



# REPORT

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

Project No. G102748333

Date: April 5, 2017

REPORT NO. 102748333CHI-032

TEST OF ONE LED CORN LIGHT

MODEL NO. CL-CW60-E39  
LED MODEL NO. HONGLI HL-A-2835HW-S1-08-HR3  
DRIVER MODEL NO. SNC 60W

RENDERED TO

SUPER BRIGHT LEADS, INC.  
4400 EARTH CITY EXPRESSWAY  
SAINT LOUIS, MO 63045

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

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00723537-3.

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 CL-CW60-E39. The sample was received by Intertek on March 24, 2017, in undamaged condition and one sample was tested as received. The sample designation was 03242017034051-032.

DATES OF TESTS: April 3, 2017 through April 5, 2017.

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SUMMARY

Model No.:	CL-CW60-E39
Description:	LED Corn Light

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	7624	7346
Total Power (W)	57.98	58.10
Luminaire Efficacy (LPW)	131.5	126.4

Criteria	Result
Power Factor at 120Vac	0.990
Power Factor at 277Vac	0.885
Current ATHD % at 120Vac	6.00
Current ATHD % at 277Vac	15.70
Correlated Color Temperature (CCT - K)	5300
Color Rendering Index (CRI - Ra)	84.3
Color Rendering Index (CRI - R9)	17.0
DUV	0.002
Chromaticity Coordinate (x)	0.337
Chromaticity Coordinate (y)	0.351
Chromaticity Coordinate (u')	0.206
Chromaticity Coordinate (v')	0.483

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	04/05/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	04/05/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	04/05/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	04/05/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	04/05/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	04/03/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	04/03/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	04/03/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	04/03/17
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	04/03/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	04/03/17
fluke J/K Temperature Meter	52	146004	01/10/17	01/10/18	04/03/17



## 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 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**

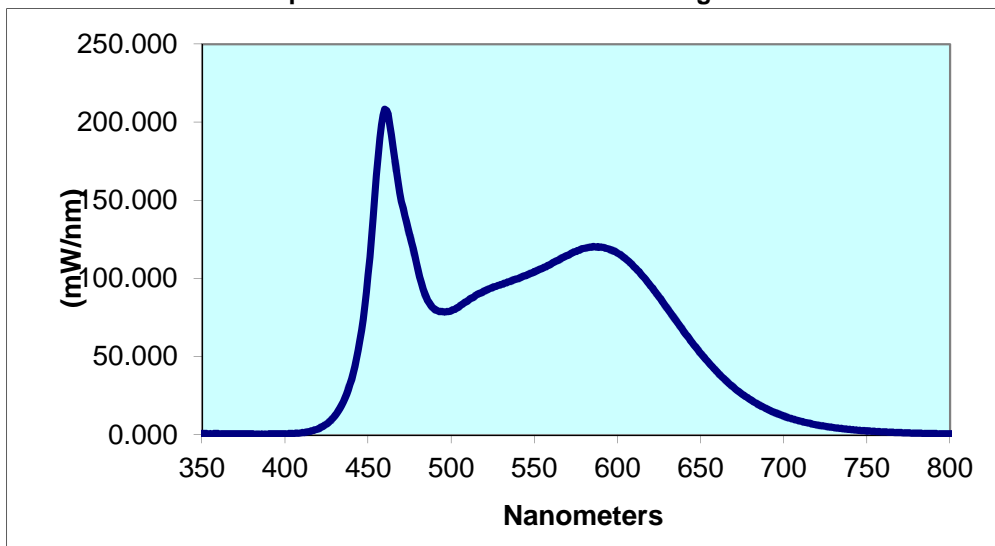
**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method**

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)
03242017034051-032	Up	120.0 277.0	487.9 235.8	57.98 57.80	0.990 0.885	6.00 15.70	7624	131.5
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')	
5300	84.3	17.0	0.002	0.337	0.351	0.206	0.483	

**Spectral Distribution over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.788	440	35.75	530	96.27	620	95.17	710	8.808
355	0.814	445	60.09	535	98.20	625	88.30	715	7.525
360	0.766	450	102.4	540	99.98	630	80.86	720	6.437
365	0.726	455	166.0	545	102.1	635	73.46	725	5.498
370	0.646	460	208.2	550	104.4	640	66.00	730	4.701
375	0.623	465	184.2	555	106.7	645	58.94	735	4.028
380	0.557	470	149.4	560	109.4	650	52.20	740	3.454
385	0.530	475	128.1	565	112.2	655	46.03	745	2.943
390	0.548	480	105.7	570	115.0	660	40.28	750	2.537
395	0.599	485	88.00	575	117.4	665	34.96	755	2.189
400	0.687	490	80.40	580	119.4	670	30.26	760	1.892
405	0.941	495	78.82	585	120.5	675	26.13	765	1.638
410	1.406	500	79.47	590	120.3	680	22.51	770	1.408
415	2.323	505	82.41	595	118.8	685	19.32	775	1.220
420	3.983	510	85.86	600	116.3	690	16.57	780	1.052
425	7.053	515	89.44	605	112.7	695	14.18		
430	12.27	520	92.14	610	107.6	700	12.12		
435	21.08	525	94.39	615	101.8	705	10.33		

