



NVLAP Lab Code: 200952-0

Verification Services

Project No.: 4786480430-8

Report No.: 4786480430-8a

Report Issued Date: 2015-03-17

Test Report

Customer Company & Address:			
SORAA Inc 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: PAR30L LED Lamp Total Amount Of Light Source: 1 pc
Model Number:	SP30L-18-60D-827-03
Electrical Specification:	120 V AC, 60 Hz, 18.5W

Test Laboratory & Address:			
UL Verification Services (Guangzhou) Co., Ltd.			
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 :	2015-03-10	Test Period:	2015-03-10 ~ 2015-03-17
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Tested By	Approved By
/ Jackson Zeng	/ 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	2071401-S001	N/A	Evaluate by customer
2.	Goniophotometer Test	2071401-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: 25.1° C

Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
GVS-LE-PE003	Integrating Sphere	Before Use	Before Use
GVS-LE-FS023	Measurement Standard Lamp	12/23/2013	12/22/2014

Test Sample

2071401-S001

Test Method

The sample was tested according to the IES LM-79-2008. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° 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	119.96	60	0.156	18.48	12.63	0.985	Base up	58	50

Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	Luminous Efficacy (lm/W)
Output	2656	1318.0	81.9	71.3



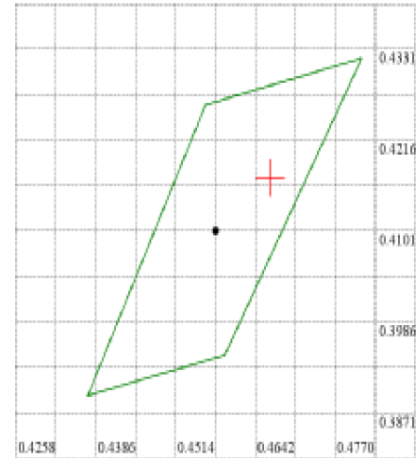
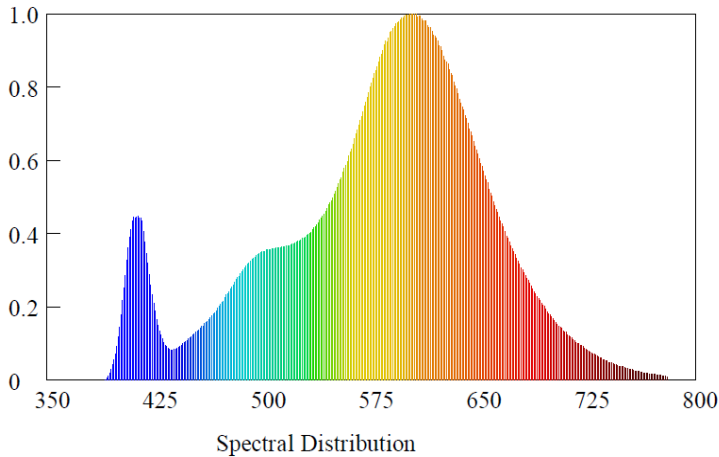
Test Report

Test Condition

Temperature: 25.1°C
 Spectrum Range: 380-780 nm

RH: ----%
 Scan Step: 1 nm

Spectroradiometric Parameters



Nominal CCT:Manual
 x0=0.4666 y0=0.4168

Chromaticity Coordinates: $x=0.4666$ $y=0.4168$ $u'=0.2640$ $v'=0.5307$

Correlated Color Temperature: 2656 K

Dominant Wavelength: 582.0 nm(E)

Luminous Flux: 1318.002 lm

Purity: 0.6565

Chromaticity Difference: 0.0017Duv

Peak Wavelength: 605.5 nm

Color Ratio: $K_r=48.9\%$ $K_g=43.7\%$ $K_b=7.4\%$

Color Tolerance(SDCM): 0

Bandwidth: 107.6nm

Radiant Flux: 3.862 W

Rendering Index: $R_a=81.9$

R1=80 R2=94 R3=89 R4=80 R5=83 R6=96 R7=79 R8=54

R9=3 R10=89 R11=80 R12=91 R13=84 R14=94 R15=71



Test Report

Test No.2: Goniophotometer Test

Environmental Conditions

Temperature: 25.1 °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

2071401-S001

Test Method

The sample was tested according to the IES LM-79-2008.
 Photometric parameters 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	120.02	60	0.157	18.47	0.980	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	1322.1	1477	84.4	84.4	55.4	55.4	71.6



