

Test Report

Report Number: L16070

Date: Sep 8, 2016

Issued by:

Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one LED Dual Vigilant Floodlight
Unit manufacturer: Dialight Corporation
Unit model number: FLxB66xC2NP

Issued to:

Dialight Corporation
1501 Route 34 South, Farmingdale, NJ 07727

Tests performed: Photometric characterization and temperature measurement per the described standards.

Dates of test: August 29, 2016 through September 1, 2016

Standards used: All tests are performed in accordance with procedures and guidelines prescribed by the American National Standards Institute (ANSI) or Illuminating Engineering Society of North America (IES):

- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

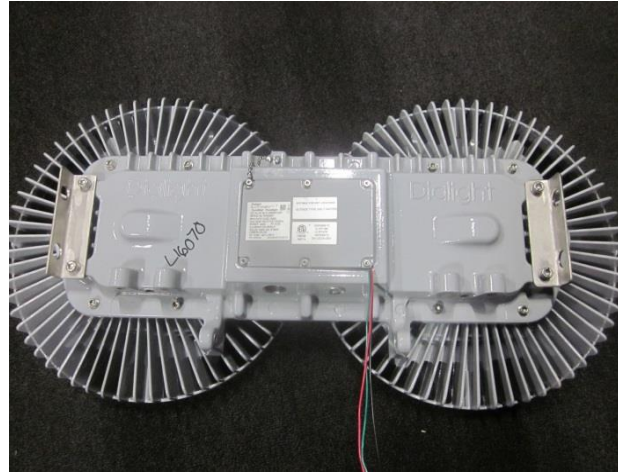
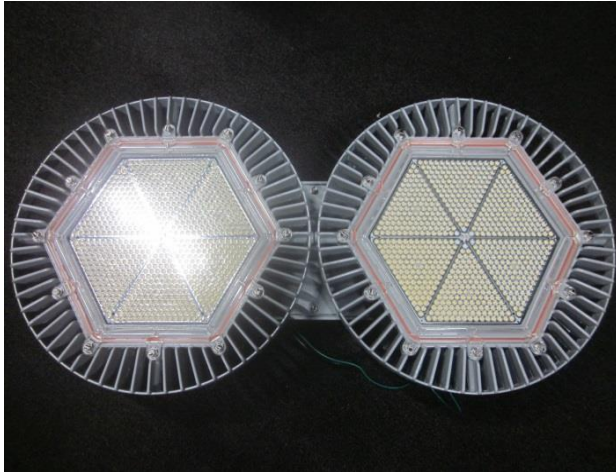
Description of sample:

Sample Number: L16070
Manufacturer: Dialight Corporation
Product Name: LED Dual Vigilant Floodlight
Description: LED Dual Vigilant Floodlight
Model Number: FLxB66xC2NP

Report Summary

Sample number L16070
Dialight unit model number FLxB66xC2NP

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	55330 (lumens)	55390 (lumens)
Electrical Power:	425.4 (W)	425.2 (W)
Luminous Efficacy:	129.5 (lumens/W)	130.3 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 425.4 (W)
 Power Factor (120VAC): 0.996
 Current ATHD % (120VAC): 3.42
 Input Power (277VAC): 410.2 (W)
 Power Factor (277VAC): 0.962
 Current ATHD % (277VAC): 13.18

Color Measurements:

Correlated Color Temperature (CCT): 4934
 Color Rendering Index (CRI): 78.2
 Chromaticity Coordinate (x): 0.347
 Chromaticity Coordinate (y): 0.356
 Chromaticity Coordinate (u'): 0.211
 Chromaticity Coordinate (v'): 0.325
 DUV: 0.0014

Temperature Measurements:

In Situ LED Source Temperature: 59.8 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16070.

Dialight unit model number FLxB66xC2NP

Test Conditions:

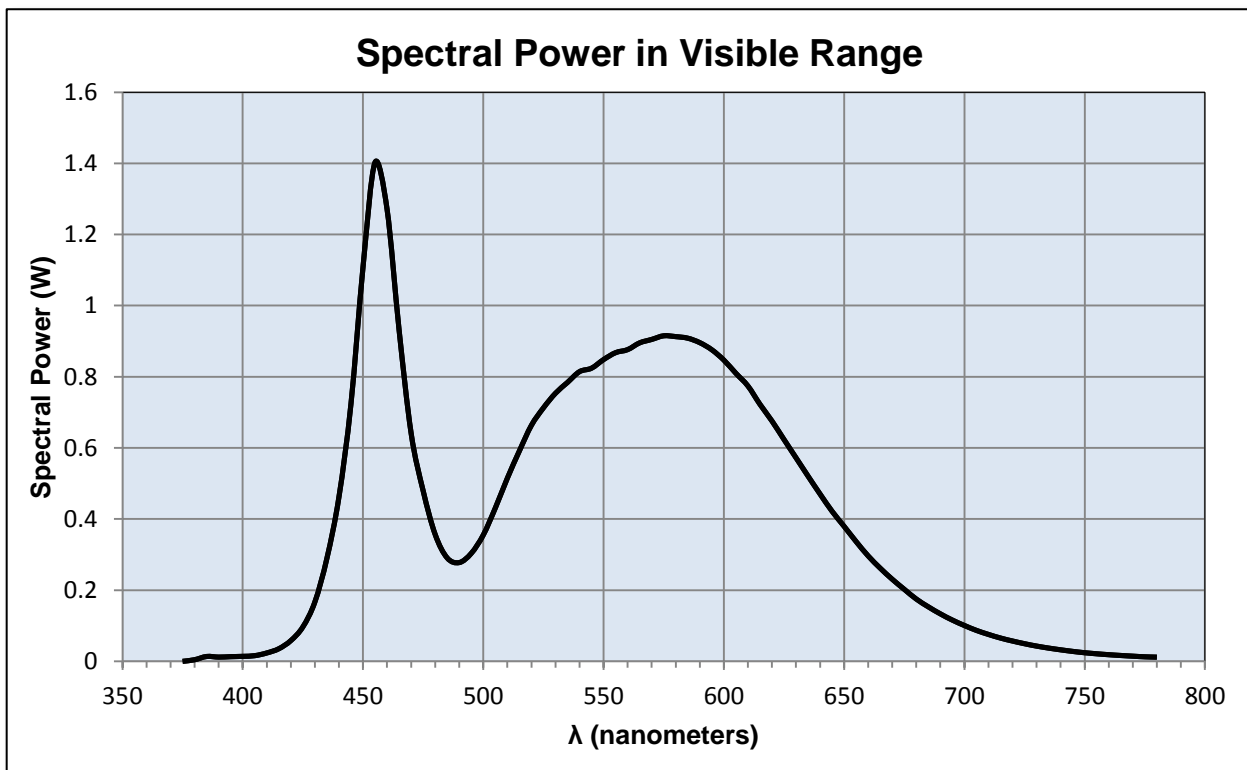
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 3.5 (A)
 Input Power: 425.4 (W)
 Input Power Factor: 0.996
 Current ATHD: 3.42 (%)

Photometric measurements:

Luminous Flux: 55330 (lumens)
 Luminous Efficacy: 129.5 (lumens/W)
 Correlated Color Temperature (CCT): 4934 (K)
 CRI -Ra: 78.2
 CRI -R9: -9.2
 DUV: 0.0014
 CIE Coordinate (x): 0.347
 CIE Coordinate (y): 0.356
 CIE Coordinate (u'): 0.211
 CIE Coordinate (v'): 0.325



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)
375	0.000	515	0.591	655	0.337
380	0.005	520	0.663	660	0.296
385	0.014	525	0.713	665	0.262
390	0.012	530	0.754	670	0.231
395	0.013	535	0.784	675	0.203
400	0.014	540	0.814	680	0.175
405	0.016	545	0.824	685	0.153
410	0.024	550	0.848	690	0.133
415	0.035	555	0.868	695	0.116
420	0.058	560	0.876	700	0.101
425	0.097	565	0.895	705	0.087
430	0.167	570	0.905	710	0.076
435	0.290	575	0.915	715	0.066
440	0.462	580	0.913	720	0.057
445	0.724	585	0.908	725	0.050
450	1.108	590	0.896	730	0.043
455	1.403	595	0.876	735	0.037
460	1.271	600	0.847	740	0.032
465	0.932	605	0.810	745	0.028
470	0.641	610	0.774	750	0.024
475	0.479	615	0.723	755	0.021
480	0.357	620	0.676	760	0.019
485	0.291	625	0.624	765	0.016
490	0.278	630	0.572	770	0.015
495	0.304	635	0.521	775	0.013
500	0.355	640	0.470	780	0.012
505	0.431	645	0.422		
510	0.515	650	0.380		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16070.
Dialight unit model number FLxB66xC2NP

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 3.5 (A)
Input Power: 425.2 (W)
Power Factor: 0.996

Photometric measurements:

Absolute Luminous Flux: 55390 (lumens)
Luminous Efficacy: 130.3 (lumens/W)

Intensity Summary:

ANGLE	ALONG	<u>INTENSITY (CANDLEPOWER) SUMMARY</u>				OUTPUT LUMENS
		23	45	68	ACROSS	
0	61660	61660	61660	61660	61660	
5	58576	58576	58576	58576	58576	2220
15	38251	38251	38251	38251	38251	9591
25	23097	23097	23097	23097	23097	10911
35	17461	17461	17461	17461	17461	10820
45	13669	13669	13669	13669	13669	10897
55	6900	6900	6900	6900	6900	8310
65	653	653	653	653	653	2255
75	194	194	194	194	194	280
85	39	39	39	39	39	101
95	0	0	0	0	0	5
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

