

FCC PART 18 TEST REPORT

For

Zhejiang Joinan Lighting Co., LTD

18 XINGGONG 7TH RD SHANGYU TOWN JIANGSHAN,ZHEJIANG ,CHINA

FCC ID: YVJSL24

| | |
|--|-----------------------------|
| Report Type: Original Report | Product Name: CFL |
| Test Engineer: Star Xie | star xie |
| Report Number: R1SH120806058-00 | |
| Report Date: 2012-09-24 | |
| Reviewed By: EMC Leader | Harry Wu |
| Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn | |

Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.

* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

TABLE OF CONTENTS

| | |
|---|-----------|
| GENERAL INFORMATION | 3 |
| PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) | 3 |
| OBJECTIVE | 3 |
| RELATED SUBMITTAL(S)/GRANT(S) | 3 |
| TEST METHODOLOGY | 3 |
| TEST FACILITY | 3 |
| SYSTEM TEST CONFIGURATION | 5 |
| JUSTIFICATION..... | 5 |
| EUT EXERCISE SOFTWARE | 5 |
| SPECIAL ACCESSORIES | 5 |
| EQUIPMENT MODIFICATIONS..... | 5 |
| BLOCK DIAGRAM OF TEST SETUP..... | 5 |
| SUMMARY OF TEST RESULT..... | 6 |
| FCC §18.307 (C) - AC LINE CONDUCTED EMISSIONS..... | 7 |
| APPLICABLE STANDARD..... | 7 |
| MEASUREMENT UNCERTAINTY | 7 |
| EUT SETUP | 7 |
| EMI TEST RECEIVER SETUP | 7 |
| TEST PROCEDURE..... | 8 |
| TEST EQUIPMENT LIST AND DETAILS | 8 |
| CORRECTED AMPLITUDE & MARGIN CALCULATION..... | 8 |
| TEST DATA..... | 8 |
| FCC §18.305 – FIELD STRENGTH | 11 |
| MEASUREMENT UNCERTAINTY | 11 |
| EUT SETUP | 11 |
| EMI TEST RECEIVER SETUP AND SPECTRUM ANALYZER SETUP | 12 |
| TEST PROCEDURE..... | 12 |
| CORRECTED AMPLITUDE CALCULATION | 12 |
| TEST EQUIPMENT LIST AND DETAILS | 12 |
| TEST DATA..... | 13 |
| DECLARATION LETTER..... | 16 |

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The Zhejiang Joinan Lighting Co., LTD's model: SL24 (FCC ID: YVJSL24) (the "EUT") in this report was a CFL, which was measured approximately: 13.0 cm (L) x 5.0 cm (W) x 5.0 cm (H), the rated input voltage: AC 120V/60Hz. The highest operating frequency is 60 kHz.

Note: model SL24 have five difference colors, they are electrically identical, the only differences are the part of plastic enclosure color to match the lamp color. We selected the green lamp for fully testing, the details was explained in the attached declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: 120806058 (Assigned by BACL, Dongguan). The EUT was received on 2012-08-08.*

Objective

This test report is prepared on behalf of Zhejiang Joinan Lighting Co., LTD in accordance with Part 2-Subpart J and Part 18-Subparts A, B and C of the Federal Communication Commissions rules and regulations.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 18.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurement was performed at Bay Area Compliance Laboratories Corp.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

No exercise software was used.

