



# REPORT

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

Project No. G102171228

Original Issue Date: August 13, 2016

Revision Date: September 1, 2016

REPORT NO. 102171228CHI-031

TEST OF ONE LED WALL SCONCE

MODEL NO. 700OWVOTASDZ840120

LED MODEL NO. CITIZEN CLU028-1202C4-403M2K1

DRIVER MODEL NO. LTF DS20W350C3058LI2D010-0000

RENDERED TO

GENERATION BRANDS

7400 LINDER AVE.

SKOKIE, IL, 60077

Revision Note September 1, 2016: This report was revised to add BUG rating data.

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 700OWVOTASDZ840120. The sample was received by Intertek on August 3, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH08032016091921G.

DATES OF TESTS: August 10, 2016 through August 13, 2016.

---

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

## SUMMARY

Model No.:	700OWVOTASDZ840120
Description:	LED Wall Sconce

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	1394	1359
Total Power (W)	27.88	27.82
Luminaire Efficacy (LPW)	50.00	48.85

Criteria	Result
Power Factor	0.979
Current ATHD %	13.19
Correlated Color Temperature (CCT - K)	4007
Color Rendering Index (CRI - Ra)	82.8
Color Rendering Index (CRI - R9)	15.1
DUV	0.000
Chromaticity Coordinate (x)	0.381
Chromaticity Coordinate (y)	0.379
Chromaticity Coordinate (u')	0.224
Chromaticity Coordinate (v')	0.503
BUG Rating	B0-U4-G1

## 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	08/13/16
Omega Newport Thermometer	DPI8-C24	146920	10/09/15	10/09/16	08/13/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	08/13/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	08/13/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	08/13/16
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	08/10/16
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	08/10/16
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	08/10/16
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	08/10/16
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	08/10/16
Yokogawa Power Meter	WT1600	146768	01/14/16	01/14/17	08/10/16
Omega Temperature Meter	MDSi8	146139	03/21/16	03/21/17	08/10/16

## 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**

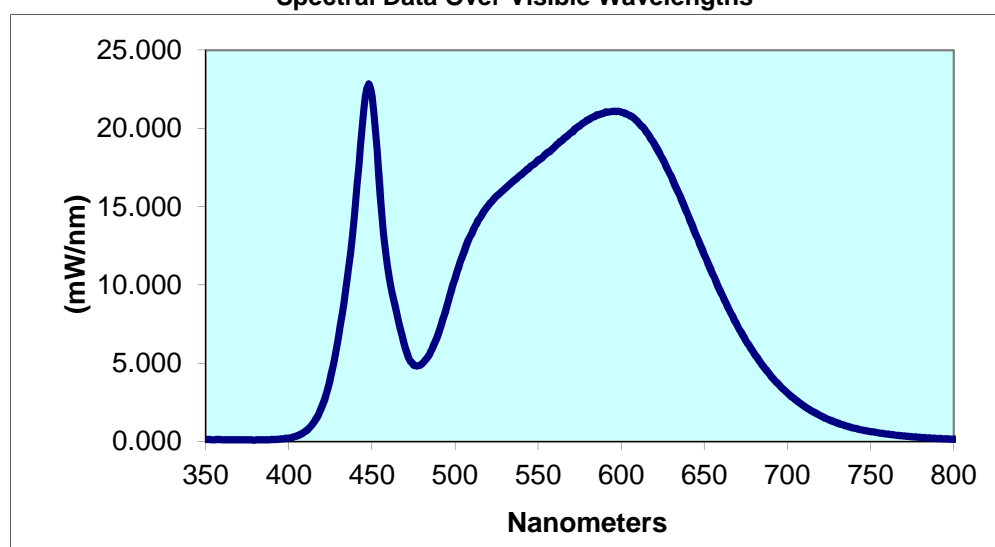
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH08032016091921G	Horizontal	120.0	237.2	27.88	0.979	13.19	1394	50.00

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')
4007	82.8	15.1	0.000	0.381	0.379	0.224	0.503

## **Spectral Distribution over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.120	440	15.15	530	16.16	620	18.98	710	2.266
355	0.109	445	21.16	535	16.62	625	18.01	715	1.931
360	0.113	450	22.09	540	17.05	630	16.92	720	1.640
365	0.104	455	15.74	545	17.53	635	15.75	725	1.393
370	0.099	460	10.70	550	17.97	640	14.48	730	1.181
375	0.095	465	8.122	555	18.40	645	13.21	735	1.005
380	0.096	470	5.978	560	18.84	650	11.93	740	0.861
385	0.098	475	4.886	565	19.29	655	10.71	745	0.739
390	0.117	480	4.976	570	19.76	660	9.537	750	0.640
395	0.155	485	5.681	575	20.16	665	8.403	755	0.553
400	0.224	490	6.930	580	20.55	670	7.380	760	0.476
405	0.368	495	8.674	585	20.85	675	6.452	765	0.410
410	0.664	500	10.46	590	21.02	680	5.620	770	0.352
415	1.237	505	12.04	595	21.09	685	4.873	775	0.303
420	2.262	510	13.28	600	21.03	690	4.202	780	0.261
425	4.079	515	14.32	605	20.83	695	3.619		
430	6.799	520	15.08	610	20.42	700	3.099		
435	10.35	525	15.69	615	19.78	705	2.655		

