



**EUROFINS ELECTRICAL TESTING SERVICE (SHENZHEN) CO., LTD.**

# **EMC TEST- REPORT**

**FCC Compliance Test Report for**

**Product name: Mini PC**

**Model name: RZBOX**

**FCC ID: 2AHLZ- RZBOX**

**TEST REPORT NUMBER: EFGX22030020-IE-01-E07**



Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

Phone: +86-0755-82911867  
Fax : +86-0755-82910749  
Page 1 of 15

## CONTENTS

|          |                                |          |
|----------|--------------------------------|----------|
| <b>1</b> | <b>General Information</b>     | <b>3</b> |
| 1.1      | Notes                          | 3        |
| 1.2      | Testing laboratory             | 4        |
| 1.3      | Details of approval holder     | 4        |
| 1.4      | Details of manufacturer        | 4        |
| 1.5      | Application details            | 4        |
| 1.6      | Test item                      | 4        |
| 1.7      | Test standards                 | 4        |
| <b>2</b> | <b>Technical test</b>          | <b>5</b> |
| 2.1      | Summary of test results        | 5        |
| 2.2      | Test environment               | 5        |
| 2.3      | Test mode                      | 5        |
| 2.4      | List of Test equipment         | 6        |
| 2.5      | System Measurement Uncertainty | 6        |
| 2.6      | Test results                   | 7        |
| <b>3</b> | <b>Emission Test</b>           | <b>8</b> |
| 3.1      | Radiated emission              | 8        |
| 3.2      | Conducted Emission             | 13       |

## 1 General Information

### 1.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter "Description of test item" and are not transferable to any other test items.

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd. is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

The test report may only be reproduced or published in full. Reproducing or publishing extracts of the report requires the prior written approval of the Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.

This document is subject to the General Terms and Conditions and the Testing and Certification System of Eurofins Electrical Testing Service (Shenzhen) Co., Ltd. available on request or accessible at [www.eurofins.com](http://www.eurofins.com).

#### Operator:

2022-03-12

Bruce Zheng / Project Engineer



Date

Eurofins-Lab.

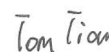
Name / Title

Signature

#### Technical responsibility for area of testing:

2022-03-12

Tom Tian / EMC Supervisor



Date

Eurofins-Lab.

Name / Title

Signature

---

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

## 1.2 Testing laboratory

### **Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.**

1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park, No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

Telephone : +86-0755-82911867

Fax : +86-0755-82910749

## 1.3 Details of approval holder

Name : CHUWI TECHNOLOGY (ShenZhen) CO., LIMITED  
Address : 2 Floor Building 3 LiJinCheng Industrial park the east of Gongye road LongHua, Shenzhen, China  
Telephone : +86 755 29706511  
Fax : N/A

## 1.4 Details of manufacturer

Name : CHUWI TECHNOLOGY (ShenZhen) CO., LIMITED  
Address : 2 Floor Building 3 LiJinCheng Industrial park the east of Gongye road LongHua, Shenzhen, China  
Telephone : +86 755 29706511  
Fax : N/A

## 1.5 Application details

Date of receipt of test item : 2022-03-01  
Date of receipt of test sample : 2022-03-01  
Date of test : 2022-03-01 to 2022-03-11  
Date of issue : 2022-03-12

## 1.6 Test item

Product type : Mini PC  
Model name : RZBOX  
Brand name : CHUWI  
Sample ID : 220301-126-007  
Ratings : 100-240V~, 19V DC 4.74A  
Test voltage : 120V~ 60Hz  
Additional information : ./.

(General disclaimer:

The above sample(s) and sample information was/were submitted and identified on behalf of the applicant. Eurofins assures objectivity and impartiality of the test, and fulfills the obligation of confidentiality for applicant's commercial information and technical documents.)

## 1.7 Test standards

### **FCC 47 CFR Part 15, Subpart B**

---

Test Report No.: EFGX22030020-IE-01-E07

---

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

## 2 Technical test

### 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



**or**

The deviations as specified were ascertained in the course of the tests performed.



