NVLAP Lab Code: 200952-0

Verification Services

Project No.: 4786480430-5
Report No.: 4786480430-5a
Report Issued Date: 2015-2-2

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-18-36D-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 :	2015-1-13	**Test Period:**	2015-1-13 ~ 2015-1-30

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

Test Report

Statement of Results

Test Flow	Test Method	Sample ID (Lab)	Sample Serial No.	Pass/Fail/NA
1.	Integrating Sphere Test	2033566-S001	N/A	Evaluate by customer
2.	Goniophotometer Test	2033566-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	08/22/2013	08/21/2015

Test Sample

2033566-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)	Power Factor	Orientation	Operate time (Min.)	Stabilization time (Min.)
Input	120.05	60	0.159	18.89	0.990	Base up	50	30

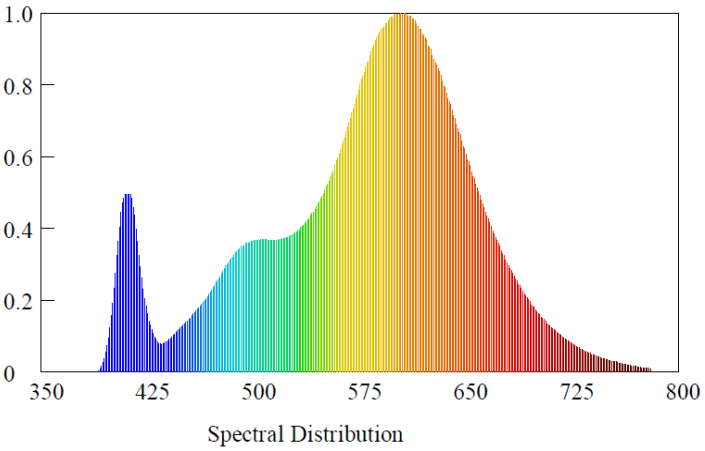
Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	R9	Luminous Efficacy (lm/W)
Output	2663	1399.8	82.9	7	74.1

Test Report

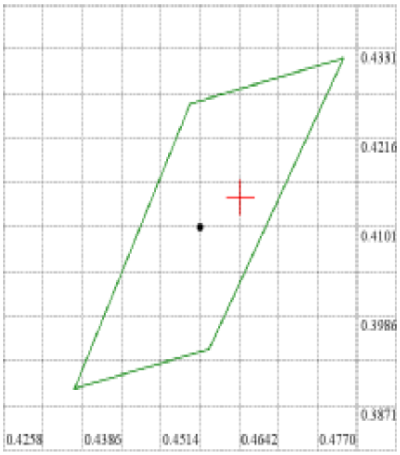
Test Condition

Temperature: 25.1°C
RH: ----%
Spectrum Range: 380-780 nm
Scan Step: 1 nm

Spectroradiometric Parameters



Spectral Distribution



Nominal CCT:Manual
x0=0.4644 y0=0.4139

Chromaticity Coordinates: x=0.4644 y=0.4139 u'=0.264 v'=0.5293

Correlated Color Temperature: 2663 K
Dominant Wavelength: 583.0 nm(E)

Luminous Flux: 1399.803 lm
Purity: 0.6372

Chromaticity Difference: +0.00083Duv
Peak Wavelength: 607.1 nm

Color Ratio: Kr=49.0% Kg=43.2% Kb=7.8%
Color Tolerance(SDCM): 0

Bandwidth: 106.5nm
Radiant Flux: 4.061 W

Rendering Index: Ra=82.9

R1=82	R2=95	R3=88	R4=81	R5=85	R6=98	R7=79	R8=55
R9=7	R10=93	R11=82	R12=92	R13=86	R14=93	R15=72	

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	08/22/2013	08/21/2015
GVS-LE-CA008	Digital Calliper	09/18/2014	09/17/2015

Test Sample

2033566-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.

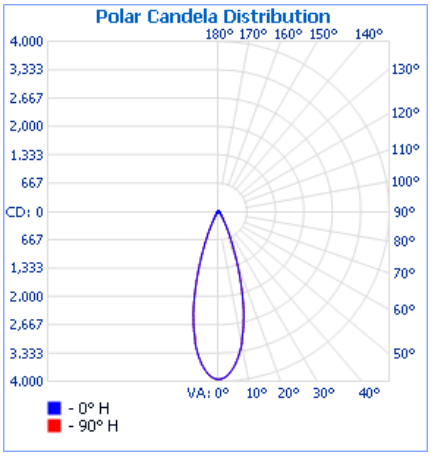
Test Results

Test Type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation	Opreate time (Min.)	Stabilization time (Min.)
Input	119.98	60	0.159	18.84	0.990	Base up	70	30

