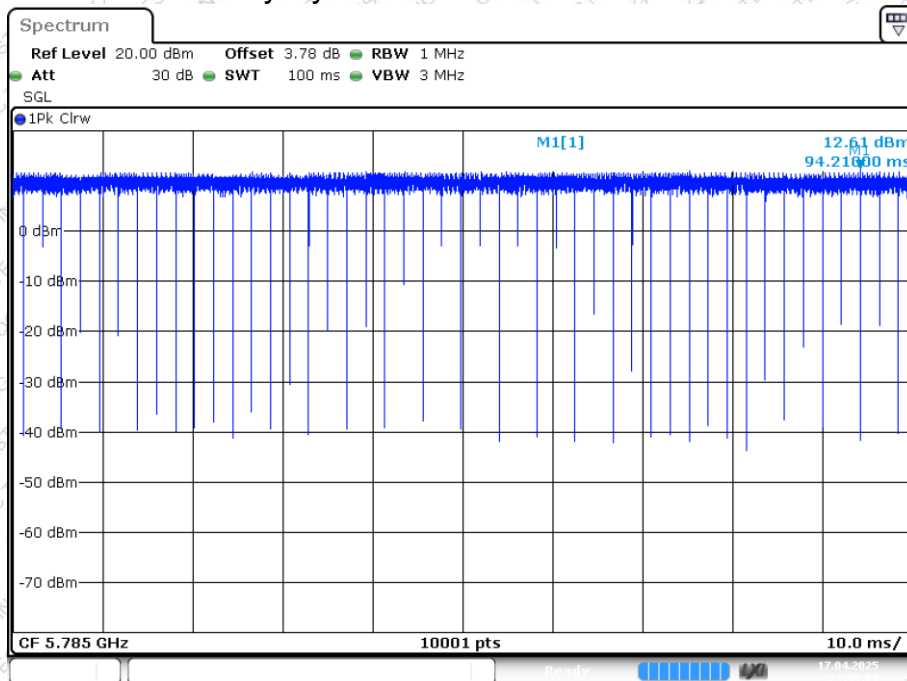


### Duty Cycle NVNT a 5745MHz Ant1



Date: 8.SEP.2025 23:37:22

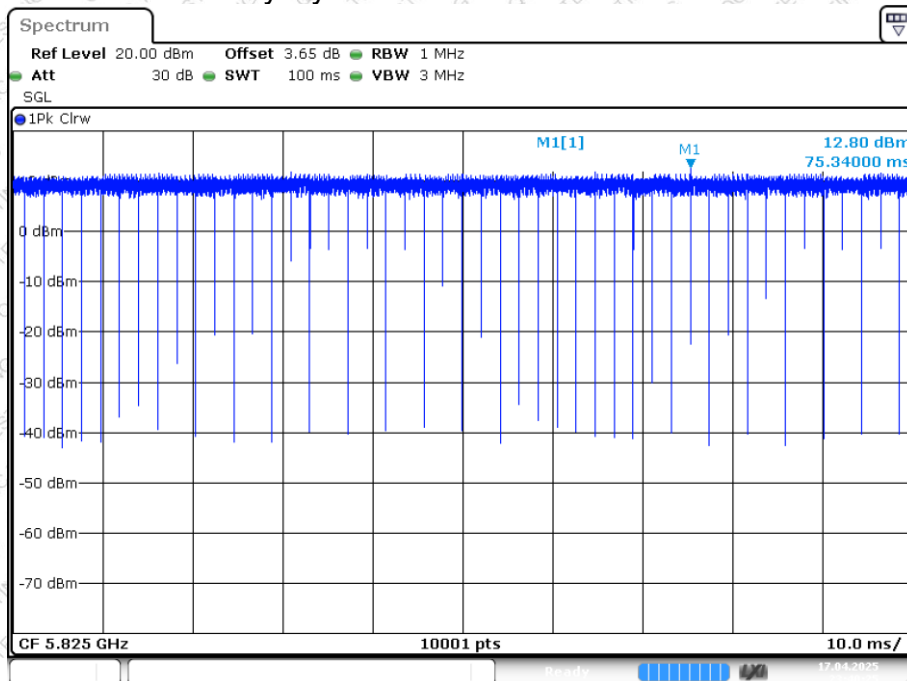
### Duty Cycle NVNT a 5785MHz Ant1



Date: 8.SEP.2025 23:39:01

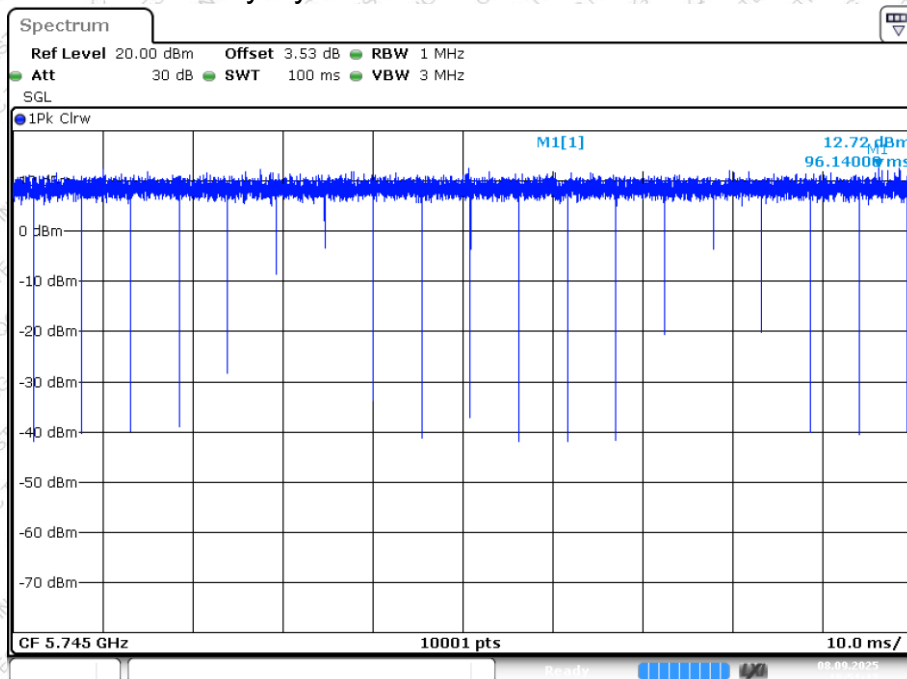


### Duty Cycle NVNT a 5825MHz Ant1



Date: 8.SEP.2025 23:40:25

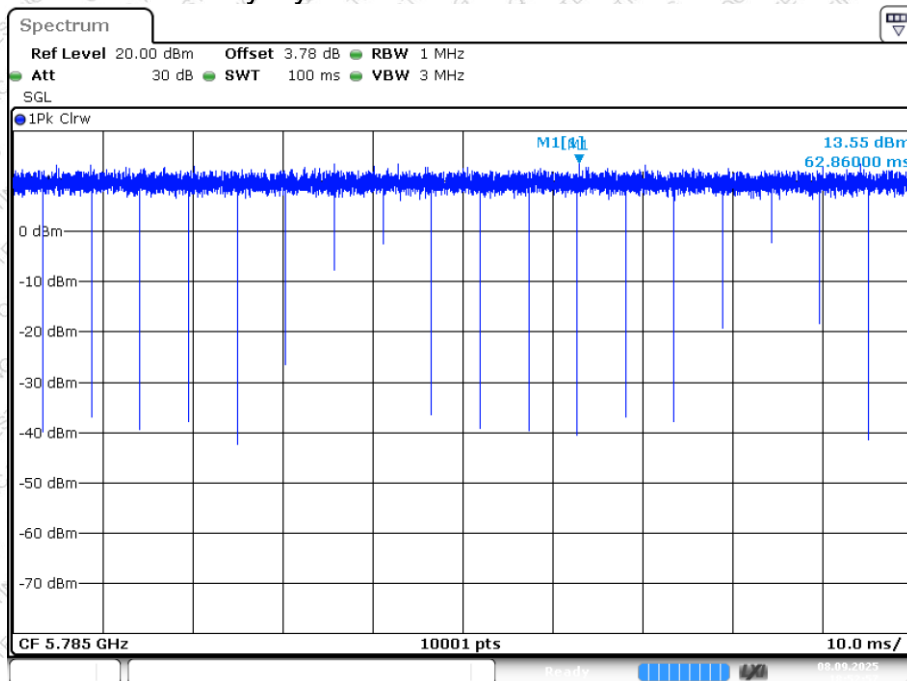
### Duty Cycle NVNT n20 5745MHz Ant1



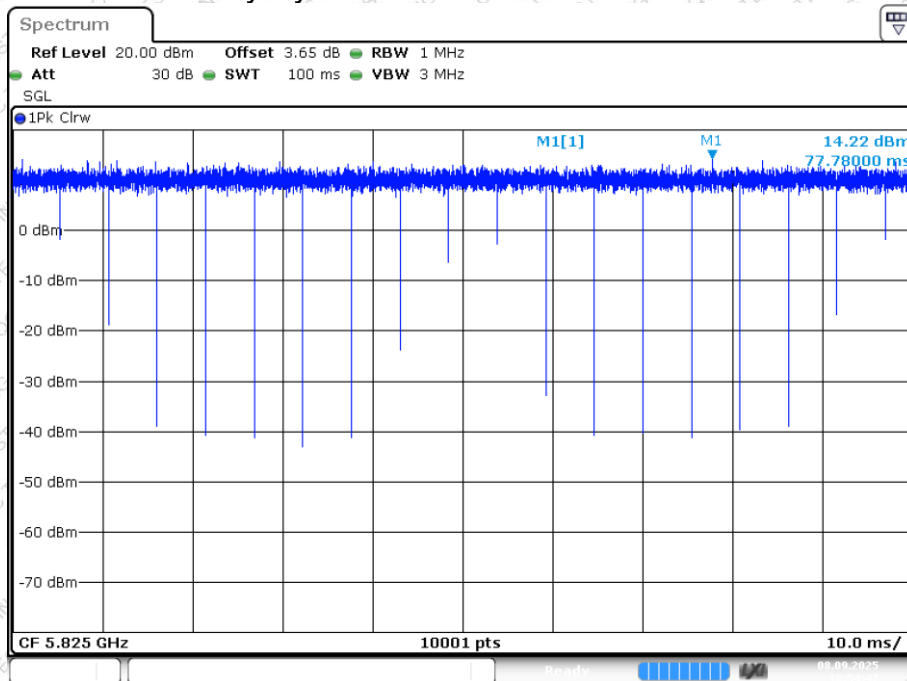
Date: 8.SEP.2025 18:51:17



### Duty Cycle NVNT n20 5785MHz Ant1



### Duty Cycle NVNT n20 5825MHz Ant1



## 8. Maximum power spectral density

### 8.1. Applicable Standard

FCC Part15 E Section 15.407(a)(3)

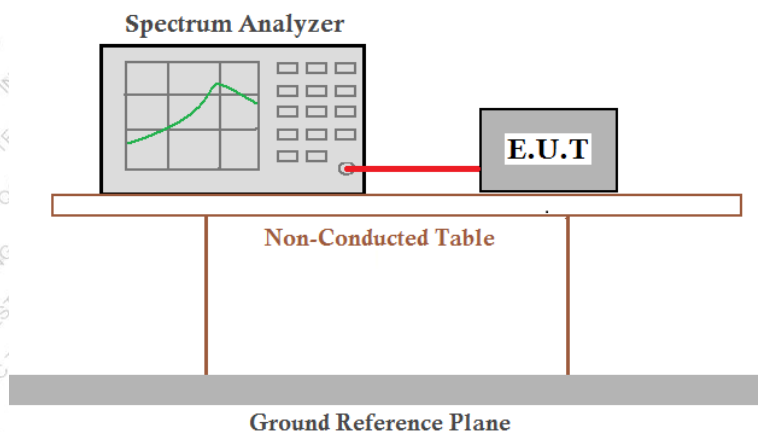
### 8.2. Limit

The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz.

