



# REPORT

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

Project No. G101518786

Date: May 2, 2014

REPORT NO. 101518786CHI-021

TEST OF ONE LED RECESSED FIXTURE 4" APERTURE

MODEL NO. E4SF-XA3060AN  
LED MODEL NO. XSM9530-1300-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 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 E4SF-XA3060AN. The sample was received by Intertek on November 26, 2013, in undamaged condition and one sample was tested as received. The sample designation was 11262013020245.

DATES OF TESTS: April 25, 2014 through April 28, 2014.



SUMMARY

Model No.:	E4SF-XA3060AN
Description:	LED Recessed Fixture 4" Aperture

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1019	1002
Total Power (W)	29.61	29.85
Luminaire Efficacy (LPW)	34.41	33.57

Criteria	Result
Power Factor	0.990
Current ATHD %	8.87
Correlated Color Temperature (CCT - K)	2997
Color Rendering Index (CRI - Ra)	96.5
Color Rendering Index (CRI - R9)	97.4
DUV	0.004
Chromaticity Coordinate (x)	0.432
Chromaticity Coordinate (y)	0.394
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.516

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	08/26/13	08/26/14
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	09/06/13	09/06/14
Omega Thermometer	DPI8-C24	146920	12/04/13	12/04/14
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146956	01/02/14	01/02/15
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 Two Meter or Ten Foot 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**

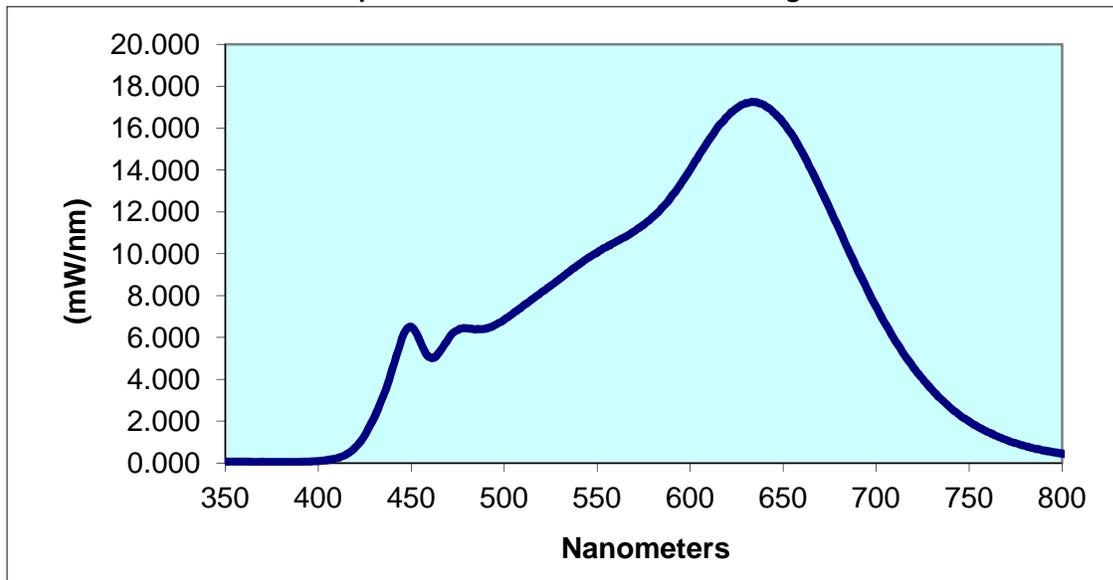
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
11262013020245	UP	120.0	249.3	29.61	0.990	8.87	1019	34.41

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')
2997	96.5	97.4	0.004	0.432	0.394	0.252	0.516

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm								
350	0.05	440	4.521	530	8.815	620	16.56	710	5.876
355	0.062	445	5.936	535	9.141	625	16.96	715	5.193
360	0.067	450	6.515	540	9.482	630	17.2	720	4.573
365	0.054	455	5.756	545	9.79	635	17.24	725	4.016
370	0.057	460	5.049	550	10.06	640	17.1	730	3.502
375	0.05	465	5.273	555	10.32	645	16.75	735	3.046
380	0.048	470	5.939	560	10.57	650	16.26	740	2.637
385	0.049	475	6.349	565	10.8	655	15.65	745	2.283
390	0.054	480	6.44	570	11.08	660	14.88	750	1.975
395	0.068	485	6.398	575	11.38	665	14.02	755	1.711
400	0.089	490	6.414	580	11.76	670	13.09	760	1.485
405	0.135	495	6.584	585	12.21	675	12.14	765	1.28
410	0.227	500	6.846	590	12.73	680	11.18	770	1.096
415	0.405	505	7.165	595	13.33	685	10.21	775	0.942
420	0.742	510	7.484	600	14.02	690	9.237	780	0.808
425	1.329	515	7.824	605	14.74	695	8.343		
430	2.161	520	8.162	610	15.42	700	7.449		
435	3.216	525	8.474	615	16.06	705	6.634		

