



Verification Services

Project No.: 4786480425-4

Report No.: 4786480425-4a

Report Issued Date: 2014-12-12


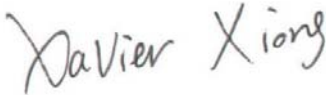
Test Report

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: MR16 GU5.3 LED Lamp Total Amount Of Light Source: 1 pc
Model Number:	SM16-07-25D-930-03
Electrical Specification:	12 V AC, 60 Hz, 7.5W

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 :	2014-11-28	Test Period:	2014-11-29 ~ 2014-12-09
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Tested By	Approved By
 / Jackson Zeng	 / Xavier Xiong
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.



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Statement of Results

Test Flow	Test Method	Sample ID (Lab)	Sample Serial No.	Pass/Fail/NA
1.	Integrating Sphere Test	2014819-S001	N/A	Evaluate by customer
2.	Goniophotometer Test	2014819-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.



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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-FS023	Measurement Standard Lamp	12/23/2013	12/22/2014

Test Sample

2014819-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)	Power Factor	Orientation	Operate time (Min.)	Stabilization time (Min.)
Input	11.99	60	0.713	7.81	0.914	Base up	58	50

Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	Luminous Efficacy (lm/W)
Output	2988	420.3	95.9	53.8



Test Report

Test Condition

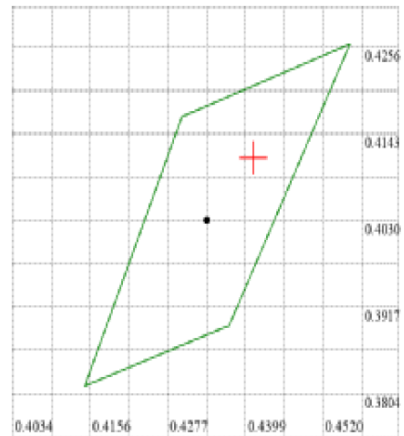
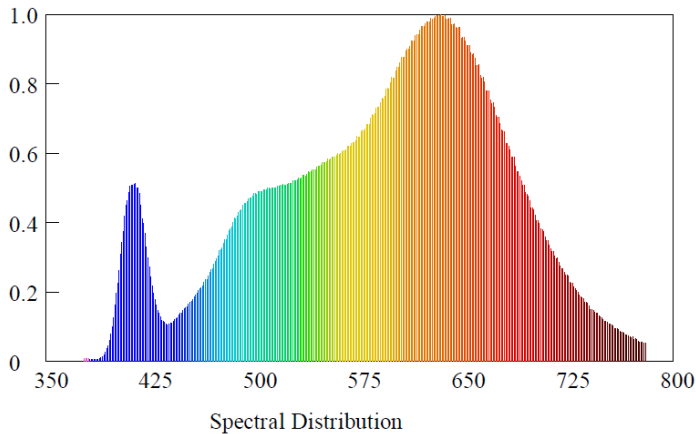
Temperature: 25.1°C

RH: ----%

Spectrum Range: 380-780 nm

Scan Step: 1 nm

Spectroradiometric Parameters



Nominal CCT: LED_3000K
x0=0.4411 y0=0.4112

Chromaticity Coordinates: x=0.4411 y=0.4112 u'=0.2502 v'=0.5248

Correlated Color Temperature: 2988 K

Dominant Wavelength: 581.0 nm(E)

Luminous Flux: 420.271 lm

Purity: 0.5588

Chromaticity Difference: +0.00225Duv

Peak Wavelength: 632.7 nm

Color Ratio: Kr=43.5% Kg=46.5% Kb=9.9%

Bandwidth: 171.1nm

Radiant Flux: 1.64 W

Rendering Index: Ra=95.9

R1=96 R2=97 R3=97 R4=94 R5=94 R6=92 R7=98 R8=99

R9=98 R10=93 R11=90 R12=81 R13=96 R14=99 R15=99



Test Report

Test No.2: Goniophotometer 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-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

