REPORT

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

Project No. G102748333 Date: April 5, 2017

REPORT NO. 102748333CHI-034

TEST OF ONE LED CORN LIGHT

MODEL NO. CL-CW120-E39
LED MODEL NO. HONGLI HL-A-2835HW-S1-08-HR3
DRIVER MODEL NO. SNC 120W

RENDERED TO

SUPER BRIGHT LEDS, 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-CW120-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 03242017034051-034.

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

SUMMARY

Model No.:	CL-CW120-E39
Description:	LED Corn Light

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	16403	15763
Total Power (W)	119.7	119.9
Luminaire Efficacy (LPW)	137.0	131.5

Criteria	Result
Power Factor at 120Vac	0.999
Power Factor at 277Vac	0.930
Current ATHD % at 120Vac	3.37
Current ATHD % at 277Vac	17.85
Correlated Color Temperature (CCT - K)	5135
Color Rendering Index (CRI - Ra)	82.5
Color Rendering Index (CRI - R9)	7.7
DUV	0.001
Chromaticity Coordinate (x)	0.342
Chromaticity Coordinate (y)	0.352
Chromaticity Coordinate (u')	0.209
Chromaticity Coordinate (v')	0.484

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

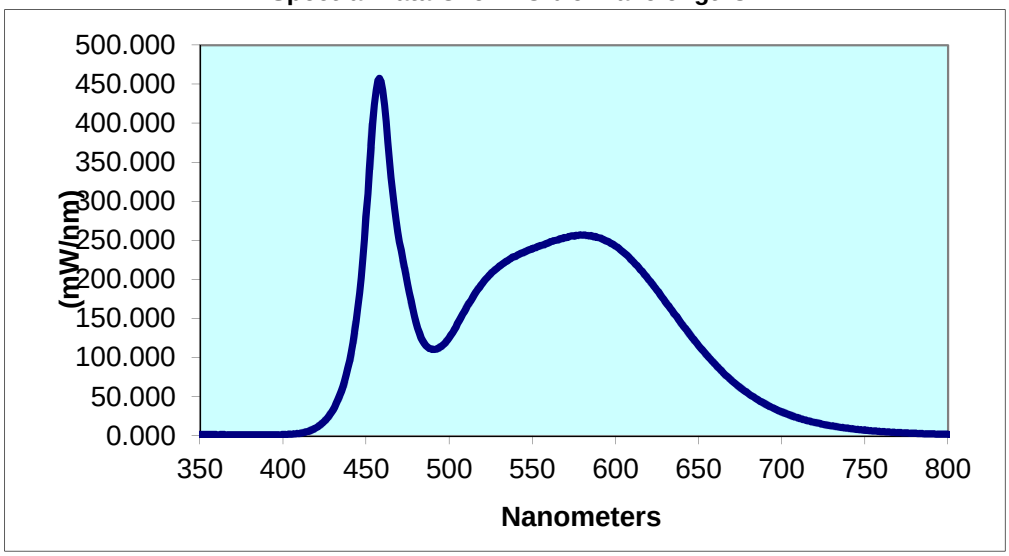
Intertek Sample No.	Base Orientation	Input Voltage {VAC}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
03242017034051-034	Up	120.0	998.6	119.7	0.999	3.37	16403	137.0
		277.0	460.0	118.4	0.930	17.85		

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')
5135	82.5	7.7	0.001	0.342	0.352	0.209	0.484

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	1.510	440	96.33	530	217.0	620	199.8	710	23.03
355	1.559	445	163.5	535	224.3	625	186.2	715	19.92
360	1.588	450	280.3	540	230.0	630	171.8	720	17.25
365	1.526	455	424.1	545	235.3	635	157.5	725	14.97
370	1.344	460	442.3	550	239.6	640	142.9	730	12.95
375	1.314	465	330.5	555	243.7	645	128.9	735	11.18
380	1.204	470	248.4	560	247.5	650	115.6	740	9.696
385	1.156	475	193.9	565	250.7	655	103.3	745	8.403
390	1.179	480	145.6	570	253.7	660	91.61	750	7.326
395	1.313	485	118.2	575	255.8	665	80.54	755	6.374
400	1.588	490	110.8	580	256.9	670	70.62	760	5.565
405	2.234	495	114.3	585	256.5	675	61.89	765	4.858
410	3.422	500	125.8	590	253.6	680	54.06	770	4.203
415	5.935	505	143.6	595	249.1	685	47.18	775	3.690
420	10.61	510	162.6	600	242.8	690	40.94	780	3.219
425	19.12	515	180.7	605	234.8	695	35.49		
430	33.41	520	195.6	610	224.4	700	30.80		
435	57.08	525	207.6	615	212.8	705	26.59		

