## EMC TEST REPORT For

Shenzhen Better Technology Limited

High Voltage SMD LED Strip Light

Model No.: YH-HRF305050220S-W

Additional Model No.: YH-HRFAB220S-X (A stand for LED quantity as 15, 30, 44, 60, 72, 90...... B stand for LED type 2835, 3528, 5050, 5630, 3014, 3030 ...... X stand for color: R, G, B, W, WW, Y, P, O, RGB, RGBW, RGBWW. It means Red, Green, Blue, White, Warm white, Yellow, Purple, Orange, RGB, RGBW, RGBWW color.)

Prepared for : Shenzhen Better Technology Limited

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Date of receipt of test sample : May 25, 2016

Number of tested samples : 1

Serial number : Prototype

Date of Test : May 25, 2016~June 01, 2016

Date of Report : June 01, 2016



#### **EMC TEST REPORT**

EN 55015: 2013+A1: 2015

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and

similar equipment EN 61547: 2009

Equipment for general lighting purposes - EMC immunity requirements

Report Reference No. .....: LCS1605252315E

Date Of Issue ...... June 01, 2016

Testing Laboratory Name.....: Shenzhen LCS Compliance Testing Laboratory Ltd.

Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure.....: Full application of Harmonised standards

Partial application of Harmonised standards □

Other standard testing method

Applicant's Name .....: Shenzhen Better Technology Limited

Address .....: Floor 4th, Building F, Fusen Technology Park, Hangcheng

Road, Gushu, Xixiang, Bao' an, Shenzhen, China

**Test Specification:** 

Standard.....: EN 55015: 2013+A1: 2015

EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61547: 2009

Test Report Form No...... LCSEMC-1.0

Master TRF...... Dated 2011-03

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Test Item Description. ......: High Voltage SMD LED Strip Light

Trade Mark ..... BET

Model/ Type Reference ...... YH-HRF305050220S-W

Ratings...... AC 200-240V, 50/60Hz, 10W/M

Result .....: Positive

Compiled by:

Supervised by:

Approved by:

Hana Zeng / File administrators

Glin Lu/ Technique principal

Gavin Liang/ Manager

## **EMC -- TEST REPORT**

Test Report No.: LCS1605252315E June 01, 2016

Date of issue

Type/Model.....: YH-HRF305050220S-W EUT.....: : High Voltage SMD LED Strip Light Applicant.....: Shenzhen Better Technology Limited Address.....: Floor 4th, Building F, Fusen Technology Park, Hangcheng Road, Gushu, Xixiang, Bao' an, Shenzhen, China Telephone.....:: / Fax.....:: / Manufacturer.....: Shenzhen Better Technology Limited Address.....: Floor 4th, Building F, Fusen Technology Park, Hangcheng Road, Gushu, Xixiang, Bao' an, Shenzhen, China Telephone..... Fax.....:: / Factory.....: Shenzhen Better Technology Limited Address.....: Floor 4th, Building F, Fusen Technology Park, Hangcheng Road, Gushu, Xixiang, Bao' an, Shenzhen, China Telephone....:: Fax....::

**Test Result** according to the standards on page 8: **Positive** 

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# **Revision History**

| Revision | Is   | sue Date     | Revisions     | Revised By  |
|----------|------|--------------|---------------|-------------|
| 00       | Ju   | ine 01, 2016 | Initial Issue | Gavin Liang |
|          | 6 28 |              | Bass          | Res Bres    |
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# TABLE OF CONTENTS

| Test Report Description  | Page |
|--|------|
| 1. SUMMARY OF STANDARDS AND RESULTS                            | 8    |
| 1.1.Description of Standards and Results                       | 8    |
| 1.2.Description of Performance Criteria                        | 9    |
| 2. GENERAL INFORMATION   | 11   |
| 2.1.Description of Device (EUT)                                |      |
| 2.2.Description of Test Facility                               |      |
| 2.3.Statement of the measurement uncertainty                   |      |
| 2.4.Measurement Uncertainty                                    |      |
| 3. MEASURING DEVICES AND TEST EQUIPMENT                        |      |
| 3.1.Conducted Disturbance                                      | 13   |
| 3.2.Disturbance Power  |      |
| 3.3.Radiated Electromagnetic Disturbance                       |      |
| 3.4.Radiated Disturbance (Electric Field)                      |      |
| 3.5.Harmonic Current   | 13   |
| 3.6.Voltage fluctuation and Flicker                            | 13   |
| 3.8.RF Field Strength Susceptibility                           | 14   |
| 3.9.Electrical Fast Transient/Burst                            |      |
| 3.10.Surge   | 14   |
| 3.11.Conducted Susceptibility                                  | 14   |
| 3.12.Power Frequency Magnetic Field Susceptibility             | 14   |
| 3.13.Voltage Dips  |      |
| 3.14. Voltage Short Interruptions                              |      |
| 3.15.EMF   |      |
| 4. POWER LINE CONDUCTED MEASUREMENT                            |      |
| 4.1.Block Diagram of Test Setup                                | 16   |
| 4.2.Conducted Power Line Emission Measurement Standard and Lin |      |
| 4.3.EUT Configuration on Test                                  |      |
| 4.4.Operating Condition of EUT                                 |      |
| 4.5.Test Procedure   |      |
| 4.6.Test Results   | 17   |
| 5. MAGNETIC FIELD EMISSION MEASUREMENT                         |      |
| 5.1.Block Diagram of Test Setup                                | 19   |
| 5.2. Magnetic Field Emission Measurement Standard and Limits   | 19   |
| 5.3.EUT Configuration on Test                                  |      |
| 5.4.Operating Condition of EUT                                 |      |
| 5.5.Test Procedure   |      |
| 5.6.Test Results   |      |
| 6. RADIATED EMISSION MEASUREMENT                               |      |
| 6.1.Block Diagram of Test Setup                                | 22   |
| 6.2.Test Standard  | 22   |

12.2.Test Standard 36

# 1. SUMMARY OF STANDARDS AND RESULTS

# 1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

| EMIS   | SSION (EN 55015: 2013+A1: 2015) |                         |         |
|--|---------------------------------|-------------------------|---------|
| Description of Test Item                             | Standard                        | Limits                  | Results |
| Conducted disturbance at mains terminals             | EN 55015: 2013+A1: 2015         | ·                       | PASS    |
| Magnetic field emission                              | EN 55015: 2013+A1: 2015         | g                       | PASS    |
| Radiated disturbance                                 | EN 55015: 2013+A1: 2015         | (S) (                   | PASS    |
| Harmonic current emissions                           | EN 61000-3-2: 2014              | Class C                 | PASS    |
| Voltage fluctuations & flicker                       | EN 61000-3-3: 2013              | 333                     | PASS    |
|  | IMMUNITY (EN 61547: 2009)       | ·                       |         |
| Description of Test Item                             | Basic Standard                  | Performance<br>Criteria | Results |
| Electrostatic discharge (ESD)                        | EN 61000-4-2: 2009              | В                       | PASS    |
| Radio-frequency,<br>Continuous radiated disturbance  | EN 61000-4-3: 2006+A1: 2010     | A                       | PASS    |
| Electrical fast transient (EFT)                      | EN 61000-4-4: 2012              | В                       | PASS    |
| Surge (Input a.c. power ports)                       | EN 61000-4-5: 2014              | В                       | PASS    |
| Radio-frequency,<br>Continuous conducted disturbance | EN 61000-4-6: 2014              | A                       | PASS    |
| Power frequency magnetic field                       | EN 61000-4-8: 2010              | A                       | PASS    |
| Voltage dips, 30% reduction                          | EN 04000 4 44, 0004             | С                       | PASS    |
|  | EN 61000-4-11: 2004             | В                       | PASS    |

## 1.2.Description of Performance Criteria

#### **General Performance Criteria**

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

#### 1.2.1.Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### 1.2.2.Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### 1.2.3.Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by

| SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD.   | Book             | Report No.: LCS16052523  |
|---|------------------|--------------------------|
| the operation of the controls by the user in acco |                  |                          |
| Functions, and/or information stored in non-vol   | latile memory, o | r protected by a battery |
| backup, shall not be loss.                        |                  |                          |
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## 2. GENERAL INFORMATION

### 2.1.Description of Device (EUT)

EUT : High Voltage SMD LED Strip Light

Trade Mark : BET

Model Number : YH-HRF305050220S-W

Power Supply : AC 200-240V, 50/60Hz, 10W/M

### 2.2.Description of Test Facility

EMC Lab. : CNAS Registration Number. is L4595.

