

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

Project No. G102748333

Date: March 16, 2017

REPORT NO. 102748333CHI-027

TEST OF ONE LED FLOOD LIGHT FIXTURE

MODEL NO. FLC4-NW200 LED MODEL NO. PHILIPS LUMILEDS, LUXEON 3030 2D DRIVER MODEL NO. MEANWELL, HLG-240H-42A

RENDERED TO

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

<u>TEST</u> :	Electrical and Photometric tests as required to the IESNA test standard.	
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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

<u>DESCRIPTION OF SAMPLE</u>: The client submitted one Production sample of model number FLC4-NW200. The sample was received by Intertek on March 13, 2017, in undamaged condition and one sample was tested as received. The sample designation was AH03132017015130-027.

DATES OF TESTS: March 16, 2017

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<u>SUMMARY</u>

Model No.: FLC4-NW200	
Description: LED Flood Light Fixture	

	Re	esult	
Criteria	Sphere	Goniometer	
Total Lumen Output (Lumens)	24794	24521	
Total Power (W)	199.0	199.3	
Luminaire Efficacy (LPW)	124.6	123.0	
Criteria	Re	esult	
Power Factor at 120Vac	0.	994	
Power Factor at 277Vac	0.917		
Current ATHD % at 120Vac	6.02		
Current ATHD % at 277Vac	11	1.00	
Correlated Color Temperature (CCT - K)	40	047	
Color Rendering Index (CRI - Ra)	7	2.6	
Color Rendering Index (CRI - R9)	-2	2.3	
DUV	0.	003	
Chromaticity Coordinate (x)	0.	377	
Chromaticity Coordinate (y)	0.	369	
Chromaticity Coordinate (u)	0.	226	
Chromaticity Coordinate (v')	0.	498	

EQUIPMENT LIST

	Model	Control	Last Date	Calibration	Date
Equipment Used	Number	Number	Calibrated	Due Date	Used
Yokogawa Power Meter	WT210	146919	07/11/16	07/11/17	03/16/17
Omega Newport Thermometer	DPI8-C24	146920	10/07/16	10/07/17	03/16/17
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	03/16/17
Newport Thermohygrometer	iServer	146956	01/06/17	01/06/18	03/16/17
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU	03/16/17
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	03/16/17
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	03/16/17
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	03/16/17
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	03/16/17
Newport Humidity Recorder	iTHX-SD	146382	06/27/16	06/27/17	03/16/17
Yokogawa Power Meter	WT1600	146768	01/10/17	01/10/18	03/16/17
Fluke J/KTemperature Meter	52	146004	01/10/17	01/10/18	03/16/17



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.

BUG Ratings (Backlight, Uplight, Glare) - for Outdoor Fixtures Only

Zonal Lumens were calculated and grouped using the formula in IESNA TM-15-11 for each zone as defined in

the BUG addendum. The maximum lumen rating in each zone was compared against the BUG zonal requirements of Energy Star. Photometric Toolbox software was used to calculate results.



RESULTS OF TEST

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

Intertek Sample No.		Base Orientatio	v n -	Input /oltage {VAC}	Input Currer (mA)	Input nt Power (Watts)	Input Power Factor	Current ATHD (%	Luminous Flux) (Lumens)	Lumen Efficacy (LPW)
\H03132017015130	-02	Horizonta	ıl	120.0	1668	199.0	0.994	6.02	24794	124.6
				277.0	760.3	193.0	0.917	11.00		
				CII	E 31'	CIE 31'	CIE	76'	CIE 76'	
Correlated Color	CRI	CRI		Chro	maticity	Chromaticity	Chrom	naticity C	Chromaticity	
Temperature (K)	-Ra	-R9	DUV	Coord	inate (x)	Coordinate (y)	Coordir	nate (u') Co	oordinate (v')	
4047	72.6	-22.3	0.003	0.	377	0.369	0.2	226	0.498	

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	1.874	440	258.1	530	251.2	620	275.3	710	31.56
355	1.814	445	359.2	535	268.1	625	255.4	715	27.36
360	1.843	450	418.5	540	282.4	630	234.5	720	23.77
365	1.812	455	340.6	545	296.5	635	214.0	725	20.64
370	1.637	460	221.3	550	309.4	640	193.5	730	17.76
375	1.588	465	150.8	555	321.5	645	174.1	735	15.38
380	1.633	470	104.7	560	333.0	650	155.9	740	13.31
385	1.694	475	71.85	565	343.2	655	139.0	745	11.54
390	2.081	480	56.22	570	352.1	660	123.3	750	9.985
395	2.866	485	51.92	575	358.7	665	108.6	755	8.711
400	4.193	490	55.49	580	362.7	670	95.53	760	7.604
405	6.869	495	69.06	585	363.3	675	83.71	765	6.577
410	12.25	500	91.50	590	359.7	680	73.41	770	5.712
415	22.83	505	120.0	595	352.2	685	64.07	775	4.968
420	41.50	510	150.4	600	342.0	690	55.71	780	4.306
425	71.97	515	180.9	605	329.4	695	48.43		
430	116.2	520	208.1	610	313.1	700	42.12		
435	177.3	525	231.5	615	295.0	705	36.45		