### 2.2 Test environment

Temperature : 15 ... 35 °C

Relative humidity content : 30 ... 60%

Air pressure : 86 ... 103kPa

### 2.3 Test mode

TM1: USB Link + LAN Link + HDMI Link + VGA Link + Earphone + Mouse + Keyboard

## 2.4 List of Test equipment

| EQUIPMENT ID | EQUIPMENT NAME           | MODEL NO.         | CAL. DUE DATE |
|--------------|--------------------------|-------------------|---------------|
| 23-2-13-05   | EMI Test Receiver        | ESR3              | 2022-03-15    |
| 23-2-13-06   | LISN                     | NNLK 8127 RC      | 2022-03-15    |
| 23-2-10-16   | Attenuator               | VTSD 9561-F       | 2022-03-16    |
| 23-2-13-01   | EMI Test Receiver        | ESR7              | 2022-03-15    |
| 23-2-13-02   | Signal Analyzer          | N9020B-544        | 2022-03-15    |
| 23-2-12-02   | TRILOG Broadband Antenna | VULB9168          | 2022-04-27    |
| 23-2-12-03   | Horn Antenna             | 3117              | 2022-05-11    |
| 23-2-12-04   | Horn Antenna             | BBHA 9170         | 2022-05-11    |
| 23-2-10-01   | Preamplifier             | BBV9745           | 2022-03-16    |
| 23-2-10-02   | Preamplifier             | TAP01018048       | 2022-03-16    |
| 23-2-10-03   | Preamplifier             | TAP18040048       | 2022-03-22    |
| 23-2-10-14   | Switch and Control Unit  | ERIT-E-JS0806-SF1 | N/A           |
| 23-2-18-005  | Test software            | TS+VER2.1-JS32-CE | N/A           |
| 23-2-18-007  | Test software            | TS+VER2.1-JS32-RE | N/A           |
| 23-2-10-69   | PC                       | M4000E-16         | N/A           |
| 23-2-10-70   | LED Monitor              | D18215FD0         | N/A           |
| 23-2-10-71   | PC                       | M4000E-16         | N/A           |
| 23-2-10-72   | LED Monitor              | V193HQV           | N/A           |

## 2.5 System Measurement Uncertainty

| System Measurement Uncertainty   |  |
|--|--|
| Test Items   | Extended Uncertainty                     |
| Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz                                      | Horizontal: 4.56dB;<br>Vertical: 4.55dB; |
| Uncertainty for Radiated Emission in 3m chamber 1000MHz-6000MHz                                    | Horizontal: 4.22dB;<br>Vertical: 4.21dB; |
| Uncertainty for Conducted Emission 150kHz-30MHz  | 1.96dB                                   |
| Uncertainty for Conducted Emission 150kHz-30MHz (for test using High Voltage Probe TK9420(VT9420)) | 2.18 dB                                  |

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

## 2.6 Test results

☒ 1st test☐ test after modification☐ production test

| Test case          | Subclause                           | Required                            | Test passed                         | Test failed              |
|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Conducted Emission | FCC part 15.107<br>ANSI C63.4: 2014 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emission  | FCC part 15.109<br>ANSI C63.4: 2014 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

---

Test Report No.: EFGX22030020-IE-01-E07

---

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

### 3 Emission Test

#### 3.1 Radiated emission

This clause lays down the general requirements for the measurement of Radiated disturbance produced at the space of apparatus.

