



REPORT

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

Project No. G103017649

Date: May 19, 2017

REPORT NO. 103017649CHI-027

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LO8302AN
LED MODEL NO. CITIZEN CLU038-1205C4-303M2K1
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-LO8302AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-027.

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

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SUMMARY

Model No.:	E3SFF-LO8302AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1312	1269
Total Power (W)	12.22	12.23
Luminaire Efficacy (LPW)	107.4	103.8

Criteria	Result
Power Factor	0.976
Current ATHD %	8.73
Correlated Color Temperature (CCT - K)	3044
Color Rendering Index (CRI - Ra)	83.4
Color Rendering Index (CRI - R9)	11.6
DUV	0.000
Chromaticity Coordinate (x)	0.434
Chromaticity Coordinate (y)	0.404
Chromaticity Coordinate (u')	0.249
Chromaticity Coordinate (v')	0.521

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

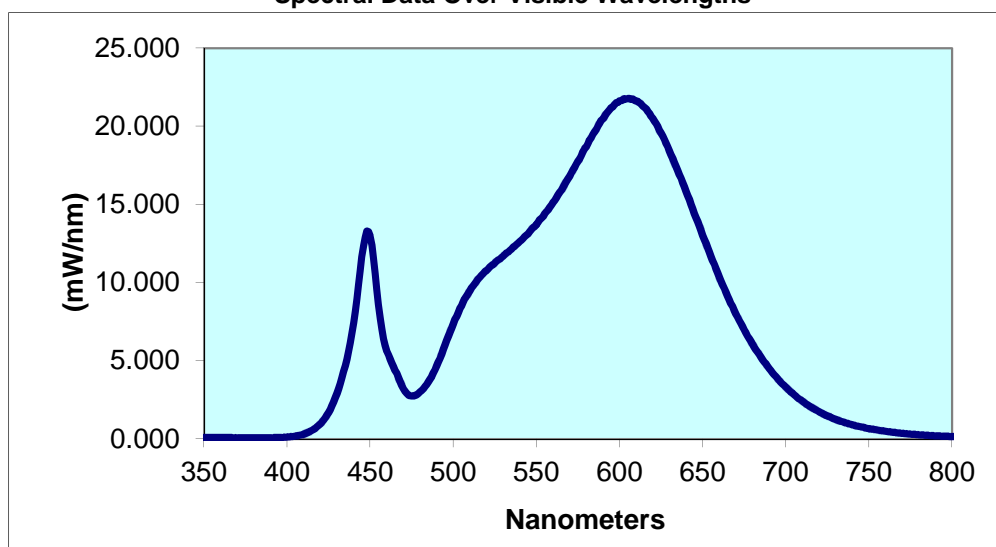
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
\H04192017041604-02'	Up	120.0	104.3	12.22	0.976	8.73	1312	107.4

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')
3044	83.4	11.6	0.000	0.434	0.404	0.249	0.521

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.080	440	7.433	530	11.70	620	20.51	710	2.414
355	0.082	445	11.66	535	12.14	625	19.58	715	2.054
360	0.084	450	12.99	540	12.64	630	18.44	720	1.742
365	0.081	455	8.602	545	13.14	635	17.19	725	1.481
370	0.072	460	5.625	550	13.73	640	15.85	730	1.252
375	0.070	465	4.415	555	14.41	645	14.43	735	1.065
380	0.065	470	3.222	560	15.13	650	13.04	740	0.910
385	0.066	475	2.737	565	15.92	655	11.67	745	0.776
390	0.067	480	3.007	570	16.81	660	10.37	750	0.665
395	0.086	485	3.651	575	17.77	665	9.147	755	0.573
400	0.120	490	4.673	580	18.71	670	8.014	760	0.492
405	0.178	495	5.994	585	19.67	675	6.988	765	0.418
410	0.306	500	7.364	590	20.48	680	6.062	770	0.357
415	0.547	505	8.527	595	21.20	685	5.242	775	0.307
420	0.973	510	9.490	600	21.63	690	4.514	780	0.264
425	1.701	515	10.25	605	21.77	695	3.877		
430	2.909	520	10.77	610	21.62	700	3.318		
435	4.692	525	11.26	615	21.23	705	2.834		

Spectral Data Over Visible Wavelengths



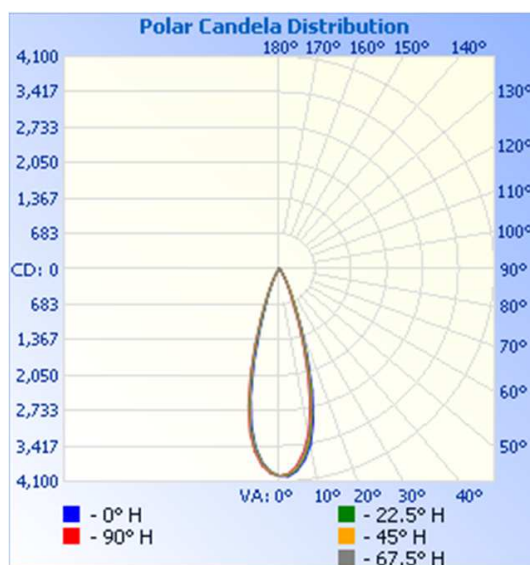
RESULTS OF TEST (cont'd)

