REPORT

545 E. Algonquin Rd., Arlington Heights, IL 60005

Project No. G101518786 Date: January 14, 2015

REPORT NO. 101518786CHI-088

TEST OF ONE LED SURFACE MOUNT

MODEL NO. 14701S-15
LED MODEL NO. PROLIGHT PS2N-FFVE-R9

RENDERED TO

GENERATION BRANDS
7400 LINDER AVE.
SKOKIE, IL 60077

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 NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number 500506211.

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

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number 14701S-15. The sample was received by Intertek on January 12, 2015, in undamaged condition and one sample was tested as received. The sample designation was AH01122015023911.

DATE OF TESTS: January 14, 2015

SUMMARY

Model No.:	14701S-15
Description:	LED surface mount

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	744.1	738.3
Total Power (W)	14.37	14.34
Luminaire Efficacy (LPW)	51.78	51.49

Criteria	Result
Power Factor	0.947
Current ATHD %	32.02
Correlated Color Temperature (CCT - K)	3037
Color Rendering Index (CRI - Ra)	94.0
Color Rendering Index (CRI - R9)	72.6
DUV	0.007
Chromaticity Coordinate (x)	0.425
Chromaticity Coordinate (y)	0.384
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.511

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251M	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	07/02/14	07/02/15
Yokogawa Power Meter	WT1600	146768	01/16/14	01/16/15
Omega Temperature Meter	MDSi8	146139	04/02/14	04/02/15
Yokogawa Power Meter	WT210	146919	07/16/14	07/16/15
Omega Thermometer	DPI8-C24	146920	10/09/14	10/09/15
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146362	01/06/15	01/06/16
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU
Cole-Parmer Triple Timer	94440-00	CHI0041	04/01/14	04/01/15

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 Model CDS 1100 CCD Array Spectroradiometer 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 Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer 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 Xitron or 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

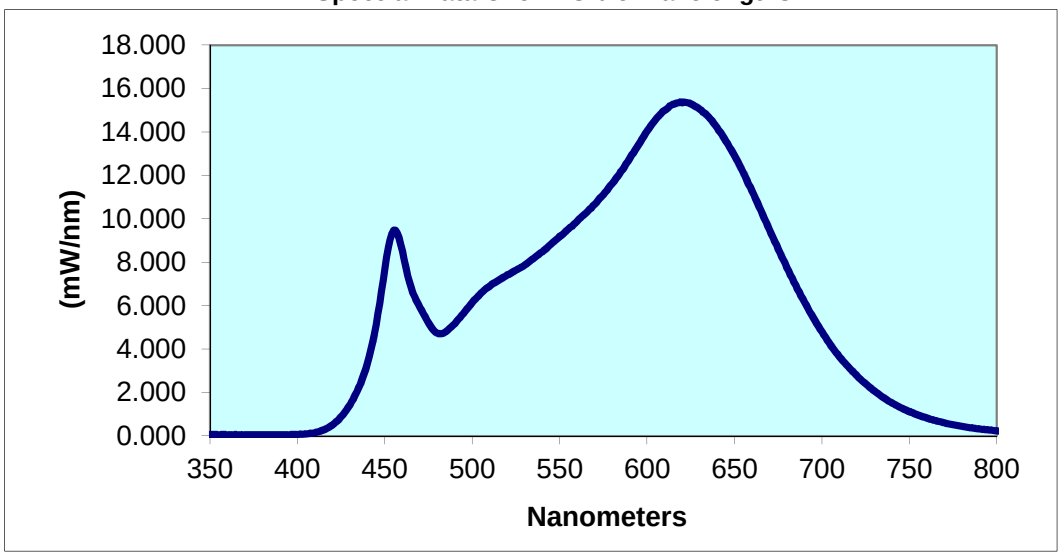
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH01122015023911	UP	120.0	126.4	14.37	0.947	32.02	744.1	51.78

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')
3037	94.0	72.6	0.007	0.425	0.384	0.252	0.511

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.06	440	3.338	530	7.877	620	15.36	710	3.65
355	0.052	445	5.139	535	8.176	625	15.29	715	3.185
360	0.053	450	7.72	540	8.486	630	15.05	720	2.771
365	0.056	455	9.471	545	8.827	635	14.7	725	2.4
370	0.048	460	8.508	550	9.186	640	14.2	730	2.067
375	0.048	465	6.837	555	9.537	645	13.58	735	1.774
380	0.043	470	5.922	560	9.897	650	12.89	740	1.52
385	0.041	475	5.193	565	10.27	655	12.13	745	1.303
390	0.045	480	4.736	570	10.68	660	11.3	750	1.123
395	0.053	485	4.816	575	11.12	665	10.38	755	0.962
400	0.066	490	5.184	580	11.62	670	9.49	760	0.827
405	0.095	495	5.655	585	12.18	675	8.598	765	0.706
410	0.157	500	6.144	590	12.79	680	7.746	770	0.604
415	0.282	505	6.572	595	13.4	685	6.932	775	0.516
420	0.508	510	6.904	600	14.04	690	6.162	780	0.44
425	0.885	515	7.169	605	14.6	695	5.452		
430	1.433	520	7.414	610	15	700	4.791		
435	2.223	525	7.64	615	15.28	705	4.179		

