

# TEST REPORT

For

**wan Alchef**

**Model Number: DW226-B, DW226-G**

**FCC ID: 2BB9R-DW226**

**IC: 30555-DW226**

**Report Number : WT268500471**

Test Laboratory : Shenzhen Academy of Metrology and Quality  
Inspection  
Site Location : No.4, Tongfa Road, Xili Street, Nanshan District,  
Shenzhen, Guangdong, China  
Tel : 0086-755-86928965  
Fax : 0086-755-86009898-31396  
Web : [www.smq.com.cn](http://www.smq.com.cn)  
E-mail : [emcrf@smq.com.cn](mailto:emcrf@smq.com.cn)

The "Important statement" on the back of the report's first page is part of the document, and copies without it are incomplete.

Revision History

| No   | Date       | Remark        |
|------|------------|---------------|
| V1.0 | 2026.03.10 | Initial issue |

## TEST REPORT DECLARATION

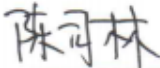
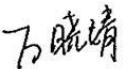
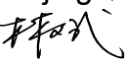
Applicant : Shenzhen Shuying Technology Co., Ltd.  
Address : Room 01, 13th Floor, No. 9988 Shennan District, Shenzhen, China  
Manufacturer : Shenzhen Shuying Technology Co., Ltd.  
Address : Room 01, 13th Floor, No. 9988 Shennan District, Shenzhen, China  
EUT Description : wan Alchef  
Model No. : DW226-B, DW226-G  
Trade mark : /  
HVIN : DW226  
FCC ID : 2BB9R-DW226  
IC : 30555-DW226

Test Standards:

**FCC Part 15 Subpart C**  
**RSS-210 Issue 11 (2024-06)**  
**RSS-GEN Issue 5 (2021-02)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results, unless they depend on the manufacturer information.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

|                   |                                                                                                           |       |               |
|-------------------|-----------------------------------------------------------------------------------------------------------|-------|---------------|
| Project Engineer: | <br>(Chen Silin 陈司林)   | Date: | Mar. 10, 2026 |
| Checked by:       | <br>(Wan Xiaojing 万晓婧) | Date: | Mar. 10, 2026 |
| Approved by:      | <br>(Lin Bin 林斌)       | Date: | Mar. 10, 2026 |

## TABLE OF CONTENTS

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| Test report declaration.....                                          | 3  |
| 1. TEST Results Summary .....                                         | 5  |
| 2. General information .....                                          | 6  |
| 2.1. Report information .....                                         | 6  |
| 2.2. Laboratory Accreditation and Relationship to Customer .....      | 6  |
| 2.3. Measurement Uncertainty.....                                     | 7  |
| 3. Product Description .....                                          | 8  |
| 3.1. EUT Description .....                                            | 8  |
| 3.2. Related Submittal(s) / Grant (s).....                            | 8  |
| 3.3. Block Diagram of EUT Configuration.....                          | 8  |
| 3.4. Operating Condition of EUT .....                                 | 8  |
| 3.5. Directional Antenna Gain.....                                    | 8  |
| 3.6. Support Equipment List.....                                      | 8  |
| 3.7. Test Conditions.....                                             | 9  |
| 3.8. Special Accessories.....                                         | 9  |
| 3.9. Equipment Modifications.....                                     | 9  |
| 4. Test Equipment USED .....                                          | 10 |
| 5. Field Strength of Fundamental and Radiated Spurious Emission ..... | 11 |
| 5.1. Test Standard and Limit.....                                     | 11 |
| 5.2. Test Procedure.....                                              | 12 |
| 5.3. Test Setup.....                                                  | 13 |
| 5.4. Test Data .....                                                  | 14 |
| 6. Conducted emission test for AC power port Measurement.....         | 27 |
| 6.1. Test Standard and Limit.....                                     | 27 |
| 6.2. Test Procedure.....                                              | 27 |
| 6.3. Test Arrangement .....                                           | 27 |
| 6.4. Test Data .....                                                  | 27 |
| 7. 20 DB BANDWIDTH.....                                               | 30 |
| 7.1. Test Standard and Limit.....                                     | 30 |
| 7.2. Test Procedure.....                                              | 30 |
| 7.3. Test Data .....                                                  | 30 |
| 8. 99% bandwidth .....                                                | 31 |
| 8.1. Test Standard and Limit.....                                     | 31 |
| 8.2. Test Procedure.....                                              | 31 |
| 8.3. Test Data .....                                                  | 31 |
| 9. Antenna Requirements .....                                         | 32 |
| 9.1. Antenna Connector.....                                           | 32 |

## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items                                                   | FCC Rules                      | ISED Rules                               | Test Results |
|--------------------------------------------------------------|--------------------------------|------------------------------------------|--------------|
| Field Strength of Fundamental and Radiated Spurious Emission | 15.249 (a)<br>15.209<br>15.205 | RSS-210 Annex B.10<br>RSS-Gen Clause 8.9 | Pass         |
| Conducted emission test for AC power port                    | 15.207                         | RSS-Gen Clause 8.8                       | Pass         |
| 20 dB Bandwidth                                              | 15.215                         | RSS-Gen Clause 6.7                       | Pass         |
| 99% Bandwidth                                                | N/A                            | RSS-Gen Clause 6.7                       | Pass         |
| Antenna Requirement                                          | 15.203                         | RSS-GEN, Clause 6.8                      | Pass         |

Remark: "N/A" means "Not applicable."

## **2. GENERAL INFORMATION**

### **2.1. Report information**

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

The lab will not be liable for any loss or damage resulting for false, inaccurate, inappropriate or incomplete product information provided by the applicant/manufacturer.

### **2.2. Laboratory Accreditation and Relationship to Customer**

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

The Laboratory is registered to perform emission tests with VCCI, and the registration number are C-20048, G20076, R-20077, R-20078 and T-20047.

The Laboratory is Accredited Testing Laboratory of American Association for Laboratory Accreditation (A2LA) and certificate number is 3292.01.

### **2.3.Measurement Uncertainty**

Conducted Emission

9 kHz~150 kHz  $U=\pm 3.7$  dB k=2

150 kHz~30MHz  $U=\pm 3.3$  dB k=2

Radiated Emission

30MHz~1000MHz  $U=\pm 4.3$  dB k=2

1GHz~6GHz  $U=\pm 4.6$  dB k=2

6GHz~100GHz  $U=\pm 5.1$  dB k=2

### 3. PRODUCT DESCRIPTION

NOTE: The extreme test conditions for temperature and antenna gain were declared by the manufacturer.

#### 3.1. EUT Description

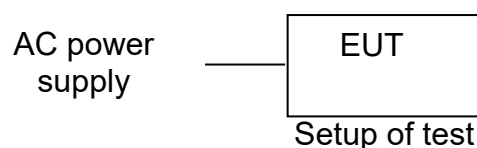
Description : wan Alchef  
Manufacturer : Shenzhen Shuying Technology Co., Ltd.  
Model Number : DW226-B, DW226-G  
Operate Frequency : 24-24.25 GHz  
Antenna Designation : Patch Antenna 7.9 dBi  
Modulation : FMCW  
Operating Voltage : AC 120V/60Hz

Remark: The only difference between DW226-B and DW226-G is the color.

#### 3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2BB9R-DW226** and IC: **30555-DW226** filing to comply with Section 15.207, 15.209, 15.249 of the FCC Part 15 Subpart C and RSS-210, RSS-GEN.

#### 3.3. Block Diagram of EUT Configuration



#### 3.4. Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter and 1-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

Test Mode1: 24 GHz radar TX

#### 3.5. Directional Antenna Gain

Directional gain need NOT to be considered.

#### 3.6. Support Equipment List

Table 2 Support Equipment List

| Name | Model No | S/N | Manufacturer |
|------|----------|-----|--------------|
| ---  | ---      | --- | ---          |

### **3.7. Test Conditions**

Date of test: Mar. 06, 2026- Mar. 10, 2026

Date of EUT Receive: Feb. 12, 2026

Temperature: 21 °C- 22 °C

Relative Humidity: 44%-53%

### **3.8. Special Accessories**

Not available for this EUT intended for grant.

### **3.9. Equipment Modifications**

Not available for this EUT intended for grant.

