



# REPORT

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

Project No. G102171228

Date: September 21, 2016

REPORT NO. 102171228CHI-062

TEST OF ONE LED WALL SCONCE

MODEL NO. 700OWVOT8408HDOUNVS  
LED MODEL NO. CITIZEN CLU028-1202C4-403M2K1  
DRIVER MODEL NO. LTF DS20W350C3058LI2D010-0000

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 500606081.

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 700OWVOT8408HDOUNVS. The sample was received by Intertek on September 16, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH09162016092757-62.

DATES OF TESTS: September 20, 2016 through September 21, 2016.

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## SUMMARY

Model No.: 700OWVOT8408HDOUNVS  
Description: LED Wall Sconce

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	672.5	655.0
Total Power (W)	14.29	14.31
Luminaire Efficacy (LPW)	47.06	45.77

Criteria	Result
Power Factor	0.991
Current ATHD %	2.72
Correlated Color Temperature (CCT - K)	3068
Color Rendering Index (CRI - Ra)	83.3
Color Rendering Index (CRI - R9)	12.5
DUV	0.000
Chromaticity Coordinate (x)	0.432
Chromaticity Coordinate (y)	0.403
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.520
BUG Rating	B0-U2-G1
IES Classification	Type II
Longitudinal Classification	Very Short

## 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	09/20/16
Omega Newport Thermometer	DPI8-C24	146920	10/09/15	10/09/16	09/20/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	09/20/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	09/20/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	09/20/16
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	09/21/16
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	09/21/16
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	09/21/16
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	09/21/16
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	09/21/16
Yokogawa Power Meter	WT1600	146768	01/14/16	01/14/17	09/21/16
Omega Temperature Meter	MDSi8	146139	03/21/16	03/21/17	09/21/16

## 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.

### BUG Ratings (Backlight, Uplight, Glare) – for Outdoor Fixtures Only

Zonal Lumens were calculated and grouped using the formula in IESNA TM-15-11 for each zone as defined in the BUG addendum. The maximum lumen rating in each zone was compared against the BUG zonal requirements of Energy Star. Photometric Toolbox software was used to calculate results.

## RESULTS OF TEST

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

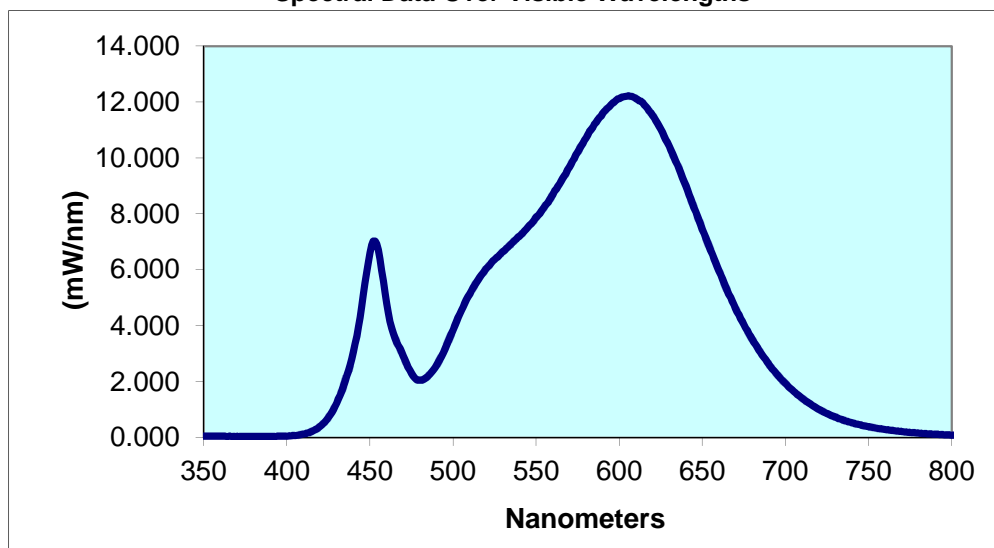
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH09162016092757-62	UP	120.0	120.1	14.29	0.991	2.72	672.5	47.06

