

# Bauer Hockey, LLC

## RF TEST REPORT

**Report Type:**

FCC Part 15.225 & ISED RSS-210 RF report

**Model:**

1062222

**REPORT NUMBER:**

230700938HZH-001

**ISSUE DATE:**

January 23, 2024

**DOCUMENT CONTROL NUMBER:**

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**TEST REPORT**

Report no.: 230700938HZH-001

**Applicant:** Bauer Hockey, LLC  
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**Manufacturer:** Bauer Hockey, LLC  
100 Domain Drive, Exeter, New Hampshire 03833, USA

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City, Shandong Province, China

**FCC ID:** 2BD6O-1062222

**IC:** 31890-1062222

**SUMMARY:**

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2021):** Radio Frequency Devices (Subpart C)

**ANSI C63.10 (2020):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**RSS-210 Issue 10 (December 2019):** Licence-Exempt Radio Apparatus: Category I Equipment

**RSS-Gen Issue 5, Amendment 1 (March 2019):** General Requirements for Compliance of Radio Apparatus

**PREPARED BY:**

**REVIEWED BY:**



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Reviewer  
Dylan Tang

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**TEST REPORT**

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## Revision History

| Report No.       | Version | Description             | Issued Date      |
|------------------|---------|-------------------------|------------------|
| 230700938HZH-001 | Rev. 01 | Initial issue of report | January 23, 2024 |
|                  |         |                         |                  |
|                  |         |                         |                  |

## Measurement result summary

| TEST ITEM              | FCC REFERENCE     | IC REFERENCE                  | RESULT |
|------------------------|-------------------|-------------------------------|--------|
| Fundamental emission   | 15.225(a) (b) (c) | RSS 210 B.6                   | Pass   |
| Spurious emission      | 15.225(d)         | RSS 210 B.6                   | Pass   |
| Frequency stability    | 15.225(e)         | RSS 210 B.6                   | Pass   |
| Conducted emissions    | 15.207            | RSS-Gen Issue 5<br>Clause 8.8 | Pass   |
| 99% and 20dB Bandwidth | 15.215(c)         | RSS-Gen Issue 5<br>Clause 6.6 | Pass   |
| Antenna requirement    | 15.203            | RSS-GEN 6.8                   | Pass   |

### Notes:

1. NA =Not Applicable
2. Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.
3. Additions, Deviations and Exclusions from Standards: None.

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

|                       |                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|
| Product name:         | Skate Sharpening Machine                                                                                                     |
| Type/Model:           | 1062222                                                                                                                      |
| Description of EUT:   | The EUT covered in the report is skate sharpening machine.<br>RFID card reader is incorporated in model for process control. |
| Rating:               | Unit: 24VDC, Max. 96W<br>Adaptor: Input: 100-240V~, 50/60Hz, 2.5A<br>Output: 24VDC, 4A, 96W                                  |
| EUT type:             | <input checked="" type="checkbox"/> Tabletop <input type="checkbox"/> Floor standing                                         |
| Software Version:     | /                                                                                                                            |
| Hardware Version:     | /                                                                                                                            |
| Serial numbers:       | A230915-13-001                                                                                                               |
| Sample received date: | September 19, 2023                                                                                                           |
| Date of test:         | September 19, 2023 ~ December 20, 2023                                                                                       |

### 1.2 Technical Specification

|                  |                       |
|------------------|-----------------------|
| Frequency Range: | 13.56 MHz ~ 13.56 MHz |
| Modulation:      | ASK                   |
| Antenna:         | PCB antenna           |

## TEST REPORT

### 1.3 Description of Test Facility

|            |                                                                         |
|------------|-------------------------------------------------------------------------|
| Name:      | Intertek Testing Services Shanghai                                      |
| Address:   | Building 86, No. 1198 Qinzhou Road (North), Shanghai 200233, P.R. China |
| Telephone: | 86 21 61278200                                                          |
| Telefax:   | 86 21 54262353                                                          |

|                                                                                   |                                                                          |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| The test facility is recognized, certified, or accredited by these organizations: | CNAS Accreditation Lab<br>Registration No. CNAS L0139                    |
|                                                                                   | FCC Accredited Lab<br>Designation Number: CN0175                         |
|                                                                                   | IC Registration Lab<br>CAB identifier.: CN0014                           |
|                                                                                   | VCCI Registration Lab<br>Registration No.: R-4243, G-845, C-4723, T-2252 |
|                                                                                   | A2LA Accreditation Lab<br>Certificate Number: 3309.02                    |

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2021)

ANSI C63.10 (2020)

RSS-210 Issue 10 (December 2019)

RSS-Gen Issue 5, Amendment 1 (March 2019)

### 2.2 Mode of operation during the test

While testing, the internal modulation and continuously transmission was applied.

### 2.3 Test software list

| Test Items         | Software | Manufacturer | Version |
|--------------------|----------|--------------|---------|
| Conducted emission | ESxS-K1  | R&S          | V2.1.0  |
| Radiated emission  | ES-K1    | R&S          | V1.71   |

### 2.4 Test peripherals list

| Item No | Description | Band and Model | S/No |
|---------|-------------|----------------|------|
| -       | -           | -              | -    |

### 2.5 Test environment condition:

| Test items                    | Temperature | Humidity |
|-------------------------------|-------------|----------|
| Radiated emission             | 26°C        | 53% RH   |
| Power line conducted emission | 27°C        | 53% RH   |