5.255.35GHz, 5.47-5.725 GHz Band in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

### 8.3. Test setup



### 8.4. Test Procedure

- Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...".
- Use the peak search function on the instrument to find the peak of the spectrum.
- Make the following adjustments to the peak value of the spectrum, if applicable:
  - If Method SA-2 or SA-2 Alternative was used, add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the peak of the spectrum.
  - If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
- The result is the PSD.

### 8.5. Test Data

|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 24.9 °C  | Humidity     | 52%        |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |



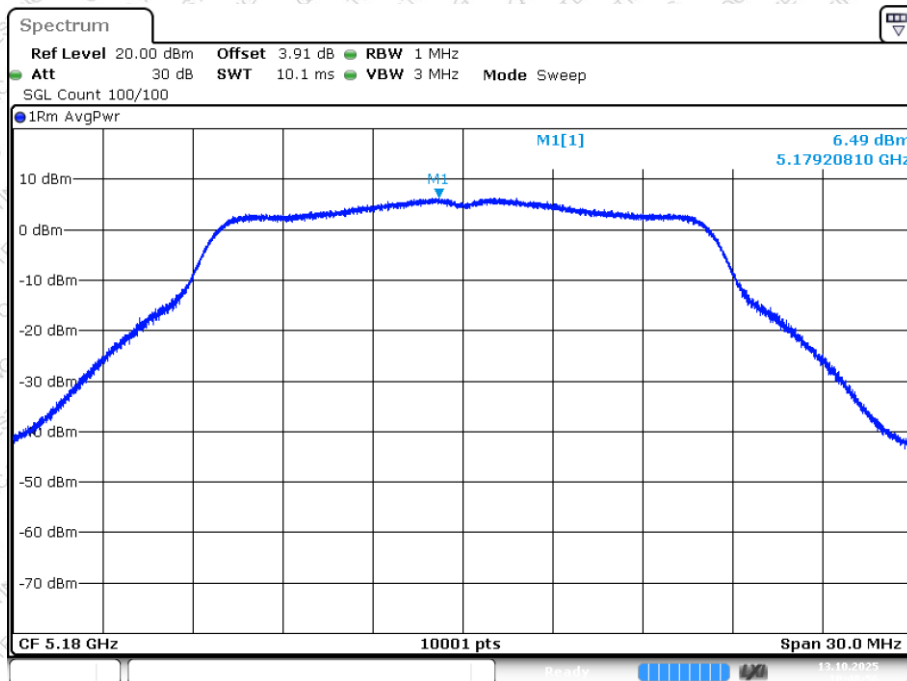
## Test Result

### UNII-1:

| Mode | Frequency (MHz) | Antenna | Measured PSD (dBm/MHz) | Duty Factor (dB) | Maximum PSD (dBm/MHz) | Limit (dBm) | Verdict |
|------|-----------------|---------|------------------------|------------------|-----------------------|-------------|---------|
| a    | 5180            | Ant1    | 6.49                   | 0.01             | 6.5                   | 11          | Pass    |
| a    | 5200            | Ant1    | 6.25                   | 0.01             | 6.26                  | 11          | Pass    |
| a    | 5240            | Ant1    | 5.43                   | 0.01             | 5.44                  | 11          | Pass    |
| n20  | 5180            | Ant1    | 5.17                   | 0                | 5.17                  | 11          | Pass    |
| n20  | 5200            | Ant1    | 5.12                   | 0                | 5.12                  | 11          | Pass    |
| n20  | 5240            | Ant1    | 4.22                   | 0                | 4.22                  | 11          | Pass    |

