Test Report

Report No.: EED35I000232-3 Page 1 of 5

Customer : Revolution Lighting Technologies

Address : 4139 Guardian Street, Simi Valley, CA93063

Description of the submitted sample(s):

Sample Name	: LED TUBE
Model/Type	:204001-415
Sample No.	: 35I0232-06
Ratings	: 100-277 V AC, 50/60 Hz, 12W, 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	: Jun. 01, 2016
Sample Tested Date	: Jun. 01, 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 PINBU(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, 60Hz
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.

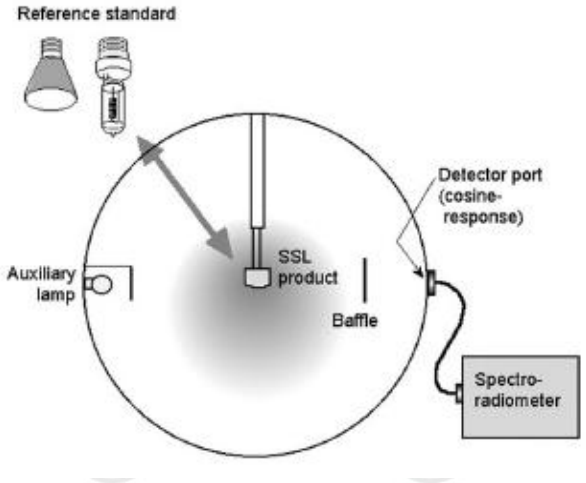
2.3 Stabilization of SSL Product

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

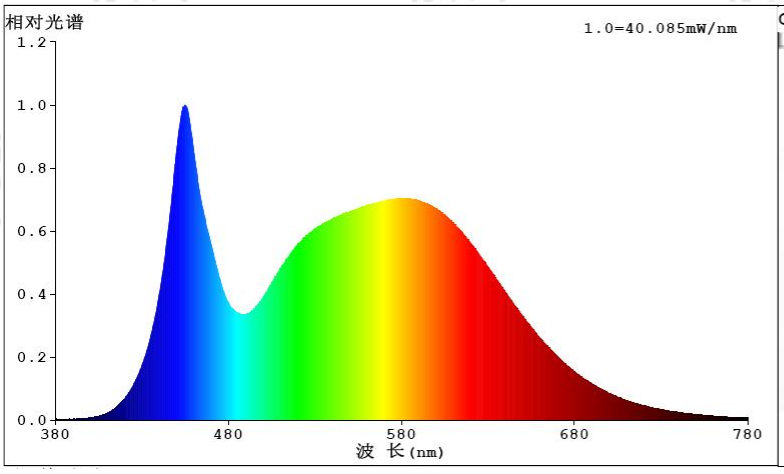
3.1 Summary

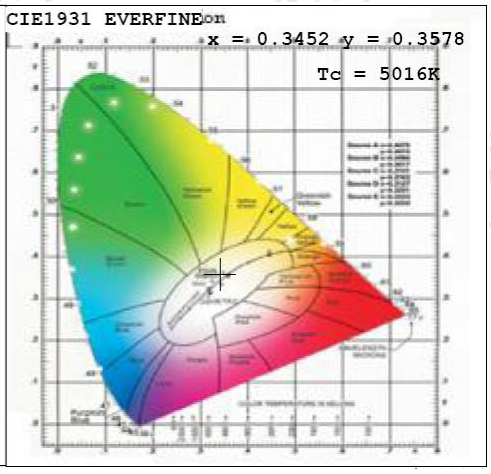
Input Voltage (V AC)	Input Current (A)	Input Power (W)	Power Factor	Total Luminous Flux (lm)
120.0	0.1077	12.78	0.9897	1877.3
Luminous Efficacy (lm/W)	**Chromaticity Coordinate x**	**Chromaticity Coordinate y**	**Chromaticity Coordinate u'**	**Chromaticity Coordinate v'**
146.89	0.4417	0.4132	0.2497	0.5256
Correlated Color Temperature (K)	**Color Rendering Index/R_a**	**Color Rendering Index/R_9**	**Duv**	**---**
2995	81.6	5	0.0029	---

