



REPORT

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

Project No. G102171228

Date: December 14, 2016

REPORT NO. 102171228CHI-074

TEST OF ONE LED LIGHT COLUMN

MODEL NO. 700OBTUR8304240CHUNVS
LED MODEL NO. CITIZEN CLU038-1206C4-303M2K1
DRIVER MODEL NO. YG LS25W-36-C0700-RD

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 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 700OBTUR8304240CHUNVS. The sample was received by Intertek on December 13, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH12132016115542.

DATES OF TESTS: December 14, 2016

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SUMMARY

Model No.:	700OBTUR8304240CHUNVS
Description:	LED Light Column

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2045	1995
Total Power (W)	26.34	26.37
Luminaire Efficacy (LPW)	77.64	75.65

Criteria	Result
Power Factor at 120Vac	0.992
Power Factor at 277Vac	0.910
Current ATHD % at 120Vac	3.37
Current ATHD % at 277Vac	7.77
Correlated Color Temperature (CCT - K)	4083
Color Rendering Index (CRI - Ra)	82.9
Color Rendering Index (CRI - R9)	9.4
DUV	0.002
Chromaticity Coordinate (x)	0.378
Chromaticity Coordinate (y)	0.380
Chromaticity Coordinate (u')	0.222
Chromaticity Coordinate (v')	0.503

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	12/14/16
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	12/14/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	12/14/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	12/14/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	12/14/16
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	12/14/16
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	12/14/16
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	12/14/16
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	12/14/16
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	12/14/16
Yokogawa Power Meter	WT1600	146768	01/14/16	01/14/17	12/14/16
Omega Temperature Meter	MDSi8	146139	03/21/16	03/21/17	12/14/16

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.

RESULTS OF TEST

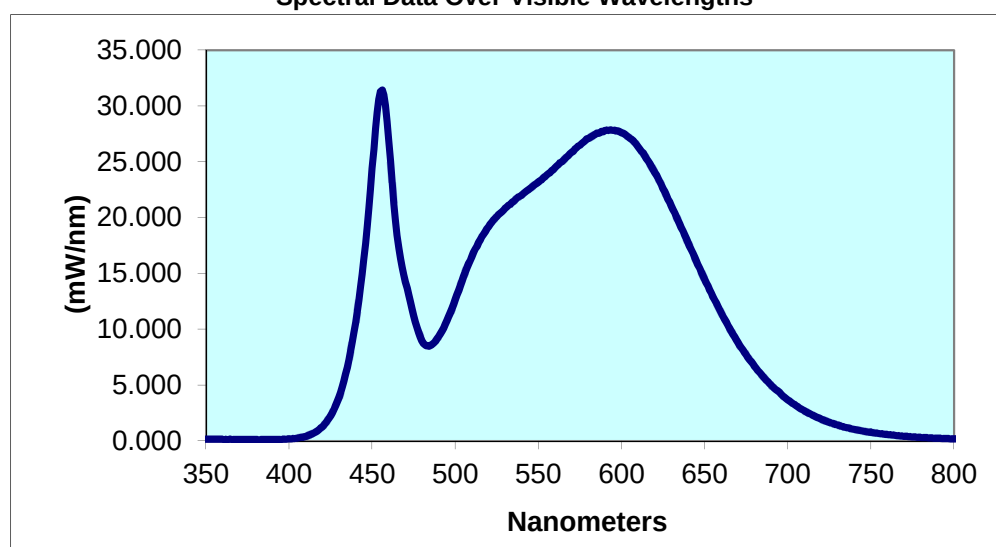
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

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)
AH12132016115542	Up	120.0	221.3	26.34	0.992	3.37	2045	77.64
		277.0	103.8	26.16	0.910	7.77		
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')	
4083	82.9	9.4	0.002	0.378	0.380	0.222	0.503	

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.144	440	10.61	530	20.84	620	24.06	710	2.699
355	0.152	445	16.24	535	21.46	625	22.60	715	2.303
360	0.137	450	24.44	540	22.03	630	21.06	720	1.965
365	0.135	455	31.29	545	22.63	635	19.45	725	1.670
370	0.126	460	26.96	550	23.21	640	17.77	730	1.424
375	0.114	465	18.40	555	23.82	645	16.12	735	1.210
380	0.110	470	14.26	560	24.47	650	14.50	740	1.035
385	0.105	475	11.23	565	25.14	655	12.94	745	0.887
390	0.110	480	8.991	570	25.85	660	11.48	750	0.765
395	0.132	485	8.559	575	26.50	665	10.09	755	0.660
400	0.171	490	9.360	580	27.10	670	8.835	760	0.569
405	0.254	495	10.77	585	27.56	675	7.713	765	0.489
410	0.413	500	12.68	590	27.81	680	6.697	770	0.419
415	0.713	505	14.73	595	27.81	685	5.801	775	0.361
420	1.271	510	16.49	600	27.61	690	4.994	780	0.312
425	2.264	515	18.01	605	27.14	695	4.368		
430	3.913	520	19.20	610	26.35	700	3.685		
435	6.596	525	20.11	615	25.29	705	3.157		

