



**Verification Services**

Project No.: 4786480425-8  
Report No.: 4786480425-8a  
Report Issued Date: 2015-2-2


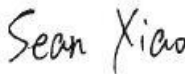
# Test Report

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

<b>Manufacturer:</b>	SORAA Inc.
<b>Country of Origin:</b>	USA
<b>Country of Export:</b>	USA
<b>Product Description:</b>	Lamp Type: MR16 GU5.3 LED Lamp Total Amount Of Light Source: 1 pc
<b>Model Number:</b>	SM16-07-36D-830-03
<b>Electrical Specification:</b>	12 V AC, 60 Hz, 7.5W

<b>Test Laboratory &amp; Address:</b>			
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			
<b>Telephone:</b>	+86 20 28667188	<b>Fax:</b>	+86 20 83486605

<b>Receipt of Test Samples :</b>	2015-1-13	<b>Test Period:</b>	2015-1-13 ~ 2015-1-30
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<b>Tested By</b>	<b>Approved By</b>
 / Jackson Zeng	 / Sean Xiao
<b>Test Personnel Name &amp; Signatory</b>	<b>Approval Name &amp; Signatory</b>

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

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## Statement of Results

Test Flow	Test Method	Sample ID (Lab)	Sample Serial No.	Pass/Fail/NA
1.	Integrating Sphere Test	2033559-S001	N/A	Evaluate by customer
2.	Goniophotometer Test	2033559-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
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**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**

2033559-S001
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**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)	Power Factor	Orientation	Operate time (Min.)	Stabilization time (Min.)
Input	11.99	60	0.718	7.86	0.913	Base up	50	30

Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	R9	Luminous Efficacy (lm/W)
Output	2943	521.0	85.3	15	66.3



NVLAP Lab Code: 200952-0

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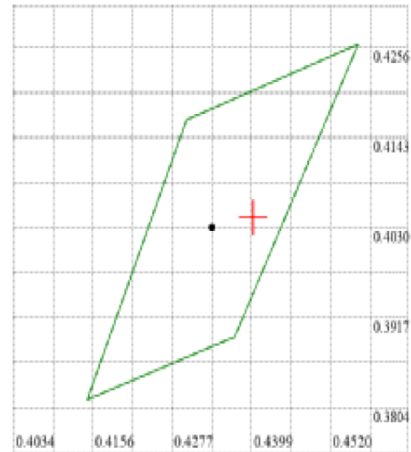
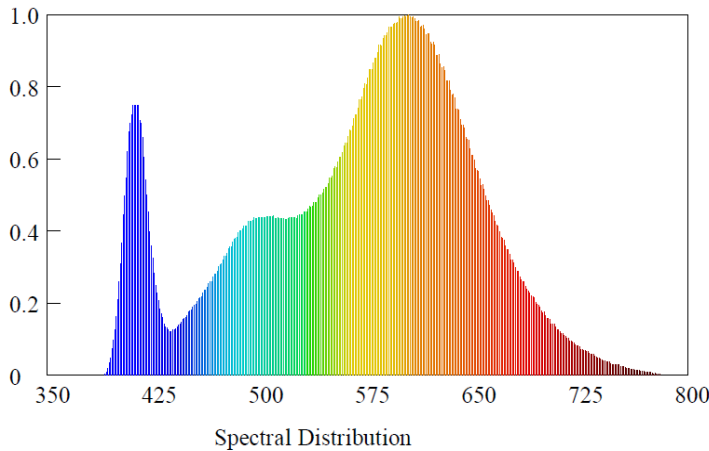
# Test Report

## Test Condition

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

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

## Spectroradiometric Parameters



Nominal CCT:LED\_3000K  
x0=0.4401 y0=0.4043

Chromaticity Coordinates: x=0.4401 y=0.4043 u'=0.2525 v'=0.5219

Correlated Color Temperature: 2943 K

Dominant Wavelength: 582.0 nm(E)

Luminous Flux: 521.024 lm

Purity: 0.5353

Chromaticity Difference: -0.0005Duv

Peak Wavelength: 604.0 nm

Color Ratio: Kr=46.2% Kg=44.9% Kb=8.9%

Bandwidth: 112.4nm

Radiant Flux: 1.491 W

Rendering Index: Ra=85.3

R1=85 R2=97 R3=89 R4=85 R5=88 R6=98 R7=81 R8=60

R9=15 R10=95 R11=86 R12=88 R13=89 R14=94 R15=76



# 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

2033559-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	Operate time (Min.)	Stabilization time (Min.)
Input	11.99	60	0.713	7.81	0.913	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	525.6	1392	56.7	56.7	32.2	32.2	67.3