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')
3068	83.3	12.5	0.000	0.432	0.403	0.248	0.520

### Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.048	440	3.064	530	6.651	620	11.52	710	1.406
355	0.049	445	4.690	535	6.924	625	11.02	715	1.197
360	0.047	450	6.620	540	7.202	630	10.42	720	1.012
365	0.042	455	6.714	545	7.519	635	9.750	725	0.860
370	0.041	460	4.803	550	7.876	640	8.999	730	0.727
375	0.036	465	3.561	555	8.257	645	8.225	735	0.617
380	0.032	470	2.916	560	8.691	650	7.445	740	0.526
385	0.033	475	2.287	565	9.169	655	6.694	745	0.453
390	0.036	480	2.047	570	9.681	660	5.969	750	0.390
395	0.041	485	2.209	575	10.21	665	5.260	755	0.335
400	0.052	490	2.587	580	10.72	670	4.628	760	0.289
405	0.073	495	3.162	585	11.21	675	4.045	765	0.248
410	0.125	500	3.857	590	11.60	680	3.516	770	0.212
415	0.222	505	4.552	595	11.91	685	3.045	775	0.182
420	0.399	510	5.145	600	12.13	690	2.621	780	0.156
425	0.719	515	5.641	605	12.22	695	2.259		
430	1.238	520	6.046	610	12.13	700	1.931		
435	2.021	525	6.369	615	11.89	705	1.648		

Spectral Data Over Visible Wavelengths



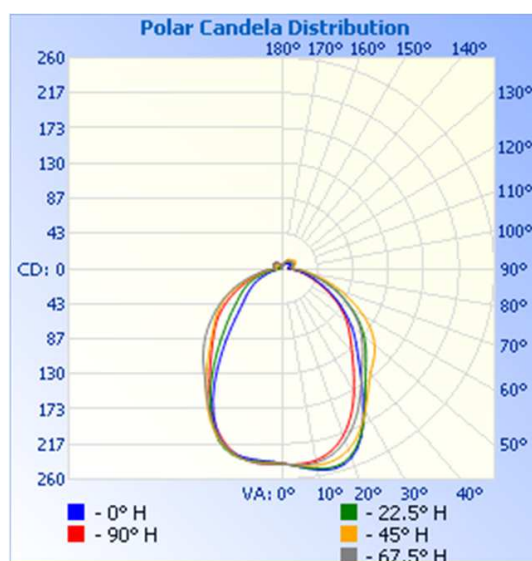
# RESULTS OF TEST (cont'd)

## 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)
AH09162016092757-62	Up	120.0	120.4	14.31	0.991	655.0	45.77

## Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	241	241	241	241	241
5	245	245	244	244	242
10	252	251	246	243	240
15	255	253	245	238	233
20	249	246	238	226	219
25	229	228	223	210	200
30	199	203	203	190	176
35	170	178	184	170	153
40	146	160	169	153	133
45	128	146	159	140	118
50	112	131	148	127	105
55	94	116	134	113	90
60	78	98	115	97	74
65	62	81	94	80	58
70	47	65	74	63	44
75	35	48	55	46	33
80	25	34	38	32	24
85	17	22	25	21	15
90	10	13	15	13	9
95	8	12	13	11	8
100	8	12	14	11	8
105	10	14	16	14	9
110	11	15	18	15	11
115	11	15	19	15	11
120	11	14	18	15	11
125	11	14	17	14	11
130	10	13	16	13	10
135	10	12	15	13	10
140	9	11	15	12	9
145	8	10	13	11	8
150	7	9	11	10	7
155	6	7	9	7	6
160	5	5	5	5	5
165	3	3	2	2	3
170	1	1	0	1	1

