

Test Report

Report Number: L15059

Date: Apr 24, 2015

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: FLxB66xC2NG

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: April 23, 2015 through April 24, 2015

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:

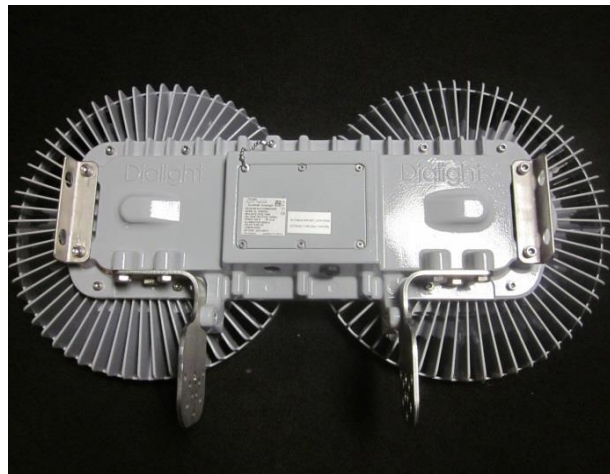
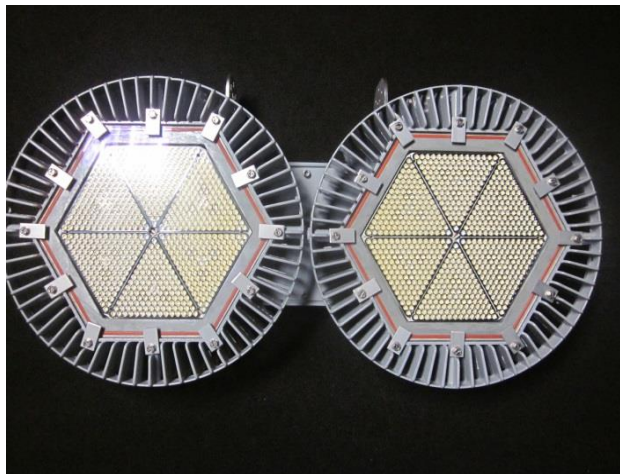
Sample Number: L15059
Manufacturer: Dialight Corporation
Product Name: LED Dual Vigilant Floodlight
Description: LED Dual Vigilant Floodlight
Model Number: FLxB66xC2NG

Report Summary

Sample number L15059

Dialight unit model number FLxB66xC2NG

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	55820 (lumens)	55845 (lumens)
Electrical Power:	427.7 (W)	426.4 (W)
Luminous Efficacy:	130.5 (lumens/W)	131 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 427.7 (W)
 Power Factor (120VAC): 0.998
 Current ATHD % (120VAC): 5.087
 Input Power (277VAC): 413.1 (W)
 Power Factor (277VAC): 0.965
 Current ATHD % (277VAC): 11.35

Color Measurements:

Correlated Color Temperature (CCT): 4996
 Color Rendering Index (CRI): 78.7
 Chromaticity Coordinate (x): 0.345
 Chromaticity Coordinate (y): 0.354
 Chromaticity Coordinate (u'): 0.211
 Chromaticity Coordinate (v'): 0.486
 DUV: 0.00099

Temperature Measurements:

In Situ LED Source Temperature: 59.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15059.
Dialight unit model number FLxB66xC2NG

Test Conditions:

