

Firefly Lighting Co., Ltd.

SELF-BALLASTED LAMP

Model Number: BH5-100W

Prepared for : Firefly Lighting Co., Ltd.  
Firefly Building, Jinzhong yuan Industrial Area Zhongzhai,  
Xiamen, China

Prepared By : Audix Technology (Shenzhen) Co., Ltd.  
No. 6 Ke Feng Rd., 52 Block,  
Shenzhen Science & Industrial Park,  
Nantou, Shenzhen, Guangdong, China

Tel: (0755) 26639496

Report Number : ACS-F05189  
Date of Test : Nov. 30~Dec. 20, 2005  
Date of Report : Dec. 29, 2005

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APPENDIX I                      (3 Pages)

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## TEST REPORT CERTIFICATION

Applicant : Firefly Lighting Co., Ltd.  
Manufacturer : Firefly Lighting Co., Ltd.  
EUT Description : SELF-BALLASTED LAMP  
(A) MODEL NO. : BH5-100W  
(B) SERIAL NO. : F2005122901  
(C) POWER SUPPLY : AC 120V/60Hz

## Test Procedure Used:

FCC RULES AND REGULATIONS PART 18 SUBPART C RF LIGHTING DEVICES  
CONSUMER (1998) AND MP-5/1986


The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 18 Subpart C limits for radiation and conduction emissions. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

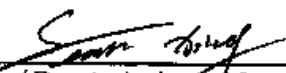
This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S. Government.

Date of Test : Nov. 30~Dec. 20, 2005

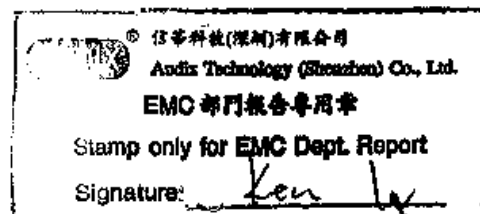
Prepared by :

  
Susan Liu / Assistant

Reviewer :

  
Sean Xing / Deputy Assistant Manager

Approved & Authorized Signer :



Ken Lu / Assistant Manager

Name of the Representative of the Responsible Party :

Signature :

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|              |   |   |
|--------------|---|---|
| Description  | : | SELF-BALLASTED LAMP   |
| Model Number | : | BH5-100W  |
| Applicant    | : | Firefly Lighting Co., Ltd.<br>Firefly Building, Jinzhong yuan Industrial Area<br>Zhongzhai, Xiamen, China |
| Manufacturer | : | Firefly Lighting Co., Ltd.<br>Firefly Building, Jinzhong yuan Industrial Area<br>Zhongzhai, Xiamen, China |
| Date of Test | : | Nov. 30~Dec. 20, 2005   |

## 1.2. Test Facility

### Site Description

- 3m Anechoic Chamber : Certificated by FCC, USA  
Registration Number: 90454  
Aug. 15, 2003
- 3m & 10m Anechoic Chamber : Certificated by FCC, USA  
Registration Number: 794232  
Mar. 15, 2004
- EMC Lab. : Certificated by DATech, German  
Registration Number: DAT-P-091/99-01  
Feb. 02, 2004
- Certificated by NVLAP, USA  
NVLAP Code: 200372-0  
Mar. 31, 2004
- Certificated by Nemko, Norway  
Aut. No.: ELA135  
April. 22, 2004
- Certificated by Industry Canada  
Registration Number: IC 5183  
Jul. 28, 2004

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.

Site Location : No. 6, Ke Feng Rd., 52 Block,  
Shenzhen Science & Industrial Park,  
Nantou, Shenzhen, Guangdong, China

## 1.3. Measurement Uncertainty

| No. | Item                                    | Uncertainty | Remark      |
|-----|---|-------------|-------------|
| 1.  | Uncertainty for Conducted Emission Test | 1.22dB      |             |
| 2.  | Uncertainty for Radiated Emission Test  | 3.14dB      | 3m Chamber  |
| 3.  | Uncertainty for Radiated Emission Test  | 3.18dB      | 10m Chamber |
| 4.  | Uncertainty for Power Clamp Test        | 1.38dB      |             |

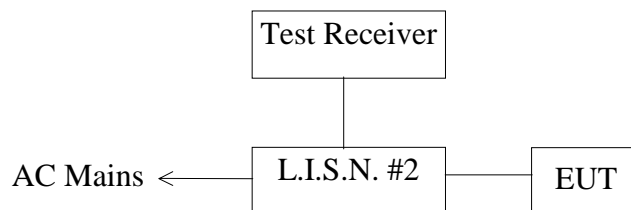
## 2. POWER LINE CONDUCTED EMISSION TEST

