



# REPORT

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

Project No. G101438970

Date: December 17, 2013

REPORT NO. 101438970CHI-004

TEST OF ONE LED RECESSED FIXTURE 4" APERTURE

MODEL NO. E4SF-XI2760AN  
LED MODEL NO. XSM8027-2000-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-XI2760AN. The sample was received by Intertek on November 26, 2013, in undamaged condition and one sample was tested as received. The sample designation was 11262013020222.

DATES OF TESTS: December 13, 2013 through December 16, 2013.



SUMMARY

Model No.:	E4SF-XI2760AN
Description:	LED Recessed Fixture 4" Aperture

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1532	1524
Total Power (W)	30.13	30.21
Luminaire Efficacy (LPW)	50.85	50.45

Criteria	Result
Power Factor	0.989
Current ATHD %	8.89
Correlated Color Temperature (CCT - K)	2711
Color Rendering Index (CRI - Ra)	80.8
Color Rendering Index (CRI - R9)	11.4
DUV	0.001
Chromaticity Coordinate (x)	0.461
Chromaticity Coordinate (y)	0.414
Chromaticity Coordinate (u')	0.262
Chromaticity Coordinate (v')	0.529

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**

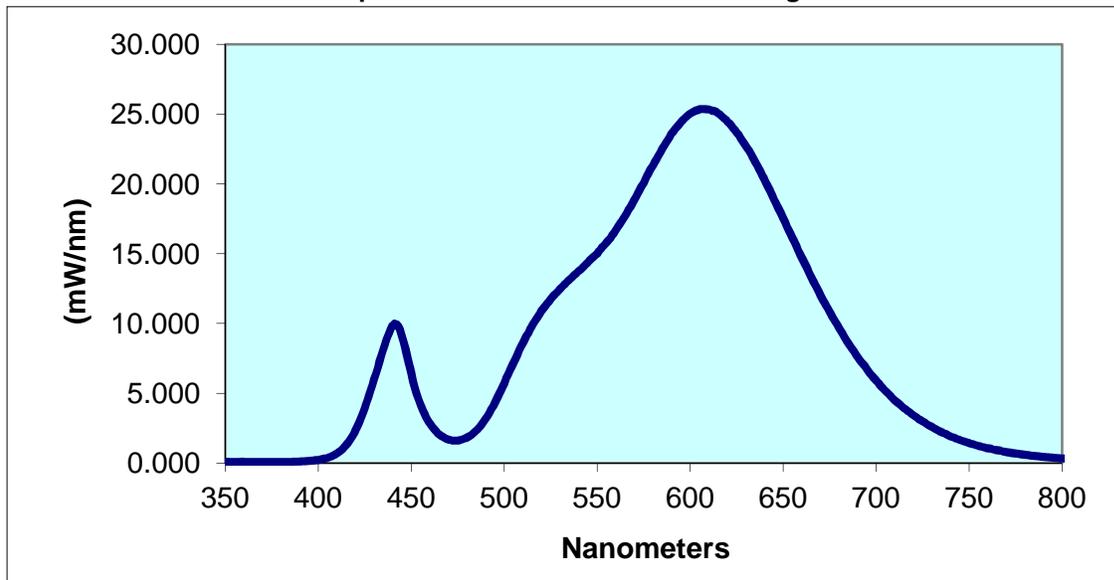
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
11262013020222	UP	120.0	253.8	30.13	0.989	8.89	1532	50.85

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')
2711	80.8	11.4	0.001	0.461	0.414	0.262	0.529

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm								
350	0.07	440	9.848	530	12.49	620	24.48	710	4.51
355	0.085	445	9.129	535	13.12	625	23.69	715	3.925
360	0.085	450	6.398	540	13.75	630	22.71	720	3.42
365	0.076	455	4.15	545	14.38	635	21.56	725	2.975
370	0.073	460	2.832	550	15.02	640	20.31	730	2.573
375	0.065	465	2.059	555	15.81	645	18.93	735	2.218
380	0.072	470	1.677	560	16.69	650	17.51	740	1.907
385	0.078	475	1.612	565	17.71	655	16.12	745	1.646
390	0.102	480	1.826	570	18.88	660	14.72	750	1.419
395	0.145	485	2.329	575	20.08	665	13.36	755	1.221
400	0.221	490	3.162	580	21.34	670	12.04	760	1.062
405	0.378	495	4.323	585	22.54	675	10.82	765	0.918
410	0.687	500	5.709	590	23.62	680	9.682	770	0.782
415	1.273	505	7.187	595	24.41	685	8.607	775	0.677
420	2.321	510	8.578	600	25.05	690	7.609	780	0.582
425	3.96	515	9.838	605	25.37	695	6.735		
430	5.994	520	10.91	610	25.35	700	5.898		
435	8.18	525	11.75	615	25.07	705	5.161		