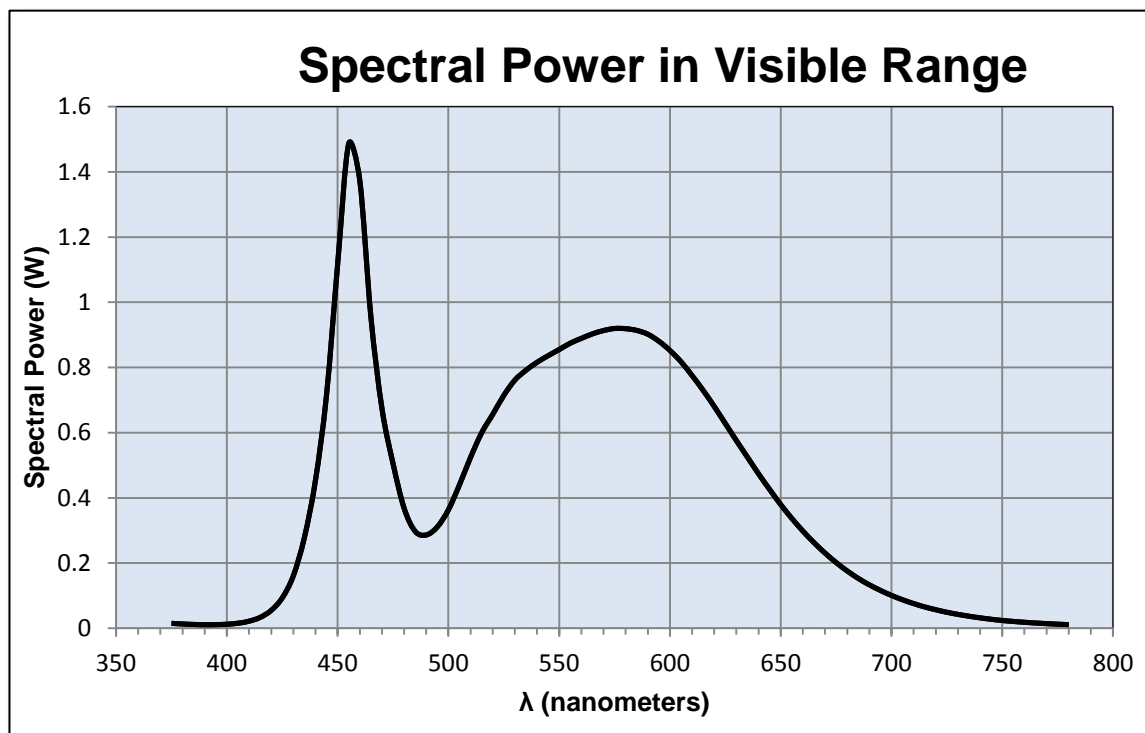
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 3.576 (A)
Input Power: 427.7 (W)
Input Power Factor: 0.998
Current ATHD: 5.087 (%)

Photometric measurements:

Luminous Flux: 55820 (lumens)
Luminous Efficacy: 130.5 (lumens/W)
Correlated Color Temperature (CCT): 4996 (K)
CRI -Ra: 78.7
CRI -R9: -8
DUV: 0.00099
CIE Coordinate (x): 0.345
CIE Coordinate (y): 0.354
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.486



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	0.015	515	0.6	655	0.337
380	0.013	520	0.656	660	0.298
385	0.012	525	0.714	665	0.263
390	0.011	530	0.761	670	0.231
395	0.011	535	0.791	675	0.202
400	0.012	540	0.816	680	0.176
405	0.016	545	0.836	685	0.153
410	0.022	550	0.855	690	0.133
415	0.033	555	0.874	695	0.116
420	0.055	560	0.889	700	0.101
425	0.093	565	0.903	705	0.087
430	0.161	570	0.913	710	0.076
435	0.279	575	0.919	715	0.066
440	0.454	580	0.919	720	0.057
445	0.717	585	0.914	725	0.049
450	1.116	590	0.902	730	0.043
455	1.486	595	0.88	735	0.037
460	1.374	600	0.852	740	0.032
465	0.956	605	0.818	745	0.028
470	0.674	610	0.775	750	0.024
475	0.505	615	0.73	755	0.021
480	0.368	620	0.68	760	0.018
485	0.297	625	0.628	765	0.016
490	0.286	630	0.576	770	0.014
495	0.311	635	0.525	775	0.013
500	0.363	640	0.474	780	0.011
505	0.44	645	0.426		
510	0.524	650	0.379		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15059.
Dialight unit model number FLxB66xC2NG

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 3.556 (A)
Input Power: 426.4 (W)
Power Factor: 0.997

Photometric measurements:

