

# Visual Comfort and Company

## TEST REPORT

**SCOPE OF WORK**

LM-79 testing report

**REPORT NUMBER**

230223104GZU-001

**ISSUE DATE**

21-March-2023

**REVISION DATE**

None

**NUMBER OF PAGES**

13

**DOCUMENT CONTROL NUMBER**

Report format for LM-79:2008\_F

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Report No.: 230223104GZU-001

## TEST REPORT

### TEST OF ONE LED LUMINAIRE

MODEL NO. SLBA11030X

(Remark: "X" denote other appearance colors for the characters that change)

#### RENDERED TO

Visual Comfort and Company

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Phone No.: 8474104774

|                                 |                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>TEST:</u>                    | Electrical and Photometric as required to the IES LM-79 test standard.                                                                                         |
| <u>STATEMENT OF LIMITATION:</u> | The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.       |
| <u>AUTHORIZATION:</u>           | The testing performed was authorized by signed quote number: QGZ230214004.                                                                                     |
| <u>STANDARDS USED:</u>          | The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen: |
| IES LM-79: 2008                 | Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products                                                               |
| ANSI C78.377:2017               | Specifications of the Chromaticity of Solid State Lighting Products                                                                                            |
| <u>DESCRIPTION OF SAMPLE:</u>   | The client submitted one sample of model SLBA11030X. The sample was received, in undamaged condition. The sample designation was S230223104-001.               |
| <u>DATES OF TESTS:</u>          | 28 February 2023                                                                                                                                               |
| <u>ISSUED BY:</u>               | Intertek Testing Services Shenzhen Ltd. Guangzhou Branch                                                                                                       |
| <u>TEST LOCATION:</u>           | Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China                    |

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## TEST REPORT

### SUMMARY

|               |                |
|---------------|----------------|
| Model Number: | SLBA11030X     |
| Description:  | LED Luminaries |
| Brand Name:   | --             |

#### Test Condition: 120V, 60Hz For SLBA11030X

| Criteria                           | Result    |
|------------------------------------|-----------|
| Total Lumen Output                 | 1247.4 lm |
| Total Power                        | 33.1 W    |
| Luminaire Efficacy                 | 37.7 lm/W |
| S/MH(C0/180)                       | 1.68      |
| S/MH(C90/270)                      | 33.73     |
| Correlated Color Temperature (CCT) | 2732 K    |
| Color Rendering Index (CRI)        | 95        |
| R9                                 | 73        |
| Chromaticity Coordinate (x)        | 0.4503    |
| Chromaticity Coordinate (y)        | 0.3974    |
| Chromaticity Coordinate (u')       | 0.2623    |
| Chromaticity Coordinate (v')       | 0.5208    |

#### Remark:

Measurement uncertainty for applicable tests has been established.

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## TEST REPORT

### EQUIPMENT LIST

| Equipment Used                      | Model Number | Control Number |
|-------------------------------------|--------------|----------------|
| Goniophotometer System              | Go-R5000     | SA063-16       |
| KONICA MINOLTA - Illuminance meter  | CX-2B_WL     | SA063-16-01    |
| Standard Lamp                       | D215S        | SA063-16-06    |
| Digital Power Meter                 | PLM3000      | SA063-16-09    |
| AC power source for Goniophotometer | PCR-1000WH   | SA063-16-10    |
| Temperature Meter                   | RC-HT601A    | SA047-62       |

### GENERAL REMARK

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When determining for test conclusion, measurement uncertainty of tests has been considered.

Throughout this report a ☐ comma ☒ point is used as the decimal separator.

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## TEST REPORT

### TEST METHOD

#### Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IES LM-79

#### Light Distribution and Output Measurements

Light Distribution and total light output (luminous flux) were measured using a Go-R5000 Type-C Rotating Mirror Goniophotometer. Temperature 25°C and relative humidity of 60% was measured at a position in the testing laboratory.

The lamp rotates only around the fixed vertical axle in the prescribed burning position. The lamp and mirror permit the measurement of luminous intensity at the direction of any horizontal or vertical angle without tilting the lamp. The lamp was allowed to stabilize before measurements were made.