2014819-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

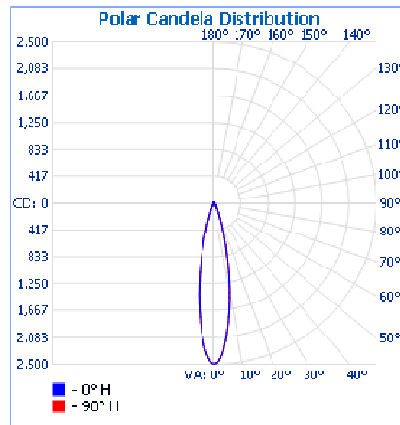
Test Type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation	Opreate time (Min.)	Stabilization time (Min.)
Input	12.02	60	0.720	7.91	0.912	Base up	70	30

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	429.1	2492	39.3	39.3	21	21	54.3

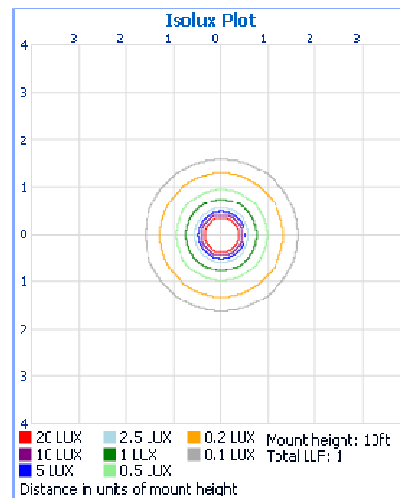


Test Report

Light Distribution Curve



Isolux Plot





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Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	392.2	91.4%
0-40	405.7	94.6%
0-60	421.5	98.2%
60-90	7.0	1.6%
70-100	2.6	0.6%
90-120	0.1	0%
0-90	428.5	99.9%
90-180	0.6	0.1%
0-180	429.1	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	54.4	12.7%	90-95	0.0	0%
5-10	119.1	27.8%	95-100	0.0	0%
10-15	110.7	25.8%	100-105	0.0	0%
15-20	64.5	15.0%	105-110	0.0	0%
20-25	30.2	7.0%	110-115	0.0	0%
25-30	13.4	3.1%	115-120	0.0	0%
30-35	7.8	1.8%	120-125	0.0	0%
35-40	5.8	1.3%	125-130	0.0	0%
40-45	4.9	1.1%	130-135	0.0	0%
45-50	4.2	1.0%	135-140	0.0	0%
50-55	3.6	0.8%	140-145	0.1	0%
55-60	3.0	0.7%	145-150	0.1	0%
60-65	2.5	0.6%	150-155	0.1	0%
65-70	1.9	0.4%	155-160	0.1	0%
70-75	1.4	0.3%	160-165	0.1	0%
75-80	0.8	0.2%	165-170	0.0	0%
80-85	0.4	0.1%	170-175	0.0	0%
85-90	0.1	0.0%	175-180	0.0	0%



Test Report

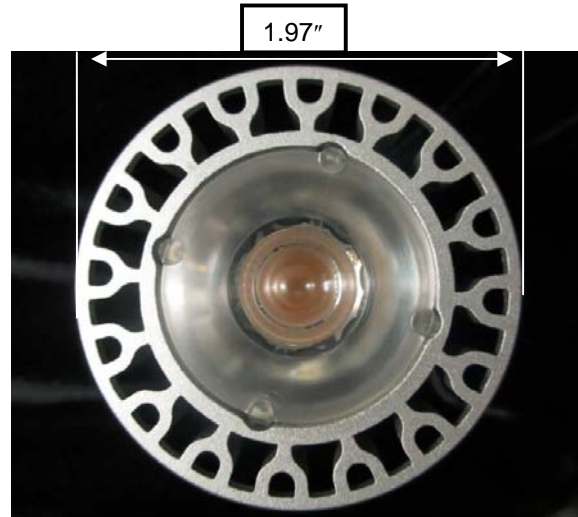
Intensity Data(cd)

	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	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492	2492
1	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472
2	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417	2417
3	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327	2327
4	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212
5	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082	2082
6	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938	1938
7	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778
8	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634
9	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478	1478
10	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322	1322
11	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171	1171
12	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023
13	874	874	874	874	874	874	874	874	874	874	874	874	874	874	874	874	874
14	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745
15	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622	622
16	517	517	517	517	517	517	517	517	517	517	517	517	517	517	517	517	517
17	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424
18	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348	348
19	286	286	286	286	286	286	286	286	286	286	286	286	286	286	286	286	286
20	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231
25	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
30	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
35	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
40	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
50	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
55	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
65	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
70	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
180.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Test Report

Photos of sample



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