### 2.1. Test Equipment

The following test equipments are used during the power line conducted emission test:

| Item | Equipment      | Manufacturer    | Model No. | Serial No.    | Last Cal.   | Cal. Interval |
|------|----------------|-----------------|-----------|---------------|-------------|---------------|
| 1.   | Test Receiver  | Rohde & Schwarz | ESHS10    | 838693/001    | May 16, 05  | 1 Year        |
| 2.   | L.I.S.N.#2     | Kyoritsu        | KNW-407   | 8-1636-1      | May 16, 05  | 1 Year        |
| 3.   | Terminator     | Hubersuhner     | 50Ω       | No. 1         | May 16, 05  | 1 Year        |
| 4.   | RF Cable       | MIYAZAKI        | 5D-2W     | LISN Cable 1# | Aug. 17, 05 | 1/2 Year      |
| 5.   | Coaxial Switch | Anritsu         | MP59B     | M55367        | Aug.17 05   | 1/2 Year      |
| 6.   | Pulse Limiter  | Rohde & Schwarz | ESH3-Z2   | 100340        | Aug. 17, 05 | 1/2 Year      |

### 2.2. Block Diagram of Test Setup



(EUT: SELF-BALLASTED LAMP)

### 2.3. Power Line Conducted Emission Test Limit

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

Notes: 1. \* Decreasing linearly with logarithm of frequency.  
2. The lower limit shall apply at the transition frequencies.

### 2.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

#### 2.4.1. SELF-BALLASTED LAMP (EUT)

Model Number : BH5-100W  
Serial Number : F2005122901  
Manufacturer : Firefly Lighting Co., Ltd.

### 2.5. Operating Condition of EUT

2.5.1. Setup the EUT and simulator as shown on Section 2.2.

2.5.2. Turn on the power of all equipment.

2.5.3. Let the EUT work in test mode (ON) and test it.

### 2.6. Test Procedure

The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission levels. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2003 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

The test result are reported on Section 2.7, all the scanning waveforms for Conducted Emission Test are attached in Appendix I.

## 2.7. Power Line Conducted Emission Test Results

**PASS.**

The frequency range from 150kHz to 30 MHz is investigated.

All emissions not reported below are too low against the prescribed limits.

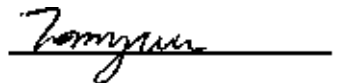
|                 |                     |               |      |
|-----------------|---------------------|---------------|------|
| Date of Test :  | Nov. 30, 2005       | Temperature : | 23°C |
| EUT :           | SELF-BALLASTED LAMP | Humidity :    | 54%  |
| Model No. :     | BH5-100W            | Test Mode :   | ON   |
| Test Engineer : | SAM                 |               |      |

| Frequency<br>(MHz) | Reading (dBμV) |         |            |         | Limit<br>(dBμV) |         |
|--------------------|----------------|---------|------------|---------|-----------------|---------|
|                    | VA             |         | VB         |         | Quasi-Peak      | Average |
|                    | Quasi-Peak     | Average | Quasi-Peak | Average |                 |         |
| 0.477              | 31.99          | *       | 31.19      | *       | 48.00           | 38.00   |
| 0.528              | 31.76          | *       | 32.28      | *       | 48.00           | 38.00   |
| 0.594              | 34.11          | *       | N/A        | N/A     | 48.00           | 38.00   |
| 0.599              | N/A            | N/A     | 33.37      | *       | 48.00           | 38.00   |
| 0.643              | N/A            | N/A     | 35.16      | *       | 48.00           | 38.00   |
| 0.648              | 36.30          | *       | N/A        | N/A     | 48.00           | 38.00   |
| 0.694              | N/A            | N/A     | 36.58      | *       | 48.00           | 38.00   |
| 0.736              | 34.44          | *       | N/A        | N/A     | 48.00           | 38.00   |
| 0.783              | N/A            | N/A     | 33.52      | *       | 48.00           | 38.00   |
| 0.838              | 32.76          | *       | N/A        | N/A     | 48.00           | 38.00   |

Remark: 1) If the data table appeared symbol of “N/A” means the value was too low to be measured.

2) If the data table appeared symbol of “\*” means the Q.P. value is under the limit for average, so, the average value had been omitted.

