

FCC PART 18

MEASUREMENT AND TEST REPORT

For

Shangyu Shunhe Electric Appliance for Illumination Co., Ltd.

Xiaoyue Town, Shangyu City, Zhejiang, China

FCC ID: YDO2104
Model: UCF13/EB/DW/PRE
UCF24/EB/DW/PRE

This Report Concerns: Original Report	Equipment Type: T5 Lamp
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Report Number: RSH100421001	
Report Date: 2011-09-14	
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The Shangyu Shunhe Electric Appliance for Illumination Co., Ltd's product, FCC ID: YDO2104, model number: UCF13/EB/DW/PRE, UCF24/EB/DW/PRE, or the "EUT" as referred to in this report is the T5 lamp, which has metallic enclosure.

Mechanical Description of EUT

The EUT is measured approximately 33cm(L) x 9cm(W) x 3cm(H) for UCF13/EB/DW/PRE.

The EUT is measured approximately 55.7cm(L) x 9cm(W) x 3cm(H) for UCF24/EB/DW/PRE.

Rated input voltage: AC 120V/60Hz.

Note: All measurement and test data in this report was gathered from production sample, serial number:100419001, (Assigned by BACL).

Objective

The following test report is prepared on behalf of Shangyu Shunhe Electric Appliance for Illumination Co., Ltd, in accordance with Part 2, Subpart J, and Part 18, Subparts A, B and C of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC Part 18 limits for Industrial, Scientific and Medical Equipment.

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 measurements were performed at BACL.

Test Facility

The test site used by BACL to collect test data is located in the Room 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL 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 July 31, 2009. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was provided for tests as a stand-alone device. The system is configured for testing in a typical fashion (as a normally used by a typical user).

EUT Exercise Software

No.

Special Accessories

No special accessories were supplied by BACL.

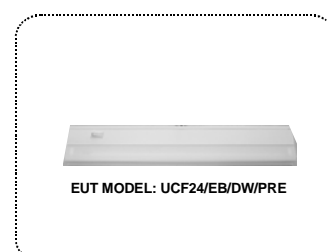
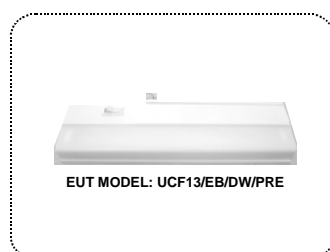
Equipment Modifications

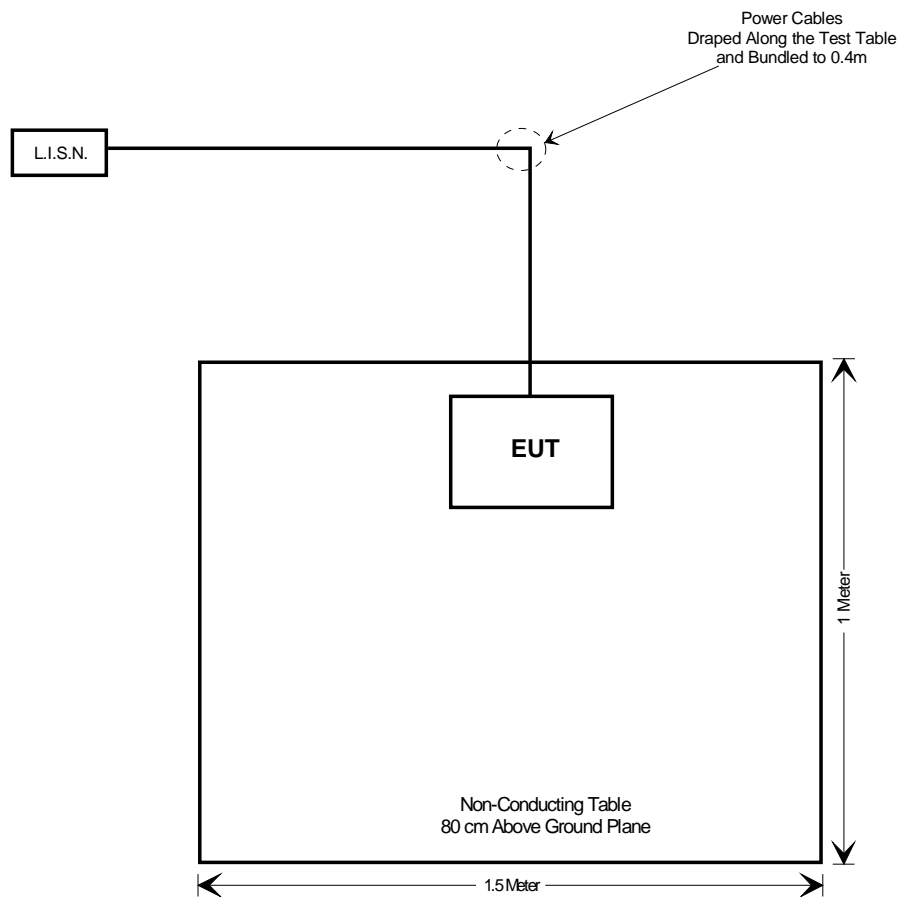
No modification to the EUT was made by BACL to make sure the EUT comply with applicable limits.