Absolute Luminous Flux: 55845 (lumens)
Luminous Efficacy: 131.0 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	70787	70787	70787	70787	70787	
5	65887	65887	65887	65887	65887	2512
15	39987	39987	39987	39987	39987	10289
25	23623	23623	23623	23623	23623	11164
35	17886	17886	17886	17886	17886	11068
45	13776	13776	13776	13776	13776	11093
55	6201	6201	6201	6201	6201	7958
65	289	289	289	289	289	1705
75	20	20	20	20	20	57
85	0	0	0	0	0	1
95	0	0	0	0	0	0
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	1	1	1	1	1	0
180	0	0	0	0	0	

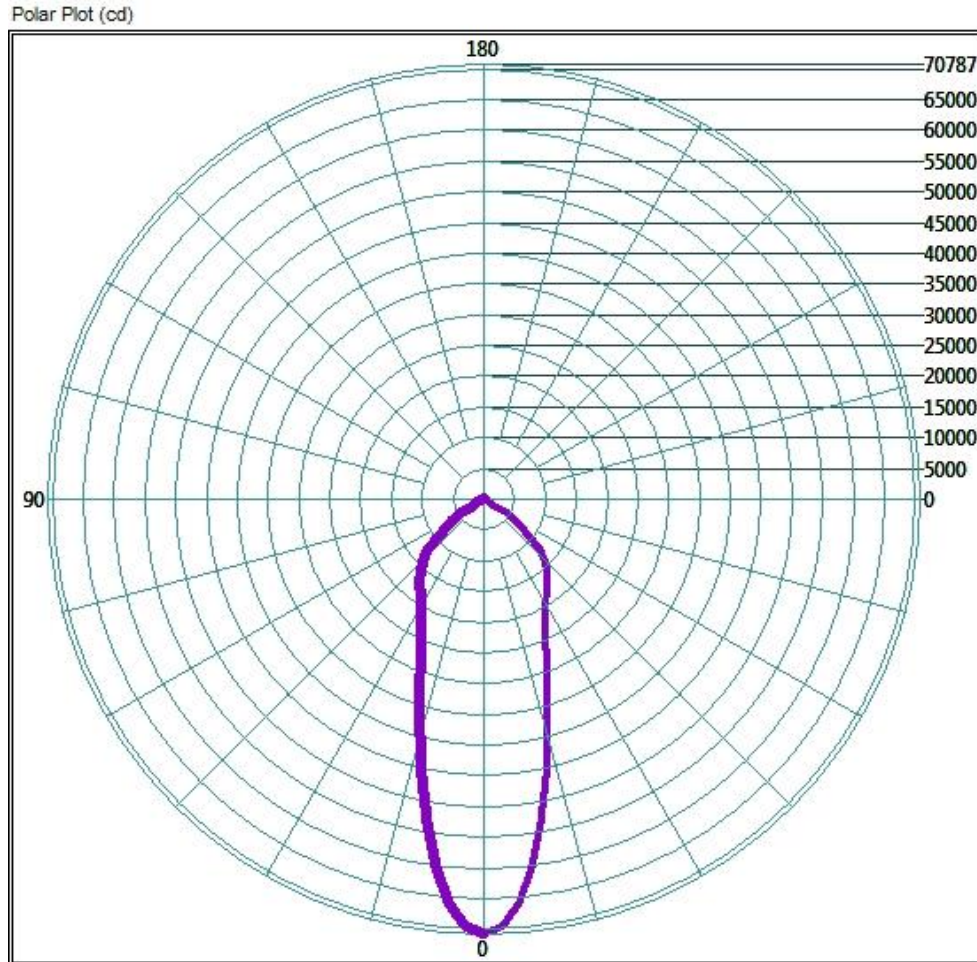
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	29440.32	52.7%
0-40	40681.76	72.8%
0-60	55494.4	99.4%
60-90	851.68	1.5%
0-90	55845.92	100.0%
90-180	0	0.0%
0-180	55845.92	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	34.20	34.20