Reviewer:





### 3. MAGNETIC FIELD EMISSION TEST

#### 3.1. Test Equipment

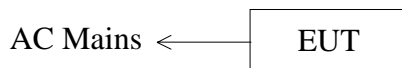
The following test equipments are used during the radiated emission test:

##### 3.1.1. Anechoic Chamber

| Item | Equipment     | Manufacturer    | Model No. | Serial No. | Last Cal.   | Cal. Interval |
|------|---------------|-----------------|-----------|------------|-------------|---------------|
| 1.   | Loop Antenna  | Chase           | HLA6120   | 1062       | June 28, 05 | 1 Year        |
| 2    | Test Receiver | Rohde & Schwarz | ESHS20    | 836600/006 | May 16, 05  | 1 Year        |

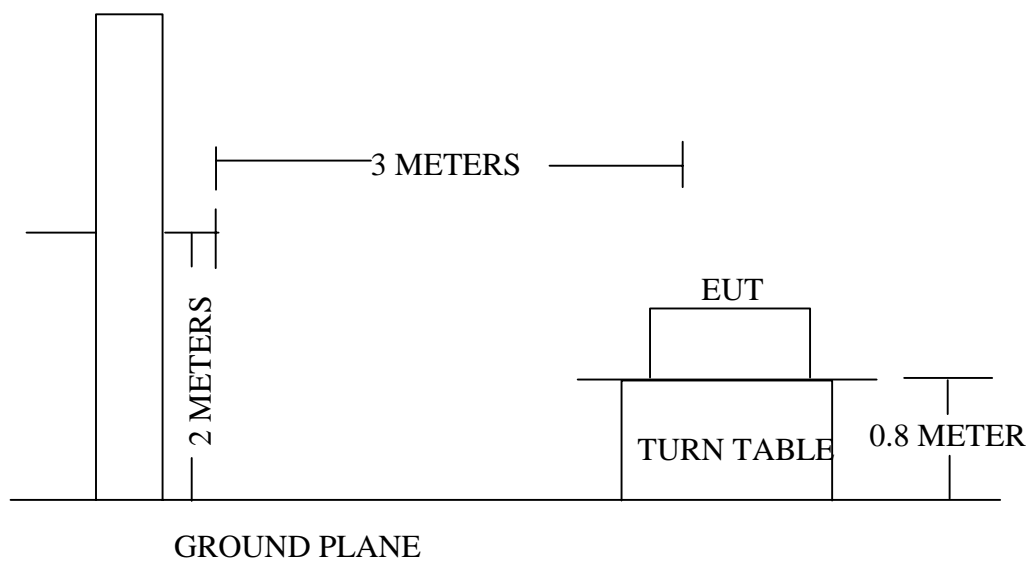
#### 3.2. Block Diagram of Test Setup

##### 3.2.1. Block Diagram of connection between the EUT and simulators



(EUT: SELF-BALLASTED LAMP)

##### 3.2.2. In Anechoic Chamber Test Setup Diagram



### 3.3. Magnetic Field Emission Limit

All emanations from Non-ISM devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| Frequency band<br>MHz | Quasi-peak Electric Field Test Distance<br>3m<br>dB( $\mu$ V/m) |
|-----------------------|---|
| 0.009 - 30            | 63.5  |

Note: (1) The limit shall decreasing linearly with logarithm of frequency.  
(2) Distance refers to the distance in meters between the test antenna and the closed point of any part of the EUT.

### 3.4. EUT Configuration on Test

The FCC part 18 Class A regulations test method must be used to find the maximum emission during Radiated Emission test.

The configuration of EUT is same as used in Conducted Emission test. Please refer to Section 2.4.

### 3.5. Operating Condition of EUT

3.5.1. Setup the EUT and the simulators as shown on Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT work in test mode (ON) and test it.

### 3.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. Measurements are performed at 3m distance with a 0.6m loop antenna as described in MP-5. The antenna shall be vertically installed, with the lower edge of the loop at 2m height above the floor.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESHS20) is 200Hz. The EUT is tested in Chamber. All the scanning waveform are attached within Appendix II.