External I/O Cable

Cable Description	Length (m)	From/Port	To
AC Power Cable	1.2	L.I.S.N.	EUT

Configuration of Test System



Test Setup Block Diagram

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§18.307	AC Line Conducted Emission	Compliance
§18.305	Field Strength	Compliance

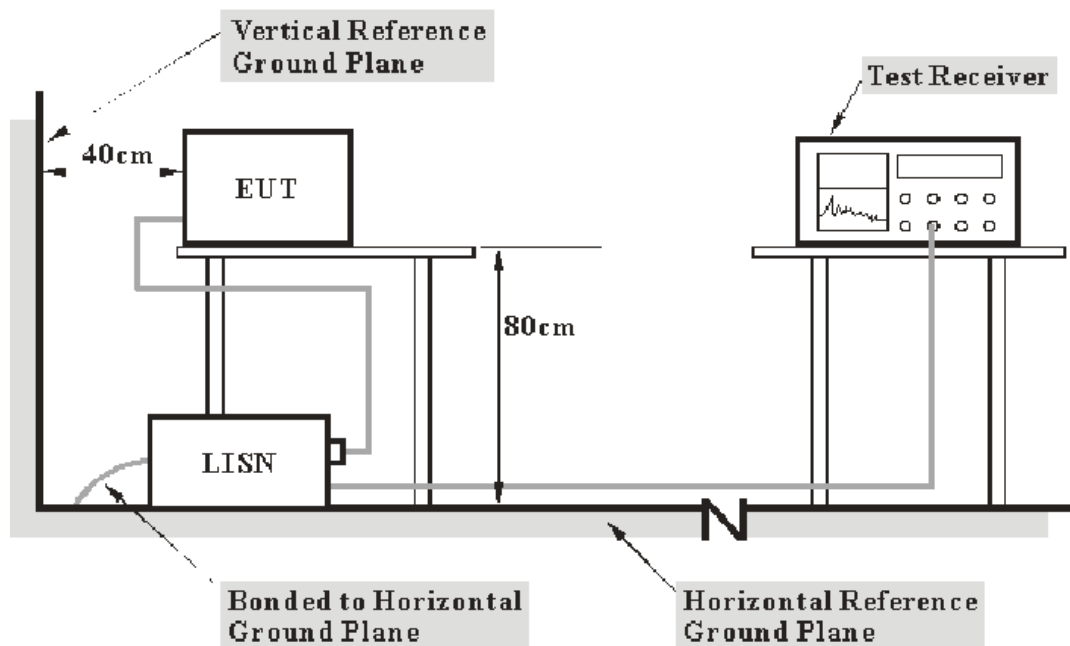
FCC §18.307 – AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMI. The factors contributing to uncertainties are EMI Test Receiver, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMI Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is ± 2.4 dB.

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per MP-5 measurement procedure. Specification used was with the FCC Part 18.307.