## TEST REPORT

### 2.6 Instrument list

| Conducted Emission                  |                                      |                   |             |              |            |
|-------------------------------------|--------------------------------------|-------------------|-------------|--------------|------------|
| Used                                | Equipment                            | Manufacturer      | Type        | Internal no. | Due date   |
| <input checked="" type="checkbox"/> | Test Receiver                        | R&S               | ESR7        | EC 6194      | 2024-02-08 |
| <input checked="" type="checkbox"/> | A.M.N.                               | R&S               | ESH2-Z5     | EC 3119      | 2024-11-09 |
| <input checked="" type="checkbox"/> | Attenuator                           | Hua Xiang         | Ts5-10db-6g | EC 6194-1    | 2024-12-06 |
| <input checked="" type="checkbox"/> | Shielded room                        | Zhongyu           | -           | EC 2838      | 2024-01-10 |
| Radiated Emission                   |                                      |                   |             |              |            |
| Used                                | Equipment                            | Manufacturer      | Type        | Internal no. | Due date   |
| <input checked="" type="checkbox"/> | Test Receiver                        | R&S               | ESIB 26     | EC 3045      | 2024-08-24 |
| <input checked="" type="checkbox"/> | Bilog Antenna                        | TESEQ             | CBL 6112B   | EC 6411      | 2024-08-22 |
| <input checked="" type="checkbox"/> | Active loop antenna                  | Schwarzbeck       | FMZB1519    | EC 5345      | 2024-07-16 |
| <input checked="" type="checkbox"/> | Semi-anechoic chamber                | Albatross project | -           | EC 3048      | 2024-07-08 |
| RF test                             |                                      |                   |             |              |            |
| Used                                | Equipment                            | Manufacturer      | Type        | Internal no. | Due date   |
| <input type="checkbox"/>            | PXA Signal Analyzer                  | Keysight          | N9030A      | EC 5338      | 2024-03-05 |
| <input type="checkbox"/>            | Vector Signal Generator              | Agilent           | N5182B      | EC 5175      | 2024-03-05 |
| <input type="checkbox"/>            | Universal Radio Communication Tester | R&S               | CMW500      | EC5944       | 2024-03-05 |
| <input type="checkbox"/>            | MXG Analog Signal Generator          | Agilent           | N5181A      | EC 5338-2    | 2024-03-05 |
| <input type="checkbox"/>            | Mobile Test System                   | Litepoint         | lqxel       | EC 5176      | 2024-01-11 |
| <input type="checkbox"/>            | Test Receiver                        | R&S               | ESCI 7      | EC 4501      | 2024-03-05 |
| <input checked="" type="checkbox"/> | Spectrum Analyzer                    | Keysight          | N9030B      | EC 6078      | 2024-06-15 |
| <input type="checkbox"/>            | Universal Radio Communication Tester | R&S               | CMW500      | EC 6209      | 2024-01-30 |
| <input type="checkbox"/>            | Signal generator                     | Agilent           | N5182A      | EC 6172      | 2024-08-08 |
| <input type="checkbox"/>            | Signal generator                     | Agilent           | N5181A      | EC 6171      | 2024-08-08 |
| <input type="checkbox"/>            | Horn antenna                         | Vdi               | M12RH       | EC6382       | 2024-03-12 |
| <input type="checkbox"/>            | Horn antenna                         | Vdi               | M15RH       | EC6381       | 2024-03-12 |
| <input checked="" type="checkbox"/> | Climate chamber                      | GWS               | MT3065      | EC 6021      | 2024-03-06 |
| Additional instrument               |                                      |                   |             |              |            |
| Used                                | Equipment                            | Manufacturer      | Type        | Internal no. | Due date   |
| <input checked="" type="checkbox"/> | Thermo-Hygrograph                    | ZJ1-2A            | S.M.I.F.    | EC 3783      | 2024-03-24 |
| <input checked="" type="checkbox"/> | Thermo-Hygrograph                    | ZJ1-2A            | S.M.I.F.    | EC 5198      | 2024-03-08 |

## 2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

| Measurement                       | Frequency      | Expanded Uncertainty<br>( $k=2$ ) |
|-----------------------------------|----------------|-----------------------------------|
| Conducted emission at mains ports | 9kHz ~ 150kHz  | 3.52 dB                           |
|                                   | 150kHz ~ 30MHz | 3.19 dB                           |
| Radiated Emissions up to 1 GHz    | 30MHz ~ 1GHz   | 3.06 dB                           |
| Radiated Emissions above 1 GHz    | 1GHz ~ 6GHz    | 5.02 dB                           |
|                                   | 6GHz ~ 18GHz   | 5.28 dB                           |

## TEST REPORT

### 3 Fundamental Emission

**Test result:** **PASS**

#### 3.1 Limit

| Frequencies<br>(MHz) | Limit at 30m<br>(dBuV/m) | Limit at 3m<br>(dBuV/m) |
|----------------------|--------------------------|-------------------------|
| 13.110 – 13.410      | 40.50                    | 80.50                   |
| 13.410 – 13.553      | 50.50                    | 90.50                   |
| 13.553 – 13.567      | 84.00                    | 124.00                  |
| 13.567 – 13.710      | 50.50                    | 90.50                   |
| 13.710 – 14.010      | 40.50                    | 80.50                   |

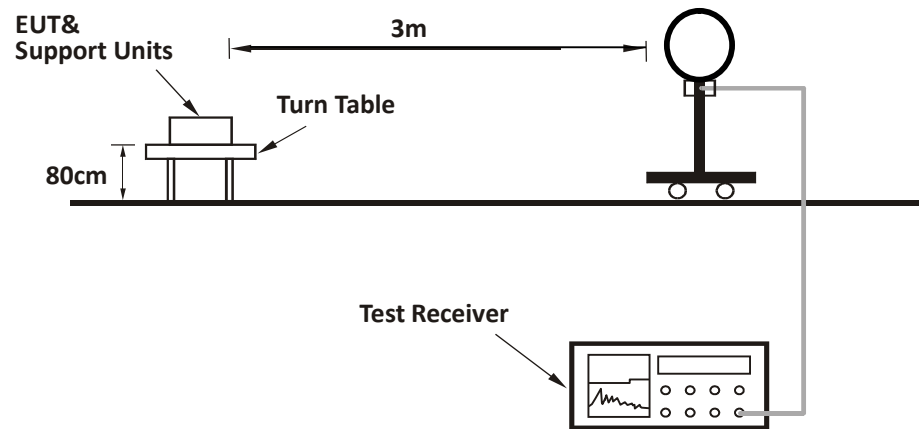
#### 3.2 Measurement Procedure

- The EUT was placed on a 0.8m plank above the ground at a 3 meter chamber room for test. 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.
- Both X and Y axes of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to PK Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### NOTE:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