#### Chromaticity Measurements

Chromaticity was measured using a 2 meters integrating sphere spectral lamp measurement system, 4 $\pi$  geometry, with an interior coating reflectance no less than 95 %. Temperature was measured at a position inside the sphere shielded from direct light. Relative humidity of 65% was measured at a position in the testing laboratory.

Spectral radiant flux measurements were made using spectroradiometer attached to the detector port of the integrating sphere. Each lamp was allowed to stabilise before measurements were made. The calibration of the integrating sphere spectroradiometer system is by the reference/standard lamps which are traceable to National Institute of Metrology P.R. CHINA. Lamp efficacy (lumens per watt) for each lamp model was then computed based on the luminous flux result. Electrical measurements including voltage, power and power factor were measured using EVERFINE - Digital Power Meter., model PLM3000.

Correction factor (self-absorption) has been considered when doing measurement.

Standard lamp used for Goniophotometer method:

Model: D215S

Current: 4.809A DC

Standard lamp used for integrating sphere:

Model: 110V/100W

Current: 0.8851A

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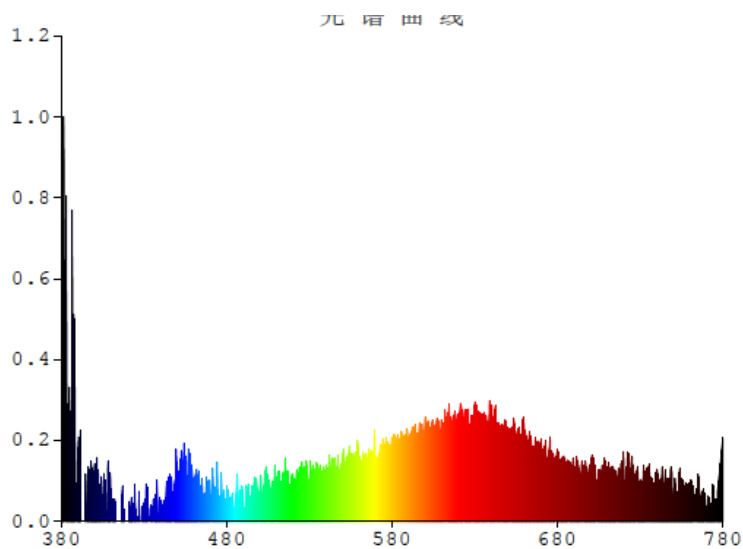
## TEST REPORT

### RESULTS OF TESTS

**Test Condition: 120V, 60Hz For SLBA11030X**

#### Spectral Distribution over Visible Wavelengths

| nm  | mW/nm  | nm  | mW/nm  | nm  | mW/nm  | nm  | mW/nm  | nm  | mW/nm  |
|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| 380 | 0.0000 | 480 | 0.0009 | 580 | 0.0000 | 680 | 0.0001 | 780 | 0.0007 |
| 385 | 0.0045 | 485 | 0.0001 | 585 | 0.0002 | 685 | 0.0001 |     |        |
| 390 | 0.0000 | 490 | 0.0000 | 590 | 0.0001 | 690 | 0.0003 |     |        |
| 395 | 0.0053 | 495 | 0.0005 | 595 | 0.0002 | 695 | 0.0001 |     |        |
| 400 | 0.0003 | 500 | 0.0000 | 600 | 0.0000 | 700 | 0.0001 |     |        |
| 405 | 0.0018 | 505 | 0.0000 | 605 | 0.0001 | 705 | 0.0005 |     |        |
| 410 | 0.0004 | 510 | 0.0002 | 610 | 0.0000 | 710 | 0.0004 |     |        |
| 415 | 0.0014 | 515 | 0.0004 | 615 | 0.0005 | 715 | 0.0000 |     |        |
| 420 | 0.0033 | 520 | 0.0008 | 620 | 0.0000 | 720 | 0.0000 |     |        |
| 425 | 0.0000 | 525 | 0.0002 | 625 | 0.0000 | 725 | 0.0004 |     |        |
| 430 | 0.0008 | 530 | 0.0000 | 630 | 0.0003 | 730 | 0.0006 |     |        |
| 435 | 0.0009 | 535 | 0.0001 | 635 | 0.0000 | 735 | 0.0005 |     |        |
| 440 | 0.0000 | 540 | 0.0002 | 640 | 0.0006 | 740 | 0.0010 |     |        |
| 445 | 0.0000 | 545 | 0.0000 | 645 | 0.0000 | 745 | 0.0008 |     |        |
| 450 | 0.0000 | 550 | 0.0000 | 650 | 0.0002 | 750 | 0.0013 |     |        |
| 455 | 0.0000 | 555 | 0.0000 | 655 | 0.0000 | 755 | 0.0009 |     |        |
| 460 | 0.0005 | 560 | 0.0000 | 660 | 0.0000 | 760 | 0.0007 |     |        |
| 465 | 0.0003 | 565 | 0.0005 | 665 | 0.0003 | 765 | 0.0009 |     |        |
| 470 | 0.0009 | 570 | 0.0001 | 670 | 0.0003 | 770 | 0.0011 |     |        |
| 475 | 0.0002 | 575 | 0.0000 | 675 | 0.0002 | 775 | 0.0008 |     |        |



