



REPORT

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

Project No. G102171228

Date: September 21, 2016

REPORT NO. 102171228CHI-061

TEST OF ONE LED WALL SCONCE

MODEL NO. 700OWVOT8406HDOUNVS
LED MODEL NO. CITIZEN CLU028-1202C4-403M2K1
DRIVER MODEL NO. LTF DS12W280C2043D010-0000

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 700OWVOT8406HDOUNVS. The sample was received by Intertek on September 16, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH09162016092757-61.

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

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SUMMARY

Model No.: 700OWVOT8406HDOUNVS
Description: LED Wall Sconce

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	538.2	527.9
Total Power (W)	11.56	11.55
Luminaire Efficacy (LPW)	46.56	45.71

Criteria	Result
Power Factor	0.992
Current ATHD %	3.02
Correlated Color Temperature (CCT - K)	4040
Color Rendering Index (CRI - Ra)	82.1
Color Rendering Index (CRI - R9)	13.1
DUV	0.002
Chromaticity Coordinate (x)	0.380
Chromaticity Coordinate (y)	0.381
Chromaticity Coordinate (u')	0.223
Chromaticity Coordinate (v')	0.503
BUG Rating	B0-U2-G0
IES Classification	Type I
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

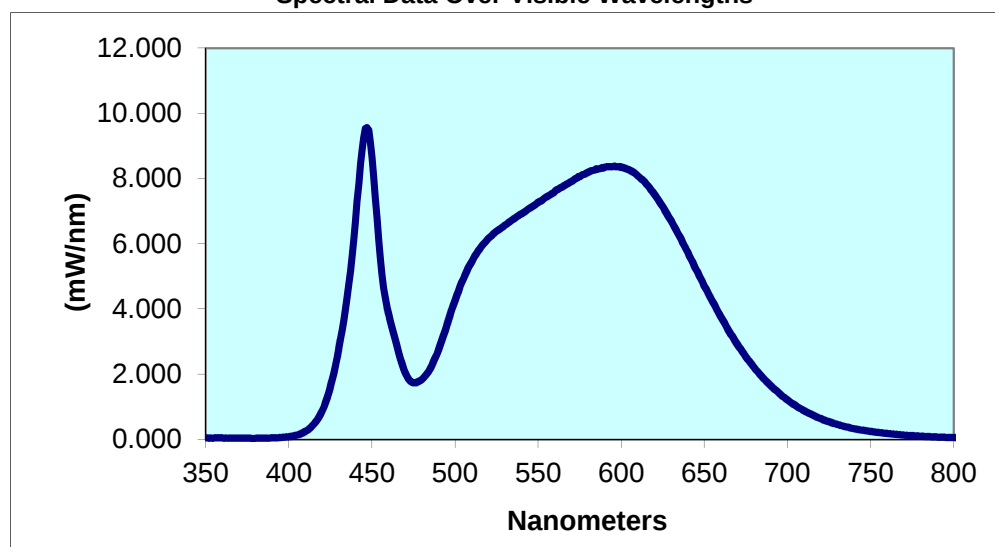
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH09162016092757-61	UP	120.0	97.09	11.56	0.992	3.02	538.2	46.56

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')
4040	82.1	13.1	0.002	0.380	0.381	0.223	0.503

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.056	440	6.679	530	6.573	620	7.508	710	0.885
355	0.050	445	9.260	535	6.752	625	7.137	715	0.753
360	0.046	450	8.647	540	6.923	630	6.702	720	0.643
365	0.042	455	5.543	545	7.095	635	6.230	725	0.545
370	0.037	460	3.846	550	7.271	640	5.730	730	0.463
375	0.037	465	2.867	555	7.440	645	5.223	735	0.394
380	0.036	470	2.044	560	7.610	650	4.716	740	0.337
385	0.039	475	1.742	565	7.762	655	4.228	745	0.288
390	0.045	480	1.847	570	7.916	660	3.764	750	0.248
395	0.061	485	2.176	575	8.063	665	3.306	755	0.215
400	0.088	490	2.758	580	8.192	670	2.901	760	0.185
405	0.142	495	3.510	585	8.300	675	2.535	765	0.159
410	0.255	500	4.276	590	8.356	680	2.206	770	0.137
415	0.475	505	4.942	595	8.370	685	1.909	775	0.116
420	0.877	510	5.453	600	8.346	690	1.645	780	0.101
425	1.627	515	5.868	605	8.269	695	1.428		
430	2.783	520	6.165	610	8.081	700	1.213		
435	4.362	525	6.389	615	7.836	705	1.036		

