



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Reference No.**..... : WTF21F07067062E  
**Applicant**..... : HEY HEY TECHNOLOGY LIMITED  
**Address**..... : UNIT 1,12/F BLK B FUK KEUNG IND BLDG 66 TONG MI RD MONG KOK KL HONGKONG  
**Manufacturer** ..... : Jiangmen Jinling Ventilating Fan Manufacture Ltd.  
**Address**..... : No.1 Jinling Road,Binjiang Avenue,Jiangmen City, Guangdong China  
**Product Name**..... : Ventilation Fan  
**Model No.**..... : HH-101,HH-102  
**Standards** ..... : EN 55014-1:2017+A11:2020  
EN 55014-2:2015  
EN IEC 61000-3-2:2019  
EN 61000-3-3:2013+A1:2019  
**Date of Receipt sample** .... : 2021-07-07  
**Date of Test** ..... : 2021-07-14 to 2021-07-15  
**Date of Issue**..... : 2021-07-29  
**Test Report Form No.**..... : WEH-55014A-01B  
**Test Result**..... : Pass

## Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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## 1 Test Summary

| EMISSION                                            |                           |                      |         |
|-----------------------------------------------------|---------------------------|----------------------|---------|
| Test Item                                           | Test Standard             | Class / Severity     | Result  |
| Mains Terminal Disturbance Voltage, 150kHz to 30MHz | EN 55014-1:2017+A11:2020  | Clause 4.3.3.6       | Pass    |
| Disturbance Power, 30MHz to 300MHz                  | EN 55014-1:2017+A11:2020  | Clause 4.3.4.4       | N/A     |
| Discontinuous Disturbance (Click)                   | EN 55014-1:2017+A11:2020  | Clause 4.4.2         | N/A**   |
| Radiated Emission, 30MHz to 1000MHz                 | EN 55014-1:2017+A11:2020  | Clause 4.3.4.5       | Pass    |
| Harmonic Current Emission                           | EN IEC 61000-3-2:2019     | Class A              | Pass*** |
| Voltage Fluctuation and Flicker                     | EN 61000-3-3:2013+A1:2019 | Clause 5             | Pass    |
| IMMUNITY (EN 55014-2:2015)                          |                           |                      |         |
| Test Item                                           | Test Method               | Performance Criteria | Result  |
| Immunity Test                                       | EN 55014-2:2015           | ---                  | Pass*   |

### Remark:

|      |                                                                                                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pass | Test item meets the requirement                                                                                                                                                                                                                                                                                                                                   |
| Fail | Test item does not meet the requirement                                                                                                                                                                                                                                                                                                                           |
| N/A  | Test case does not apply to the test object                                                                                                                                                                                                                                                                                                                       |
| *    | According to EN 55014-2, the EUT contains no electronic control circuit, it is a category I appliance, so it is deemed to fulfil the relevant immunity requirements without testing.                                                                                                                                                                              |
| **   | According to the electrical characteristics and usage of the equipment, the EUT does not produce discontinuous radio interference voltages on AC Mains. Therefore this test item has been skipped.                                                                                                                                                                |
| ***  | According to EN61000-3-2 which states:" For the following categories of equipment limits are not specified in this edition of the standard. Equipment with a rated power of 75W or less, other than lighting equipment" Therefore there is no need for harmonics test to be performed on this product and deemed to fulfil emission requirements without testing. |



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### 3 General Information

#### 3.1 General Description of E.U.T.

|                           |   |                                                                                                                                                                            |
|---------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Name</b> ..... | : | Ventilation Fan                                                                                                                                                            |
| <b>Model No.</b> .....    | : | HH-101,HH-102                                                                                                                                                              |
| <b>Remark</b> .....       | : | All models have the same circuit diagram, only their rated power is different. HH-102 is the biggest power model. Therefore the full tests were performed on model HH-102. |

#### 3.2 Details of E.U.T.

|                             |   |                                          |
|-----------------------------|---|------------------------------------------|
| <b>Technical Data</b> ..... | : | AC 220-240V, 50Hz, HH-101:24W,HH-102:28W |
|-----------------------------|---|------------------------------------------|

#### 3.3 Description of Support Units

The EUT has been tested as an independent unit. HH-102 is the test sample. The DV,RE test were performed In the condition of AC240V/50Hz input. The Flicker test was performed In the condition of AC 230V/50Hz input.

#### 3.4 Standards Applicable for Testing

The tests were performed according to following standards:

|                               |                                                                                                                                                                                                                                                                   |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 55014-1:2017+A11:2020      | Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 1:Emission                                                                                                                                         |
| EN 55014-2:2015               | Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 2: Immunity Product Family Standard.                                                                                                               |
| EN 61000-3-2:2019             | Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).                                                                                                     |
| EN 61000-3-3:2013<br>+A1:2019 | Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection. |



### 3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science and Economic Development Canada (ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number: 21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

### 3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items: ---

Lab information: ---

### 3.7 Abnormalities from Standard Conditions

None.



