

# Test Report

Report No.: EED35I000457-3R1

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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 : 202420-115  
Sample No. : 35I0457-05  
Brand : RVL T  
LED Driver Model : 200000-P01  
Ratings : 100-277 V AC, 50/60 Hz, 9W, 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

Remarks : LED T8 replacement lamp with 2 feet length, fixed G13 base, 1-lamp External driver lamp style Retrofit kits (UL Type C), Frosted lens

This testing report displaces the original report of No. EED35I000457-3, and the original one No. EED35I000457-3 was invalid since the date of this testing report released.

Compiled by

*Jinbiao Jiang*

Reviewed by

*Havenlin*

Approved by

*Wang*

Date

Sept. 06, 2016

Supervisor

Check No.: 2447624940



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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.

## 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%.

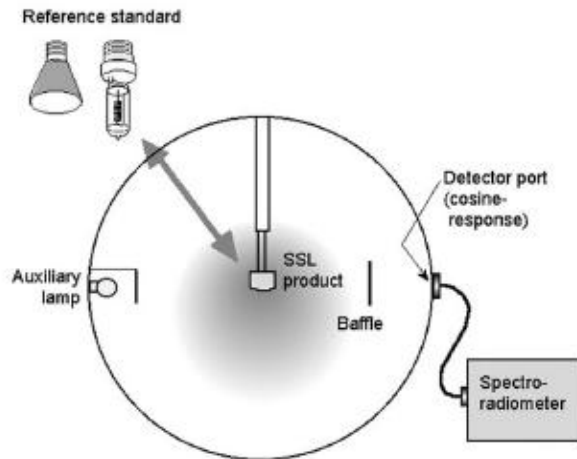
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## 2.4 Photometric and Electrical Measurements - Sphere-spectroradiometer Method

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  $4\pi$  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                            | 0.0778                               | 9.26                                 | 0.9915                     | 1322.6                     |
| Luminous Efficacy (lm/W)         | Chromaticity Coordinate x            | Chromaticity Coordinate y            | Chromaticity Coordinate u' | Chromaticity Coordinate v' |
| 142.91                           | 0.3458                               | 0.3568                               | 0.2099                     | 0.4873                     |
| Correlated Color Temperature (K) | Color Rendering Index/R <sub>a</sub> | Color Rendering Index/R <sub>9</sub> | Duv                        | ---                        |
| 4989                             | 84.0                                 | 15                                   | 0.0023                     | ---                        |

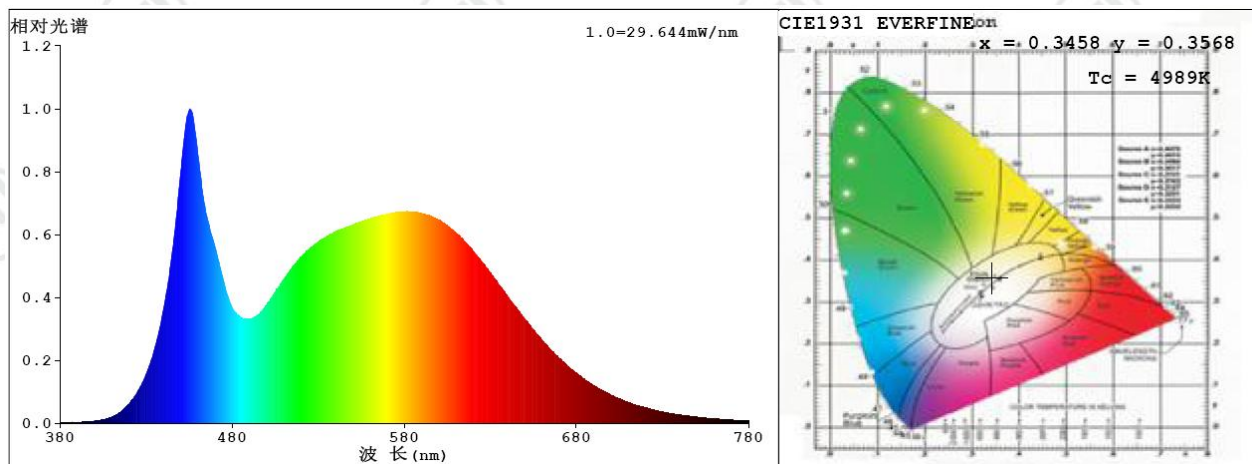
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## 3.2 Spectral Power Distribution and Chromaticity Diagram