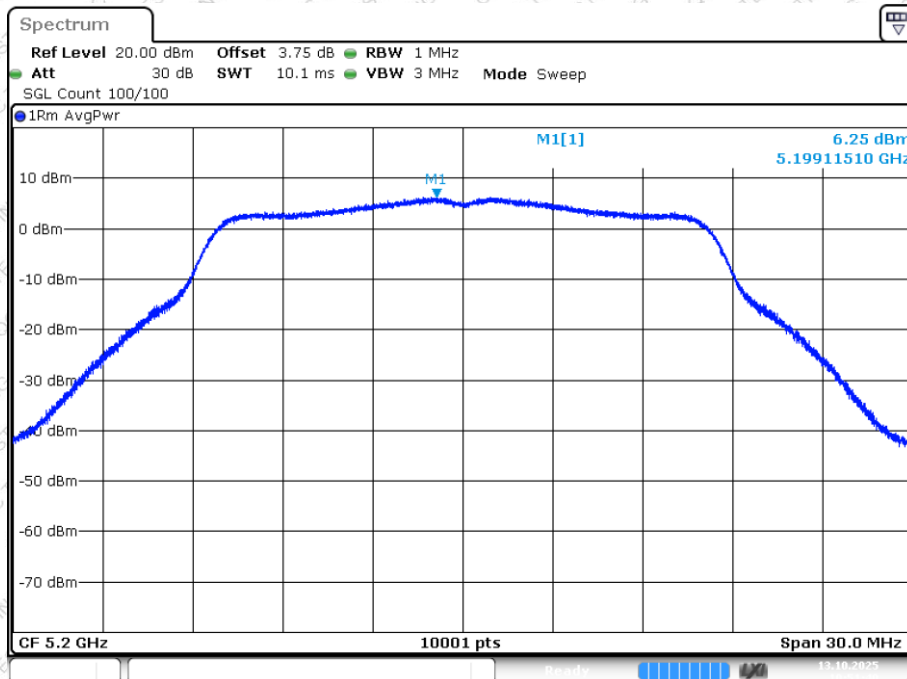


## PSD NVNT a 5180MHz Ant1



Date: 13.OCT.2025 10:48:57

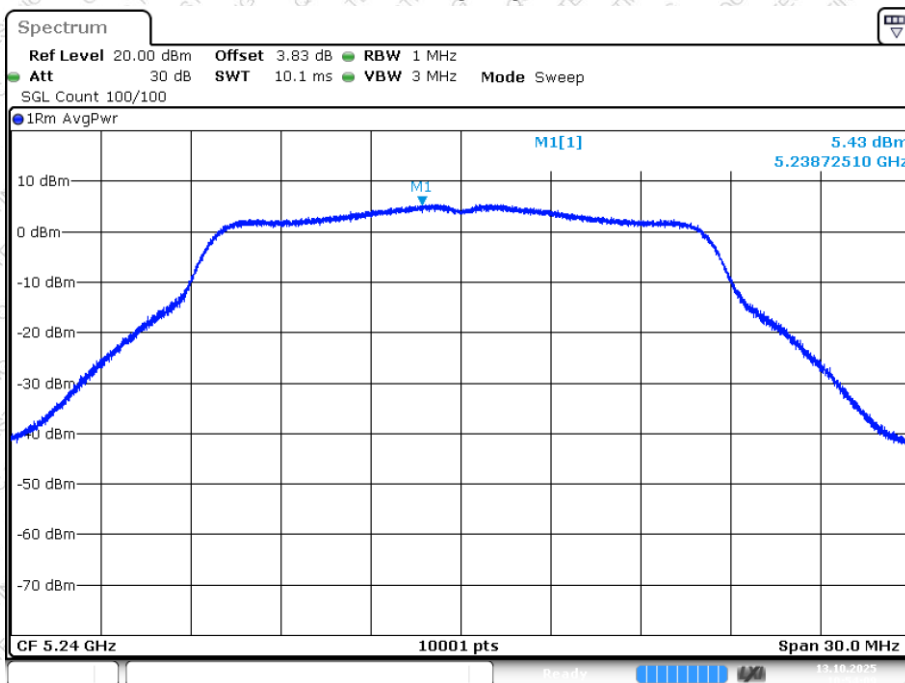
## PSD NVNT a 5200MHz Ant1



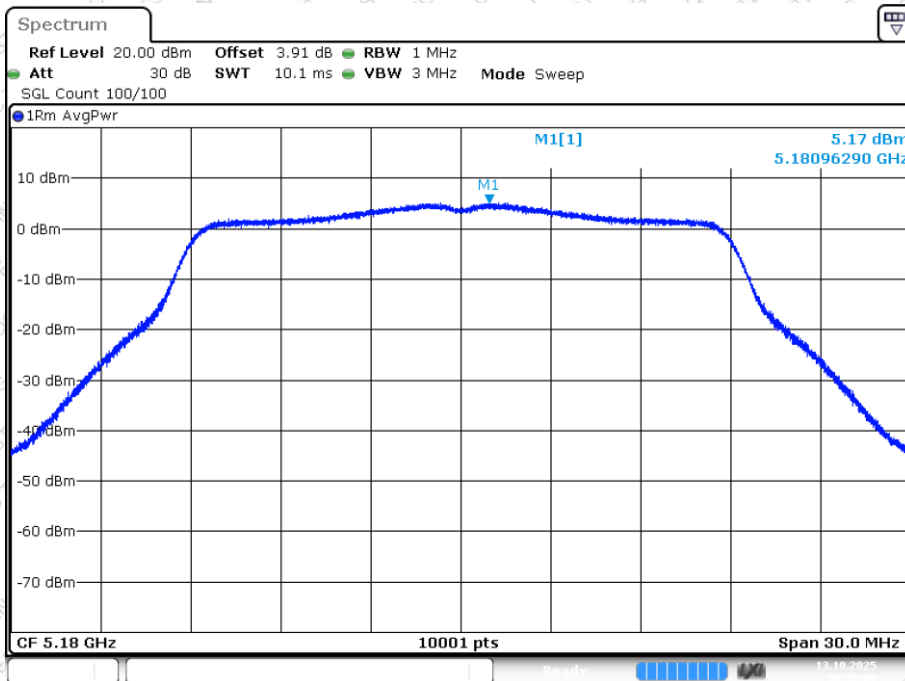
Date: 13.OCT.2025 10:51:40



## PSD NVNT a 5240MHz Ant1

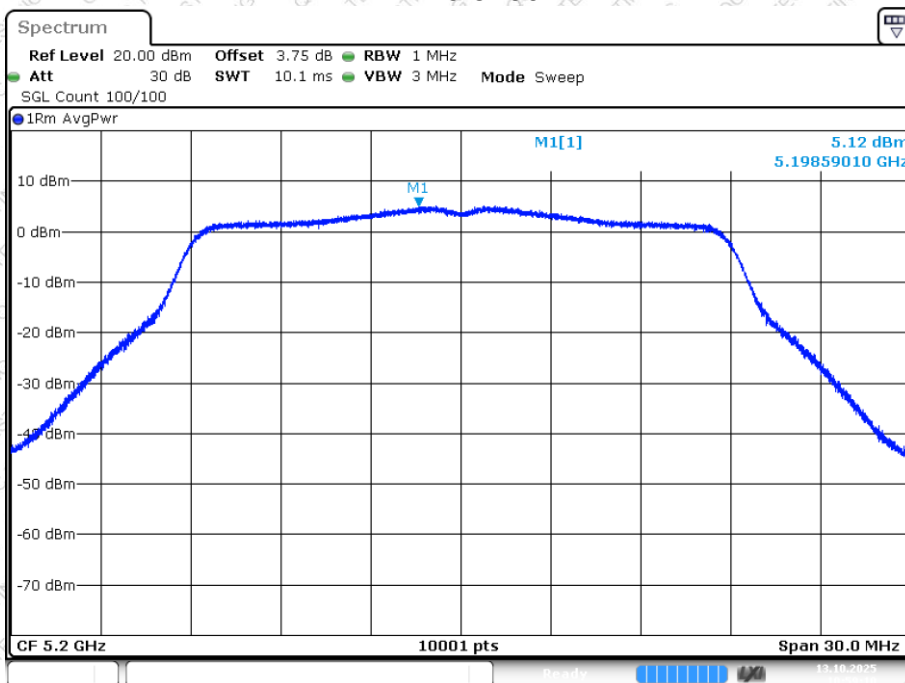


## PSD NVNT n20 5180MHz Ant1

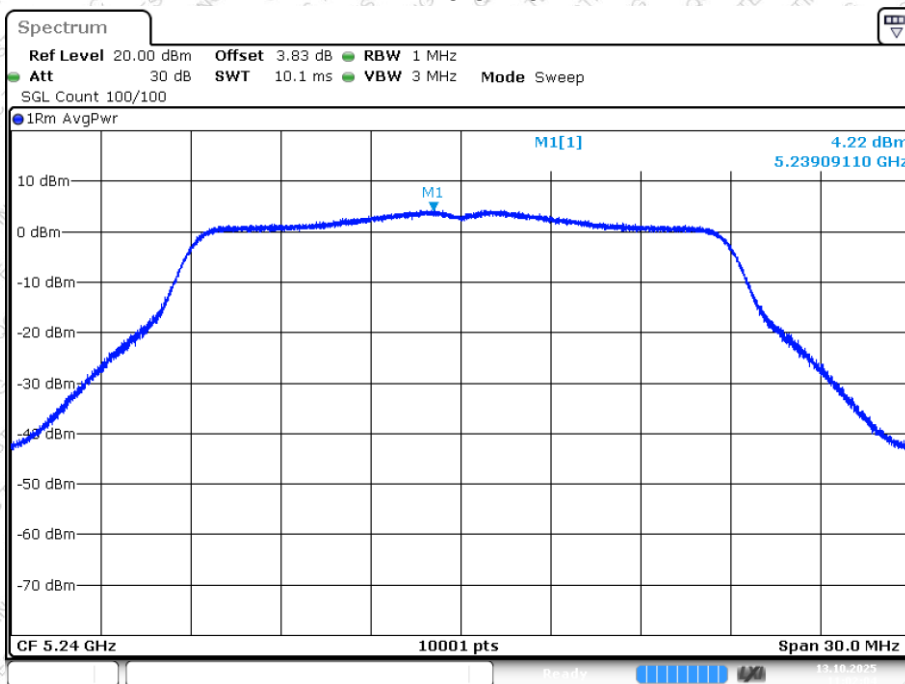




## PSD NVNT n20 5200MHz Ant1



## PSD NVNT n20 5240MHz Ant1





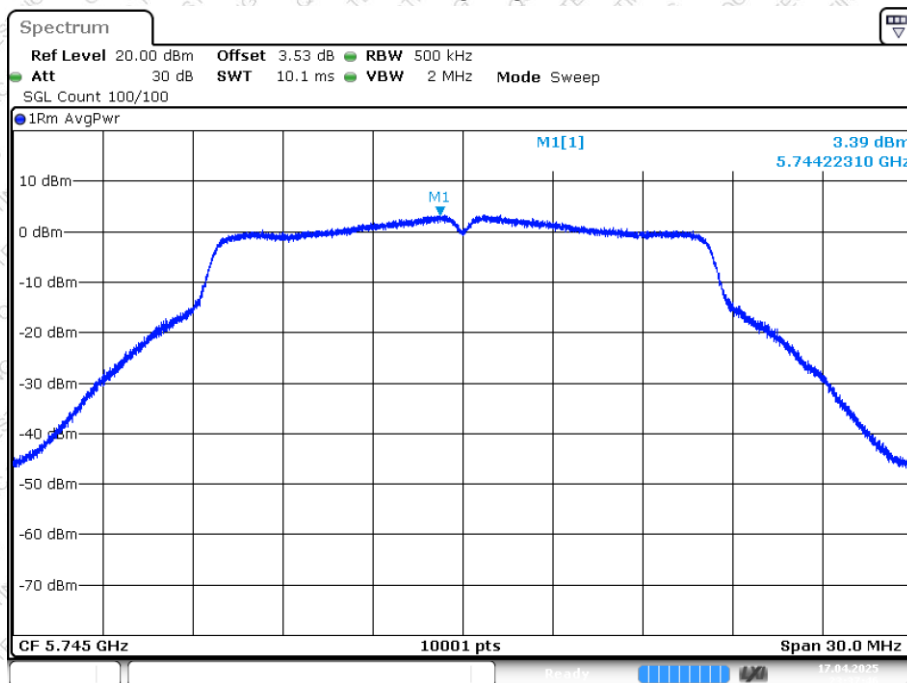
UNII-3:

| Mode | Frequency (MHz) | Antenna | Measured PSD (dBm/500kHz) | Duty Factor (dB) | Maximum PSD (dBm/500kHz) | Limit (dBm) | Verdict |
|------|-----------------|---------|---------------------------|------------------|--------------------------|-------------|---------|
| a    | 5745            | Ant1    | 3.39                      | 0.01             | 3.4                      | 30          | Pass    |
| a    | 5785            | Ant1    | 3.34                      | 0.01             | 3.35                     | 30          | Pass    |
| a    | 5825            | Ant1    | 2.79                      | 0.01             | 2.8                      | 30          | Pass    |
| n20  | 5745            | Ant1    | 2.16                      | 0                | 2.16                     | 30          | Pass    |
| n20  | 5785            | Ant1    | 3.26                      | 0                | 3.26                     | 30          | Pass    |
| n20  | 5825            | Ant1    | 3.79                      | 0                | 3.79                     | 30          | Pass    |

