



REPORT

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

Project No. G103017649

Date: May 19, 2017

REPORT NO. 103017649CHI-028

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LH9302AN
LED MODEL NO. CITIZEN CLU038-1205C4-303H5K2
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-LH9302AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-028.

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

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SUMMARY

Model No.:	E3SFF-LH9302AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1399	1378
Total Power (W)	17.97	17.93
Luminaire Efficacy (LPW)	77.85	76.85

Criteria	Result
Power Factor	0.977
Current ATHD %	11.97
Correlated Color Temperature (CCT - K)	3122
Color Rendering Index (CRI - Ra)	92.5
Color Rendering Index (CRI - R9)	68.3
DUV	0.002
Chromaticity Coordinate (x)	0.431
Chromaticity Coordinate (y)	0.407
Chromaticity Coordinate (u')	0.246
Chromaticity Coordinate (v')	0.522

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

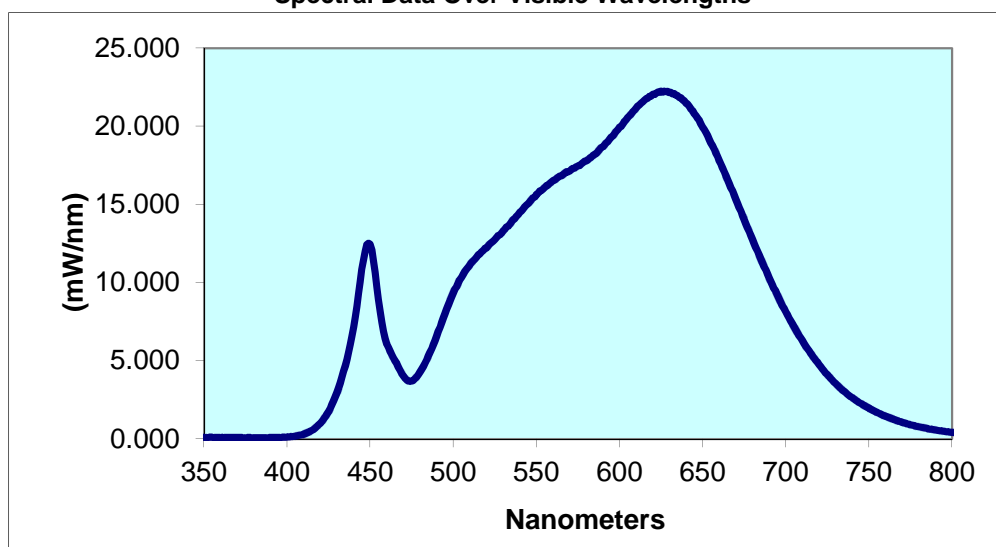
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
1H04192017041604-02	Up	120.0	153.2	17.97	0.977	11.97	1399	77.85

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')
3122	92.5	68.3	0.002	0.431	0.407	0.246	0.522

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.097	440	7.168	530	13.31	620	22.03	710	6.279
355	0.099	445	10.85	535	13.89	625	22.25	715	5.478
360	0.092	450	12.45	540	14.50	630	22.17	720	4.759
365	0.094	455	8.941	545	15.06	635	21.95	725	4.113
370	0.081	460	6.092	550	15.62	640	21.49	730	3.548
375	0.074	465	5.006	555	16.11	645	20.81	735	3.057
380	0.073	470	4.035	560	16.52	650	19.96	740	2.640
385	0.072	475	3.719	565	16.84	655	18.95	745	2.272
390	0.077	480	4.292	570	17.15	660	17.81	750	1.967
395	0.090	485	5.296	575	17.47	665	16.61	755	1.695
400	0.123	490	6.576	580	17.80	670	15.32	760	1.462
405	0.182	495	8.002	585	18.21	675	14.05	765	1.249
410	0.309	500	9.335	590	18.70	680	12.76	770	1.067
415	0.556	505	10.35	595	19.31	685	11.50	775	0.912
420	1.003	510	11.15	600	19.92	690	10.32	780	0.779
425	1.765	515	11.78	605	20.55	695	9.224		
430	2.968	520	12.24	610	21.15	700	8.129		
435	4.692	525	12.76	615	21.67	705	7.167		

Spectral Data Over Visible Wavelengths



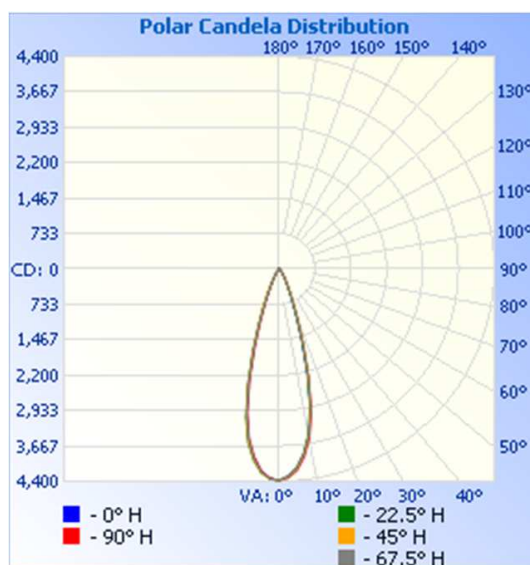
RESULTS OF TEST (cont'd)