| nm  | mW/nm  | nm  | mW/nm | nm  | mW/nm | nm  | mW/nm | nm  | mW/nm  |
|-----|--------|-----|-------|-----|-------|-----|-------|-----|--------|
| 380 | 0.1368 | 465 | 19.75 | 550 | 18.69 | 635 | 13.1  | 720 | 1.463  |
| 385 | 0.1219 | 470 | 16.72 | 555 | 18.97 | 640 | 12.02 | 725 | 1.265  |
| 390 | 0.1136 | 475 | 13.5  | 560 | 19.28 | 645 | 10.92 | 730 | 1.085  |
| 395 | 0.1479 | 480 | 10.93 | 565 | 19.51 | 650 | 9.862 | 735 | 0.9397 |
| 400 | 0.2117 | 485 | 9.981 | 570 | 19.7  | 655 | 8.837 | 740 | 0.8013 |
| 405 | 0.3483 | 490 | 9.839 | 575 | 19.86 | 660 | 7.881 | 745 | 0.6913 |
| 410 | 0.591  | 495 | 10.21 | 580 | 19.88 | 665 | 6.971 | 750 | 0.5954 |
| 415 | 1.047  | 500 | 11.13 | 585 | 19.9  | 670 | 6.152 | 755 | 0.5019 |
| 420 | 1.816  | 505 | 12.4  | 590 | 19.79 | 675 | 5.401 | 760 | 0.4377 |
| 425 | 2.995  | 510 | 13.59 | 595 | 19.53 | 680 | 4.738 | 765 | 0.3752 |
| 430 | 4.64   | 515 | 14.7  | 600 | 19.13 | 685 | 4.124 | 770 | 0.332  |
| 435 | 7.063  | 520 | 15.68 | 605 | 18.63 | 690 | 3.583 | 775 | 0.2858 |
| 440 | 10.65  | 525 | 16.45 | 610 | 17.95 | 695 | 3.104 | 780 | 0.2569 |
| 445 | 15.9   | 530 | 17.09 | 615 | 17.16 | 700 | 2.667 |     |        |
| 450 | 23.49  | 535 | 17.62 | 620 | 16.27 | 705 | 2.31  |     |        |
| 455 | 29.49  | 540 | 18.01 | 625 | 15.27 | 710 | 1.988 |     |        |
| 460 | 25.72  | 545 | 18.36 | 630 | 14.2  | 715 | 1.697 |     |        |



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## Photos of the Sample



Fig.1- Overall view

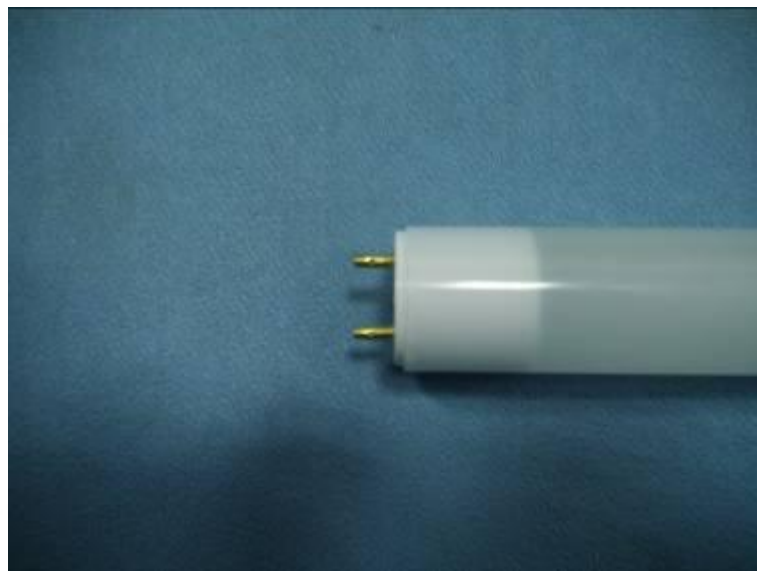


Fig.2- Partial view

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Fig.3- Overall view of LED Driver

\*\*\* End of Report \*\*\*

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