



# REPORT

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

Project No. G103017649

Date: May 23, 2017

REPORT NO. 103017649CHI-035

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LO8274AN  
LED MODEL NO. CITIZEN CLU038-1205C4-273M2K1  
DRIVER MODEL NO. LTF DA15W300C2042BF-00HE  
TRIM MODEL NO. E3SFB-OW

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 E3SFF-LO8274AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-035.

DATES OF TESTS: May 16, 2017 through May 23, 2017.

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## SUMMARY

Model No.:	E3SFF-LO8274AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1330	1302
Total Power (W)	12.24	12.24
Luminaire Efficacy (LPW)	108.7	106.4

Criteria	Result
Power Factor	0.978
Current ATHD %	8.60
Correlated Color Temperature (CCT - K)	2730
Color Rendering Index (CRI - Ra)	82.8
Color Rendering Index (CRI - R9)	8.9
DUV	0.001
Chromaticity Coordinate (x)	0.456
Chromaticity Coordinate (y)	0.407
Chromaticity Coordinate (u')	0.261
Chromaticity Coordinate (v')	0.525

## EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Yokogawa Power Meter	WT210	146919	07/11/16	07/11/17	05/23/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	05/23/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	05/23/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	05/23/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	05/23/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	05/16/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	05/16/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	05/16/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	05/16/17
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	05/16/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	05/16/17
Fluke J/K Temperature Meter	52	146004	01/10/17	01/10/18	05/16/17

## 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 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**

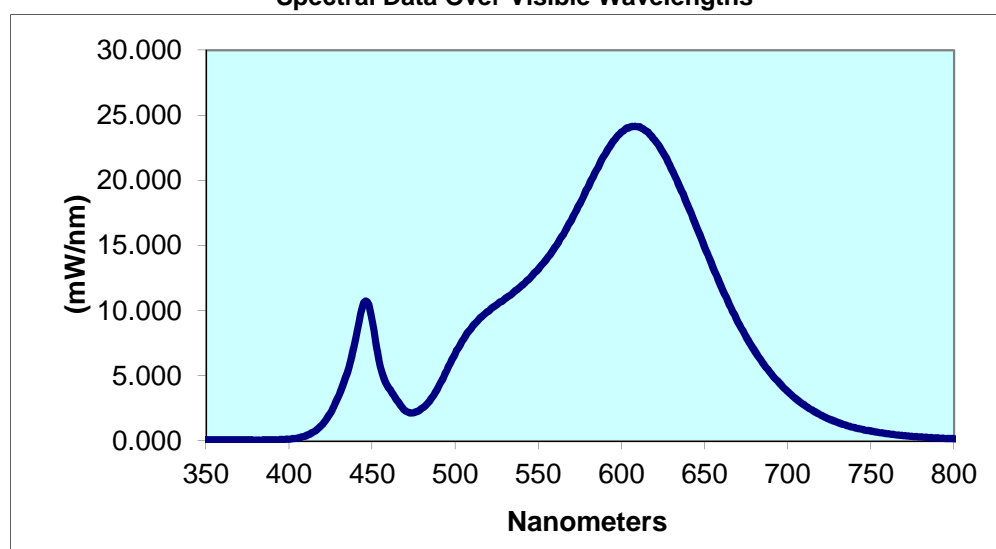
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
\\H04192017041604-03\	Up	120.0	104.2	12.24	0.978	8.60	1330	108.7

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')
2730	82.8	8.9	0.001	0.456	0.407	0.261	0.525

## **Spectral Distribution over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.084	440	7.837	530	10.93	620	23.09	710	2.744
355	0.079	445	10.62	535	11.40	625	22.15	715	2.337
360	0.080	450	9.281	540	11.95	630	20.90	720	1.978
365	0.079	455	5.689	545	12.52	635	19.52	725	1.676
370	0.071	460	4.054	550	13.20	640	18.04	730	1.420
375	0.068	465	3.100	555	13.99	645	16.46	735	1.208
380	0.065	470	2.317	560	14.89	650	14.88	740	1.027
385	0.068	475	2.172	565	15.86	655	13.33	745	0.877
390	0.076	480	2.500	570	16.99	660	11.86	750	0.754
395	0.098	485	3.155	575	18.25	665	10.46	755	0.643
400	0.137	490	4.172	580	19.52	670	9.149	760	0.553
405	0.221	495	5.434	585	20.82	675	7.998	765	0.470
410	0.394	500	6.720	590	21.99	680	6.934	770	0.404
415	0.713	505	7.819	595	23.02	685	5.986	775	0.344
420	1.267	510	8.734	600	23.72	690	5.158	780	0.297
425	2.174	515	9.467	605	24.10	695	4.450		
430	3.507	520	9.966	610	24.10	700	3.783		
435	5.247	525	10.46	615	23.78	705	3.228		