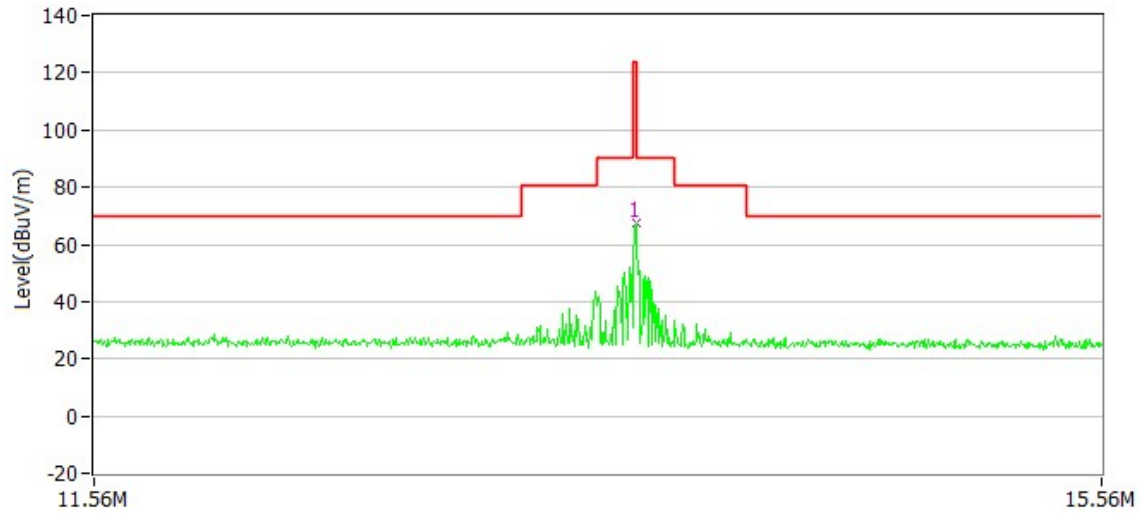
### 3.3 Test Configuration



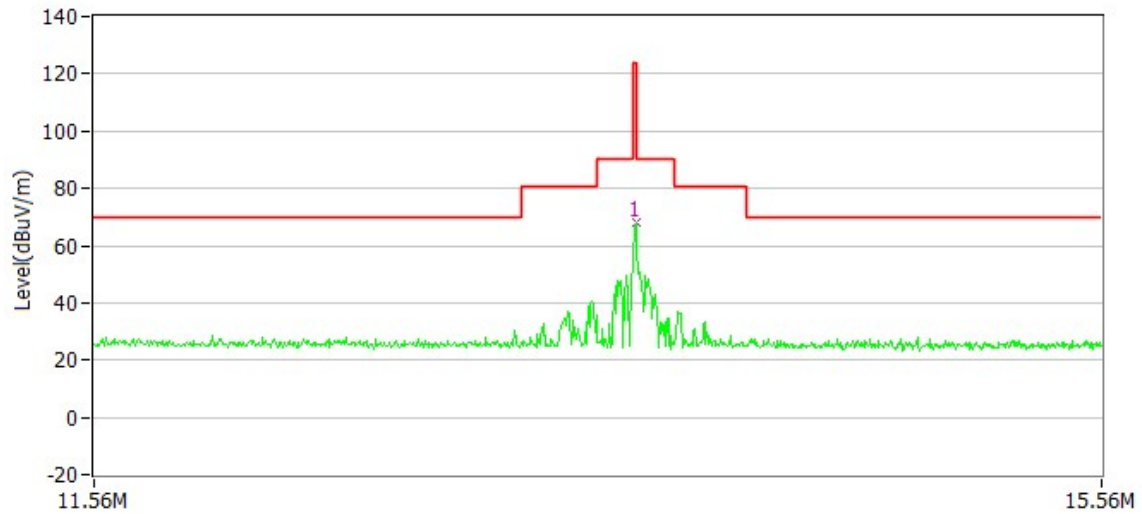
## TEST REPORT

### 3.4 Test Results of Fundamental Emissions

Antenna Polarization: X axis

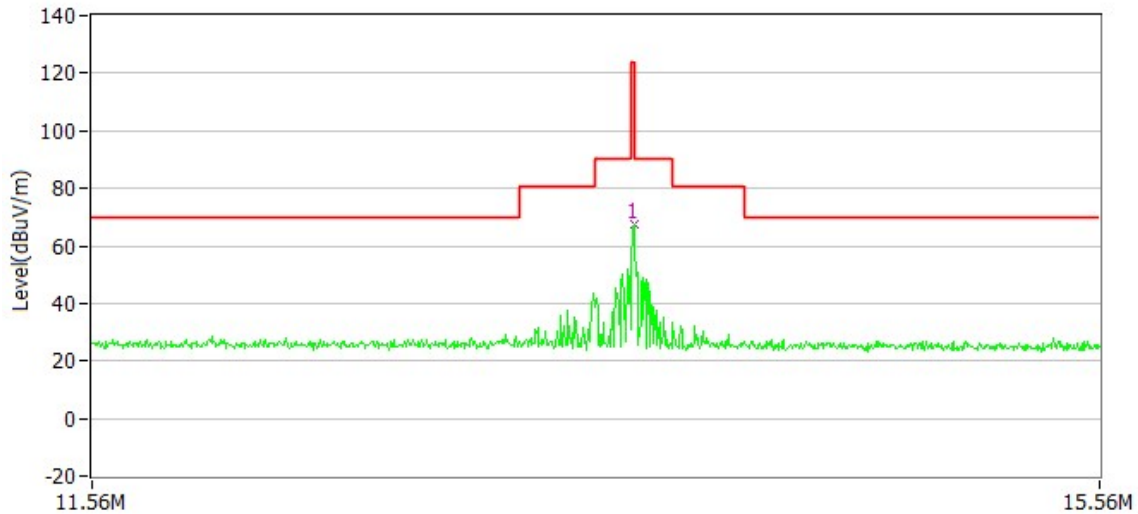


Antenna Polarization: Y axis



## TEST REPORT

Antenna Polarization: Z axis



| Antenna Polarization | Frequency (MHz) | Corrected Reading (dBuV/m) | Correct Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|----------------------|-----------------|----------------------------|-----------------------|----------------|-------------|----------|
| X                    | 13.56           | 67.30                      | 20.50                 | 124.00         | 56.70       | PK       |
| Y                    | 13.56           | 69.10                      | 20.50                 | 124.00         | 54.90       | PK       |
| Z                    | 13.56           | 68.00                      | 20.50                 | 124.00         | 56.00       | PK       |

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.

2. Corrected Reading = Original Receiver Reading + Correct Factor

3. Margin = Limit - Corrected Reading

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB, Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV, Limit = 40.00dBuV/m.

Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;

Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;

Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

## 4 Spurious Emission

Test result: **PASS**

### 4.1 Limit

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

### 4.2 Measurement Procedure

#### For Radiated emission below 30MHz:

- The EUT was placed on a 0.8m plank above the ground at a 3 meter chamber room for test. 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.
- Both X and Y axes of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### NOTE:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

#### For Radiated emission above 30MHz:

- The EUT was placed on a 0.8m plank above the ground at a 3 meter chamber room for test. 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 height of antenna 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.

## TEST REPORT

- 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

### Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 3. All modes of operation were evaluated and the worst-case emissions were reported

