NVLAP LAB CODE 200889-0

Test Report

Customer : Revolution Lighting Technologies
Address : 4139 Guardian Street, Simi Valley, CA93063

Description of the submitted sample(s):

Sample Name	: LED TUBE
Model/Type	: 204001-435
Sample No.	: 35I0235-03
Ratings	: 100-277 V AC, 50/60 Hz, 10.5W, 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	: Revolution Lighting Technologies
Sample Received Date	: May 12, 2016
Sample Tested Date	: May 17, 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
Remark	: LED T8 replacement lamp with 4 feet length, G13 base, internal driver(UL Type B), 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 _____ Reviewed by _____

Approved by _____ Date Jun. 08, 2016

Supervisor Check No.: 1996286269

CENTRE TESTING INTERNATIONAL (PUDONG/SHANGHAI) CO., LTD. Report Seal

CENTRE TESTING INTERNATIONAL CORPORATION NO.1996, Xin jin qiao Road, Pudong New District, Shanghai, 201206, China

Test Report

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. 08, 2015	Jul. 07, 2016
Digital Power Meter	PF2010	ATTEELSH00011	Jun. 23, 2015	Jun. 22, 2016

1 Test Condition

Ambient Condition	: 25.1℃
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℃ ± 1℃, 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.

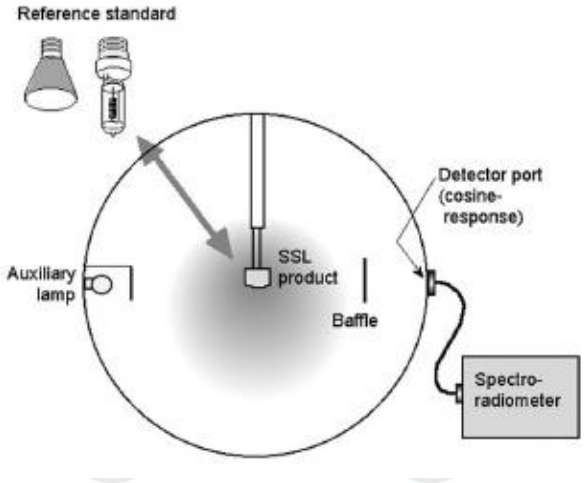
2.3 Stabilization of SSL Product

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%.

Test Report

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

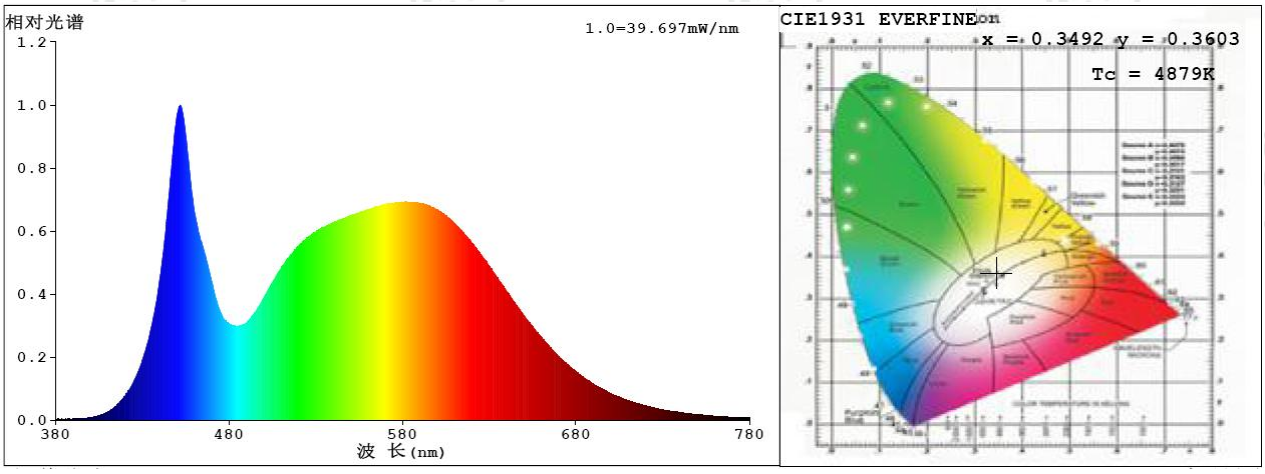
3.1 Summary

Input Voltage (V AC)	Input Current (A)	Input Power (W)	Power Factor	Total Luminous Flux (lm)
120.0	0.0940	11.19	0.9929	1801.6
Luminous Efficacy (lm/W)	**Chromaticity Coordinate x**	**Chromaticity Coordinate y**	**Chromaticity Coordinate u'**	**Chromaticity Coordinate v'**
161.00	0.3492	0.3603	0.2108	0.4895
Correlated Color Temperature (K)	**Color Rendering Index/R_a**	**Color Rendering Index/R_9**	**Duv**	**---**
4879	82.8	9	0.0027	---