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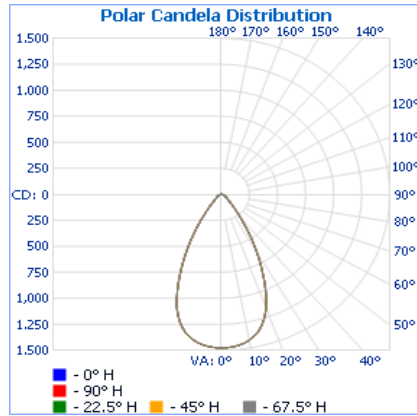
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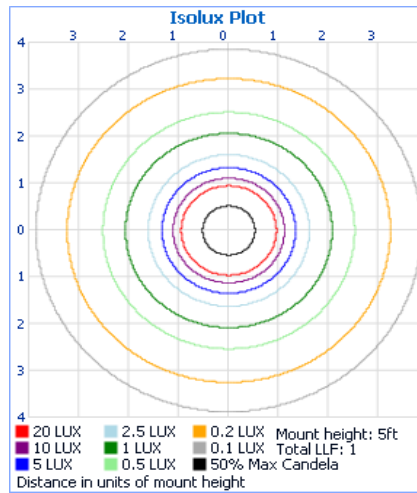
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Test Report

Light Distribution Curve



Isolux Plot





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Test Report

Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	912.4	69%
0-40	1,143.0	86.5%
0-60	1,274.4	96.4%
60-90	46.7	3.5%
70-100	19.3	1.5%
90-120	0.2	0%
0-90	1,321.1	99.9%
90-180	0.9	0.1%
0-180	1,322.1	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	35.2	2.7%	90-95	0.0	0%
5-10	103.5	7.8%	95-100	0.0	0%
10-15	163.9	12.4%	100-105	0.0	0%
15-20	206.1	15.6%	105-110	0.0	0%
20-25	215.2	16.3%	110-115	0.0	0%
25-30	188.6	14.3%	115-120	0.0	0%
30-35	141.3	10.7%	120-125	0.0	0%
35-40	89.3	6.8%	125-130	0.0	0%
40-45	53.2	4.0%	130-135	0.1	0%
45-50	34.1	2.6%	135-140	0.1	0%
50-55	24.9	1.9%	140-145	0.1	0%
55-60	19.3	1.5%	145-150	0.1	0%
60-65	15.2	1.1%	150-155	0.1	0%
65-70	12.3	0.9%	155-160	0.1	0%
70-75	9.7	0.7%	160-165	0.1	0%
75-80	6.5	0.5%	165-170	0.1	0%
80-85	2.7	0.2%	170-175	0.0	0%
85-90	0.3	0.0%	175-180	0.0	0%



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Intensity Data(cd)

Candela Table - Type C																
0	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477
0.5	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477	1477
1.5	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476
2.5	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474	1474
3.5	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472	1472
4.5	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468	1468
5.5	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464	1464
6.5	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457	1457
7.5	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
8.5	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441	1441
9.5	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430
10.5	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417
11.5	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404
12.5	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387
13.5	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369
14.5	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345	1345
15.5	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
16.5	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292	1292
17.5	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260
18.5	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222	1222
19.5	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182
20.5	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137
25.5	860	860	860	860	860	860	860	860	860	860	860	860	860	860	860	860
30.5	583	583	583	583	583	583	583	583	583	583	583	583	583	583	583	583
35.5	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
40.5	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182
45.5	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
50.5	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
55.5	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
60.5	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
65.5	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
70.5	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
75.5	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
80.5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
85.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
90.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



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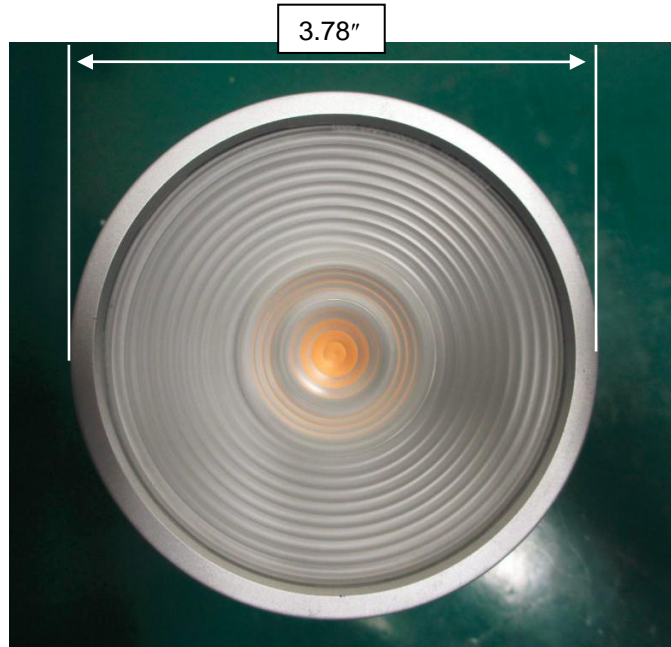
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Test Report

Photos of sample



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