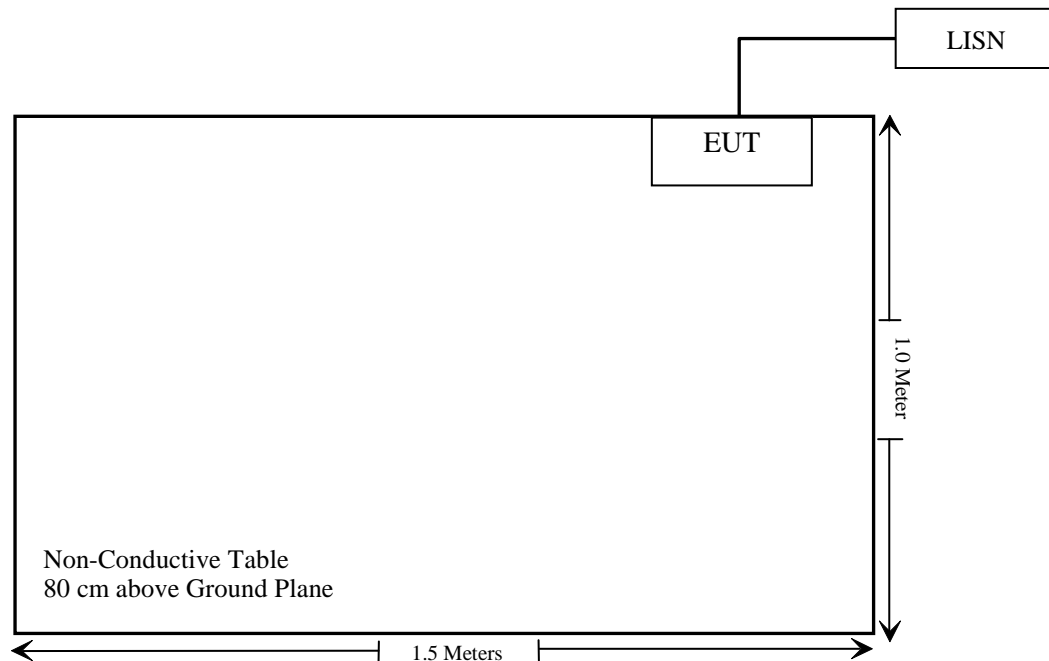
Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

Block Diagram of Test Setup



SUMMARY OF TEST RESULT

| FCC Rules | Description of Test | Results |
|-----------|-----------------------------|------------|
| §18.307 | AC Line Conducted Emissions | Compliance |
| §18.305 | Field Strength | Compliance |

FCC §18.307 (C) - AC LINE CONDUCTED EMISSIONS

Applicable Standard

Conduction limits. For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 μ H/50 ohms line impedance stabilization network (LISN).

| Frequency (MHz) | Maximum RF line voltage measured with a 50 μ H/50 ohm LISN (uV) |
|-------------------------|---|
| Non-consumer equipment: | |
| 0.45 to 1.6 | 1,000 |
| 1.6 to 30 | 3,000 |
| Consumer equipment: | |
| 0.45 to 2.51 | 250 |
| 2.51 to 3.0 | 3,000 |
| 3.0 to 30 | 250 |

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss and LISN.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Dongguan) is 2.4 dB.(k=2, 95% level of confidence)

EUT Setup

The setup of EUT is according with MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18.

The EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 9 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| <i>Frequency Range</i> | <i>IFBW</i> |
|------------------------|-------------|
| 9kHz~150kHz | 200Hz |
| 150 kHz – 30 MHz | 9 kHz |

Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-Peak and average detection mode.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|-------------------|---------|---------------|------------------|----------------------|
| R&S | EMI Test Receiver | ESCS 30 | 830245/006 | 2011-10-08 | 2012-10-07 |
| R&S | LISN1 | ESH3-Z5 | 843331/015 | 2011-10-08 | 2012-10-07 |
| R&S | LISN2 | ESH3-Z5 | 100113 | 2011-10-08 | 2012-10-07 |

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Cable Loss, and Attenuator Factor adding to the Indicated Amplitude Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Cable Loss} + \text{Attenuator Factor}$$

For example, a Corrected Amplitude of 34.08 dBuV/m = Indicated Reading (23.85 dBuV) + Cable Factor (0.22 dB) + Attenuator Factor (10 dB)