#### 4 Equipment Used during Test

| Mains Terminal Disturbance Voltage 1#(Conducted Emission) |                                        |              |             |             |                    |
|-----------------------------------------------------------|----------------------------------------|--------------|-------------|-------------|--------------------|
| Item                                                      | Equipment                              | Manufacturer | Model No.   | Serial No.  | Calibration Status |
| 1.                                                        | EMI Test Receiver                      | R&S          | ESR3        | 102423      | Valid              |
| 2.                                                        | LISN                                   | R&S          | ENV216      | 101343      | Valid              |
| 3.                                                        | Cable                                  | HUBER+SUHNER | CBL2-NN-6M  | 223NN624    | Valid              |
| 4.                                                        | Switch                                 | CD           | RSU-A4 18G  | RSUA4008    | Valid              |
| Mains Terminal Disturbance Voltage 2#(Conducted Emission) |                                        |              |             |             |                    |
| Item                                                      | Equipment                              | Manufacturer | Model No.   | Serial No.  | Calibration Status |
| 1.                                                        | EMI Test Receiver                      | R&S          | ESCI        | 101178      | Valid              |
| 2.                                                        | LISN                                   | R&S          | ENV216      | 101215      | Valid              |
| 3.                                                        | Cable                                  | HUBER+SUHNER | CBL2-NN-6M  | 6102701     | Valid              |
| 4.                                                        | Switch                                 | ESE          | RSU/M2      | —           | Valid              |
| Radiated Emission                                         |                                        |              |             |             |                    |
| Item                                                      | Equipment                              | Manufacturer | Model No.   | Serial No.  | Calibration Status |
| 1.                                                        | EMI Test Receiver                      | R&S          | ESR7        | 101566      | Valid              |
| 2.                                                        | Active Loop Antenna                    | SCHWARZBECK  | FMZB1519B   | 00004       | Valid              |
| 3.                                                        | Trilog Broadband Antenna               | SCHWARZBECK  | VULB 9162   | 9162-117    | Valid              |
| 4.                                                        | Broad-band Horn Antenna                | SCHWARZBECK  | BBHA 9120 D | 01561       | Valid              |
| 5.                                                        | Preamplifier                           | Lunar E M    | LNA1G18-40  | 20160501002 | Valid              |
| Harmonics and Flicker Measuring System                    |                                        |              |             |             |                    |
| Item                                                      | Equipment                              | Manufacturer | Model No.   | Serial No.  | Calibration Status |
| 1.                                                        | Harmonics and Flicker Measuring System | TESEQ        | CCN1000-1   | 1133A01498  | Valid              |

##### 4.1 Software List

| Description                                 | Manufacturer | Model   | Version   |
|---------------------------------------------|--------------|---------|-----------|
| EMI Test Software<br>(Conducted Emission1#) | FARATRONIC   | EZ-EMC  | EMEC-3A1  |
| EMI Test Software<br>(Conducted Emission2#) | FARATRONIC   | EZ-EMC  | CON-03A1  |
| EMI Test Software<br>(Radiated Emission)    | FARATRONIC   | EZ-EMC  | RA-03A1-1 |
| Harmonics and Flicker Test<br>Software      | TESEQ        | Win2100 | V4        |
| Click Test Software                         | SCHAFFNER    | DIS9966 | V2.5      |



## 4.2 Measurement Uncertainty

| Test Item          | Frequency Range | Uncertainty        | Note |
|--------------------|-----------------|--------------------|------|
| Conducted Emission | 150kHz~30MHz    | $\pm 2.7\text{dB}$ | (1)  |
| Radiated Emission  | 30MHz~1GHz      | $\pm 4.1\text{dB}$ | (1)  |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 4.3 Special Accessories and Auxiliary Equipment

| Item | Equipment | Technical Data | Manufacturer | Model No. | Serial No. |
|------|-----------|----------------|--------------|-----------|------------|
| 1.   | /         | /              | /            | /         | /          |

## 4.4 Decision Rule

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

**If  $U_{\text{LAB}}$  is less than or equal to  $U_{\text{cispr}}$ , then**

- Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

**If  $U_{\text{LAB}}$  is greater than  $U_{\text{cispr}}$ , then**

- Compliance is deemed to occur if no measured disturbance level, increased by  $(U_{\text{LAB}} - U_{\text{cispr}})$ , exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{LAB}} - U_{\text{cispr}})$ , exceeds the disturbance limit.



## 5 Emission Test Results

### 5.1 Mains Terminals Disturbance Voltage, 150 kHz to 30MHz

|                       |                         |
|-----------------------|-------------------------|
| Test Requirement..... | : EN 55014-1            |
| Test Method.....      | : EN 55014-1            |
| Test Result.....      | : Pass                  |
| Frequency Range.....  | : 150kHz to 30MHz       |
| Class/Severity.....   | : Table 5 of EN 55014-1 |

#### 5.1.1 E.U.T. Operation

##### Operating Environment:

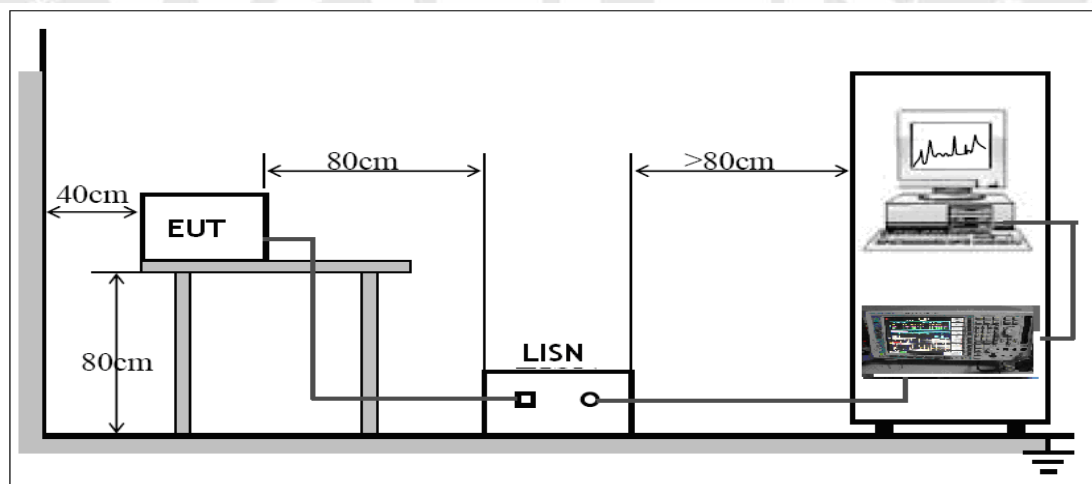
|                            |            |
|----------------------------|------------|
| Temperature .....          | : 26°C     |
| Humidity.....              | : 60%RH    |
| Atmospheric Pressure ..... | : 101.2kPa |