Remark: Maximum PSD=Measured PSD+Duty Factor

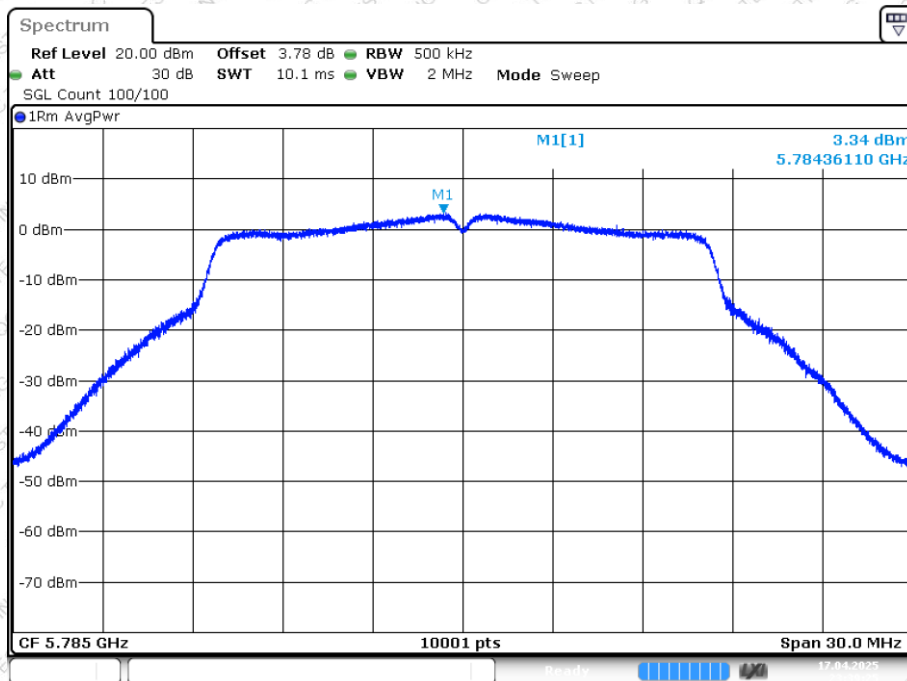


## PSD NVNT a 5745MHz Ant1



Date: 8.SEP.2025 23:37:46

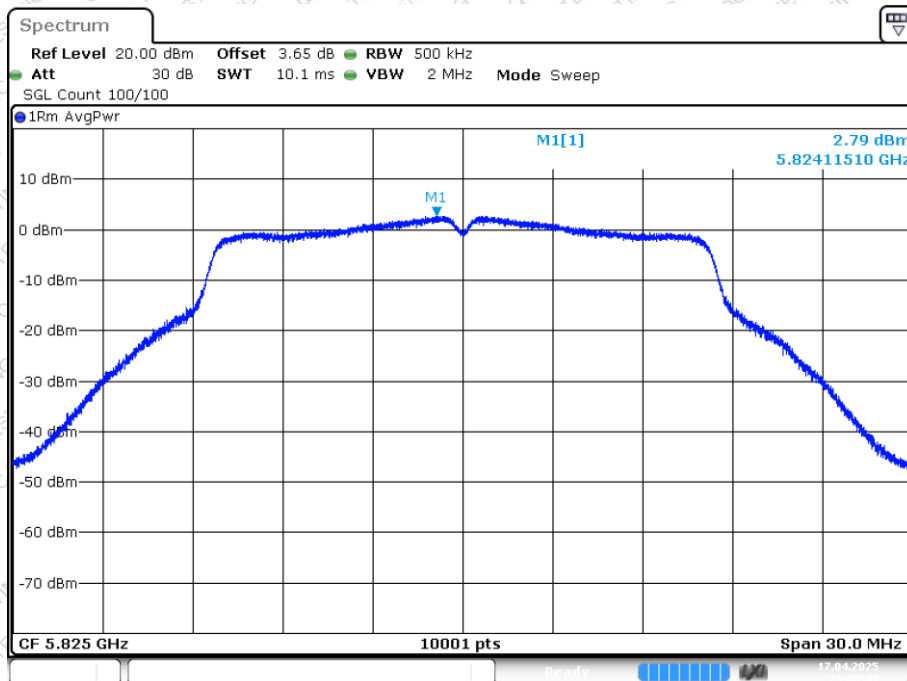
## PSD NVNT a 5785MHz Ant1



Date: 8.SEP.2025 23:39:26

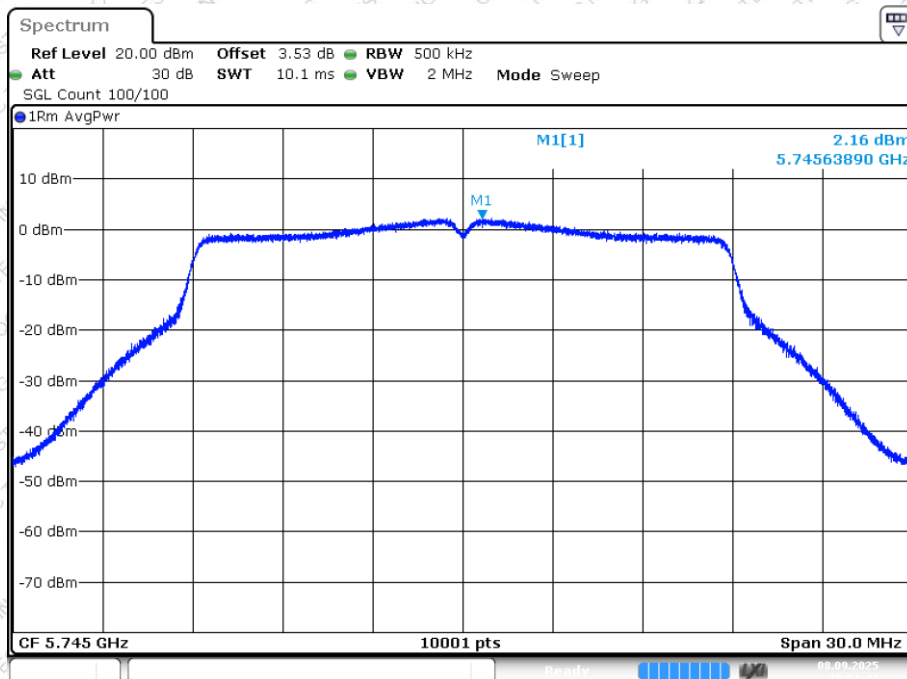


## PSD NVNT a 5825MHz Ant1



Date: 8.SEP.2025 23:40:49

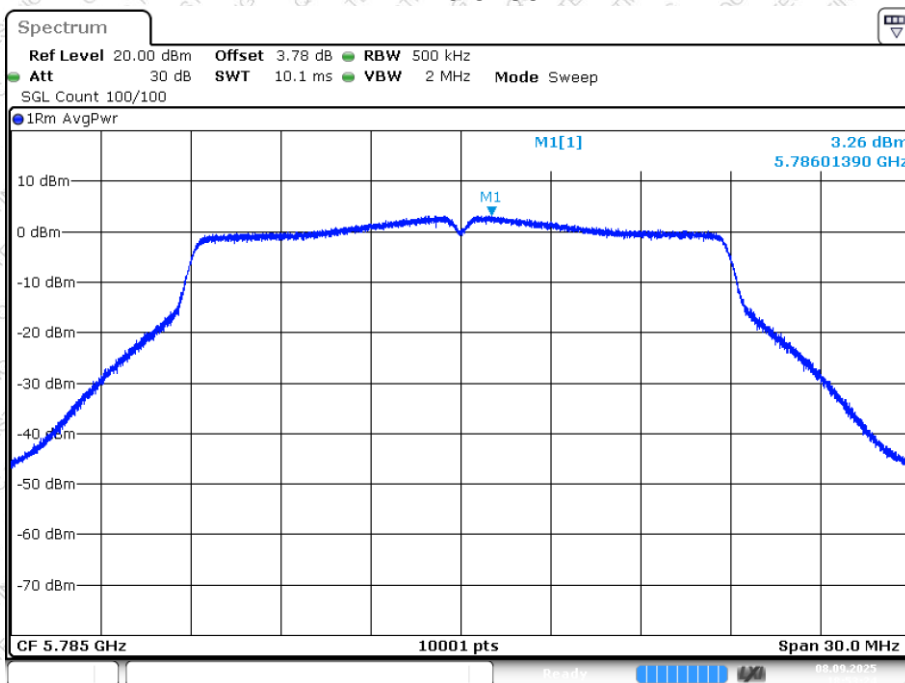
## PSD NVNT n20 5745MHz Ant1



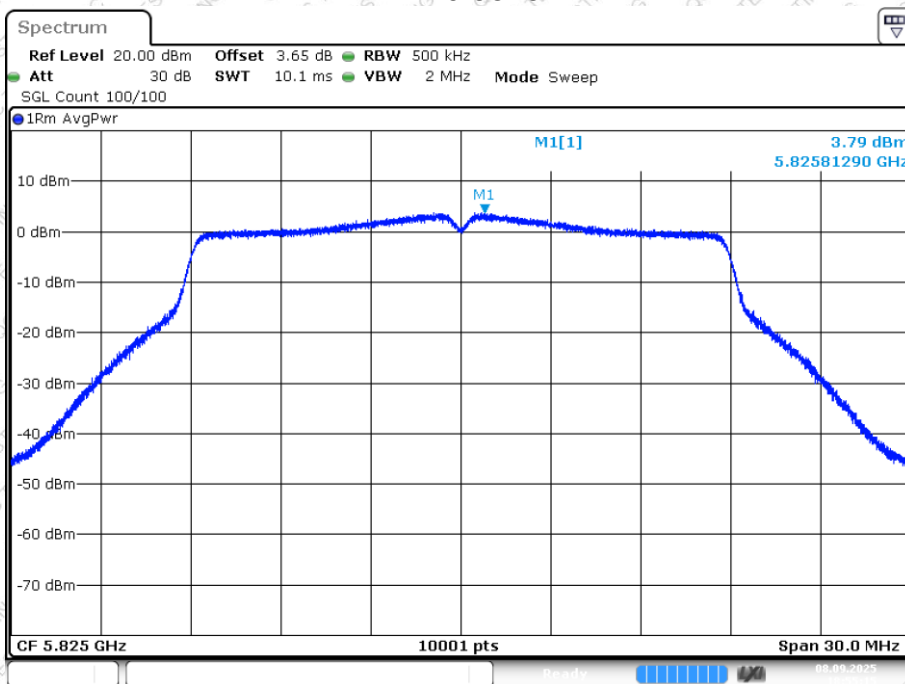
Date: 8.SEP.2025 18:51:41



## PSD NVNT n20 5785MHz Ant1



## PSD NVNT n20 5825MHz Ant1



## 9. Band Edge

### 9.1 Applicable Standard

FCC Part15 C Section 15.205/ 15.407(b)

### 9.2 Limit

According to part 15.407b (1) (2) (3) (4)

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of-27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of-27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of-27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: 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.

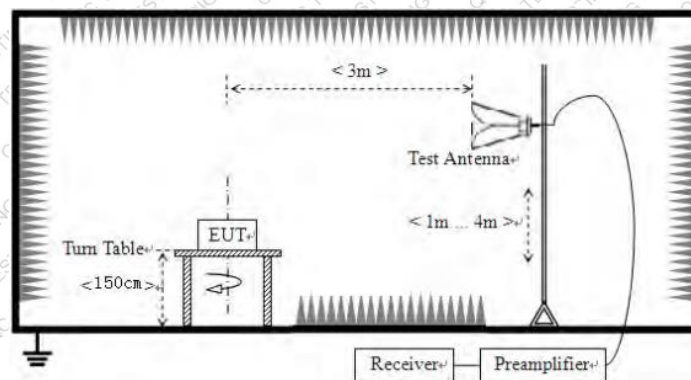
### 9.3 EMI Test Receiver Setup

| Frequency         | RBW     | VBW          | IF B/W  | Measurement |
|-------------------|---------|--------------|---------|-------------|
| 9KHz-150KHz       | 200Hz   | 600Hz        | /       | QP          |
| 150KHz-30MHz      | 9KHz    | 30KHz        | /       | QP          |
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz      | 120 kHz | QP          |
| Above 1 GHz       | 1 MHz   | 3 MHz        | /       | Peak        |
|                   | 1 MHz   | 10 Hz Note 1 | /       | Average     |
| 1MHz              | 1MHz    | > 1/T Note 2 | /       | Average     |

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

### 9.4 Test setup



### 9.5 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.



- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

## 9.6 Test Data

|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 26 °C    | Humidity     | 54%        |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |

### Remarks:

1. According to KDB 789033 D02v02r01 section G) 1) d), for measurements above 1000 MHz @3m distance, the limit of field strength is computed as follows:

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2;$$

$$E[\text{dBuV/m}] = -27 + 95.2 = 68.2\text{dBuV/m.}$$

$$E[\text{dBuV/m}] = 10 + 95.2 = 105.2\text{dBuV/m.}$$

$$E[\text{dBuV/m}] = 15.6 + 95.2 = 110.8\text{dBuV/m.}$$

$$E[\text{dBuV/m}] = 27 + 95.2 = 122.2\text{dBuV/m.}$$

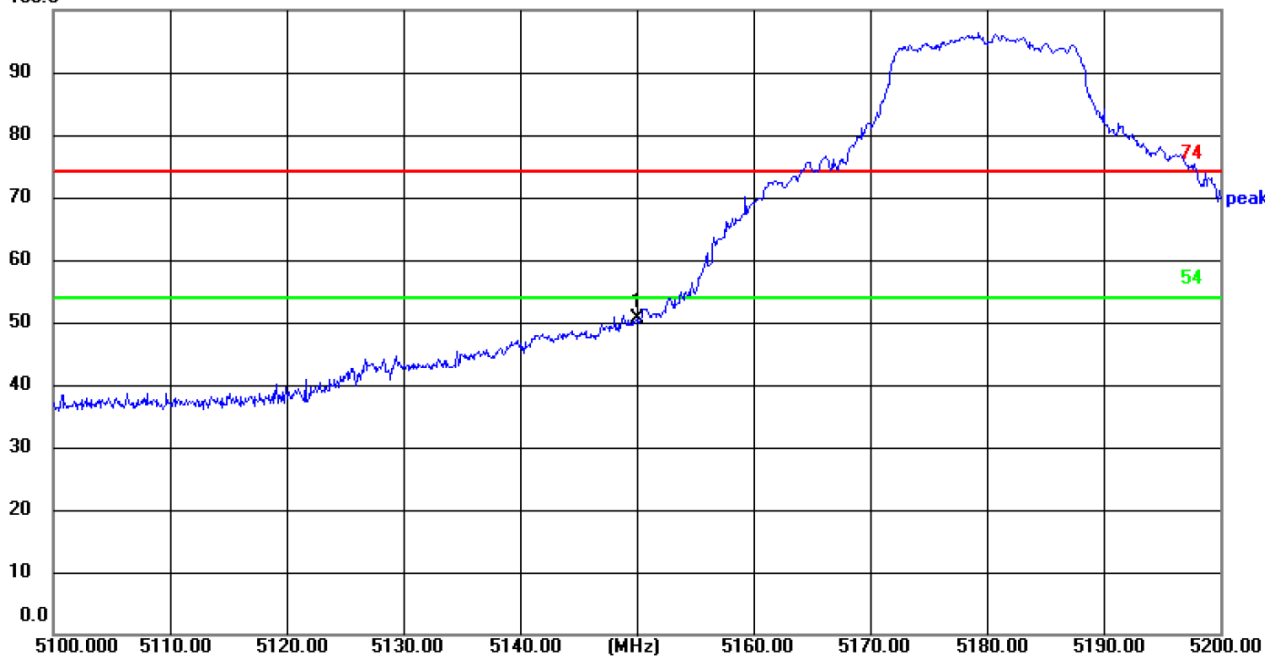


Pre-scan all test modes, found worst case at 802.11a mode, and so only show the test result of 802.11a mode.