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For SLBA11030X**

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

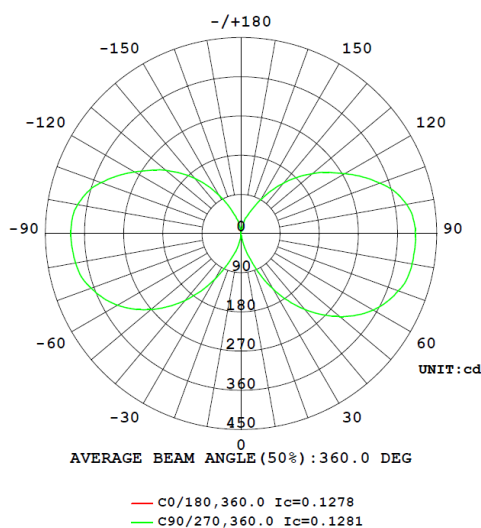
#### Photometric Measurements at 25°C – Integrating Sphere Method

| Intertek<br>Sample<br>No. | Base<br>Orientation | Correlated<br>Color<br>Temperatur<br>e (K) | CRI | R9 | CIE 31'                        | CIE 31'                        | CIE 76'                        | CIE 76'                        |
|---------------------------|---------------------|--------------------------------------------|-----|----|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                           |                     |                                            |     |    | Chromaticit<br>y<br>Coordinate | Chromaticit<br>y<br>Coordinate | Chromaticit<br>y<br>Coordinate | Chromaticit<br>y<br>Coordinate |
|                           |                     |                                            |     |    | (x)                            | (y)                            | (u')                           | (v')                           |
| SLBA11030X                |                     |                                            |     |    |                                |                                |                                |                                |
| S2302231<br>04-001        | --                  | 2732                                       | 95  | 73 | 0.4503                         | 0.3974                         | 0.2623                         | 0.5208                         |

#### Photometric and Electrical Measurements at 25°C – Distribution Method

| Intertek<br>Sample<br>No. | Base<br>Orientation | Input<br>Voltage<br>(Vac) | Input<br>Current<br>(mA) | Input<br>Power<br>(Watts) | Input<br>Power<br>Factor | Absolute                     | Lumen                            |
|---------------------------|---------------------|---------------------------|--------------------------|---------------------------|--------------------------|------------------------------|----------------------------------|
|                           |                     |                           |                          |                           |                          | Luminous<br>Flux<br>(Lumens) | Efficacy<br>(Lumens<br>Per Watt) |
| SLBA11030X                |                     |                           |                          |                           |                          |                              |                                  |
| S2302231<br>04-001        | --                  | 120.2                     | 277.2                    | 33.1                      | 0.993                    | 1247.4                       | 37.7                             |

