



# REPORT

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

Project No. G103017649

Date: May 23, 2017

REPORT NO. 103017649CHI-039

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LO8354AN  
LED MODEL NO. CITIZEN CLU038-1205C4-353M2K1  
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-LO8354AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-039.

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

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SUMMARY

Model No.:	E3SFF-LO8354AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1393	1354
Total Power (W)	12.06	12.05
Luminaire Efficacy (LPW)	115.5	112.4

Criteria	Result
Power Factor	0.976
Current ATHD %	8.70
Correlated Color Temperature (CCT - K)	3470
Color Rendering Index (CRI - Ra)	84.4
Color Rendering Index (CRI - R9)	14.8
DUV	0.001
Chromaticity Coordinate (x)	0.408
Chromaticity Coordinate (y)	0.394
Chromaticity Coordinate (u')	0.236
Chromaticity Coordinate (v')	0.513

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**

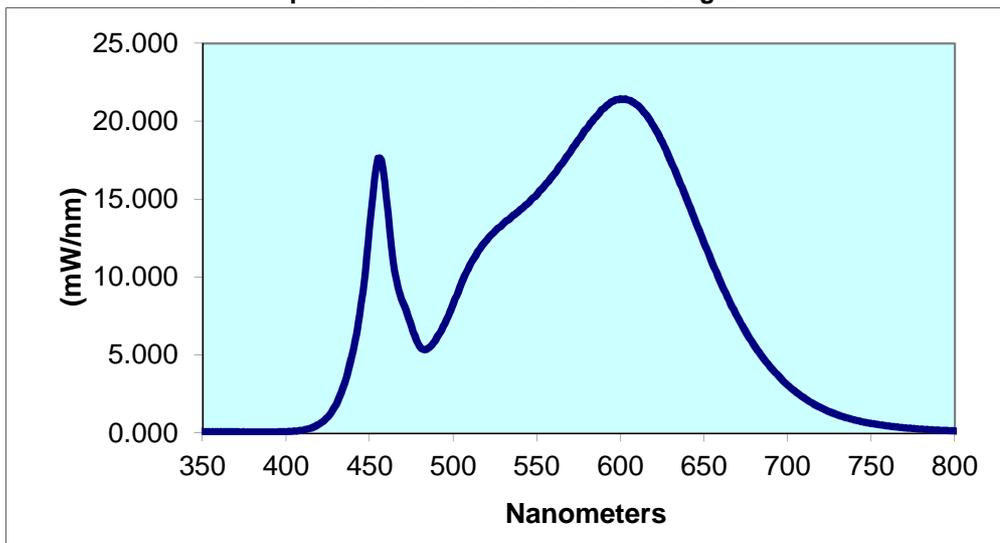
**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method**

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	102.9	12.06	0.976	8.70	1393	115.5
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')	
3470	84.4	14.8	0.001	0.408	0.394	0.236	0.513	

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm								
350	0.097	440	5.267	530	13.44	620	19.67	710	2.247
355	0.092	445	8.311	535	13.88	625	18.69	715	1.912
360	0.093	450	13.24	540	14.33	630	17.50	720	1.622
365	0.083	455	17.63	545	14.78	635	16.25	725	1.377
370	0.080	460	15.13	550	15.31	640	14.93	730	1.171
375	0.075	465	10.36	555	15.93	645	13.55	735	0.996
380	0.065	470	8.367	560	16.58	650	12.21	740	0.848
385	0.068	475	6.875	565	17.28	655	10.91	745	0.726
390	0.068	480	5.562	570	18.04	660	9.672	750	0.624
395	0.076	485	5.441	575	18.83	665	8.520	755	0.535
400	0.092	490	6.078	580	19.57	670	7.456	760	0.462
405	0.124	495	7.033	585	20.27	675	6.502	765	0.397
410	0.195	500	8.293	590	20.83	680	5.641	770	0.338
415	0.331	505	9.600	595	21.28	685	4.868	775	0.291
420	0.593	510	10.77	600	21.45	690	4.199	780	0.250
425	1.056	515	11.70	605	21.37	695	3.630		
430	1.855	520	12.36	610	21.05	700	3.079		
435	3.217	525	12.96	615	20.47	705	2.633		

**Spectral Data Over Visible Wavelengths**



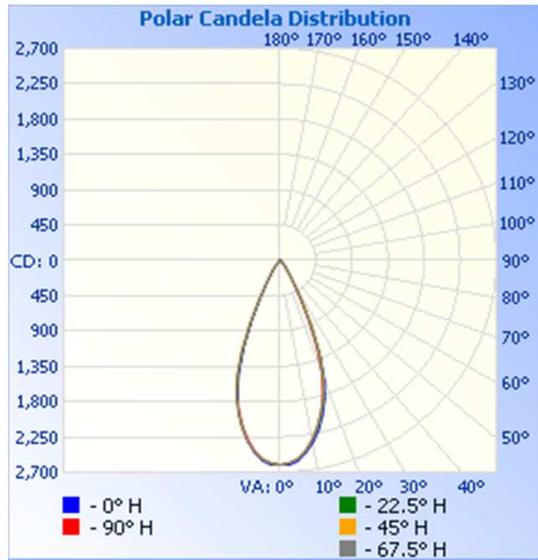
RESULTS OF TEST (cont'd)