802.11a 5180MHz

Horizontal:

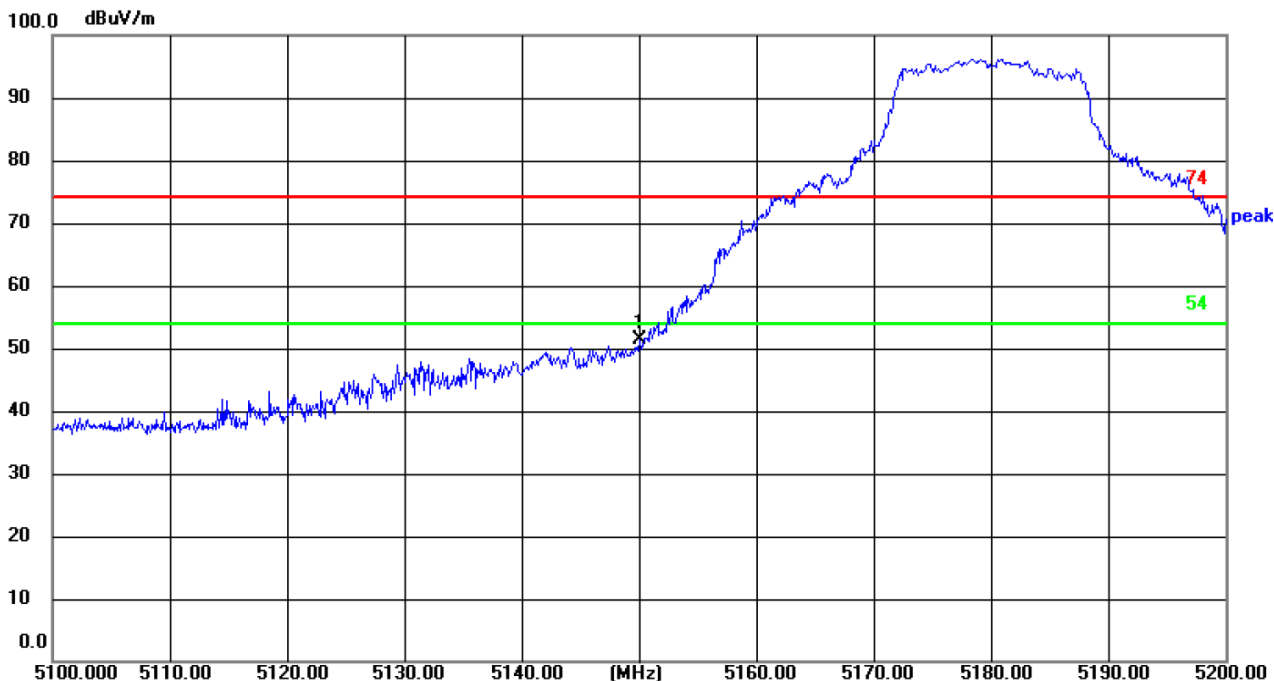
100.0 dBuV/m



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5150.000        | 68.45          | -17.94        | 50.51          | 74.00          | 23.49       | peak     |



Vertical:



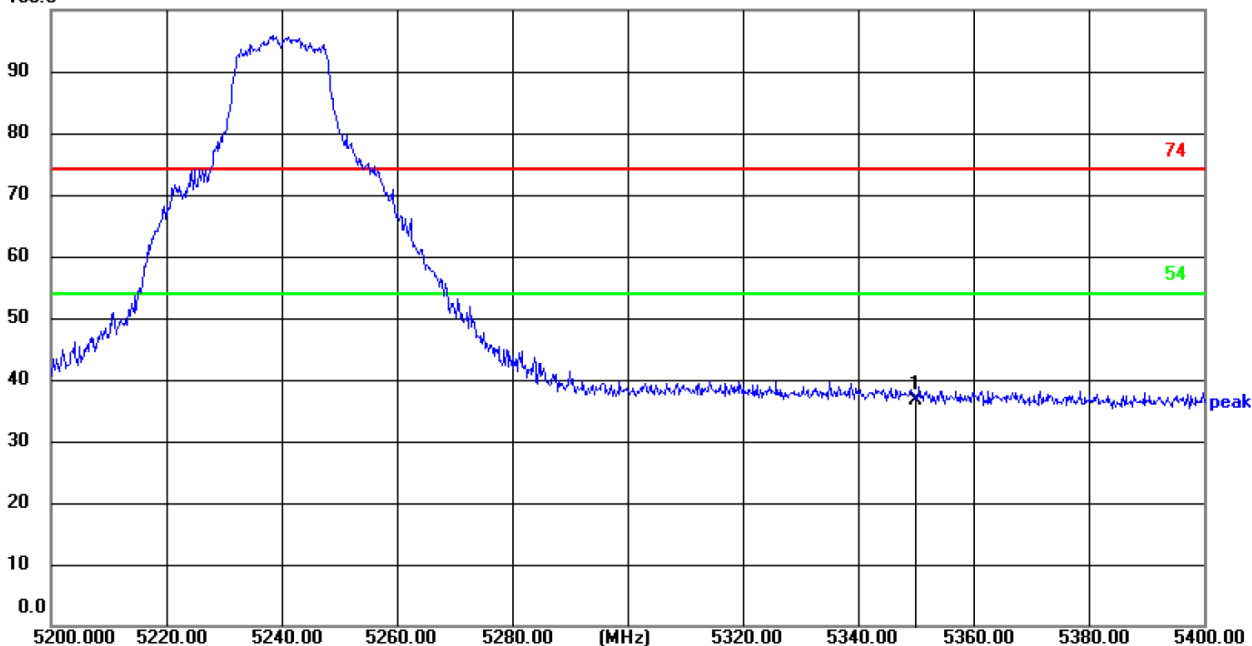
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5150.000        | 69.43          | -17.94        | 51.49          | 74.00          | 22.51       | peak     |



802.11a 5240MHz

Horizontal:

100.0 dBuV/m

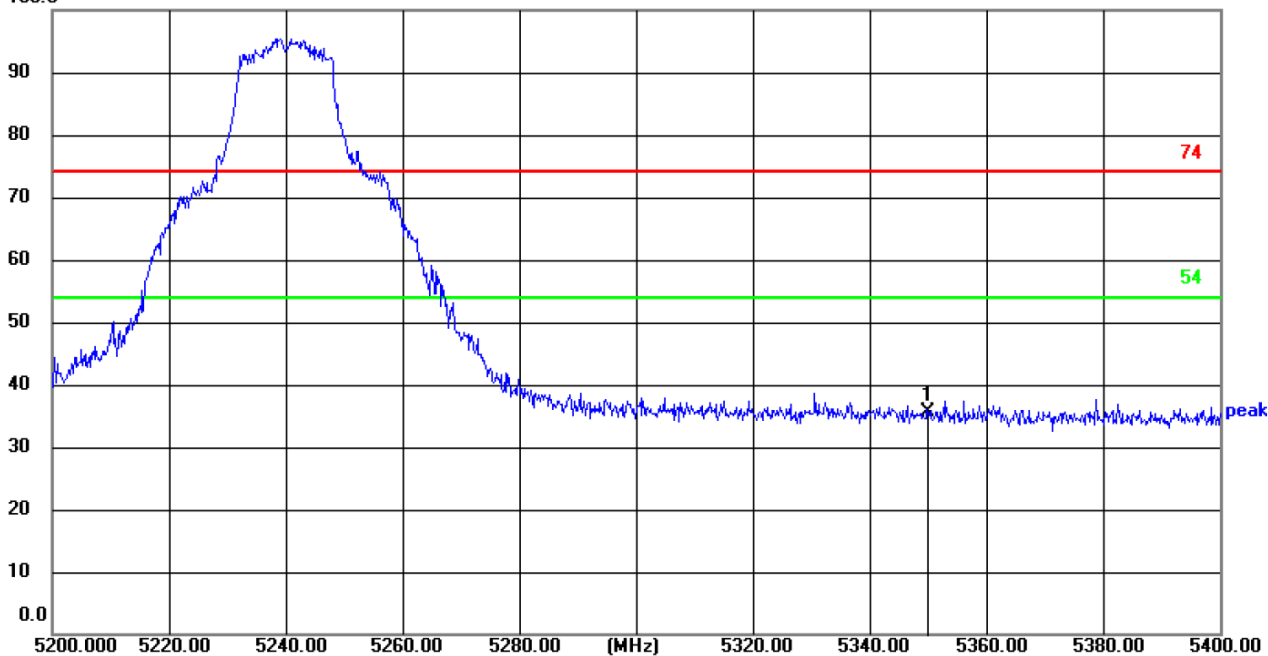


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5350.000        | 54.24          | -17.51        | 36.73          | 74.00          | 37.27       | peak     |



Vertical:

100.0 dBuV/m



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5350.000        | 53.15          | -17.51        | 35.64          | 74.00          | 38.36       | peak     |

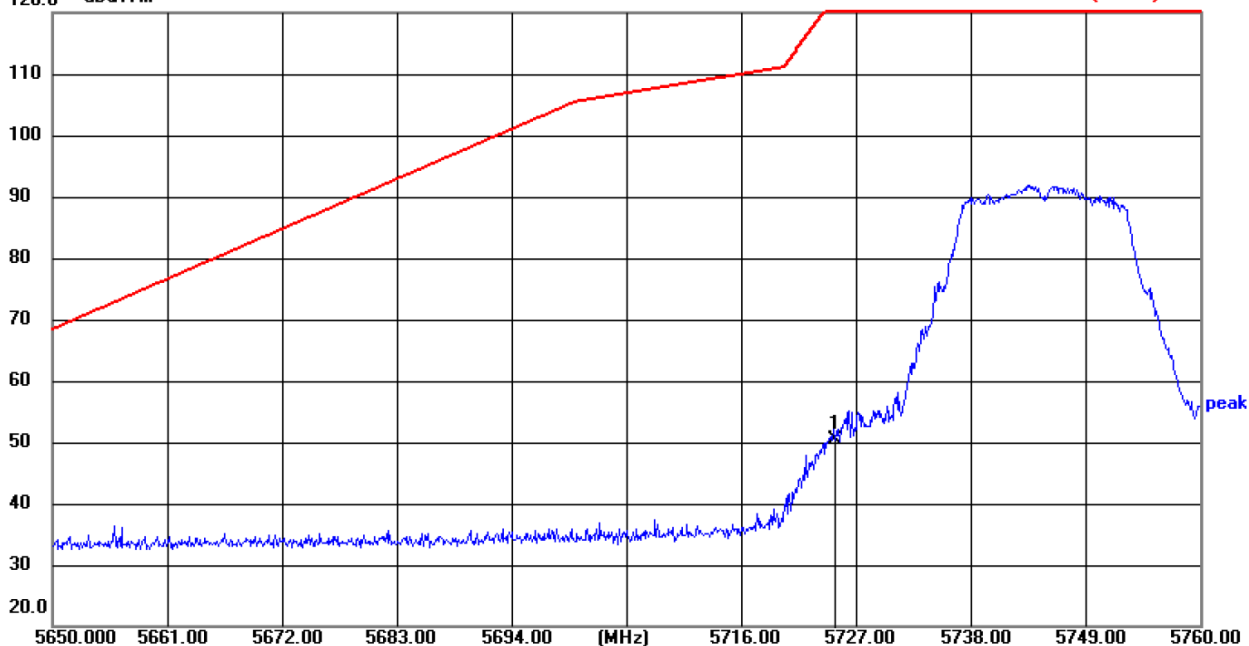


802.11a 5745MHz

Horizontal:

