



REPORT

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

Project No. G103017649

Date: May 23, 2017

REPORT NO. 103017649CHI-036

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LH9274AN
LED MODEL NO. CITIZEN CLU038-1205C4-273H5K2
DRIVER MODEL NO. LTF DA18W440C40BF
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-LH9274AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-036.

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

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SUMMARY

Model No.:	E3SFF-LH9274AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1462	1420
Total Power (W)	17.98	17.98
Luminaire Efficacy (LPW)	81.31	78.98

Criteria	Result
Power Factor	0.976
Current ATHD %	12.17
Correlated Color Temperature (CCT - K)	2838
Color Rendering Index (CRI - Ra)	93.8
Color Rendering Index (CRI - R9)	70.9
DUV	0.000
Chromaticity Coordinate (x)	0.449
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.256
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

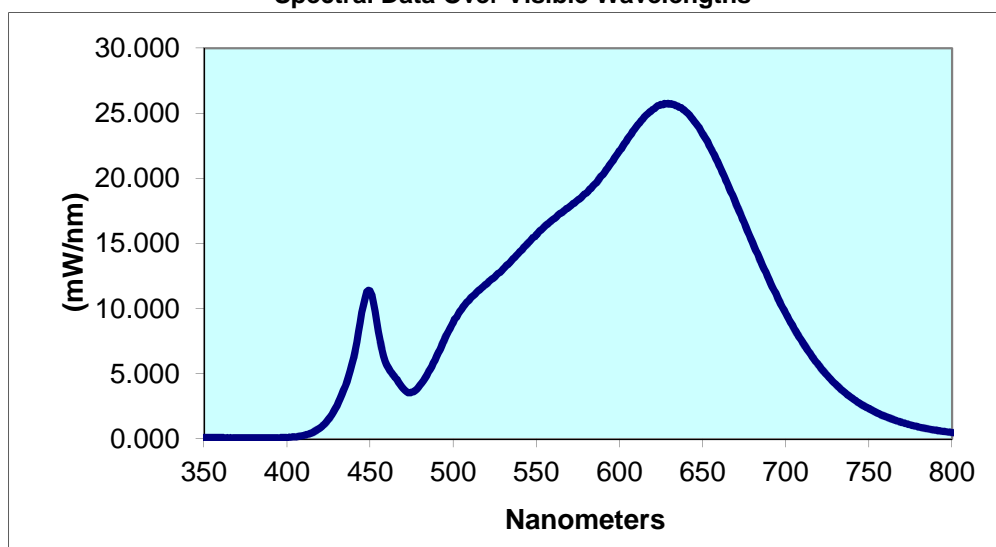
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
1H04192017041604-031	Up	120.0	153.4	17.98	0.976	12.17	1462	81.31

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')
2838	93.8	70.9	0.000	0.449	0.409	0.256	0.525

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.098	440	6.250	530	13.05	620	25.29	710	7.442
355	0.098	445	9.704	535	13.69	625	25.67	715	6.484
360	0.100	450	11.36	540	14.38	630	25.72	720	5.625
365	0.089	455	8.232	545	15.03	635	25.56	725	4.866
370	0.083	460	5.668	550	15.69	640	25.11	730	4.200
375	0.074	465	4.726	555	16.32	645	24.38	735	3.620
380	0.074	470	3.855	560	16.86	650	23.43	740	3.123
385	0.073	475	3.580	565	17.34	655	22.29	745	2.690
390	0.076	480	4.136	570	17.84	660	20.99	750	2.329
395	0.086	485	5.106	575	18.36	665	19.59	755	2.006
400	0.112	490	6.325	580	18.87	670	18.08	760	1.724
405	0.163	495	7.686	585	19.56	675	16.61	765	1.477
410	0.271	500	8.956	590	20.29	680	15.09	770	1.259
415	0.481	505	9.952	595	21.21	685	13.62	775	1.075
420	0.861	510	10.75	600	22.12	690	12.22	780	0.923
425	1.517	515	11.39	605	23.05	695	10.92		
430	2.559	520	11.89	610	23.94	700	9.629		
435	4.068	525	12.45	615	24.73	705	8.492		

Spectral Data Over Visible Wavelengths



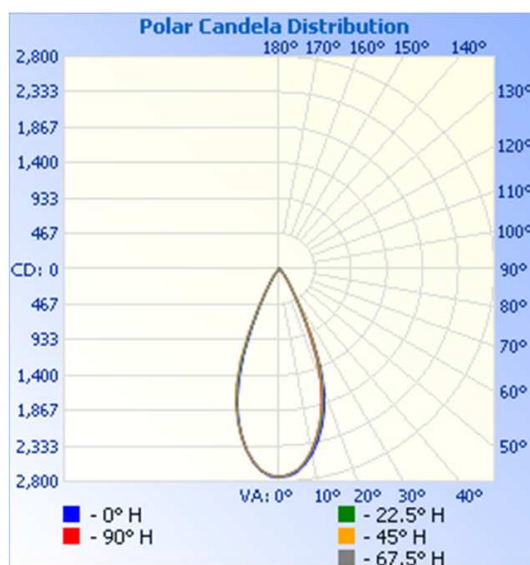
RESULTS OF TEST (cont'd)