#### **4. DEVIATION TO TEST SPECIFICATIONS**

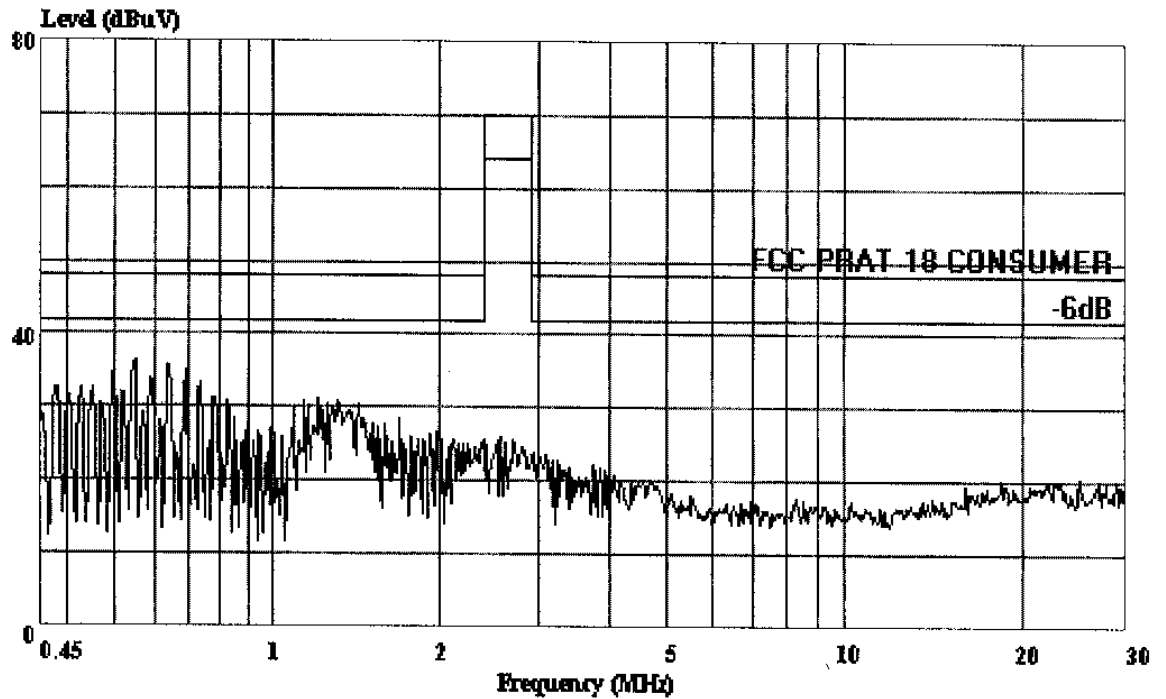
[ NONE]

# **APPENDIX I**

**AUDIX**<sup>®</sup>  
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science & Ind Park  
Tel: 0755-26639496  
Fax: 26632877

Data#: 5      File#: ACS5Q1111.EMI      Date: 2005-11-30      Time: 13:09:53



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (Audix NO.1 CONDUCTION)

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Ref Trace:

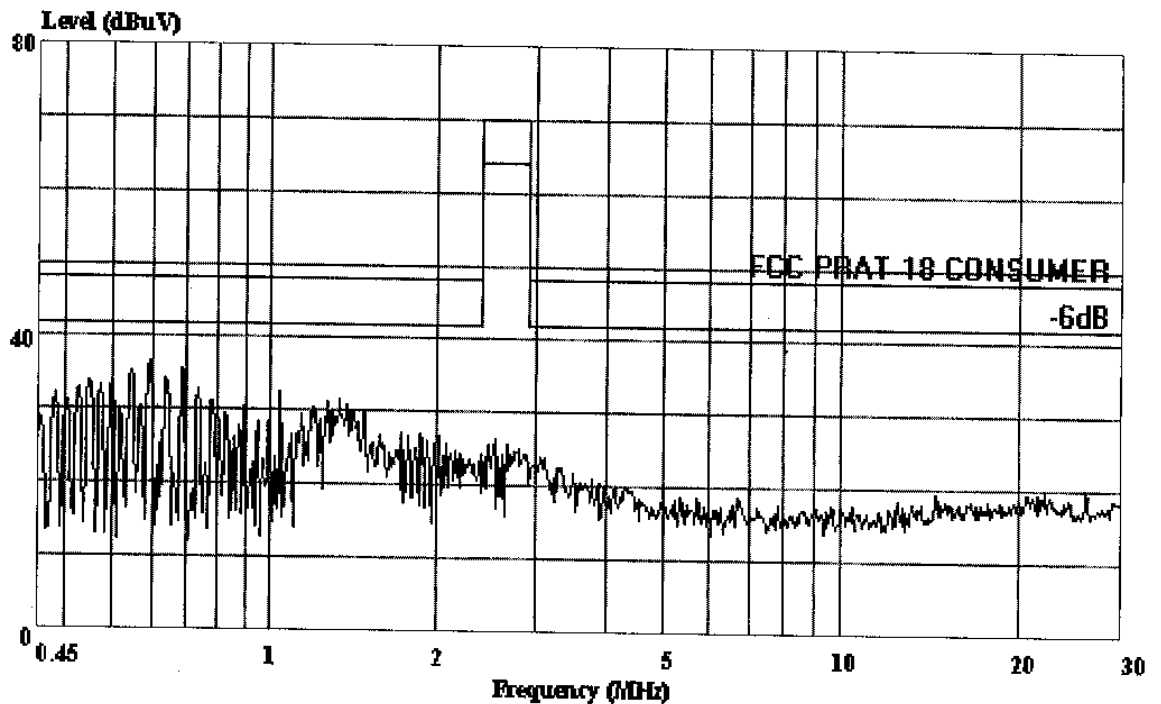
Condition: FCC PRAT 18 CONSUMER VA KNW-407  
EUT : SELF-BALLASTED LAMP  
M/N : BH5-100W  
Test Spec : AC 120V/60Hz  
Test Engineer: SAM  
Comment : Temp: 23' Humi: 54%  
OP Condition : ON  
Memo :