##### 3.1.1 Limits

| Frequency range | Limits at 3m           |
|-----------------|------------------------|
| MHz             | dB ( $\mu\text{V/m}$ ) |
| 30 to 88        | 40.0                   |
| 88 to 216       | 43.5                   |
| 216 to 960      | 46.0                   |
| Above 960       | 54.0                   |

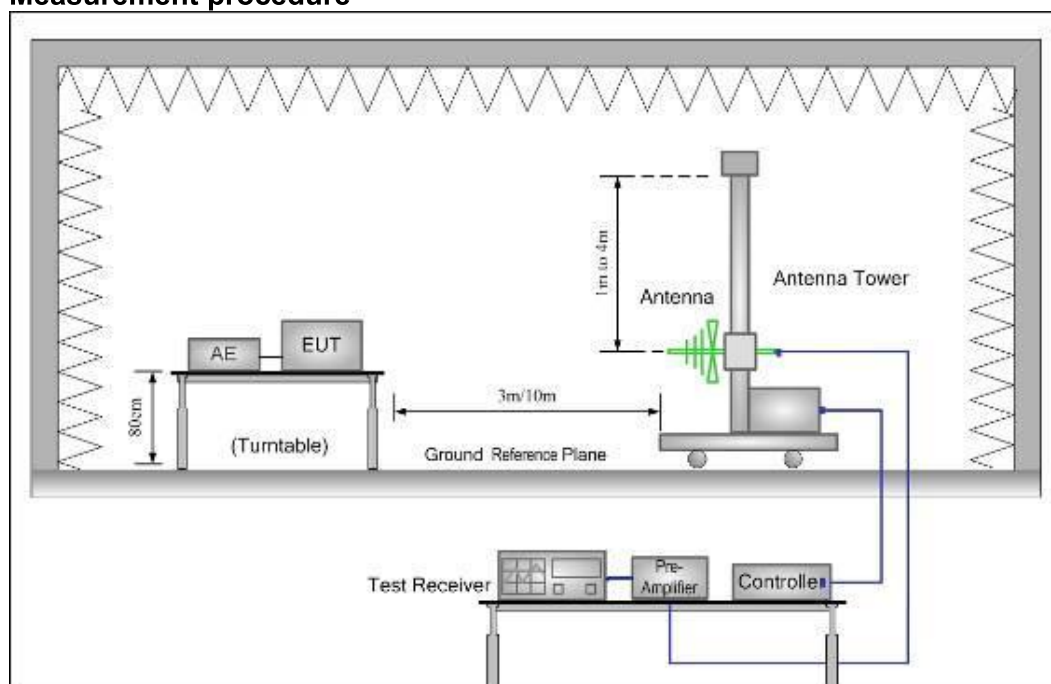
The tighter limit applies at the band edges.

Note 1: Result Level= Read Level + Corrector Factor

Note 2: Below 1GHz: Corrector factor = Antenna Factor + Cable Loss - Amplifier Gain.

Note 3: Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

##### 3.1.2 Measurement procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber. The EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

2. Before get the final emission results with quasi-peak(QP) detector, a pre-scan was performed with the peak(PK) detector to find out the maximum emission data plots of the EUT.

3. The frequencies of maximum emission were determined in the final radiated emissions measurement, the physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. Test was performed at 3 m distance.