##### EUT Operation:

|                     |                |
|---------------------|----------------|
| Input Voltage ..... | : AC 240V/50Hz |
| Operating Mode..... | : Working mode |

#### 5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the EN 55014-1.



#### 5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.



### 5.1.4 Corrected Amplitude & Margin Calculation

The Corrected factor is calculated by adding LISN VDF(Voltage Division Facotr), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Measurement} = \text{Reading Level} + \text{Correct Factor}$$

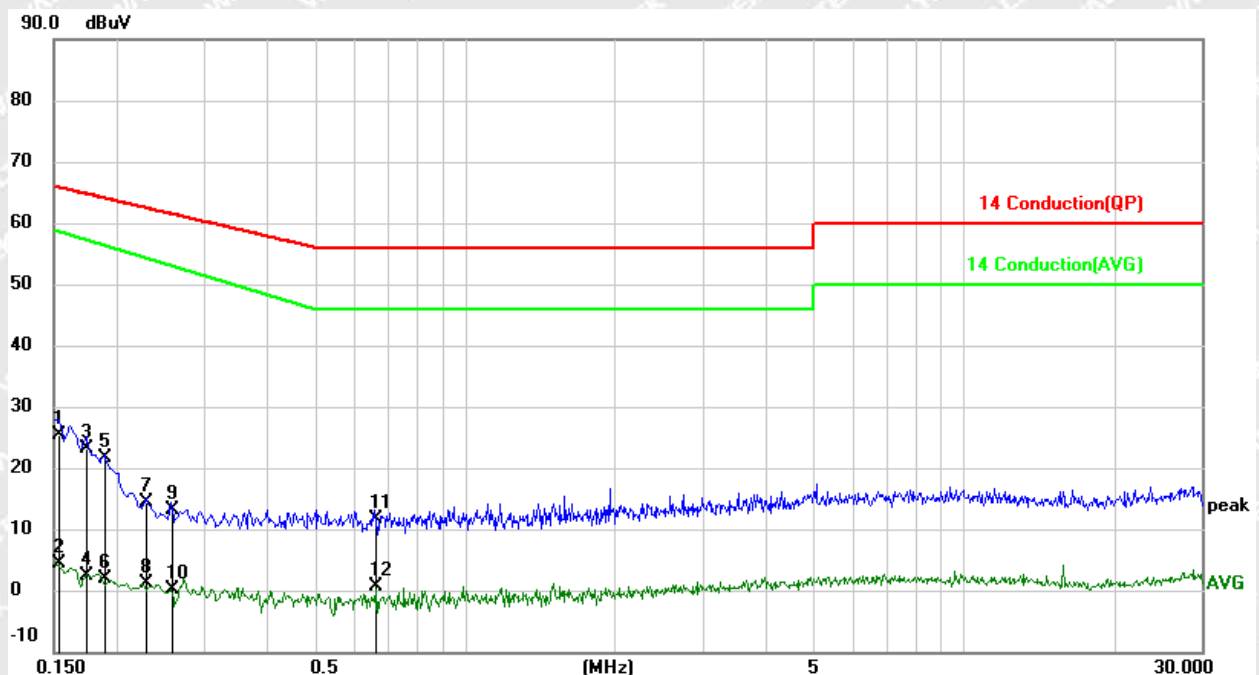
$$\text{Correct Facotor} = \text{LISN VDF} + \text{Cable Loss}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Measurement}$$