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude.}$$

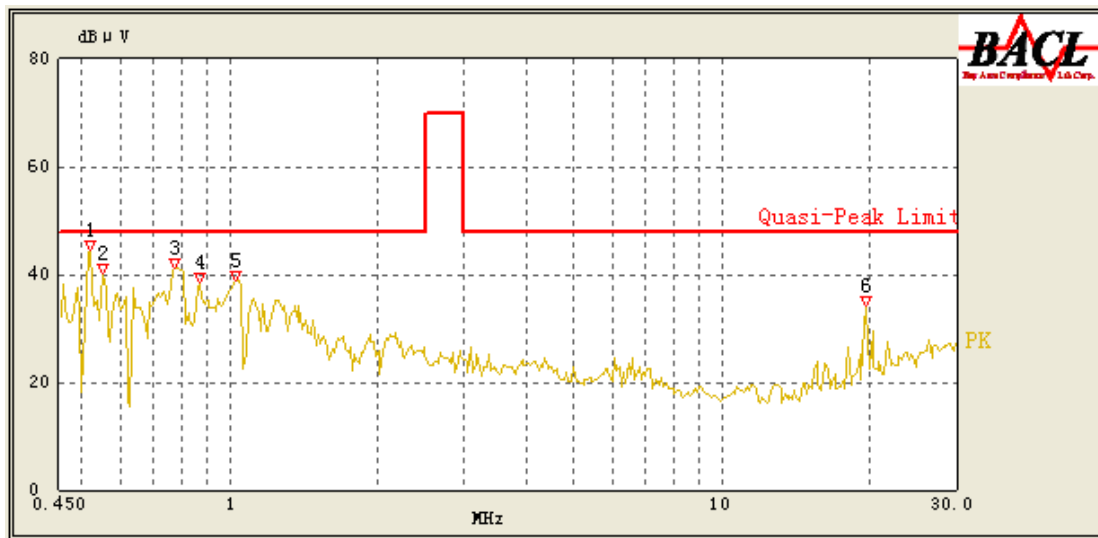
Test Data

Environmental Conditions

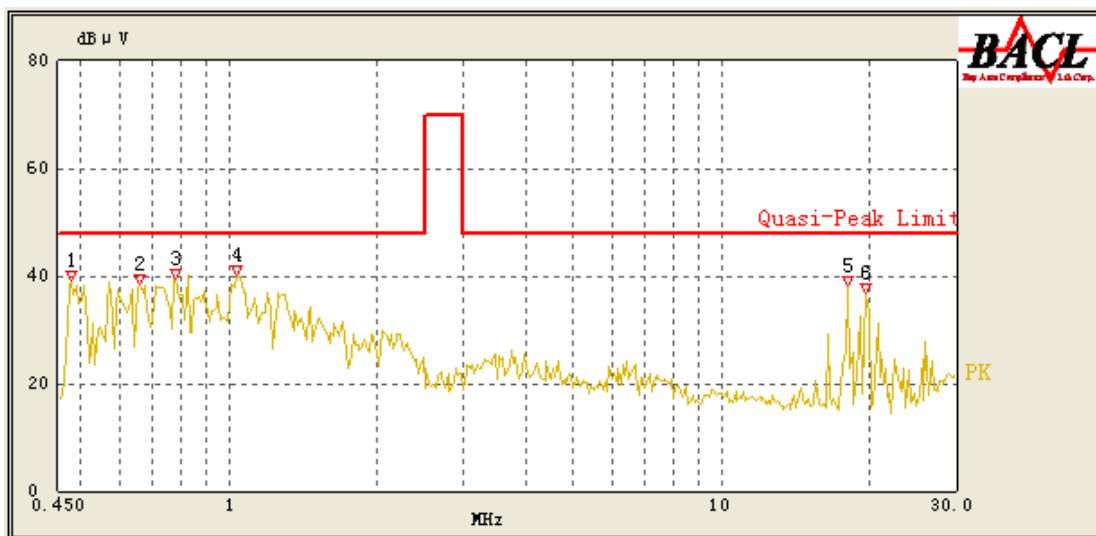
| | |
|--------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 48 % |
| ATM Pressure: | 100.0 kPa |

Testing was performed by Star Xie on 2012-08-08.

Test Mode: Running

AC 120V/60 Hz, Line:

| Frequency (MHz) | Corrected Amplitude (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/Ave./QP) |
|-----------------|----------------------------|------------------------|--------------|-------------|-----------------------|
| 0.520 | 40.48 | 0.42 | 48.00 | 7.52 | QP |
| 0.555 | 38.79 | 0.43 | 48.00 | 9.21 | QP |
| 0.775 | 35.28 | 0.44 | 48.00 | 12.72 | QP |
| 0.870 | 34.99 | 0.45 | 48.00 | 13.01 | QP |
| 1.030 | 32.02 | 0.45 | 48.00 | 15.98 | QP |
| 19.705 | 27.64 | 1.69 | 48.00 | 20.36 | QP |

