



# REPORT

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

Project No. G103017649

Date: August 23, 2017

REPORT NO. 103017649CHI-047

TEST OF ONE LED CHANDELIER

MODEL NO. CH997ABLED930  
LED MODEL NO. CITIZEN CLU028-1201C4-303H5K2  
DRIVER MODEL NO. MORETECH DA32W900C2036OC1-0000

RENDERED TO

GENERATION BRANDS  
7400 LINDER AVE  
SKOKIE, IL 60077 USA

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00779063-2.

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 CH997ABLED930. The sample was received by Intertek on August 17, 2017, in undamaged condition and one sample was tested as received. The sample designation was 0817201702341-047.

DATES OF TESTS: August 22, 2017 through August 23, 2017.



SUMMARY

Model No.:	CH997ABLED930
Description:	LED Chandelier

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2656	2574
Total Power (W)	34.97	35.02
Luminaire Efficacy (LPW)	75.95	73.50

Criteria	Result
Power Factor	0.988
Current ATHD %	6.49
Correlated Color Temperature (CCT - K)	3064
Color Rendering Index (CRI - Ra)	91.4
Color Rendering Index (CRI - R9)	66.1
DUV	0.003
Chromaticity Coordinate (x)	0.436
Chromaticity Coordinate (y)	0.410
Chromaticity Coordinate (u')	0.247
Chromaticity Coordinate (v')	0.524

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Yokogawa Power Meter	WT210	146919	07/10/17	07/10/18	08/22/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	08/22/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	08/22/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	08/22/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	08/22/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	08/23/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	08/23/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	08/23/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	08/23/17
Newport Humidity Recorder	iTHX-SD	146961	07/14/17	07/14/18	08/23/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	08/23/17
Extech temperature data logger	SD200	CHI0207	04/06/17	04/06/18	08/23/17



## 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 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 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**

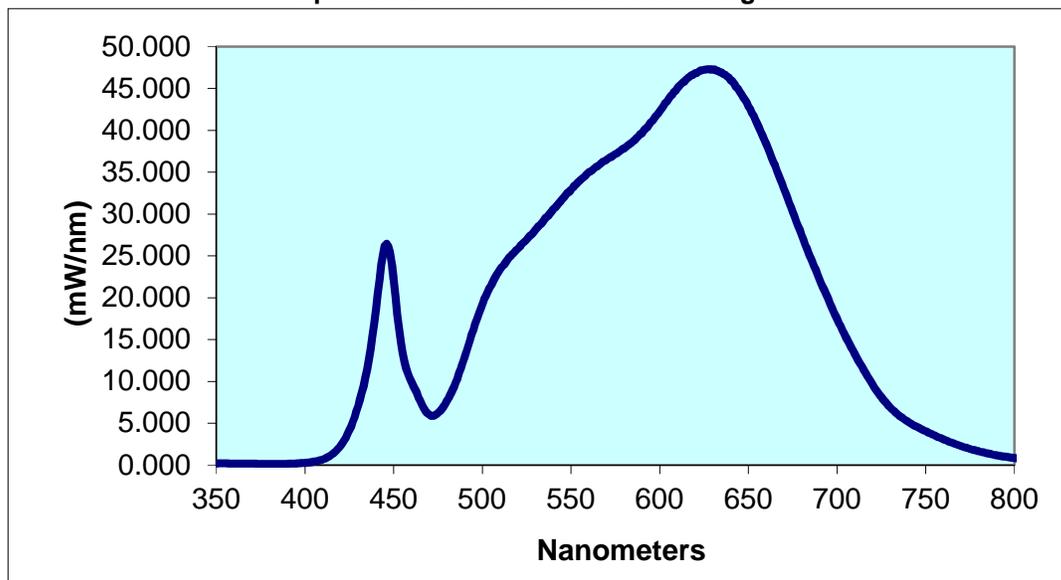
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
0817201702341-047	Up	120.0	294.8	34.97	0.988	6.49	2656	75.95

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')
3064	91.4	66.1	0.003	0.436	0.410	0.247	0.524