**Spectral Data Over Visible Wavelengths**



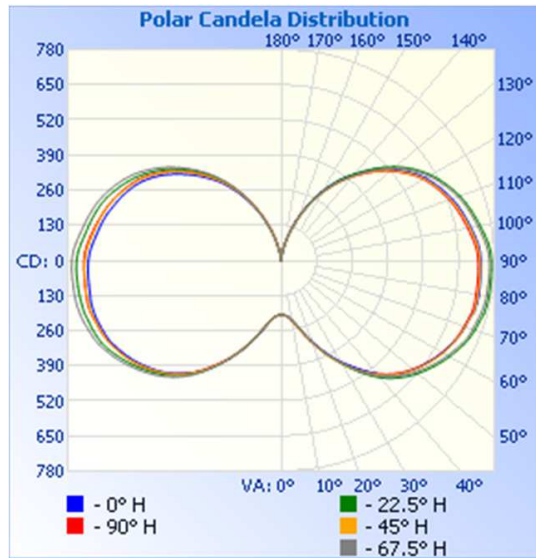
**RESULTS OF TEST (cont'd)**

**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)
03242017034051-032	Up	120.1	491.5	58.10	0.984	7346	126.4

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

Angle	0	22.5	45	67.5	90
0	201	201	201	201	201
5	205	206	206	206	206
10	223	224	225	224	226
15	261	262	265	263	265
20	314	316	319	315	318
25	372	378	380	377	378
30	432	441	439	436	435
35	488	506	497	499	493
40	548	567	551	560	547
45	598	614	597	606	592
50	631	652	631	643	627
55	657	683	660	675	656
60	682	712	685	704	680
65	702	737	703	730	700
70	717	754	716	746	712
75	731	768	731	757	724
80	735	772	731	763	724
85	732	771	730	763	723
90	731	770	728	762	721
95	723	760	718	750	711
100	705	740	700	730	693
105	687	719	682	712	676
110	666	696	660	689	655
115	640	667	633	660	630
120	610	633	605	626	602
125	570	590	566	583	562
130	525	540	519	532	516
135	476	480	464	470	462
140	415	418	405	408	405
145	358	357	347	344	346
150	292	288	282	281	282
155	221	215	215	210	214
160	154	148	147	143	147
165	92	88	86	84	87
170	43	39	40	38	39
175	8	9	13	12	11

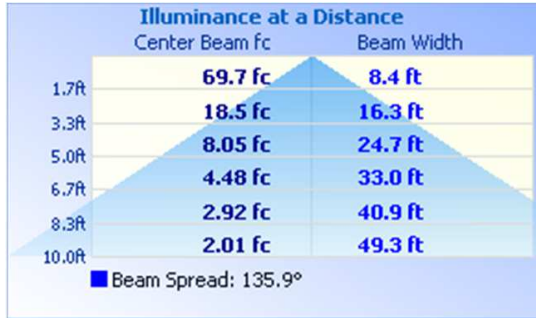


RESULTS OF TEST (cont'd)

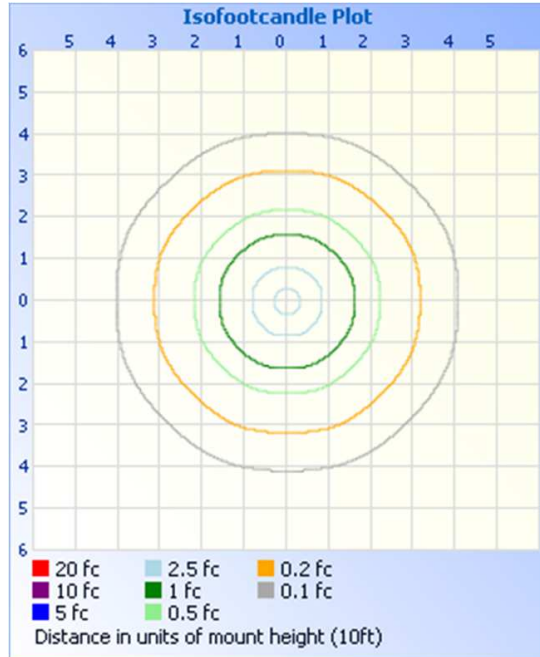
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



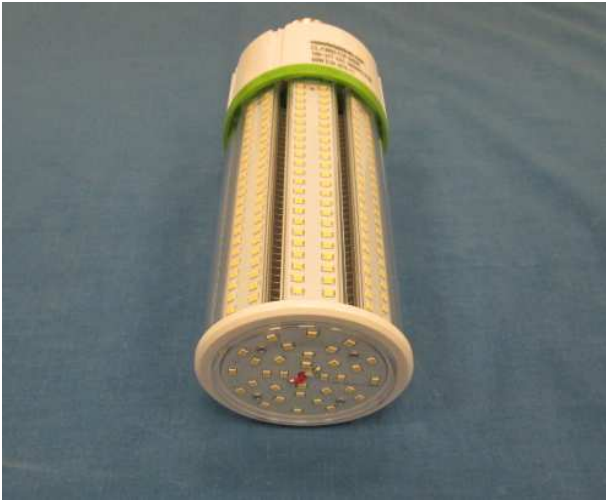
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	274.3	3.7
0-40	588.6	8.0
0-60	1650	22.5
60-90	2302	31.3
0-90	3952	53.8
90-180	3394.0	46.2
0-180	7346	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	20.3	0.3
10-20	77.3	1.1
20-30	176.7	2.4
30-40	314.2	4.3
40-50	463.9	6.3
50-60	597.9	8.1
60-70	709.2	9.7
70-80	781.9	10.6
80-90	810.5	11.0
90-100	795.1	10.8
100-110	733.6	10.0
110-120	639.8	8.7
120-130	513.0	7.0
130-140	363.6	4.9
140-150	220.4	3.0
150-160	100.6	1.4
160-170	26.5	0.4
170-180	1.8	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:



Hector Huitron  
Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division