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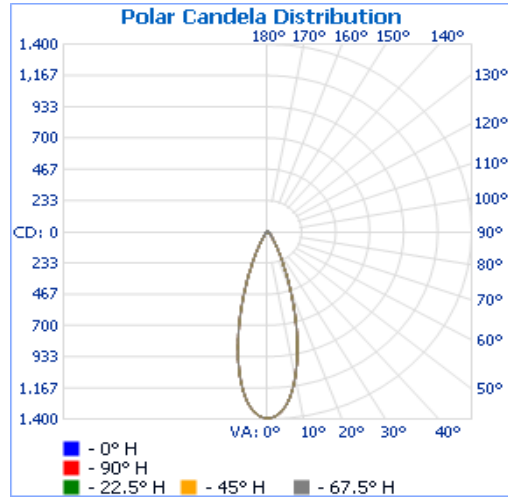
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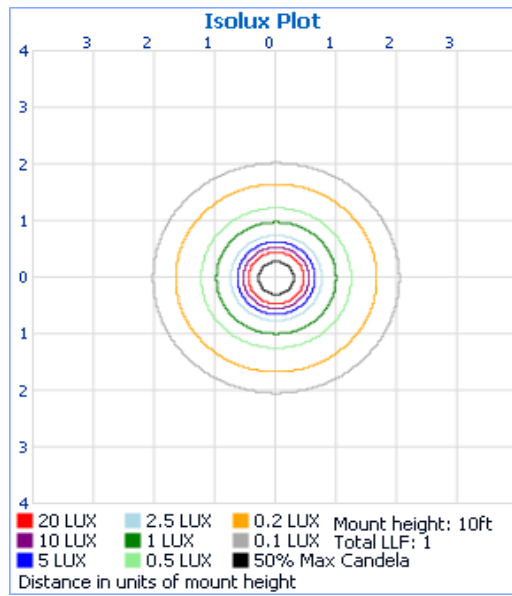
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# Test Report

## Light Distribution Curve



## Isolux Plot





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# Test Report

## Zonal Lumen Tabulation

### Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	434.5	82.7%
0-40	472.3	89.9%
0-60	506.5	96.4%
60-90	17.9	3.4%
70-100	7.8	1.5%
90-120	0.3	0.1%
0-90	524.4	99.8%
90-180	1.2	0.2%
0-180	525.6	100%

### Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	32.4	6.2%	90-95	0.0	0%
5-10	86.3	16.4%	95-100	0.0	0%
10-15	109.7	20.9%	100-105	0.0	0%
15-20	98.5	18.7%	105-110	0.1	0%
20-25	67.6	12.9%	110-115	0.1	0%
25-30	40.0	7.6%	115-120	0.1	0%
30-35	23.0	4.4%	120-125	0.1	0%
35-40	14.7	2.8%	125-130	0.1	0%
40-45	10.9	2.1%	130-135	0.1	0%
45-50	9.0	1.7%	135-140	0.1	0%
50-55	7.7	1.5%	140-145	0.1	0%
55-60	6.6	1.3%	145-150	0.1	0%
60-65	5.6	1.1%	150-155	0.1	0%
65-70	4.6	0.9%	155-160	0.1	0%
70-75	3.5	0.7%	160-165	0.1	0%
75-80	2.5	0.5%	165-170	0.0	0%
80-85	1.3	0.3%	170-175	0.0	0%
85-90	0.4	0.1%	175-180	0.0	0%



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## 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	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392	1392
1	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389	1389
2	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381
3	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366	1366
4	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346	1346
5	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319
6	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287
7	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
8	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201
9	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150
10	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
11	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034
12	972	972	972	972	972	972	972	972	972	972	972	972	972	972	972	972	972
13	903	903	903	903	903	903	903	903	903	903	903	903	903	903	903	903	903
14	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837
15	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771
16	703	703	703	703	703	703	703	703	703	703	703	703	703	703	703	703	703
17	636	636	636	636	636	636	636	636	636	636	636	636	636	636	636	636	636
18	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570
19	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508
20	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
25	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227
30	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108
35	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
40	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
45	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
50	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
55	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
60	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
65	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
70	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
75	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

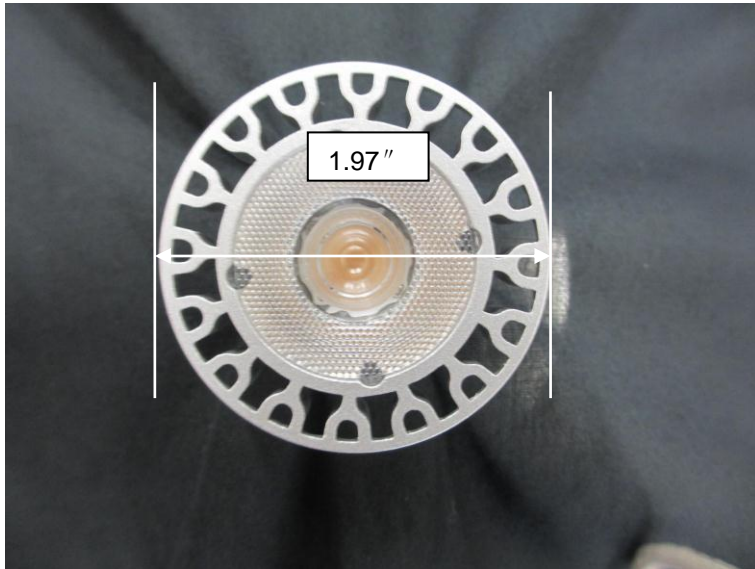




# Test Report

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## Photos of sample



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