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm								
350	0.195	440	18.71	530	28.11	620	46.83	710	13.29
355	0.216	445	26.24	535	29.32	625	47.23	715	11.41
360	0.198	450	22.20	540	30.56	630	47.23	720	9.655
365	0.190	455	13.44	545	31.72	635	46.90	725	8.119
370	0.167	460	9.939	550	32.90	640	45.99	730	6.885
375	0.156	465	7.654	555	33.98	645	44.65	735	5.937
380	0.151	470	6.020	560	34.99	650	42.87	740	5.186
385	0.154	475	6.233	565	35.71	655	40.78	745	4.576
390	0.162	480	7.656	570	36.48	660	38.38	750	4.050
395	0.199	485	9.860	575	37.18	665	35.80	755	3.555
400	0.270	490	12.89	580	37.83	670	33.05	760	3.074
405	0.409	495	16.17	585	38.71	675	30.30	765	2.662
410	0.689	500	19.23	590	39.64	680	27.53	770	2.274
415	1.249	505	21.50	595	40.97	685	24.83	775	1.931
420	2.283	510	23.38	600	42.29	690	22.25	780	1.653
425	4.139	515	24.77	605	43.69	695	19.87		
430	7.095	520	25.83	610	45.05	700	17.44		
435	11.44	525	26.95	615	46.08	705	15.31		

**Spectral Data Over Visible Wavelengths**



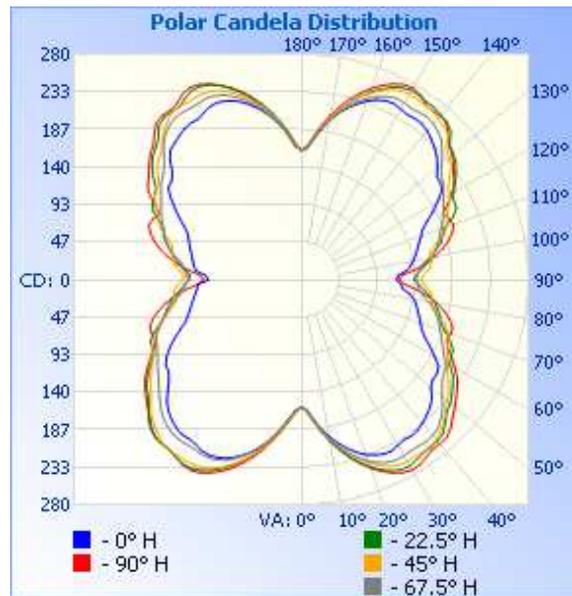
RESULTS OF TEST (cont'd)

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)
0817201702341-047	Up	120.1	293.8	35.02	0.992	2574	73.50

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	158	158	158	158	158
5	174	177	175	176	176
10	198	204	201	201	203
15	217	228	224	223	228
20	232	248	242	240	249
25	240	262	256	251	265
30	238	268	261	253	274
35	237	263	262	253	269
40	233	262	259	252	266
45	225	251	249	244	261
50	209	240	235	226	247
55	204	228	222	213	235
60	190	212	208	205	219
65	168	207	199	192	200
70	156	189	193	182	196
75	149	178	174	173	189
80	141	167	163	160	170
85	125	153	159	146	143
90	118	139	148	142	120
95	131	149	158	146	141
100	141	164	163	162	168
105	148	179	172	175	188
110	157	188	190	184	200
115	171	211	199	193	193
120	194	214	210	202	218
125	210	233	224	213	229
130	219	244	237	226	243
135	232	261	255	245	256
140	241	267	262	254	266
145	244	270	265	254	267
150	245	272	267	254	275
155	246	264	260	251	268
160	236	248	246	240	253
165	221	227	227	223	233
170	201	202	204	201	208
175	176	176	176	177	179
180	161	161	161	161	161