Spectral Data Over Visible Wavelengths



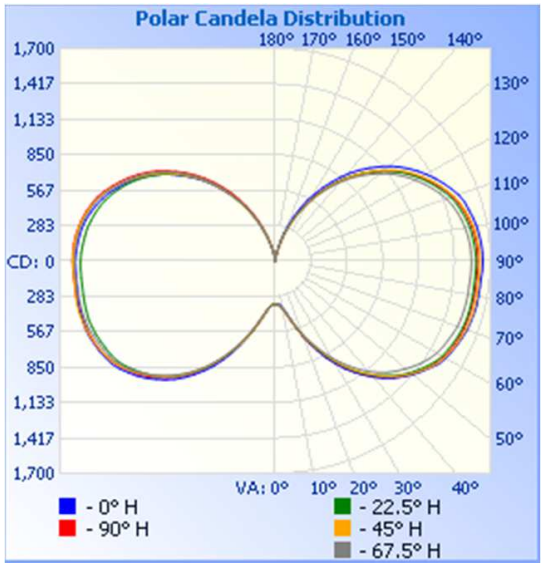
RESULTS OF TEST (cont'd)

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)
03242017034051-034	Up	120.0	1.000	119.9	0.999	15763	131.5

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	344	344	344	344	344
5	349	354	356	357	358
10	392	401	404	405	408
15	494	498	500	498	508
20	636	633	625	619	642
25	794	773	764	752	785
30	948	916	915	893	936
35	1084	1064	1060	1030	1081
40	1210	1190	1188	1153	1207
45	1322	1300	1306	1259	1319
50	1413	1390	1404	1343	1409
55	1491	1465	1488	1418	1482
60	1556	1523	1547	1474	1535
65	1587	1552	1580	1505	1567
70	1613	1574	1605	1533	1586
75	1626	1584	1618	1543	1595
80	1629	1585	1620	1546	1597
85	1632	1585	1617	1547	1597
90	1641	1587	1620	1551	1603
95	1634	1578	1610	1545	1597
100	1615	1561	1592	1524	1578
105	1584	1527	1558	1492	1545
110	1544	1480	1508	1445	1498
115	1469	1408	1434	1372	1421
120	1384	1326	1348	1291	1336
125	1289	1232	1250	1199	1238
130	1182	1120	1136	1090	1122
135	1053	997	1005	968	999
140	920	865	860	839	864
145	769	716	708	699	722
150	617	565	552	555	574
155	467	417	403	410	422
160	307	276	265	269	274
165	171	153	146	149	149
170	68	60	59	59	60
175	13	14	18	18	18

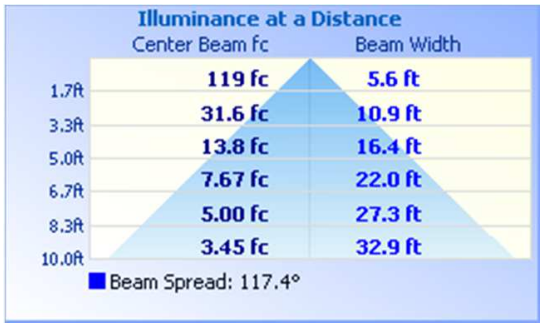


RESULTS OF TEST (cont'd)

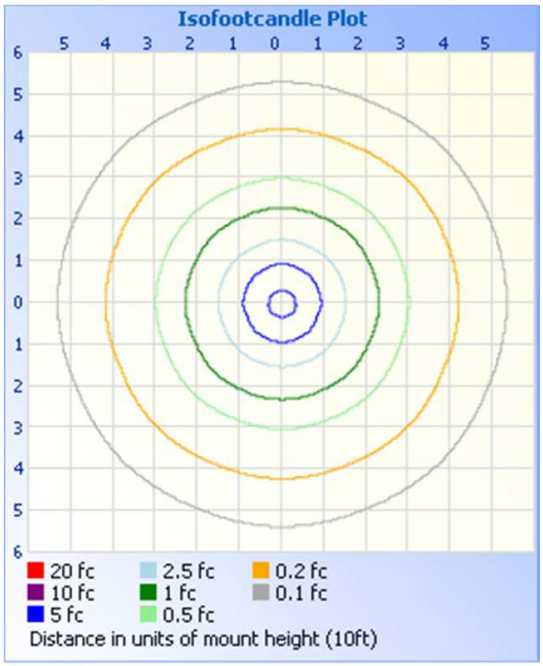
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	549.5	3.5
0-40	1222	7.7
0-60	3545	22.5
60-90	4944	31.4
0-90	8489	53.9
90-180	7274.0	46.1
0-180	15763	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	35.7	0.2
10-20	148.8	0.9
20-30	365.0	2.3
30-40	672.0	4.3
40-50	1008	6.4
50-60	1316	8.3
60-70	1540	9.8
70-80	1675	10.6
80-90	1729	11.0
90-100	1721	10.9
100-110	1612	10.2
110-120	1393	8.8
120-130	1097	7.0
130-140	764.6	4.9
140-150	445.5	2.8
150-160	192.6	1.2
160-170	45.7	0.3
170-180	2.8	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
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Lighting Division

Report Reviewed By:

Timothy Quigley
Engineer
Lighting Division

Attachment: None