

Test Report

Report No.: EED35I000459-3

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Customer : Revolution Lighting Technologies Inc
Address : 4139 Guardian St Simi Valley, CA, 93063 United States

Description of the submitted sample(s):

Sample Name : LED TUBE
Model/Type : 202422-115
Sample No. : 35I0459-05
Brand : RVL T
LED Driver Model : 200000-P03
Ratings : 100-277 V AC, 50/60 Hz, 27 W, 5000 K
Test Item : Total Luminous Flux, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical Parameters
State of Sample(s) : Normal
Sample Quantity : 1pc
Manufacturer : Longhorn Lighting Co., Ltd
LED Driver Manufacturer : Longhorn Lighting Co., Ltd
Sample Received Date : Aug. 02, 2016
Sample Tested Date : Aug. 04, 2016
Test Requested : All test items were measured according to IES LM-79-08 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products
Remarks : LED T8 replacement lamp with 2 feet length, fixed G13 base, 3-lamp External driver lamp style Retrofit kits (UL Type C), Frosted lens

Laboratory Note: The laboratory that conducted the testing items in this report has been accredited by the National Voluntary Laboratory Accreditation Program (NVLAP LAB CODE: 200889-0), for IES LM-79 testing of SSL products. And the report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Compiled by

Jinling Jiang

Reviewed by

Havenlin

Approved by

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Date

Sept. 01, 2016

Supervisor/Engineer

Check No.: 2447624940



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Equipment list:

Test Equipment	Equipment Model	Equipment No.	Calibration Date	Calibration Due Date
Spectroradiometer	HAAS-2000	TTF20120376	---	---
Integrating Sphere	2.0m	ATTEELSH00007	---	---
Standard Lamp	D204	TTE20141711	Jul. 06, 2016	Jul. 05, 2017
Digital Power Meter	PF2010	ATTEELSH00011	Jun. 17, 2016	Jun. 16, 2017

1 Test Condition

Ambient Condition	: 24.6°C
Photometric Method	: Sphere-spectroradiometer
Colorimetric Method	: Sphere-spectroradiometer
Tested	: 120 V AC, 60 Hz
Stabilization Time	: 30 minutes
Total Operation Time including Stabilization	: 35 minutes
Orientation	: Horizontal, Light Downwards

2 Test Method

2.1 Requirements of Ambient Condition

The ambient temperature in which measurements are being taken shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the SSL product and at the same height as the SSL product. Air flow around the SSL product being tested should be such that normal convective air flow induced by device under test is not affected.

2.2 Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.

Therefore, no seasoning was performed.

2.3 Stabilization of SSL Product

Before measurements are taken, the SSL product under test shall be operated long enough to reach stabilization and temperature equilibrium. The time required for stabilization depends on the type of SSL products under test. The stabilization time typically ranges from 30 min for small integrated LED lamps to 2 or more hours for large SSL luminaires. It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30min, taken 15 minutes apart, is less than 0.5%.

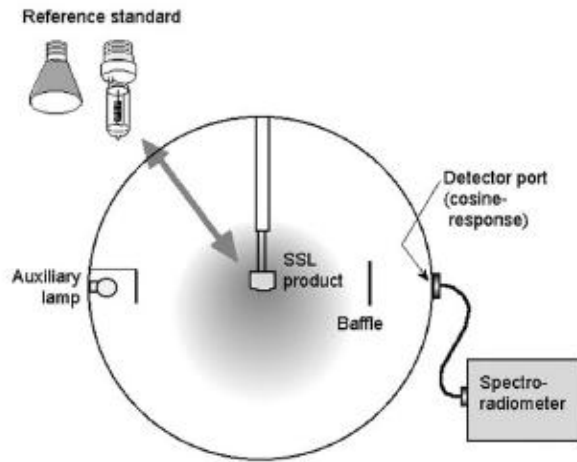
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2.4 Photometric and Electrical Measurements - Sphere-spectroradiometer Method

A CCD Spectroradiometer and 2m or 50cm Integrating Sphere was used to measure total luminous flux correlated color temperature, color rendering index, and chromaticity coordinates. The 4π geometry, shown as following, is used for measurement. Ambient temperature was measured at a position inside the integrating sphere. Electrical measurements including voltage, current, and power were measured using the Digital Power Meter.



3 Test Results

3.1 Summary

Input Voltage (V AC)	Input Current (A)	Input Power (W)	Power Factor	Total Luminous Flux (lm)
120.0	0.0767	9.12	0.9906	1338.1
Luminous Efficacy (lm/W)	Chromaticity Coordinate x	Chromaticity Coordinate y	Chromaticity Coordinate u'	Chromaticity Coordinate v'
146.77	0.3460	0.3570	0.2099	0.4874
Correlated Color Temperature (K)	Color Rendering Index/R _a	Color Rendering Index/R ₉	Duv	---
4983	83.9	15	0.0023	---