AC 120V/ 60 Hz, Neutral:

| Frequency (MHz) | Corrected Amplitude (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/Ave./QP) |
|-----------------|----------------------------|------------------------|--------------|-------------|-----------------------|
| 0.780 | 35.52 | 0.44 | 48.00 | 12.48 | QP |
| 1.040 | 34.43 | 0.45 | 48.00 | 13.57 | QP |
| 18.065 | 34.43 | 1.54 | 48.00 | 13.57 | QP |
| 19.620 | 34.07 | 1.69 | 48.00 | 13.93 | QP |
| 0.480 | 32.69 | 0.42 | 48.00 | 15.31 | QP |
| 0.660 | 32.64 | 0.44 | 48.00 | 15.36 | QP |

Note:

- 1) Corrected Amplitude = Reading + Correction Factor
- 2) Correction Factor = LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
- 3) Margin = Limit – Corrected Amplitude

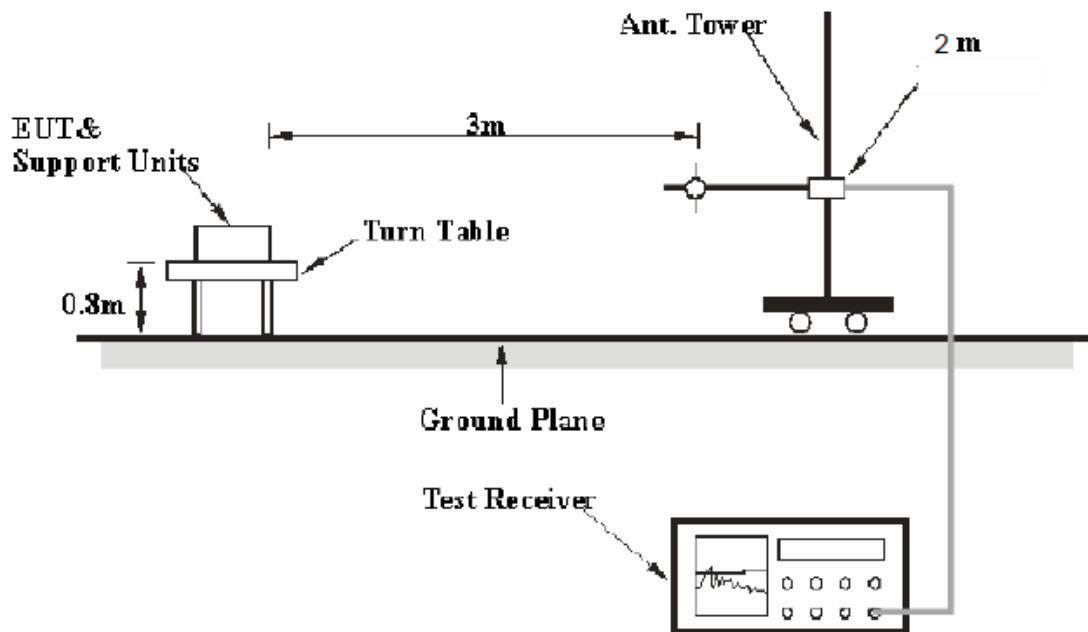
FCC §18.305 – FIELD STRENGTH

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB ($k=2$, 95% level of confidence).

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP - 5.

The EUT was connected to 120 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1000 MHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

| <i>Frequency Range</i> | <i>R B/W</i> | <i>Video B/W</i> | <i>IF B/W</i> |
|------------------------|--------------|------------------|---------------|
| 9 kHz– 150 kHz | 200 Hz | 1 kHz | 200Hz |
| 150 kHz– 30 MHz | 9 kHz | 30 kHz | 9 kHz |
| 30MHz-1000MHz | 120 kHz | 300 kHz | 120 kHz |

Test Procedure

During the conducted emission test, the EUT was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the average detection mode.

Corrected Amplitude Calculation

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

$$\text{Corrected Amplitude} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss}$$

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 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|----------------------|-------|---------------|------------------|----------------------|
| ETS-LINDGREN | Passive Loop Antenna | 6512 | 9706-1206 | 2011-11-30 | 2013-11-29 |
| Sunol Sciences | Hybrid Antennas | JB3 | A060611-2 | 2012-9-6 | 2013-9-5 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 101121 | 2011-10-08 | 2012-10-07 |
| HP | Pre-amplifier | 8447D | 2727A05902 | 2012-3-15 | 2013-3-14 |

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Data**Environmental Conditions**

| | |
|---------------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.5 kPa |