FCC Registration Number. is 899208.

Industry Canada Registration Number. is 9642A-1.

VCCI Registration Number. is C-4260 and R-3804.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

#### 2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 2.4. Measurement Uncertainty

| Test   | Parameters  | Expanded uncertainty (Ulab) | Expanded<br>uncertainty<br>(Ucispr) |
|--|---|-----------------------------|-------------------------------------|
| Conducted Emission                               | Level accuracy<br>(9kHz to 150kHz)<br>(150kHz to 30MHz) | ± 2.63 dB<br>± 2.35 dB      | ± 4.0 dB<br>± 3.6 dB                |
| Power disturbance                                | Level accuracy (30MHz to 300MHz)                        | ± 2.90dB                    | ± 4.5 dB                            |
| Electromagnetic<br>Radiated Emission<br>(3-loop) | Level accuracy<br>(9kHz to 30MHz)                       | ± 3.60 dB                   | N/A                                 |
| Radiated Emission                                | Level accuracy (9kHz to 30MHz)                          | ± 3.68 dB                   | N/A                                 |
| Radiated Emission                                | Level accuracy (30MHz to 1000MHz)                       | ± 3.48 dB                   | ± 5.2 dB                            |
| Radiated Emission                                | Level accuracy (above 1000MHz)                          | ± 3.90 dB                   | N/A                                 |
| Mains Harmonic                                   | Voltage   | ± 0.510%                    | N/A                                 |
| Voltage Fluctuations & Flicker                   | Voltage   | ± 0.510%                    | N/A                                 |
| EMF  |   | ± 21.59%                    | N/A                                 |

- (1)Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

# 3. MEASURING DEVICES AND TEST EQUIPMENT

## 3.1.Conducted Disturbance

| Item | Test Equipment           | Manufacturer    | Model No. | Serial No. | Last Cal.  |
|------|--------------------------|-----------------|-----------|------------|------------|
| 10   | <b>EMI Test Receiver</b> | ROHDE & SCHWARZ | ESCI      | 101142     | 2015/06/18 |
| 2    | 10dB Attenuator          | SCHWARZBECK     | OSPAM236  | 9729       | 2015/06/18 |
| 3    | Artificial Mains         | ROHDE & SCHWARZ | ENV216    | 101288     | 2015/06/18 |
| 4    | EMI Test Software        | AUDIX           | E3        | N/A        | 2015/06/18 |

## 3.2.Disturbance Power

| Item | Test Equipment    | Manufacturer    | Model No. | Serial No. | Last Cal.  |
|------|-------------------|-----------------|-----------|------------|------------|
| 1    | EMI Test Receiver | ROHDE & SCHWARZ | ESCI      | 101142     | 2015/06/18 |
| 2    | Absorbing clamp   | ROHDE & SCHWARZ | MDS 21    | 4033       | 2015/10/28 |
| 3    | EMI Test Software | AUDIX           | E3        | N/A        | 2015/06/18 |

## 3.3.Radiated Electromagnetic Disturbance

| Item | Test Equipment      | Manufacturer    | Model No. | Serial No. | Last Cal.  |
|------|---------------------|-----------------|-----------|------------|------------|
| 1    | EMI Test Receiver   | ROHDE & SCHWARZ | ESCI      | 1011423    | 2015/06/18 |
| 2    | Triple-loop Antenna | EVERFINE        | LLA-2     | 11050003   | 2015/06/18 |
| 3    | EMI Test Receiver   | ROHDE & SCHWARZ | ESCI      | 101840     | 2015/06/18 |
| 4    | EMI Test Software   | AUDIX           | E3        | N/A        | 2015/06/18 |

# 3.4.Radiated Disturbance (Electric Field)

| Item | Test Equipment           | Manufacturer    | Model No. | Serial No. | Last Cal.  |
|------|--------------------------|-----------------|-----------|------------|------------|
| 1    | 3m Semi Anechoic Chamber | SIDT FRANKONIA  | SAC-3M    | 03CH03-HY  | 2015/06/18 |
| 2    | EMI Test Receiver        | ROHDE & SCHWARZ | ESCI      | 101840     | 2015/06/18 |
| 3    | Log per Antenna          | SCHWARZBECK     | VULB9163  | 9163-470   | 2016/04/18 |
| 4    | EMI Test Software        | AUDIX           | E3        | N/A        | 2015/06/18 |
| 5    | Positioning Controller   | MF              | MF-7082   | /          | 2015/06/18 |

## 3.5.Harmonic Current

| Item | Test Equipment             | Manufacturer | Model No. | Serial No.  | Last Cal.  |
|------|----------------------------|--------------|-----------|-------------|------------|
| 1    | Power Analyzer Test System | Voltech      | PM6000    | 20000670053 | 2015/06/18 |

# 3.6. Voltage fluctuation and Flicker

| Item | Test Equipment             | Manufacturer | Model No. | Serial No.  | Last Cal.  |
|------|----------------------------|--------------|-----------|-------------|------------|
| 1    | Power Analyzer Test System | Voltech      | PM6000    | 20000670053 | 2015/06/18 |
| 3.7. | Electrostatic Discharge    | 3 13         | 13        | 3           | 3          |
| Item | Test Equipment             | Manufacturer | Model No. | Serial No.  | Last Cal.  |
| 18   | ESD Simulator              | KIKUSUI      | KC001311  | KES4021     | 2015/09/02 |

# 3.8.RF Field Strength Susceptibility

| Item | Test Equipment          | Manufacturer    | Model No.   | Serial No. | Last Cal.  |
|------|-------------------------|-----------------|-------------|------------|------------|
| 1    | SIGNAL GENERATOR        | HP              | 8648A       | 625U00573  | 2015/07/29 |
| 2    | Amplifier               | AR              | 500A100     | 17034      | 2015/07/29 |
| 3    | Amplifier               | AR              | 100W/1000M1 | 17028      | 2015/07/29 |
| 4    | Isotropic Field Monitor | AR              | FM2000      | 16829      | 2015/07/29 |
| 5    | Isotropic Field Probe   | AR              | FP2000      | 16755      | 2015/07/29 |
| 6    | Bi-conic Antenna        | EMCO            | 3108        | 9507-2534  | 2015/07/29 |
| 7    | By-log-periodic Antenna | AR              | AT1080      | 16812      | 2015/07/29 |
| 8    | EMS Test Software       | ROHDE & SCHWARZ | ESK1        | N/A        | 2015/07/29 |

# 3.9. Electrical Fast Transient/Burst

| Item | Test Equipment                          | Manufacturer | Model No. | Serial No. | Last Cal.  |
|------|---|--------------|-----------|------------|------------|
| 1    | Electrical fast transient(EFT)generator | 3CTEST       | EFT-4021  | EC0461044  | 2015/06/18 |
| 2    | Coupling Clamp                          | 3CTEST       | EFTC      | EC0441098  | 2015/06/18 |

# 3.10.Surge

| Item | Test Equipment              | Manufacturer | Model No. | Serial No. | Last Cal.  |
|------|-----------------------------|--------------|-----------|------------|------------|
| 1    | Surge test system           | 3CTEST       | SG5006G   | EC5581070  | 2015/06/18 |
| 2    | Coupling/decoupling network | 3CTEST       | SGN-5010G | CS5591033  | 2015/06/18 |

# 3.11.Conducted Susceptibility

| Item | Test Equipment | Manufacturer | Model No. | Serial No.  | Last Cal.  |
|------|----------------|--------------|-----------|-------------|------------|
| 1    | Simulator      | EMTEST       | CWS500C   | 0900-12     | 2015/06/18 |
| 2    | CDN            | EMTEST       | CDN-M2    | 5100100100  | 2015/06/18 |
| 3    | CDN            | EMTEST       | CDN-M3    | 0900-11     | 2015/06/18 |
| 4    | CDN            | EMTEST       | CDN-M     | 0900-12     | 2015/06/18 |
| 5    | Attenuator     | EMTEST       | ATT6      | 0010222A    | 2015/06/18 |
| 6    | Infuse tongs   | EMTEST       | EM-Clamp  | 0513A031201 | 2015/06/18 |

