REPORT

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

Project No. G102748333 Date: December 9, 2016

REPORT NO. 102748333CHI-010

TEST OF ONE LED RETROFIT KIT

MODEL NO. LRK-50K65W
LED MODEL NO. CREE XTEAWT-00-0000-00000LBE7
DRIVER MODEL NO. MEANWELL HLG-80H-24A

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.

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 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 LRK-50K65W. The sample was received by Intertek on December 1, 2016, in undamaged condition and one sample was tested as received. The sample designation was AH12012016042336.

DATES OF TESTS: December 7, 2016 through December 9, 2016.

SUMMARY

Model No.:	LRK-50K65W
Description:	LED Retrofit Kit

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	7079	7037
Total Power (W)	63.59	64.27
Luminaire Efficacy (LPW)	111.3	109.5

Criteria	Result
Power Factor at 120Vac	0.992
Power Factor at 277Vac	0.944
Current ATHD % at 120Vac	8.71
Current ATHD % at 277Vac	14.33
Correlated Color Temperature (CCT - K)	5137
Color Rendering Index (CRI - Ra)	71.1
Color Rendering Index (CRI - R9)	-18.1
DUV	0.002
Chromaticity Coordinate (x)	0.341
Chromaticity Coordinate (y)	0.346
Chromaticity Coordinate (u')	0.211
Chromaticity Coordinate (v')	0.481

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	12/09/16
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	12/09/16
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	12/09/16
Newport Thermohygrometer	iServer	146956	01/04/16	01/04/17	12/09/16
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	12/09/16
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	12/07/16
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	12/07/16
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	12/07/16
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	12/07/16
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	12/07/16
Yokogawa Power Meter	WT1600	146768	01/14/16	01/14/17	12/07/16
Omega Temperature Meter	MDSi8	146139	03/21/16	03/21/17	12/07/16

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

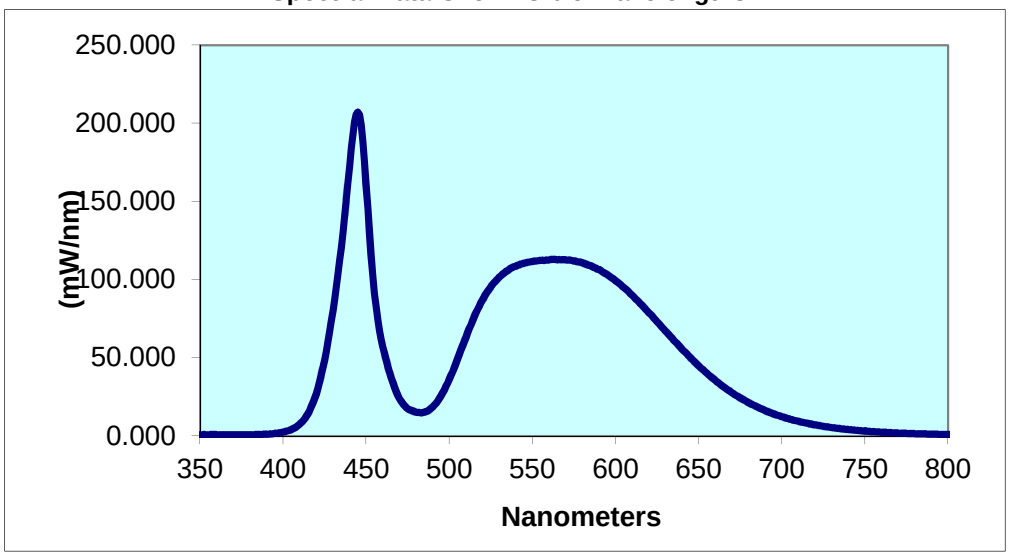
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
AH12012016042336	Horizontal	120.0	534.0	63.59	0.992	8.71	7079	111.3
		277.0	243.8	63.78	0.944	14.33		

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')
5137	71.1	-18.1	0.002	0.341	0.346	0.211	0.481

