



TEST REPORT

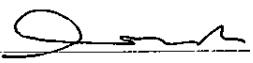
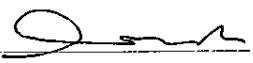
For

CNLIGHT CO., LTD.

A Zone, Shi-shan Technology Industry District, Nanhai,
Foshan City, Guangdong, China

FCC PART 18

FCC ID: ZCHES425

Report Type: Original Report	Product Type: Self-ballasted Fluorescent Lamps
Test Engineer: <u>Phase Zhang</u> <i>Phase Zhang</i>	
Report Number: <u>RSZ11042751</u>	
Report Date: <u>2011-06-20</u>	
Lisa Zhu 	
Reviewed By: <u>EMC Engineer</u> 	
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* 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
EXTERNAL I/O CABLE.....	5
CONFIGURATION OF TEST SETUP	5
BLOCK DIAGRAM OF TEST SETUP	6
FCC §18.307 - AC LINE CONDUCTED EMISSIONS.....	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP	7
EMI TEST RECEIVER SETUP.....	8
TEST PROCEDURE	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST RESULTS SUMMARY	8
TEST DATA	8
FCC §18.305 – FIELD STRENGTH.....	13
MEASUREMENT UNCERTAINTY	13
EUT SETUP	13
EMI TEST RECEIVER SETUP AND SPECTRUM ANALYZER SETUP.....	14
TEST PROCEDURE	14
TEST RESULT CALCULATION	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST DATA	15
PRODUCT SIMILARITY DECLARATION LETTER	16

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *CNLIGHT CO.,LTD.*’s model: *ES4-20W, ES4-25W (FCC ID: ZCHES425)*, or the “EUT” as referred to this report is a *Self-ballasted fluorescent lamps*, which measure approximately: 16.0 cm (L) x 5.8 cm (W) x 5.8 cm (H) for *ES4-20W* and 16.5 cm (L) x 5.8 cm (W) x 5.8 cm (H) for *ES4-25W*, rated input voltage: AC 120V/60Hz.

**Note: The serial models ES4-20W, ES4-25W, both of them are selected to tested, the difference between are explained in the attached product similarity declaration letter.*

** All measurement and test data in this report was gathered from production sample serial number: 1104028 (Assigned by BACL, Shenzhen). The EUT was received on 2011-04-27.*

Objective

The following test report is prepared on behalf of *CNLIGHT 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 the product with FCC Part 18 requirements.

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. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 December 06, 2010. 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.: 382179. 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 operation mode (as normally used by a typical user).

EUT Exercise Software

N/A

Special Accessories

The special accessories were supplied by Bay Area Compliance Laboratories Corp.

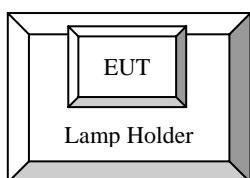
Equipment Modifications

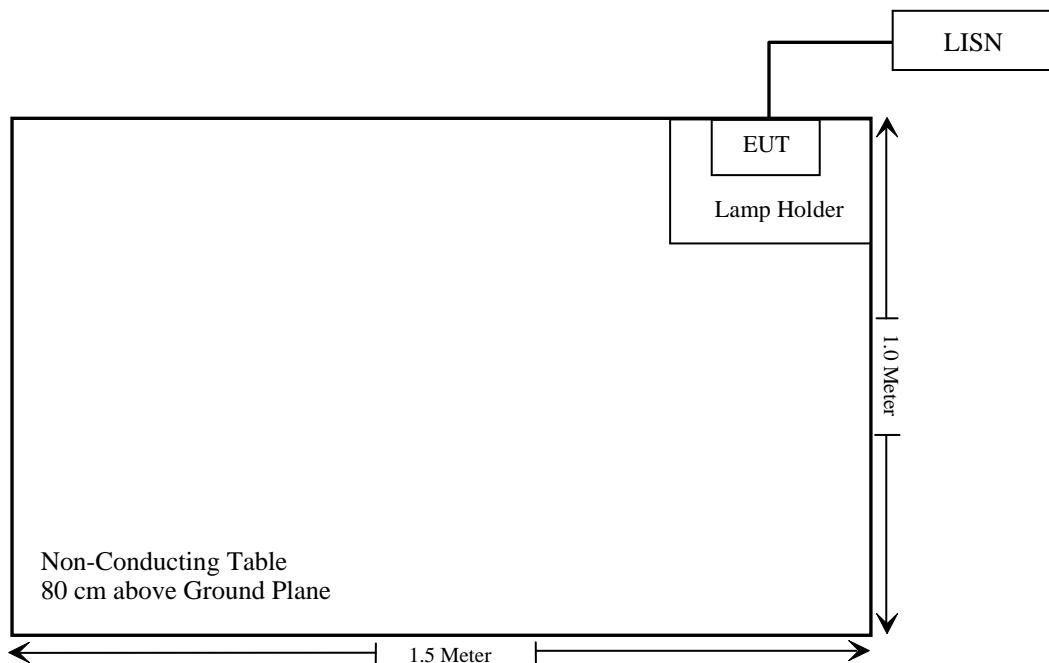
No modifications were made to the unit tested.

