REPORT

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

Project No. G103017649 Date: May 23, 2017

REPORT NO. 103017649CHI-037

TEST OF ONE LED RECESSED FIXTURE

MODEL NO. E3SFF-LO9274AN
LED MODEL NO. CITIZEN CLU038-1205C4-273H5K2
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-LO9274AN. The sample was received by Intertek on April 19, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH04192017041604-037.

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

SUMMARY

Model No.:	E3SFF-LO9274AN
Description:	LED RECESSED FIXTURE

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	1027	999.5
Total Power (W)	11.96	11.98
Luminaire Efficacy (LPW)	85.87	83.43

Criteria	Result
Power Factor	0.976
Current ATHD %	8.75
Correlated Color Temperature (CCT - K)	2828
Color Rendering Index (CRI - Ra)	93.6
Color Rendering Index (CRI - R9)	70.4
DUV	0.002
Chromaticity Coordinate (x)	0.452
Chromaticity Coordinate (y)	0.413
Chromaticity Coordinate (u')	0.256
Chromaticity Coordinate (v')	0.527

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

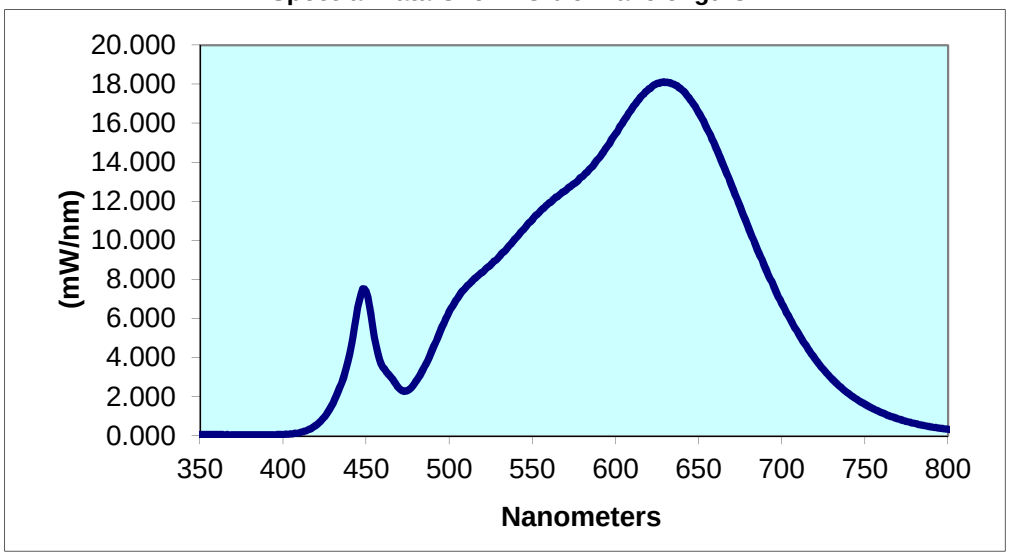
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
\H04192017041604-03	Up	120.0	102.0	11.96	0.976	8.75	1027	85.87

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')
2828	93.6	70.4	0.002	0.452	0.413	0.256	0.527

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.070	440	4.193	530	9.184	620	17.76	710	5.237
355	0.064	445	6.586	535	9.636	625	18.05	715	4.566
360	0.065	450	7.408	540	10.13	630	18.09	720	3.949
365	0.059	455	5.052	545	10.61	635	18.00	725	3.413
370	0.058	460	3.528	550	11.07	640	17.71	730	2.940
375	0.054	465	2.999	555	11.53	645	17.20	735	2.531
380	0.051	470	2.430	560	11.92	650	16.54	740	2.180
385	0.050	475	2.333	565	12.25	655	15.75	745	1.878
390	0.052	480	2.796	570	12.57	660	14.84	750	1.625
395	0.059	485	3.522	575	12.91	665	13.84	755	1.397
400	0.073	490	4.437	580	13.27	670	12.78	760	1.201
405	0.105	495	5.425	585	13.71	675	11.73	765	1.025
410	0.172	500	6.351	590	14.22	680	10.65	770	0.874
415	0.307	505	7.047	595	14.83	685	9.605	775	0.745
420	0.553	510	7.598	600	15.46	690	8.619	780	0.638
425	0.984	515	8.048	605	16.13	695	7.715		
430	1.678	520	8.380	610	16.76	700	6.786		
435	2.672	525	8.759	615	17.33	705	5.981		

Spectral Data Over Visible Wavelengths



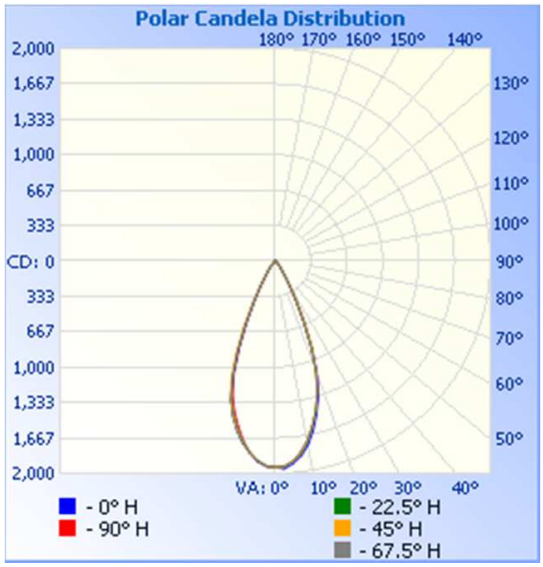
RESULTS OF TEST (cont'd)