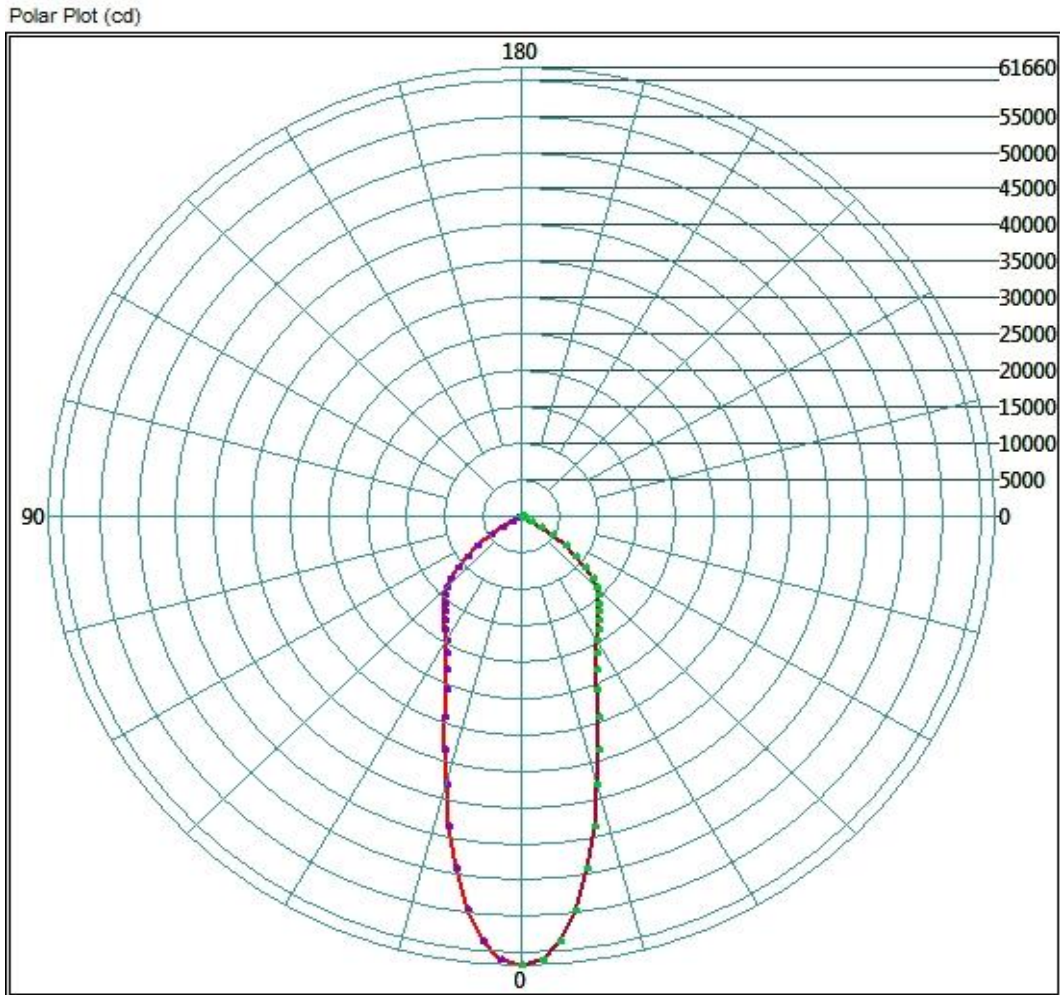
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	28079.2	50.7%
0-40	39062.08	70.5%
0-60	54496	98.4%
60-90	1551.2	2.8%
0-90	55389.92	100.0%
90-180	0	0.0%
0-180	55389.92	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:



Target % of Peak Intensity	Beam Angle to % Intensity Value (degrees)	Beam Angle to Specified % Intensity Value (degrees) [-]
50.00	38.29	38.29

Beam Spread (at 50% Max CD)		Field Spread (at 10% Max CD)		IESNA LM-35-02 Floodlight Designation	
(deg) Horiz	(deg) Vert	(deg) Horiz	(deg) Vert	IESNA LM-35-02 Floodlight H Designation	IESNA LM-35-02 Floodlight V Designation
38.30	38.30	112.35	112.35	6	6

