



Verification Services

Project No.: 4786480425-3

Report No.: 4786480425-3a

Report Issued Date: 2015-01-04


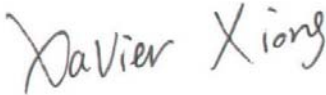
# Test Report

<b>Customer Company &amp; Address:</b>			
<b>SORAA Inc</b> 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>	SM16-07-25D-927-03
<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>	2014-11-28	<b>Test Period:</b>	2014-11-29 ~ 2014-12-09
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<b>Tested By</b>	<b>Approved By</b>
 / Jackson Zeng	 / Xavier Xiong
<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.



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# 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	2014818-S001	N/A	Evaluate by customer
2.	Goniophotometer Test	2014818-S001	N/A	Evaluate by customer

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

N/A
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## **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.
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# 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-FS019	Measurement Standard Lamp	08/22/2014	08/21/2015

### Test Sample

2014818-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	12.00	60	0.701	7.66	41.86	0.911	Base up	58	50

Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	Luminous Efficacy (lm/W)
Output	2681	416.5	96.0	54.3



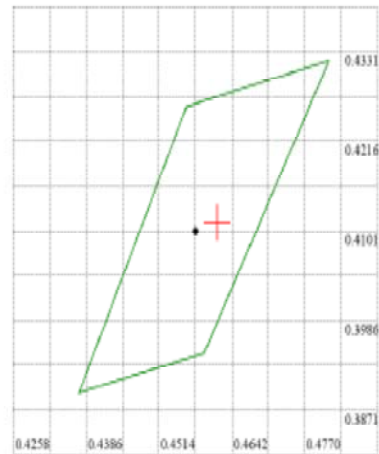
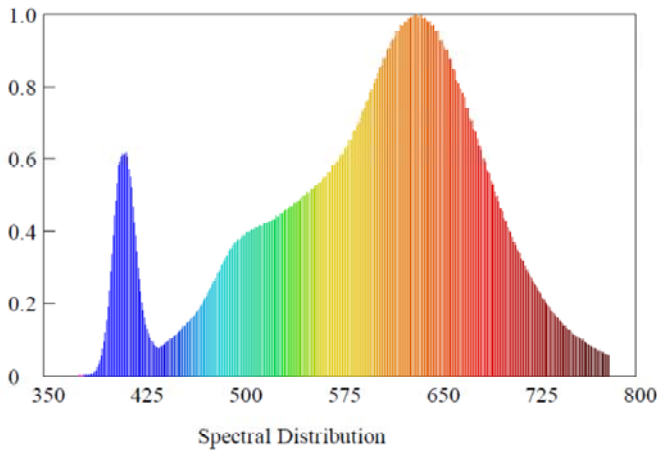
# Test Report

## Test Condition

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

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

## Spectroradiometric Parameters



Nominal CCT:Manual  
 x0=0.4616 y0=0.4112

Chromaticity Coordinates:  $x=0.4616$   $y=0.4112$   $u'=0.2634$   $v'=0.5278$   
 Correlated Color Temperature: 2681 K      Dominant Wavelength: 583.0 nm(E)  
 Luminous Flux: 416.477 lm      Purity: 0.6215  
 Chromaticity Difference: 0.0001Duv      Peak Wavelength: 633.9 nm  
 Color Ratio: Kr=46.4% Kg=45.0% Kb=8.6%      Color Tolerance(SDCM): 0  
 Bandwidth: 141.9nm      Radiant Flux: 1.496 W  
 Rendering Index: Ra=96.0  
 R1=96 R2=97 R3=99 R4=93 R5=94 R6=92 R7=98 R8=98  
 R9=95 R10=94 R11=89 R12=76 R13=96 R14=99 R15=98



# 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

2014818-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	12.00	60	0.701	7.67	0.911	Base up	70	30