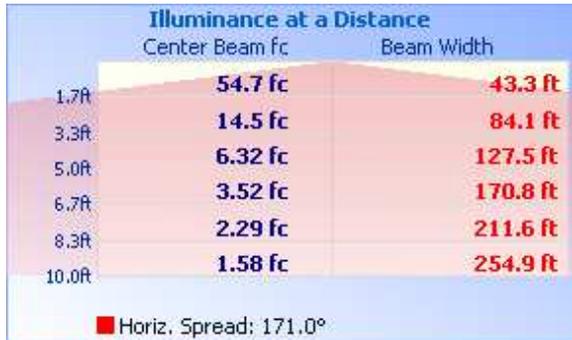


**RESULTS OF TEST** (cont'd)

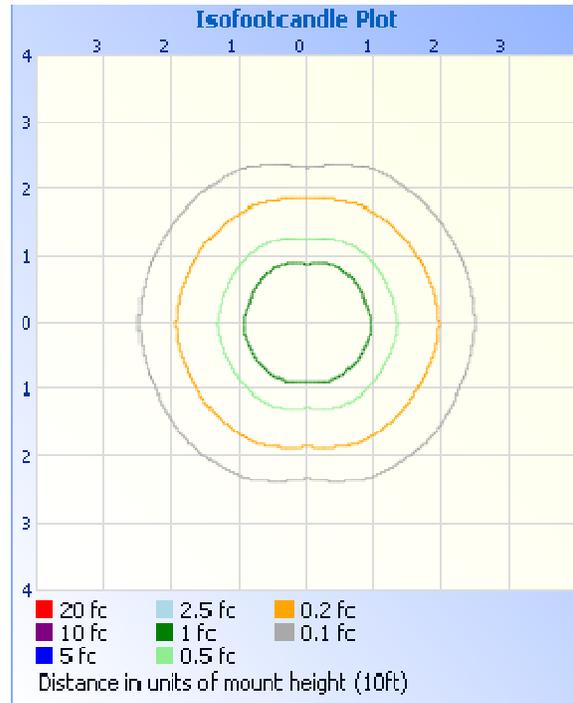
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



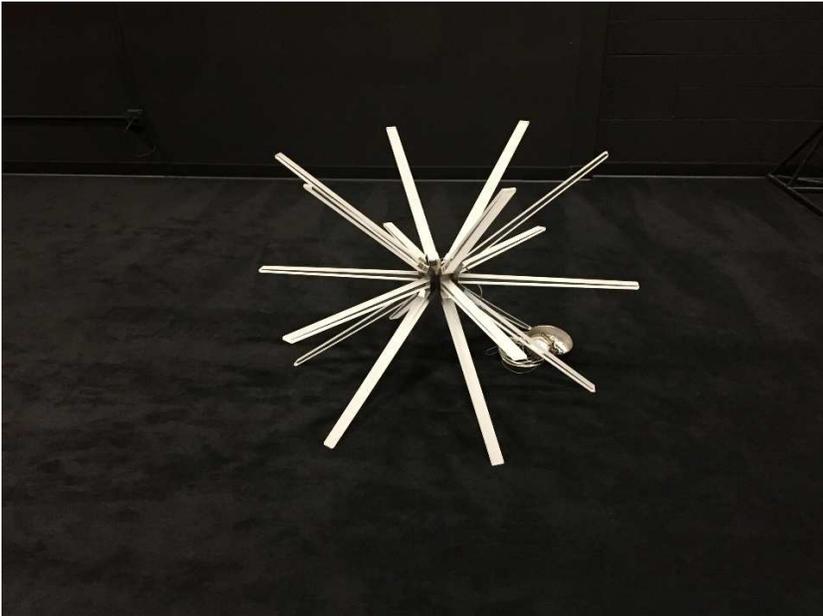
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	199.3	7.7
0-40	361.9	14.1
0-60	752.3	29.2
60-90	538.6	20.9
0-90	1291	50.1
90-180	1284.0	49.9
0-180	2574	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	17.6	0.7
10-20	63.8	2.5
20-30	117.8	4.6
30-40	162.7	6.3
40-50	191.7	7.4
50-60	198.7	7.7
60-70	194.8	7.6
70-80	182.5	7.1
80-90	161.3	6.3
90-100	159.2	6.2
100-110	180.6	7.0
110-120	192.4	7.5
120-130	196.2	7.6
130-140	190.1	7.4
140-150	163.1	6.3
150-160	119.0	4.6
160-170	65.0	2.5
170-180	18.0	0.7

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:



Hector Huitron  
Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division