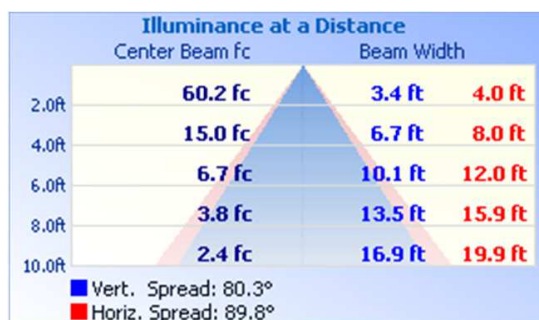


# RESULTS OF TEST (cont'd)

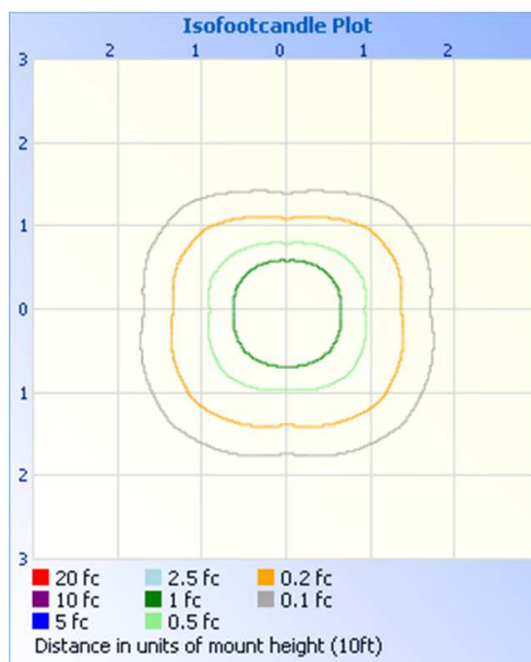
## Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



## Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	187.1	28.6
0-40	289.2	44.2
0-60	475.3	72.6
60-90	124.8	19.0
0-90	600.0	91.6
90-180	55.0	8.4
0-180	655.0	100.0

## Luminaire Classification System (LCS)

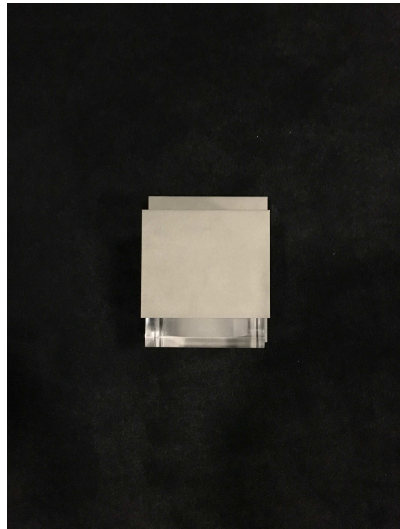
LCS	Zone	Lumens	% Luminaire
FL	(0-30)	96.3	14.7
FM	(30-60)	160.0	24.4
FH	(60-80)	63.5	9.7
FVH	(80-90)	11.7	1.8
BL	(0-30)	90.9	13.9
BM	(30-60)	128.3	19.6
BH	(60-80)	43.8	6.7
BVH	(80-90)	5.7	0.9
UL	(90-100)	9.1	1.4
UH	(100-180)	45.9	7.0
Total		655.2	100.0

## Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	23.2	3.5
10-20	67.4	10.3
20-30	96.5	14.7
30-40	102.1	15.6
40-50	98.0	15.0
50-60	88.0	13.4
60-70	67.3	10.3
70-80	40.1	6.1
80-90	17.4	2.7
90-100	9.1	1.4
100-110	10.3	1.6
110-120	10.9	1.7
120-130	9.3	1.4
130-140	7.2	1.1
140-150	5.0	0.8
150-160	2.6	0.4
160-170	0.6	0.1

BUG Rating: B0-U2-G1  
 IES Classification: Type II  
 Longitudinal Classification: Very Short

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:



Vladimir Kozak  
Senior Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division