External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Undetachable AC Power Cable	1.0	EUT	LISN

Configuration of Test Setup



Block Diagram of Test Setup

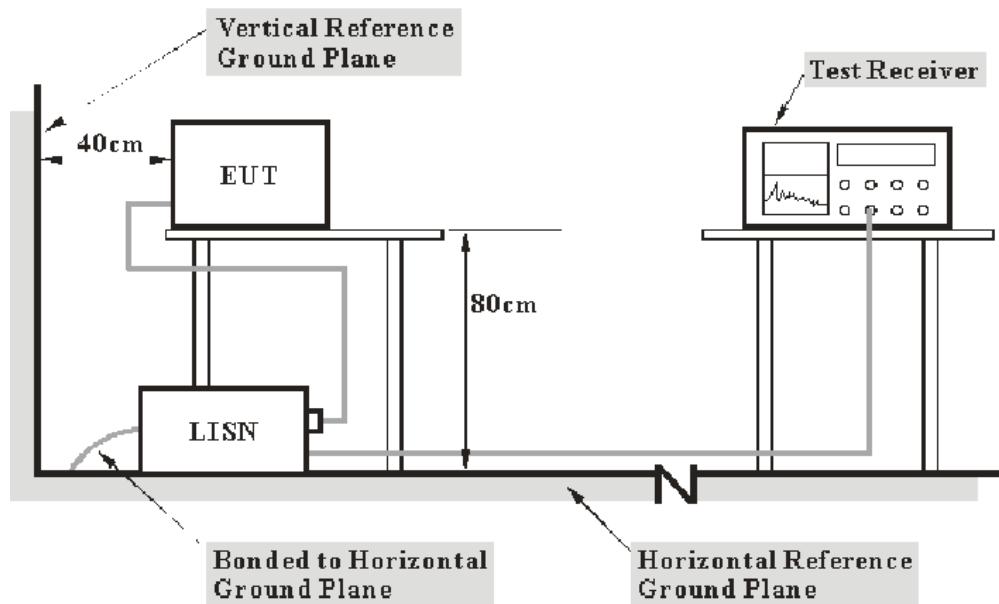
FCC §18.307 - AC LINE CONDUCTED EMISSIONS

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 NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. is ± 2.4 dB (k=2, 95% level of confidence).

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 MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18 limits.

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

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 450 kHz to 30 MHz.

