REPORT

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

Project No. G101518786 March 19, 2015

REPORT NO. 101518786CHI-095

TEST OF ONE LED RECESSED RETRO-FIT FIXTURE

MODEL NO. ER6A-LH930WW
DRIVER MODEL NO. ERP EBR 015U-0350-42
LED MODEL NO. CITIZEN CLU024-1202B8-303H5D2

RENDERED TO

GENERATION BRANDS
7400 LINDER AVE.
SKOKIE, IL 60077

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number 500506211.

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 ER6A-LH930WW . The sample was received by Intertek on March 6, 2015, in undamaged condition and one sample was tested as received. The sample designation was AH03062015070428.

DATES OF TESTS: March 12, 2015 through March 18, 2015.

SUMMARY

Model No.:	ER6A-LH930WW
Description:	LED Recessed Retro-fit Fixture

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	1012	1004
Total Power (W)	14.53	14.55
Luminaire Efficacy (LPW)	69.65	69.00

Criteria	Result
Power Factor	0.989
Current ATHD %	12.42
Correlated Color Temperature (CCT - K)	2986
Color Rendering Index (CRI - Ra)	92.2
Color Rendering Index (CRI - R9)	69.7
DUV	0.000
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.404
Chromaticity Coordinate (u')	0.251
Chromaticity Coordinate (v')	0.521

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251M	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	07/02/14	07/02/15
Yokogawa Power Meter	WT1600	146770	04/10/14	04/10/15
Omega Temperature Meter	MDSi8	146139	04/02/14	04/02/15
Yokogawa Power Meter	WT210	146919	07/16/14	07/16/15
Omega Thermometer	DPI8-C24	146920	10/09/14	10/09/15
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146956	01/06/15	01/06/16
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU
Cole-Parmer Triple Timer	94440-00	CHI0041	04/01/14	04/01/15

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 Three Meter 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

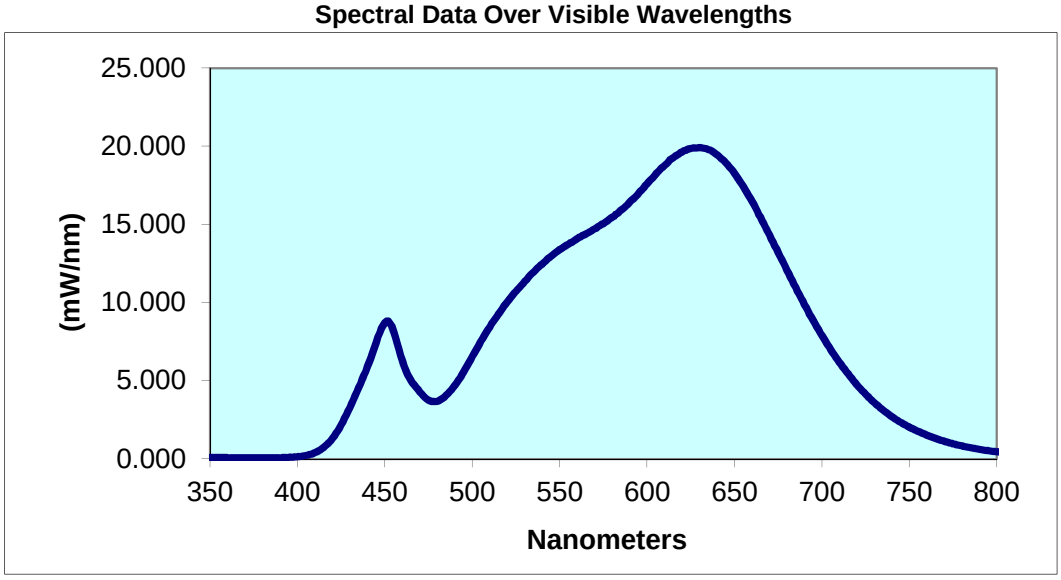
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

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)
AH03062015070428	UP	120.0	122.4	14.53	0.989	12.42	1012	69.65

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
2986	92.2	69.7	0.000	0.437	0.404	0.251	0.521

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.08	440	5.894	530	11.36	620	19.64	710	6.168
355	0.08	445	7.452	535	11.95	625	19.87	715	5.421
360	0.078	450	8.731	540	12.47	630	19.91	720	4.737
365	0.073	455	8.164	545	12.96	635	19.79	725	4.134
370	0.064	460	6.272	550	13.39	640	19.46	730	3.59
375	0.061	465	5.006	555	13.75	645	18.94	735	3.121
380	0.06	470	4.291	560	14.08	650	18.26	740	2.699
385	0.063	475	3.749	565	14.39	655	17.43	745	2.342
390	0.074	480	3.69	570	14.72	660	16.48	750	2.034
395	0.099	485	4.068	575	15.06	665	15.42	755	1.761
400	0.141	490	4.706	580	15.45	670	14.32	760	1.524
405	0.231	495	5.567	585	15.92	675	13.19	765	1.315
410	0.407	500	6.556	590	16.43	680	12.07	770	1.13
415	0.743	505	7.54	595	16.98	685	10.96	775	0.971
420	1.311	510	8.439	600	17.59	690	9.872	780	0.832
425	2.171	515	9.276	605	18.24	695	8.863		
430	3.301	520	10.05	610	18.79	700	7.887		
435	4.572	525	10.73	615	19.27	705	6.993		