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)
AH04192017041604-027	Up	120.0	104.4	12.23	0.976	1269	103.8

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	3993	3993	3993	3993	3993
5	3911	3887	3859	3839	3810
10	3442	3362	3319	3264	3210
15	2424	2327	2269	2194	2124
20	1244	1197	1168	1099	1026
25	554	571	577	490	448
30	260	269	280	232	210
35	128	131	120	116	102
40	68	71	66	64	57
45	42	44	43	39	34
50	22	27	28	20	15
55	12	12	17	11	9
60	6	7	8	5	3
65	2	2	4	2	1
70	1	1	1	1	1
75	1	1	1	1	1
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

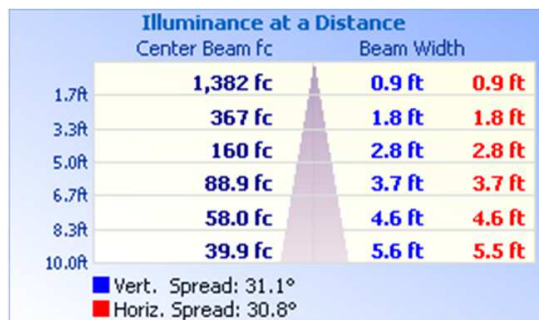


RESULTS OF TEST (cont'd)

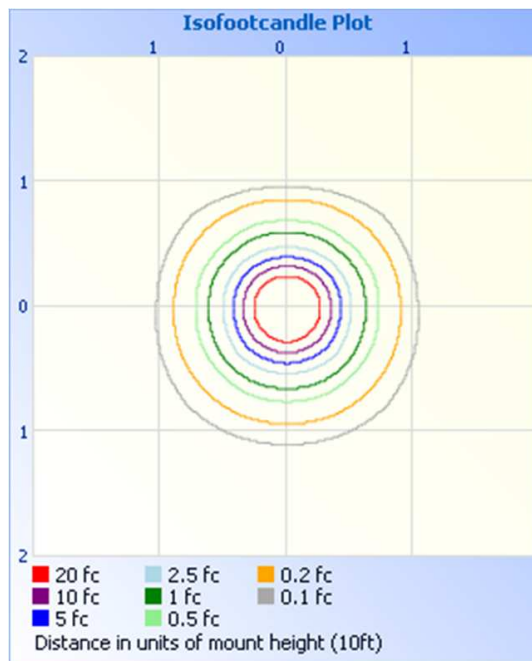
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



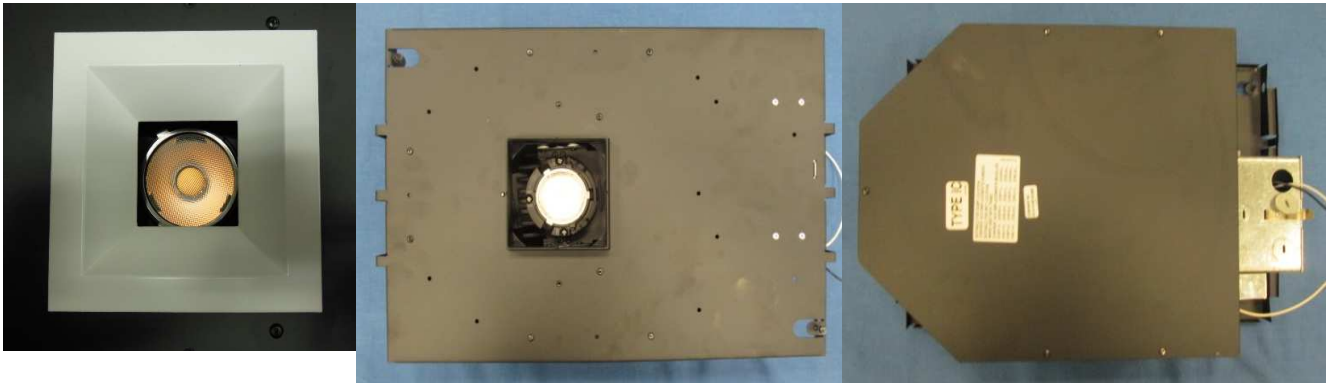
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1154	90.9
0-40	1228	96.8
0-60	1266	99.8
60-90	2.9	0.2
0-90	1269	100.0
90-180	0.0	0.0
0-180	1269	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	344.2	27.1
10-20	570.9	45.0
20-30	238.6	18.8
30-40	74.5	5.9
40-50	28.5	2.2
50-60	9.7	0.8
60-70	2.3	0.2
70-80	0.7	0.1
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