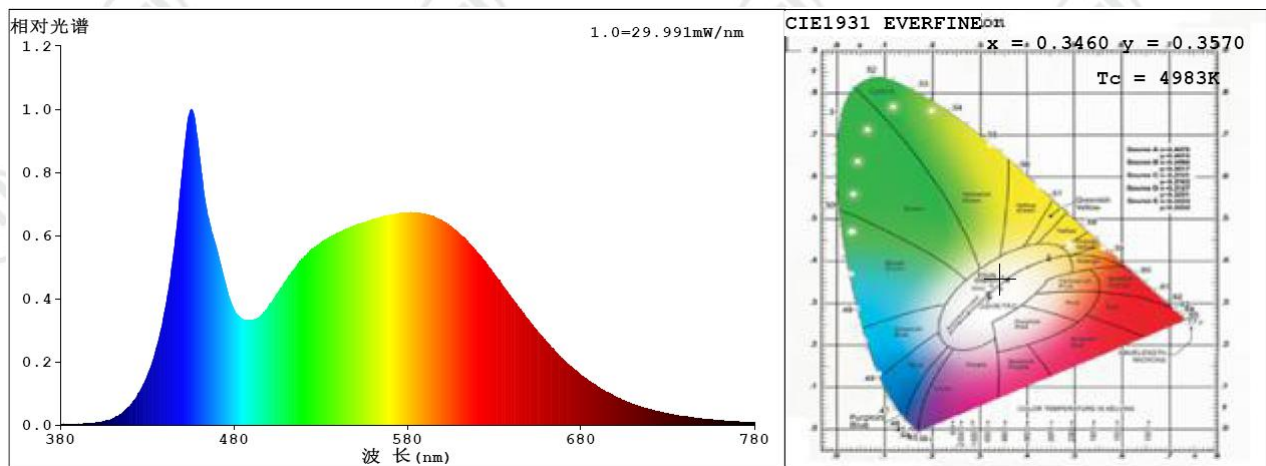
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3.2 Spectral Power Distribution and Chromaticity Diagram

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.1336	465	19.9	550	18.96	635	13.24	720	1.474
385	0.1057	470	16.86	555	19.25	640	12.11	725	1.266
390	0.1113	475	13.58	560	19.52	645	11.02	730	1.092
395	0.1682	480	11.01	565	19.72	650	9.95	735	0.9348
400	0.2137	485	10.05	570	19.96	655	8.908	740	0.8055
405	0.3573	490	9.901	575	20.06	660	7.935	745	0.6968
410	0.6059	495	10.3	580	20.16	665	7.031	750	0.59
415	1.062	500	11.27	585	20.12	670	6.21	755	0.5099
420	1.829	505	12.5	590	20.02	675	5.465	760	0.4401
425	3.021	510	13.72	595	19.8	680	4.771	765	0.381
430	4.69	515	14.87	600	19.41	685	4.151	770	0.3253
435	7.158	520	15.84	605	18.84	690	3.608	775	0.2924
440	10.78	525	16.68	610	18.15	695	3.117	780	0.2633
445	16.05	530	17.3	615	17.38	700	2.69		
450	23.84	535	17.83	620	16.44	705	2.317		
455	29.88	540	18.2	625	15.45	710	1.997		
460	26	545	18.59	630	14.39	715	1.718		



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Photos of the Sample



Fig.1- Overall view

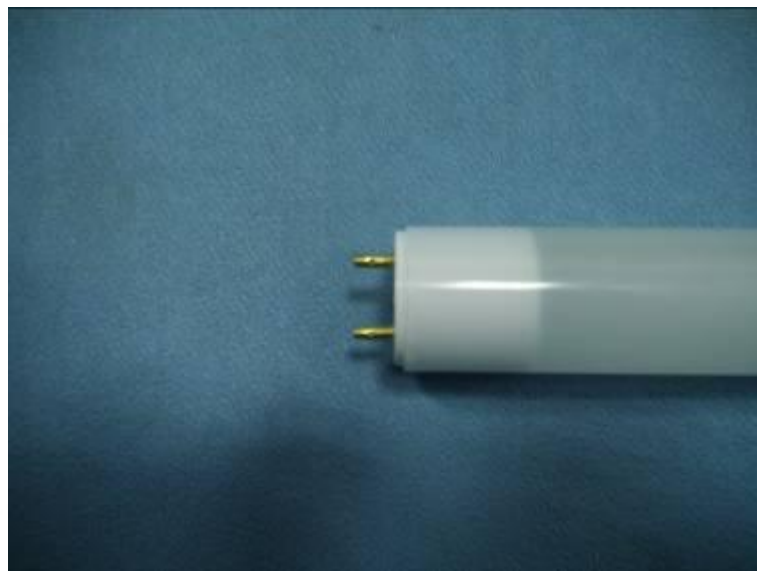


Fig.2- Partial view

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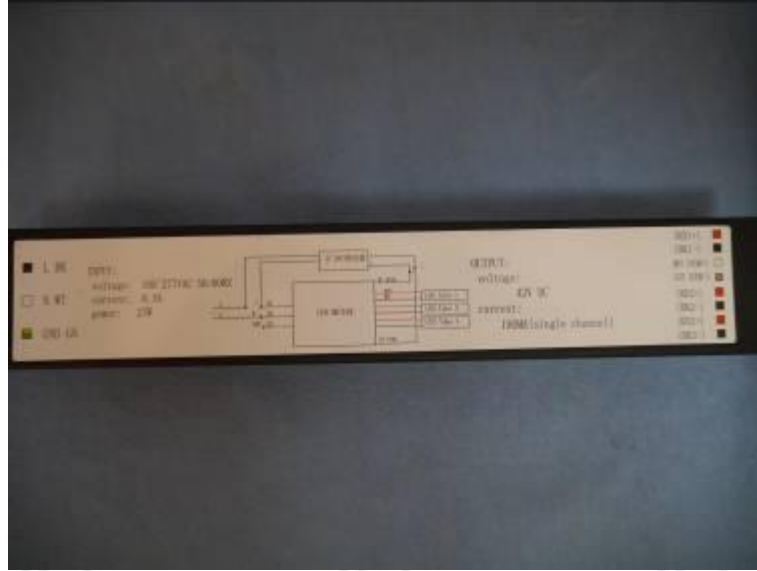


Fig.3- Overall view of LED Driver

*** End of Report ***

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