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

<u>Frequency Range</u>	<u>IFBW</u>
450 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 detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the [FCC Part 18](#), with the worst margin reading of:

ES4-20W: 11.05 dB at 0.465 MHz in the **Line** conductor mode
ES4-25W: 7.09 dB at 0.780 MHz in the **Neutral** conductor mode

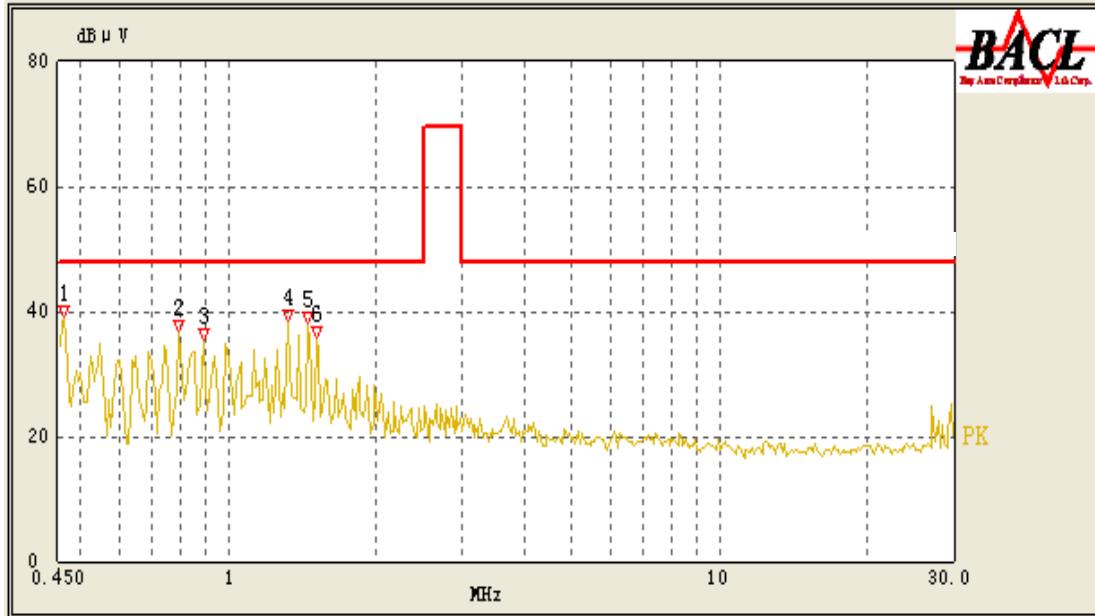
Test Data

Environmental Conditions

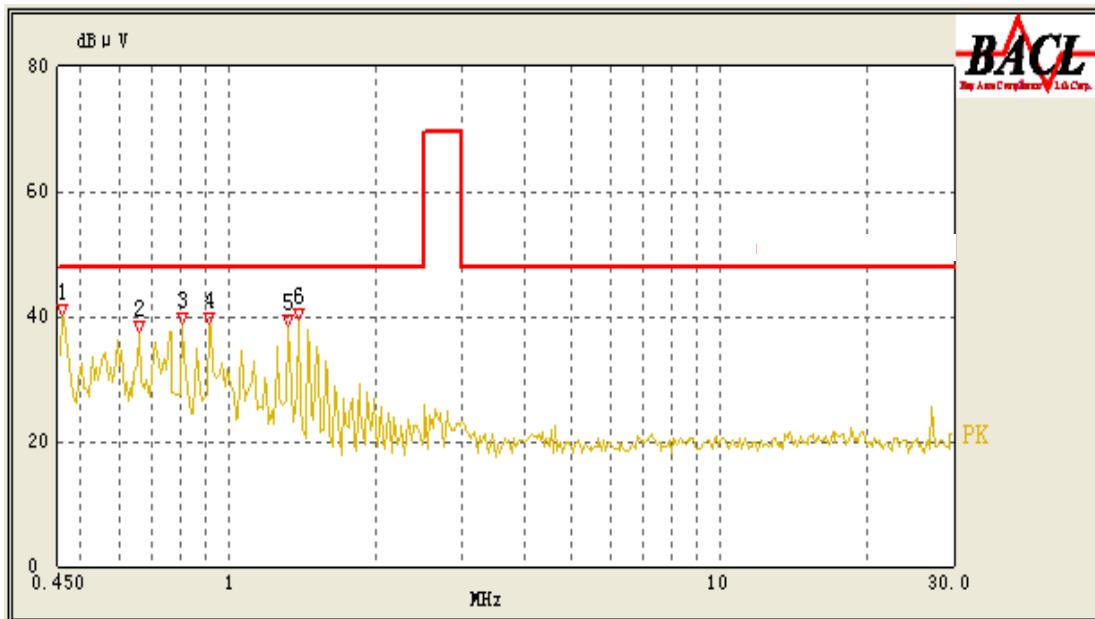
Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

Testing was performed by Phase Zhang on 2011-05-03.