120.0 dBuV/m

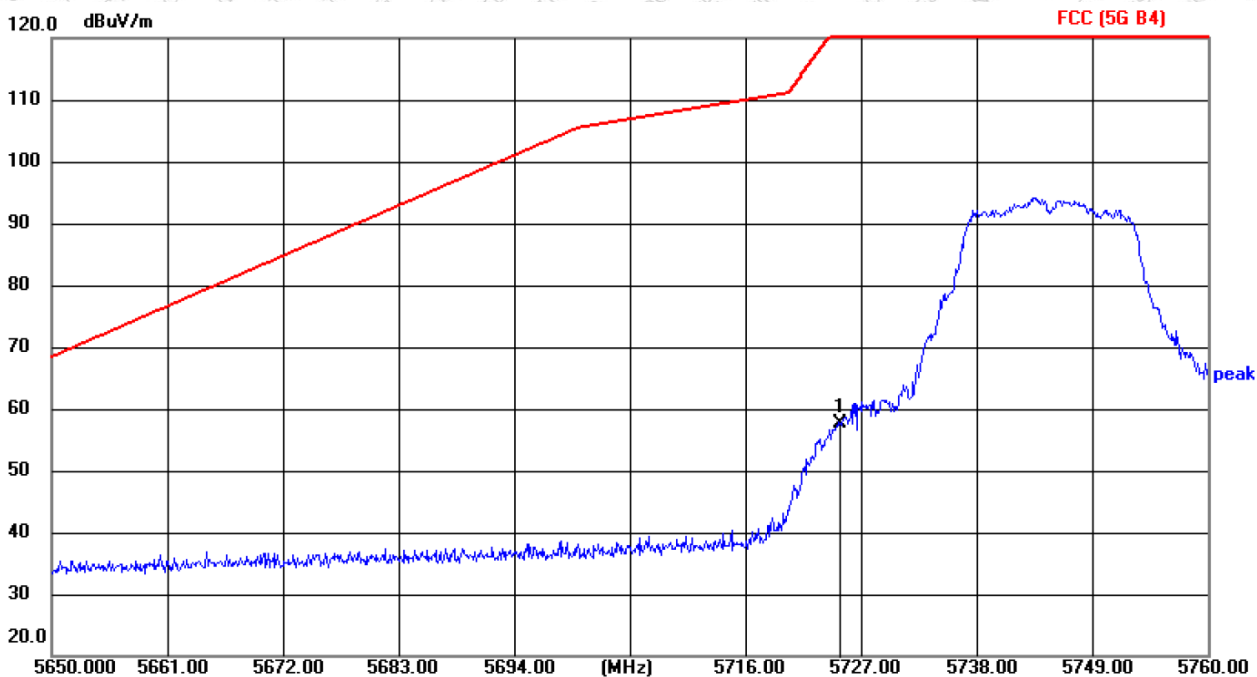
FCC (5G B4)



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5725.000        | 67.54          | -17.13        | 50.41          | 122.23         | 71.82       | peak     |



Vertical:



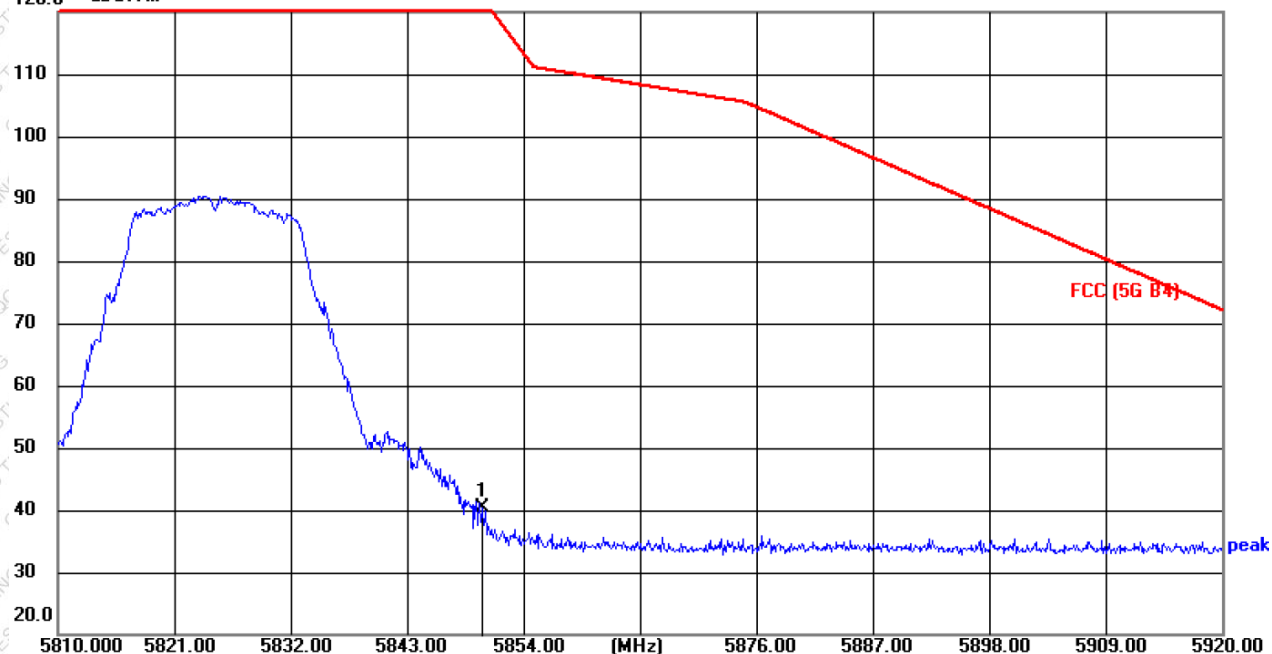
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5725.000        | 74.84          | -17.13        | 57.71          | 122.23         | 64.52       | peak     |



802.11a 5825MHz

Horizontal:

120.0 dBuV/m

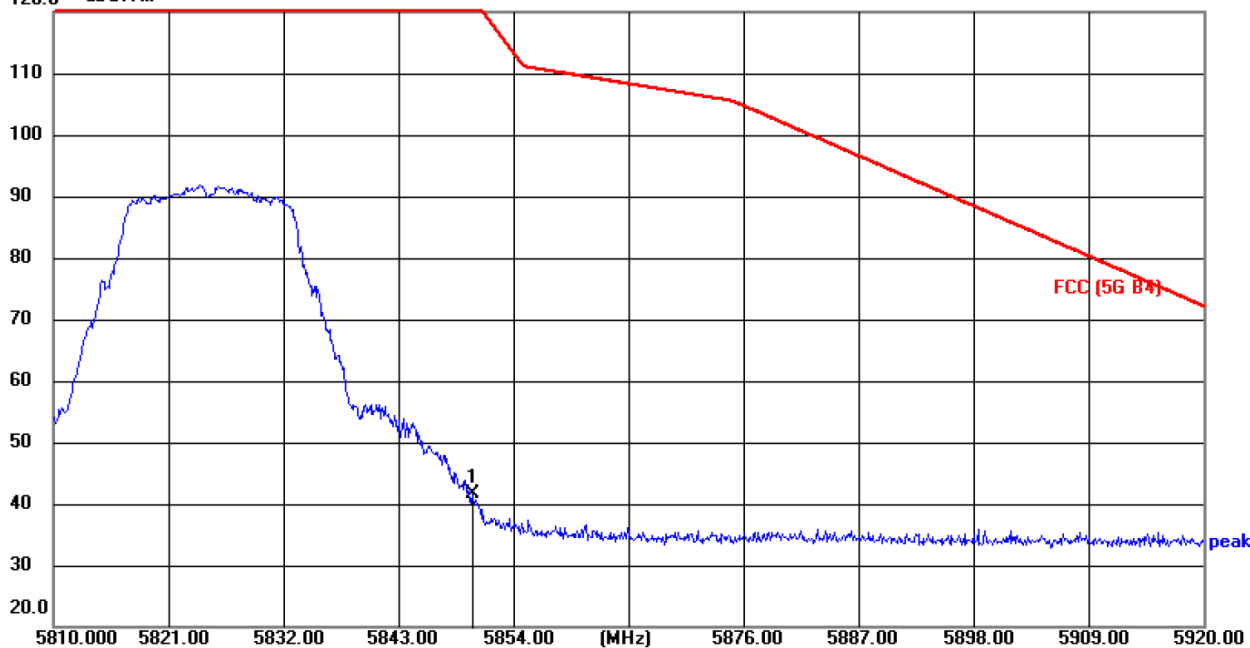


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5850.000        | 57.51          | -17.09        | 40.42          | 122.23         | 81.81       | peak     |



Vertical:

120.0 dBuV/m



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 5850.000        | 58.83          | -17.09        | 41.74          | 122.23         | 80.49       | peak     |

## 10. Radiated Emission Method

### 10.1 Applicable Standard

FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)

### 10.2 Limit

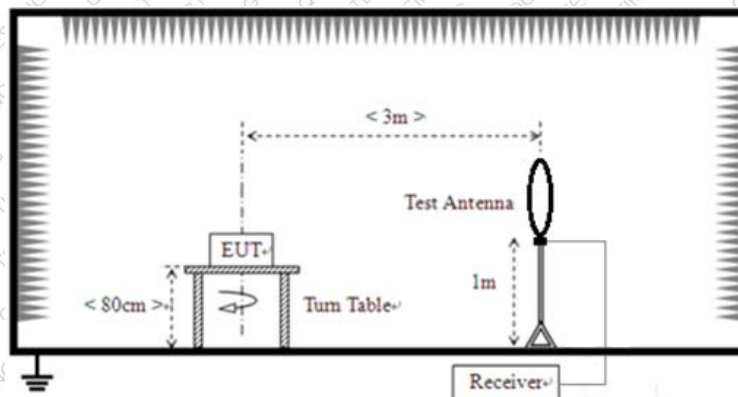
| Frequency         | Limit (uV/m) | Value | Measurement Distance |
|-------------------|--------------|-------|----------------------|
| 0.009MHz-0.490MHz | 2400/F(KHz)  | QP    | 300m                 |
| 0.490MHz-1.705MHz | 24000/F(KHz) | QP    | 30m                  |
| 1.705MHz-30MHz    | 30           | QP    | 30m                  |

| Frequency  | Field Strengths Limits<br>( $\mu\text{V/m}$ at 3 m) | Field Strengths Limits<br>(dB $\mu\text{V/m}$ at 3 m) | Remark     |
|------------|-----------------------------------------------------|-------------------------------------------------------|------------|
| 30 – 88    | 100                                                 | 40.0                                                  | Quasi-peak |
| 88 – 216   | 150                                                 | 43.5                                                  | Quasi-peak |
| 216 – 960  | 200                                                 | 46.0                                                  | Quasi-peak |
| Above 960  | 500                                                 | 54.0                                                  | Quasi-peak |
| Above 1GHz | /                                                   | 54.0                                                  | Peak       |
|            |                                                     | 74.0                                                  | Average    |