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)
AH04192017041604-037	Up	120.0	102.2	11.98	0.977	999.5	83.43

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	1943	1943	1943	1943	1943
5	1913	1895	1896	1890	1891
10	1757	1728	1720	1718	1715
15	1487	1460	1455	1454	1466
20	1130	1110	1113	1106	1124
25	638	634	662	622	617
30	273	271	289	268	262
35	116	117	118	120	114
40	60	63	63	63	60
45	35	36	37	34	32
50	15	19	22	15	12
55	8	9	12	7	6
60	2	4	5	3	2
65	1	1	2	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

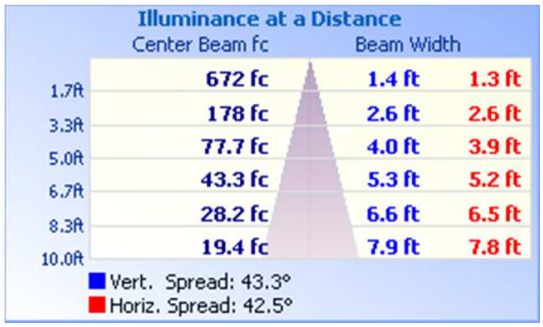


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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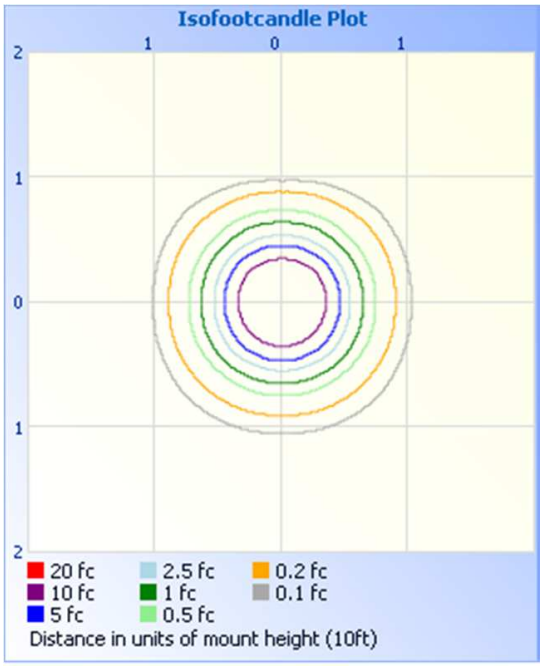


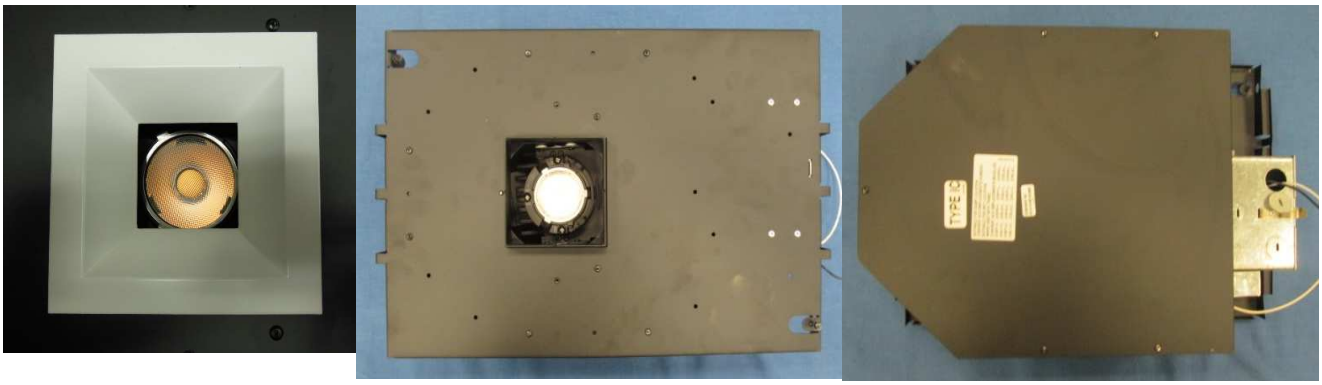
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	879.4	88.0
0-40	963.9	96.4
0-60	998.6	99.9
60-90	1.0	0.1
0-90	1000	100.0
90-180	0.0	0.0
0-180	1000	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	175.0	17.5
10-20	405.8	40.6
20-30	298.7	29.9
30-40	84.5	8.5
40-50	27.5	2.7
50-60	7.2	0.7
60-70	1.0	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:

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Report Reviewed By:

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Lighting Division

Attachment: None