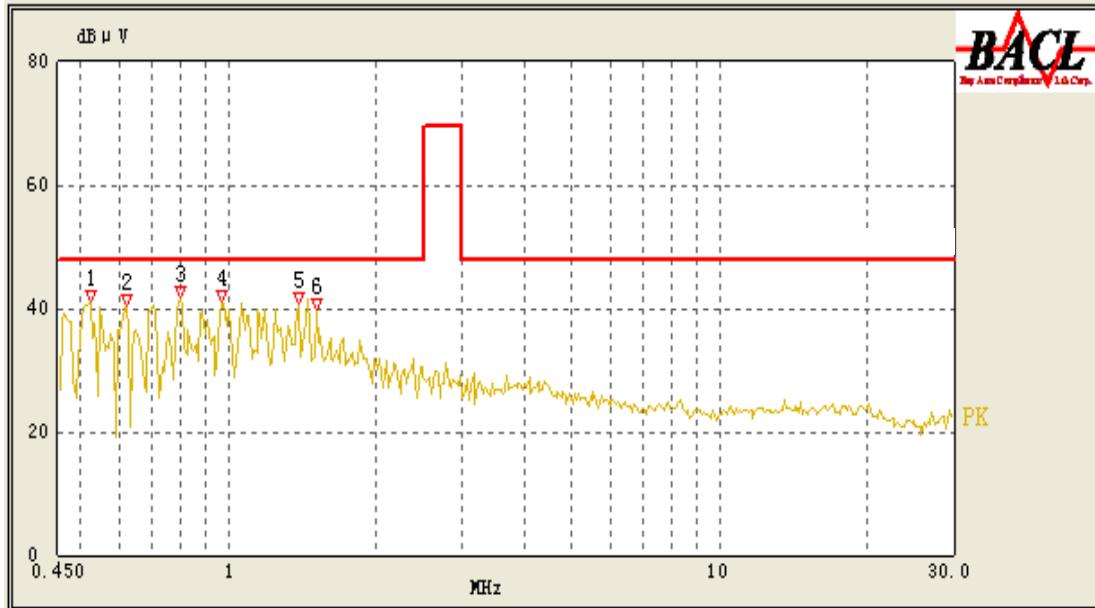
EUT operation mode: On

ES4-20W**AC 120V/ 60 Hz, Line:**

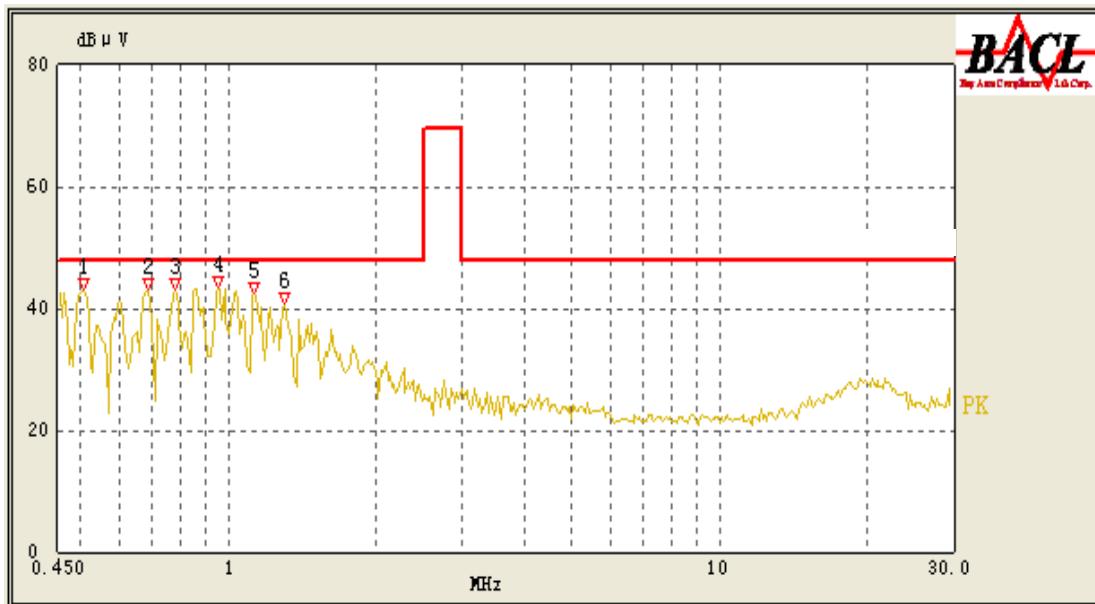
Frequency (MHz)	Cord. Result (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)
0.465	36.95	10.10	48.00	11.05
1.455	35.89	10.10	48.00	12.11
1.325	34.88	10.10	48.00	13.12
1.520	32.57	10.10	48.00	15.43
0.790	25.73	10.10	48.00	22.27
0.890	21.11	10.10	48.00	26.89