#### 4. TEST EQUIPMENT USED

Table 3 Test Equipment

| No.        | Equipment             | Manufacturer | Model No. | Calibration Due Date | Calibration Interval |
|------------|-----------------------|--------------|-----------|----------------------|----------------------|
| SB3997     | Test Receiver         | R&S          | ESPI3     | Oct.14, 2026         | 1 Year               |
| SB8501/06  | AMN                   | R&S          | ESH-Z5    | May.08, 2026         | 1 Year               |
| SB9548     | Shielded Room         | Albatross    | SR        | Aug.14, 2028         | 3 Years              |
| SB20321    | EMI Test Receiver     | R&S          | FSW43     | Apr.17, 2026         | 1 Year               |
| SB12724/11 | Loop Antenna          | R&S          | HFH2-Z2   | Apr.22, 2026         | 1 Year               |
| SB3955     | Broadband Antenna     | SCHWARZBECK  | VULB9163  | Aug.24, 2026         | 1 Year               |
| SB9422/16  | Horn Antenna          | R&S          | HF907     | Mar.04, 2026         | 1 Year               |
| SB18871    | Pre-Amplifier         | R&S          | SCU18F    | Mar.04, 2026         | 1 Year               |
| SB8501/11  | Antenna               | R&S          | 3160-09   | Feb.01, 2029         | 3 Years              |
| SB8501/12  | Antenna               | R&S          | 3160-10   | Feb.01, 2029         | 3 Years              |
| SB8501/16  | Pre-Amplifier         | R&S          | SCU-26    | Jan.03, 2027         | 1 Year               |
| SB9059     | Pre-Amplifier         | R&S          | SCU-40    | Aug.10, 2026         | 1 Year               |
| SB18844    | Semi Anechoic Chamber | Albatross    | 3mSAC     | Jan.25, 2027         | 1 Year               |
| SB20447/02 | Multiplier Unit       | R&S          | TC-MX60   | N/A                  | N/A                  |
| SB20321/04 | Receive Unit          | R&S          | TC-RSE60  | N/A                  | N/A                  |
| SB20321/05 | Receive Unit          | R&S          | TC-RSE90  | N/A                  | N/A                  |
| SB20321/06 | Receive Unit          | R&S          | TC-RSE140 | N/A                  | N/A                  |

## 5. FIELD STRENGTH OF FUNDAMENTAL AND RADIATED SPURIOUS EMISSION

### 5.1. Test Standard and Limit

#### 5.1.1. Test Standard

FCC Part 15 15.205, 15.209, 15.249  
RSS-210 Issue 11 Annex B.10, RSS-Gen Clause 8.8

#### 5.1.2. Test Limit

Table 4 the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) at 3m | Field strength of fundamental (dBμV/m) at 3m Average limits | Field strength of fundamental (dBμV/m) at 3m Peak limits <sup>note2</sup> |
|-----------------------|--------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|
| 24.0-24.25 GHz        | 250                                                    | 107.96                                                      | 127.96                                                                    |

| Fundamental frequency | Field strength of harmonics (microvolts/meter) at 3m | Field strength of harmonics (dBμV/m) at 3m | Field strength of harmonics (dBμV/m) at 0.5m Average limits <sup>note1</sup> | Field strength of harmonics (dBμV/m) at 0.5m Peak limits <sup>note2</sup> |
|-----------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 24.0-24.25 GHz        | 2500                                                 | 67.96                                      | 83.52                                                                        | 103.52                                                                    |

Note1: Limit= $67.9588 + 20 \log(3/0.5) = 83.52$  dBμV/m

Note2: The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Table 5 Radiation Emission Test Limit for FCC (9kHz-1GHz)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009~0.490     | 2400/F(KHz)                       | 300                           |
| 0.490~1.705     | 24000/F(KHz)                      | 30                            |
| 1.705~30.0      | 30                                | 30                            |
| 30~88           | 100                               | 3                             |
| 88~216          | 150                               | 3                             |
| 216~960         | 200                               | 3                             |
| 960~1000        | 500                               | 3                             |

Table 6 Radiation Emission Test Limit for FCC (Above 1G)

| Frequency (MHz) | (dBuV/m) (at 3 meters) |         |
|-----------------|------------------------|---------|
|                 | PEAK                   | AVERAGE |
| Above 1000      | 74                     | 54      |

\* The lower limit shall apply at the transition frequency.

\* Below 42 GHz the test distance is 3m.

\* Above 42 GHz the test distance is 0.5m.

Table 7 Restricted Band Radiated Emission

| MHz                        | MHz                 | MHz             | GHz              |
|----------------------------|---------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423      | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475 | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67        | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25        | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6           | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2         | 1660 - 1710     | 10.6-12.7        |
| 6.26775 - 6.26825          | 108 - 121.94        | 1718.8 - 1722.2 | 13.25-13.4       |
| 6.31175 - 6.31225          | 123 - 138           | 2200 - 2300     | 14.47-14.5       |
| 8.291 - 8.294              | 149.9 - 150.05      | 2310 - 2390     | 15.35-16.2       |
| 8.362 - 8.366              | 156.52475 -         | 2483.5 - 2500   | 17.7-21.4        |
| 8.37625 - 8.38675          | 156.52525           | 2655 - 2900     | 22.01-23.12      |
| 8.41425 - 8.41475          | 156.7 - 156.9       | 3260 - 3267     | 23.6-24.0        |
| 12.29 - 12.293             | 162.0125 - 167.17   | 3332 - 3339     | 31.2-31.8        |
| 12.51975 -                 | 167.72 - 173.2      | 3345.8 - 3358   | 36.43-36.5       |
| 12.52025                   | 240 - 285           | 3600 - 4400     | ( <sup>2</sup> ) |
| 12.57675 -                 | 322 - 335.4         |                 |                  |
| 12.57725                   |                     |                 |                  |
| 13.36 - 13.41              |                     |                 |                  |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

## 5.2. Test Procedure

1. The testing follows the guidelines in ANSI C63.10.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter, above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 0.5 or 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the

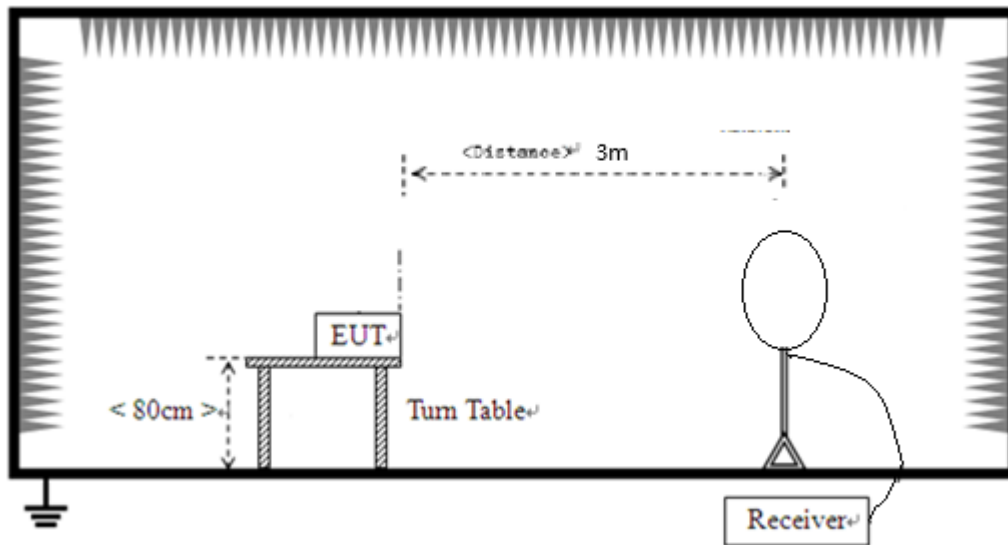
quasi-peak detector and reported.

7. Use the following spectrum analyzer settings:

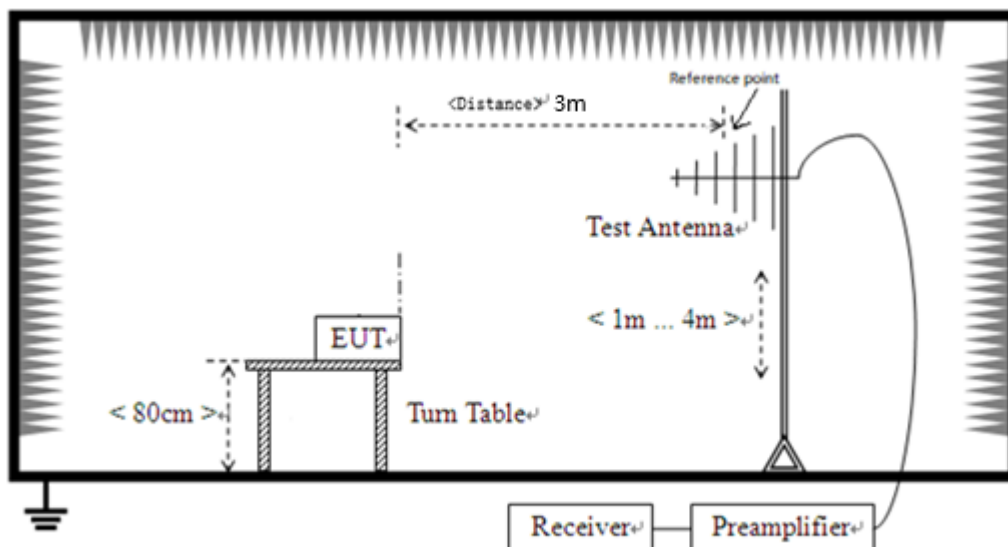
- (1) Span shall wide enough to fully capture the emission being measured;
- (2) Set RBW=100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
- (3) Set RBW = 1 MHz, VBW= 3MHz for  $f > 1$  GHz for peak measurement.