### 5.1.5 Mains Terminals Disturbance Voltage Test Data

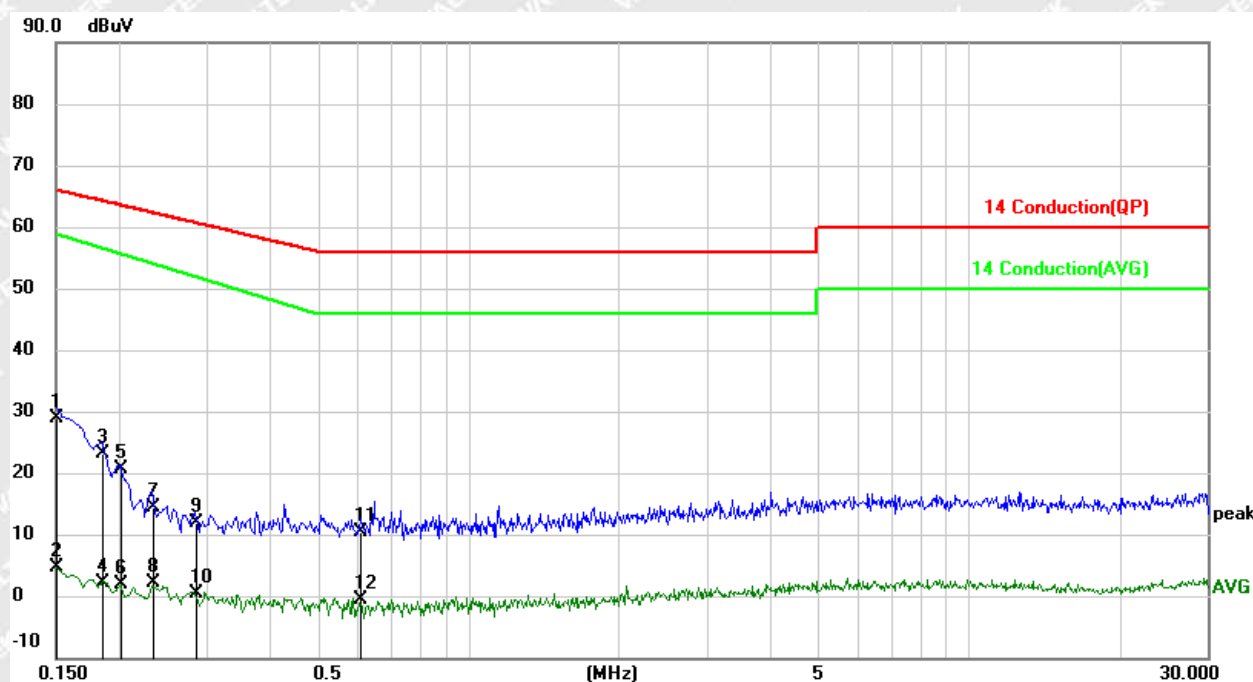
Live Line :



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   | *   | 0.1539       | 15.66                    | 9.62                    | 25.28                    | 65.79         | -40.51     | QP       |         |
| 2   |     | 0.1539       | -5.33                    | 9.62                    | 4.29                     | 58.86         | -54.57     | AVG      |         |
| 3   |     | 0.1740       | 13.57                    | 9.62                    | 23.19                    | 64.77         | -41.58     | QP       |         |
| 4   |     | 0.1740       | -7.16                    | 9.62                    | 2.46                     | 58.11         | -55.65     | AVG      |         |
| 5   |     | 0.1900       | 11.96                    | 9.63                    | 21.59                    | 64.04         | -42.45     | QP       |         |
| 6   |     | 0.1900       | -7.75                    | 9.63                    | 1.88                     | 57.51         | -55.63     | AVG      |         |
| 7   |     | 0.2300       | 4.62                     | 9.64                    | 14.26                    | 62.45         | -48.19     | QP       |         |
| 8   |     | 0.2300       | -8.62                    | 9.64                    | 1.02                     | 56.03         | -55.01     | AVG      |         |
| 9   |     | 0.2580       | 3.55                     | 9.64                    | 13.19                    | 61.50         | -48.31     | QP       |         |
| 10  |     | 0.2580       | -9.62                    | 9.64                    | 0.02                     | 54.99         | -54.97     | AVG      |         |
| 11  |     | 0.6580       | 1.85                     | 9.66                    | 11.51                    | 56.00         | -44.49     | QP       |         |
| 12  |     | 0.6580       | -9.14                    | 9.66                    | 0.52                     | 46.00         | -45.48     | AVG      |         |



### Neutral Line :



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   | *   | 0.1500       | 19.28                    | 9.61                    | 28.89                    | 66.00         | -37.11     | QP       |         |
| 2   |     | 0.1500       | -5.03                    | 9.61                    | 4.58                     | 59.00         | -54.42     | AVG      |         |
| 3   |     | 0.1860       | 13.46                    | 9.62                    | 23.08                    | 64.21         | -41.13     | QP       |         |
| 4   |     | 0.1860       | -7.40                    | 9.62                    | 2.22                     | 57.66         | -55.44     | AVG      |         |
| 5   |     | 0.2020       | 10.96                    | 9.63                    | 20.59                    | 63.53         | -42.94     | QP       |         |
| 6   |     | 0.2020       | -7.78                    | 9.63                    | 1.85                     | 57.07         | -55.22     | AVG      |         |
| 7   |     | 0.2340       | 4.63                     | 9.63                    | 14.26                    | 62.31         | -48.05     | QP       |         |
| 8   |     | 0.2340       | -7.62                    | 9.63                    | 2.01                     | 55.88         | -53.87     | AVG      |         |
| 9   |     | 0.2860       | 2.18                     | 9.64                    | 11.82                    | 60.64         | -48.82     | QP       |         |
| 10  |     | 0.2860       | -9.37                    | 9.64                    | 0.27                     | 53.95         | -53.68     | AVG      |         |
| 11  |     | 0.6100       | 0.76                     | 9.67                    | 10.43                    | 56.00         | -45.57     | QP       |         |
| 12  |     | 0.6100       | -10.25                   | 9.67                    | -0.58                    | 46.00         | -46.58     | AVG      |         |