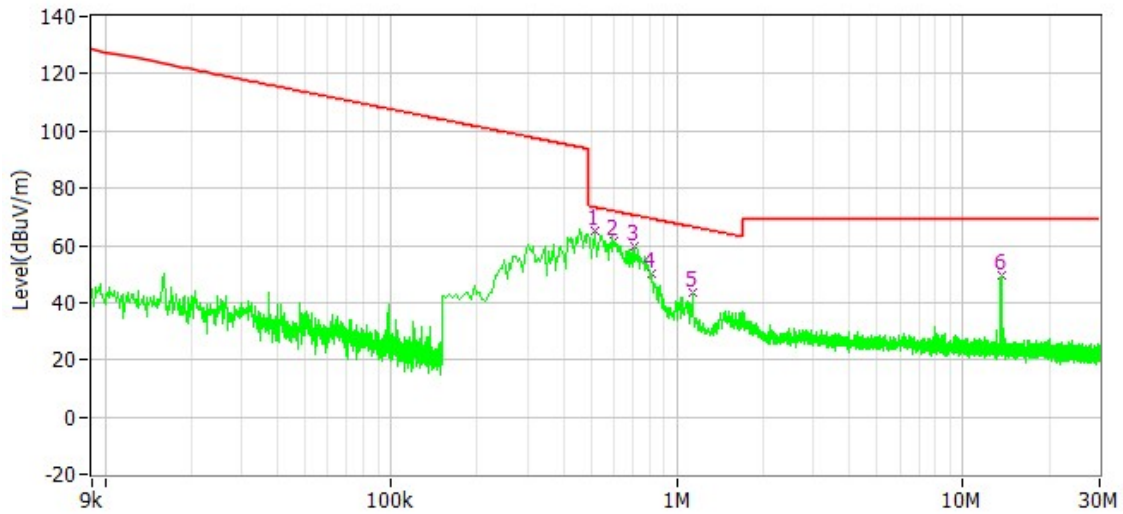
## TEST REPORT

### 4.3 Test Results of Radiated Emissions

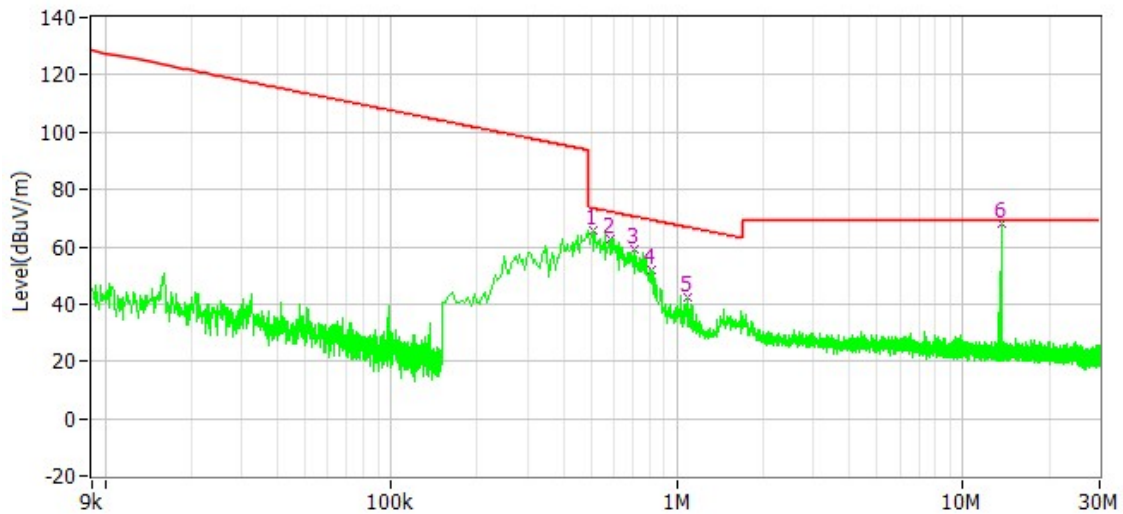
The EUT has been tested in all two orthogonal planes, it has the worst case when it is in horizontal position for both below 30MHz & above 30MHz.

#### Test Curve (below 30MHz):

X

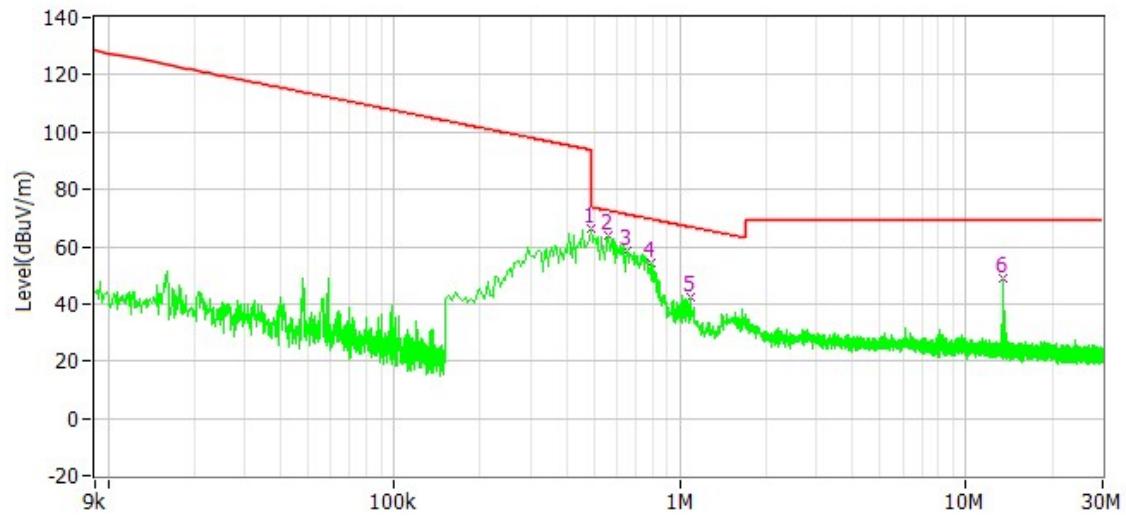


Y



**TEST REPORT**

Z



## TEST REPORT

### Test data below 30MHz:

| Frequency  | Limit (dBuV/m) | Corrected Reading (dBuV/m) | Margin (dB) | Reading (dBuV) | Factor (dB/m) | Detector | Polarity |
|------------|----------------|----------------------------|-------------|----------------|---------------|----------|----------|
| 519.000kHz | 73.30          | 64.80                      | 8.50        | 44.60          | 20.20         | PK       | X        |
| 600.000kHz | 72.00          | 61.70                      | 10.30       | 41.50          | 20.20         | PK       | X        |
| 708.000kHz | 70.60          | 59.90                      | 10.80       | 39.70          | 20.20         | PK       | X        |
| 816.000kHz | 69.40          | 50.00                      | 19.40       | 29.90          | 20.10         | PK       | X        |
| 1.131MHz   | 66.60          | 43.50                      | 23.10       | 23.40          | 20.10         | PK       | X        |
| 505.500kHz | 73.50          | 65.60                      | 7.90        | 45.40          | 20.20         | PK       | Y        |
| 586.500kHz | 72.20          | 62.80                      | 9.40        | 42.60          | 20.20         | PK       | Y        |
| 708.000kHz | 70.60          | 59.30                      | 11.30       | 39.10          | 20.20         | PK       | Y        |
| 816.000kHz | 69.40          | 52.10                      | 17.20       | 32.00          | 20.10         | PK       | Y        |
| 1.091MHz   | 66.90          | 42.50                      | 24.40       | 22.40          | 20.10         | PK       | Y        |
| 487.500kHz | 93.80          | 66.10                      | 27.80       | 45.90          | 20.20         | PK       | Z        |
| 564.000kHz | 72.60          | 63.70                      | 8.80        | 43.50          | 20.20         | PK       | Z        |
| 654.000kHz | 71.30          | 58.80                      | 12.50       | 38.60          | 20.20         | PK       | Z        |
| 789.000kHz | 69.70          | 54.20                      | 15.40       | 34.10          | 20.10         | PK       | Z        |
| 1.082MHz   | 66.90          | 42.50                      | 24.40       | 22.40          | 20.10         | PK       | Z        |