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science & Ind Park  
Tel:0755-26639496  
Fax:26632877

Data#: 7 File#: ACS5Q1111.EMI Date: 2005-11-30 Time: 13:11:26



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (Audix NO.1 CONDUCTION)

Trace:

Ref Trace:

Condition: FCC PRAT 18 CONSUMER VB KNW-407  
EUT : SELF-BALLASTED LAMP  
M/N : BH5-100W  
Test Spec : AC 120V/60Hz  
Test Engineer: SAM  
Comment : Temp:23' Humi:54%  
OP Condition : ON  
Memo :

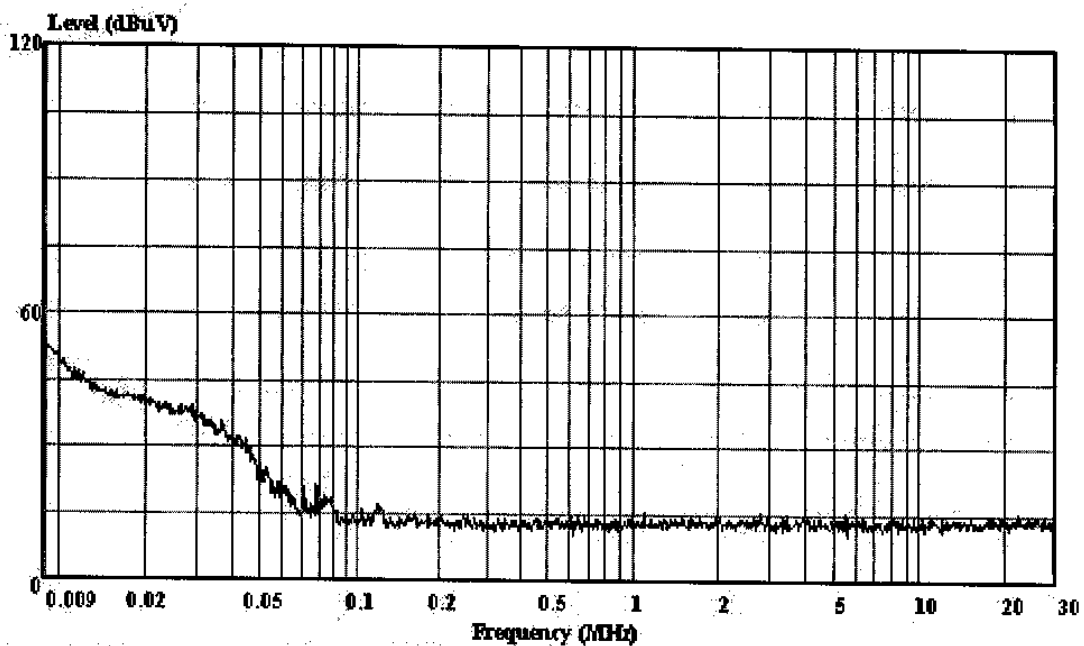
# **APPENDIX II**



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science & Ind Park  
Tel:0755-26639496  
Fax:26632877

Data#: 179 File#: Global.EMI Date: 2005-12-20 Time: 13:45:42



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Trace:

Ref Trace:

Condition:

EUT : SELF-BALLASTED LAMP  
M/N : BH5-100W  
OP Condition : ON  
Test Spec : AC 120V/60Hz  
Test Engineer: sam  
Comment : Temp:23' C Humi:54%