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China



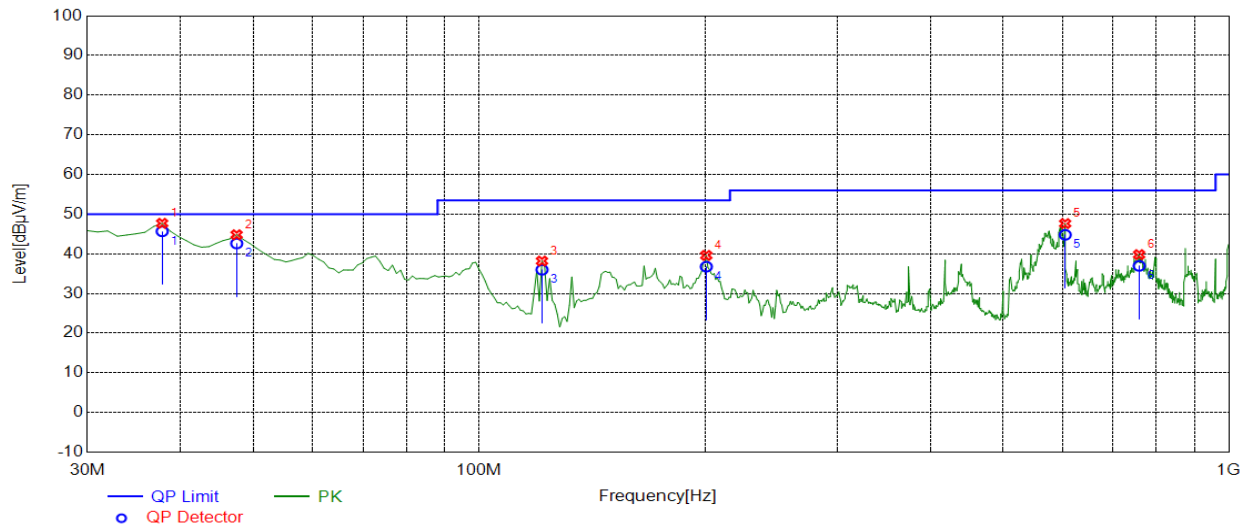
### 3.1.3 Test environment

Temperature : 24.6 °C  
 Relative humidity content : 57.6 %  
 Air pressure : 101.5 kPa

### 3.1.4 Results

**Below 1GHz**

**Vertical Polarity Test Data**

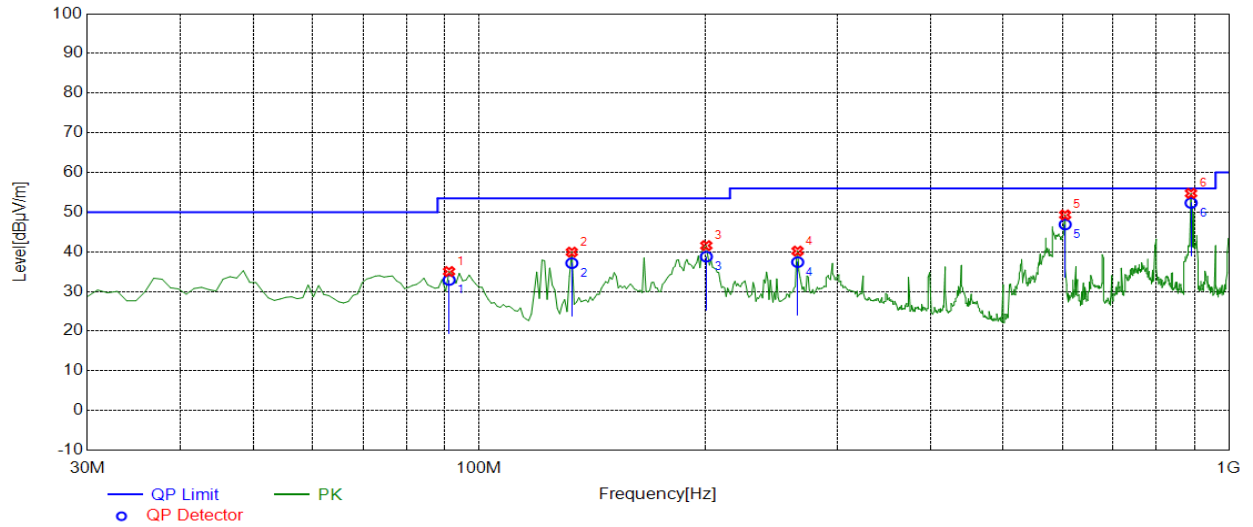


| NO. | Freq. [MHz] | Factor [dB/m] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Polarity | Verdict |
|-----|-------------|---------------|-------------------|-------------------|----------------|----------|---------|
| 1   | 37.7678     | -16.08        | 45.67             | 50.00             | 4.33           | Vertical | PASS    |
| 2   | 47.4775     | -15.43        | 42.61             | 50.00             | 7.39           | Vertical | PASS    |
| 3   | 121.2713    | -18.56        | 35.99             | 53.50             | 17.51          | Vertical | PASS    |
| 4   | 200.8909    | -19.15        | 36.76             | 53.50             | 16.74          | Vertical | PASS    |
| 5   | 604.8148    | -3.30         | 44.79             | 56.00             | 11.21          | Vertical | PASS    |
| 6   | 759.1992    | -4.47         | 36.97             | 56.00             | 19.03          | Vertical | PASS    |