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.691	440	172.9	530	101.6	620	78.94	710	9.364
355	0.744	445	207.1	535	105.8	625	73.11	715	8.149
360	0.749	450	161.5	540	108.6	630	67.21	720	7.094
365	0.729	455	91.43	545	110.6	635	61.36	725	6.168
370	0.675	460	57.14	550	111.7	640	55.61	730	5.373
375	0.669	465	37.47	555	112.3	645	50.16	735	4.671
380	0.718	470	23.98	560	112.7	650	44.88	740	4.065
385	0.804	475	17.53	565	112.7	655	40.08	745	3.538
390	1.057	480	15.26	570	112.6	660	35.60	750	3.089
395	1.570	485	15.22	575	111.9	665	31.42	755	2.707
400	2.448	490	18.52	580	110.8	670	27.67	760	2.370
405	4.175	495	25.67	585	108.9	675	24.34	765	2.081
410	7.553	500	36.28	590	106.5	680	21.36	770	1.819
415	14.31	505	49.31	595	103.1	685	18.68	775	1.590
420	27.02	510	62.97	600	99.36	690	16.31	780	1.397
425	48.86	515	76.09	605	95.05	695	14.21		
430	80.10	520	87.09	610	90.03	700	12.37		
435	120.7	525	95.51	615	84.58	705	10.76		

Spectral Data Over Visible Wavelengths



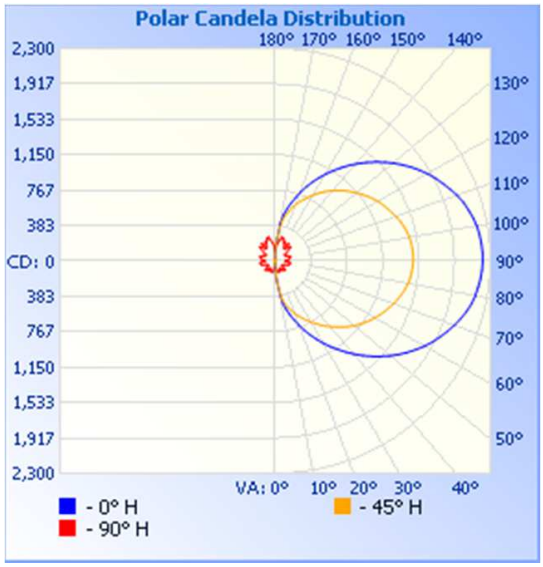
RESULTS OF TEST (cont'd)

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)
AH12012016042336	Horizontal	120.0	539.6	64.27	0.993	7037	109.5

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	25	45	65	90
0	77	77	77	77	77
5	224	227	230	232	234
10	467	471	468	465	460
15	601	602	599	593	586
20	739	740	733	723	709
25	881	880	869	852	831
30	1026	1025	1012	990	961
35	1168	1169	1151	1124	1090
40	1315	1309	1288	1258	1217
45	1458	1451	1427	1393	1345
50	1595	1584	1559	1523	1471
55	1725	1711	1686	1644	1586
60	1841	1825	1797	1753	1691
65	1944	1927	1898	1849	1783
70	2036	2017	1987	1937	1869
75	2116	2092	2061	2010	1940
80	2171	2146	2116	2065	1993
85	2203	2177	2147	2095	2024
90	2218	2193	2163	2112	2040
95	2212	2189	2159	2109	2037
100	2188	2164	2132	2083	2012
105	2140	2113	2084	2034	1965
110	2073	2044	2015	1967	1901
115	1980	1956	1929	1883	1820
120	1886	1862	1837	1794	1736
125	1774	1748	1726	1689	1637
130	1649	1628	1607	1573	1525
135	1518	1496	1479	1448	1404
140	1379	1358	1345	1320	1279
145	1237	1216	1203	1182	1149
150	1092	1072	1063	1047	1021
155	947	929	923	913	894
160	796	781	779	775	763
165	649	639	639	636	630
170	508	502	501	501	498
175	243	241	241	241	243
180	106	106	106	106	106