**Spectral Data Over Visible Wavelengths**



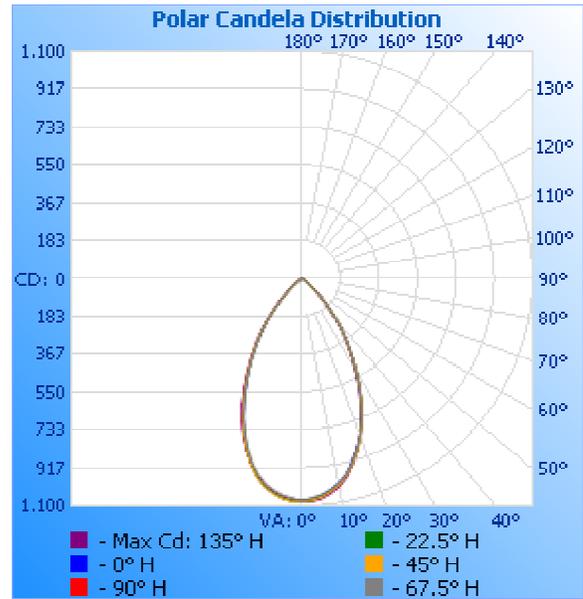
RESULTS OF TEST (cont'd)

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)
11262013020245	UP	120.0	251.8	29.85	0.988	1002	33.57

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	1077	1077	1077	1077	1077
5	1056	1060	1064	1052	1063
10	1007	1012	1018	1009	1019
15	921	926	932	926	933
20	810	812	817	811	813
25	670	672	674	671	668
30	519	520	520	518	515
35	376	372	377	377	373
40	247	248	246	247	244
45	135	135	134	134	132
50	52	49	49	48	46
55	1	1	2	2	2
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

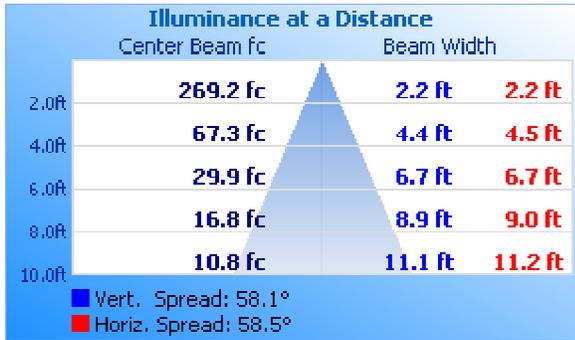


RESULTS OF TEST (cont'd)

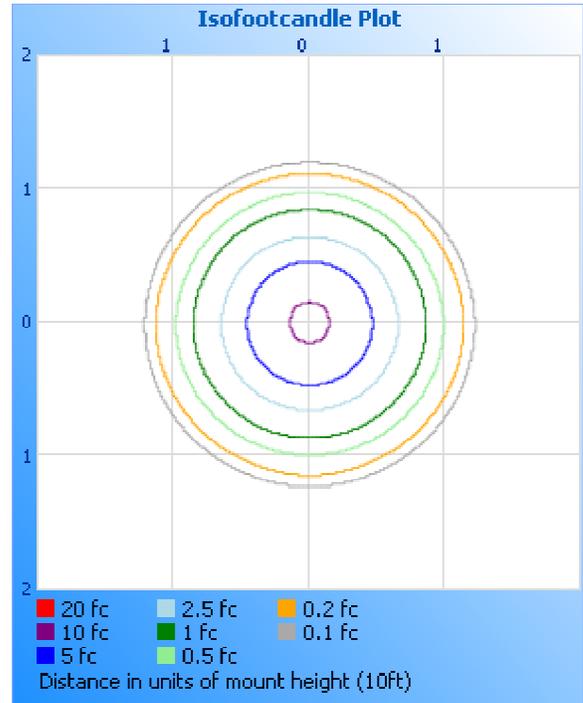
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



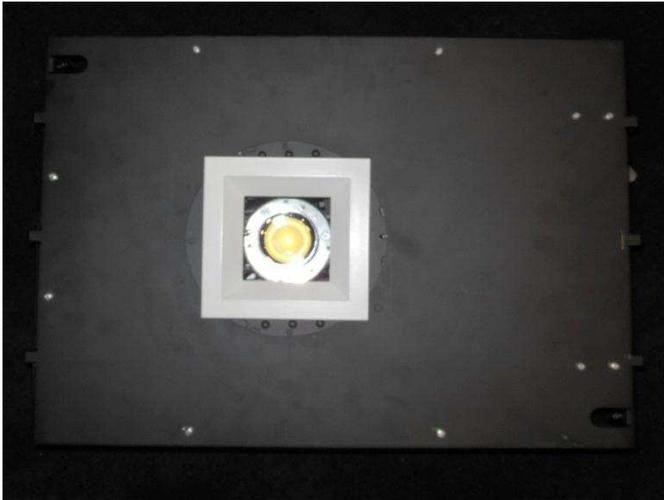
Zonal Lumens Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	660.3	65.9
0-40	891.0	89.0
0-60	1001	100.0
60-90	0.1	0.0
0-90	1002	100.0
90-180	0.0	0.0
0-180	1002	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	99.8	10.0
10-20	258.3	25.8
20-30	302.2	30.2
30-40	230.7	23.0
40-50	102.0	10.2
50-60	8.3	0.8
60-70	0.1	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:



Kenneth Prettyman  
Technician  
Lighting Division

Attachment: None

Report Reviewed By:



Joe Schledorn  
Engineering Team Lead  
Lighting Division