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
 1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
 No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

### Horizontal Polarity Test Data



| NO. | Freq. [MHz] | Factor [dB/m] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Polarity   | Verdict |
|-----|-------------|---------------|-------------------|-------------------|----------------|------------|---------|
| 1   | 91.1712     | -21.19        | 32.90             | 53.50             | 20.60          | Horizontal | PASS    |
| 2   | 132.9229    | -17.06        | 37.15             | 53.50             | 16.35          | Horizontal | PASS    |
| 3   | 200.8909    | -19.15        | 38.79             | 53.50             | 14.71          | Horizontal | PASS    |
| 4   | 265.9459    | -17.33        | 37.41             | 56.00             | 18.59          | Horizontal | PASS    |
| 5   | 604.8148    | -3.30         | 46.89             | 56.00             | 9.11           | Horizontal | PASS    |
| 6   | 890.2803    | -4.28         | 52.32             | 56.00             | 3.68           | Horizontal | PASS    |

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
 1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
 No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

**Above 1GHz**
**Vertical Polarity Test Data**

| Freq.<br>[MHz] | Factor<br>[dB/m] | PK Level<br>[dBμV/m] | PK Limit<br>[dBμV/m] | PK Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity |
|----------------|------------------|----------------------|----------------------|-------------------|----------------|--------------|----------|
| 1598.5986      | -25.97           | 40.88                | 74.00                | 33.12             | 100            | 68           | Vertical |
| 3692.9429      | -16.42           | 49.59                | 74.00                | 24.41             | 100            | 212          | Vertical |
| 4590.8408      | -15.25           | 54.88                | 74.00                | 19.12             | 100            | 136          | Vertical |
| 7704.2042      | -10.61           | 51.90                | 74.00                | 22.10             | 100            | 287          | Vertical |
| 11081.0811     | -6.67            | 55.46                | 74.00                | 18.54             | 100            | 190          | Vertical |
| 12613.3634     | -4.29            | 54.71                | 74.00                | 19.29             | 100            | 287          | Vertical |

| Freq.<br>[MHz] | Factor<br>[dB/m] | AV Value<br>[dBμV/m] | AV Limit<br>[dBμV/m] | AV Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity |
|----------------|------------------|----------------------|----------------------|-------------------|----------------|--------------|----------|
| 1598.5986      | -25.98           | 26.87                | 54.00                | 27.13             | 100            | 68           | Vertical |
| 3692.9429      | -16.42           | 34.23                | 54.00                | 19.77             | 100            | 212          | Vertical |
| 4590.8408      | -15.24           | 35.29                | 54.00                | 18.71             | 100            | 136          | Vertical |
| 7704.2042      | -10.62           | 38.83                | 54.00                | 15.17             | 100            | 287          | Vertical |
| 11081.0811     | -6.67            | 41.43                | 54.00                | 12.57             | 100            | 190          | Vertical |
| 12613.3634     | -4.29            | 42.44                | 54.00                | 11.56             | 100            | 287          | Vertical |