## 5.2 Radiated Emission, 30MHz to 1GHz

Test Requirement ..... : EN 55014-1 Clause 4.3.4.5

Test Method ..... : EN 55014-1 Clause 5.3.4

Test Result ..... : Pass

Frequency Range ..... : 30MHz to 1GHz

Class/Severity ..... : Table 9 of EN55014-1

### 5.2.1 E.U.T. Operation

#### Operating Environment:

Temperature..... : 23.8°C

Humidity ..... : 49.5%RH

Atmospheric Pressure..... : 101.1kPa

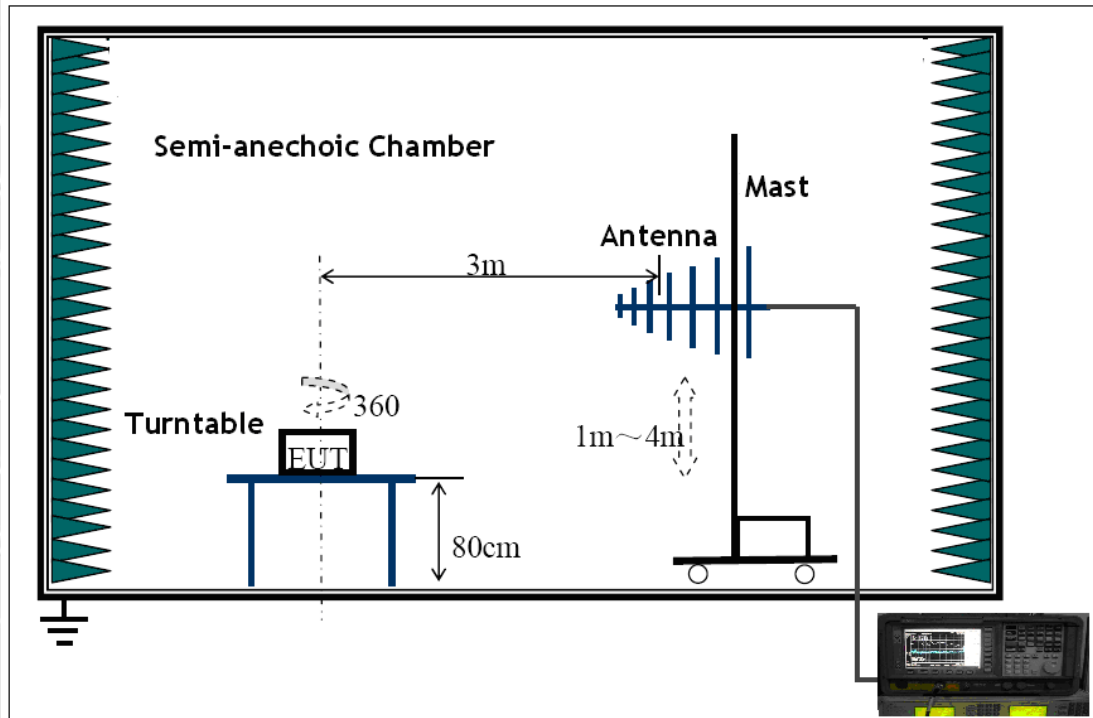
#### EUT Operation:

Input Voltage..... : AC 240V/50Hz

Operating Mode ..... : Working mode

### 5.2.2 Block Diagram of Test Setup

The Radiated Emission test was performed in the 3m Semi- Anechoic Chamber test site and accordance with CISPR16-2-3.



### 5.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for Horizontal & Vertical polarisation. Quasi-peak measurements were performed if peak emissions were within 6dB of the limit line.



### 5.2.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Corr. Factor}$$

$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

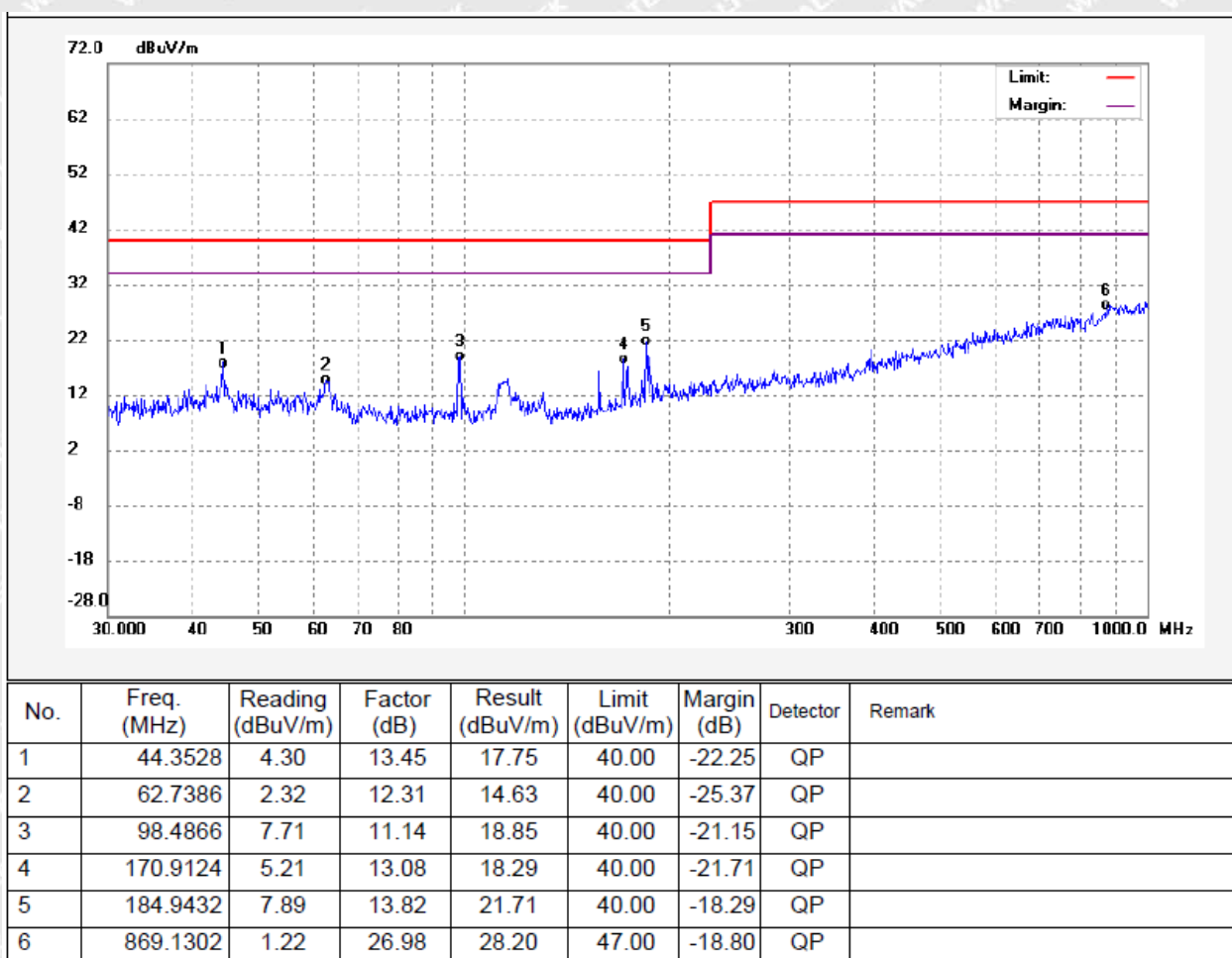
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit.