Test Report

3.2 Spectral Power Distribution and Chromaticity Diagram

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.1222	465	21.9	550	25.72	635	17.93	720	1.824
385	0.147	470	17.64	555	26.13	640	16.31	725	1.566
390	0.1717	475	13.76	560	26.49	645	14.74	730	1.323
395	0.2546	480	12.14	565	26.83	650	13.23	735	1.141
400	0.3605	485	11.84	570	27.14	655	11.86	740	0.976
405	0.5701	490	12.28	575	27.35	660	10.48	745	0.8397
410	1.021	495	13.59	580	27.46	665	9.236	750	0.7126
415	1.817	500	15.4	585	27.45	670	8.088	755	0.6151
420	3.06	505	17.35	590	27.33	675	7.062	760	0.5316
425	4.869	510	19.17	595	27.04	680	6.116	765	0.4498
430	7.546	515	20.67	600	26.52	685	5.299	770	0.3849
435	11.5	520	21.91	605	25.72	690	4.595	775	0.3386
440	17.66	525	22.97	610	24.78	695	3.952	780	0.3118
445	27.38	530	23.7	615	23.64	700	3.397		
450	38.42	535	24.32	620	22.35	705	2.923		
455	36.38	540	24.85	625	20.94	710	2.487		
460	26.64	545	25.31	630	19.43	715	2.146		



Test Report

Photos of the Sample

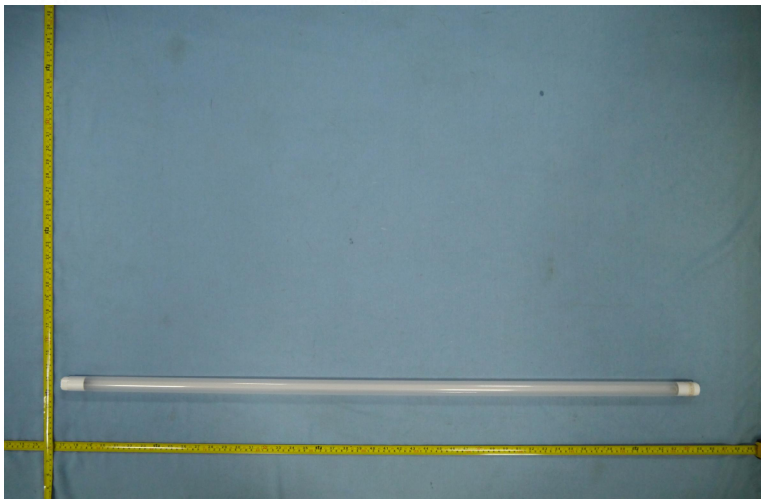


Fig.1- Overall view

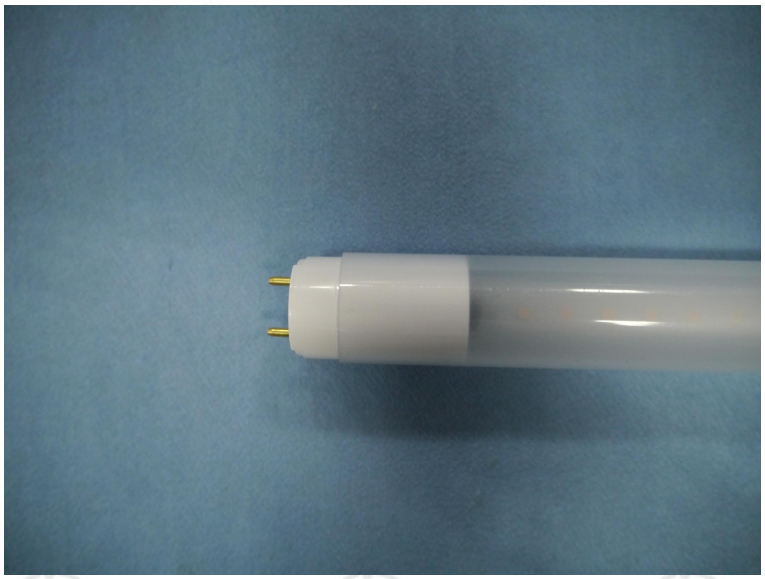


Fig.2- Partial view

*** End of Report ***