Spectral Data Over Visible Wavelengths



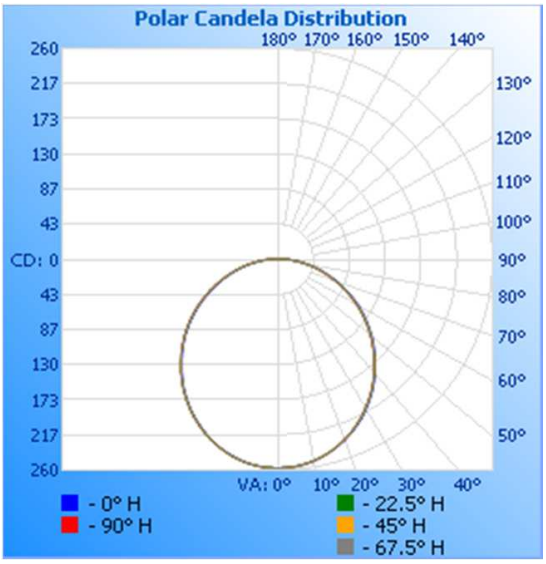
RESULTS OF TEST (cont'd)

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)
AH01122015023911	UP	119.8	125.5	14.34	0.953	738.3	51.49

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	257	257	257	257	257
5	256	256	256	256	256
10	252	252	252	252	252
15	246	246	246	246	245
20	237	237	237	236	236
25	226	226	225	225	225
30	214	212	213	212	212
35	199	198	198	198	198
40	183	182	182	182	181
45	166	165	165	165	164
50	149	148	147	147	147
55	131	129	129	129	129
60	113	110	110	110	109
65	93	91	91	90	90
70	74	72	72	72	71
75	56	55	54	54	53
80	39	38	38	37	37
85	24	23	23	23	22
90	12	12	11	11	11
95	4	3	3	3	3

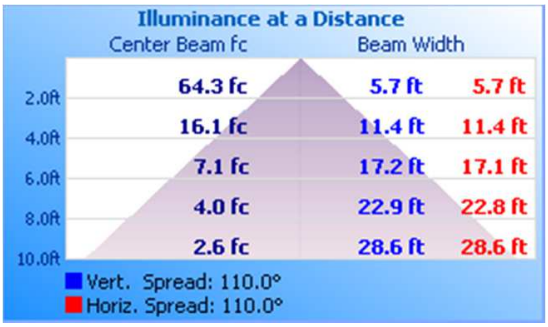


RESULTS OF TEST (cont'd)

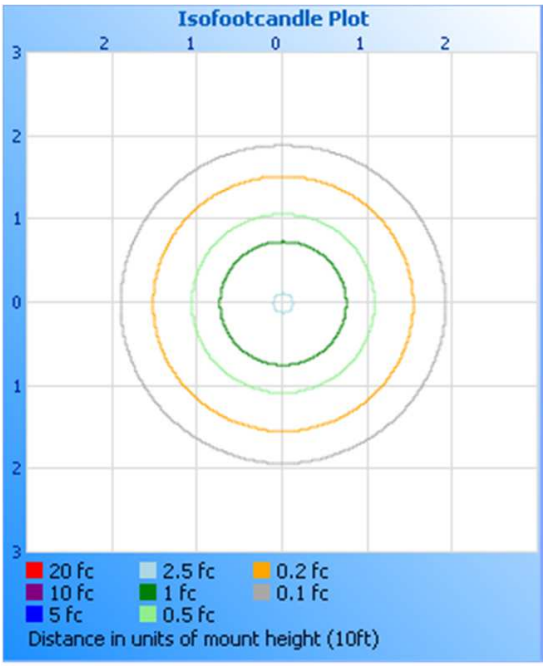
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	197.3	26.7
0-40	320.9	43.5
0-60	562.9	76.2
60-90	171.2	23.2
0-90	734.1	99.4
90-180	4.3	0.6
0-180	738.3	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	24.3	3.3
10-20	69.2	9.4
20-30	103.8	14.1
30-40	123.6	16.7
40-50	127.0	17.2
50-60	115.0	15.6
60-70	89.4	12.1
70-80	56.8	7.7
80-90	25.0	3.4
90-100	4.3	0.6

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:

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Report Reviewed By:

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Attachment: None