The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

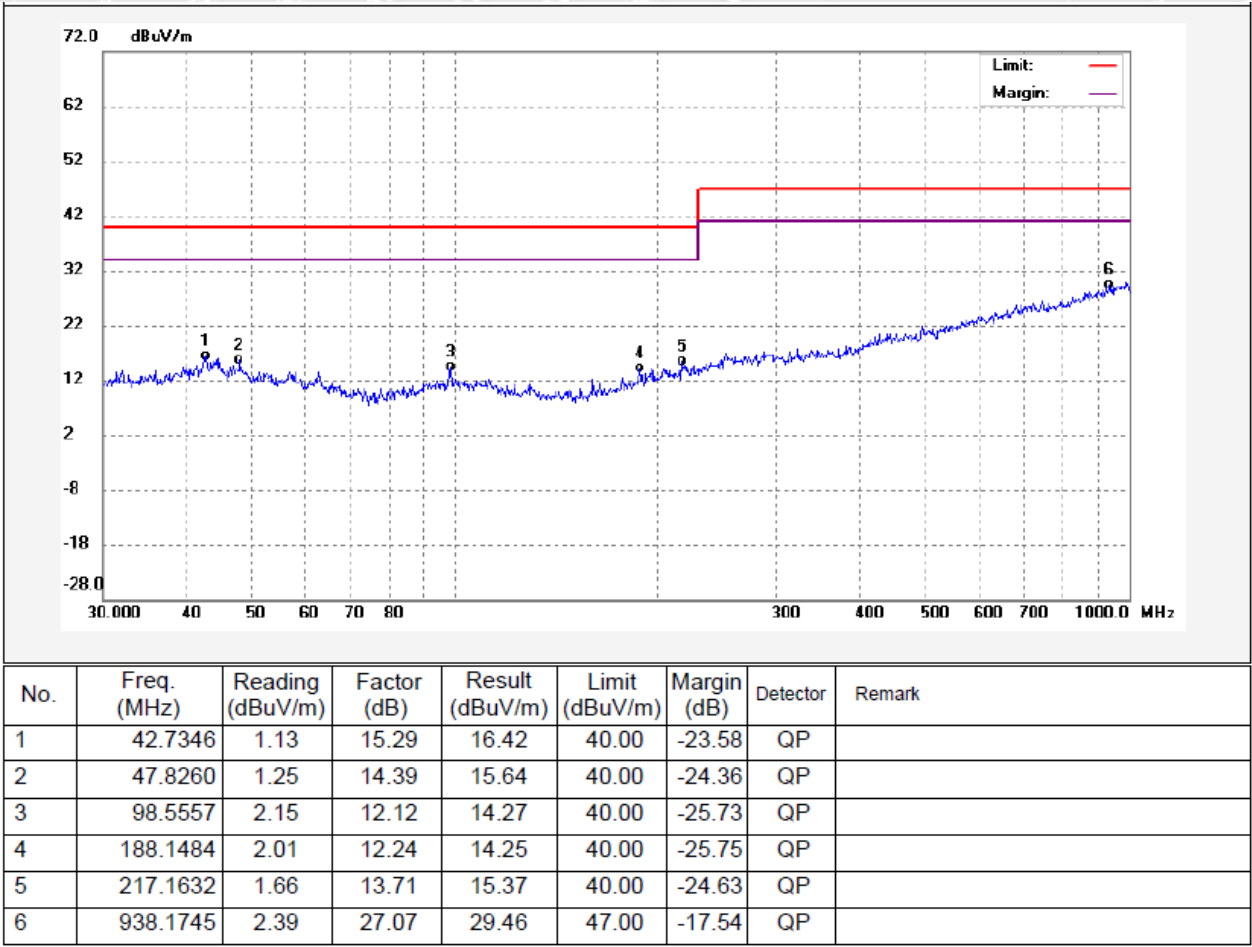
### 5.2.5 Radiated Emission Test Data

#### Vertical Polarization





Horizontal Polarization





### 5.3 Voltage Fluctuation and Flicker

Test Requirement ..... : EN 61000-3-3

Test Method..... : EN 61000-3-3

Test Result ..... : Pass

#### 5.3.1 E.U.T. Operation

##### Operating Environment:

Temperature ..... : 23.1°C