### 5.3. Test Setup

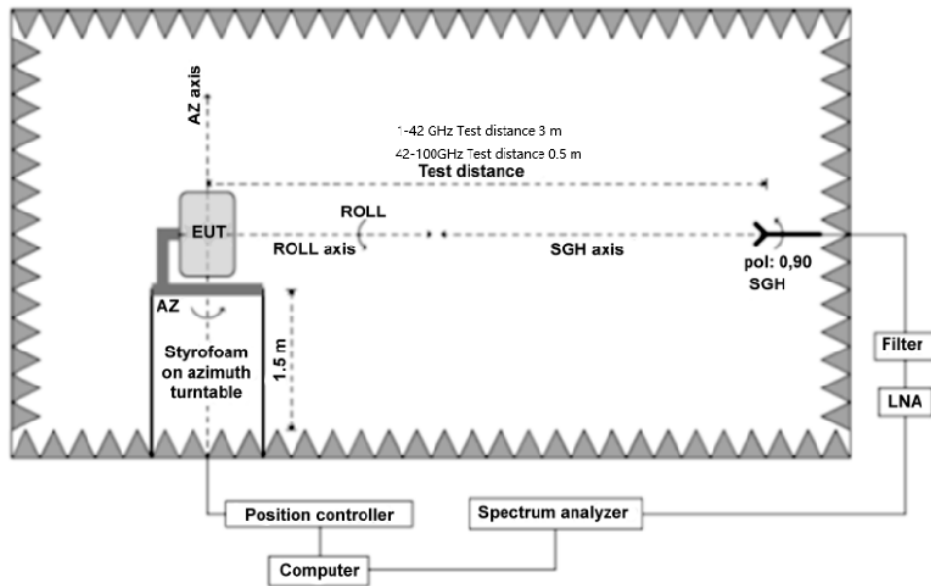
9kHz- 30MHz



30MHz- 1GHz



Above: 1GHz



## 5.4. Test Data

Table 8 Field strength of fundamental

| Test Mode   | Distance (m) | Measured Filed Strength of fundamental (dBμV/m) | Desensitization Factor(dB) | Final Filed Strength of fundamental (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Verdict | Polarity | Note |
|-------------|--------------|-------------------------------------------------|----------------------------|----------------------------------------------|----------------|-------------|---------|----------|------|
| Test Mode 1 | 3            | 102.346                                         | 0.012                      | 102.358                                      | 127.96         | 25.602      | PASS    | Vertical | Peak |
| Test Mode 1 | 3            | 91.156                                          | 0.012                      | 91.168                                       | 107.96         | 16.792      | PASS    | Vertical | AV   |

FMCW desensitization factor =  $-20 \cdot \log(a) = -20 \cdot \log(0.9986) = 0.012$   
 $T_{\text{Chirp}} = 1.067$  ms was declared by the manufacturer.

$$\alpha = \frac{1}{\left(1 + \left[\left(\frac{2 \times \ln(2)}{\pi}\right)^2 \times \left(\frac{BW_{\text{Chirp}}}{T_{\text{Chirp}} \times RBW^2}\right)^2\right]\right)^{0.25}}$$

$\alpha$  is the reduction in amplitude  
 $BW_{\text{Chirp}}$  is the FMCW Chirp Bandwidth  
 $T_{\text{Chirp}}$  is the FMCW Chirp Time  
 $B$  is the 3 dB IF Bandwidth = RBW

### 9 kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 9 Radiated Emission Test Data 9k Hz-30MHz

| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dBμV/m) | Level (dBμV/m) | Polarity (H/V) | Limit (dBμV/m) | Margin (dB) | Note |
|-----------------|-------------------------|---------------------|------------------|----------------|----------------|----------------|-------------|------|
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |
| --              | --                      | --                  | --               | --             | --             | --             | --          | --   |

### 30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

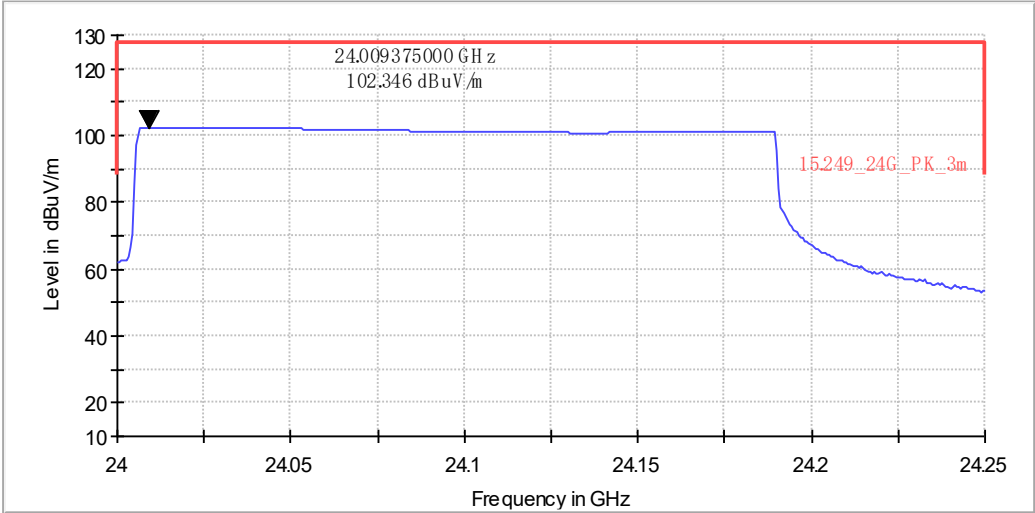
The emissions don't show in following result tables are more than 20dB below the limits.

Table 10 Radiated Emission Test Data 30MHz-1GHz

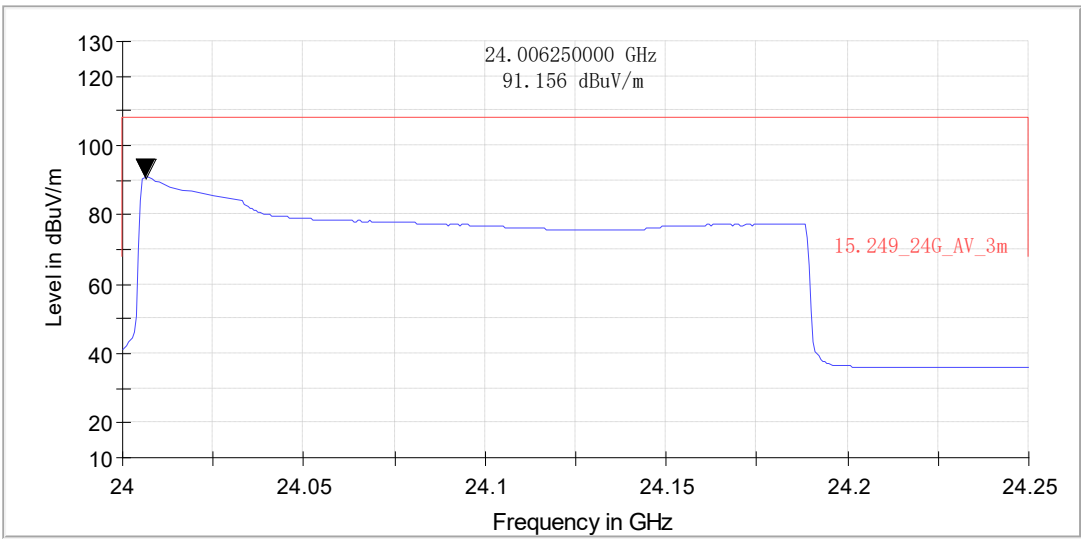
| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dBμV/m) | Level (dBμV/m) | Polarity (Horizontal/ Vertical) | Limit (dBμV/m) | Margin (dB) | Note |
|-----------------|-------------------------|---------------------|------------------|----------------|---------------------------------|----------------|-------------|------|
| 175.403         | 1.5                     | 9.0                 | 14.0             | 24.5           | Horizontal                      | 43.5           | 19.0        | QP   |
| 216.337         | 1.7                     | 10.6                | 15.5             | 27.8           | Horizontal                      | 46.0           | 18.2        | QP   |
| 233.700         | 1.8                     | 11.2                | 27.4             | 40.4           | Horizontal                      | 46.0           | 5.6         | QP   |
| 238.356         | 1.8                     | 11.2                | 28.8             | 41.8           | Horizontal                      | 46.0           | 4.2         | QP   |
| 609.963         | 3.1                     | 18.5                | 20.7             | 42.3           | Horizontal                      | 46.0           | 3.7         | QP   |
| 630.042         | 3.2                     | 18.5                | 11.5             | 33.2           | Horizontal                      | 46.0           | 12.8        | QP   |
| 37.178          | 0.6                     | 12.3                | 9.1              | 22.0           | Vertical                        | 40             | 18.0        | QP   |
| 39.021          | 0.7                     | 12.3                | 7.6              | 20.6           | Vertical                        | 40             | 19.4        | QP   |
| 500.062         | 2.7                     | 16.6                | 7.8              | 27.1           | Vertical                        | 46             | 18.9        | QP   |
| 529.938         | 2.9                     | 16.6                | 9.4              | 28.9           | Vertical                        | 46             | 17.1        | QP   |
| 609.963         | 3.1                     | 18.5                | 12.7             | 34.3           | Vertical                        | 46             | 11.7        | QP   |
| 782.429         | 3.5                     | 18.8                | 8.2              | 30.5           | Vertical                        | 46             | 15.5        | QP   |

