



REPORT

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

Project No. G103017649

Date: May 19, 2017

REPORT NO. 103017649CHI-026

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LH8302AN
LED MODEL NO. CITIZEN CLU038-1205C4-303M2K1
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-LH8302AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-026.

DATES OF TESTS: May 11, 2017 through May 19, 2017.

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SUMMARY

Model No.:	E3SFF-LH8302AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1754	1720
Total Power (W)	18.36	18.36
Luminaire Efficacy (LPW)	95.53	93.68

Criteria	Result
Power Factor	0.978
Current ATHD %	11.93
Correlated Color Temperature (CCT - K)	3053
Color Rendering Index (CRI - Ra)	83.3
Color Rendering Index (CRI - R9)	11.2
DUV	0.000
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.403
Chromaticity Coordinate (u')	0.249
Chromaticity Coordinate (v')	0.520

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	05/19/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	05/19/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	05/19/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	05/19/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	05/19/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	05/11/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	05/11/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	05/11/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	05/11/17
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	05/11/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	05/11/17
Fluke J/K Temperature Meter	52	146004	01/10/17	01/10/18	05/11/17

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

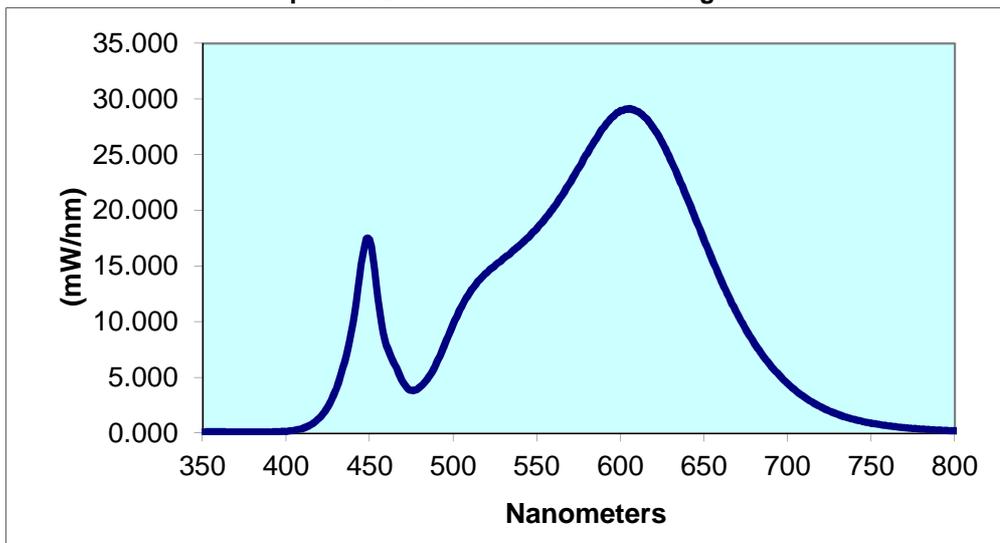
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Input Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
\\H04192017041604-02\	Up	120.0	156.5	18.36	0.978	11.93	1754	95.53

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')
3053	83.3	11.2	0.000	0.433	0.403	0.249	0.520

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	0.116	440	9.929	530	15.67	620	27.37	710	3.239
355	0.115	445	15.20	535	16.27	625	26.11	715	2.757
360	0.112	450	17.38	540	16.93	630	24.55	720	2.348
365	0.104	455	12.11	545	17.59	635	22.89	725	1.986
370	0.096	460	7.879	550	18.39	640	21.09	730	1.689
375	0.087	465	6.164	555	19.29	645	19.22	735	1.436
380	0.087	470	4.572	560	20.28	650	17.36	740	1.224
385	0.091	475	3.844	565	21.32	655	15.55	745	1.045
390	0.096	480	4.131	570	22.53	660	13.82	750	0.903
395	0.118	485	4.959	575	23.82	665	12.20	755	0.772
400	0.161	490	6.276	580	25.09	670	10.69	760	0.666
405	0.254	495	7.983	585	26.35	675	9.324	765	0.569
410	0.435	500	9.803	590	27.46	680	8.095	770	0.486
415	0.774	505	11.35	595	28.39	685	7.004	775	0.417
420	1.371	510	12.65	600	28.95	690	6.037	780	0.359
425	2.384	515	13.67	605	29.13	695	5.221		
430	4.000	520	14.39	610	28.90	700	4.445		
435	6.398	525	15.05	615	28.33	705	3.798		