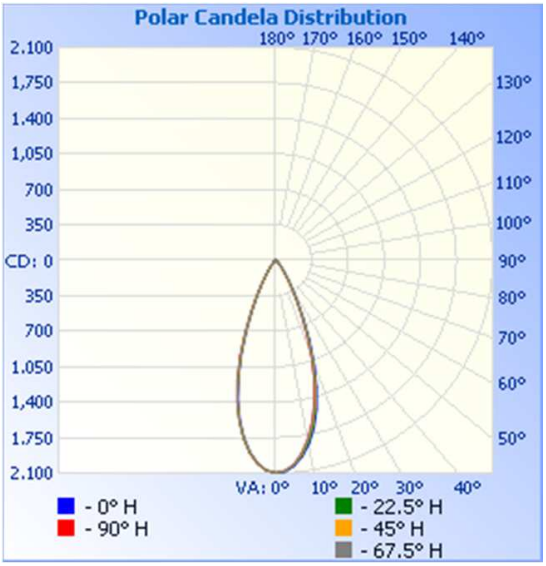
RESULTS OF TEST (cont'd)

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 (Lumens Per Watt)
AH03062015070428	UP	120.0	122.5	14.55	0.990	1004	69

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2096	2096	2096	2096	2096
5	2038	2026	2023	2019	2018
10	1845	1825	1801	1792	1787
15	1527	1500	1481	1462	1444
20	1087	1053	1044	1026	1008
25	635	612	603	599	581
30	327	307	301	295	289
35	163	151	144	141	137
40	82	78	76	74	73
45	46	44	43	42	41
50	29	28	27	26	25
55	19	18	18	17	17
60	14	13	13	12	12
65	10	10	10	9	9
70	7	7	6	5	5
75	3	2	2	2	1
80	1	1	1	1	1
85	0	1	0	1	0
90	0	0	0	0	0

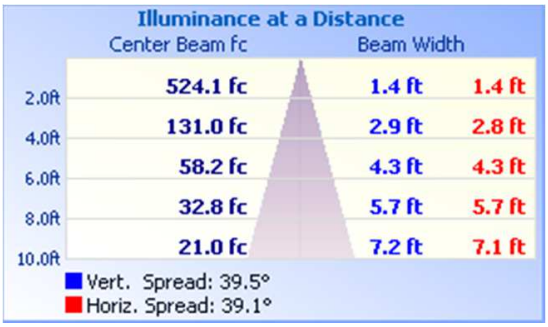


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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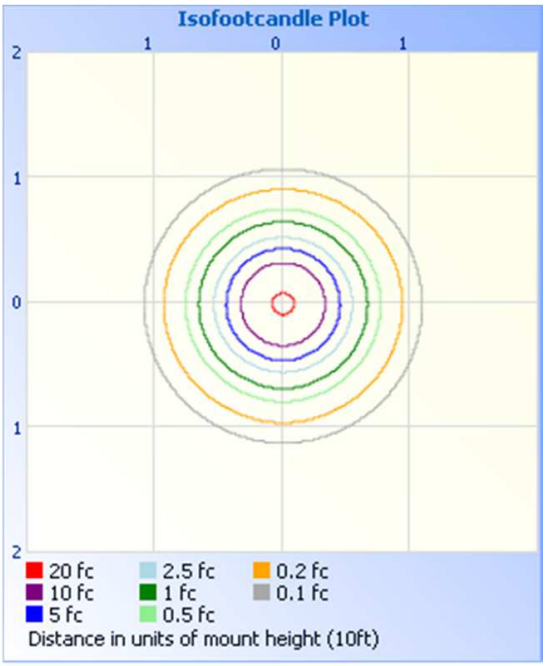


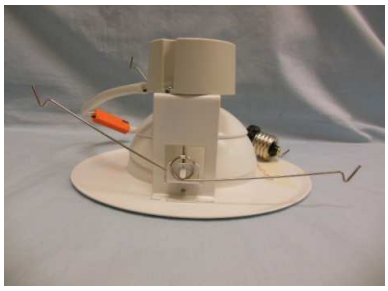
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	849.3	84.6
0-40	942.9	93.9
0-60	992.6	98.9
60-90	11.4	1.1
0-90	1004	100.0
90-180	0.0	0.0
0-180	1004	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	185.1	18.4
10-20	394.8	39.3
20-30	269.5	26.8
30-40	93.6	9.3
40-50	33.7	3.4
50-60	16.0	1.6
60-70	8.9	0.9
70-80	2.1	0.2
80-90	0.4	0.0

PICTURE (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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Attachment: None