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)
AH04192017041604-028	Up	120.0	153.0	17.93	0.977	1378	76.85

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	4375	4375	4375	4375	4375
5	4119	4121	4142	4165	4190
10	3468	3454	3490	3516	3558
15	2226	2202	2298	2315	2325
20	996	1015	1114	1086	1081
25	447	452	500	489	479
30	210	220	208	230	224
35	106	110	104	114	109
40	58	61	63	64	63
45	27	33	40	38	35
50	15	16	24	16	16
55	7	9	12	10	9
60	2	3	6	4	3
65	1	1	2	2	1
70	1	1	1	1	1
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

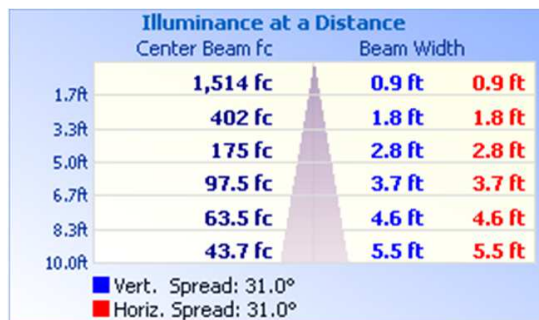


RESULTS OF TEST (cont'd)

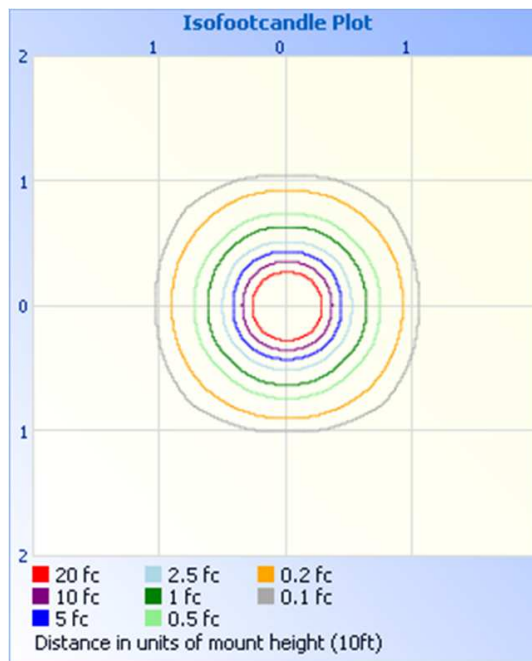
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



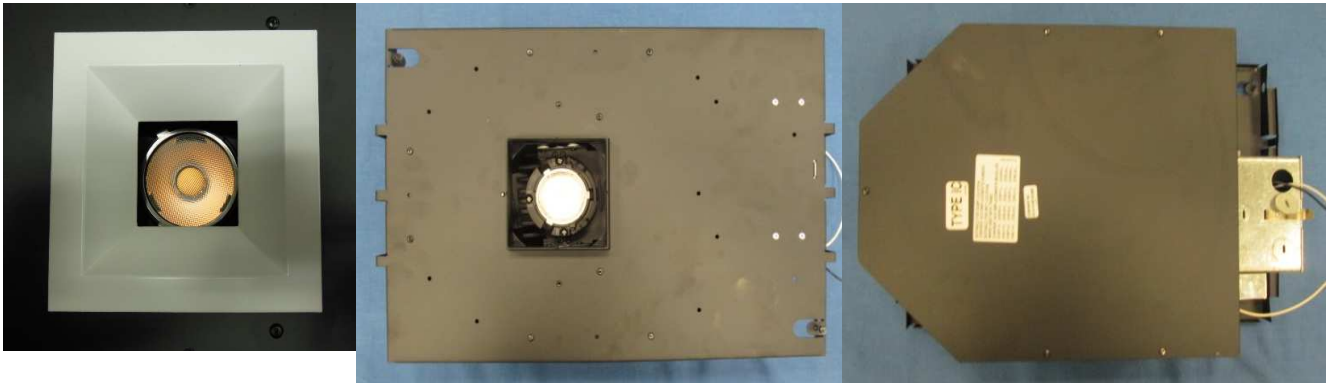
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1258	91.2
0-40	1336	96.9
0-60	1376	99.8
60-90	2.1	0.2
0-90	1378	100.0
90-180	0.0	0.0
0-180	1378	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	378.0	27.4
10-20	626.0	45.4
20-30	253.8	18.4
30-40	78.5	5.7
40-50	30.5	2.2
50-60	9.6	0.7
60-70	1.9	0.1
70-80	0.1	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