#### Intensity (Candlepower) Summary at 25°C – Candelas



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For SLBA11030X**

Intensity (Candlepower) Summary at 25°C - Candelas

| V \<br>H(°) | 0   | 22.5 | 45    | 67.5  | 90    |
|-------------|-----|------|-------|-------|-------|
| 0           | 0.1 | 0.1  | 0.1   | 0.1   | 0.1   |
| 5           | 0.1 | 0.1  | 0.3   | 0.9   | 1.6   |
| 10          | 0.1 | 0.3  | 3.6   | 5.4   | 8.9   |
| 15          | 0.1 | 1.8  | 7.2   | 25.3  | 36.6  |
| 20          | 0.1 | 3.0  | 19.4  | 42.3  | 64.2  |
| 25          | 0.1 | 4.4  | 29.2  | 69.2  | 104.1 |
| 30          | 0.1 | 11.0 | 44.2  | 99.8  | 146.8 |
| 35          | 0.1 | 15.5 | 61.6  | 130.0 | 188.3 |
| 40          | 0.1 | 20.4 | 79.2  | 158.7 | 227.2 |
| 45          | 0.1 | 27.3 | 95.9  | 185.4 | 263.5 |
| 50          | 0.1 | 35.7 | 111.5 | 209.7 | 296.3 |
| 55          | 0.2 | 44.3 | 125.2 | 231.6 | 326.0 |
| 60          | 0.2 | 52.3 | 137.5 | 250.4 | 351.0 |
| 65          | 0.2 | 59.3 | 147.8 | 265.2 | 370.2 |
| 70          | 0.2 | 65.0 | 155.2 | 275.8 | 385.0 |
| 75          | 0.2 | 69.2 | 159.9 | 284.3 | 395.6 |
| 80          | 0.2 | 71.1 | 162.1 | 286.7 | 399.2 |
| 85          | 0.2 | 70.4 | 161.6 | 287.4 | 400.9 |
| 90          | 0.2 | 69.2 | 161.4 | 287.4 | 401.1 |
| 95          | 0.1 | 66.4 | 159.2 | 284.6 | 397.5 |
| 100         | 0.1 | 58.5 | 151.9 | 275.5 | 386.6 |
| 105         | 0.2 | 51.2 | 139.4 | 260.8 | 368.0 |
| 110         | 0.1 | 44.6 | 125.2 | 238.8 | 339.8 |
| 115         | 0.1 | 38.1 | 111.4 | 215.6 | 308.7 |
| 120         | 0.1 | 31.6 | 98.9  | 191.7 | 276.1 |
| 125         | 0.1 | 25.8 | 85.9  | 171.3 | 245.6 |
| 130         | 0.1 | 21.1 | 72.8  | 147.9 | 214.8 |
| 135         | 0.1 | 17.8 | 59.6  | 125.2 | 183.5 |
| 140         | 0.1 | 16.1 | 47.4  | 102.4 | 151.5 |
| 145         | 0.1 | 13.9 | 36.5  | 79.8  | 119.8 |
| 150         | 0.1 | 7.3  | 27.9  | 59.6  | 90.3  |
| 155         | 0.1 | 2.2  | 22.2  | 42.8  | 63.8  |
| 160         | 0.1 | 1.2  | 16.8  | 31.4  | 44.9  |
| 165         | 0.1 | 0.3  | 4.7   | 20.7  | 33.6  |
| 170         | 0.1 | 0.1  | 1.0   | 2.2   | 5.9   |
| 175         | 0.1 | 0.1  | 0.1   | 0.1   | 0.2   |
| 180         | 0.1 | 0.1  | 0.1   | 0.1   | 0.1   |

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## TEST REPORT

### RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLBA11030X

#### Zonal Lumen Summary and Percentages at 25°C

| Zone       | Lumens (lm) | % Luminaire (%) |
|------------|-------------|-----------------|
| SLBA11030X |             |                 |
| 0-30       | 16.5        | 1.3             |
| 0-40       | 52.0        | 4.2             |
| 0-60       | 217.9       | 17.5            |
| 0-90       | 668.7       | 53.6            |
| 60-90      | 450.8       | 36.1            |
| 0-180      | 1247.4      | 100.0           |