Remark: Emission level (dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

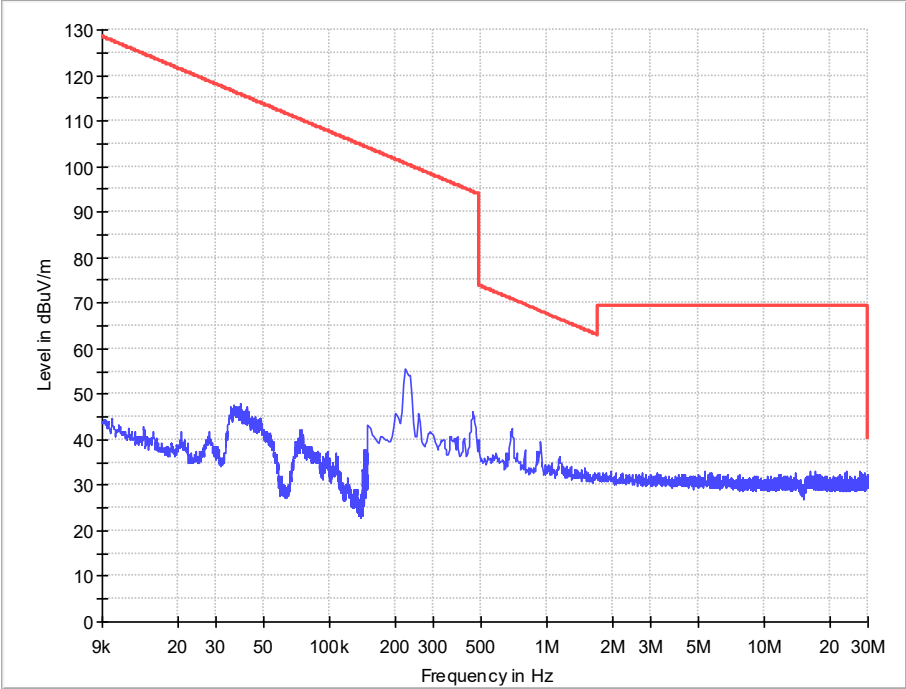
Filed Strength of fundamental\_PK  
Vertical