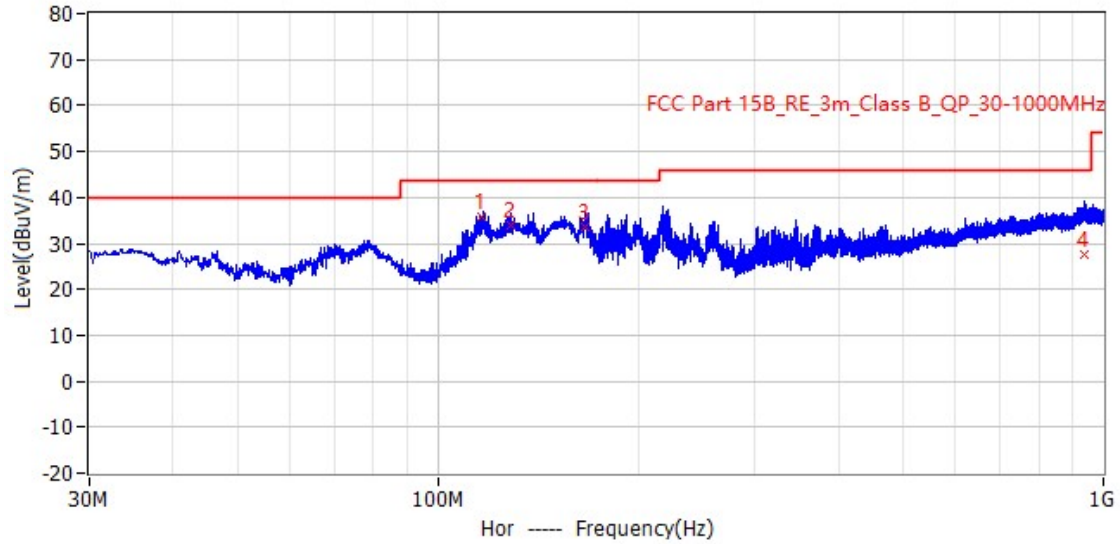
- Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.  
 2. Corrected Reading = Original Receiver Reading + Correct Factor  
 3. Margin = Limit - Corrected Reading  
 4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
 Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,  
 Limit = 40.00dBuV/m.  
 Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
 Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;  
 Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

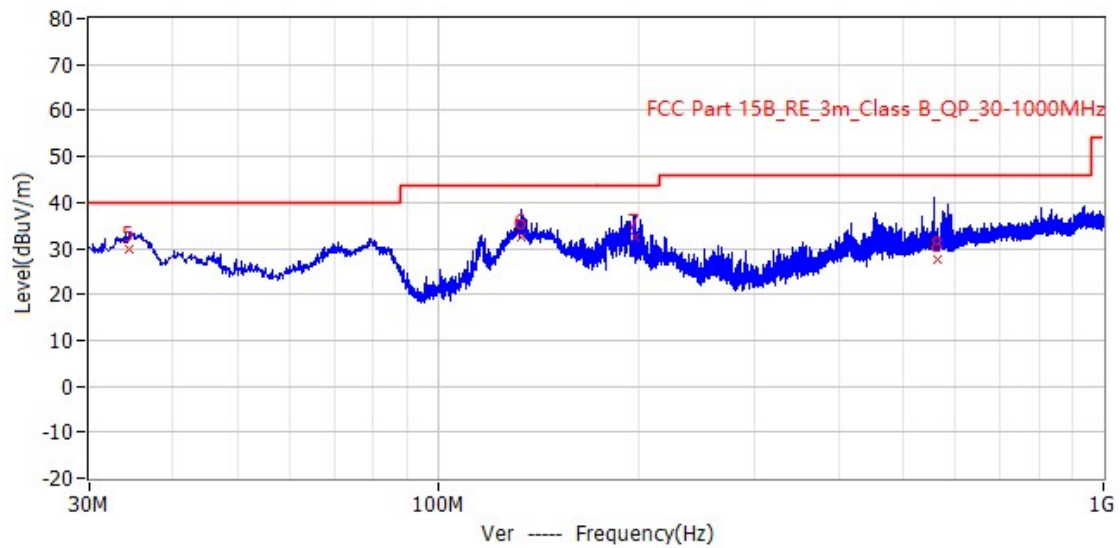
## TEST REPORT

### Test Curve (30MHz to 1000MHz):

Horizontal



Vertical



## TEST REPORT

### Test data (30MHz to 1000MHz)

| Frequency  | Limit (dBuV/m) | Corrected Reading (dBuV/m) | Margin (dB) | Original Reading (dBuV) | Correct Factor (dB/m) | Detector | Polar |
|------------|----------------|----------------------------|-------------|-------------------------|-----------------------|----------|-------|
| 116.291MHz | 43.50          | 35.90                      | 7.60        | 27.70                   | 8.20                  | QP       | Hor   |
| 129.208MHz | 43.50          | 33.90                      | 9.60        | 25.50                   | 8.40                  | QP       | Hor   |
| 166.115MHz | 43.50          | 33.60                      | 9.90        | 23.50                   | 10.10                 | QP       | Hor   |
| 933.672MHz | 46.00          | 27.40                      | 18.60       | 0.60                    | 26.80                 | QP       | Hor   |
| 34.365MHz  | 40.00          | 30.00                      | 10.00       | 16.50                   | 13.50                 | QP       | Ver   |
| 133.556MHz | 43.50          | 32.60                      | 10.90       | 23.90                   | 8.70                  | QP       | Ver   |
| 198.130MHz | 43.50          | 32.40                      | 11.10       | 21.60                   | 10.80                 | QP       | Ver   |
| 563.276MHz | 46.00          | 27.50                      | 18.50       | 6.00                    | 21.50                 | QP       | Ver   |

- Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.  
 2. Corrected Reading = Original Receiver Reading + Correct Factor  
 3. Margin = Limit - Corrected Reading  
 4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
 Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,  
 Limit = 40.00dBuV/m.  
 Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
 Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;  
 Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

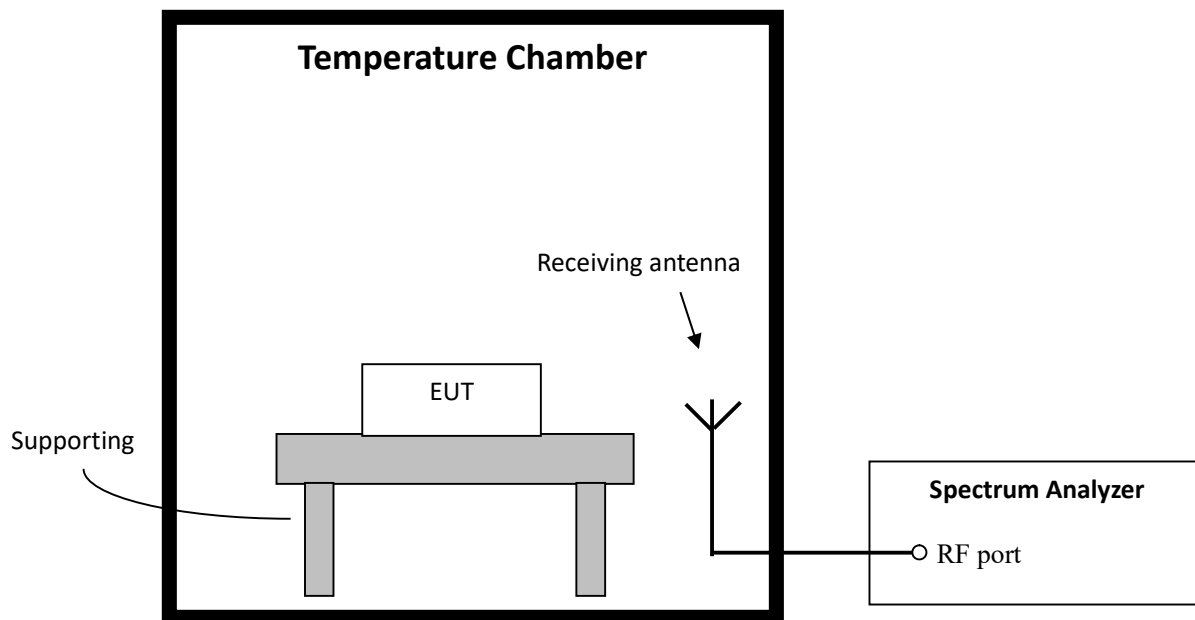
## 5 Frequency Stability (Temperature Variation)

**Test result:**      **PASS**

### 5.1 Test limit

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage.