#### Beam Angle

Total Beam Angle (°)

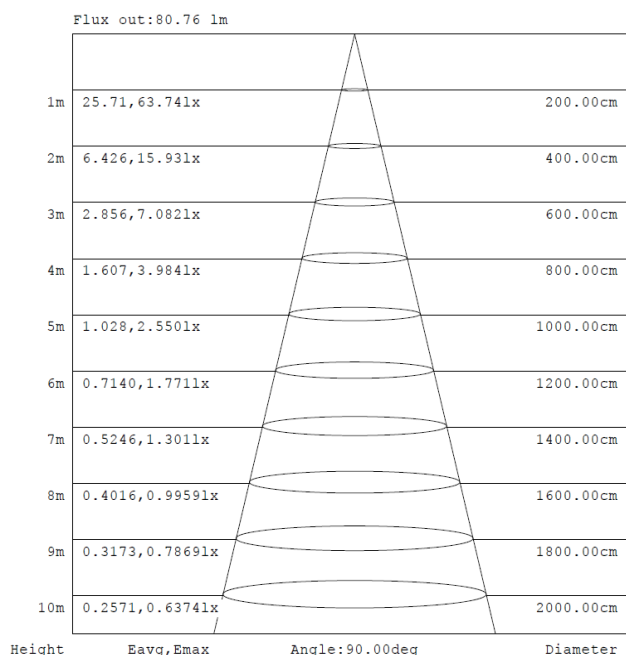
360.0

#### Illumination Plots

Model No.: SLBA11030X

Mount Height: 2.5 m

#### Illuminance - Cone of Light



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## TEST REPORT

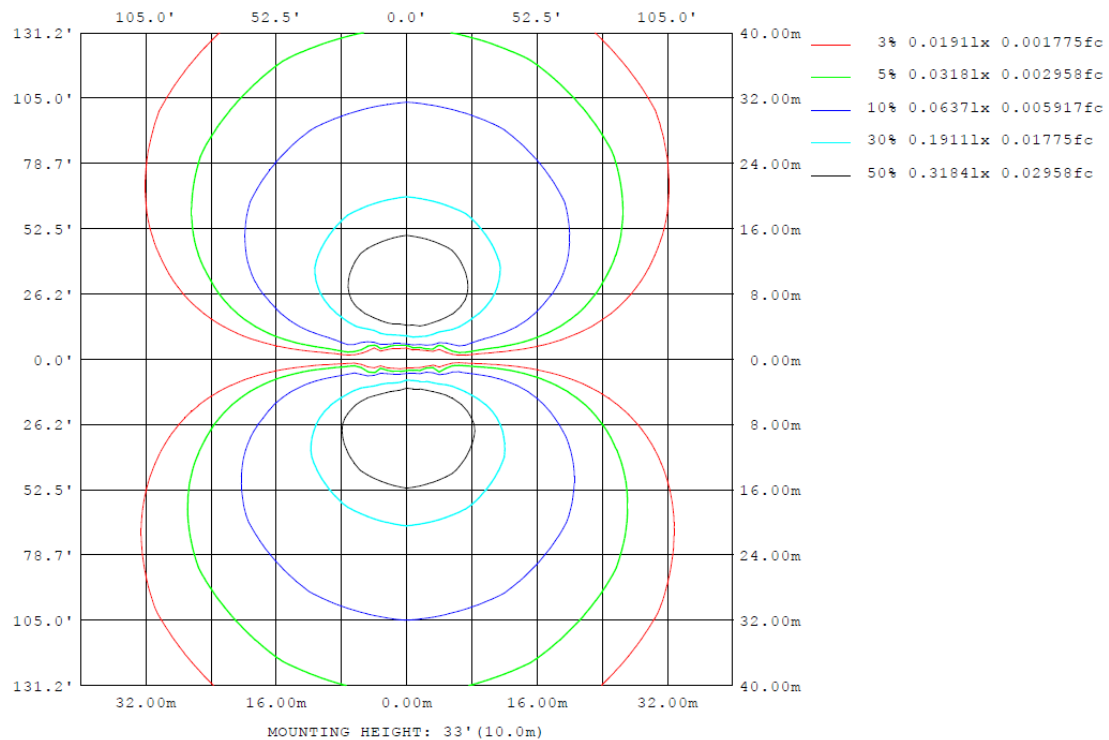
### RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLBA11030X