Filed Strength of fundamental\_AV  
Vertical

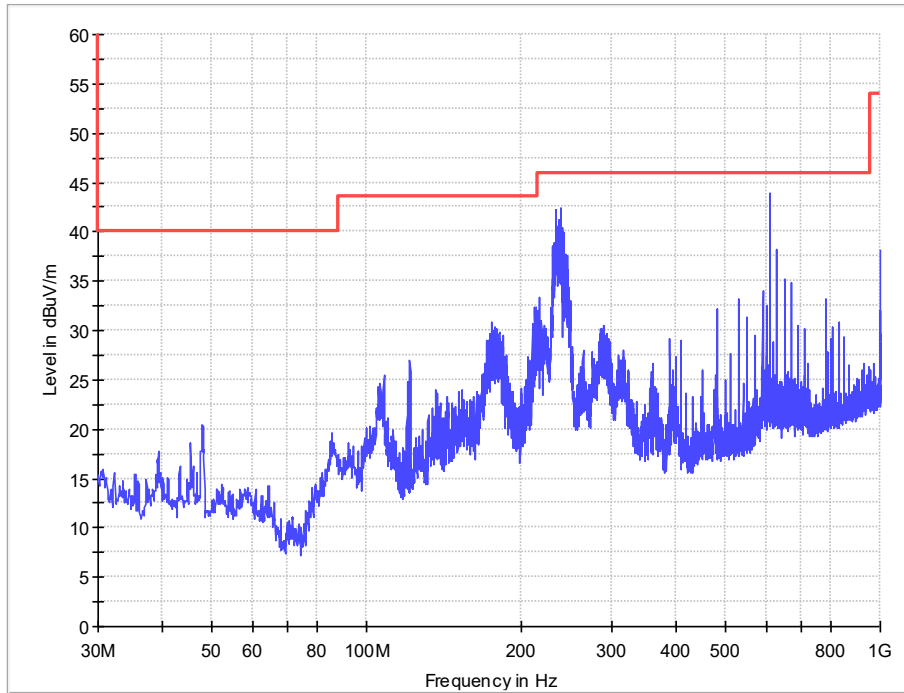


9kHz-30MHz

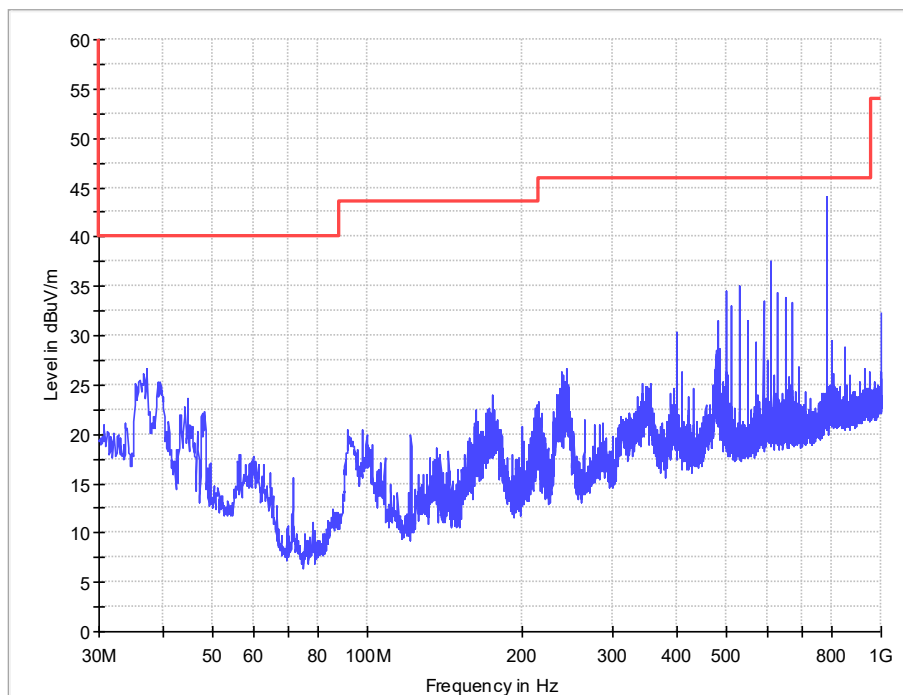


30MHz-1GHz

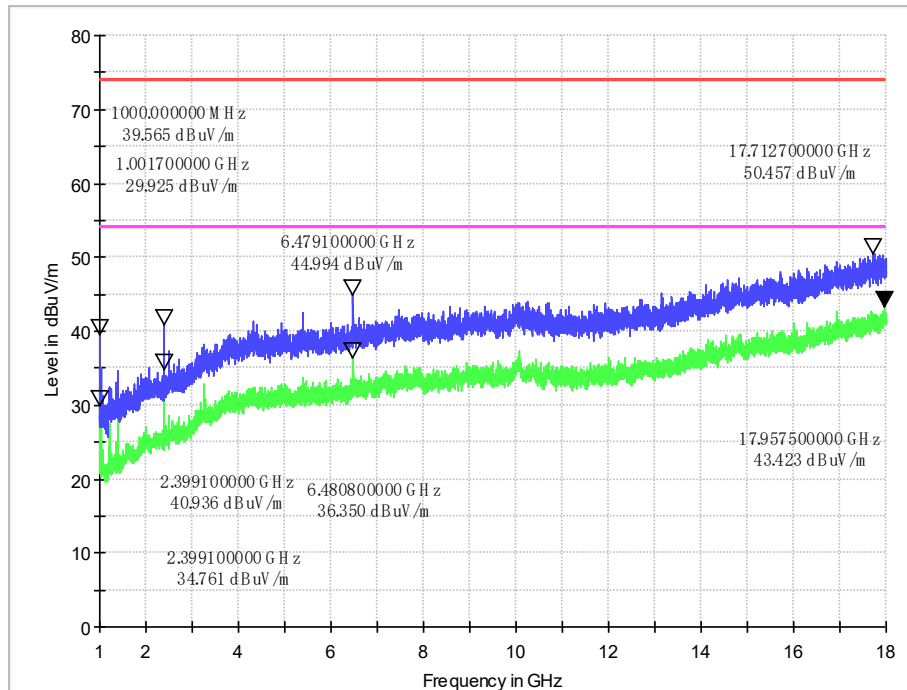
Horizontal



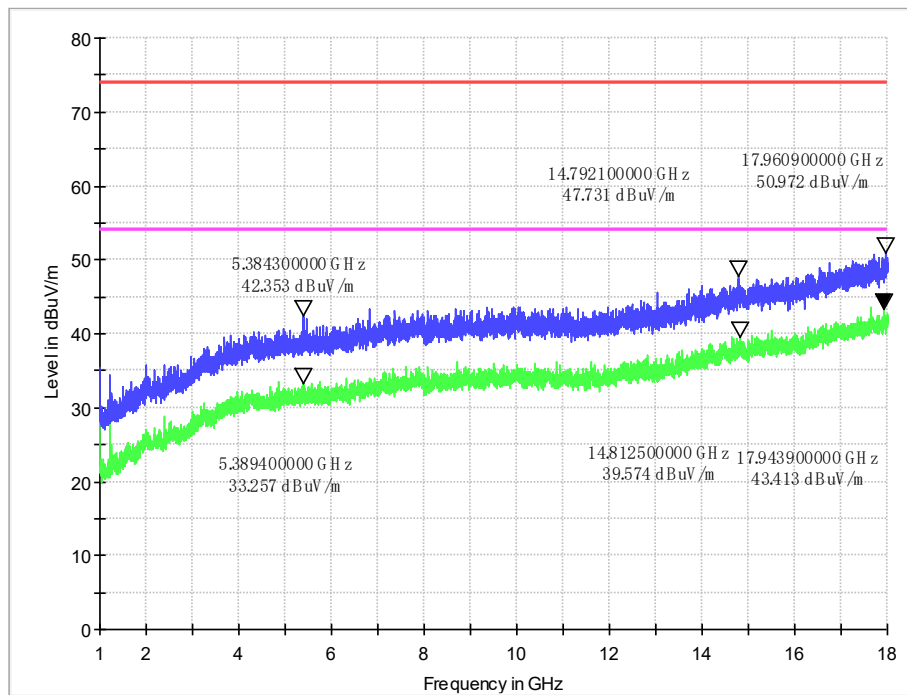
Vertical



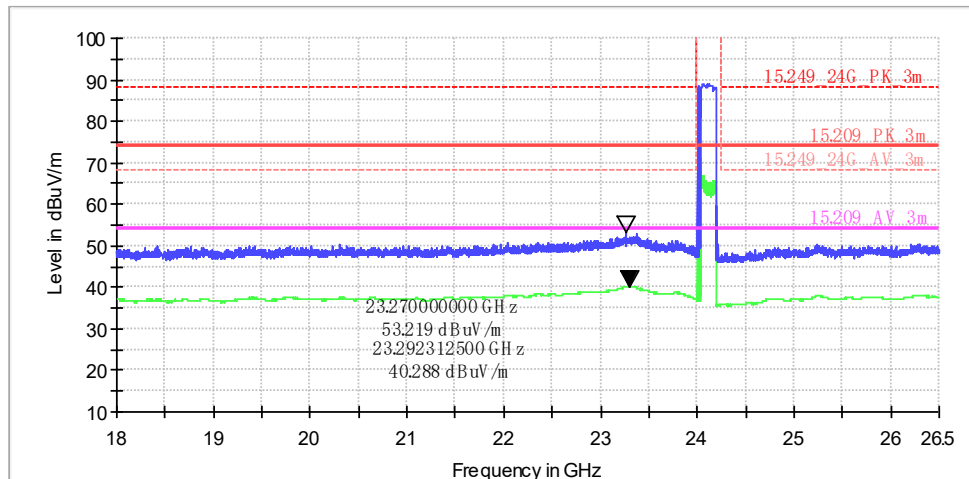
# 1-18GHz Horizontal



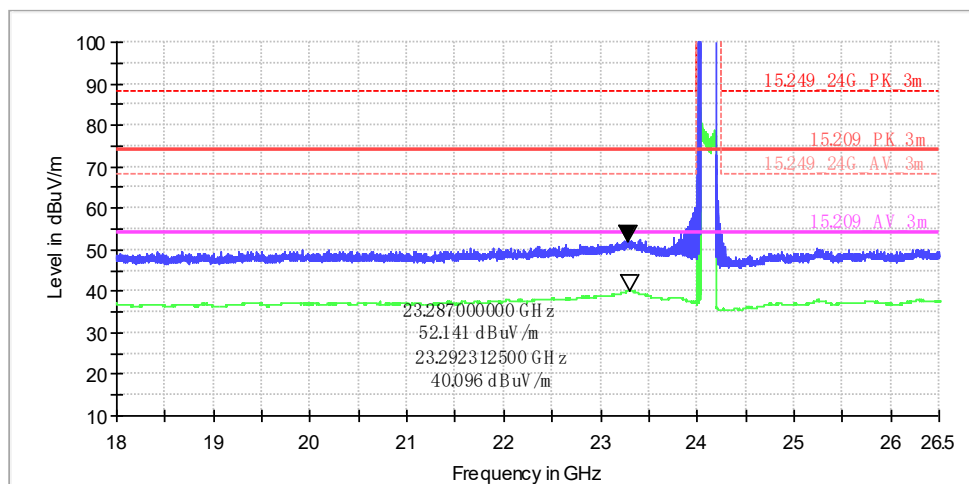
## Vertical



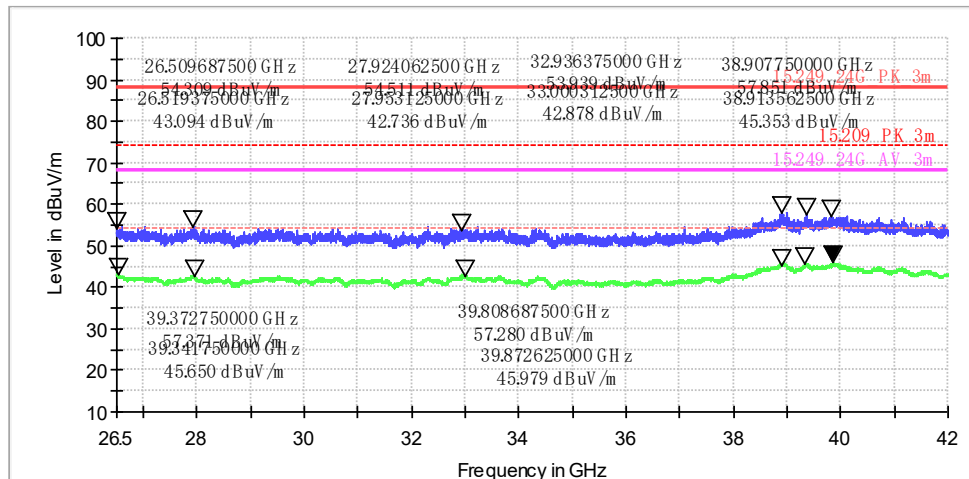
# 18- 26.5GHz Horizontal



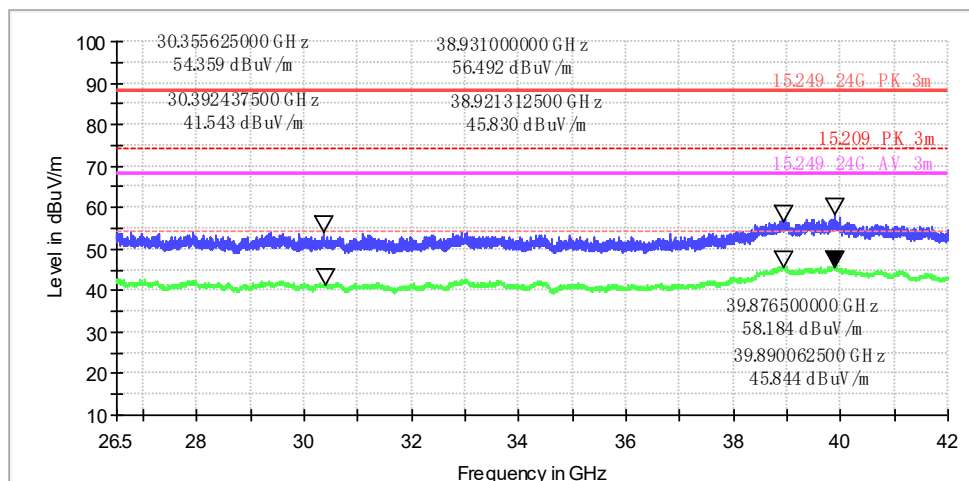
## Vertical



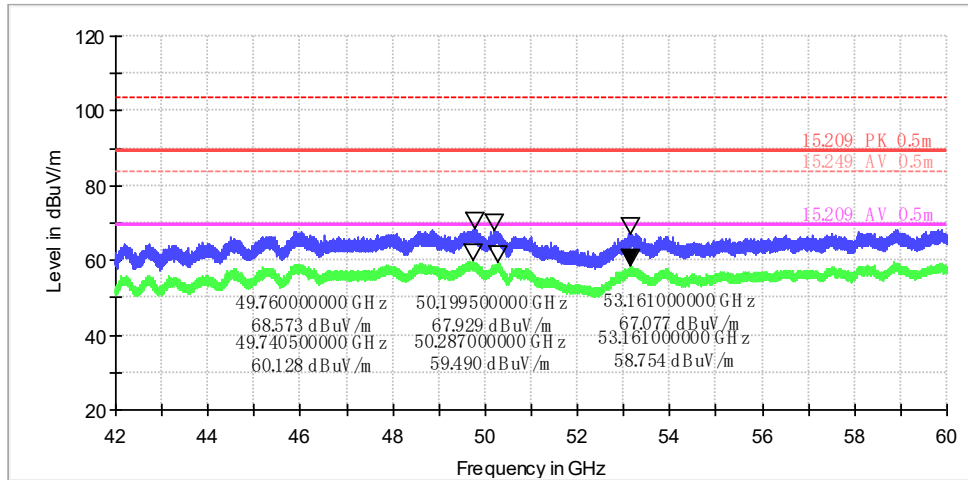
## 26.5- 42GHz Horizontal



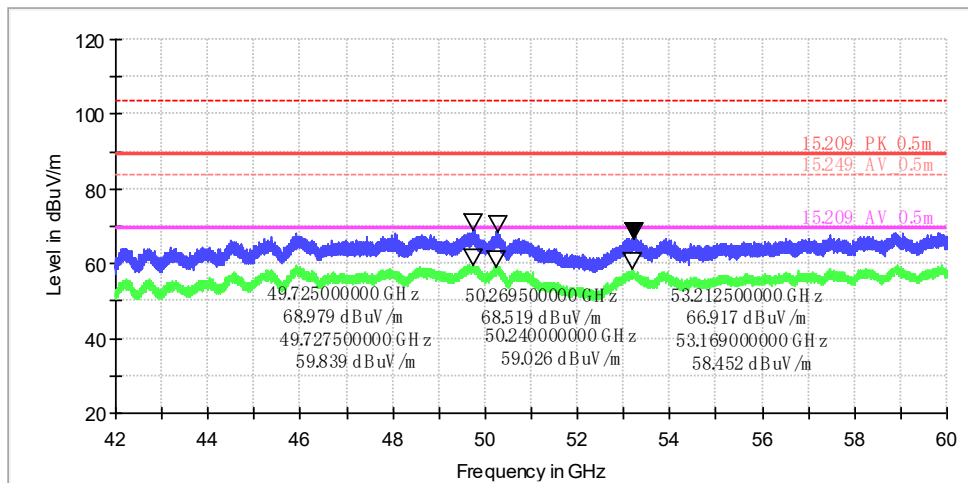
## Vertical



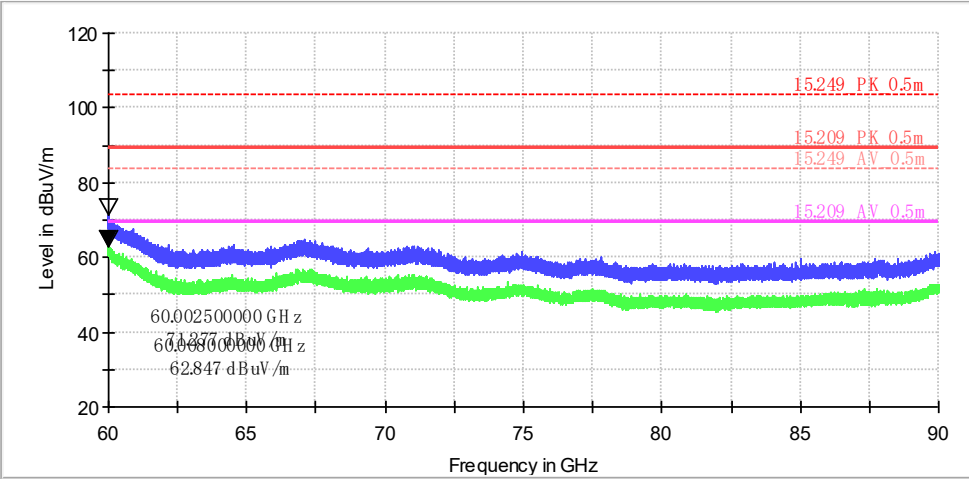
## 42- 60GHz Horizontal



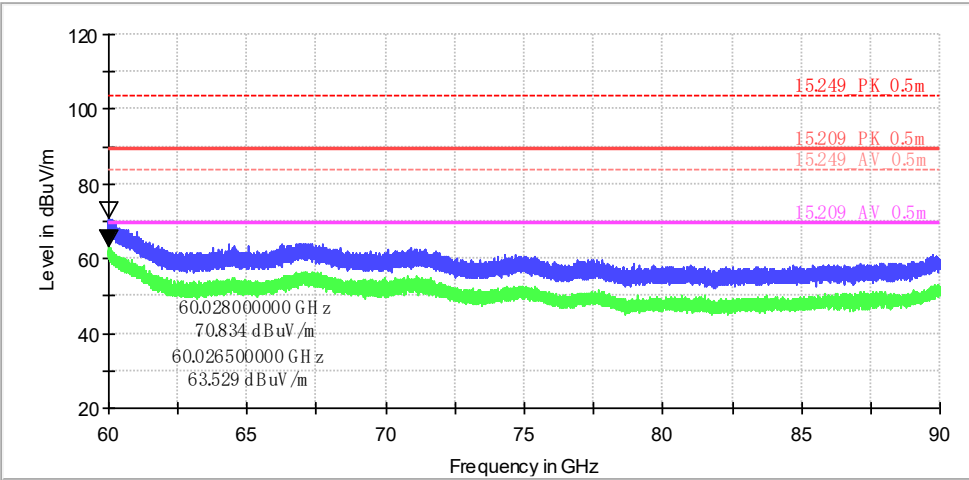
## Vertical



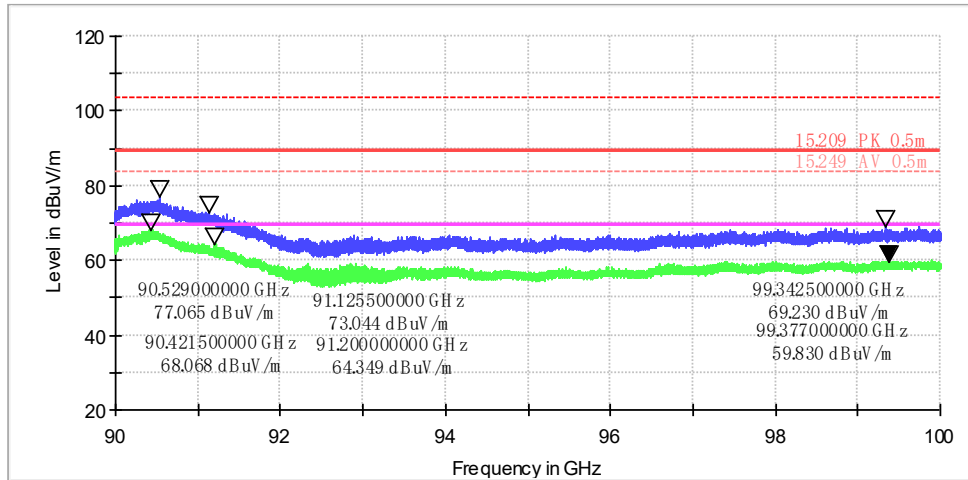
60- 90GHz  
Horizontal