---

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

### Horizontal Polarity Test Data

| Freq.<br>[MHz] | Factor<br>[dB/m] | PK Level<br>[dBμV/m] | PK Limit<br>[dBμV/m] | PK Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity   |
|----------------|------------------|----------------------|----------------------|-------------------|----------------|--------------|------------|
| 1340.3403      | -26.59           | 40.68                | 74.00                | 33.32             | 100            | 168          | Horizontal |
| 4473.7237      | -15.20           | 49.92                | 74.00                | 24.08             | 100            | 337          | Horizontal |
| 5918.1682      | -13.04           | 50.74                | 74.00                | 23.26             | 100            | 160          | Horizontal |
| 7704.2042      | -10.61           | 52.70                | 74.00                | 21.30             | 100            | 290          | Horizontal |
| 10495.4955     | -7.54            | 54.33                | 74.00                | 19.67             | 100            | 327          | Horizontal |
| 11832.5826     | -5.21            | 55.14                | 74.00                | 18.86             | 100            | 306          | Horizontal |

| Freq.<br>[MHz] | Factor<br>[dB/m] | AV Value<br>[dBμV/m] | AV Limit<br>[dBμV/m] | AV Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity   |
|----------------|------------------|----------------------|----------------------|-------------------|----------------|--------------|------------|
| 1340.3403      | -26.59           | 26.62                | 54.00                | 27.38             | 100            | 168          | Horizontal |
| 4473.7237      | -15.20           | 35.41                | 54.00                | 18.59             | 100            | 337          | Horizontal |
| 5918.1682      | -13.04           | 36.62                | 54.00                | 17.38             | 100            | 160          | Horizontal |
| 7704.2042      | -10.62           | 38.85                | 54.00                | 15.15             | 100            | 290          | Horizontal |
| 10495.4955     | -7.54            | 40.57                | 54.00                | 13.43             | 100            | 327          | Horizontal |
| 11832.5826     | -5.21            | 42.05                | 54.00                | 11.95             | 100            | 306          | Horizontal |

---

Test Report No.: EFGX22030020-IE-01-E07

---

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

## 3.2 Conducted Emission

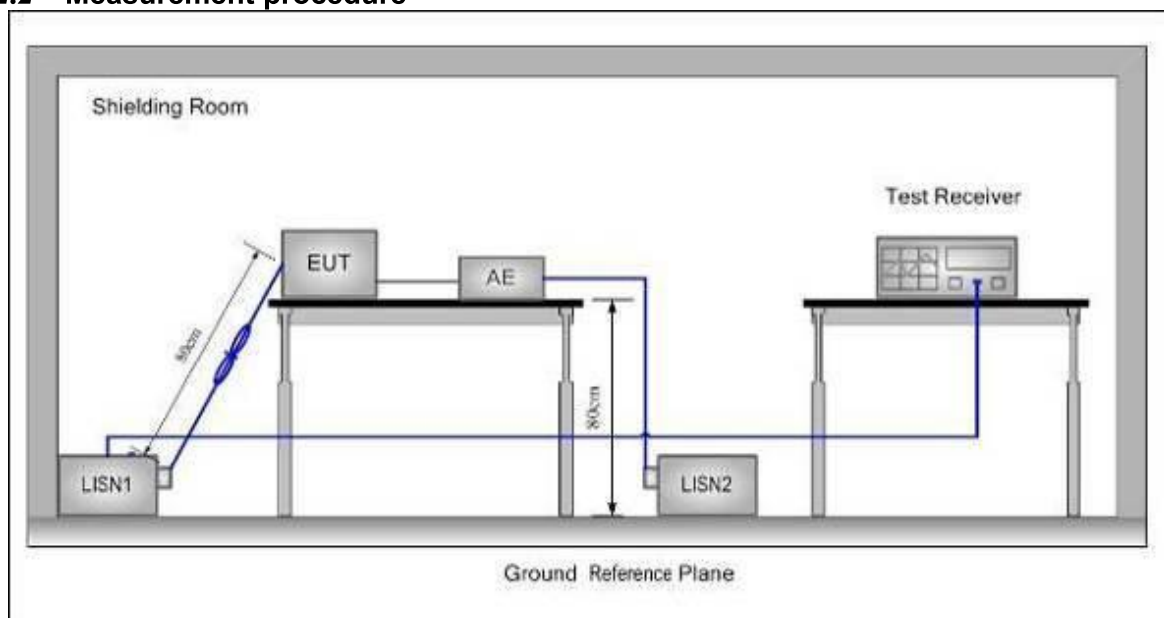
This clause lays down the general requirements for the measurement of disturbance voltage produced at the terminals of apparatus.