Spectral Data Over Visible Wavelengths



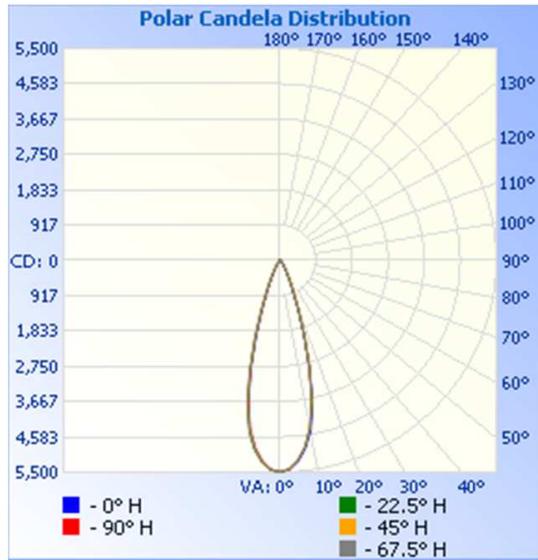
RESULTS OF TEST (cont'd)

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)
AH04192017041604-026	Up	120.0	156.5	18.36	0.977	1720	93.68

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	5422	5415	5416	5417	5427
5	4916	4879	4872	4869	4888
10	3800	3724	3718	3712	3721
15	2040	2050	2115	2048	2016
20	870	885	979	923	900
25	400	415	441	431	414
30	190	204	190	208	196
35	103	107	103	111	105
40	60	64	65	65	61
45	27	35	43	36	31
50	16	17	25	17	17
55	7	9	12	9	7
60	2	3	5	3	2
65	2	2	2	2	2
70	1	1	1	1	2
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

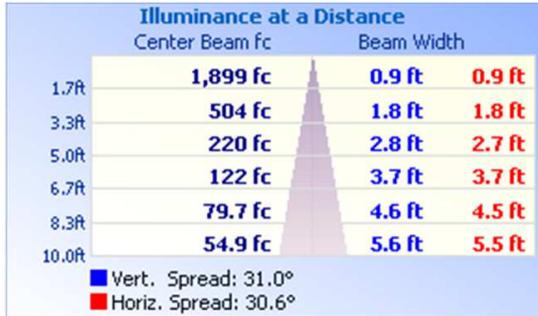


RESULTS OF TEST (cont'd)

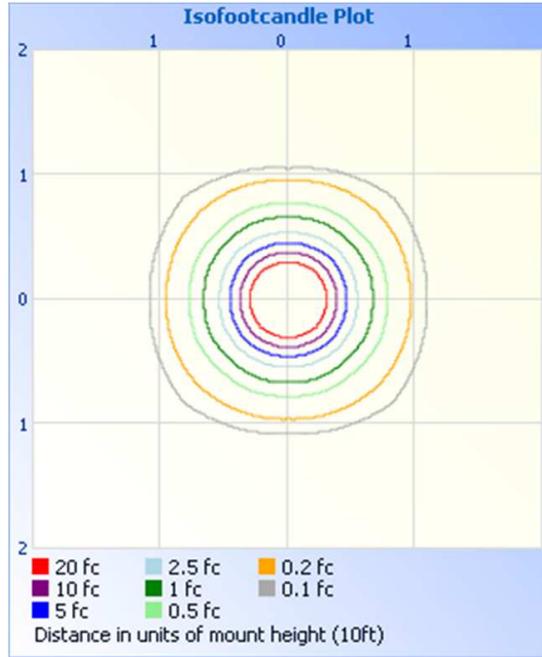
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1566	91.1
0-40	1665	96.8
0-60	1716	99.8
60-90	3.4	0.2
0-90	1720	100.0
90-180	0.0	0.0
0-180	1720	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	472.7	27.5
10-20	778.6	45.3
20-30	314.5	18.3
30-40	98.8	5.7
40-50	38.9	2.3
50-60	12.6	0.7
60-70	2.6	0.2
70-80	0.8	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