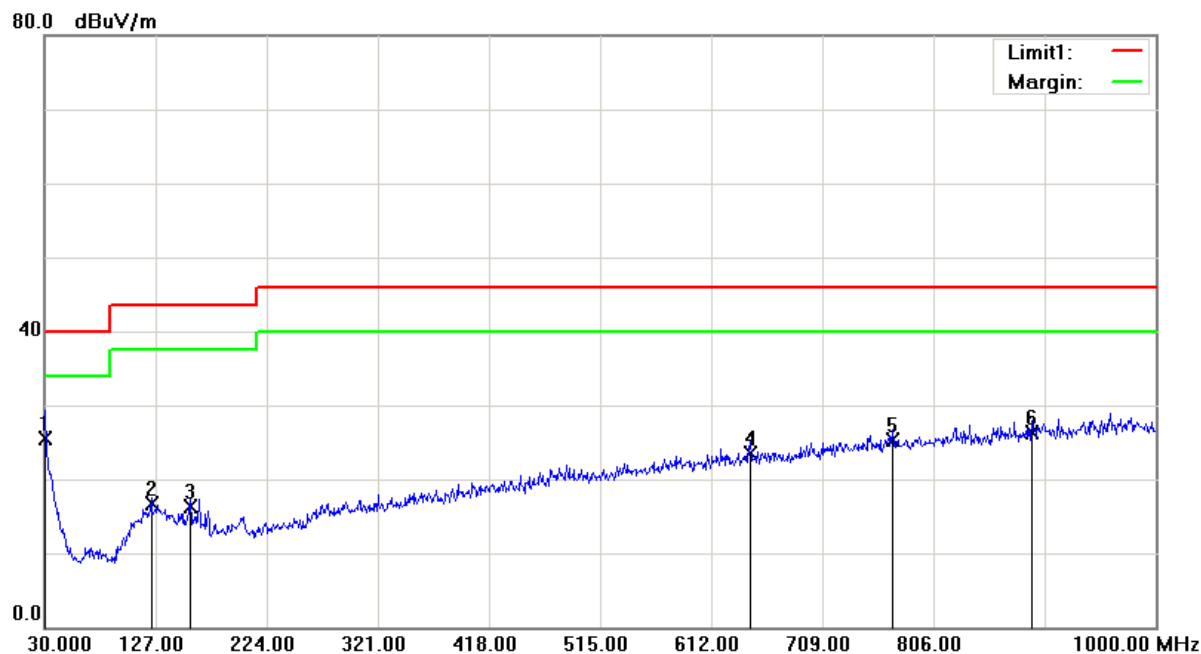
The testing was performed by Star Xie on 2012-09-24.