# 3.12. Power Frequency Magnetic Field Susceptibility

| Item | Test Equipment                             | Manufacturer | Model No.   | Serial No. | Last Cal.  |
|------|--|--------------|-------------|------------|------------|
| 1    | Power frequency mag-field generator System | EVERFINE     | EMS61000-8K | 906003     | 2015/06/18 |

# 3.13. Voltage Dips

| Item | Test Equipment                | Manufacturer | Model No. | Serial No. | Last Cal.  |
|------|-------------------------------|--------------|-----------|------------|------------|
| 1    | Voltage dips and up generator | 3CTEST       | VDG-1105G | EC0171014  | 2015/06/18 |

## 3.14. Voltage Short Interruptions

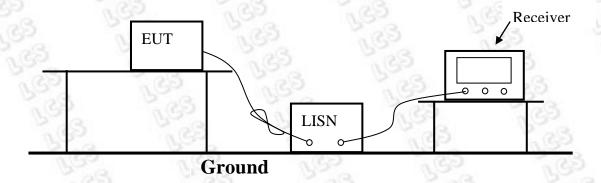
| Item | Test Equipment                | Manufacturer | Model No. | Serial No. | Last Cal.  |
|------|-------------------------------|--------------|-----------|------------|------------|
| 1    | Voltage dips and up generator | 3CTEST       | VDG-1105G | EC0171014  | 2015/06/18 |

# 3.15.EMF

| Item | Test Equipment     | Manufacturer    | Model No. | Serial No. | Last Cal.  |
|------|--------------------|-----------------|-----------|------------|------------|
| 1    | PROTECTION NETWORK | AFJ             | VDH30     | SC069N     | 2016/04/10 |
| 2    | EMI Test Receiver  | ROHDE & SCHWARZ | ESCI      | 101142     | 2015/06/18 |
| 3    | EMI Test Software  | AUDIX           | E3        | N/A        | 23         |

# 4. POWER LINE CONDUCTED MEASUREMENT

## 4.1.Block Diagram of Test Setup



### 4.2. Conducted Power Line Emission Measurement Standard and Limits

#### 4.2.1.Standard:

EN 55015: 2013+A1: 2015

#### **4.2.2.Limits**

| Frequency       | At mains terminals (dBμV) |               |  |  |
|-----------------|---------------------------|---------------|--|--|
| rrequency       | Quasi-peak Level          | Average Level |  |  |
| 9kHz ~ 50kHz    | 110                       | 63            |  |  |
| 50kHz ~ 150kHz  | 90 ~ 80*                  | 13-03         |  |  |
| 150kHz ~ 0.5MHz | 66 ~ 56*                  | 56 ~ 46*      |  |  |
| 0.5MHz ~ 5.0MHz | 56                        | 46            |  |  |
| 5.0MHz ~ 30MHz  | 60                        | 50            |  |  |

- 1. At the transition frequency the lower limit applies.
- 2. \* decreasing linearly with logarithm of the frequency.

## 4.3.EUT Configuration on Test

The configuration of the EUT is same as Section 3.1.

## 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT as shown in Section 4.1.
- 4.4.2. Turn on the power of all equipments.
- 4.4.3.Let the EUT work in test mode (On) and measure it.

### 4.5.Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the EN 55015 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the EN 55015 standard.

The bandwidth of the test receiver is set at 200Hz in 9k~150kHz range and 9kHz in 150k~30MHz range.

The frequency range from 9kHz to 30MHz is checked.

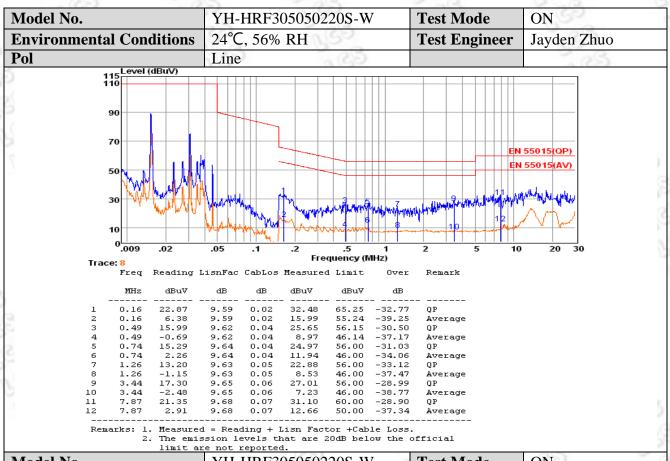
All the test results are listed in Section 4.6.

The frequency range from 9kHz to 30MHz is investigated.

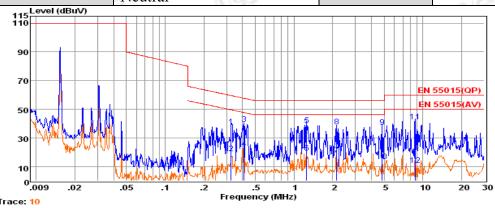
#### 4.6.Test Results

#### PASS.

The test result please refer to the next page.



Model No.YH-HRF305050220S-WTest ModeONEnvironmental Conditions24°C, 56% RHTest EngineerJayden ZhuoPolNeutral



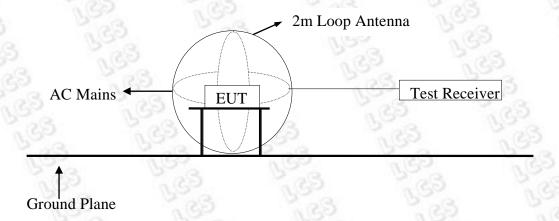
|    | rreq | reading | Figure | Capros | neasurea | ртштс | OVEL   | VCMGTV. |
|----|------|---------|--------|--------|----------|-------|--------|---------|
|    | MHz  | dBu∀    | dB     | dB     | dBuV     | dBu∀  | dВ     |         |
|    |      |         |        |        |          |       |        |         |
| 1  | 0.32 | 28.26   | 9.61   | 0.03   | 37.90    | 59.59 | -21.69 | QP      |
| 2  | 0.32 | 9.61    | 9.61   | 0.03   | 19.25    | 49.59 | -30.34 | Average |
| 3  | 0.41 | 30.06   | 9.61   | 0.04   | 39.71    | 57.63 | -17.92 | QP      |
| 4  | 0.41 | 12.98   | 9.61   | 0.04   | 22.63    | 47.61 | -24.98 | Average |
| 5  | 1.26 | 29.07   | 9.63   | 0.05   | 38.75    | 56.00 | -17.25 | QP      |
| 6  | 1.26 | 10.12   | 9.63   | 0.05   | 19.80    | 46.00 | -26.20 | Average |
| 7  | 2.15 | 8.85    | 9.63   | 0.05   | 18.53    | 46.00 | -27.47 | Average |
| 8  | 2.15 | 28.24   | 9.63   | 0.05   | 37.92    | 56.00 | -18.08 | QP      |
| 9  | 4.84 | 28.09   | 9.66   | 0.06   | 37.81    | 56.00 | -18.19 | QP      |
| 10 | 4.84 | 4.04    | 9.66   | 0.06   | 13.76    | 46.00 | -32.24 | Average |
| 11 | 8.74 | 31.54   | 9.71   | 0.08   | 41.33    | 60.00 | -18.67 | QP      |
| 12 | 8.74 | 1.47    | 9.71   | 0.08   | 11.26    | 50.00 | -38.74 | Average |
|    |      |         |        |        |          |       |        |         |

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.

The emission levels that are 20dB below the official limit are not reported.

## 5. MAGNETIC FIELD EMISSION MEASUREMENT

## 5.1.Block Diagram of Test Setup



## 5.2. Magnetic Field Emission Measurement Standard and Limits

#### 5.2.1.Test Standard

EN 55015: 2013+A1: 2015

#### 5.2.2.Test Limits

| Frequency       | Limits for loop diameter (dBµA) |  |  |  |
|-----------------|---------------------------------|--|--|--|
| Trequency       | 2m                              |  |  |  |
| 9kHz ~ 70kHz    | 88                              |  |  |  |
| 70kHz ~ 150kHz  | 88 ~ 58*                        |  |  |  |
| 150kHz ~ 3.0MHz | 58 ~ 22*                        |  |  |  |
| 3.0MHz ~ 30MHz  | 22                              |  |  |  |

- 1. At the transition frequency the lower limit applies.
- 2. \* decreasing linearly with logarithm of the frequency.

