NVLAP Lab Code: 200952-0

Verification Services

Project No.: 4786888141-1a
Report No.: 4786888141-1a
Report Issued Date: 2015-04-29

# Test Report

| **Customer Company & Address:** | | | |
|---|---|---|---|
| **SORAA Inc**<br>ADD: 6500 Kaiser Dr, Fremont, CA 94555 | | | |
| **Contact Person:** | Steve Yang | | |
| **Telephone:** | 510-4567183 | **Fax/Email Address:** | SYang@soraa.com |

| | |
|---|---|
| **Manufacturer:** | SORAA Inc. |
| **Country of Origin:** | USA |
| **Country of Export:** | USA |
| **Product Description:** | Lamp Type: PAR30S E26 LED Lamp<br>Total Amount Of Light Source: 1 pc |
| **Model Number:** | SP30S-18-25D-927-03 |
| **Electrical Specification:** | 120 V AC, 60 Hz |

| **Test Laboratory & Address:** | | | |
|---|---|---|---|
| UL Verification Services (Guangzhou) Co., Ltd.<br><br>ADD: Building A1, 1F & 2F, Nansha Science and Technology Innovation Center, No. 25, South Huanshi Avenue , Nansha District, Guangzhou 511458, China | | | |
| **Telephone:** | +86 20 28667188 | **Fax:** | +86 20 83486605 |

| | | | |
|---|---|---|---|
| **Receipt of Test Samples :** | 2015-03-19 | **Test Period:** | 2015-04-14 |

| **Tested By** | **Approved By** |
|---|---|
| Jackson Zeng / Jackson Zeng | Sean Xiao / Sean Xiao |
| **Test Personnel Name & Signatory** | **Approval Name & Signatory** |

**The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.**

# Test Report

## Statement of Results

| Test Flow | Test Method | Sample ID (Lab) | Sample Serial No. | Pass/Fail/NA |
|---|---|---|---|---|
| 1. | Integrating Sphere Test | 2077599-S001 | N/A | Evaluate by customer |
| 2. | Goniophotometer Test | 2077599-S001 | N/A | Evaluate by customer |

## Deviation from Test Method (*if any*)

N/A

## Remark *(if any)*

This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.

# Test Report

**Test No. 1 : Integrating Sphere Test**

## Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25.1º C |

## Test Equipment

| Equipment ID | Equipment Name | Last Calibration Date | Calibration Due Date |
|---|---|---|---|
| GVS-LE-PE003 | Integrating Sphere | Before Use | Before Use |
| GVS-LE-FS019 | Measurement Standard Lamp | 08/22/2014 | 08/21/2015 |

## Test Sample

2110268-S001

## Test Method

The sample was tested according to the IES LM-79-2008.
Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C.
The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.
The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

## Test Results

| Test Type | Voltage (V AC) | Frequency (Hz) | Current (A) | Power (W) | THD (%) | Power Factor | Orientation | Operate time (Min.) | Stabilization time (Min.) |
|---|---|---|---|---|---|---|---|---|---|
| Input | 120.01 | 60 | 0.160 | 18.67 | 20.69 | 0.973 | Base up | 58 | 50 |

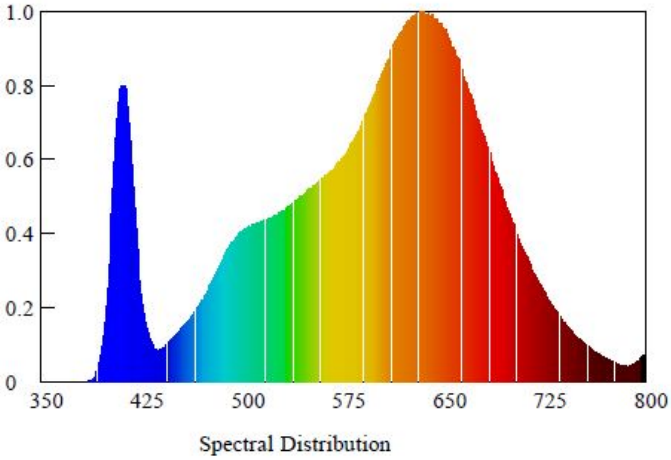
| Test Type | CCT (K) | Luminous Flux (lm) | Color Rendering Index Ra | Luminous Efficacy (lm/W) |
|---|---|---|---|---|
| Output | 2766 | 1095.4 | 95.6 | 58.7 |

