



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G102330740

Date: October 30, 2015

REPORT NO. 102330740LAX-001

TEST OF ONE SURFACE LUMINAIRE

MODEL NO. SLIM-16IN RESIN
DRIVER MODEL NO. ALVA LIGHT / GC GLN2201
LED MODEL NO. NICHIA NSSLT0Z

RENDERED TO

ALVA LIGHT
2150 ALLSTON WAY STE 400
BERKELEY, CA 94704

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00649730.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number Slim-16in Resin. The sample was received by Intertek on October 13, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1510131025-002.

DATES OF TESTS: October 26, 2015 through October 26, 2015.

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SUMMARY

Model No.:	Slim-16in Resin
Description:	Surface Luminaire

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	532.5	534.0
Total Power (W)	13.50	13.50
Luminaire Efficacy (LPW)	39.44	39.56

Criteria	Result
Power Factor	0.990
Current ATHD %	8.94
Correlated Color Temperature (CCT - K)	2639
Color Rendering Index (CRI - Ra)	87.7
Color Rendering Index (CRI - R9)	42.5
DUV	0.001
Chromaticity Coordinate (x)	0.463
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.265
Chromaticity Coordinate (v')	0.527

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	09/28/15	10/28/15
LabSphere Spectrometer	CDS-3020	000834	09/28/15	10/28/15
California Instruments Power Supply	CSW5550	001339	VBU	VBU
Yokogawa Power Meter	WT333	001320	06/03/15	06/03/16
Extech Instruments Stop Watch	365510	001390	12/08/14	12/08/15
Temp & HR Meter	971	001178	12/22/14	12/22/15
DC Power Supply	LPS-100-0833	000836	05/07/15	05/07/16
LSI High Speed Mirror Goniometer	6440T	000943	09/28/15	10/28/15
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	11/26/14	11/26/15
Temp. & RH Meter	971	001178	12/22/14	12/22/15
Extech Instruments Stop Watch	N/A	001390	12/08/14	12/08/15
Tape Measure	33-428	000684	12/08/14	12/08/15



TEST METHODS

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere CDS 3020 Spectrometer and Three Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

The calibration of the sphere spectrometer system is traceable to the National Institute of Standards and Technology.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

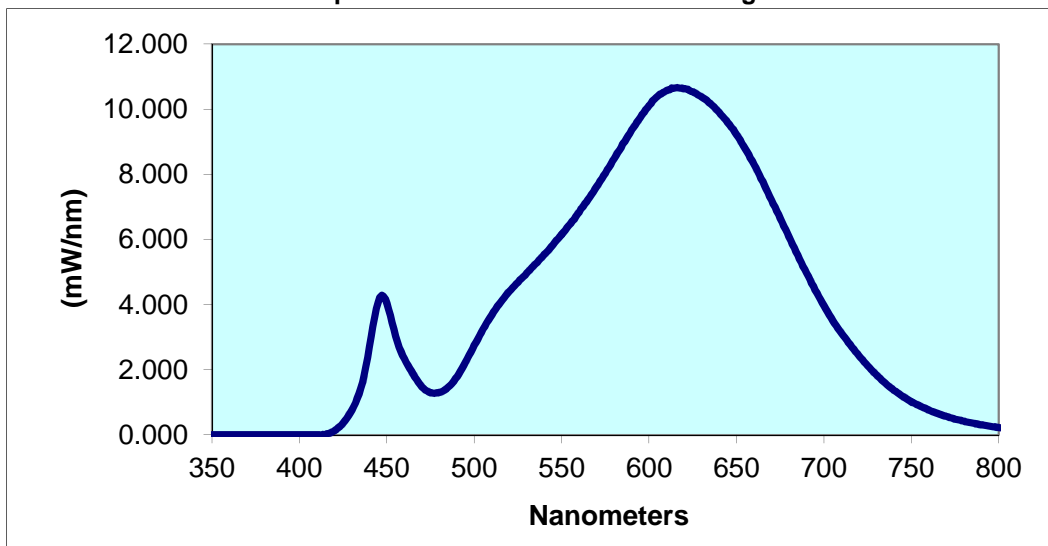
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1510131025-002	UP	120.0	113.7	13.50	0.990	8.94	532.5	39.44

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
2639	87.7	42.5	0.001	0.463	0.409	0.265	0.527

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.000	440	2.694	530	4.977	620	10.620	710	3.125
355	0.000	445	4.085	535	5.246	625	10.540	715	2.763
360	0.000	450	4.042	540	5.543	630	10.380	720	2.430
365	0.000	455	3.038	545	5.843	635	10.180	725	2.127
370	0.000	460	2.329	550	6.153	640	9.912	730	1.839
375	0.000	465	1.867	555	6.492	645	9.580	735	1.592
380	0.000	470	1.478	560	6.845	650	9.215	740	1.371
385	0.000	475	1.294	565	7.229	655	8.783	745	1.186
390	0.000	480	1.306	570	7.639	660	8.307	750	1.017
395	0.000	485	1.462	575	8.043	665	7.775	755	0.888
400	0.000	490	1.784	580	8.487	670	7.209	760	0.764
405	0.000	495	2.240	585	8.935	675	6.645	765	0.661
410	0.000	500	2.753	590	9.373	680	6.081	770	0.568
415	0.018	505	3.245	595	9.755	685	5.518	775	0.484
420	0.131	510	3.689	600	10.110	690	4.973	780	0.421
425	0.370	515	4.074	605	10.410	695	4.452		
430	0.765	520	4.410	610	10.580	700	3.967		
435	1.426	525	4.691	615	10.660	705	3.515		