AC 120V/60 Hz, Neutral:

Frequency (MHz)	Cord. Result (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)
1.390	36.06	10.10	48.00	11.94
0.460	35.72	10.10	48.00	12.28
1.325	34.58	10.10	48.00	13.42
0.915	32.49	10.10	48.00	15.51
0.660	30.95	10.10	48.00	17.05
0.810	29.59	10.10	48.00	18.41

ES4-25W**AC 120V/ 60 Hz, Line:**

Frequency (MHz)	Cord. Result (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)
0.800	40.33	10.10	48.00	7.67
0.525	39.55	10.10	48.00	8.45
0.620	38.32	10.10	48.00	9.68
1.390	37.13	10.10	48.00	10.87
1.520	34.59	10.10	48.00	13.41
0.970	26.96	10.10	48.00	21.04

AC 120V/60 Hz, Neutral:

Frequency (MHz)	Cord. Result (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)
0.780	40.91	10.10	48.00	7.09
0.510	40.75	10.10	48.00	7.25
0.685	38.98	10.10	48.00	9.02
1.300	33.52	10.10	48.00	14.48
0.955	31.75	10.10	48.00	16.25
1.125	31.59	10.10	48.00	16.41

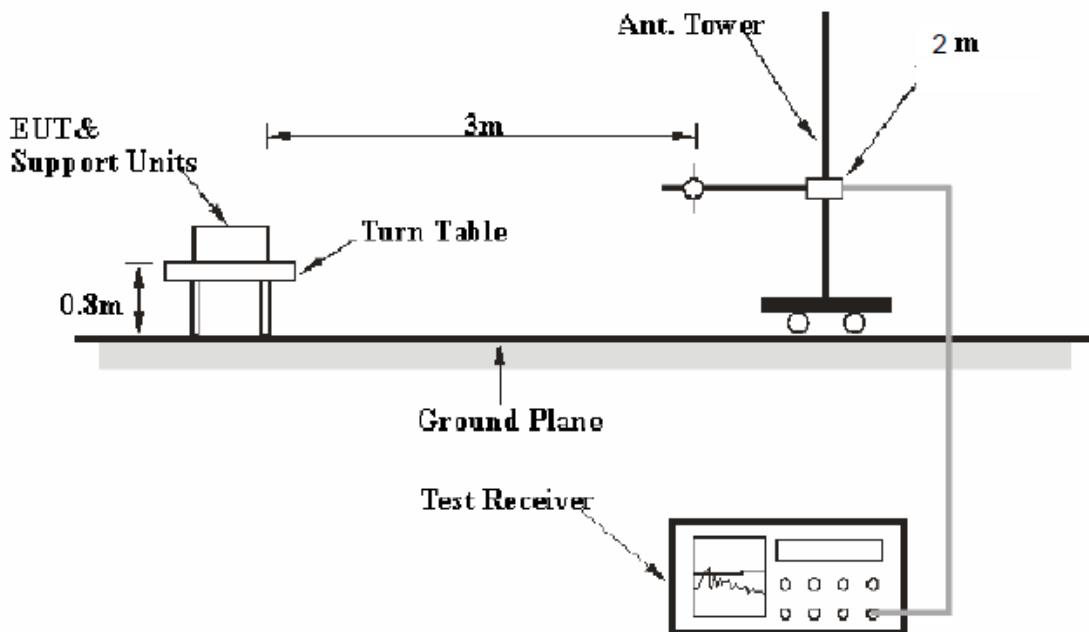
FCC §18.305 – FIELD STRENGTH

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 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. (Shenzhen) 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 30 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– 150kHz	300 Hz	1 kHz	200Hz
150 kHz– 30 MHz	100 kHz	300 kHz	9 kHz

Test Procedure

For the radiated emissions test, the EUT was connected to the AC floor outlet.

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT complied with all installation combinations.

The EUT was in the normal operating mode during the final qualification test to represent the worst results.

All data was recorded in the Quasi-peak detection mode from 9 kHz to 30 MHz.

Test Result Calculation

The test result is calculated by adding the Antenna Factor, Cable Loss and conversion factor to the Receiver Reading. The basic equation is as follows:

Test Result (dB μ V/m) = Receiver Reading (dB μ A/m) + Antenna Factor (dB/m) + Cable Loss (dB) + 51.5 dB*