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)
AH04192017041604-036	Up	120.0	153.4	17.98	0.976	1420	78.98

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2739	2739	2739	2739	2739
5	2689	2659	2664	2663	2666
10	2476	2437	2427	2424	2424
15	2146	2107	2083	2067	2062
20	1717	1669	1644	1602	1580
25	1037	1009	1011	943	910
30	434	430	443	401	377
35	198	195	180	179	168
40	102	102	94	92	85
45	51	53	54	48	41
50	21	26	30	20	16
55	12	12	15	10	8
60	4	6	7	4	2
65	2	2	3	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

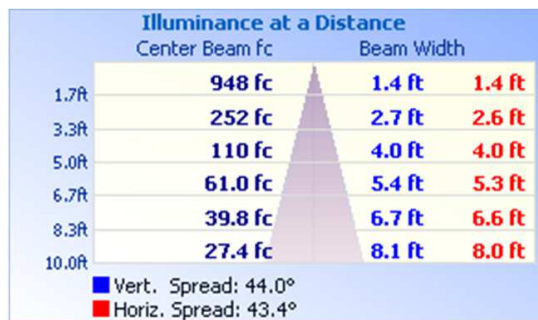


RESULTS OF TEST (cont'd)

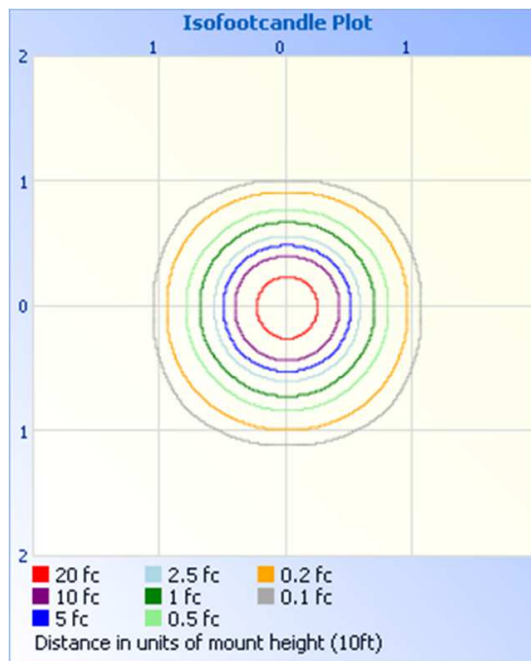
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



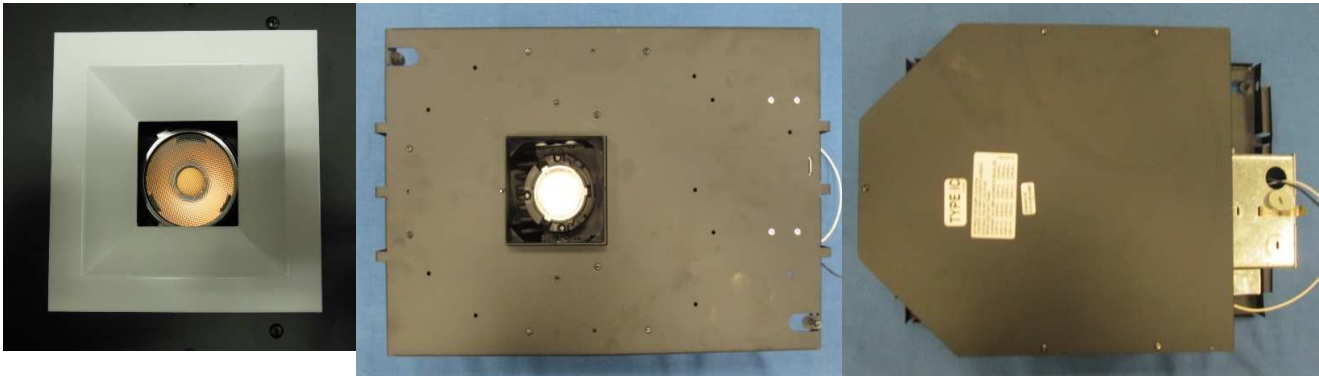
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1250	88.0
0-40	1372	96.6
0-60	1419	99.9
60-90	1.6	0.1
0-90	1420	100.0
90-180	0.0	0.0
0-180	1420	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	246.5	17.4
10-20	571.5	40.2
20-30	432.5	30.4
30-40	121.8	8.6
40-50	37.3	2.6
50-60	9.4	0.7
60-70	1.6	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