Spectral Data Over Visible Wavelengths



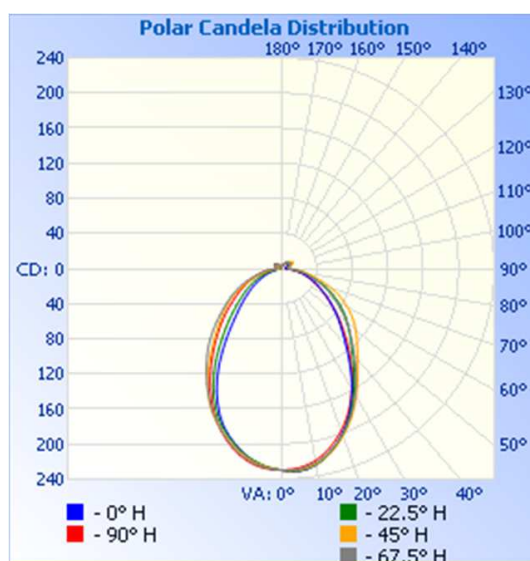
RESULTS OF TEST (cont'd)

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)
AH09162016092757-61	UP	120.0	104.3	11.55	0.923	527.9	45.71

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	229	229	229	229	229
5	232	231	230	229	228
10	227	227	226	224	222
15	216	217	216	214	211
20	201	202	203	201	197
25	182	184	187	185	180
30	159	164	169	167	159
35	136	143	150	147	138
40	113	125	134	128	117
45	96	110	121	111	99
50	82	98	110	97	83
55	68	86	98	83	68
60	56	73	85	69	55
65	46	60	72	57	45
70	36	47	56	45	36
75	28	36	41	35	27
80	21	26	29	25	20
85	13	16	18	16	11
90	7	9	10	9	6
95	6	8	9	8	5
100	5	7	8	7	5
105	6	9	10	8	5
110	7	10	12	10	7
115	8	12	15	12	8
120	9	12	15	12	8
125	9	11	13	11	8
130	9	10	12	10	8
135	8	9	11	10	8
140	8	8	10	9	7
145	7	7	9	7	6
150	6	6	7	6	5
155	5	4	5	4	4
160	3	3	3	2	3
165	2	1	1	1	1



RESULTS OF TEST (cont'd)

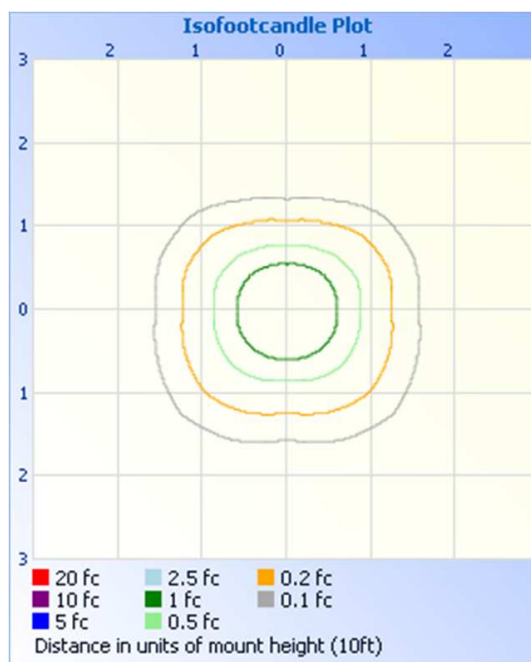
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	164.1	31.1
0-40	251.8	47.7
0-60	398.3	75.4
60-90	92.0	17.4
0-90	490.3	92.9
90-180	37.6	7.1
0-180	527.9	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	83.4	15.8
FM	(30-60)	125.2	23.7
FH	(60-80)	47.5	9.0
FVH	(80-90)	8.7	1.6
BL	(0-30)	80.8	15.3
BM	(30-60)	109.1	20.7
BH	(60-80)	32.0	6.0
BVH	(80-90)	3.9	0.7
UL	(90-100)	5.8	1.1
UH	(100-180)	31.8	6.0
Total		528.2	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	21.6	4.1
10-20	59.5	11.3
20-30	83.1	15.7
30-40	87.7	16.6
40-50	79.6	15.1
50-60	66.9	12.7
60-70	49.8	9.4
70-80	29.6	5.6
80-90	12.6	2.4
90-100	5.8	1.1
100-110	6.2	1.2
110-120	7.9	1.5
120-130	7.1	1.3
130-140	5.4	1.0
140-150	3.4	0.6
150-160	1.5	0.3
160-170	0.3	0.1

BUG Rating: B0-U2-G0
 IES Classification: Type I
 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.

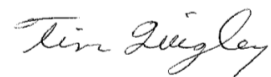
In Charge Of Tests:



Vladimir Kozak
Senior Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley
Engineer
Lighting Division