# Test Report

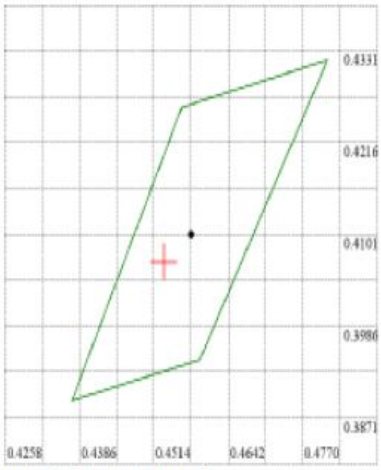
## Test Condition

Temperature: 25.1°C RH: ----%
Spectrum Range: 350-800 nm Scan Step: 1 nm

## Spectroradiometric Parameters



Spectral Distribution



Nominal CCT:Manual
x0=0.4531 y0=0.4067

Chromaticity Coordinates: x=0.4531 y=0.4067 u'=0.2599 v'=0.5248
Correlated Color Temperature: 2766 K Dominant Wavelength: 583.0 nm(E)
Luminous Flux: 1095.397 lm Purity: 0.5817
Chromaticity Difference: -0.00086Duv Peak Wavelength: 635.0 nm
Color Ratio: Kr=45.6% Kg=45.3% Kb=9.0% Color Tolerance(SDCM): 0
Bandwidth: 149.1nm Radiant Flux: 4.11 W
Rendering Index: Ra=95.6
R1=95 R2=97 R3=99 R4=92 R5=93 R6=92 R7=99 R8=99
R9=99 R10=92 R11=88 R12=73 R13=95 R14=99 R15=97

# Test Report

**Test No.2: Goniophotometer Test**

## Environmental Conditions

| | |
|---|---|
| Temperature: | 25.1 º C |

## Test Equipment

| Equipment ID | Equipment Name | Last Calibration Date | Calibration Due Date |
|---|---|---|---|
| GVS-LE-GS002 | Goniophotometer | Before Use | Before Use |
| GVS-LE-FS019 | Measurement Standard Lamp | 08/19/2014 | 08/18/2015 |
| GVS-LE-CA008 | Digital Calliper | 09/18/2014 | 09/17/2015 |

## Test Sample

2110268-S001

## Test Method

The sample was tested according to the IES LM-79-2008.
Photometric paramters were measured using a type C goniophotometer and software.
The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.
The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 22.5° horizontal intervals.

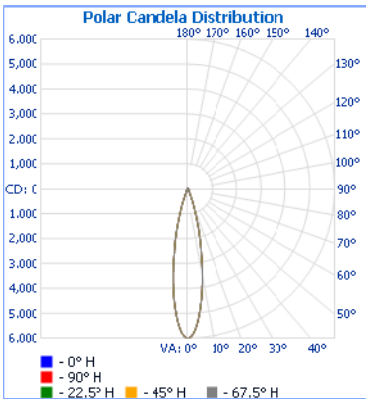
## Test Results

| Test Type | Voltage (V AC) | Frequency (Hz ) | Current (A) | Power (W) | Power Factor | Orientation | Opreate time (Min.) | Stabilization time (Min.) |
|---|---|---|---|---|---|---|---|---|
| Input | 119.99 | 60 | 0.156 | 18.17 | 0.973 | Base up | 70 | 30 |