### 5.2 Test Configuration



## TEST REPORT

### 5.3 Test procedure and test setup

Test Procedure as per ANSI 63.10 clause 6.8.1.

### 5.4 Test protocol

| Voltage (V) | Temp (°C) | Freq Measured (MHz) | Freq Nominal (MHz) | Tolerance (%) | Limit (%) |
|-------------|-----------|---------------------|--------------------|---------------|-----------|
| 120         | -20       | 13.5605             | 13.56              | 0.004         | ± 0.01    |
|             | -10       | 13.5602             |                    | 0.001         |           |
|             | 0         | 13.5605             |                    | 0.004         |           |
|             | 10        | 13.5606             |                    | 0.004         |           |
|             | 20        | 13.5606             |                    | 0.004         |           |
|             | 30        | 13.5606             |                    | 0.004         |           |
|             | 40        | 13.5594             |                    | -0.004        |           |
|             | 50        | 13.5598             |                    | -0.001        |           |

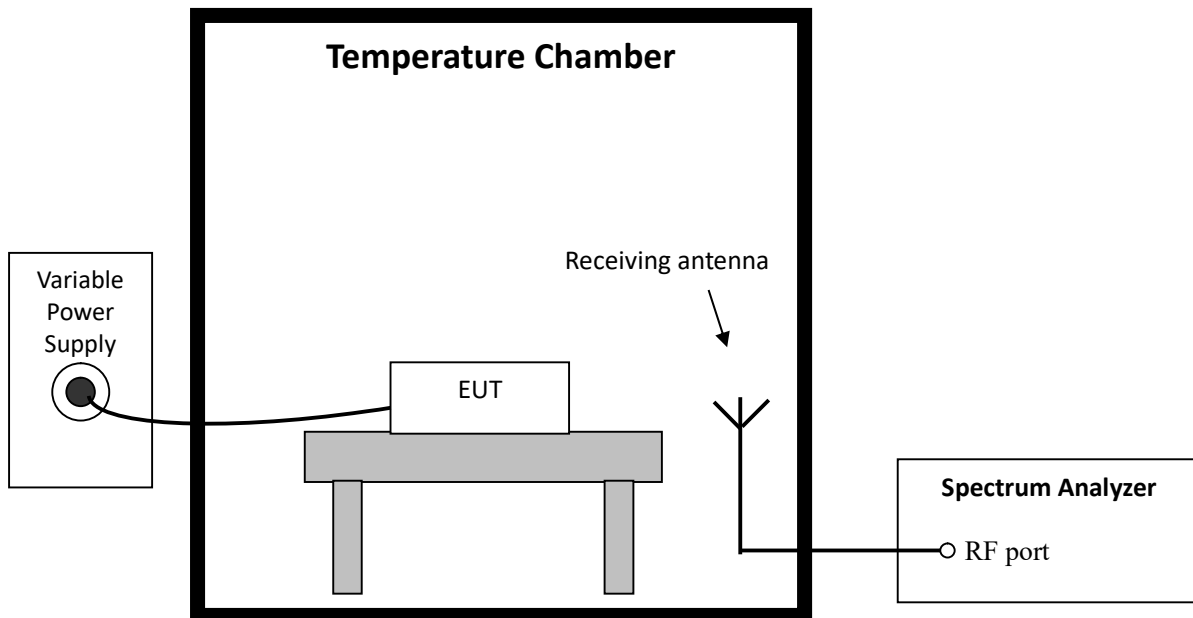
## 6 Frequency Stability (Voltage Variation)

**Test result:** PASS

### 6.1 Test limit

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### 6.2 Test Configuration



### 6.3 Test procedure and test setup

Test Procedure as per ANSI 63.10 clause 6.8.2.

**TEST REPORT**

**6.4 Test protocol**

| Temp<br>(°C) | Voltage<br>(V) | Freq Measured<br>(MHz) | Freq nominal<br>(MHz) | Tolerance (%) | Limit<br>(%) |
|--------------|----------------|------------------------|-----------------------|---------------|--------------|
| 20           | 102            | 13.5605                | 13.56                 | 0.004         | ± 0.01       |
|              | 120            | 13.5608                |                       | 0.006         |              |
|              | 138            | 13.5602                |                       | 0.001         |              |

## TEST REPORT

### 7 Conducted emissions

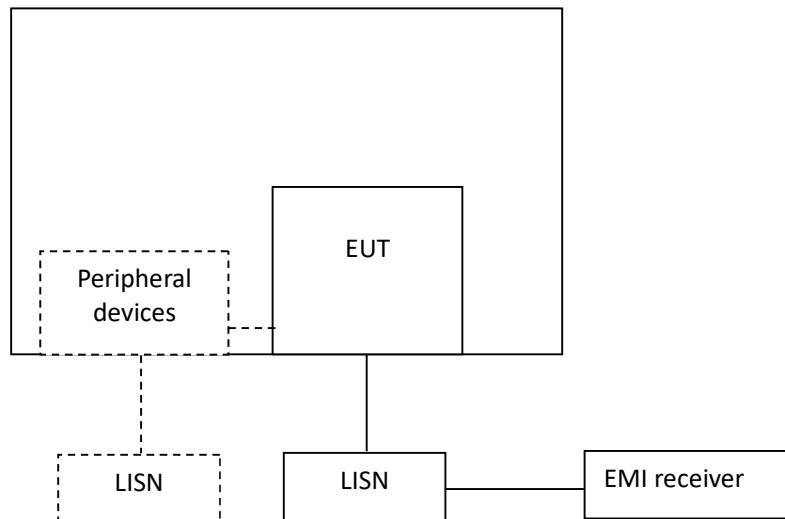
Test result: **PASS**

#### 7.1 Limit

| Frequency of Emission (MHz) | Conducted Emissions Limit (dBuV) |            |
|-----------------------------|----------------------------------|------------|
|                             | QP                               | AV         |
| 0.15-0.5                    | 66 to 56*                        | 56 to 46 * |
| 0.5-5                       | 56                               | 46         |
| 5-30                        | 60                               | 50         |

\* Decreases with the logarithm of the frequency.