**Spectral Data Over Visible Wavelengths**



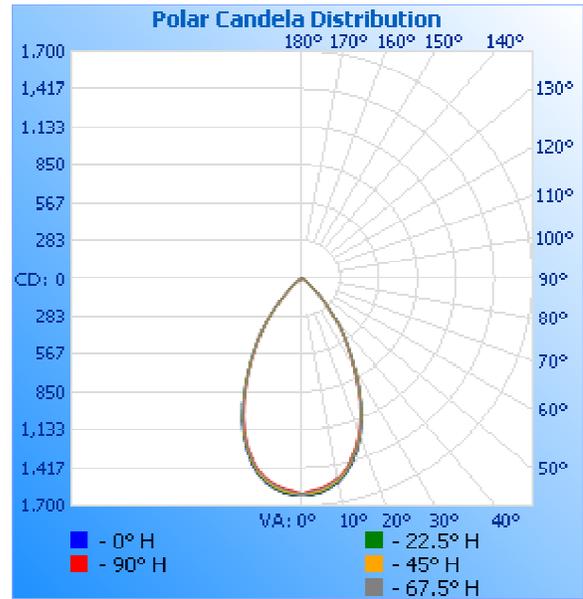
RESULTS OF TEST (cont'd)

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)
11262013020222	UP	120.0	255.2	30.21	0.986	1524	50.45

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	1613	1613	1613	1613	1613
5	1610	1607	1597	1585	1577
10	1553	1546	1538	1527	1520
15	1432	1426	1416	1407	1400
20	1258	1254	1248	1239	1232
25	1029	1029	1022	1015	1009
30	784	785	778	772	769
35	568	565	560	556	553
40	373	370	366	362	363
45	200	196	194	194	193
50	69	69	69	69	68
55	2	1	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

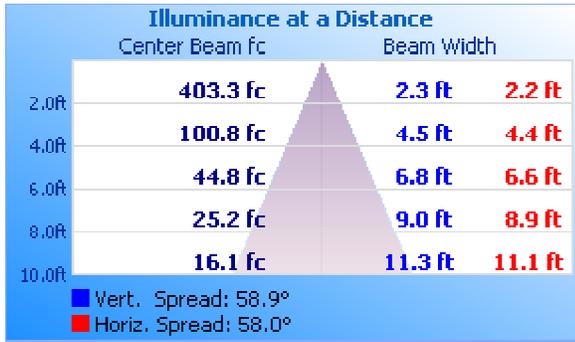


RESULTS OF TEST (cont'd)

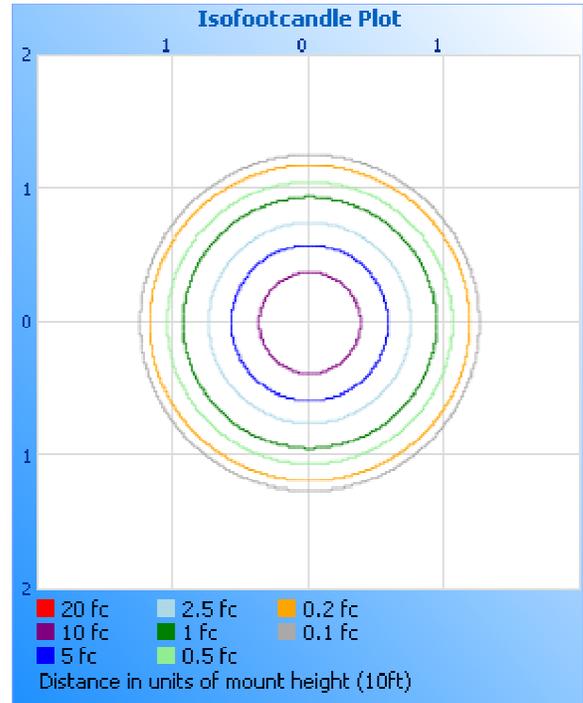
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



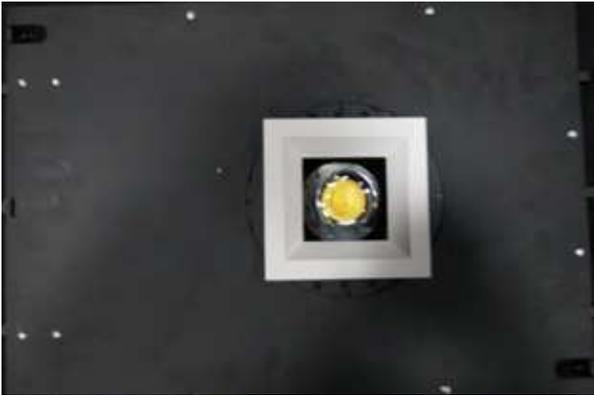
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1009	66.2
0-40	1358	89.1
0-60	1524	100.0
60-90	0.0	0.0
0-90	1524	100.0
90-180	0.0	0.0
0-180	1524	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	150.3	9.9
10-20	394.6	25.9
20-30	464.0	30.4
30-40	349.2	22.9
40-50	154.5	10.1
50-60	11.9	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