The power cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

A 120VAC/60Hz power source was provided to the EUT through the L.I.S.N.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 450 kHz to 30 MHz.

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

<i>Frequency Range</i>	<i>IF B/W</i>
450 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the power cord of the EUT is connected to the outlet of the L.I.S.N.(Line Impedance Stabilization Network).

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

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

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	10028	2011-09-27
SOLAR	L.I.S.N.	9252-50-R-24-BNC	984412	2011-12-20
Rohde & Schwarz	L.I.S.N.	ENV216	100081	2011-11-12
Rohde & Schwarz	Pulse Limiter	ESH3Z2	DE25985	2011-10-12

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

Test Environment Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0 KPa

The testing was performed by Sally Ni.

Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC Part 18.307, with the worst margin reading of:

Model Number: UCF13/EB/DW/PRE

11.82 dB at 0.47 MHz at the **Neutral** mode with the power cord extension, 0.45-30 MHz

Model Number: UCF24/EB/DW/PRE

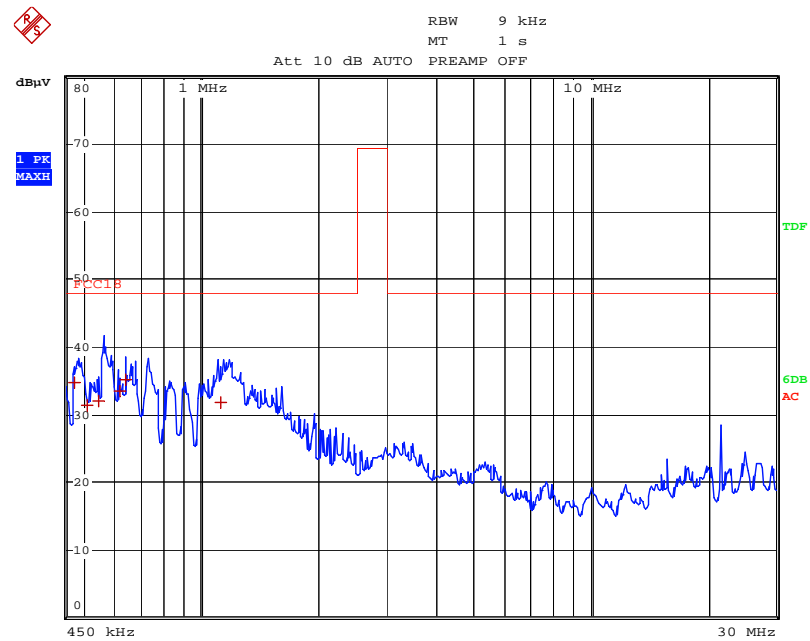
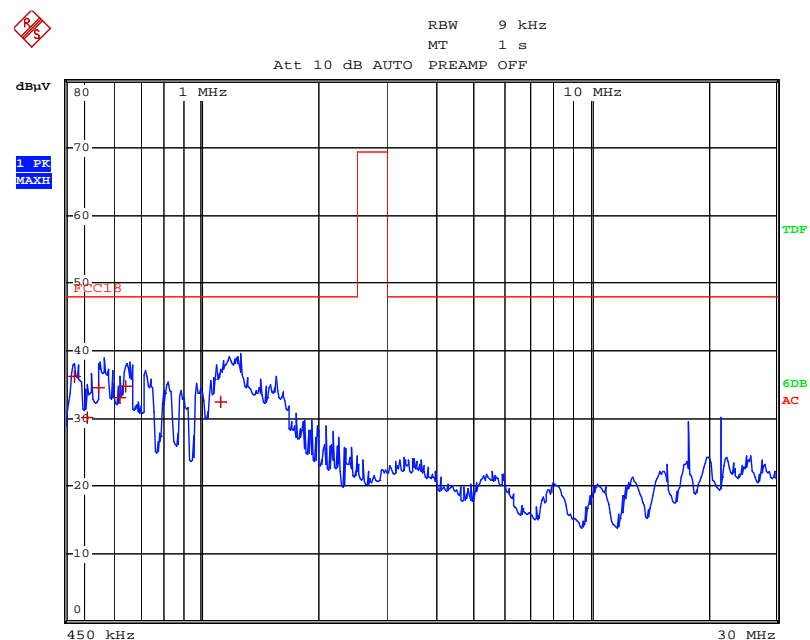
10.36 dB at 0.47 MHz at the **Neutral** mode with the power cord extension, 0.45-30 MHz