## 5.3.EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

### 5.4. Operating Condition of EUT

Same as conducted measurement which is listed in Section 4.4, except the test set up replaced by Section 5.1.

#### 5.5.Test Procedure

The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components are checked by means of a coaxial switch.

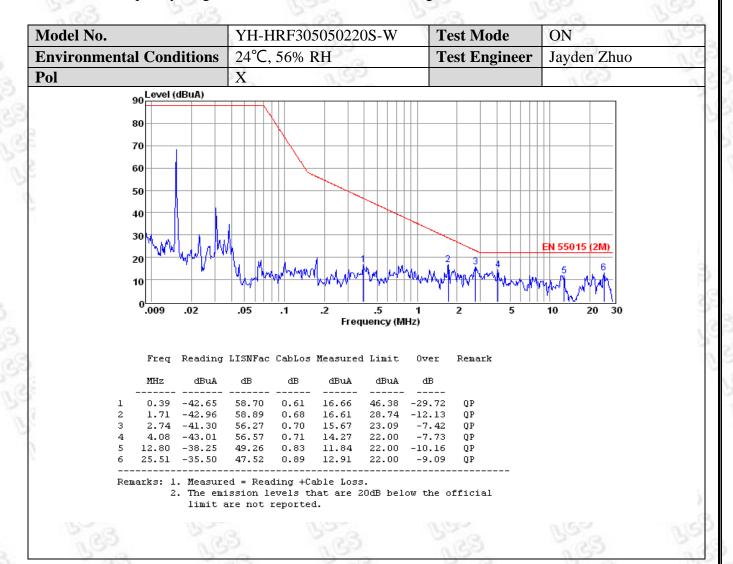
The frequency range from 9kHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9kHz to 150kHz, the bandwidth of the field strength meter is set at 200Hz. For frequency band 150kHz to 30MHz, the bandwidth is set at 9kHz.

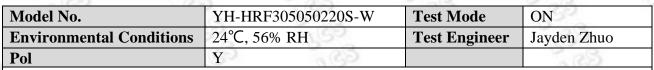
All the test results are listed in Section 5.6.

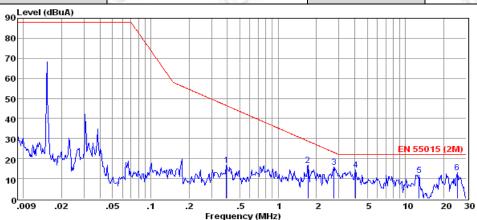
#### 5.6.Test Results

#### PASS.

The frequency range from 9kHz to 30MHz is investigated.







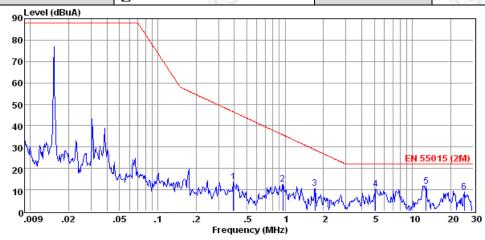
Freq Reading LISNFac CabLos Measured Limit Over Remark

|   | MHz   | dBuA   | dB    | dB   | dBuA  | dBuA  | dB     |    |
|---|-------|--------|-------|------|-------|-------|--------|----|
|   |       |        |       |      |       |       |        |    |
| 1 | 0.39  | -42.65 | 58.70 | 0.61 | 16.66 | 46.38 | -29.72 | QP |
| 2 | 1.71  | -42.96 | 58.89 | 0.68 | 16.61 | 28.74 | -12.13 | QP |
| 3 | 2.74  | -41.30 | 56.27 | 0.70 | 15.67 | 23.09 | -7.42  | QP |
| 4 | 4.08  | -43.01 | 56.57 | 0.71 | 14.27 | 22.00 | -7.73  | QP |
| 5 | 12.80 | -38.25 | 49.26 | 0.83 | 11.84 | 22.00 | -10.16 | QP |
| 6 | 25.51 | -35.50 | 47.52 | 0.89 | 12.91 | 22.00 | -9.09  | QP |

Remarks: 1. Measured = Reading +Cable Loss.

2. The emission levels that are 20dB below the official limit are not reported.

| Model No.                       | YH-HRF305050220S-W | Test Mode     | ON          |
|---------------------------------|--------------------|---------------|-------------|
| <b>Environmental Conditions</b> | 24°C, 56% RH       | Test Engineer | Jayden Zhuo |
| Pol                             | Z                  |               | ~ (25)      |



Freq Reading LISNFac CabLos Measured Limit Over Remark

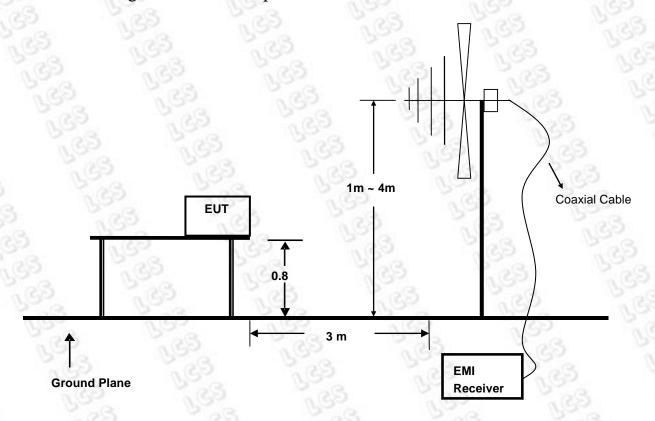
|   | MHz   | dBuA   | dB    | dB   | dBuA  | dBuA  | dB     |    |  |
|---|-------|--------|-------|------|-------|-------|--------|----|--|
|   |       |        |       |      |       |       |        |    |  |
| 1 | 0.39  | -46.14 | 59.19 | 0.61 | 13.66 | 46.38 | -32.72 | QP |  |
| 2 | 0.96  | -48.96 | 61.00 | 0.66 | 12.70 | 35.66 | -22.96 | QP |  |
| 3 | 1.71  | -50.53 | 60.46 | 0.68 | 10.61 | 28.74 | -18.13 | QP |  |
| 4 | 5.12  | -43.21 | 52.86 | 0.72 | 10.37 | 22.00 | -11.63 | QP |  |
| 5 | 12.80 | -37.38 | 48.39 | 0.83 | 11.84 | 22.00 | -10.16 | QP |  |
| 6 | 25.51 | -39.42 | 47.44 | 0.89 | 8.91  | 22.00 | -13.09 | QP |  |

Remarks: 1. Measured = Reading +Cable Loss.

The emission levels that are 20dB below the official limit are not reported.

## 6. RADIATED EMISSION MEASUREMENT

## 6.1.Block Diagram of Test Setup



### 6.2.Test Standard

EN 55015: 2013+A1: 2015

#### 6.3. Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| FREQUENCY | DISTANCE | FIELD STRENGTHS LIMIT |
|-----------|----------|-----------------------|
| (MHz)     | (Meters) | $(dB\mu V/m)$         |
| 30 ~ 230  | 3        | 40                    |
| 230 ~ 300 | 3        | 47                    |

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

### 6.4.EUT Configuration on Test

The EN 55015 regulations test method must be used to find the maximum emission during radiated emission measurement.

## 6.5. Operating Condition of EUT

- 6.5.1 Turn on the power.
- 6.5.2 After that, let the EUT work in test mode (ON) and measure it.

#### 6.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

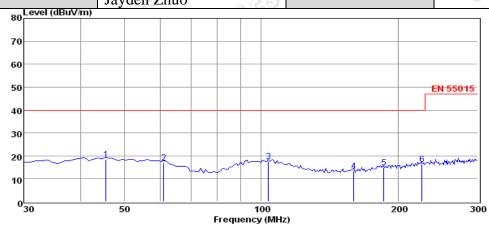
The frequency range from 30MHz to 300MHz is investigated.