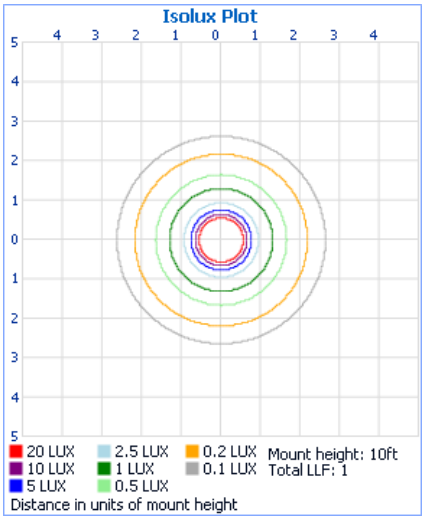
Test Type	Flux (lm)	Center Beam Candle Power (cd)	Field angle (10%)		Beam angle (50%)		Luminous Efficacy (lm/W)
			Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
Output	1412.6	3951	54.3	54.3	32.5	32.5	75.0

Test Report

Light Distribution Curve



Isolux Plot



Test Report

Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	1,211.0	85.7%
0-40	1,291.9	91.5%
0-60	1,369.3	96.9%
60-90	42.2	3%
70-100	16.6	1.2%
90-120	0.3	0%
0-90	1,411.5	99.9%
90-180	1.1	0.1%
0-180	1,412.6	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	91.8	6.5%	90-95	0.1	0%
5-10	245.5	17.4%	95-100	0.1	0%
10-15	316.5	22.4%	100-105	0.1	0%
15-20	279.9	19.8%	105-110	0.1	0%
20-25	181.3	12.8%	110-115	0.1	0%
25-30	96.1	6.8%	115-120	0.1	0%
30-35	49.7	3.5%	120-125	0.1	0%
35-40	31.3	2.2%	125-130	0.1	0%
40-45	23.5	1.7%	130-135	0.1	0%
45-50	19.7	1.4%	135-140	0.1	0%
50-55	17.9	1.3%	140-145	0.1	0%
55-60	16.3	1.2%	145-150	0.1	0%
60-65	14.1	1.0%	150-155	0.1	0%
65-70	11.6	0.8%	155-160	0.1	0%
70-75	8.4	0.6%	160-165	0.1	0%
75-80	5.3	0.4%	165-170	0.1	0%
80-85	2.4	0.2%	170-175	0.1	0%
85-90	0.5	0.0%	175-180	0.0	0%

Test Report

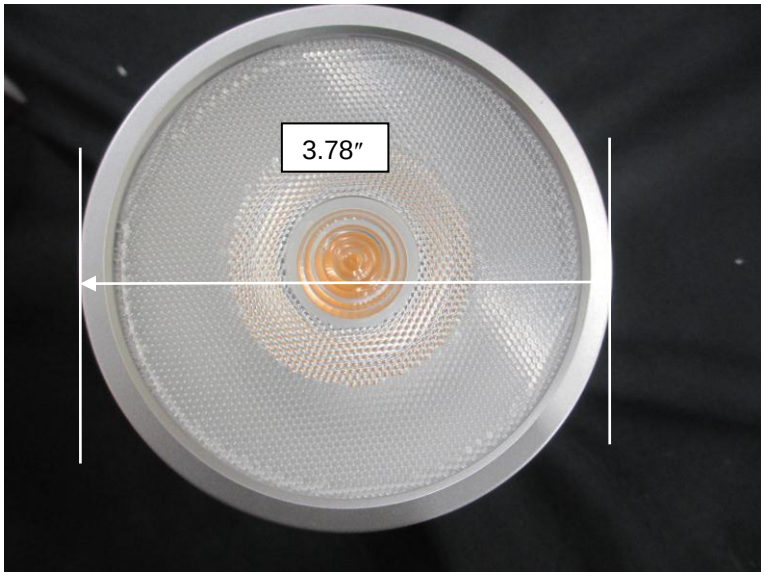
Intensity Data(cd)

Candela Table - Type C

	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
0	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951	3951
0.5	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949
1.5	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931	3931
2.5	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896	3896
3.5	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843
4.5	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770	3770
5.5	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686	3686
6.5	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588	3588
7.5	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478	3478
8.5	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352	3352
9.5	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219	3219
10.5	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034	3034
11.5	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887	2887
12.5	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714	2714
13.5	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528	2528
14.5	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332	2332
15.5	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126
16.5	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914	1914
17.5	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716	1716
18.5	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518	1518
19.5	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334	1334
24.5	628	628	628	628	628	628	628	628	628	628	628	628	628	628	628	628	628
29.5	259	259	259	259	259	259	259	259	259	259	259	259	259	259	259	259	259
34.5	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
39.5	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
49.5	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
54.5	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
59.5	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
64.5	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
69.5	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
74.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
79.5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
84.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
89.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
164.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
169.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
174.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Test Report

Photos of sample



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