



REPORT

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

Project No. G102171228

Original Issue Date: August 12, 2016

Revision Date: September 1, 2016

REPORT NO. 102171228CHI-030

TEST OF ONE LED WALL SCONCE

MODEL NO. 700OWVOTBSDC840120

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

DRIVER MODEL NO. LTF DS12W280C2043D010-0000

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 700OWVOTBSDC840120. The sample was received by Intertek on August 3, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH08032016091921F.

DATES OF TESTS: August 10, 2016 through August 12, 2016.

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SUMMARY

Model No.:	700OWVOTBSDC840120
Description:	LED Wall Sconce

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	909.1	891.1
Total Power (W)	19.91	19.95
Luminaire Efficacy (LPW)	45.66	44.67

Criteria	Result
Power Factor	0.980
Current ATHD %	12.13
Correlated Color Temperature (CCT - K)	4028
Color Rendering Index (CRI - Ra)	82.0
Color Rendering Index (CRI - R9)	11.1
DUV	0.002
Chromaticity Coordinate (x)	0.381
Chromaticity Coordinate (y)	0.384
Chromaticity Coordinate (u')	0.223
Chromaticity Coordinate (v')	0.505
BUG Rating	B0-U3-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	08/12/16
Omega Newport Thermometer	DPI8-C24	146920	10/09/15	10/09/16	08/12/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	08/12/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	08/12/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	08/12/16
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

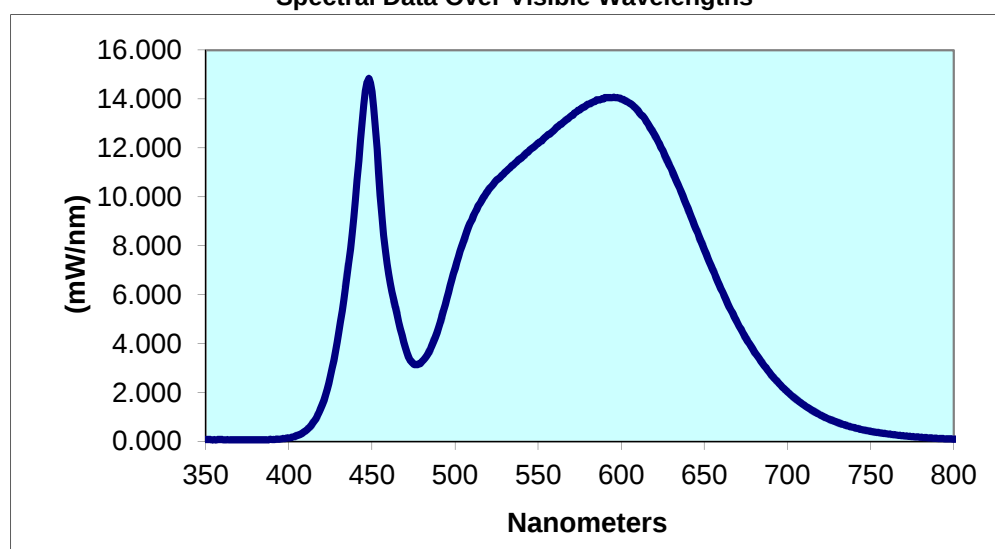
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH08032016091921F	Horizontal	120.0	169.2	19.91	0.980	12.13	909.1	45.66

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')
4028	82.0	11.1	0.002	0.381	0.384	0.223	0.505

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.076	440	9.883	530	11.01	620	12.53	710	1.486
355	0.075	445	13.76	535	11.31	625	11.88	715	1.268
360	0.074	450	14.31	540	11.60	630	11.15	720	1.080
365	0.069	455	10.06	545	11.92	635	10.36	725	0.921
370	0.066	460	6.846	550	12.20	640	9.529	730	0.781
375	0.061	465	5.211	555	12.49	645	8.691	735	0.664
380	0.064	470	3.842	560	12.77	650	7.849	740	0.570
385	0.064	475	3.167	565	13.05	655	7.035	745	0.489
390	0.082	480	3.267	570	13.32	660	6.258	750	0.422
395	0.105	485	3.774	575	13.56	665	5.509	755	0.361
400	0.148	490	4.653	580	13.79	670	4.842	760	0.313
405	0.243	495	5.862	585	13.96	675	4.232	765	0.271
410	0.437	500	7.097	590	14.06	680	3.683	770	0.232
415	0.812	505	8.194	595	14.07	685	3.193	775	0.199
420	1.490	510	9.054	600	14.00	690	2.754	780	0.170
425	2.677	515	9.753	605	13.83	695	2.370		
430	4.462	520	10.28	610	13.53	700	2.032		
435	6.789	525	10.69	615	13.09	705	1.740		

Spectral Data Over Visible Wavelengths



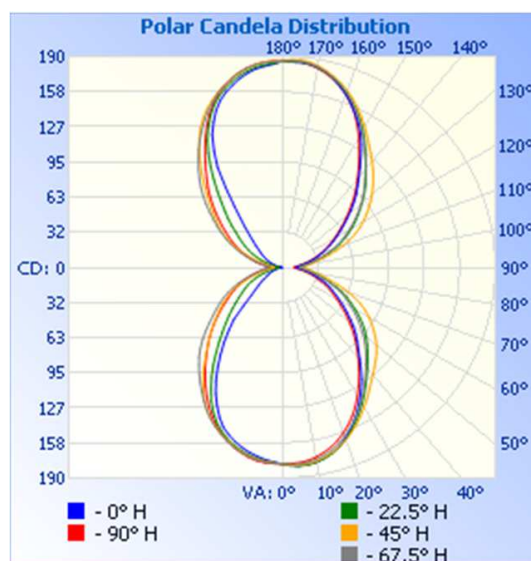
RESULTS OF TEST (cont'd)