#### 7.2 Test Configuration



**TEST REPORT****7.3 Measurement Procedure**

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50  $\Omega$  LISN port (to which the EUT is connected), where permitted, terminated into a 50  $\Omega$  measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50  $\Omega$  measuring port is terminated by a measuring instrument having 50  $\Omega$  input impedance. All other ports are terminated in 50  $\Omega$  loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

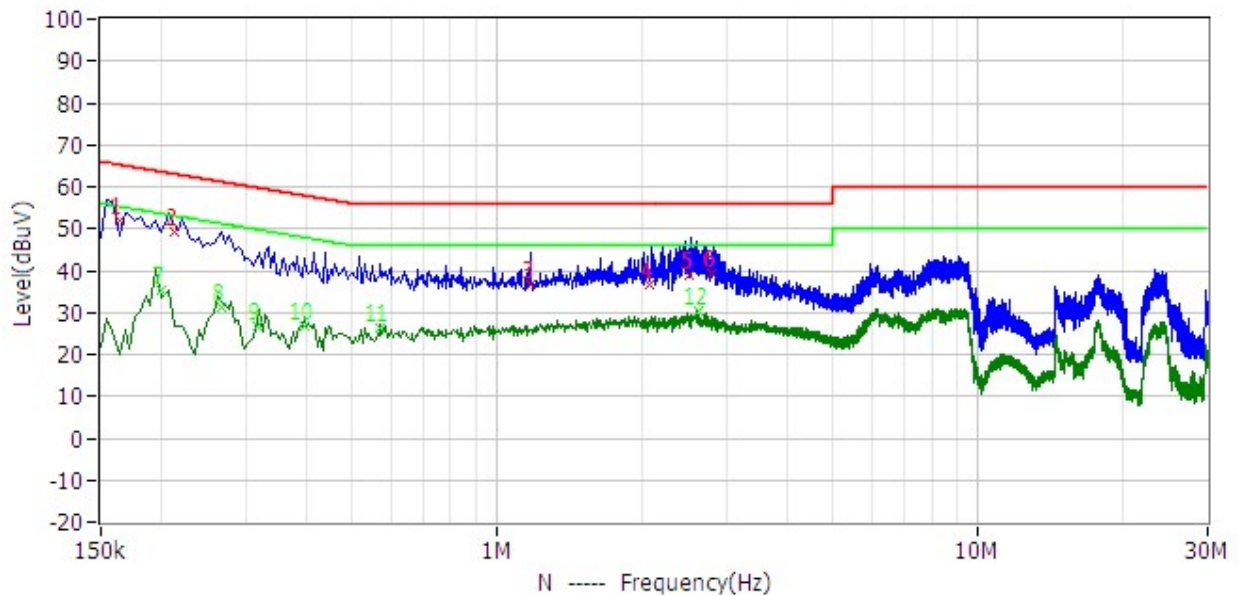
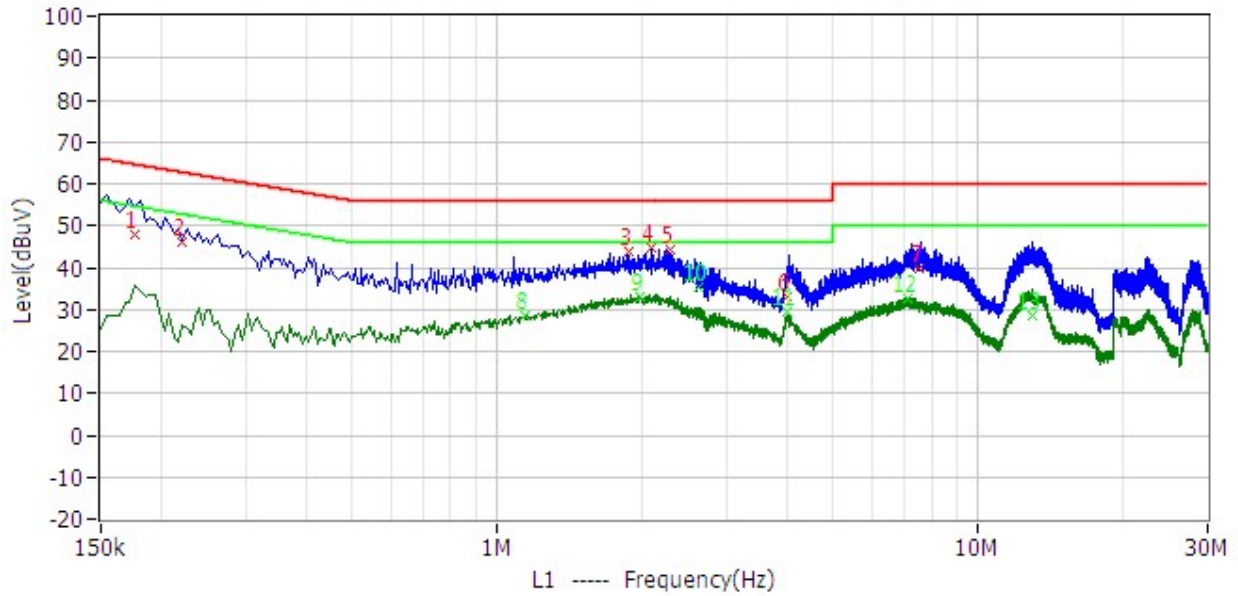
The bandwidth of the test receiver is set at 9 kHz.

## TEST REPORT

### 7.4 Test Results of Conducted Emissions

Test Voltage: 120VAC/60Hz

Test Curve:



## TEST REPORT

| Frequency  | Limit (dBuV) | Level (dBuV) | Delta (dB) | Original Receiver Reading (dBuV) | Correct Factor (dB) | Detector | Phase |
|------------|--------------|--------------|------------|----------------------------------|---------------------|----------|-------|
| 177.000kHz | 64.60        | 47.90        | 16.70      | 37.70                            | 10.20               | QP       | L1    |
| 222.000kHz | 62.70        | 45.90        | 16.80      | 35.70                            | 10.20               | QP       | L1    |
| 1.878MHz   | 56.00        | 43.80        | 12.20      | 33.50                            | 10.30               | QP       | L1    |
| 2.099MHz   | 56.00        | 44.60        | 11.40      | 34.30                            | 10.30               | QP       | L1    |
| 2.297MHz   | 56.00        | 44.40        | 11.60      | 34.10                            | 10.30               | QP       | L1    |
| 4.020MHz   | 56.00        | 33.10        | 22.90      | 22.70                            | 10.40               | QP       | L1    |
| 7.562MHz   | 60.00        | 39.80        | 20.20      | 29.30                            | 10.50               | QP       | L1    |
| 1.145MHz   | 46.00        | 28.40        | 17.60      | 18.10                            | 10.30               | CAV      | L1    |
| 1.977MHz   | 46.00        | 33.20        | 12.80      | 22.90                            | 10.30               | CAV      | L1    |
| 2.630MHz   | 46.00        | 35.30        | 10.70      | 25.00                            | 10.30               | CAV      | L1    |
| 4.007MHz   | 46.00        | 29.60        | 16.40      | 19.20                            | 10.40               | CAV      | L1    |
| 7.152MHz   | 50.00        | 32.60        | 17.40      | 22.10                            | 10.50               | CAV      | L1    |
| 12.935MHz  | 50.00        | 28.70        | 21.30      | 17.90                            | 10.80               | CAV      | L1    |
| 163.500kHz | 65.30        | 52.00        | 13.30      | 41.80                            | 10.20               | QP       | N     |
| 213.000kHz | 63.10        | 49.30        | 13.80      | 39.00                            | 10.30               | QP       | N     |
| 1.176MHz   | 56.00        | 36.60        | 19.40      | 26.30                            | 10.30               | QP       | N     |
| 2.081MHz   | 56.00        | 36.80        | 19.20      | 26.40                            | 10.40               | QP       | N     |
| 2.517MHz   | 56.00        | 38.70        | 17.30      | 28.30                            | 10.40               | QP       | N     |
| 2.796MHz   | 56.00        | 39.40        | 16.60      | 29.00                            | 10.40               | QP       | N     |
| 199.500kHz | 53.60        | 35.20        | 18.40      | 24.90                            | 10.30               | CAV      | N     |
| 267.000kHz | 51.20        | 31.20        | 20.00      | 20.90                            | 10.30               | CAV      | N     |
| 316.500kHz | 49.80        | 26.80        | 23.00      | 16.50                            | 10.30               | CAV      | N     |
| 397.500kHz | 47.90        | 26.90        | 21.00      | 16.60                            | 10.30               | CAV      | N     |
| 573.000kHz | 46.00        | 26.20        | 19.80      | 15.90                            | 10.30               | CAV      | N     |
| 2.621MHz   | 46.00        | 30.30        | 15.70      | 19.90                            | 10.40               | CAV      | N     |