**Spectral Data Over Visible Wavelengths**



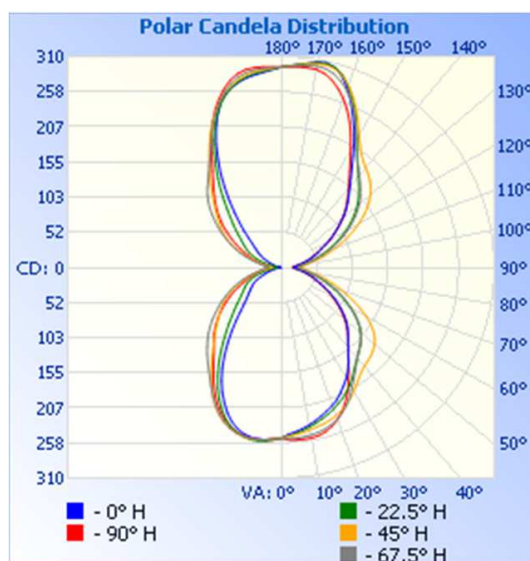
# RESULTS OF TEST (cont'd)

## 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)
AH08032016091921G	Horizontal	120.0	236.7	27.82	0.980	1359	48.85

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

Angle	0	22.5	45	67.5	90
0	251	251	251	251	251
5	243	245	247	252	255
10	235	238	242	250	254
15	226	230	238	246	250
20	217	222	232	238	239
25	204	212	224	224	220
30	189	200	211	206	196
35	170	185	198	187	171
40	151	172	189	173	152
45	137	163	184	162	137
50	124	151	177	152	122
55	107	135	164	136	104
60	89	115	142	117	86
65	69	94	115	97	69
70	55	74	90	78	54
75	43	56	67	59	42
80	32	42	48	43	31
85	23	31	35	31	22
90	19	25	29	24	17
95	21	29	33	29	20
100	29	39	46	40	29
105	39	53	65	56	40
110	51	71	85	75	52
115	64	90	108	93	65
120	82	109	131	113	83
125	100	128	153	132	100
130	119	145	170	149	118
135	137	160	182	163	136
140	155	175	191	177	153
145	179	193	203	193	174
150	212	220	227	219	202
155	247	254	258	251	236
160	281	285	285	278	264
165	304	304	302	295	285
170	307	306	304	301	296
175	300	300	299	298	296
180	295	295	295	295	295

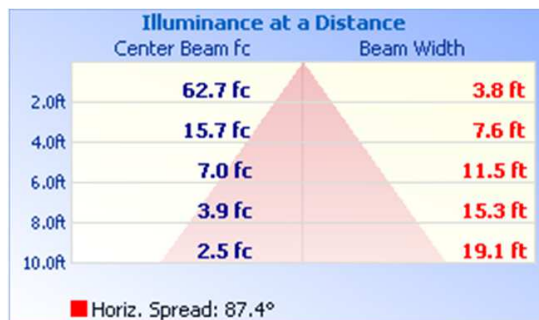


# RESULTS OF TEST (cont'd)

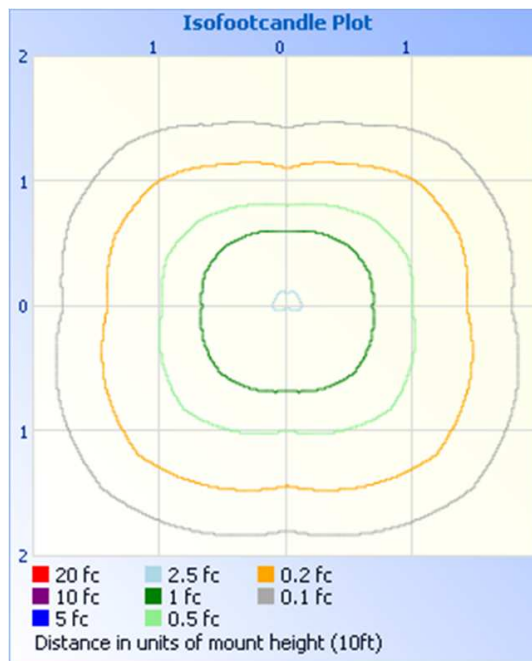
## Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	192.9	14.2
0-40	303.2	22.3
0-60	515.5	37.9
60-90	154.7	11.4
0-90	670.1	49.3
90-180	688.5	50.7
0-180	1359	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	95.5	7.0
FM	(30-60)	180.7	13.3
FH	(60-80)	76.6	5.6
FVH	(80-90)	16.7	1.2
BL	(0-30)	97.5	7.2
BM	(30-60)	142.0	10.4
BH	(60-80)	52.7	3.9
BVH	(80-90)	8.7	0.6
UL	(90-100)	24.0	1.8
UH	(100-180)	664.8	48.9
Total		1359.2	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	23.9	1.8
10-20	68.8	5.1
20-30	100.1	7.4
30-40	110.4	8.1
40-50	110.3	8.1
50-60	102.0	7.5
60-70	79.4	5.8
70-80	49.9	3.7
80-90	25.3	1.9
90-100	24.0	1.8
100-110	46.8	3.4
110-120	75.6	5.6
120-130	98.4	7.2
130-140	110.3	8.1
140-150	113.9	8.4
150-160	110.4	8.1
160-170	80.8	5.9
170-180	28.2	2.1

BUG Rating: B0-U4-G1

IES Classification: Type II

Longitudinal Classification: Very Short

PICTURES (not to scale)



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.

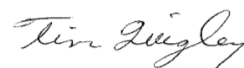
In Charge Of Report:



Vladimir Kozak  
Senior Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division