Humidity..... : 47.2%RH

Barometric Pressure..... : 101.2kPa

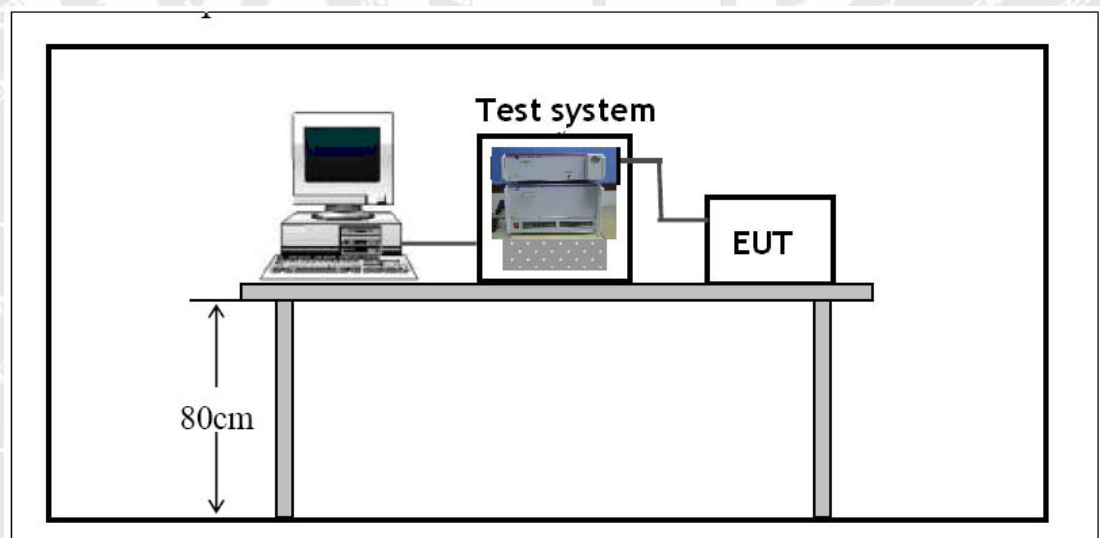
##### EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : Working mode

#### 5.3.2 Block Diagram of Setup

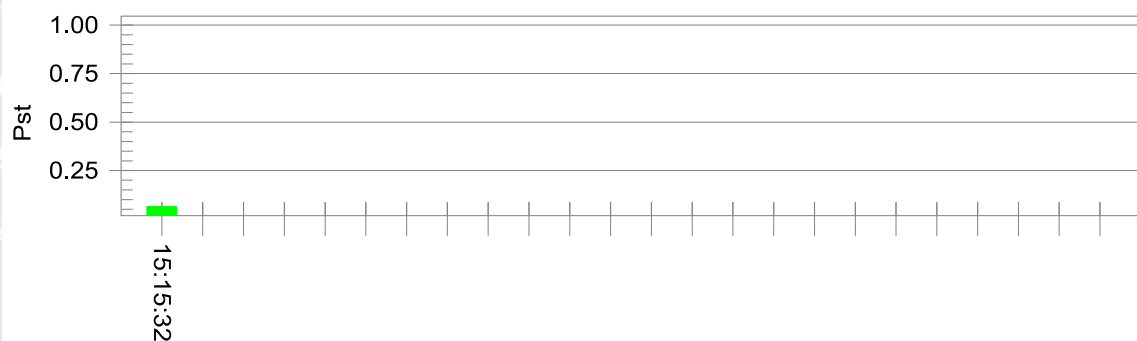
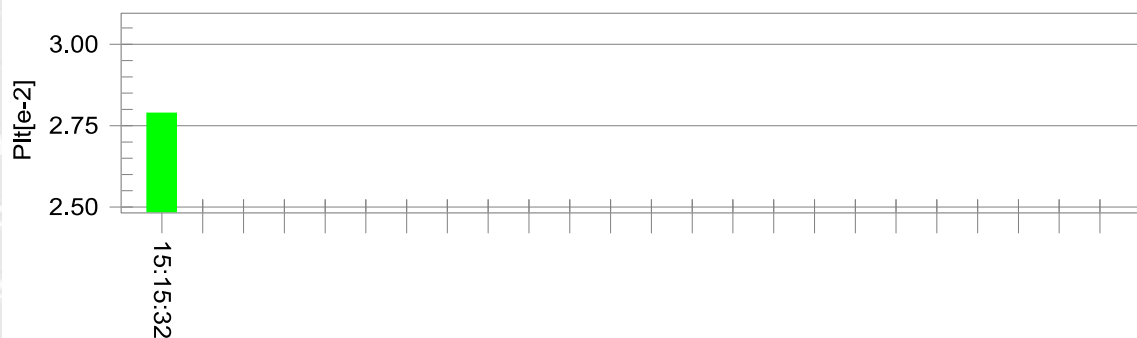
The Voltage Fluctuation and Flicker test was performed in accordance with the EN 61000-3-3.





