



REPORT

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

Project No. G103017649

Date: May 5, 2017

REPORT NO. 103017649CHI-018

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E4SF-LH83040AN
LED MODEL NO. CITIZEN CLU038-1205C4-303M2K1
DRIVER MODEL NO. LTF DA30W750C40BF-0000
TRIM MODEL NO. E4SFF-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 E4SF-LH83040AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-018.

DATES OF TESTS: May 3, 2017 through May 5, 2017.

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SUMMARY

Model No.:	E4SF-LH83040AN
Description:	LED RECESSED FIXTURE

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	3157	3130
Total Power (W)	32.88	32.92
Luminaire Efficacy (LPW)	96.02	95.08

Criteria	Result
Power Factor	0.987
Current ATHD %	8.61
Correlated Color Temperature (CCT - K)	3048
Color Rendering Index (CRI - Ra)	82.1
Color Rendering Index (CRI - R9)	5.9
DUV	0.000
Chromaticity Coordinate (x)	0.434
Chromaticity Coordinate (y)	0.403
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	05/05/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	05/05/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	05/05/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	05/05/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	05/05/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	05/03/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	05/03/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	05/03/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	05/03/17
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	05/03/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	05/03/17
Fluke J/K Temperature Meter	52	146004	01/10/17	01/10/18	05/03/17

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

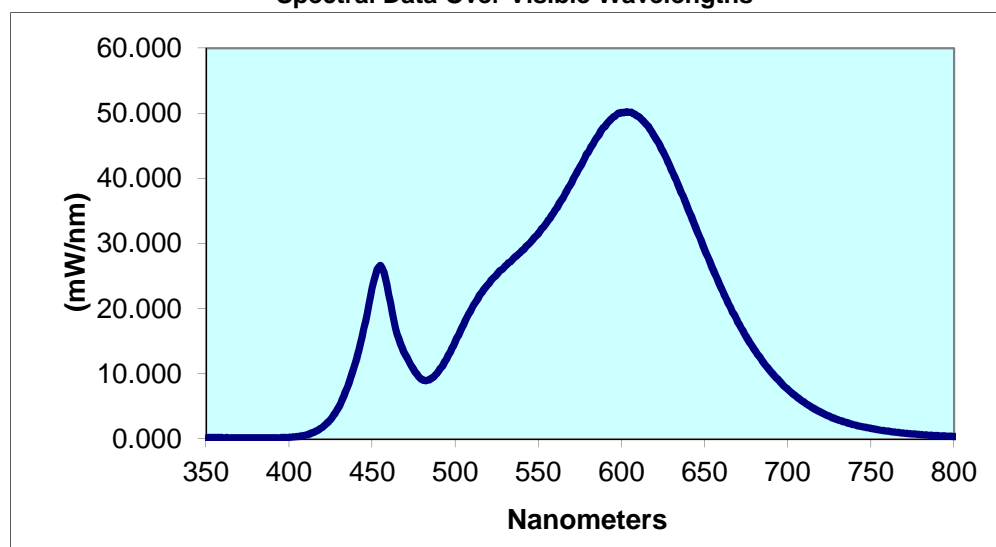
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
H04192017041604-01	Up	120.0	277.6	32.88	0.987	8.61	3157	96.02

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')
3048	82.1	5.9	0.000	0.434	0.403	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	0.178	440	11.85	530	26.54	620	46.40	710	5.592
355	0.193	445	16.93	535	27.71	625	44.13	715	4.783
360	0.189	450	23.18	540	28.91	630	41.34	720	4.089
365	0.171	455	26.63	545	30.11	635	38.45	725	3.483
370	0.154	460	22.17	550	31.57	640	35.35	730	2.965
375	0.157	465	16.14	555	33.25	645	32.20	735	2.541
380	0.140	470	12.94	560	35.13	650	29.07	740	2.175
385	0.141	475	10.66	565	37.14	655	26.05	745	1.865
390	0.155	480	9.151	570	39.40	660	23.15	750	1.616
395	0.180	485	9.210	575	41.78	665	20.48	755	1.386
400	0.239	490	10.43	580	44.04	670	17.97	760	1.203
405	0.359	495	12.36	585	46.23	675	15.75	765	1.028
410	0.599	500	14.93	590	48.00	680	13.69	770	0.883
415	1.039	505	17.57	595	49.45	685	11.86	775	0.766
420	1.799	510	20.07	600	50.15	690	10.28	780	0.660
425	3.027	515	22.21	605	50.16	695	8.909		
430	4.968	520	23.81	610	49.53	700	7.612		
435	7.908	525	25.28	615	48.29	705	6.534		

Spectral Data Over Visible Wavelengths



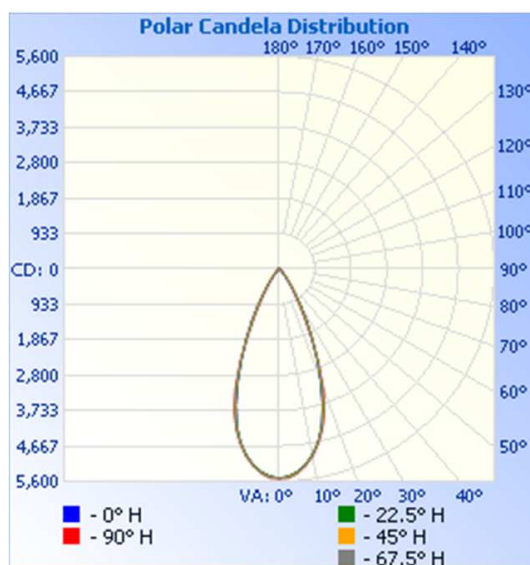
RESULTS OF TEST (cont'd)