*Note: 51.5 dB is the conversion factor for the conversion from dB μ A/m to dB μ V/m.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS	Passive Loop Antenna	6512	00029604	2010-07-14	2011-07-13
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
Sunol Sciences	System Controller	SC99V	041304-1	N/A	N/A

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

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Phase Zhang on 2011-05-03

EUT operation mode: On

ES4-20W:

Frequency (MHz)	Receiver Reading (dB μ A/m)	Detector (PK/QP/Ave.)	Direction (Degree)	Test Antenna		Cable Loss (dB)	Test Result (dB μ V/m)
				Height (m)	Factor (dB/m)		
0.117006	-33.20	PK	191	2.00	13.3	0.1	31.70
0.101496	-33.27	PK	191	2.00	13.6	0.1	31.93
0.066810	-35.13	PK	190	2.00	18.8	0.1	35.27
0.048480	-38.26	PK	190	2.00	22.6	0.1	35.94
0.032970	-38.06	PK	185	2.00	26.0	0.1	39.54
0.014922	-36.95	PK	185	2.00	34.9	0.1	49.55

ES4-25W:

Frequency (MHz)	Receiver Reading (dB μ A/m)	Detector (PK/QP/Ave.)	Direction (Degree)	Test Antenna		Cable Loss (dB)	Test Result (dB μ V/m)
				Height (m)	Factor (dB/m)		
0.110238	-38.06	PK	191	2.00	12.6	0.1	26.14
0.116724	-32.41	PK	191	2.00	11.9	0.1	31.09
0.101496	-33.23	PK	190	2.00	14.4	0.1	32.77
0.060880	-38.06	PK	185	2.00	21.0	0.1	34.54
0.066810	-34.45	PK	190	2.00	20.3	0.1	37.45
0.013794	-37.18	PK	185	2.00	35.3	0.1	49.72

PRODUCT SIMILARITY DECLARATION LETTER



CNLIGHT CO., LTD.

Add : A Zone, Shi-shan Technology Industry District, Nanhai, Foshan City, Guangdong province, China.
Tel: 0757-81208358
Fax: 0757-86695225

Different Declaration

We, CNLIGHT CO., LTD., declare that the Self-ballasted fluorescent lamps, The model ES4-20W and ES4-25W are tested by BACL. They have the same circuit diagram, PCB layout in side, and only different in the power. Thank you!

2011-6-14

Sincerely,

Signature: A handwritten signature in black ink, appearing to read 'Sing Zhang'.

Sing Zhang

Engineer

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