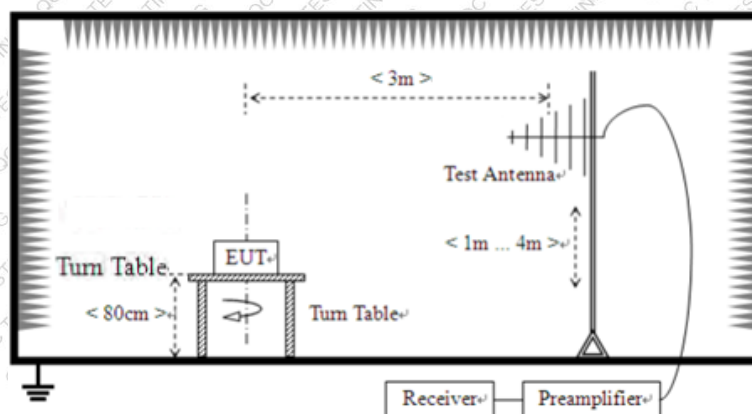
Note: dB $\mu\text{V/m}$  = 20log( $\mu\text{V/m}$ )

### 10.3 Test setup

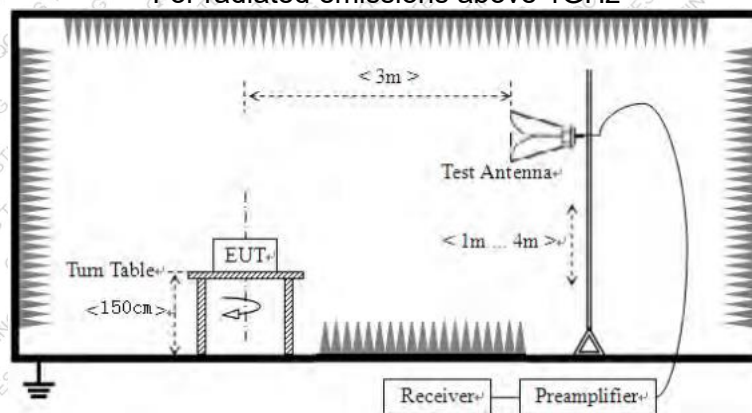
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



## 10.4 EMI Test Receiver Setup

| Frequency         | RBW     | VBW                     | IF B/W  | Measurement |
|-------------------|---------|-------------------------|---------|-------------|
| 9KHz-150KHz       | 200Hz   | 600Hz                   | /       | QP          |
| 150KHz-30MHz      | 9KHz    | 30KHz                   | /       | QP          |
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz                 | 120 kHz | QP          |
| Above 1 GHz       | 1 MHz   | 3 MHz                   | /       | Peak        |
|                   | 1 MHz   | 10 Hz <sup>Note 1</sup> | /       | Average     |
| 1MHz              | 1MHz    | > 1/T <sup>Note 2</sup> | /       | Average     |

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

Remark: For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission test in these three bands are based on measurements employing an average detector.

## 10.5 Test procedure

- The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.



- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.

## 10.6 Test Data

|              |          |              |            |
|--------------|----------|--------------|------------|
| Temperature  | 26 °C    | Humidity     | 54%        |
| ATM Pressure | 101.1kPa | Antenna Gain | see page 5 |
| Test by      | Fan Yang | Test result  | PASS       |

### Remarks:

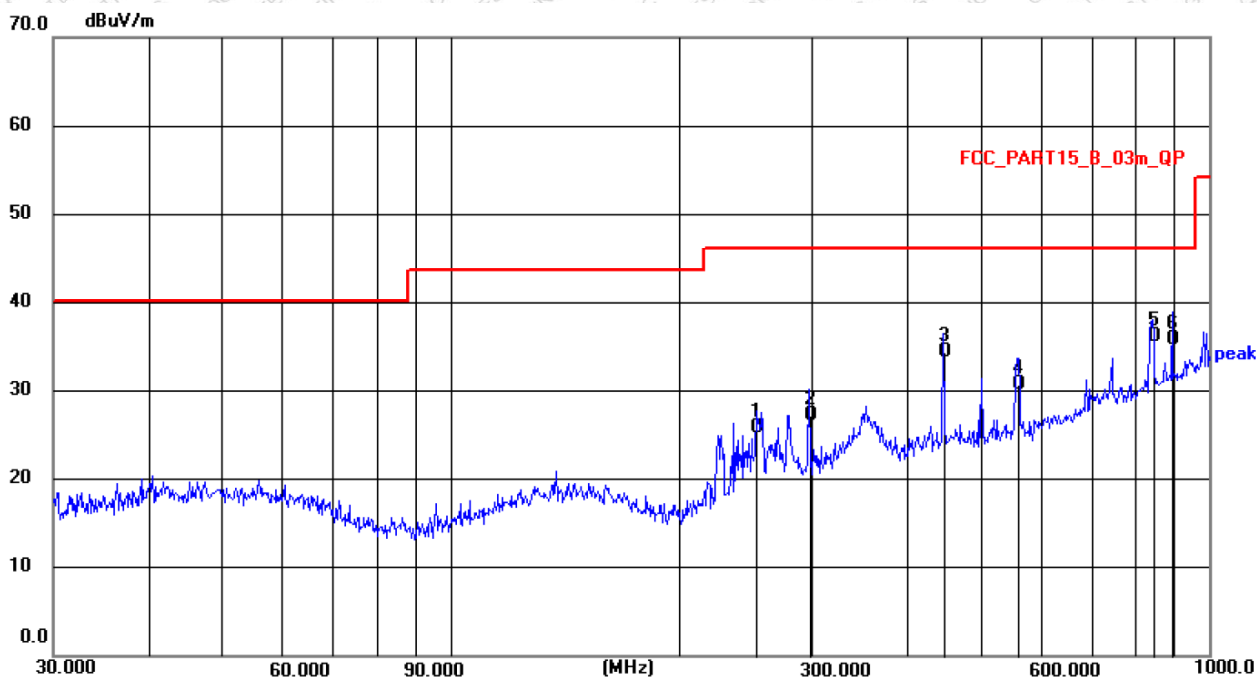
- Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.
- Data of measurement within frequency range 9kHz-30MHz, 1-40GHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.



### Below 1GHz

Pre-scan all test modes, found worst case at 802.11a mode 5745MHz, and so only show the test result of 802.11a mode 5745MHz.

### Horizontal:

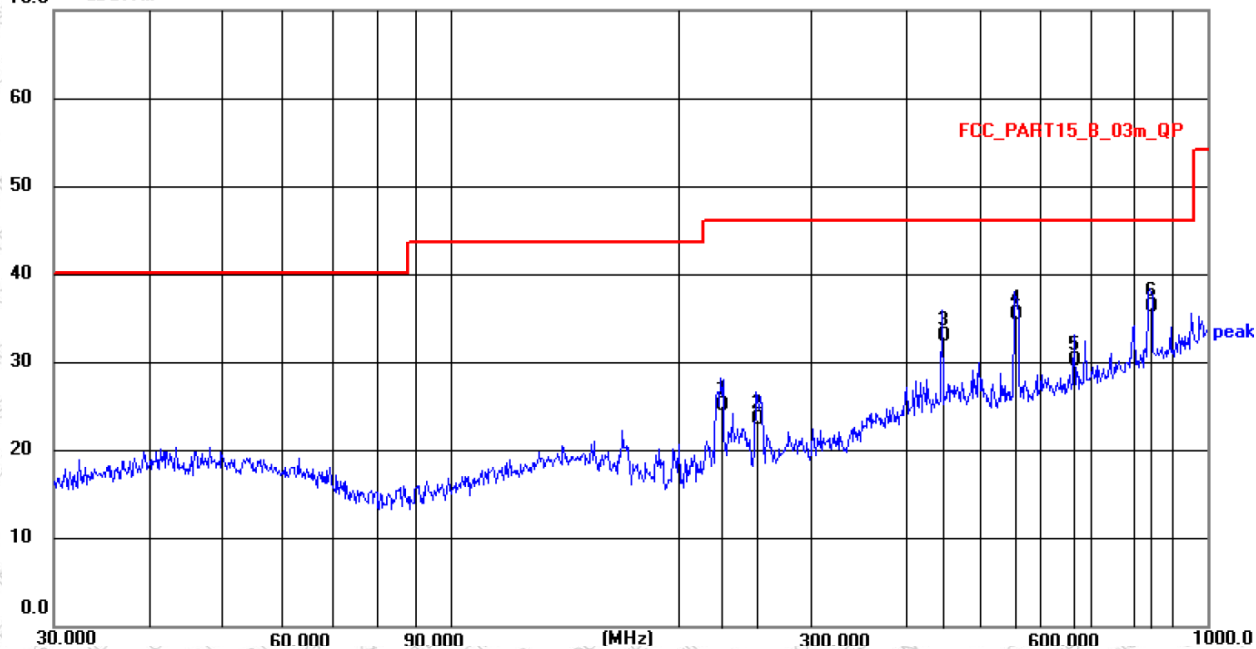


| No. | Frequency (MHz) | Reading (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 252.9482        | 12.34          | 13.44         | 25.78          | 46.00          | 20.22       | QP       |
| 2   | 297.2241        | 12.68          | 14.55         | 27.23          | 46.00          | 18.77       | QP       |
| 3   | 446.4141        | 15.55          | 18.85         | 34.40          | 46.00          | 11.60       | QP       |
| 4   | 560.6928        | 10.01          | 20.76         | 30.77          | 46.00          | 15.23       | QP       |
| 5 * | 842.1296        | 10.76          | 25.33         | 36.09          | 46.00          | 9.91        | QP       |
| 6   | 893.8567        | 9.40           | 26.40         | 35.80          | 46.00          | 10.20       | QP       |



Vertical:

70.0 dBuV/m



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 227.6906        | 12.54          | 12.64         | 25.18          | 46.00          | 20.82       | QP       |
| 2   | 253.8367        | 10.36          | 13.24         | 23.60          | 46.00          | 22.40       | QP       |
| 3   | 446.4141        | 14.41          | 18.51         | 32.92          | 46.00          | 13.08       | QP       |
| 4   | 556.7744        | 14.91          | 20.56         | 35.47          | 46.00          | 10.53       | QP       |
| 5   | 665.8035        | 7.84           | 22.29         | 30.13          | 46.00          | 15.87       | QP       |
| 6 * | 839.1818        | 11.08          | 25.30         | 36.38          | 46.00          | 9.62        | QP       |