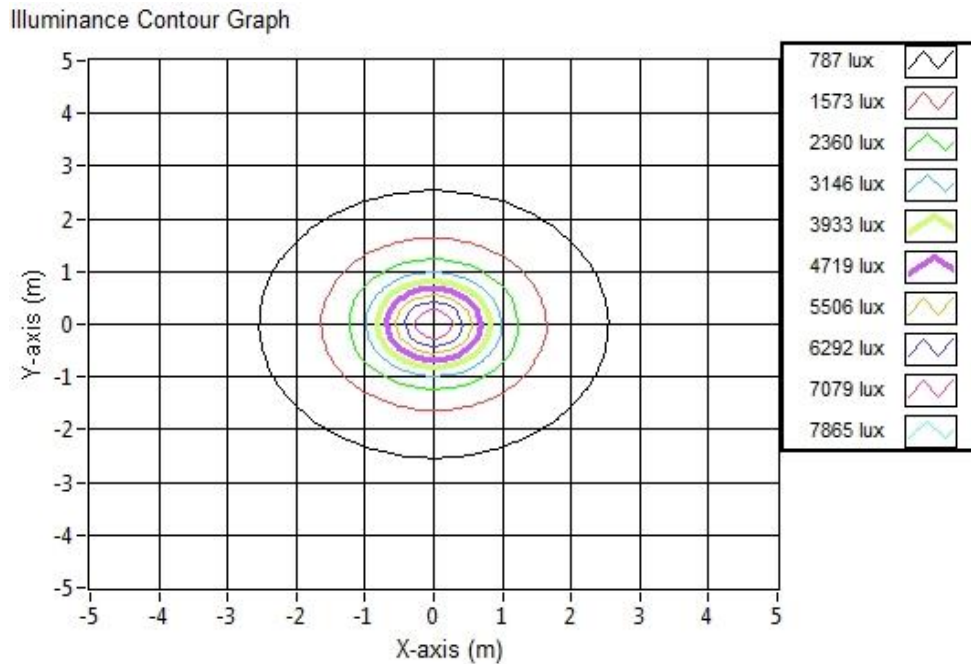
Beam Spread (at 50% Max CD)		Field Spread (at 10% Max CD)		IESNA LM-35-02 Floodlight Designation	
(deg) Horiz	(deg) Vert	(deg) Horiz	(deg) Vert	IESNA LM-35-02 Floodlight H Designation	IESNA LM-35-02 Floodlight V Designation
34.23	34.23	107.85	107.85	6	6

Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
55594.49	92.98	51690.15	24.81	13792.84	7.02	3904.34

Test Results: Goniometer

Results continued from previous page.

Illuminance Plot:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	1.88	1.88	7619.5
6.096	3.75	3.75	1904.9
9.144	5.63	5.63	846.6
12.192	7.50	7.50	476.2
15.24	9.38	9.38	304.8
18.288	11.25	11.25	211.7
21.336	13.13	13.13	155.5
24.384	15.00	15.00	119.1
27.432	16.88	16.88	94.1
30.48	18.75	18.75	76.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15059.
Dialight unit model number FLxB66xC2NG

LED identified as Nichia part number NT2W757DT.

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:

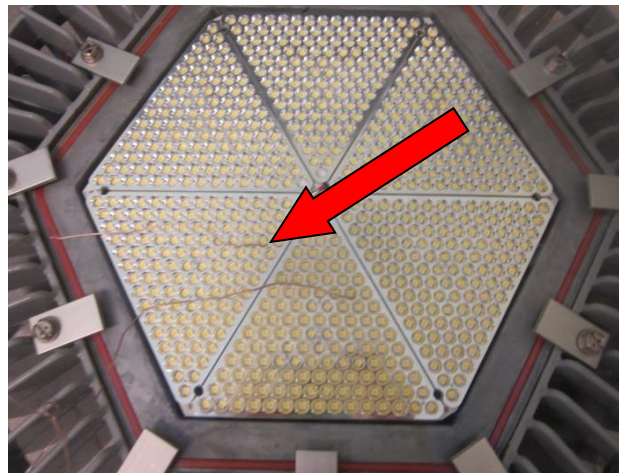
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 24.4 (°C)
Relative humidity at time of measurement: 15%

Results:

Measured LED source temperature: 59.1 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	760401
LSI Standard Lamps	#30279
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
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	445703
Extech Hygro-Thermometer	445703
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
Tenma AC Power Source	72-7675
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

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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 Optical Engineer
 Approved Signatory