Model No.: SLBA11030X

Mount Height: 2.5 m

Isoillumination Plot



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLBA11030X

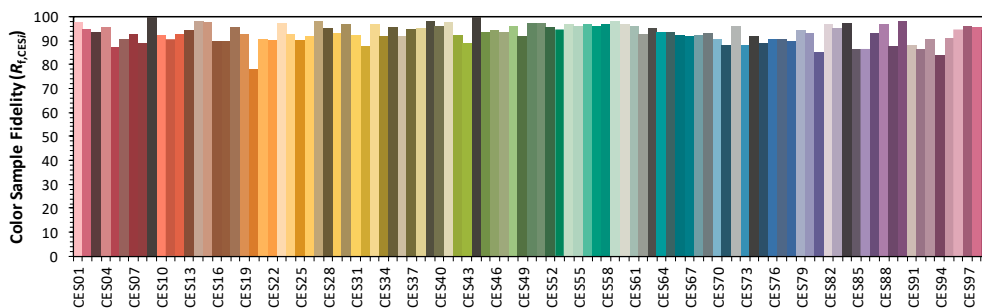
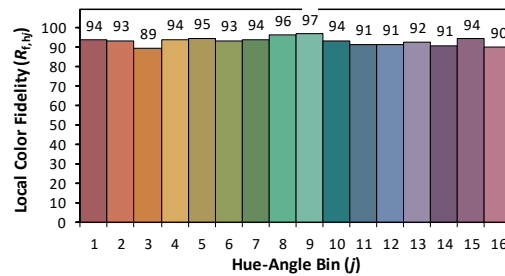
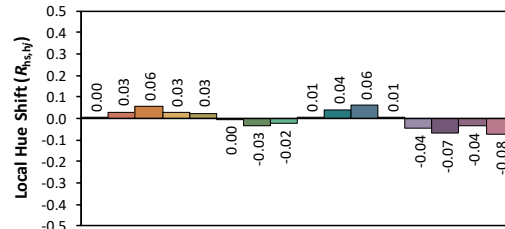
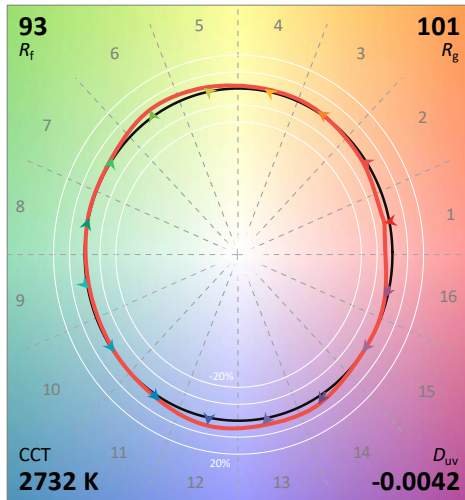
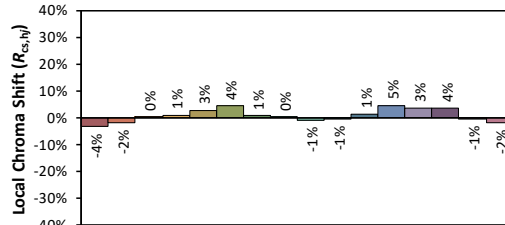
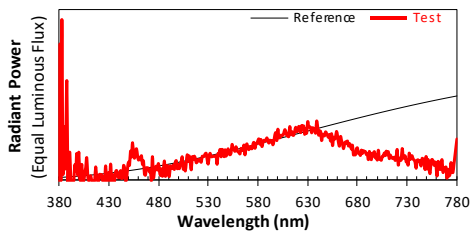
#### ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2023/2/28