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	0.06775	465	11.24	550	22.91	635	28.11	720	3.173
385	0.03134	470	10.01	555	24.28	640	26.04	725	2.724
390	0.07715	475	8.731	560	25.75	645	23.82	730	2.333
395	0.07289	480	8.064	565	27.31	650	21.64	735	2.003
400	0.1346	485	8.154	570	28.95	655	19.49	740	1.706
405	0.2116	490	8.801	575	30.65	660	17.42	745	1.47
410	0.3757	495	9.787	580	32.19	665	15.44	750	1.266
415	0.6431	500	11.14	585	33.59	670	13.61	755	1.089
420	1.072	505	12.62	590	34.75	675	11.93	760	0.9232
425	1.733	510	13.94	595	35.61	680	10.41	765	0.7947
430	2.658	515	15.23	600	35.99	685	9.092	770	0.6833
435	3.967	520	16.44	605	36.05	690	7.897	775	0.5985
440	6.015	525	17.48	610	35.62	695	6.833	780	0.5458
445	9.357	530	18.48	615	34.82	700	5.896		
450	13.49	535	19.48	620	33.54	705	5.037		
455	14.88	540	20.51	625	32.02	710	4.312		
460	13.02	545	21.66	630	30.17	715	3.708		





Test Report

Photos of the Sample

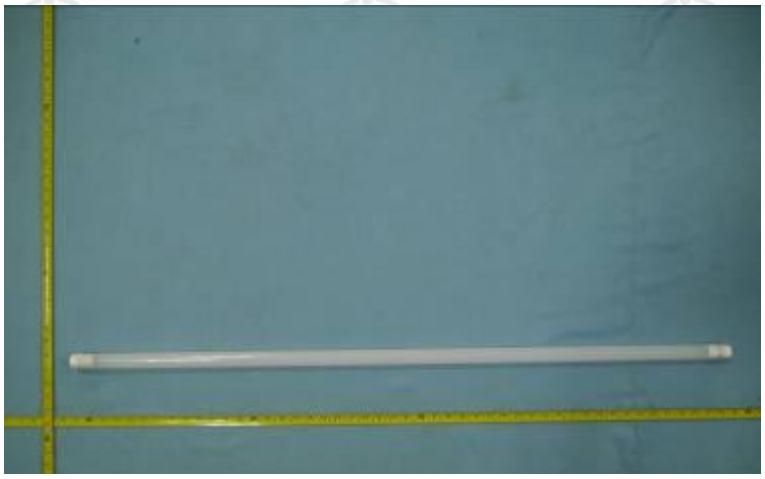


Fig.1- Overall view

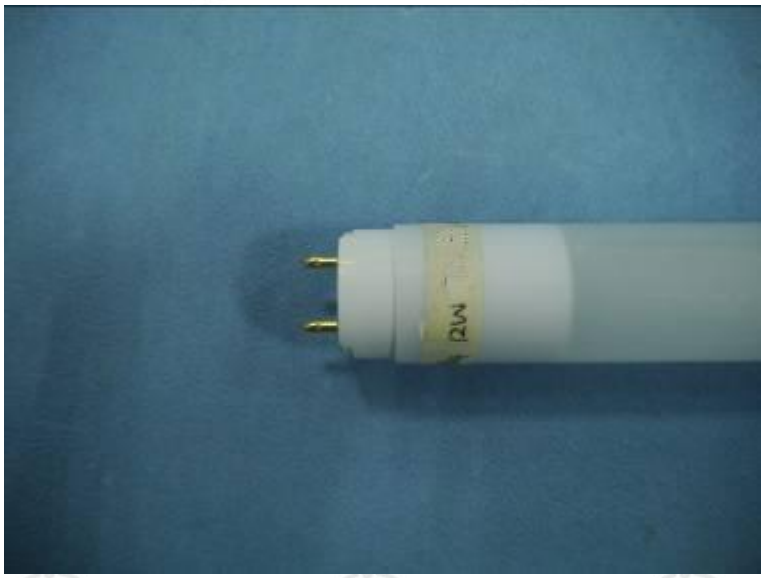


Fig.2- Partial view

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