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)
AH04192017041604-039	Up	120.0	102.8	12.05	0.976	1354	112.4

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2606	2606	2606	2606	2606
5	2567	2540	2538	2537	2538
10	2360	2326	2318	2314	2312
15	2046	2017	1997	1980	1985
20	1617	1589	1566	1544	1525
25	947	936	954	878	851
30	386	388	409	373	354
35	178	179	164	165	156
40	92	93	86	85	79
45	47	49	50	44	39
50	19	25	28	18	16
55	10	11	14	9	7
60	4	5	6	3	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

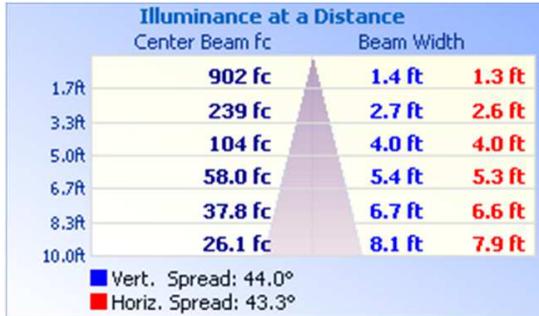


RESULTS OF TEST (cont'd)

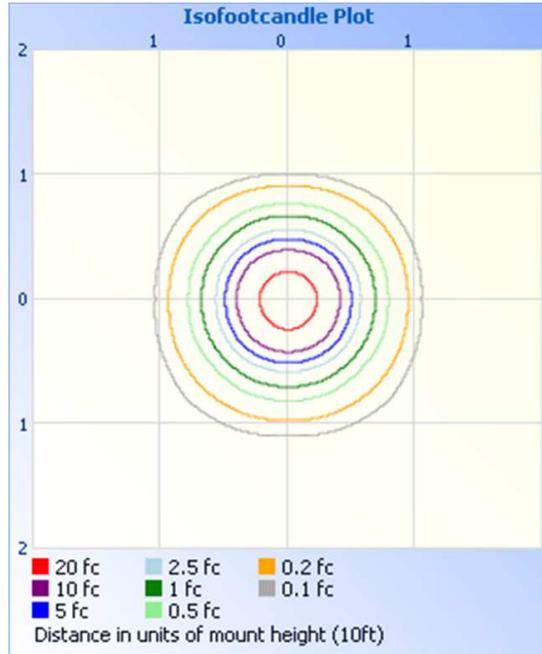
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



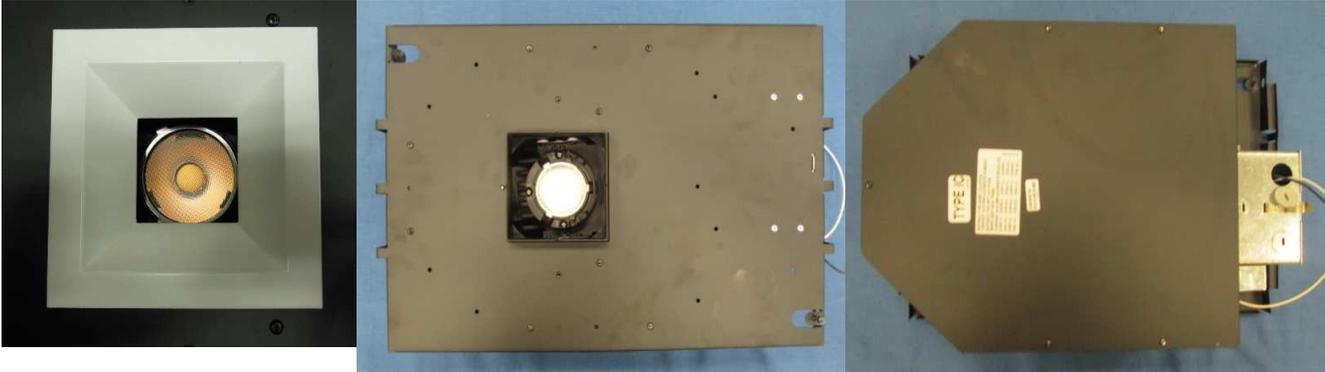
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1195	88.3
0-40	1308	96.7
0-60	1352	99.9
60-90	1.4	0.1
0-90	1354	100.0
90-180	0.0	0.0
0-180	1354	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	235.2	17.4
10-20	549.6	40.6
20-30	409.8	30.3
30-40	113.8	8.4
40-50	35.1	2.6
50-60	8.8	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