Spectral Data Over Visible Wavelengths





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RESULTS OF TEST (cont'd)

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

	5	Input	Input	Input	Input	Absolute	Lumen
Intertek	Base	Voltage	Current	Power	Power	Luminous Flux	Efficacy
Sample No.	Orientation	{VAC}	(mA)	(Watts)	Factor	(Lumens)	(LPW)
AH03132017015130-027	Horizontal	120.0	1671	199.3	0.994	24521	123.0

Intensity (Candlepower) Summary at 25°C - Candelas

0	25	45	65	90
9	9	9	9	0
10	12	13	14	0
277	157	34	15	0
947	658	285	18	0
1740	1417	694	105	0
2703	2252	1303	265	0
3749	3222	1956	502	0
4553	3939	2486	768	0
5320	4599	3220	1074	0
6098	5276	3716	1421	0
6734	5900	4216	1721	0
7319	6423	4693	2054	0
7682	6817	5074	2282	0
7958	7095	5370	2501	0
8276	7349	5581	2683	0
8533	7583	5773	2819	0
8771	7813	5923	2904	0
8906	7967	6058	2966	0
8949	8019	6105	2987	0
8947	8000	6100	3010	0
8880	7921	6036	2988	0
8684	7729	5895	2921	0
8422	7483	5734	2832	0
8084	7235	5545	2695	0
7799	6988	5309	2498	0
7452	6640	4962	2287	0
6906	6148	4520	2044	0
6285	5567	4024	1666	0
5544	4894	3532	1382	0
4735	4200	2987	1049	0
3916	3473	2230	740	0
2843	2478	1536	440	0
1855	1588	954	229	0
978	806	448	79	0
296	240	111	27	0
18	22	24	24	0
18	18	18	18	0
	0 9 10 277 947 1740 2703 3749 4553 5320 6098 6734 7319 7682 7958 8276 8533 8771 8906 8949 8947 8880 8949 8947 8880 8949 8947 8880 8949 8947 8880 8949 8947 8880 8084 7799 7452 6906 6285 5544 4735 3916 2843 1855 978 296 18 18	0 25 9 9 10 12 277 157 947 658 1740 1417 2703 2252 3749 3222 4553 3939 5320 4599 6098 5276 6734 5900 7319 6423 7682 6817 7958 7095 8276 7349 8533 7583 8771 7813 8906 7967 8949 8019 8947 8000 8880 7921 8684 7229 8422 7483 8084 7235 7799 6988 7452 6640 6906 6148 6285 5567 5544 4894 4735 4200 3916 3473 2843 2478	0 25 45 9 9 9 10 12 13 277 157 34 947 658 285 1740 1417 694 2703 2252 1303 3749 3222 1956 4553 3939 2486 5320 4599 3220 6098 5276 3716 6734 5900 4216 7319 6423 4693 7682 6817 5074 7958 7095 5370 8276 7349 5581 8533 7583 5773 8771 7813 5923 8906 7967 6058 8949 8019 6105 8947 8000 6100 8880 7921 6036 8684 7729 5895 8422 7483 5734 8084	0 25 45 65 9 9 9 9 9 10 12 13 14 277 157 34 15 947 658 285 18 1740 1417 694 105 2703 2252 1303 265 3749 3222 1956 502 4553 3939 2486 768 5320 4599 3220 1074 6098 5276 3716 1421 6734 5900 4216 1721 7319 6423 4693 2054 7682 6817 5074 2282 7958 7095 5370 2501 8276 7349 5581 2683 8533 7583 5773 2819 8771 7813 5923 2904 8906 7967 6058 2966 8949





RESULTS OF TEST (cont'd)

Illumination Plots



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	370.8	1.5
0-40	1118	4.6
0-60	4239	17.3
60-90	7787	31.8
0-90	12026	49.0
90-180	12495.0	51.0
0-180	24521	100.0



Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1.7	0.0
10-20	60.5	0.2
20-30	308.6	1.3
30-40	747.3	3.0
40-50	1282	5.2
50-60	1839	7.5
60-70	2295	9.4
70-80	2639	10.8
80-90	2853	11.6
90-100	2873	11.7
100-110	2699	11.0
110-120	2368	9.7
120-130	1928	7.9
130-140	1375	5.6
140-150	820.2	3.3
150-160	354.3	1.4
160-170	76.1	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:

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Hector Huitron Associate Engineer Lighting Division

Attachment: None

Report Reviewed By:

Tim Duigley

Timothy Quigley Engineer Lighting Division