### 6.7. Test Results

#### PASS.

The test result please refer to the next page.

| Model No.                       | YH-HRF305050220S-W | Test Mode                | ON         |
|---------------------------------|--------------------|--------------------------|------------|
| <b>Environmental Conditions</b> | 24℃, 56% RH        | <b>Detector Function</b> | Quasi-peak |
| Pol                             | Vertical           | Distance                 | 3m         |
| Test Engineer                   | Jayden Zhuo        |                          | 1200       |



Freq Reading CabLos Antfac Measured Linit Over dBuV dВ dB/m MHzdBuV/m dBuV/m 45.52 4.38 13.52 18.31 -21.69 0.41 40.00 QP 61.04 4.09 0.49 12.28 16.86 40.00 -23.14 QP 4.13 12.82 17.56 40.00 -22.44 103.72 0.61 OP 0.75 159.98 4.10 8.67 13.52 40.00 -26.48OP 0.98 186.17 3.67 10.22 14.87 40.00 -25.13OP 225.94 3.90 0.89 11.46 16.25 40.00 -23.75QΡ

Note: 1. All readings are Quasi-peak values.

2

3

4

5

6

2

3

4

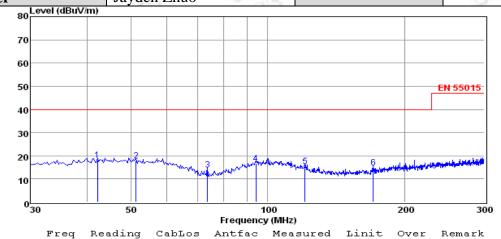
5

6

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that ate 20db blow the offficial limit are not reported

| Model No.                       | YH-HRF305050220S-W | Test Mode                | ON         |
|---------------------------------|--------------------|--------------------------|------------|
| <b>Environmental Conditions</b> | 24℃, 56% RH        | <b>Detector Function</b> | Quasi-peak |
| Pol                             | Horizontal         | Distance                 | 3m         |
| Test Engineer                   | Javden Zhuo        |                          | S. C.      |



MHz dB/m dBuV/m dBuV dВ dBuV/m dB 3.99 42.15 0.50 13.57 18.06 40.00 -21.94 OP 51.33 4.14 0.54 13.19 17.87 40.00 -22.13 OP 73.74 5.48 0.54 8.01 14.03 40.00 -25.97 QP 94.26 3.43 0.58 12.70 16.71 40.00 -23.29 120.72 4.40 0.70 10.37 15.47 40.00 -24.53 QP 170.94 5.12 0.80 9.04 14.96 40.00 -25.04 QP

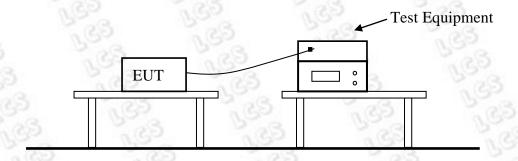
Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that ate 20db blow the offficial limit are not reported

# 7. HARMONIC CURRENT MEASUREMENT

## 7.1.Block Diagram of Test Setup



## 7.2.Test Standard

EN 61000-3-2: 2014

## 7.3. Operating Condition of EUT

Same as Section 4.4, except the test setup replaced by Section 7.1.

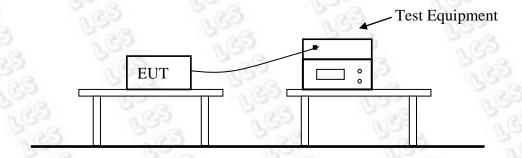
### 7.4.Test Results

#### PASS.

Because power of EUT less than 25W, According standard EN 61000-3-2, Harmonic current unnecessary to test.

# 8. VOLTAGE FLUCTUATIONS & FLICKER MEASUREMENT

# 8.1.Block Diagram of Test Setup



### 8.2.Test Standard

EN 61000-3-3: 2013

# 8.3. Operating Condition of EUT

Same as Section 4.4, except the test setup replaced by Section 8.1.

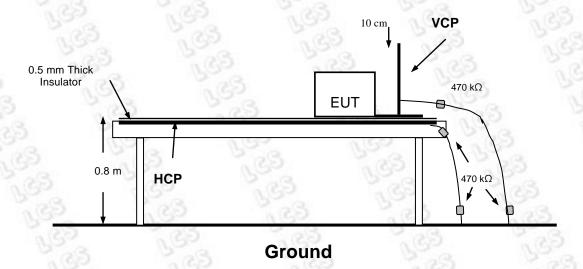
# 8.4.Test Results

PASS.

| Model No.       | YH-HRF3050502                | 220S-W    | <b>Test Engineer</b> | Jayden Zhuo     |
|-----------------|------------------------------|-----------|----------------------|-----------------|
| Overall Result: | Notes:<br>Measurement method | - Voltage |                      |                 |
| PASS            | Wedsarement method           | Vollage   |                      |                 |
|                 |                              |           |                      |                 |
|                 |                              |           |                      |                 |
|                 |                              |           |                      |                 |
|                 |                              |           |                      |                 |
|                 | Pst                          | dc (%)    | dmax (%)             | d(t) > 3.3%(ms) |
| Limit           | 1.000                        | 3.300     | 4.000                | 500             |
| Reading 1       | 0.090                        | 0.006     | 0.117                | 0               |

## 9. ELECTROSTATIC DISCHARGE TEST

## 9.1.Block Diagram of Test Setup



### 9.2.Test Standard

EN 61547: 2009 (EN 61000-4-2: 2009, Severity Level: Air Discharge: Level 3, ±8KV

Contact Discharge: Level 2, ±4KV)

## 9.3. Severity Levels and Performance Criterion

### 9.3.1.Severity level

| Level | Test Voltage<br>Contact Discharge (KV) | Test Voltage<br>Air Discharge (KV) |
|-------|--|------------------------------------|
| 1.    | ±2                                     | ±2                                 |
| 2.    | ±4                                     | ±4                                 |
| 3.    | ±6                                     | ±8                                 |
| 4.    | ±8                                     | ±15                                |
| X     | Special                                | Special                            |

#### 9.3.2.Performance criterion: **B**

### 9.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.7

## 9.5. Operating Condition of EUT

- 9.5.1. Setup the EUT as shown in Section 9.1.
- 9.5.2. Turn on the power of all equipments.
- 9.5.3.Let the EUT work in test mode (ON) and measure it.

#### 9.6.Test Procedure

#### 9.6.1.Air Discharge

This test is done on a non-conductive surfaces. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Because the case of the EUT is metal surface, so it does not need to be tested.

#### 9.6.2.Contact Discharge

All the procedure shall be same as Section 9.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

#### 9.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

#### 9.6.4.Indirect Discharge For Vertical Coupling Plane

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

#### 9.7.Test Results

#### PASS.

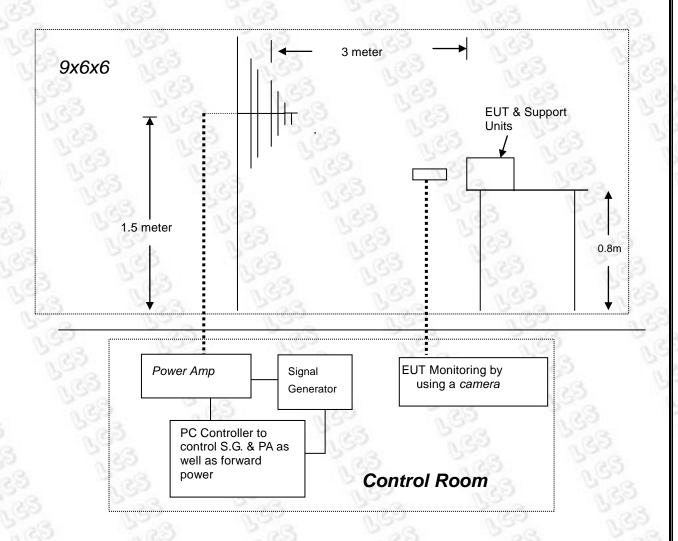
Please refer to the following page.