### 3.2.1 Limits

| Frequency range<br>MHz | At mains terminals<br>dB (μV) |          |
|------------------------|-------------------------------|----------|
|                        | Quasi-peak                    | Average  |
| 0.15 to 0.50           | 66 to 56                      | 56 to 46 |
| 0.50 to 5              | 56                            | 46       |
| 5 to 30                | 60                            | 50       |

Note 1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 30 MHz.  
Note 2: The lower limit is applicable at the transition frequency.

### 3.2.2 Measurement procedure



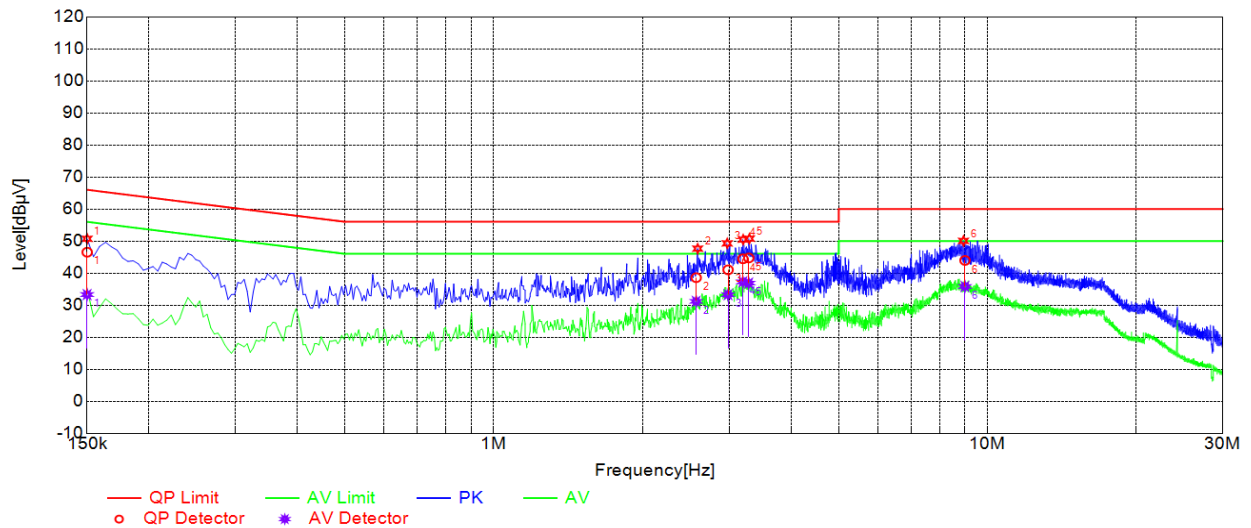
1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $(50 \mu H + 5 \Omega) \parallel 50 \Omega$  linear impedance. The power cables of all other units of the EUT was connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

### 3.2.3 Test environment

Temperature : 25.2 °C  
 Relative humidity content : 57.1 %  
 Air pressure : 101.5 kPa