Remark: 1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

2. Level = Original Receiver Reading + Correct Factor

3. Delta = Level - Limit

4. If the PK Level is lower than AV limit, the AV test can be elided.

5. the emissions of 13.56MHz are the product's RF signal.

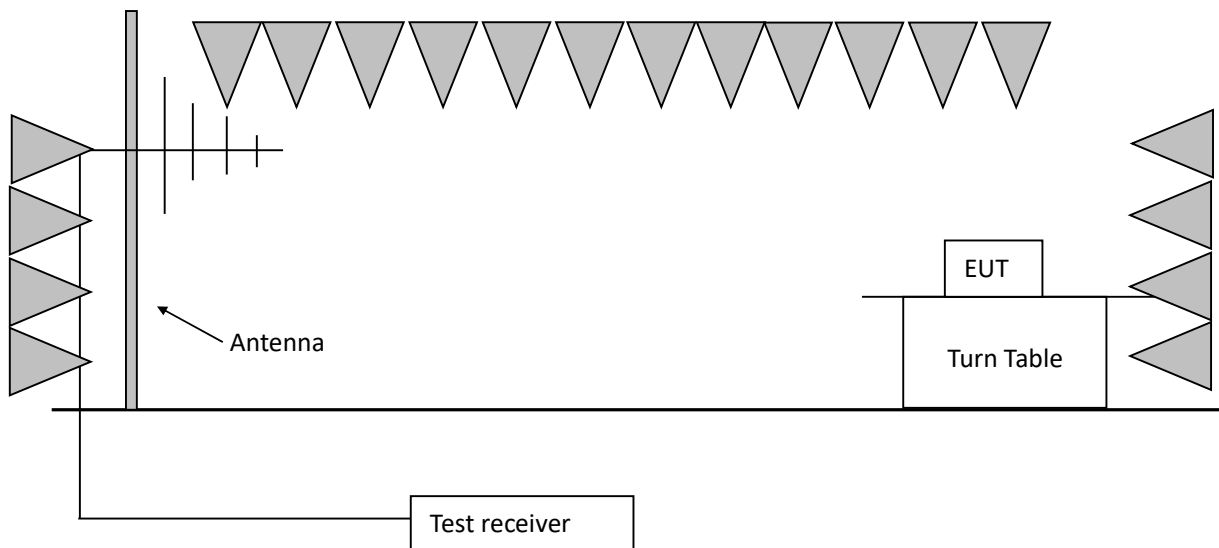
## 8 20dB Bandwidth

Test result: **PASS**

### 8.1 Limit

The 20dB bandwidth should be fallen in the allocated operating frequency range.  
No limit for 99% bandwidth.

### 8.2 Test configuration



## TEST REPORT

### 8.3 Test procedure and test set up

The measurement was applied in a 3m semi-anechoic chamber.

The center of the loop antenna shall be 1 m above the horizontal metal ground plane.

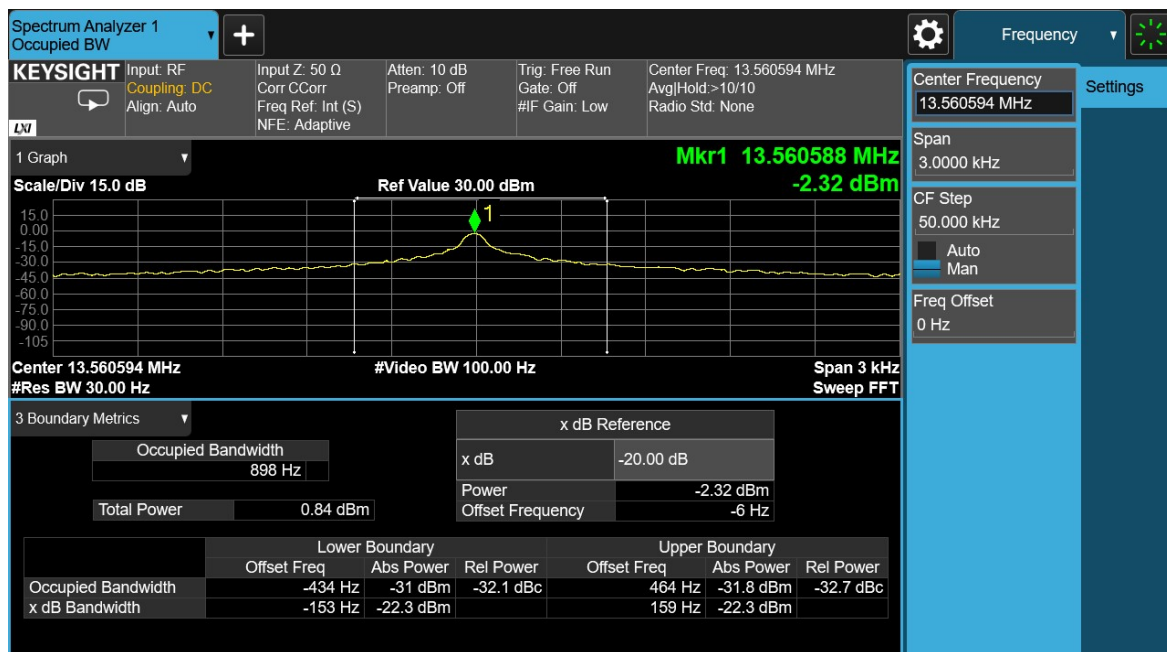
The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set RBW = 1 % to 5 % of the OBW
3. Set VBW  $\geq 3 \cdot$  RBW
4. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
5. Use the 99 % power bandwidth function of the instrument (if available).
6. the 20dB bandwidth is also measured with the same setting.

## TEST REPORT

### 8.4 Test protocol

|                    | Lower point (MHz) | Higher point (MHz) | Bandwidth (kHz) | Allocated bandwidth (MHz) |
|--------------------|-------------------|--------------------|-----------------|---------------------------|
| 20dB Bandwidth     | 13.560441         | 13.560753          | 0.312           | 13.553 ~ 13.567           |
| Occupied bandwidth | 13.560160         | 13.561058          | 0.898           | 13.553 ~ 13.567           |



## 9 Antenna requirement

### 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 shall be considered sufficient to comply with the provisions of this section.

### Result:

EUT uses permanently attached antenna to the intentional radiator, so it can comply with the provisions of this section.

\*\*\*\*\* END \*\*\*\*\*