## Above 1GHz

| Frequency (MHz)   | Read Level (dBμV) | polarization | Factor (dB/m) | Level (dBμV/m) | Limit Line (dBμV/m) | Margin (dB) | Detector |
|-------------------|-------------------|--------------|---------------|----------------|---------------------|-------------|----------|
| 802.11a 5180MHz   |                   |              |               |                |                     |             |          |
| 10360             | 46.72             | H            | -5.39         | 41.33          | 68.2                | 26.87       | peak     |
| 10360             | 48.07             | V            | -5.39         | 42.68          | 68.2                | 25.52       | peak     |
| 802.11a 5200MHz   |                   |              |               |                |                     |             |          |
| 10400             | 47.33             | H            | -5.29         | 42.04          | 68.2                | 26.16       | peak     |
| 10400             | 47.41             | V            | -5.29         | 42.12          | 68.2                | 26.08       | peak     |
| 802.11a 5240MHz   |                   |              |               |                |                     |             |          |
| 10480             | 48.58             | H            | -5.08         | 43.5           | 68.2                | 24.7        | peak     |
| 10480             | 47.4              | V            | -5.08         | 42.32          | 68.2                | 25.88       | peak     |
| 802.11n20 5180MHz |                   |              |               |                |                     |             |          |
| 10360             | 47.72             | H            | -5.39         | 42.33          | 68.2                | 25.87       | peak     |
| 10360             | 46.57             | V            | -5.39         | 41.18          | 68.2                | 27.02       | peak     |
| 802.11n20 5200MHz |                   |              |               |                |                     |             |          |
| 10400             | 47.98             | H            | -5.29         | 42.69          | 68.2                | 25.51       | peak     |
| 10400             | 46.91             | V            | -5.29         | 41.62          | 68.2                | 26.58       | peak     |
| 802.11n20 5240MHz |                   |              |               |                |                     |             |          |
| 10480             | 48.08             | H            | -5.08         | 43             | 68.2                | 25.2        | peak     |
| 10480             | 46.4              | V            | -5.08         | 41.32          | 68.2                | 26.88       | peak     |
| 802.11a 5745MHz   |                   |              |               |                |                     |             |          |
| 11490             | 48.76             | H            | -3.25         | 45.51          | 68.2                | 22.69       | peak     |
| 11490             | 50.09             | V            | -3.25         | 46.84          | 68.2                | 21.36       | peak     |
| 802.11a 5785MHz   |                   |              |               |                |                     |             |          |
| 11570             | 50.25             | H            | -3.18         | 47.07          | 68.2                | 21.13       | peak     |
| 11570             | 49.92             | V            | -3.18         | 46.74          | 68.2                | 21.46       | peak     |
| 802.11a 5825MHz   |                   |              |               |                |                     |             |          |
| 11650             | 49.57             | H            | -3.12         | 46.45          | 68.2                | 21.75       | peak     |
| 11650             | 49.23             | V            | -3.12         | 46.11          | 68.2                | 22.09       | peak     |
| 802.11n20 5745MHz |                   |              |               |                |                     |             |          |
| 11490             | 47.59             | H            | -3.25         | 44.34          | 68.2                | 23.86       | peak     |
| 11490             | 49.56             | V            | -3.25         | 46.31          | 68.2                | 21.89       | peak     |
| 802.11n20 5785MHz |                   |              |               |                |                     |             |          |
| 11570             | 49.48             | H            | -3.18         | 46.3           | 68.2                | 21.9        | peak     |
| 11570             | 49.13             | V            | -3.18         | 45.95          | 68.2                | 22.25       | peak     |
| 802.11n20 5825MHz |                   |              |               |                |                     |             |          |
| 11650             | 48.23             | H            | -3.12         | 45.11          | 68.2                | 23.09       | peak     |
| 11650             | 49.66             | V            | -3.12         | 46.54          | 68.2                | 21.66       | peak     |

## Remarks:

1. Level = Read level + Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. If the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

## 11. Frequencies Stability

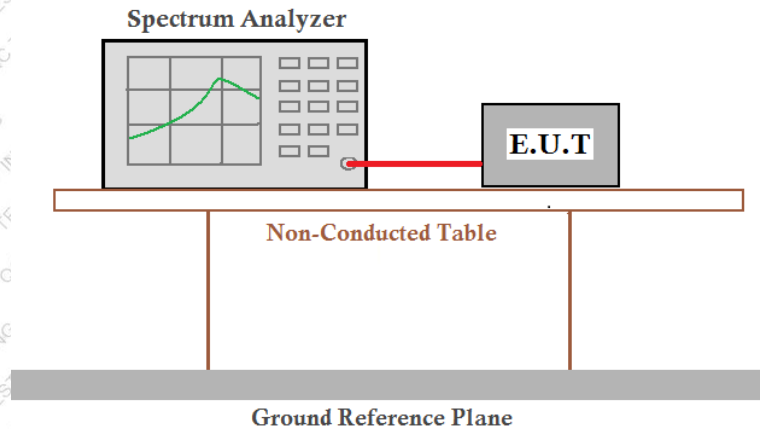
### 11.1 Applicable Standard

FCC Part15 E Section 15.407(g)

### 11.2 Limit

It is required that that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### 11.3 Test setup



### 11.4 Test Procedure

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10kHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is 0°C to +40°C, normal Temperature is +25°C.

Manufacturers of UNII 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 in the user's manual.

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)



## 11.5 Test Data

|              |          |              |         |
|--------------|----------|--------------|---------|
| Temperature  | 24.9 °C  | Humidity     | 49 %    |
| ATM Pressure | 101.1kPa | Antenna Gain | 1.49dBi |
| Test by      | Fan Yang | Test result  | PASS    |

## Test result as below table

| Mode    | Frequency (MHz) | Temperature (°C) | Voltage (DC) | Measured Frequency (MHz) | Limit (MHz)  | Verdict |
|---------|-----------------|------------------|--------------|--------------------------|--------------|---------|
| 802.11a | 5180            | 25               | 4.25         | 5180.0217                | 5150 to 5250 | PASS    |
|         |                 |                  | 5            | 5180.0223                | 5150 to 5250 | PASS    |
|         |                 |                  | 5.75         | 5179.994                 | 5150 to 5250 | PASS    |
|         |                 | -20              | 5            | 5179.9795                | 5150 to 5250 | PASS    |
|         |                 | -10              | 5            | 5180.0168                | 5150 to 5250 | PASS    |
|         |                 | 0                | 5            | 5179.9586                | 5150 to 5250 | PASS    |
|         |                 | 10               | 5            | 5179.951                 | 5150 to 5250 | PASS    |
|         |                 | 30               | 5            | 5180.018                 | 5150 to 5250 | PASS    |
|         |                 | 40               | 5            | 5179.999                 | 5150 to 5250 | PASS    |
|         | 5200            | 25               | 4.25         | 5200.0114                | 5150 to 5250 | PASS    |
|         |                 |                  | 5            | 5199.9931                | 5150 to 5250 | PASS    |
|         |                 |                  | 5.75         | 5199.9751                | 5150 to 5250 | PASS    |
|         |                 | -20              | 5            | 5200.0251                | 5150 to 5250 | PASS    |
|         |                 | -10              | 5            | 5199.963                 | 5150 to 5250 | PASS    |
|         |                 | 0                | 5            | 5199.9515                | 5150 to 5250 | PASS    |
|         |                 | 10               | 5            | 5200.0237                | 5150 to 5250 | PASS    |
|         |                 | 30               | 5            | 5200.001                 | 5150 to 5250 | PASS    |
|         |                 | 40               | 5            | 5200.02                  | 5150 to 5250 | PASS    |
|         | 5240            | 25               | 4.25         | 5239.9926                | 5150 to 5250 | PASS    |
|         |                 |                  | 5            | 5239.9816                | 5150 to 5250 | PASS    |
|         |                 |                  | 5.75         | 5240.0204                | 5150 to 5250 | PASS    |
|         |                 | -20              | 5            | 5239.9569                | 5150 to 5250 | PASS    |
|         |                 | -10              | 5            | 5239.9514                | 5150 to 5250 | PASS    |
|         |                 | 0                | 5            | 5240.0214                | 5150 to 5250 | PASS    |
|         |                 | 10               | 5            | 5239.9996                | 5150 to 5250 | PASS    |
|         |                 | 30               | 5            | 5240.0123                | 5150 to 5250 | PASS    |
|         |                 | 40               | 5            | 5239.9937                | 5150 to 5250 | PASS    |
| 802.11a | 5745            | 25               | 4.25         | 5745.0226                | 5725 to 5850 | PASS    |
|         |                 |                  | 5            | 5744.9881                | 5725 to 5850 | PASS    |
|         |                 |                  | 5.75         | 5744.9785                | 5725 to 5850 | PASS    |
|         |                 | -20              | 5            | 5745.0174                | 5725 to 5850 | PASS    |
|         |                 | -10              | 5            | 5744.9513                | 5725 to 5850 | PASS    |
|         |                 | 0                | 5            | 5744.9453                | 5725 to 5850 | PASS    |
|         |                 | 10               | 5            | 5745.0244                | 5725 to 5850 | PASS    |
|         |                 | 30               | 5            | 5745.0013                | 5725 to 5850 | PASS    |
|         |                 | 40               | 5            | 5745.0179                | 5725 to 5850 | PASS    |
|         | 5785            | 25               | 4.25         | 5784.9899                | 5725 to 5850 | PASS    |
|         |                 |                  | 5            | 5784.9752                | 5725 to 5850 | PASS    |
|         |                 |                  | 5.75         | 5785.019                 | 5725 to 5850 | PASS    |
|         |                 | -20              | 5            | 5784.956                 | 5725 to 5850 | PASS    |
|         |                 | -10              | 5            | 5784.9457                | 5725 to 5850 | PASS    |
|         |                 | 0                | 5            | 5785.028                 | 5725 to 5850 | PASS    |
|         |                 | 10               | 5            | 5784.9973                | 5725 to 5850 | PASS    |
|         |                 | 30               | 5            | 5785.0174                | 5725 to 5850 | PASS    |
|         |                 | 40               | 5            | 5784.9933                | 5725 to 5850 | PASS    |



|      |     |      |           |              |      |
|------|-----|------|-----------|--------------|------|
| 5825 | 25  | 4.25 | 5824.9792 | 5725 to 5850 | PASS |
|      |     | 5    | 5825.0283 | 5725 to 5850 | PASS |
|      |     | 5.75 | 5824.9566 | 5725 to 5850 | PASS |
|      | -20 | 5    | 5824.9455 | 5725 to 5850 | PASS |
|      | -10 | 5    | 5825.0288 | 5725 to 5850 | PASS |
|      | 0   | 5    | 5825.0071 | 5725 to 5850 | PASS |
|      | 10  | 5    | 5825.0236 | 5725 to 5850 | PASS |
|      | 30  | 5    | 5824.9911 | 5725 to 5850 | PASS |
|      | 40  | 5    | 5824.9758 | 5725 to 5850 | PASS |

-----THE END OF TEST REPORT-----