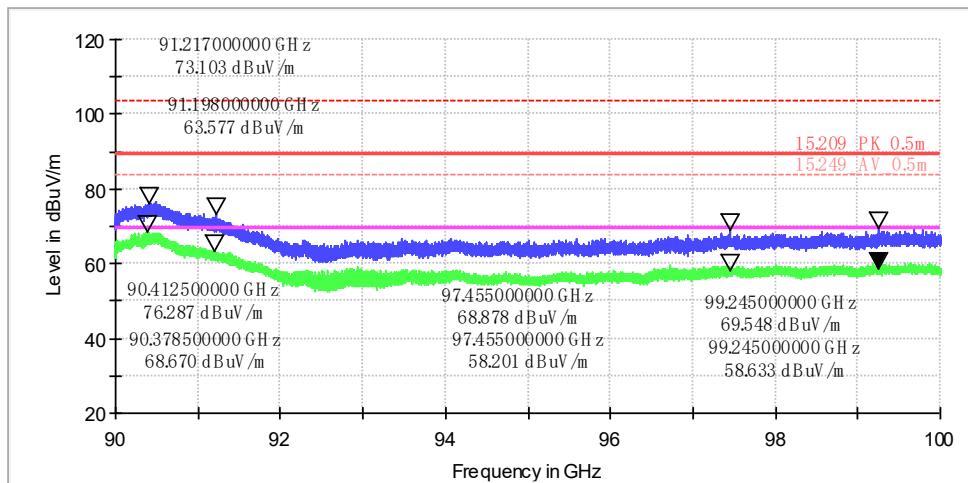
Vertical



## 90- 100GHz Horizontal

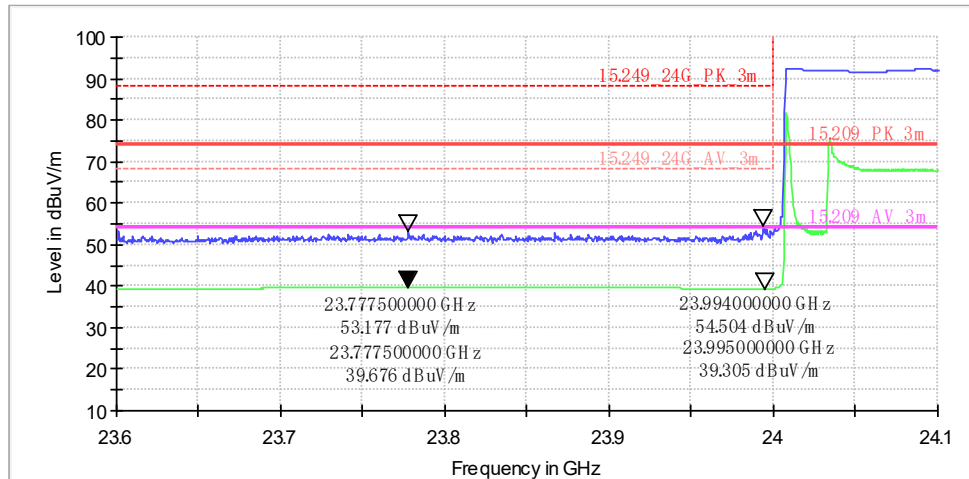


## Vertical

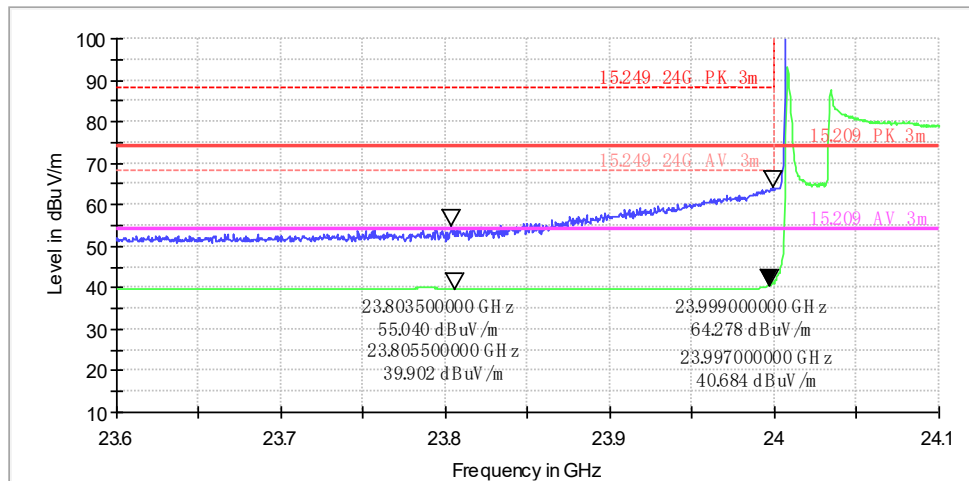


## Restricted Band Radiated Emission

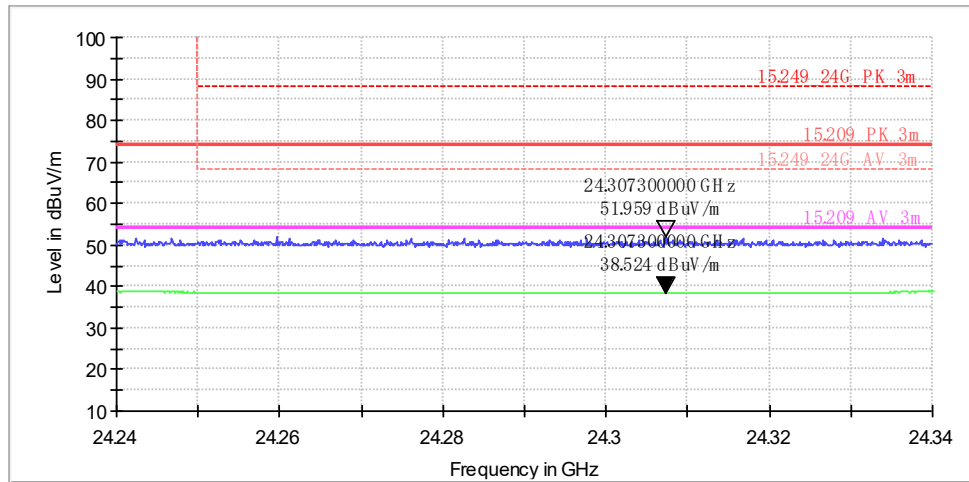
### Horizontal



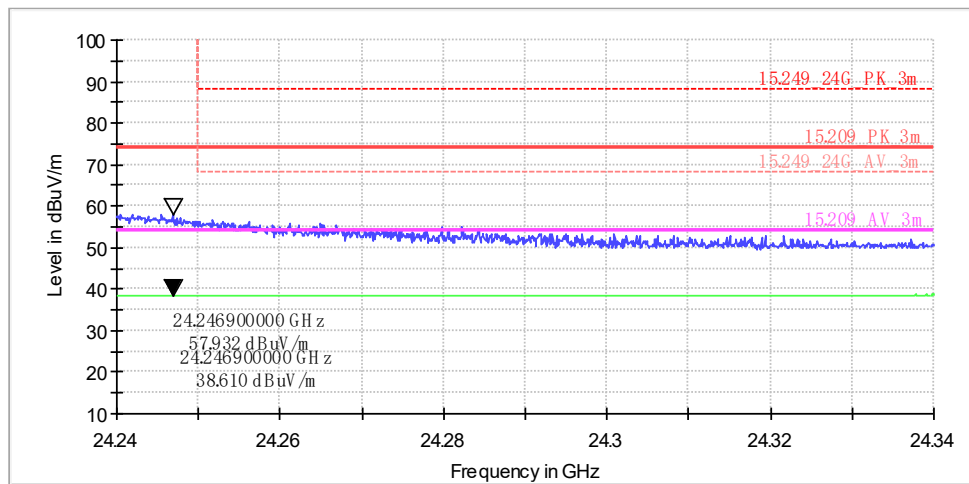
### Vertical



## Horizontal



## Vertical



## 6. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT

### 6.1. Test Standard and Limit

#### 6.1.1. Test Standard

FCC Part 15 15.207  
RSS-Gen Clause 8.8

#### 6.1.2. Test Limit

Table 11 Conducted Disturbance Test Limit

| Frequency     | Maximum RF Line Voltage (dB $\mu$ V) |               |
|---------------|--------------------------------------|---------------|
|               | Quasi-peak Level                     | Average Level |