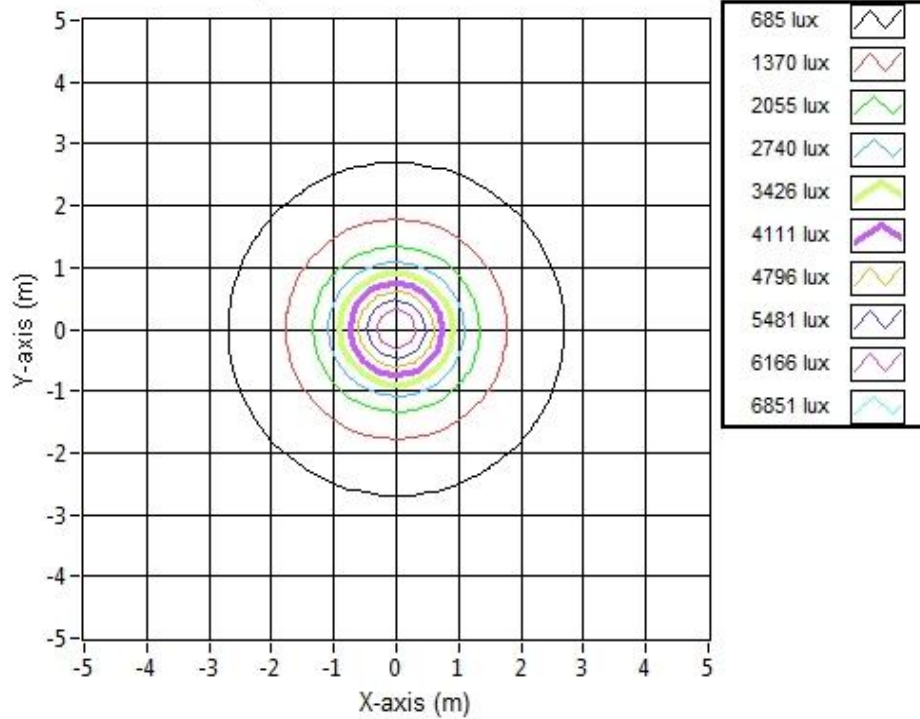
Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
55155.59	94.76	52264.21	26.28	14496.79	5.24	2891.38

Test Results: Goniometer

Results continued from previous page.

Illuminance Plot:

Illuminance Contour Graph



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	2.12	2.12	6637.1
6.096	4.23	4.23	1659.3
9.144	6.35	6.35	737.5
12.192	8.46	8.46	414.8
15.24	10.58	10.58	265.5
18.288	12.70	12.70	184.4
21.336	14.81	14.81	135.5
24.384	16.93	16.93	103.7
27.432	19.04	19.04	81.9
30.48	21.16	21.16	66.4

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16070.
Dialight unit model number FLxB66xC2NP

LED identified as Nichia part number NT2W757.

LED drive current (as indicated by customer): 100 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 300 (mA)
Maximum Rated Power Dissipation: 1.05 (W)
Maximum Junction Temp. (Tj): 120 (°C)
Thermal Resistance (Rth): 18 (°C/W)

Derived Specifications:

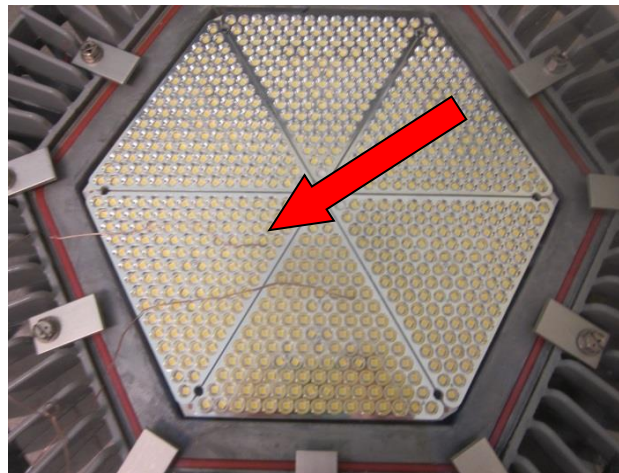
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 23.8 (°C)
Relative humidity at time of measurement: 25%

Results:

Measured LED source temperature: 59.8 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	11/26/3981
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System 1.5 Meter Sphere	ISP1500
Volttech Power Analyzer	PM1000+
Delta Elektronika DC Power Supply	SM.300-5
Elgar AC Power Supply	CW1251P
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
Extech Hygro-Thermometer	4/16/3120
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
BK Precision	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digital Thermometer 343	TPI 343
TPI Digital Thermometer 343	TPI 343
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640

Additional Notes:

Samples are received and tested in new and undamaged condition, unless otherwise noted. The results shown in this report are representative only of the test samples submitted. This data has been issued to the assignee for further evaluation. This report shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. This report shall not be reproduced, except in full, without the express written permission of Dialight Optics Laboratory.

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