Test Data & Plots

Test Mode: Operating Mode

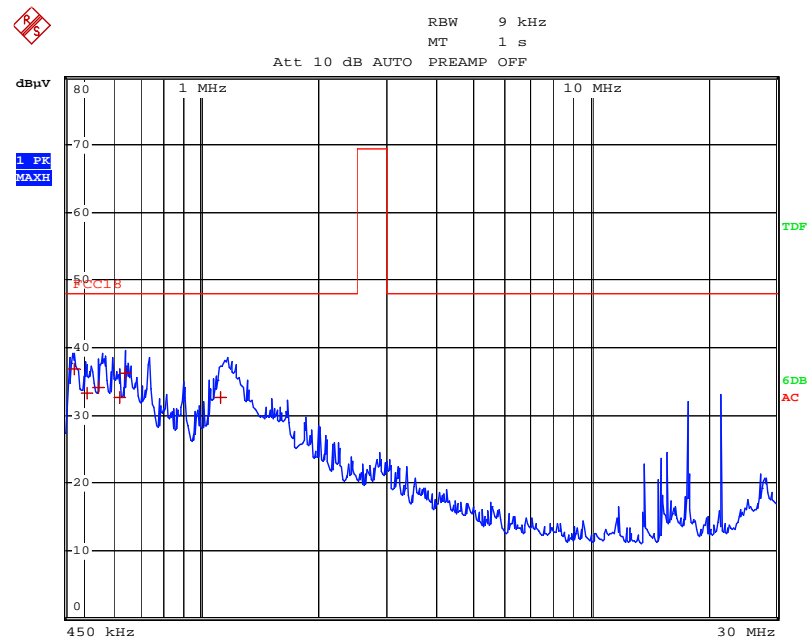
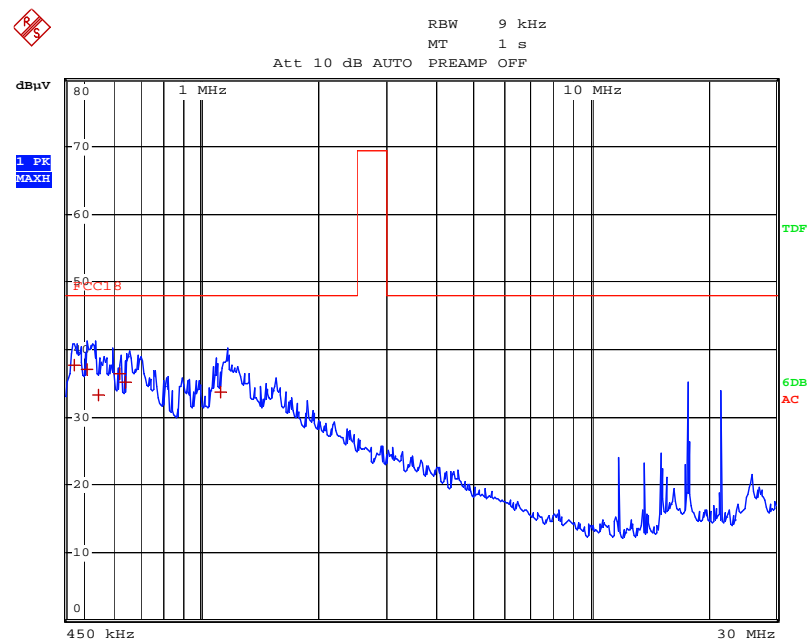
Model Number: UCF13/EB/DW/PRE