### 5.3.3 Voltage Fluctuation and Flicker Test Data

#### Flicker Test Summary per IEC61000-3-3:2013/AMD1:2017 (Run time)

**EUT: Ventilation Fan HH-102 (WTF21F07067062E)****Tested by: ivan****Test category: dt,dmax,dc and Pst (European limits)****Test Margin: 100****Test date: 2021/7/15****Start time: 15:05:11****End time: 15:15:38****Test duration (min): 10****Data file name: F-000046.cts\_data****Comment: Working mode****Customer:****Test Result: Pass****Status: Test Completed****Pst and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 220.20****Highest dt (%):****T-max (mS):****Highest dc (%):****Highest dmax (%):****Highest Pst (10 min. period):****0****0.00****0.00****0.064****Test limit (%):****Test limit (mS):****Test limit (%):****Test limit (%):****Test limit:****500.0****3.30****4.00****1.000****Pass****Pass****Pass****Pass**



## 6 Immunity Test Results

### 6.1 Performance Criteria

**Performance criterion A:** The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

**Performance criterion B:** The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

**Performance criterion C:** Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

For further details, please refer to EN 55014-2.

### 6.2 Test Results

According to EN 55014-2, the EUT contains no electronic control circuit, it is a category I appliance, so it is deemed to fulfil the relevant immunity requirements without testing.

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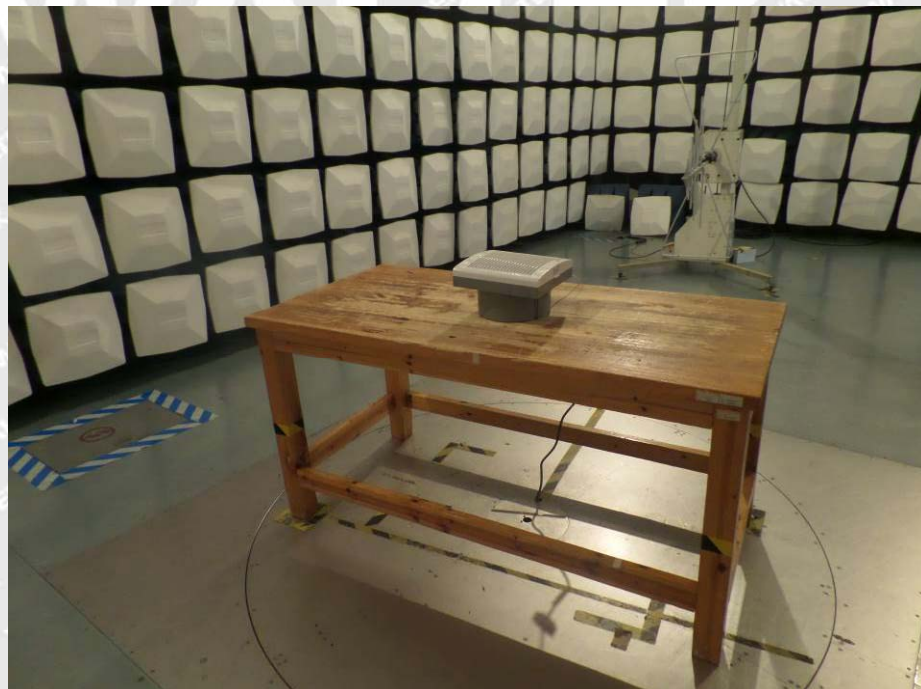


## **7 Photographs – Test Setup**

### **7.1 Photograph – Mains Terminal Disturbance Voltage Test Setup**

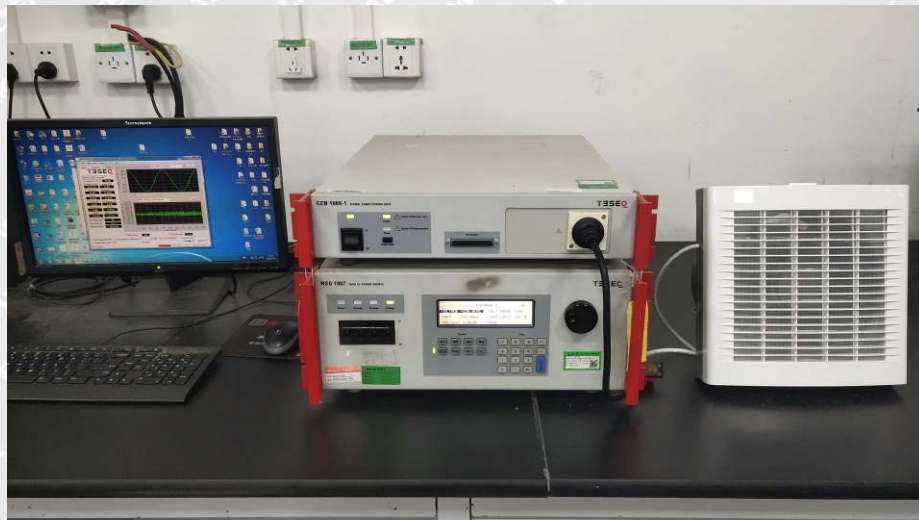


### **7.2 Photograph –Radiated Emission Test Setup, 30MHz to 1GHz**





### 7.3 Photograph – Voltage Fluctuation and Flicker Test Setup



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## 8 Photographs – Constructional Details

### 8.1 EUT – Front View



### 8.2 EUT – Back View



===== End of Report =====