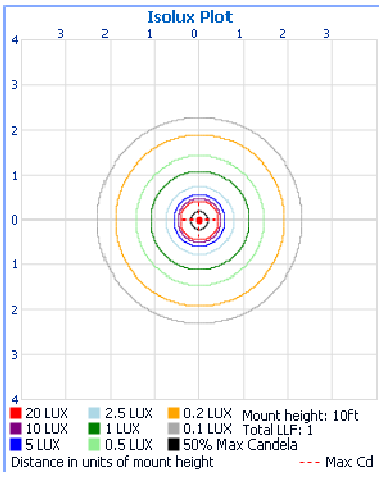
| Test Type | Flux (lm) | Center Beam Candle Power (cd) | Field angle (10%) | | Beam angle (50%) | | Luminous Efficacy (lm/W) |
|---|---|---|---|---|---|---|---|
| | | | Horizontal Spread | Vertical Spread | Horizontal Spread | Vertical Spread | |
| Output | 1094.0 | 5999 | 40.1 | 40.1 | 22.1 | 22.1 | 60.2 |

# Test Report

**Light Distribution Curve**




**Isolux Plot**



# Test Report

**Zonal Lumen Tabulation**

| Zonal Lumen Summary | | |
|---|---|---|
| Zone | Lumens | % Luminaire |
| 0-30 | 986.3 | 90.2% |
| 0-40 | 1,019.0 | 93.2% |
| 0-60 | 1,067.8 | 97.6% |
| 60-90 | 25.6 | 2.3% |
| 70-100 | 9.6 | 0.9% |
| 90-120 | 0.0 | 0% |
| 0-90 | 1,093.4 | 100% |
| 90-180 | 0.5 | 0% |
| 0-180 | 1,093.9 | 100% |

| Lumens Per Zone | | | | | |
|---|---|---|---|---|---|
| Zone | Lumens | % Total | Zone | Lumens | % Total |
| 0-5 | 132.8 | 12.1% | 90-95 | 0.0 | 0% |
| 5-10 | 300.5 | 27.5% | 95-100 | 0.0 | 0% |
| 10-15 | 287.9 | 26.3% | 100-105 | 0.0 | 0% |
| 15-20 | 173.8 | 15.9% | 105-110 | 0.0 | 0% |
| 20-25 | 65.8 | 6.0% | 110-115 | 0.0 | 0% |
| 25-30 | 25.5 | 2.3% | 115-120 | 0.0 | 0% |
| 30-35 | 17.6 | 1.6% | 120-125 | 0.0 | 0% |
| 35-40 | 15.1 | 1.4% | 125-130 | 0.0 | 0% |
| 40-45 | 13.9 | 1.3% | 130-135 | 0.0 | 0% |
| 45-50 | 12.7 | 1.2% | 135-140 | 0.0 | 0% |
| 50-55 | 11.8 | 1.1% | 140-145 | 0.0 | 0% |
| 55-60 | 10.5 | 1.0% | 145-150 | 0.0 | 0% |
| 60-65 | 8.9 | 0.8% | 150-155 | 0.0 | 0% |
| 65-70 | 7.1 | 0.6% | 155-160 | 0.1 | 0% |
| 70-75 | 5.1 | 0.5% | 160-165 | 0.1 | 0% |
| 75-80 | 3.0 | 0.3% | 165-170 | 0.1 | 0% |
| 80-85 | 1.3 | 0.1% | 170-175 | 0.1 | 0% |
| 85-90 | 0.2 | 0.0% | 175-180 | 0.0 | 0% |

# Test Report

**Intensity Data(cd)**

| | 0 | 22.5 | 45 | 67.5 | 90 | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315 | 337.5 | 360 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 | 5999 |
| 1 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 | 5958 |
| 2 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 | 5850 |
| 3 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 | 5667 |
| 4 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 | 5434 |
| 5 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 | 5140 |
| 6 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 | 4828 |
| 7 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 | 4491 |
| 8 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 | 4138 |
| 9 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 | 3767 |
| 10 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 | 3386 |
| 11 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 | 2996 |
| 12 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 | 2590 |
| 13 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 | 2290 |
| 14 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 |
| 15 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 | 1693 |
| 16 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 | 1423 |
| 17 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 | 1155 |
| 18 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 |
| 19 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 | 758 |
| 20 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 | 609 |
| 25 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 |
| 30 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| 35 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 |
| 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| 45 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| 50 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| 55 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 60 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| 65 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 70 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 75 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 80 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 85 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 165 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 170 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 175 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 180 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

# Test Report

## Photos of sample

# Test Report

**********END OF TEST REPORT**********