Test Mode: Running

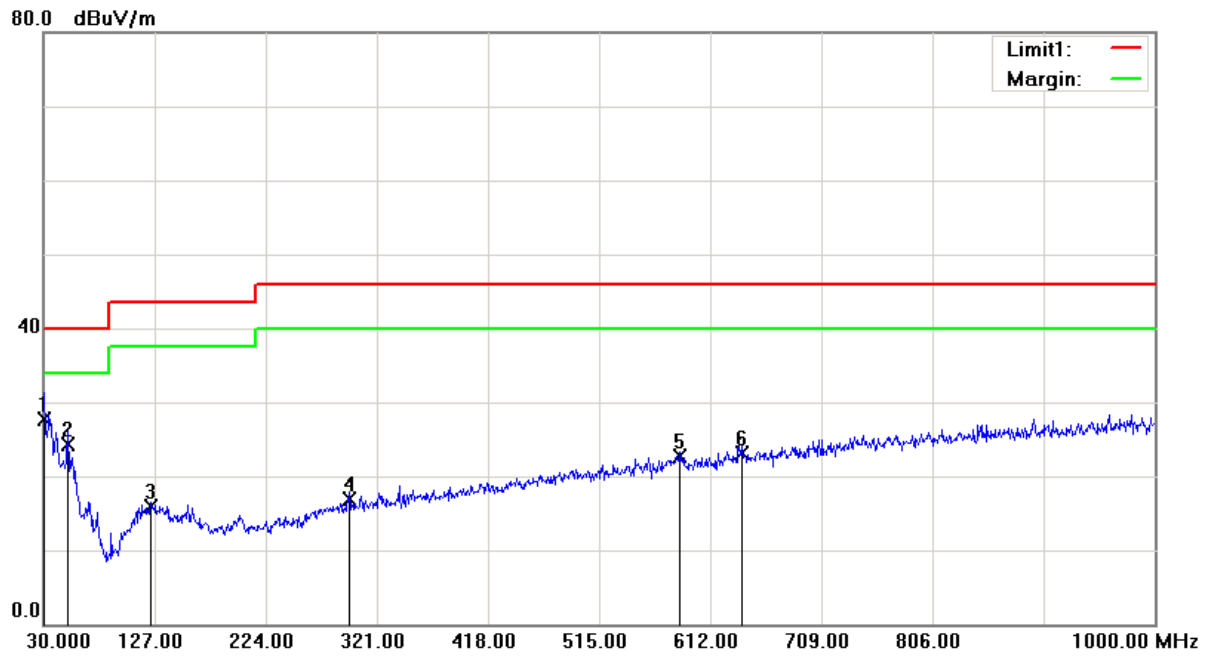
1) 9 kHz-30 MHz

| Frequency (MHz) | Corrected Amplitude (dBμV/m) | Detector (PK/QP/Ave.) |
|----------------------------|--|----------------------------------|
| 0.060 | 23.95 | PK |
| 0.071 | 23.13 | PK |
| 0.084 | 22.81 | PK |
| 0.135 | 22.48 | PK |
| 0.147 | 22.26 | PK |
| 0.160 | 22.01 | PK |

2) 30 MHz-1000 MHz

Horizontal

| No. | Frequency (MHz) | Reading (dBuV/m) | Detector | Corrected dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----|-----------------|------------------|----------|----------------|-----------------|----------------|-------------|
| 1 | 30.9700 | 24.86 | QP | 0.64 | 25.50 | 40.00 | 14.50 |
| 2 | 123.1200 | 23.10 | QP | -6.30 | 16.80 | 43.50 | 26.70 |
| 3 | 157.0700 | 24.05 | QP | -7.65 | 16.40 | 43.50 | 27.10 |
| 4 | 645.9500 | 23.78 | QP | -0.18 | 23.60 | 46.00 | 22.40 |
| 5 | 770.1100 | 23.97 | QP | 1.43 | 25.40 | 46.00 | 20.60 |
| 6 | 891.3600 | 23.45 | QP | 2.85 | 26.30 | 46.00 | 19.70 |

Vertical

| No. | Frequency (MHz) | Reading (dBuV/m) | Detector | Corrected dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----|--------------------|---------------------|----------|-------------------|--------------------|-------------------|----------------|
| 1 | 30.9700 | 27.16 | QP | 0.64 | 27.80 | 40.00 | 12.20 |
| 2 | 51.3400 | 36.79 | QP | -12.49 | 24.30 | 40.00 | 15.70 |
| 3 | 123.1200 | 22.20 | QP | -6.30 | 15.90 | 43.50 | 27.60 |
| 4 | 296.7500 | 23.15 | QP | -6.25 | 16.90 | 46.00 | 29.10 |
| 5 | 585.8100 | 23.37 | QP | -0.57 | 22.80 | 46.00 | 23.20 |
| 6 | 639.1600 | 23.28 | QP | -0.18 | 23.10 | 46.00 | 22.90 |

DECLARATION LETTER



Company: Zhejiang Joinan Lighting Co., LTD

Address: 18 Xingong 7th Rd, Shangyu Town, Jiangshan, Zhejiang, PR China

Tel: +86-570-4352051 Fax: +86-570-4352000

Date: 2012-8-13

Product Similarity Declaration

To Whom it May Concern:

Bay Area Compliance Laboratories Corp.

1274 Anvilwood Ave.

Sunnyvale, CA 94089

Phone: 408-732-9162, Fax: 408-732-9164

<http://www.baclcorp.com>

We, Zhejiang Joinan Lighting Co., LTD, hereby declare that our CFLs, Model Number: SL24 have five difference colors that including GREEN, RED, YELLOW, BLUE and BLACK. These lamps are exactly same for electrically identical as well as for schematic, PCB layout and construction, the only difference are the part of plastic enclosure color to match the lamp color. The GREEN color lamp was certified by BACL.

Please contact us if you have any questions.

Signature: 邵雄

Print Name: Zhixiong Shao

Title: Engineer

****END OF REPORT****