Model: SLBA11030X



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.4503  
 $y$  0.3974  
 $u'$  0.2623  
 $v'$  0.5208

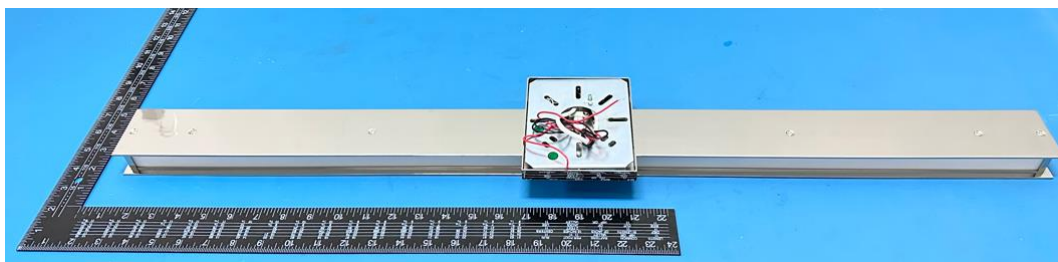
CIE 13.3-1995  
(CRI)  
 $R_a$  95  
 $R_g$  73

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

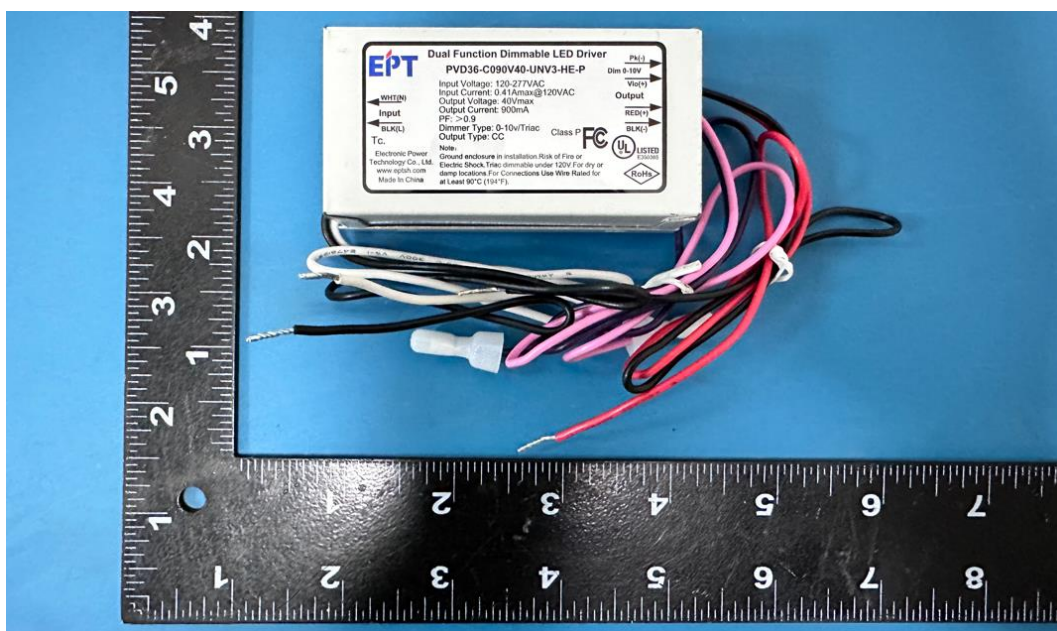
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## TEST REPORT

### PRODUCT PICTURE (not to scale)



**External view of SLBA11030X**



**View of LED Driver PVD36-C090V40-UNV3-HE-P**

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## TEST REPORT

### PRODUCT PICTURE (not to scale)



View of LED

In Charge Of Tests:

*Done Ye*

Done Ye  
Engineer

Report Reviewed By

*Shelley Ying*

Shelley Ying  
Reviewer

Attachment: None

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