



REPORT

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

Project No. G101438970

Date: December 17, 2013

REPORT NO. 101438970CHI-005

TEST OF ONE LED RECESSED FIXTURE 4" APERTURE

MODEL NO. E4SF-XI3560AN
LED MODEL NO. XSM8035-2000-C
DRIVER MODEL NO. LTF DA30W900C
TRIM MODEL NO. E4SFB-OW

RENDERED TO

GENERATION BRANDS
7400 LINDER AVENUE
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 500495420.

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 E4SF-XI3560AN. The sample was received by Intertek on November 26, 2013, in undamaged condition and one sample was tested as received. The sample designation was 11262013020308.

DATES OF TESTS: December 13, 2013 through December 17, 2013.



SUMMARY

Model No.:	E4SF-XI3560AN
Description:	LED Recessed Fixture 4" Aperture

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1612	1587
Total Power (W)	29.83	29.92
Luminaire Efficacy (LPW)	54.04	53.04

Criteria	Result
Power Factor	0.987
Current ATHD %	8.86
Correlated Color Temperature (CCT - K)	3437
Color Rendering Index (CRI - Ra)	82.2
Color Rendering Index (CRI - R9)	21.7
DUV	0.000
Chromaticity Coordinate (x)	0.409
Chromaticity Coordinate (y)	0.393
Chromaticity Coordinate (u')	0.237
Chromaticity Coordinate (v')	0.513

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBV	VBV
3 Meter Sphere	SPR600	CHI0088	VBV	VBV
Elgar AC Power Supply	CW1251M	146112	VBV	VBV
Sorenson DC Power Supply	XFR150-8	146846	VBV	VBV
Newport Humidity Recorder	iTHX-SD	146382	08/26/13	08/26/14
Yokoga Power Meter	WT1600	146769	05/17/13	05/17/14
Omega Temperature Meter	MDSi8	146139	06/20/13	06/20/14
Yokogawa Power Meter	WT210	146919	09/06/13	09/06/14
Omega Thermometer	DPI8-C24	146920	08/26/13	08/26/14
LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
Newport Hygrometer	iServer	146960	02/21/13	02/21/14
Elgar, AC Power Supply	CW1251P	146918	VBV	VBV
Cole-Parmer Triple Timer	94440-00	CHI0041	06/20/13	06/20/14



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

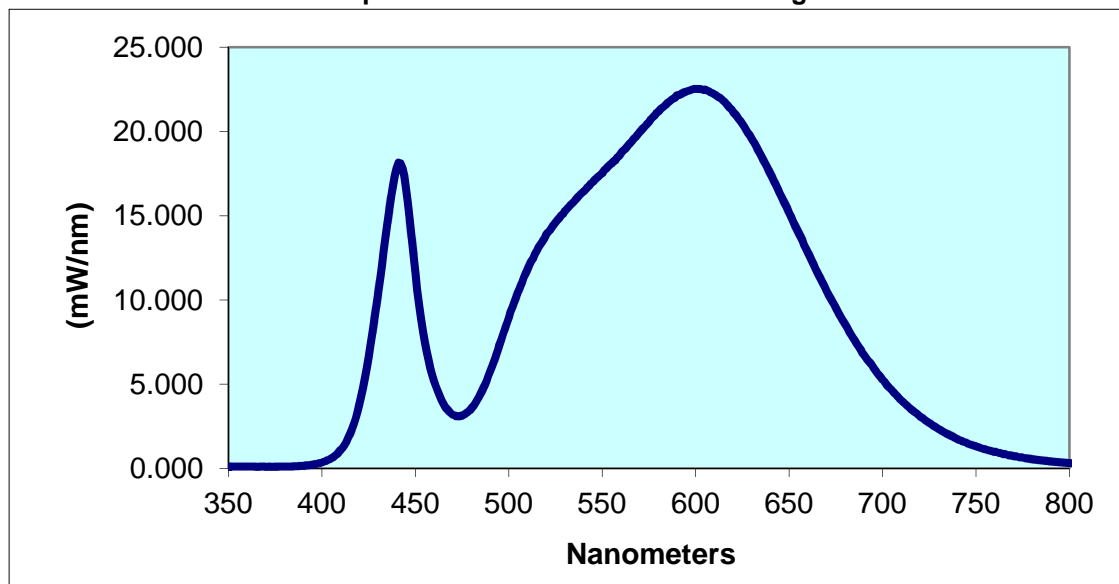
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
11262013020308	UP	120.0	251.2	29.83	0.987	8.86	1612	54.04

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
3437	82.2	21.7	0.000	0.409	0.393	0.237	0.513

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.08	440	17.84	530	15.28	620	21.19	710	4.044
355	0.101	445	16.65	535	15.85	625	20.44	715	3.534
360	0.103	450	11.58	540	16.43	630	19.56	720	3.084
365	0.09	455	7.516	545	17	635	18.57	725	2.689
370	0.09	460	5.198	550	17.52	640	17.49	730	2.33
375	0.091	465	3.838	555	18.1	645	16.34	735	2.011
380	0.097	470	3.175	560	18.69	650	15.16	740	1.74
385	0.112	475	3.123	565	19.31	655	13.99	745	1.503
390	0.146	480	3.563	570	19.95	660	12.82	750	1.299
395	0.219	485	4.447	575	20.57	665	11.67	755	1.121
400	0.342	490	5.745	580	21.18	670	10.55	760	0.972
405	0.589	495	7.315	585	21.71	675	9.515	765	0.839
410	1.081	500	8.951	590	22.14	680	8.535	770	0.722
415	2.026	505	10.49	595	22.37	685	7.62	775	0.623
420	3.769	510	11.8	600	22.53	690	6.747	780	0.534
425	6.639	515	12.92	605	22.49	695	6.017		
430	10.37	520	13.87	610	22.21	700	5.257		
435	14.54	525	14.61	615	21.8	705	4.622		