| Electrostatic Discharge Test Results   |                                    |             |          |  |  |  |
|--|------------------------------------|-------------|----------|--|--|--|
| Standard                               | ☐ IEC 61000-4-2 ☐ EN 61000-4-2     |             |          |  |  |  |
| Applicant                              | Shenzhen Better Technology Limited |             |          |  |  |  |
| EUT                                    | High Voltage SMD LED Strip Light   | Temperature | 26℃      |  |  |  |
| M/N                                    | YH-HRF305050220S-W                 | Humidity    | 51%      |  |  |  |
| Criterion                              | B                                  | Pressure    | 1021mbar |  |  |  |
| Test Mode ON Test Engineer Jayden Zhuo |                                    |             |          |  |  |  |

| TD 434 3           | ON           |             |               | FD 4 FD      | TD 4 E 1 71 |   |  |
|--------------------|--------------|-------------|---------------|--------------|-------------|---|--|
| Test Mode          | Test Mode ON |             | Test Ei       | ngineer      | Jayden Zhuo |   |  |
| 73.53              |              | A           | ir Discharge  | e            |             |   |  |
|                    | 7            | Test Levels |               |              | Res         | sults                                   |  |
| <b>Test Points</b> | ± 2KV        | ± 4KV       | ± 8KV         | Pass         | Fail        | Performance<br>Criterion                |  |
| Front              |              | $\boxtimes$ | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Back               |              | $\boxtimes$ | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Left               |              | $\boxtimes$ | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Right              |              | $\boxtimes$ | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Тор                | $\boxtimes$  |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Bottom             | $\boxtimes$  | $\boxtimes$ | $\square$     | $\boxtimes$  |             | $\square A  \boxtimes B$                |  |
|                    |              | Con         | tact Dischar  | rge          |             |   |  |
|                    | ,            | Test Levels |               |              | Res         | sults                                   |  |
| <b>Test Points</b> | ± 2 KV       |             | ±4 KV         | Pass         | Fail        | Performance<br>Criterion                |  |
| Front              |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Back               |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Left               |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Right              |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Тор                |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box \mathbf{A}  \boxtimes \mathbf{B}$ |  |
| Bottom             | $\boxtimes$  |             | $\boxtimes$   | $\square$    |             | $\square A  \boxtimes B$                |  |
|                    | D            | ischarge T  | o Horizonta   | al Coupling  | Plane       |   |  |
|                    | r            | Test Levels | S             |              | Res         | sults                                   |  |
| Side of EUT        | ± 2 KV       |             | ± 4 KV        | Pass         | Fail        | Performance<br>Criterion                |  |
| Front              |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Back               |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Left               |              |             | $\boxtimes$   | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Right              | $\boxtimes$  |             | $\boxtimes$   | $\boxtimes$  |             | $\square A  \boxtimes B$                |  |
|                    | D            | ischarge T  | To Vertical ( | Coupling Pla | ane         |   |  |
|                    | ,            | Test Levels |               |              | Results     |   |  |
| Side of EUT        | ± 2 KV       |             | ± 4 KV        | Pass         | Fail        | Performance<br>Criterion                |  |
| Front              |              |             |               | $\boxtimes$  |             | $\Box$ A $\boxtimes$ B                  |  |
| Back               | $\boxtimes$  |             | $\boxtimes$   |              |             | $\square A  \boxtimes B$                |  |
| Left               |              |             | $\boxtimes$   |              |             | $\Box$ A $\boxtimes$ B                  |  |
| Right              | $\boxtimes$  |             | $\boxtimes$   |              |             | $\Box A  \boxtimes B$                   |  |

## 10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

## 10.1.Block Diagram of Test Setup



### 10.2.Test Standard

EN 61547: 2009 (EN 61000-4-3: 2006+A1: 2010, Severity Level: 2, 3V / m)

## 10.3. Severity Levels and Performance Criterion

## 10.3.1.Severity level

| Level | Field Strength (V/m) |  |  |
|-------|----------------------|--|--|
| 1.3   | Bas Bra Bes          |  |  |
| 2     | 3                    |  |  |
| 3     | 10                   |  |  |
| X     | Special              |  |  |

10.3.2.Performance criterion: A

## 10.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.8.

## 10.5. Operating Condition of EUT

- 10.5.1. Setup the EUT as shown in Section 10.1.
- 10.5.2. Turn on the power of all equipments.
- 10.5.3.Let the EUT work in test mode (On) and measure it.

#### 10.6.Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

|    | Condition of Test      | Remarks                  |
|----|------------------------|--------------------------|
| 1. | Fielded Strength       | 3 V/m (Severity Level 2) |
| 2. | Radiated Signal        | Unmodulated              |
| 3. | Scanning Frequency     | 80 - 1000 MHz            |
| 4. | Dwell time of radiated | 0.0015 decade/s          |
| 5. | Waiting Time           | 3 Sec.                   |
|    |                        |                          |

### 10.7.Test Results

#### PASS.

Please refer to the following page.

| RF Fi           | eld Strength Susceptibi            | ility Test F  | Results     |  |  |
|-----------------|------------------------------------|---------------|-------------|--|--|
| Standard        | ☐ IEC 61000-4-3 ☐ EN 61000-4-3     | 163           | 133         |  |  |
| Applicant       | Shenzhen Better Technology Limited | 3 350         | S BES       |  |  |
| EUT             | High Voltage SMD LED Strip Light   | Temperature   | 26℃         |  |  |
| M/N             | YH-HRF305050220S-W                 | Humidity      | 51%         |  |  |
| Field Strength  | 3 V/m                              | Criterion     | A           |  |  |
| Test Mode       | ON                                 | Test Engineer | Jayden Zhuo |  |  |
| Frequency Range | 80 MHz to 1000 MHz                 |               | 365         |  |  |
| Modulation      | □None □ Pulse ☑                    | ZAM 1KHz 80%  | Res         |  |  |
| Steps           | 1%                                 |               |             |  |  |
| 198             | as bas bas                         | 1900          | I I I I     |  |  |

|       |            | 12-1     |
|-------|------------|----------|
|       | Horizontal | Vertical |
| Front | PASS       | PASS     |
| Right | PASS       | PASS     |
| Rear  | PASS       | PASS     |
| Left  | PASS       | PASS     |

## Test Equipment:

1. Signal Generator: 2031 (MARCONI)

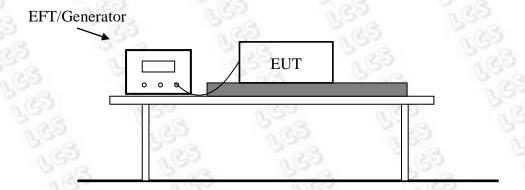
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R) 3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)

4. Field Monitor: FM2000 (A&R)

|    | - |     |   |
|----|---|-----|---|
|    | 0 | te. | • |
| 1. | • | にし  |   |

## 11. ELECTRICAL FAST TRANSIENT/BURST TEST

## 11.1.Block Diagram of Test Setup



#### 11.2.Test Standard

EN 61547: 2009 (EN 61000-4-4: 2012, Severity Level: Level 2: 1KV)

## 11.3. Severity Levels and Performance Criterion

### 11.3.1.Severity level

| S N    | Open Circuit Output Test Voltage ±10% |   |  |  |
|--------|---------------------------------------|---|--|--|
| Level  | On Power Supply<br>Lines              | On I/O (Input/Output) Signal data and control lines |  |  |
| n C 1. | 0.5 KV                                | 0.25 KV   |  |  |
| 2.     | 1 KV                                  | 0.5 KV  |  |  |
| 3.     | 2 KV                                  | 1 KV  |  |  |
| 4.     | 4 KV                                  | 2 KV  |  |  |
| X      | Special                               | Special   |  |  |

#### 11.3.2.Performance criterion: **B**

### 11.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.9.

## 11.5. Operating Condition of EUT

- 11.5.1. Setup the EUT as shown in Section 11.1.
- 11.5.2. Turn on the power of all equipments.
- 11.5.3.Let the EUT work in test mode (ON) and measure it.

#### 11.6.Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

#### 11.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

### 11.6.2. For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

#### 11.6.3. For DC output line ports:

It's unnecessary to test.