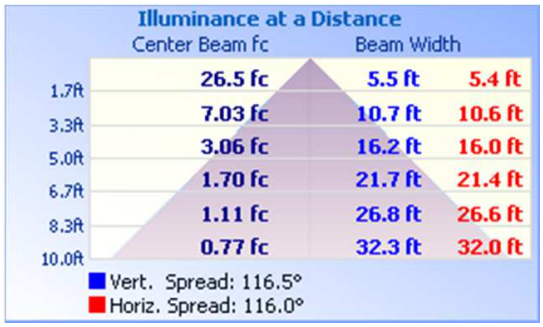


RESULTS OF TEST (cont'd)

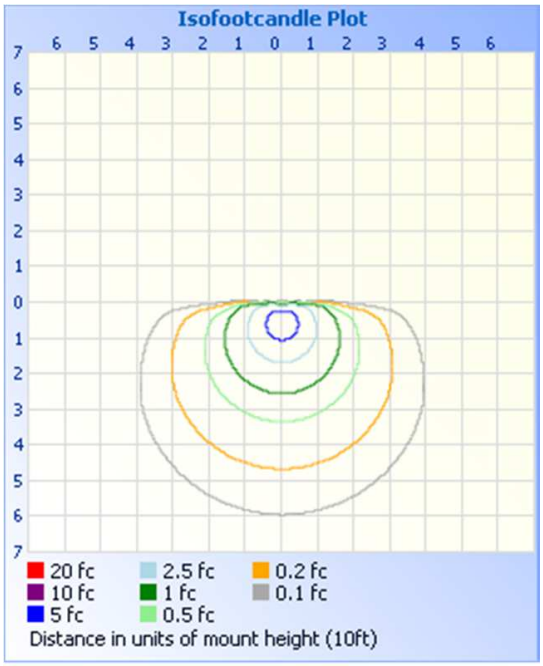
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

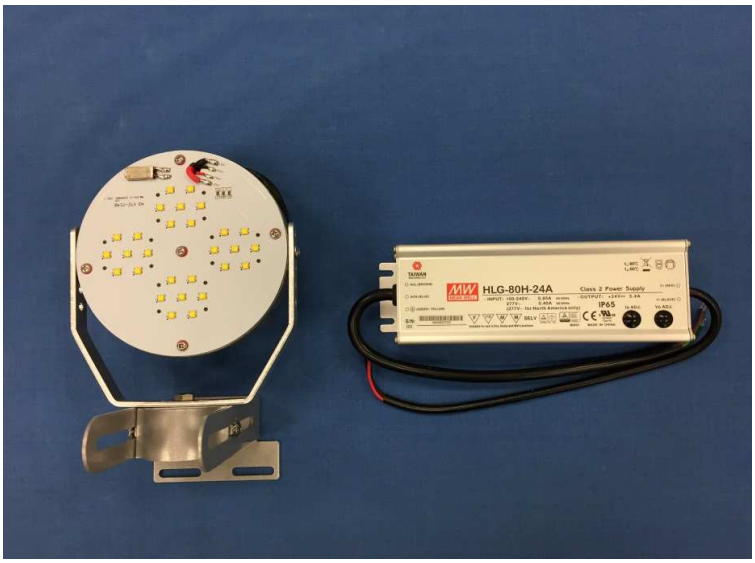
Zone	Lumens	% Luminaire
0-30	236.6	3.4
0-40	492.8	7.0
0-60	1368	19.4
60-90	2074	29.5
0-90	3442	48.9
90-180	3595.0	51.1
0-180	7037	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	13.2	0.2
10-20	71.0	1.0
20-30	152.3	2.2
30-40	256.2	3.6
40-50	377.7	5.4
50-60	497.7	7.1
60-70	609.8	8.7
70-80	706.0	10.0
80-90	757.8	10.8
90-100	763.9	10.9
100-110	721.9	10.3
110-120	632.1	9.0
120-130	522.3	7.4
130-140	404.5	5.7
140-150	280.4	4.0
150-160	170.4	2.4
160-170	82.5	1.2
170-180	17.4	0.2

	Efficiency (%)	Lumens	Horizontal Spread (°)	Vertical Spread (°)
Field 10%	98.6	6942	175.4	170.9
Beam 50%	66.7	4693	116	116.5
Total	100.0	7035		

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:

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Lighting Division

Report Reviewed By:

Timothy Quigley
Engineer
Lighting Division

Attachment: None