



# REPORT

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

Project No. G103017649

Date: August 30, 2017

REPORT NO. 103017649CHI-049

TEST OF ONE LED DOWNLIGHT

MODEL NO. E4SF-XI3043AN  
LED MODEL NO. XICATO XTM STANDARD 2000LM  
DRIVER MODEL NO. 255LEDDA30W750

RENDERED TO

GENERATION BRANDS  
7400 LINDER AVE.  
SKOKIE, IL 60077

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

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00779063-2.

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-XI3043AN. The sample was received by Intertek on August 23, 2017, in undamaged condition and one sample was tested as received. The sample designation was 08232017045431-049.

DATES OF TESTS: August 30, 2017

## SUMMARY

Model No.:	E4SF-XI3043AN
Description:	LED Downlight

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2195	2121
Total Power (W)	24.54	24.51
Luminaire Efficacy (LPW)	89.45	86.54

Criteria	Result
Power Factor	0.974
Current ATHD %	13.76
Correlated Color Temperature (CCT - K)	2932
Color Rendering Index (CRI - Ra)	82.1
Color Rendering Index (CRI - R9)	15.4
DUV	0.001
Chromaticity Coordinate (x)	0.443
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.524

## EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Yokogawa Power Meter	WT210	146919	07/10/17	07/10/18	08/30/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	08/30/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	08/30/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	08/30/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	08/30/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	08/30/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	08/30/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	08/30/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	08/30/17
Newport Humidity Recorder	iTHX-SD	146961	07/14/17	07/14/18	08/30/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	08/30/17
Extech K Temperature Meter	SD200	CHI0207	04/05/17	04/05/18	08/30/17



## 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 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 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

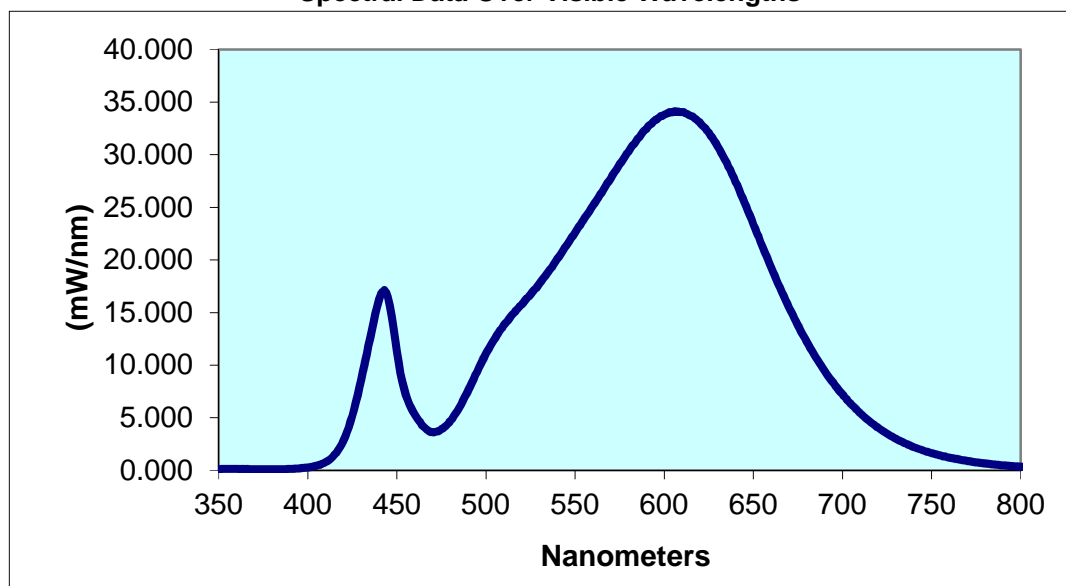
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
08232017045431-049	Up	120.0	210.0	24.54	0.974	13.76	2195	89.45

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')
2932	82.1	15.4	0.001	0.443	0.409	0.253	0.524

### Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.127	440	16.28	530	17.74	620	33.08	710	5.433
355	0.144	445	16.49	535	18.89	625	32.12	715	4.698
360	0.135	450	11.34	540	20.10	630	30.77	720	4.054
365	0.126	455	7.185	545	21.32	635	29.26	725	3.495
370	0.111	460	5.320	550	22.60	640	27.43	730	3.010
375	0.107	465	4.156	555	23.90	645	25.47	735	2.584
380	0.106	470	3.641	560	25.17	650	23.39	740	2.222
385	0.120	475	3.911	565	26.41	655	21.33	745	1.906
390	0.139	480	4.710	570	27.77	660	19.28	750	1.647
395	0.190	485	5.962	575	29.10	665	17.35	755	1.416
400	0.276	490	7.607	580	30.29	670	15.51	760	1.219
405	0.450	495	9.365	585	31.50	675	13.81	765	1.045
410	0.786	500	11.09	590	32.43	680	12.22	770	0.896
415	1.471	505	12.53	595	33.33	685	10.77	775	0.765
420	2.817	510	13.80	600	33.82	690	9.460	780	0.655
425	5.201	515	14.84	605	34.06	695	8.285		
430	8.651	520	15.75	610	34.05	700	7.217		
435	12.59	525	16.71	615	33.70	705	6.281		