#### 11.7.Test Results

#### PASS.

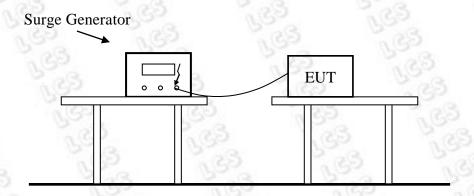
Please refer to the following page.

| Electrical Fast Transient/Burst Test Results |                                    |             |     |  |
|--|------------------------------------|-------------|-----|--|
| Standard                                     | □ IEC 61000-4-4 ☑ EN 61000-4-4     |             |     |  |
| Applicant                                    | Shenzhen Better Technology Limited |             |     |  |
| EUT  | High Voltage SMD LED Strip Light   | Temperature | 26℃ |  |
| M/N  | YH-HRF305050220S-W                 | Humidity    | 51% |  |
| Test Mode                                    | ON                                 | Criterion   | В   |  |
| Test Engineer                                | Jayden Zhuo                        |             | Bes |  |

| Line        | Test Voltage | Result (+)    | Result (-) |
|-------------|--------------|---------------|------------|
| CSL !       | 1KV          | PASS          | PASS       |
| N           | 1KV          | PASS          | PASS       |
| PE          | Ten Ten      | 3 163         | 1,63       |
| L-N         | 1KV          | PASS          | PASS       |
| L-PE        | S SES        | ICS IC        | 3 135      |
| N-PE        | 35 11.GS     | Reg B         | 35 35      |
| L-N-PE      | (3) (3)      | 335           | LES I      |
| Signal Line | LES LES      | Bes.          | LES.       |
| I/O Cable   | 162 Per      | 5 3           | 133        |
| Note:       | 333 B        | 35 <u>165</u> | 368        |

# 12. SURGE IMMUNITY TEST

## 12.1.Block Diagram of Test Setup



### 12.2.Test Standard

EN 61547: 2009 (EN61000-4-5: 2014, Severity Level: Line to Line: Level 1, 0.5KV; Line to Earth: Level 3, 2.0KV)

## 12.3. Severity Levels and Performance Criterion

### 12.3.1.Severity level

| Severity Level | Open-Circuit Test Voltage (KV) |  |
|----------------|--------------------------------|--|
| 1 3            | 0.5                            |  |
| 2              | 1.0                            |  |
| 3              | 2.0                            |  |
| 4              | 4.0                            |  |
| *              | Special                        |  |

#### 12.3.2.Performance criterion: B

## 12.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.10

### 12.5. Operating Condition of EUT

- 12.5.1. Setup the EUT as shown in Section 12.1.
- 12.5.2. Turn on the power of all equipments.
- 12.5.3.Let the EUT work in test mode (ON) and measure it.

#### 12.6.Test Procedure

- 12.6.1. Set up the EUT and test generator as shown on Section 12.1.
- 12.6.2.For line to line coupling mode, provide a 1.0KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 12.6.3.At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 12.6.4. Different phase angles are done individually.
- 12.6.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

#### 12.7. Test Results

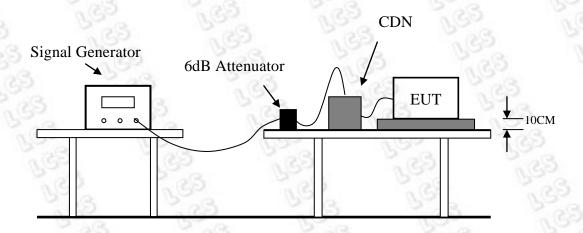
#### PASS.

| Surge Immunity Test Result |  |             |       |  |  |
|----------------------------|--|-------------|-------|--|--|
| Standard                   | <b>Standard</b> □ IEC 61000-4-5 ☑ EN 61000-4-5 |             |       |  |  |
| Applicant                  | Shenzhen Better Technology Limited             |             |       |  |  |
| EUT                        | High Voltage SMD LED Strip Light               | Temperature | 26℃   |  |  |
| M/N                        | YH-HRF305050220S-W                             | Humidity    | 51%   |  |  |
| Test Mode                  | Test Mode ON Criterion B                       |             |       |  |  |
| Test Engineer              | Jayden Zhuo                                    |             | TO BE |  |  |

| Location     | Polarity      | Phase Angle | Number of Pulse | Pulse Voltage<br>(KV) | Result |
|--------------|---------------|-------------|-----------------|-----------------------|--------|
| Post         | Bec           | $0_{\rm o}$ | 5               | 0.5                   | PASS   |
|              | + 14.58       | 90°         | 5               | 0.5                   | PASS   |
|              | + 0(0         | 180°        | 5               | 0.5                   | PASS   |
| 3.0          | + ~           | 270°        | 5               | 0.5                   | PASS   |
| L-N          | 3S - N        | $0_{\rm o}$ | 5               | 0.5                   | PASS   |
|              | 38 -          | 90°         | 5               | 0.5                   | PASS   |
|              | 0             | 180°        | 5               | 0.5                   | PASS   |
|              | 460           | 270°        | 5               | 0.5                   | PASS   |
| 080          | 650           | 7,65        | 3.13.13         | es es                 | 5      |
|              | 0.03          | 03          | 15-0            | 3                     | B      |
|              | 6-33          | Bass        | Be              | 23 B                  |        |
| T DE 36      | Been          | Res         | 13              | 600                   | (3)    |
| L-PE         | 160           | T.G         | )               | (35)                  | 650    |
|              | 30            | 0.0         | 35              | 1, 23                 | 103    |
|              | 3             | 23          | 23              | 5 23                  | 1503   |
|              | 3             | 23          | 233             | Pos                   | Box    |
| 3 3          | 18 N          | 133         | Roca            | 000                   | 11,5   |
|              | 300           | 150         | USS             | 030                   | 0.9    |
|              | (3)           | 11 (3)      | 085             | 283                   | 9      |
| n (\$15)     | 0.00          | 3.83        | 6.8             | 0.8                   | 7      |
| N-PE         | 23            | 303         | 500             | Book                  | 2      |
|              | 503           | Pose        | Ba              | G. B5                 |        |
|              | Ban           | 0.50        | 46              | 205                   | 30     |
| 17.00        | 1150          | 160         | 0               | (3)                   | 65     |
| Signal Line  | 0.85          | 200         | 5               | 33                    | 23     |
| Signal Dille | 200           | 3)          | 2.5             | 43                    | 203    |
| Note         | 3<br>23<br>23 |             |                 |                       |        |
|              | 35            |             |                 |                       |        |

## 13. INJECTED CURRENTS SUSCEPTIBILITY TEST

## 13.1.Block Diagram of Test Setup



## 13.2.Test Standard

EN 61547: 2009 (EN 61000-4-6: 2014, Severity Level: 3V (rms), 0.15MHz ~ 80MHz)

## 13.3. Severity Levels and Performance Criterion

## 13.3.1.Severity level

| Level | Field Strength (V) |
|-------|--------------------|
| 1.    | 35 (CS 1 (CS       |
| 2.    | 3                  |
| 3.    | 10                 |
| X     | Special            |

#### 13.3.2.Performance criterion: A

## 13.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.11.

### 13.5. Operating Condition of EUT

- 13.5.1. Setup the EUT as shown in Section 13.1.
- 13.5.2. Turn on the power of all equipments.
- 13.5.3.Let the EUT work in test mode (ON) and measure it.