Line Conducted Emissions				FCC 18.307 RF Lighting Consumer Equipment	
Frequency (MHz)	Amplitude (dBμV)	Detector (QP/Ave/Peak)	Phase (Line/Neutral)	Limit (dBμV)	Margin (dB)
0.47	36.18	QP	Neutral	48.00	11.82
0.638	35.27	QP	Line	48.00	12.73
0.638	34.79	QP	Neutral	48.00	13.21
0.47	34.69	QP	Line	48.00	13.31
0.542	34.49	QP	Neutral	48.00	13.51
0.614	33.45	QP	Line	48.00	14.55
0.614	33.02	QP	Neutral	48.00	14.98
1.122	32.35	QP	Neutral	48.00	15.65
0.542	32.01	QP	Line	48.00	15.99
1.122	31.85	QP	Line	48.00	16.15
0.506	31.40	QP	Line	48.00	16.60
0.506	30.16	QP	Neutral	48.00	17.84

AC 120V/60Hz, Line**AC 120V/60Hz, Neutral**

Model Number: UCF24/EB/DW/PRE

Line Conducted Emissions				FCC 18.307 RF Lighting Consumer Equipment	
Frequency (MHz)	Amplitude (dBμV)	Detector (QP/Ave/Peak)	Phase (Line/Neutral)	Limit (dBμV)	Margin (dB)
0.47	37.64	QP	Neutral	48.00	10.36
0.506	36.97	QP	Neutral	48.00	11.03
0.47	36.94	QP	Line	48.00	11.06
0.614	36.35	QP	Neutral	48.00	11.65
0.638	36.28	QP	Line	48.00	11.72
0.638	35.23	QP	Neutral	48.00	12.77
0.542	34.22	QP	Line	48.00	13.78
1.122	33.76	QP	Neutral	48.00	14.24
0.542	33.27	QP	Neutral	48.00	14.73
0.506	33.18	QP	Line	48.00	14.82
0.614	32.71	QP	Line	48.00	15.29
1.122	32.71	QP	Line	48.00	15.29

AC 120V/60Hz, Line**AC 120V/60Hz, Neutral**

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 EMI Test Receiver, cable loss, antenna factor calibration antenna factor frequency interpolation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, the Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Chengdu) is ± 4.0 dB.

EUT Setup

The radiated emission tests were performed in the 3 meters chamber test site, the EUT was placed on the test table and the distant from the receiver antenna 3m using the setup accordance with MP-5.

The specification used was FCC Part 18.305.

The power source which EUT used was AC 120V, 60Hz.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 30 MHz.

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

Frequency	R B/W	V B/W	IF B/W
9 kHz – 150 kHz	3 kHz	3 kHz	200 Hz
150 kHz-30 MHz	100 kHz	100 kHz	9 kHz

Test Procedure

During the field strength test, the power cord of the EUT is connected to the auxiliary outlet of the AC power.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Peak detection mode.

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Amp.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss}$$

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

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

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	10028	2011-09-27
Rohde & Schwarz	Loop Antenna	HFH2-Z2	040904	2012-08-14

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

Test Environment Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0 KPa

The testing was performed by Sally Ni.

Test Results

Test mode: operating mode

Model Number: UCF13/EB/DW/PRE

Frequency (kHz)	Cord. Amp. (dBuV/m)	Detector (QP/Ave/Peak)	Limit (dBμV/m)	Margin (dB)
55.00	37.64	PK	63.5	25.86
302.00	37.16	PK	63.5	26.34
65.00	36.61	PK	63.5	26.89
74.76	34.4	PK	63.5	29.10
75.32	34.07	PK	63.5	29.43
85.00	33.66	PK	63.5	29.84

Model Number: UCF24/EB/DW/PRE

Frequency (kHz)	Cord. Amp. (dBuV/m)	Detector (QP/Ave/Peak)	Limit (dBμV/m)	Margin (dB)
55.00	37.5	PK	63.5	26.00
286.00	37.39	PK	63.5	26.11
65.00	36.19	PK	63.5	27.31
74.76	34.46	PK	63.5	29.04
85.00	34.14	PK	63.5	29.36
75.24	33.88	PK	63.5	29.62

******* END OF REPORT *******