Spectral Data Over Visible Wavelengths



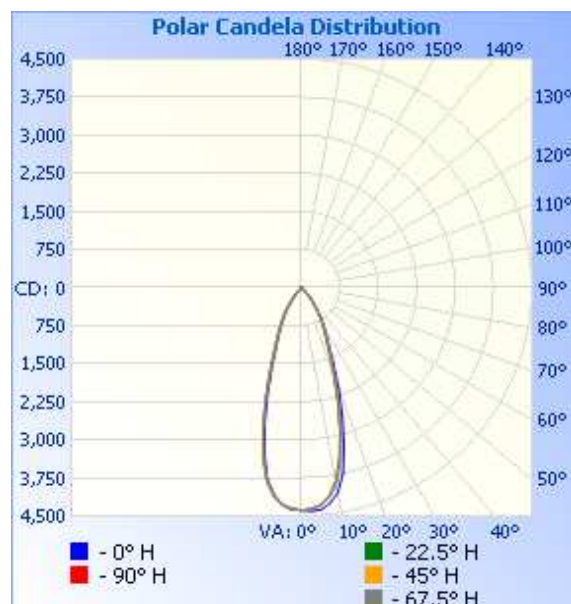
## RESULTS OF TEST (cont'd)

### 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 (LPW)
08232017045431-049	Up	120.0	208.8	24.51	0.978	2121	86.54

### Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	4386	4386	4386	4386	4386
5	4389	4296	4300	4299	4295
10	4094	3923	3894	3870	3862
15	3209	2974	2940	2897	2896
20	2121	1928	1905	1873	1855
25	1276	1199	1197	1181	1166
30	875	813	812	804	801
35	558	503	505	503	504
40	286	241	243	244	244
45	81	63	67	67	67
50	13	10	10	10	10
55	3	2	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

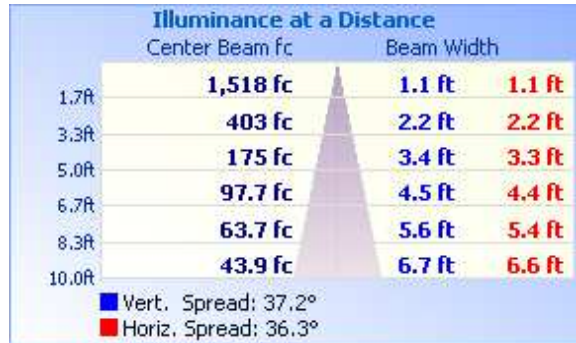


## RESULTS OF TEST (cont'd)

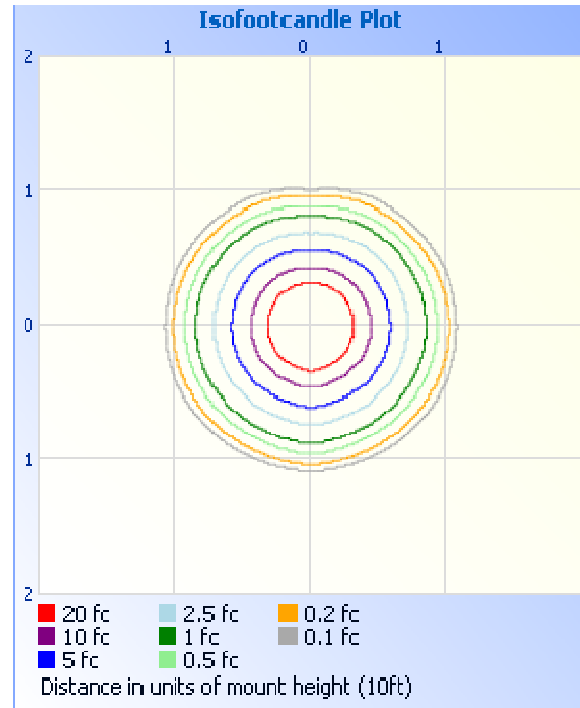
### Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



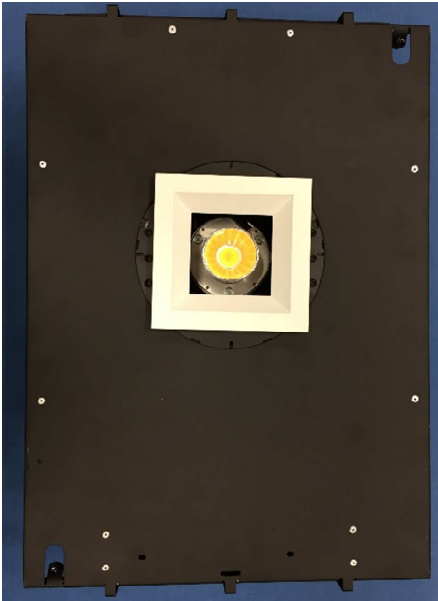
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1747	82.4
0-40	2056	96.9
0-60	2121	100.0
60-90	0.0	0.0
0-90	2121	100.0
90-180	0.0	0.0
0-180	2121	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	397.0	18.7
10-20	793.9	37.4
20-30	556.1	26.2
30-40	308.7	14.6
40-50	63.3	3.0
50-60	2.3	0.1
60-70	0.0	0.0
70-80	0.0	0.0
80-90	0.0	0.0

PICTURES (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:



Hector Huitron  
Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division