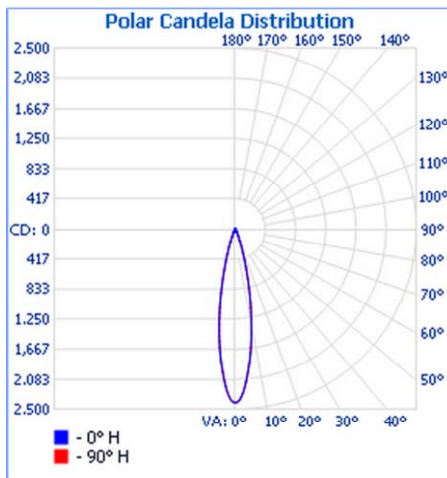
Test Type	Flux (lm)	Center Beam Candle Power (cd)	Field angle (10%)		Beam angle (50%)		Luminous Efficacy (lm/W)
			Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
Output	417.5	2408	39.2	39.2	22.1	22.1	54.4



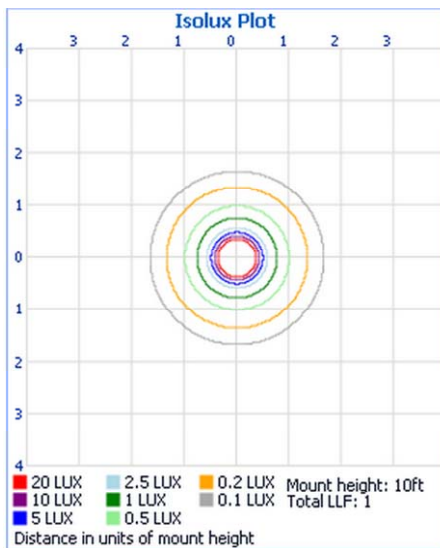
# Test Report

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## Light Distribution Curve



## Isolux Plot





# Test Report

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## Zonal Lumen Tabulation

### Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	376.5	90.2%
0-40	391.0	93.7%
0-60	408.4	97.8%
60-90	8.0	1.9%
70-100	3.2	0.8%
90-120	0.3	0.1%
0-90	416.4	99.7%
90-180	1.1	0.3%
0-180	417.5	100%

### Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	52.3	12.5%	90-95	0.0	0%
5-10	114.7	27.5%	95-100	0.0	0%
10-15	105.9	25.4%	100-105	0.1	0%
15-20	61.0	14.6%	105-110	0.1	0%
20-25	29.0	7.0%	110-115	0.1	0%
25-30	13.6	3.3%	115-120	0.1	0%
30-35	8.3	2.0%	120-125	0.1	0%
35-40	6.3	1.5%	125-130	0.1	0%
40-45	5.4	1.3%	130-135	0.1	0%
45-50	4.7	1.1%	135-140	0.1	0%
50-55	4.0	1.0%	140-145	0.1	0%
55-60	3.4	0.8%	145-150	0.1	0%
60-65	2.7	0.7%	150-155	0.1	0%
65-70	2.1	0.5%	155-160	0.1	0%
70-75	1.5	0.4%	160-165	0.1	0%
75-80	1.0	0.2%	165-170	0.0	0%
80-85	0.5	0.1%	170-175	0.0	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
0	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408	2408
1	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390
2	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334	2334
3	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243
4	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126
5	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994
6	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
7	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725
8	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576
9	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421	1421
10	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271	1271
11	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120
12	978	978	978	978	978	978	978	978	978	978	978	978	978	978	978	978	978
13	839	839	839	839	839	839	839	839	839	839	839	839	839	839	839	839	839
14	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711
15	593	593	593	593	593	593	593	593	593	593	593	593	593	593	593	593	593
16	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490
17	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398
18	329	329	329	329	329	329	329	329	329	329	329	329	329	329	329	329	329
19	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273
20	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219
25	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
30	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
35	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
40	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
50	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
55	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
60	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
65	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
70	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
75	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
80	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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

## Photos of sample

Doc No: 10-CT-F0059

Issue No: 1.1





# Test Report

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