Spectral Data Over Visible Wavelengths



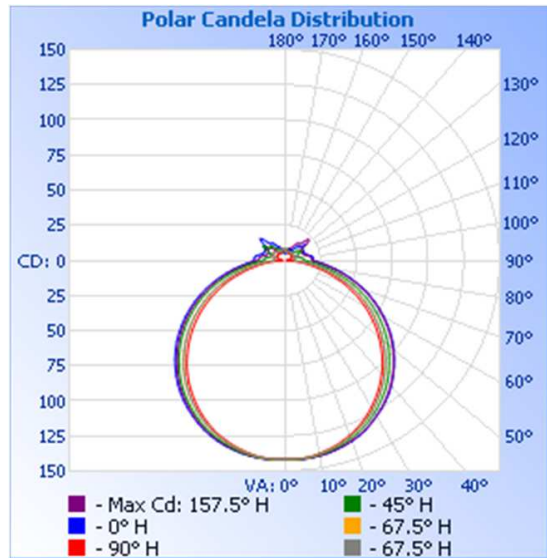
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
LAN1510131025-002	UP	120.0	113.7	13.50	0.990	534.0	39.56

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	142	142	142	142	142
5	142	142	142	142	141
10	141	141	140	140	140
15	139	139	138	137	136
20	137	136	135	133	132
25	133	132	131	129	127
30	128	127	125	123	121
35	123	121	119	116	114
40	116	114	112	108	105
45	108	106	103	99	96
50	99	98	94	90	86
55	90	88	85	80	76
60	80	78	74	69	64
65	69	67	63	57	52
70	58	56	52	45	40
75	47	45	40	34	28
80	37	34	30	23	17
85	27	25	20	14	8
90	20	18	14	7	1
95	20	18	13	7	2
100	19	16	11	6	3
105	16	14	10	7	4
110	15	13	10	10	5
115	15	13	10	8	6
120	15	13	14	7	6
125	15	18	12	7	6
130	16	13	9	7	6
135	14	13	8	7	6
140	12	9	7	7	6
145	9	8	7	7	6
150	8	8	7	7	6
155	9	7	7	7	6
160	9	7	7	6	6
165	8	8	8	6	7
170	6	7	7	7	8
175	6	6	7	8	8
180	7	7	7	7	7

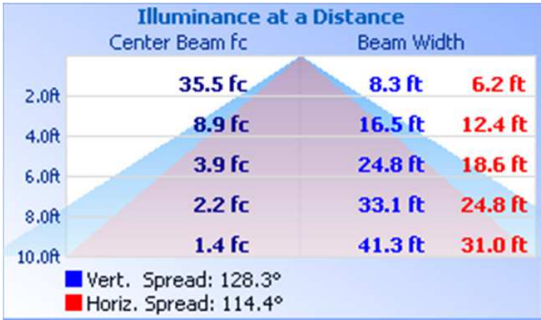


RESULTS OF TEST (cont'd)

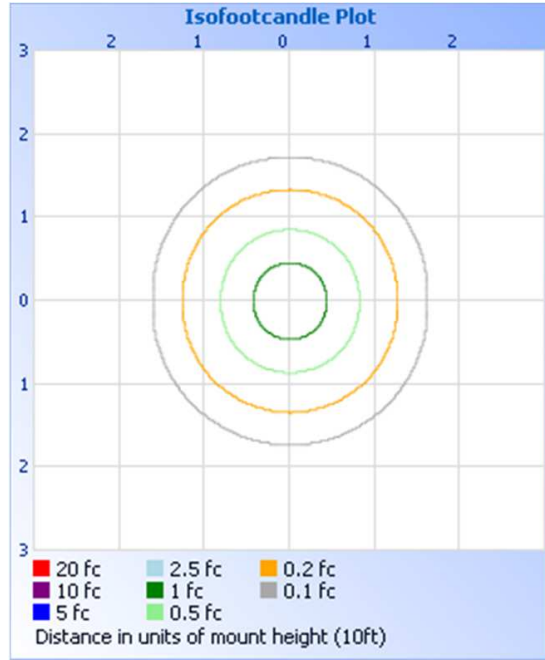
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	112.7	21.1
0-40	187.0	35.0
0-60	341.5	64.0
60-90	124.9	23.4
0-90	466.4	87.4
90-180	67.5	12.6
0-180	534.0	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	13.5	2.5
10-20	39.0	7.3
20-30	60.2	11.3
30-40	74.3	13.9
40-50	79.5	14.9
50-60	75.1	14.1
60-70	61.6	11.5
70-80	41.7	7.8
80-90	21.5	4.0
90-100	13.6	2.6
100-110	11.4	2.1
110-120	10.7	2.0
120-130	11.0	2.1
130-140	8.8	1.6
140-150	5.7	1.1
150-160	3.6	0.7
160-170	2.1	0.4
170-180	0.7	0.1

PICTURE (not to scale)



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:



Jesse Reyna
Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Lighting Performance Team Lead
Lighting Division