#### 13.6. Test Procedure

- 13.6.1. Set up the EUT, CDN and test generators as shown on Section 13.1.
- 13.6.2.Let the EUT work in test mode and measure it.
- 13.6.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 13.6.4. The disturbance signal described below is injected to EUT through CDN.
- 13.6.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 13.6.6. The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 13.6.7. The rate of sweep shall not exceed 1.5\*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 13.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

#### 13.7.Test Results

#### PASS.

| Inje                      | Injected Currents Susceptibility Test Results |             |      |  |  |  |  |
|---------------------------|---|-------------|------|--|--|--|--|
| Standard                  | □ IEC 61000-4-6                               |             |      |  |  |  |  |
| Applicant                 | Shenzhen Better Technology Limited            |             |      |  |  |  |  |
| EUT                       | High Voltage SMD LED Strip Light              | Temperature | 26°C |  |  |  |  |
| M/N                       | YH-HRF305050220S-W                            | Humidity    | 51%  |  |  |  |  |
| Test Mode                 | ON  | Criterion   | A    |  |  |  |  |
| Test Engineer Jayden Zhuo |   |             |      |  |  |  |  |
| 160                       | (5) (5) (5) (5)                               |             |      |  |  |  |  |

| Frequency<br>Range (MHz) | Injected<br>Position | Strength<br>(Unmodulated) | Criterion | Result |
|--------------------------|----------------------|---------------------------|-----------|--------|
| 0.15 ~ 80                | AC Mains             | 3V                        | A         | PASS   |

#### Remark:

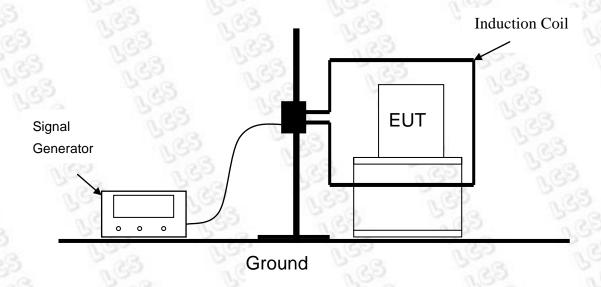
- 1. Modulation Signal:1kHz 80% AM
- 2. Measurement Equipment:

Simulator: CIT-10 (FRANKONIA)
CDN : ☑CDN-M2 (FRANKONIA)
□CDN-M3 (FRANKONIA)

Note:

## 14. MAGNETIC FIELD IMMUNITY TEST

## 14.1.Block Diagram of Test Setup



#### 14.2.Test Standard

EN 61547: 2009 (EN 61000-4-8: 2010, Severity Level 2: 3A/m)

## 14.3. Severity Levels and Performance Criterion

### 14.3.1.Severity level

| Level | Magnetic Field Strength (A/m) |
|-------|-------------------------------|
| L     | Res Res                       |
| 2.    | 3                             |
| 3.    | 10                            |
| 4.    | 30                            |
| 5.    | 100                           |
| X     | Special                       |

#### 14.3.2.Performance criterion: A

## 14.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.12.

## 14.5. Operating Condition of EUT

- 14.5.1. Setup the EUT as shown in Section 14.1.
- 14.5.2. Turn on the power of all equipments.
- 14.5.3.Let the EUT work in test mode (On) and measure it.

#### 14.6.Test Procedure

- 14.6.1.Set up the EUT system as shown on Section 14.1.
- 14.6.2. The Induction coil is set up in horizontal or vertical.
- 14.6.3.Let the EUT work in test mode and measure it.

## 14.7.Test Results

#### PASS.

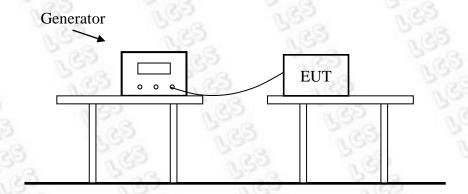
| Magnetic Field Immunity Test Result |                                    |             |       |  |
|-------------------------------------|------------------------------------|-------------|-------|--|
| Standard                            | □ IEC 61000-4-8                    |             |       |  |
| Applicant                           | Shenzhen Better Technology Limited |             |       |  |
| EUT                                 | High Voltage SMD LED Strip Light   | Temperature | 26℃   |  |
| M/N                                 | YH-HRF305050220S-W                 | Humidity    | 51%   |  |
| Test Mode                           | ON Criterion A                     |             |       |  |
| Test Engineer                       | Jayden Zhuo                        |             | CS TO |  |

| Test Level<br>(A/M) | Testing<br>Duration | Coil Orientation | Criterion | Result |
|---------------------|---------------------|------------------|-----------|--------|
| 3                   | 5 mins              | X                | Α         | PASS   |
| 3                   | 5 mins              | Y                | A         | PASS   |
| 3                   | 5 mins              | Z                | A CS      | PASS   |

Note:

## 15. VOLTAGE DIPS AND INTERRUPTIONS TEST

## 15.1.Block Diagram of Test Setup



#### 15.2.Test Standard

EN 61547: 2009 (EN 61000-4-11: 2004)

## 15.3. Severity Levels and Performance Criterion

### 15.3.1.Severity level

| Test Level<br>(%U <sub>T</sub> ) | Voltage dip and short<br>interruptions<br>(%U <sub>T</sub> ) | Duration<br>(in period) |
|----------------------------------|--|-------------------------|
| 0                                | 100  | 0.5                     |
| 70                               | 30   | 10                      |

15.3.2.Performance criterion: **B&C** 

## 15.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.13&3.14.

## 15.5.Operating Condition of EUT

- 15.5.1. Setup the EUT as shown in Section 15.1.
- 15.5.2. Turn on the power of all equipments.
- 15.5.3.Let the EUT work in test mode (ON) and measure it.

#### 15.6.Test Procedure

- 15.6.1. Set up the EUT and test generator as shown on Section 15.1.
- 15.6.2. The interruptions is introduced at selected phase angles with specified duration.
- 15.6.3.Record any degradation of performance.

## 15.7.Test Results

#### PASS.

| Voltage Dips And Interruptions Test Results |   |           |     |  |  |
|---|---|-----------|-----|--|--|
| Standard                                    | □ IEC 61000-4-11  |           |     |  |  |
| Applicant                                   | Shenzhen Better Technology Limited                      |           |     |  |  |
| EUT   | High Voltage SMD LED Strip Light <b>Temperature</b> 26℃ |           |     |  |  |
| M/N   | YH-HRF305050220S-W                                      | Humidity  | 51% |  |  |
| Test Mode                                   | ON  | Criterion | B&C |  |  |
| Test Engineer                               | Engineer Jayden Zhuo                                    |           |     |  |  |

| Test Level<br>% U <sub>T</sub> |    | Voltage Dips & Short<br>Interruptions<br>% U <sub>T</sub> | Duration<br>(in periods) | Criterion | Result |
|--------------------------------|----|---|--------------------------|-----------|--------|
| 3<br>3                         | 0  | 100   | 0.5P                     | В         | PASS   |
| Jes<br>Jes                     | 70 | 30  | 10P                      | C         | PASS   |

Note:

## 16. PHOTOGRAPH

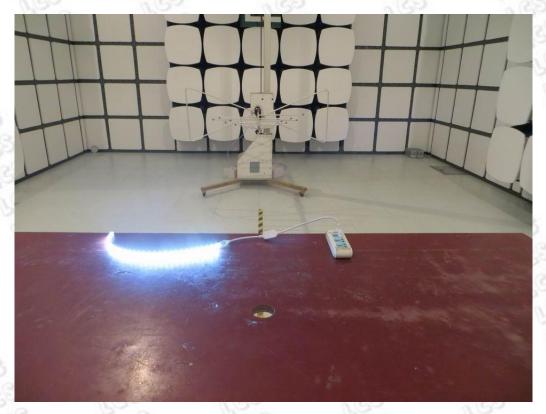
## 16.1. Photo of Power Line Conducted Measurement



16.2. Photo of Radiated Electromagnetic Disturbance Measurement



## 16.3. Photo of Radiated Measurement



## 16.4. Photo of Harmonic & Flicker Measurement



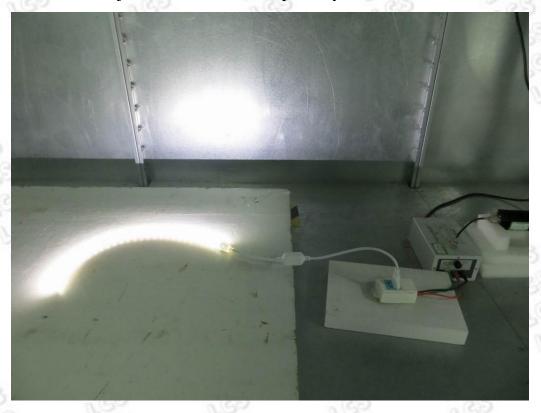
# 16.5. Photo of Electrostatic Discharge Test



# 16.6. Photo of Surge Immunity Test



## 16.7. Photo of Injected Currents Susceptibility Test



16.8. Photo of Magnetic Field Immunity Test



# 16.9. Photo of Voltage Dips and Short Interruptions Immunity Test



-THE END OF TEST REPORT---