### 3.2.4 Results -Measurement Data

Live line test data

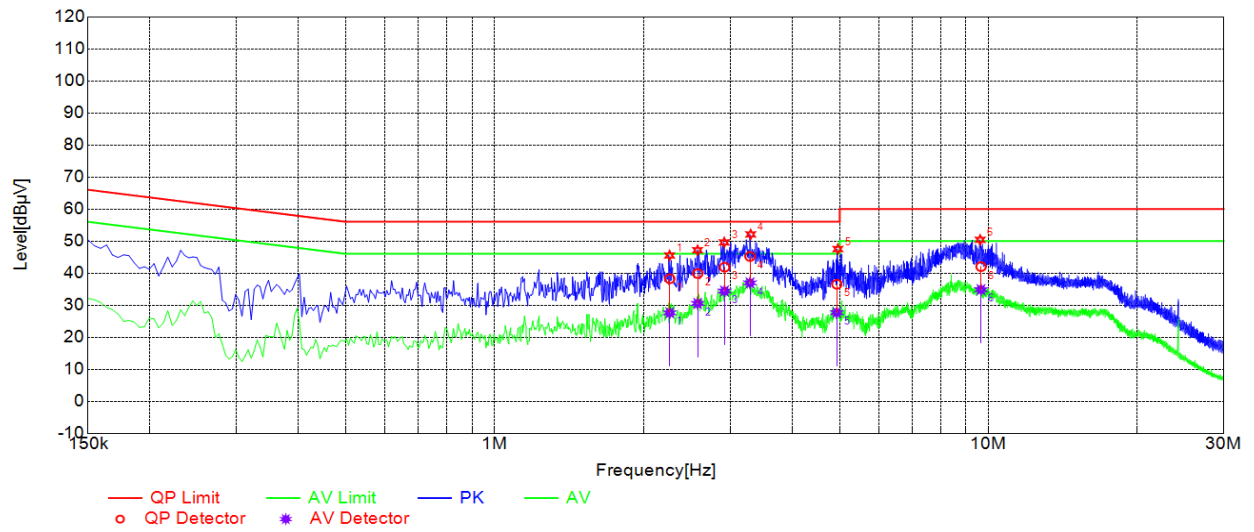


| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type | Verdict |
|-----|-------------|-------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|------|---------|
| 1   | 0.1500      | 10.25       | 46.52           | 66.00           | 19.48          | 33.29           | 56.00           | 22.71          | L    | PASS    |
| 2   | 2.5707      | 10.37       | 38.57           | 56.00           | 17.43          | 31.18           | 46.00           | 14.82          | L    | PASS    |
| 3   | 2.9831      | 10.37       | 41.02           | 56.00           | 14.98          | 33.28           | 46.00           | 12.72          | L    | PASS    |
| 4   | 3.1964      | 10.37       | 44.47           | 56.00           | 11.53          | 37.26           | 46.00           | 8.74           | L    | PASS    |
| 5   | 3.2851      | 10.37       | 44.74           | 56.00           | 11.26          | 36.88           | 46.00           | 9.12           | L    | PASS    |
| 6   | 9.0097      | 10.50       | 43.95           | 60.00           | 16.05          | 35.83           | 50.00           | 14.17          | L    | PASS    |

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
 1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
 No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China

### Neutral line test data



| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type | Verdict |
|-----|-------------|-------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|------|---------|
| 1   | 2.2621      | 10.30       | 38.25           | 56.00           | 17.75          | 27.60           | 46.00           | 18.40          | N    | PASS    |
| 2   | 2.5771      | 10.32       | 39.86           | 56.00           | 16.14          | 30.53           | 46.00           | 15.47          | N    | PASS    |
| 3   | 2.9207      | 10.32       | 41.85           | 56.00           | 14.15          | 34.41           | 46.00           | 11.59          | N    | PASS    |
| 4   | 3.2897      | 10.32       | 45.19           | 56.00           | 10.81          | 36.96           | 46.00           | 9.04           | N    | PASS    |
| 5   | 4.9323      | 10.36       | 36.52           | 56.00           | 19.48          | 27.67           | 46.00           | 18.33          | N    | PASS    |
| 6   | 9.6638      | 10.47       | 42.03           | 60.00           | 17.97          | 34.83           | 50.00           | 15.17          | N    | PASS    |

---End of Report---

Test Report No.: EFGX22030020-IE-01-E07

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.  
1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park,  
No. 83 Dabao Road, Bao'an District, Shenzhen, P. R. China