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)
AH04192017041604-018	Up	120.0	278.0	32.92	0.987	3130	95.08

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	5513	5513	5513	5513	5513
5	5367	5365	5391	5405	5407
10	4968	4968	4984	5003	5005
15	4281	4282	4310	4341	4348
20	3156	3188	3248	3310	3346
25	2040	2036	2013	1978	1960
30	1125	1124	1075	994	966
35	520	550	569	527	468
40	244	268	325	260	226
45	134	146	173	141	126
50	76	86	93	83	76
55	39	46	57	46	38
60	22	26	30	25	22
65	7	11	14	11	8
70	1	1	3	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

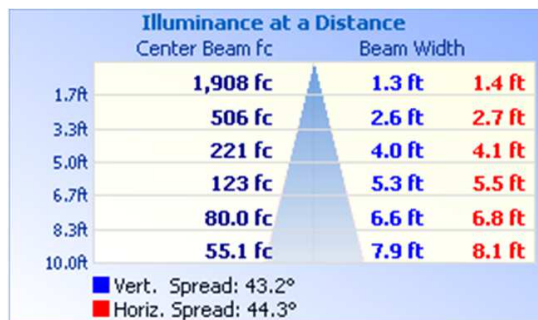


RESULTS OF TEST (cont'd)

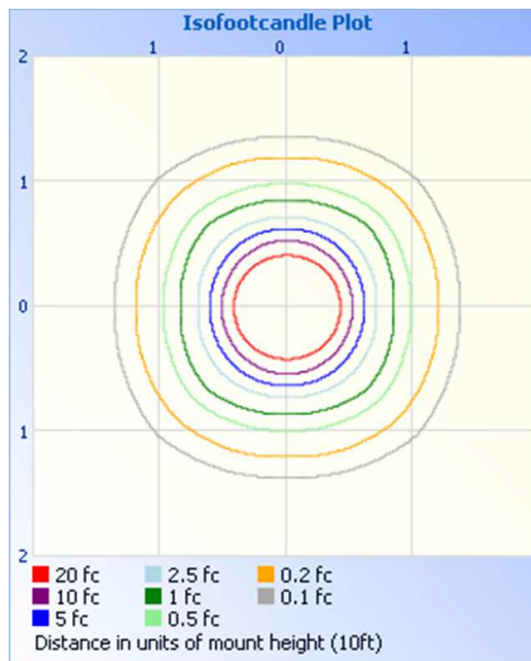
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



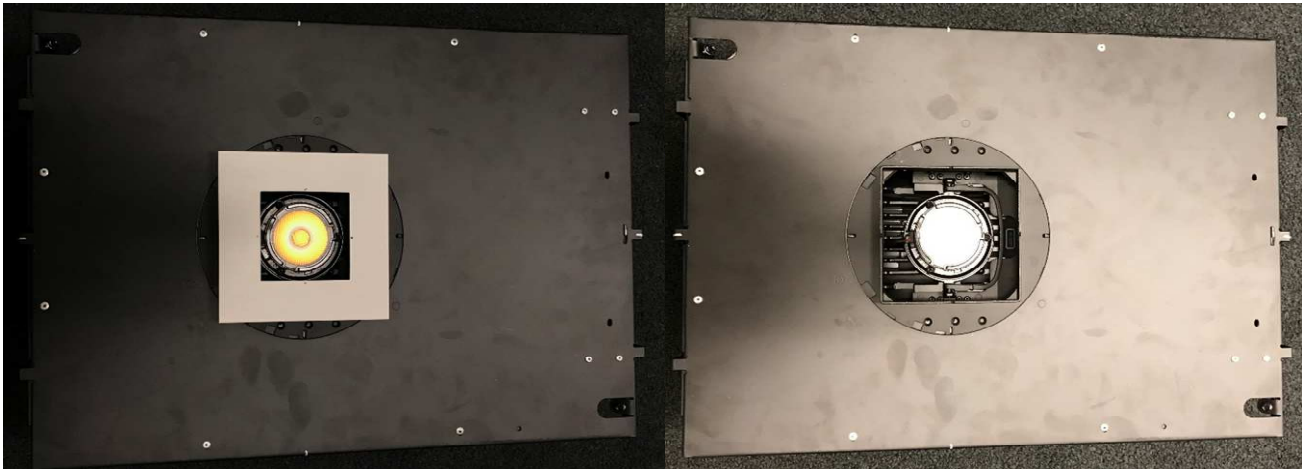
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	2596	83.0
0-40	2952	94.3
0-60	3118	99.6
60-90	11.8	0.4
0-90	3130	100.0
90-180	0.0	0.0
0-180	3130	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	500.5	16.0
10-20	1173	37.5
20-30	922.4	29.5
30-40	356.1	11.4
40-50	121.0	3.9
50-60	44.6	1.4
60-70	11.6	0.4
70-80	0.2	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