Spectral Data Over Visible Wavelengths



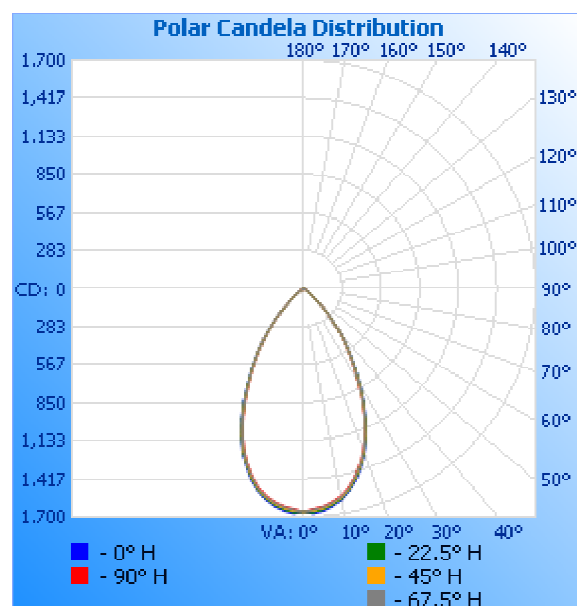
RESULTS OF TEST (cont'd)

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)
11262013020308	UP	120.0	252.7	29.92	0.987	1587	53.04

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	1661	1661	1661	1661	1661
5	1660	1650	1640	1633	1628
10	1597	1590	1581	1576	1571
15	1478	1470	1461	1454	1449
20	1302	1298	1290	1285	1280
25	1073	1070	1061	1059	1053
30	826	822	811	808	802
35	595	591	585	584	578
40	391	387	384	384	381
45	210	207	207	208	206
50	72	70	71	73	75
55	6	3	0	0	0
60	0	0	0	0	0
65	0	0	0	0	0
70	0	0	0	0	0
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

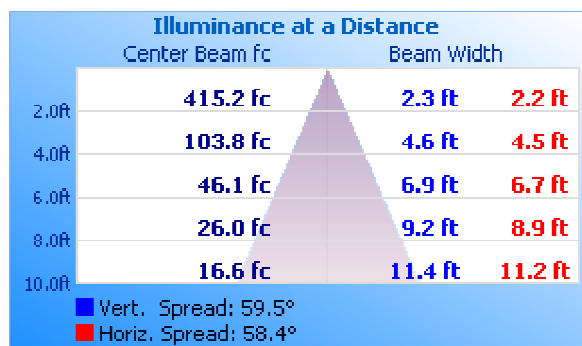


RESULTS OF TEST (cont'd)

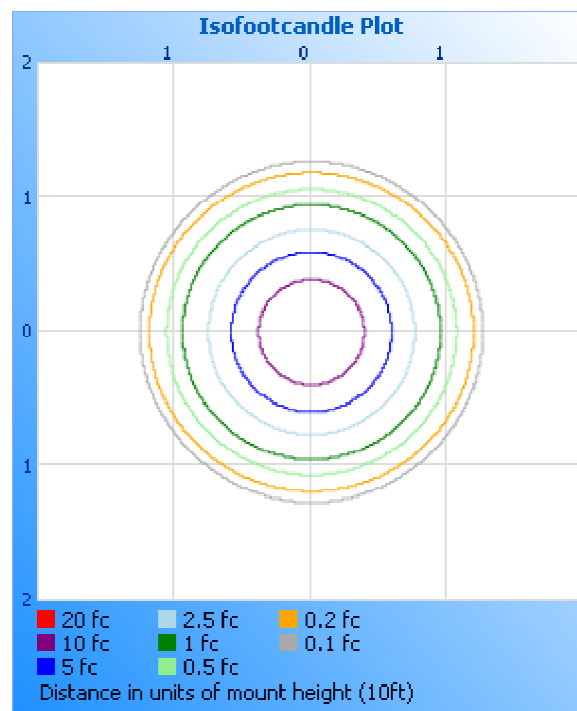
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1045	65.8
0-40	1411	88.9
0-60	1587	100.0
60-90	0.0	0.0
0-90	1587	100.0
90-180	0.0	0.0
0-180	1587	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	154.7	9.7
10-20	407.4	25.7
20-30	482.9	30.4
30-40	365.8	23.0
40-50	163.3	10.3
50-60	13.0	0.8
60-70	0.0	0.0
70-80	0.0	0.0
80-90	0.0	0.0

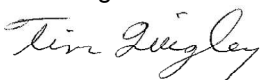
PICTURE (not to scale)



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:



Tim Quigley
Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Joe Schledorn
Project Engineer
Lighting Division