| 150kHz~500kHz | 66 ~ 56 *                            | 56 ~ 46 *     |
| 500kHz~5MHz   | 56                                   | 46            |
| 5MHz~30MHz    | 60                                   | 50            |

\* Decreasing linearly with logarithm of the frequency

\* The lower limit shall apply at the transition frequency.

### 6.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver is used to test the emissions from both sides of AC line. According to the requirements of ANSI C63.10 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

The bandwidth of EMI test receiver is set at 9 kHz.

### 6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### 6.4. Test Data

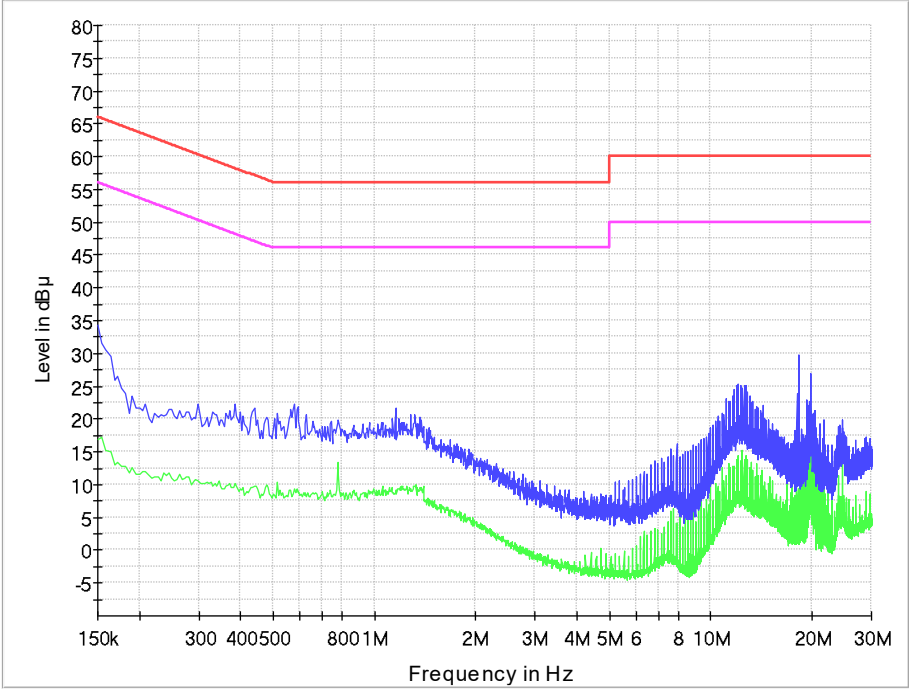
The emissions don't show in below are too low against the limits. Refer to the test curves.