Spectral Data Over Visible Wavelengths



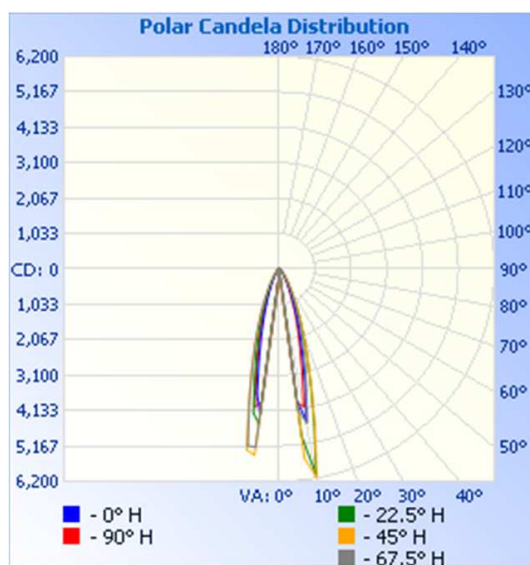
RESULTS OF TEST (cont'd)

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)
AH12132016115542	Up	119.9	220.9	26.37	0.996	1995	75.65

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	8	8	8	8	8
5	67	200	388	137	384
10	4507	6090	6158	4568	4081
15	2607	3510	3583	2880	2265
20	1450	2034	2069	1765	1307
25	800	1150	1170	1022	700
30	433	638	650	584	398
35	245	349	361	330	232
40	149	206	216	199	144
45	103	137	144	133	99
50	76	99	104	95	73
55	57	73	76	67	54
60	42	52	53	45	39
65	29	36	34	27	24
70	19	23	20	13	12
75	11	12	9	4	5
80	3	3	2	3	3
85	2	3	2	2	2
90	2	3	2	3	2
95	3	3	2	3	3
100	3	3	3	3	3
105	3	4	3	3	4
110	4	4	3	4	4
115	4	4	4	4	4
120	4	4	4	4	4
125	5	5	4	5	5
130	5	5	5	5	5
135	5	5	5	5	6
140	6	6	6	6	6
145	7	7	7	7	8
150	2	8	8	9	9
155	2	5	5	11	12
160	3	10	10	7	11
165	4	6	10	16	14
170	4	7	10	15	16
175	4	5	6	5	5



RESULTS OF TEST (cont'd)

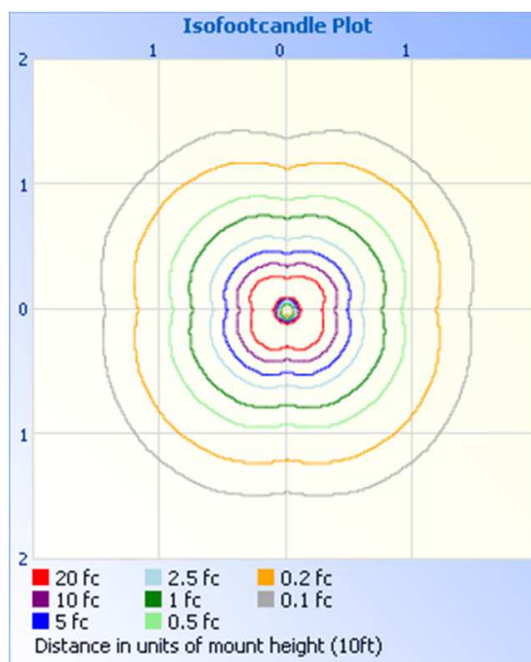
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



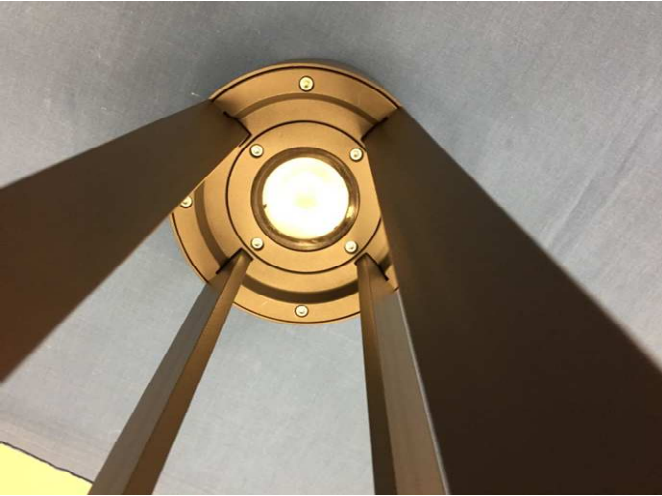
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1558	78.1
0-40	1761	88.3
0-60	1922	96.3
60-90	42.9	2.2
0-90	1965	98.5
90-180	30.1	1.5
0-180	1995	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	289.8	14.5
10-20	818.1	41.0
20-30	450.5	22.6
30-40	202.6	10.2
40-50	100.6	5.0
50-60	60.6	3.0
60-70	30.9	1.5
70-80	9.4	0.5
80-90	2.6	0.1
90-100	3.0	0.2
100-110	3.6	0.2
110-120	4.0	0.2
120-130	4.0	0.2
130-140	4.0	0.2
140-150	4.3	0.2
150-160	3.7	0.2
160-170	2.9	0.1
170-180	0.7	0.0

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:



Jehue Williams
Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley
Engineer
Lighting Division