**Spectral Data Over Visible Wavelengths**



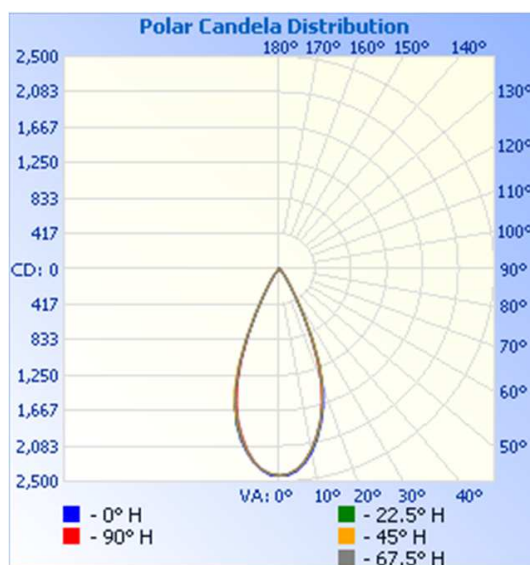
## RESULTS OF TEST (cont'd)

### 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)
AH04192017041604-035	Up	120.0	104.3	12.24	0.978	1302	106.4

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

Angle	0	22.5	45	67.5	90
0	2430	2430	2430	2430	2430
5	2385	2364	2364	2361	2362
10	2189	2165	2159	2154	2153
15	1880	1859	1853	1845	1846
20	1487	1469	1473	1442	1424
25	904	914	935	877	863
30	368	376	410	403	397
35	151	161	168	178	174
40	82	85	87	91	86
45	44	46	49	47	42
50	18	23	28	20	17
55	9	10	14	10	8
60	3	4	6	4	2
65	1	1	2	1	1
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

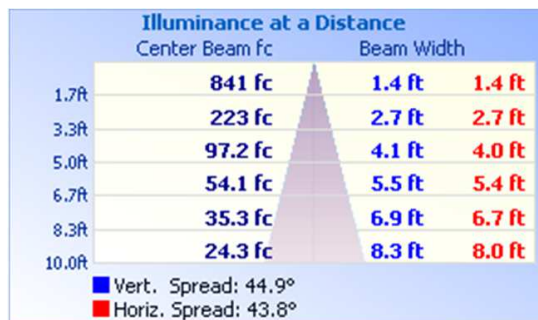


# RESULTS OF TEST (cont'd)

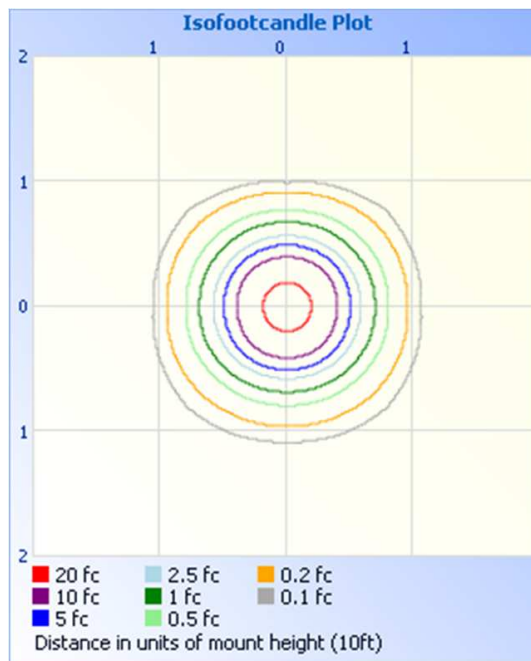
## Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



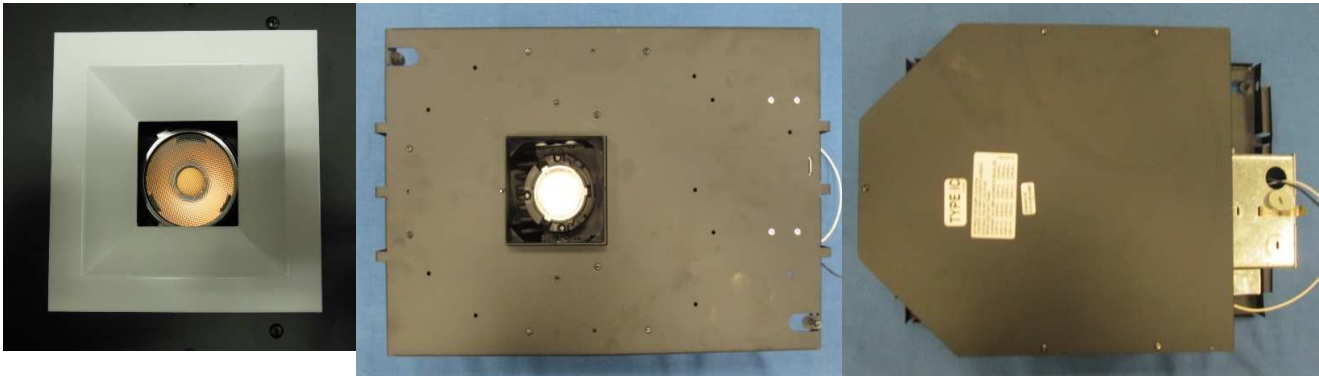
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1138	87.4
0-40	1256	96.5
0-60	1301	99.9
60-90	1.4	0.1
0-90	1302	100.0
90-180	0.0	0.0
0-180	1302	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	219.0	16.8
10-20	513.0	39.4
20-30	405.8	31.2
30-40	118.4	9.1
40-50	35.7	2.7
50-60	8.9	0.7
60-70	1.4	0.1
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