**Table 12 Conducted Emission Test Data**

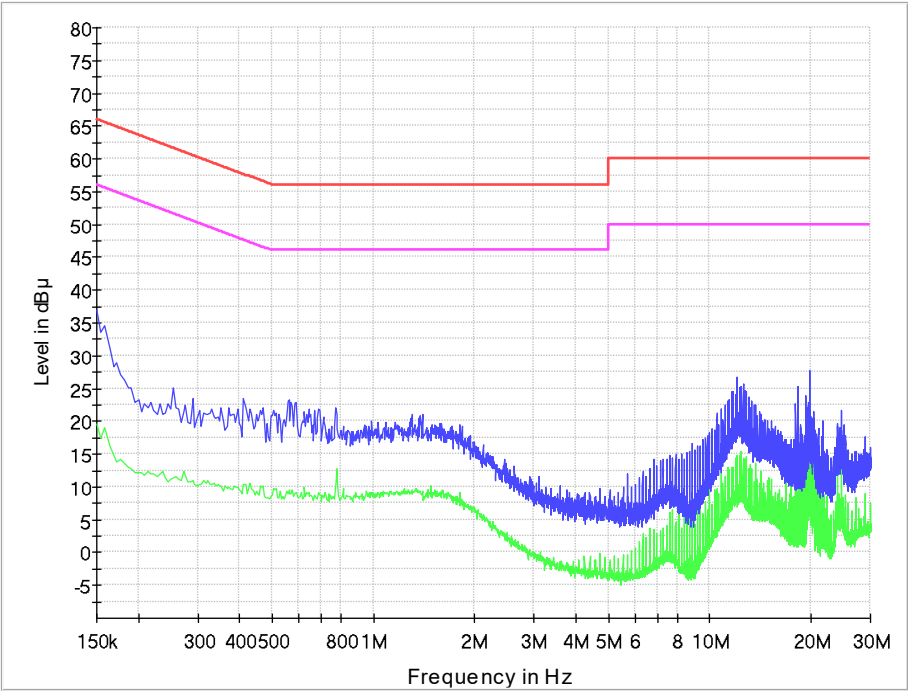
| Test mode: 1 |                    |                              |                         |                                   |                       |                         |                                   |                       |
|--------------|--------------------|------------------------------|-------------------------|-----------------------------------|-----------------------|-------------------------|-----------------------------------|-----------------------|
|              | Frequency<br>(MHz) | Correction<br>Factor<br>(dB) | Quasi-Peak              |                                   |                       | Average                 |                                   |                       |
|              |                    |                              | Reading<br>(dB $\mu$ V) | Emission<br>Level<br>(dB $\mu$ V) | Limit<br>(dB $\mu$ V) | Reading<br>(dB $\mu$ V) | Emission<br>Level<br>(dB $\mu$ V) | Limit<br>(dB $\mu$ V) |
| Line         | 0.474              | 0.150                        | 21.3                    | 31.0                              | 66                    | 13.5                    | 23.2                              | 56                    |
|              | 0.555              | 0.577                        | 13.3                    | 23.1                              | 56                    | 8.2                     | 18.0                              | 46                    |
|              | 0.627              | 0.775                        | 18.7                    | 28.5                              | 56                    | 15.6                    | 25.4                              | 46                    |
|              | 0.945              | 12.061                       | 11.4                    | 21.3                              | 60                    | 4.4                     | 14.3                              | 50                    |
|              | 1.050              | 18.285                       | 1.1                     | 11.0                              | 60                    | -4.0                    | 5.9                               | 50                    |
|              | 1.495              | 19.797                       | 15.0                    | 24.9                              | 60                    | 10.9                    | 20.8                              | 50                    |
| Neutral      | 0.469              | 0.150                        | 24.5                    | 34.2                              | 66                    | 14.3                    | 24.0                              | 56                    |
|              | 0.537              | 0.159                        | 21.0                    | 30.7                              | 65.5                  | 13.2                    | 22.9                              | 55.5                  |
|              | 0.667              | 0.253                        | 16.1                    | 25.8                              | 61.7                  | 10.9                    | 20.6                              | 51.7                  |
|              | 0.892              | 0.771                        | 14.7                    | 24.5                              | 56                    | 10.9                    | 20.7                              | 46                    |
|              | 1.041              | 12.061                       | 11.4                    | 21.3                              | 60                    | 4.5                     | 14.4                              | 50                    |
|              | 1.891              | 19.797                       | 14.0                    | 23.9                              | 60                    | 9.8                     | 19.7                              | 50                    |

REMARKS: 1. Emission level (dB $\mu$ V) = Read Value (dB $\mu$ V) + Correction Factor (dB)  
2. Correction Factor (dB) = LISN Factor (dB) + Cable Factor (dB) + Limiter Factor (dB)  
3. The other emission levels were very low against the limit.

Line



Neutral



## 7. 20 DB BANDWIDTH

### 7.1.Test Standard and Limit

#### 7.1.1.Test Standard

CFR 47 (FCC) part 15.215  
RSS-GEN Clause 6.7

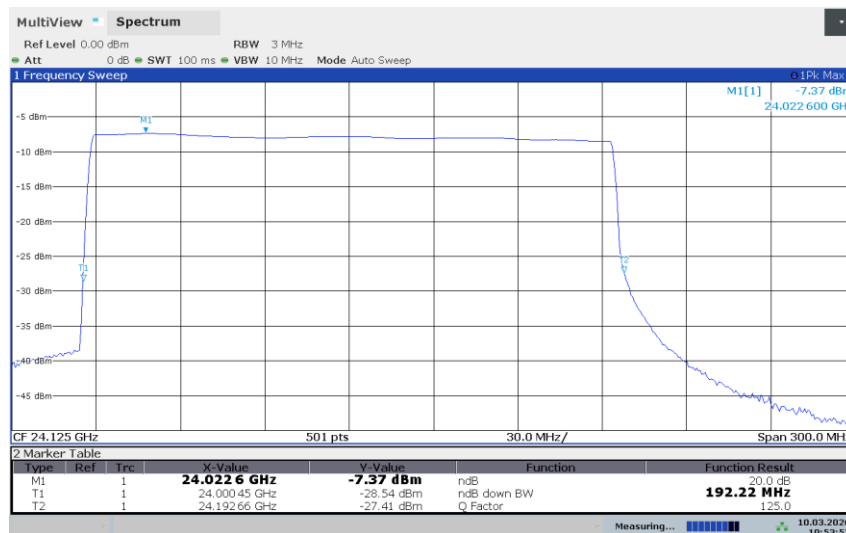
### 7.2.Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3 MHz RBW and  $VBW \geq RBW$ . The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### 7.3.Test Data

Table 13 20dB Bandwidth Test Data

| Test Mode   | 20dB<br>EBW[MHz] | FL[GHz]  | FH[GHz]  | Verdict |
|-------------|------------------|----------|----------|---------|
| Test Mode 1 | 192.22           | 24.00445 | 24.19266 | PASS    |



## 8. 99% BANDWIDTH

### 8.1.Test Standard and Limit

RSS-GEN Clause 6.7, For reporting purposes only

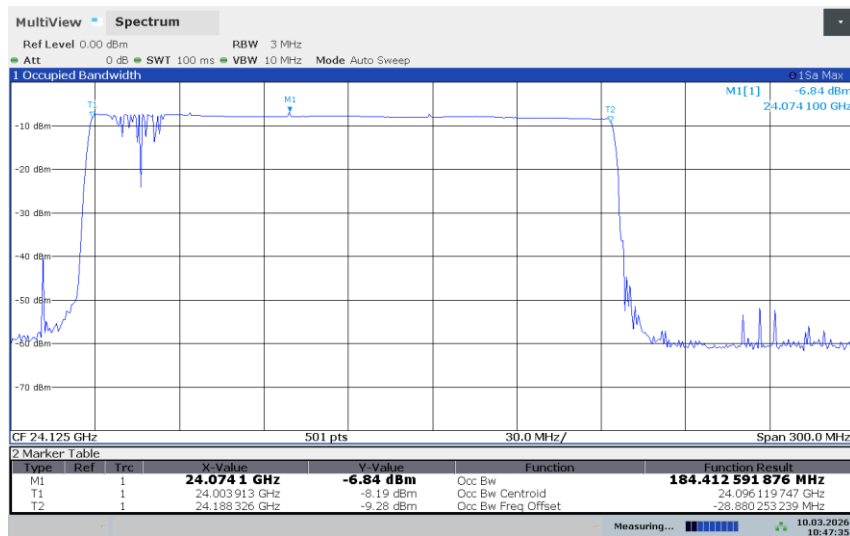
### 8.2.Test Procedure

The transmitter output was connected to the spectrum analyzer.  
The transmitter output is connected to a spectrum analyzer.  
The RBW is set to  $\geq 1\%$  to 5% of the actual occupied.  
The VBW is set to  $\geq 3\text{RBW}$ . The sweep time is coupled

### 8.3.Test Data

Table 14 99%Occupied Bandwidth Test Data

| Test Mode   | OCB[MHz] | FL[GHz]   | FH[GHz]   | Limit[MHz] | Verdict |
|-------------|----------|-----------|-----------|------------|---------|
| Test Mode 1 | 184.413  | 24.003913 | 24.188326 | ---        | ---     |



## **9. ANTENNA REQUIREMENTS**

15.203 requirements:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

According to RSS-GEN Section 6.8, 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.

### **9.1. Antenna Connector**

Antenna Connector is on the PCB within enclosure and not accessible to user.

**END OF REPORT**