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)
AH08032016091921F	Horizontal	120.0	169.3	19.95	0.981	891.1	44.67

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	177	177	177	177	177
5	179	180	179	178	177
10	178	178	177	176	174
15	173	173	172	170	168
20	164	165	166	162	159
25	152	154	156	152	148
30	138	142	146	140	134
35	123	130	135	128	119
40	108	118	126	116	105
45	95	108	118	105	92
50	83	98	110	94	79
55	71	87	100	83	67
60	59	75	89	71	56
65	50	64	77	61	46
70	41	51	61	49	37
75	32	39	45	38	29
80	24	30	33	28	21
85	17	22	24	20	14
90	13	16	18	15	11
95	15	20	23	19	14
100	22	28	31	27	20
105	30	38	43	37	28
110	38	50	58	48	36
115	47	61	72	59	45
120	57	72	84	70	55
125	67	83	95	81	65
130	80	94	105	93	77
135	93	105	115	104	91
140	106	116	125	115	105
145	122	129	135	129	119
150	140	144	147	142	136
155	153	157	159	156	153
160	166	168	170	168	166
165	176	177	178	177	176
170	183	183	185	183	182
175	186	186	188	186	186
180	186	186	186	186	186

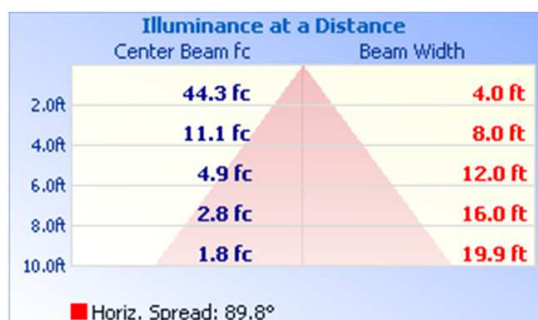


RESULTS OF TEST (cont'd)

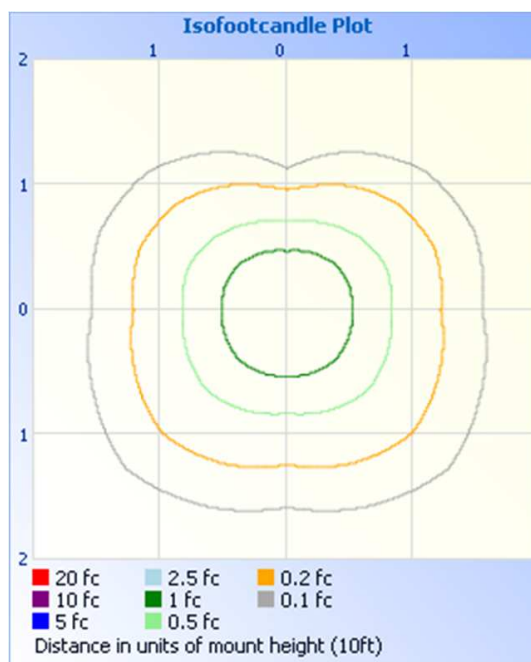
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	133.3	15.0
0-40	209.8	23.5
0-60	347.6	39.0
60-90	98.2	11.0
0-90	445.7	50.0
90-180	445.3	50.0
0-180	891.1	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	67.9	7.6
FM	(30-60)	119.1	13.4
FH	(60-80)	51.0	5.7
FVH	(80-90)	11.4	1.3
BL	(0-30)	65.5	7.3
BM	(30-60)	95.2	10.7
BH	(60-80)	31.0	3.5
BVH	(80-90)	4.8	0.5
UL	(90-100)	15.5	1.7
UH	(100-180)	430.1	48.2
Total		891.5	100.0

Zonal Lumens and Percentages at 25°C

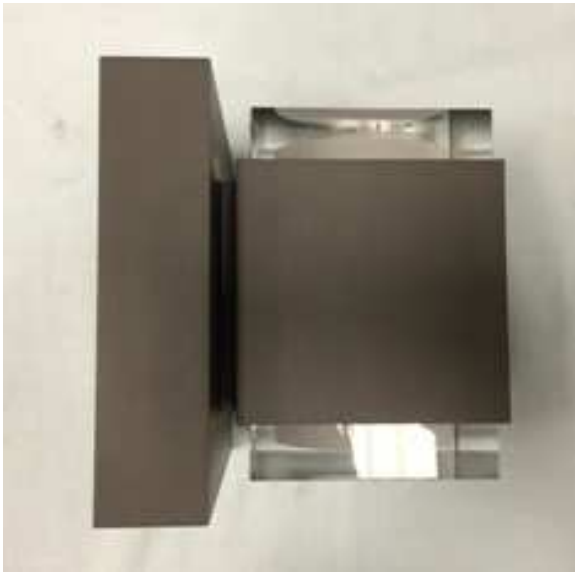
Zone	Lumens	% Luminaire
0-10	16.8	1.9
10-20	47.5	5.3
20-30	68.9	7.7
30-40	76.5	8.6
40-50	73.5	8.3
50-60	64.3	7.2
60-70	50.5	5.7
70-80	31.5	3.5
80-90	16.2	1.8
90-100	15.5	1.7
100-110	30.3	3.4
110-120	48.9	5.5
120-130	62.9	7.1
130-140	72.6	8.1
140-150	77.1	8.7
150-160	71.0	8.0
160-170	49.4	5.5
170-180	17.6	2.0

BUG Rating: B0-U3-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 Report:



Vladimir Kozak
Senior Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley
Engineer
Lighting Division