

# Test Report

Report Number: L16051

Date: Sep 14, 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: FLxB76xC5NG

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:** September 8, 2016 through September 13, 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

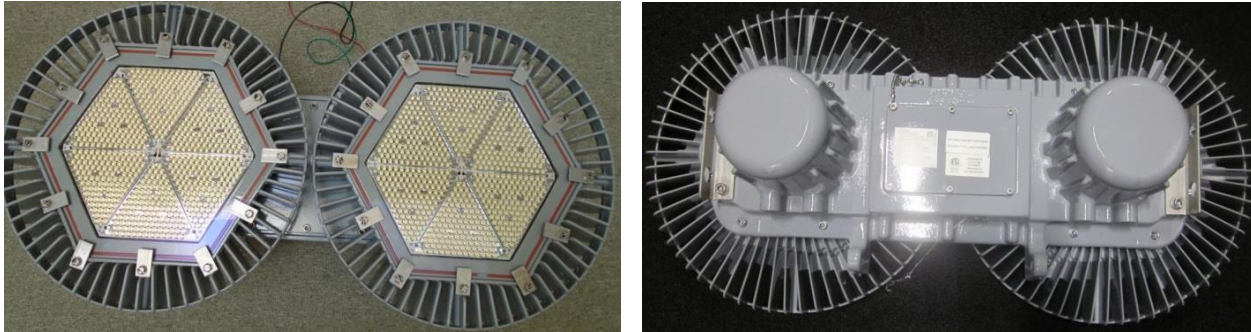
**Description of sample:**

Sample Number: L16051  
Manufacturer: Dialight Corporation  
Product Name: LED Dual Vigilant Floodlight  
Description: LED Dual Vigilant Floodlight  
Model Number: FLxB76xC5NG

## Report Summary

Sample number L16051  
Dialight unit model number FLxB76xC5NG

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	52940 (lumens)	53286 (lumens)
Electrical Power:	444.6 (W)	445.4 (W)
Luminous Efficacy:	119.1 (lumens/W)	119.6 (lumens/W)

### Electrical Measurements:

Input Power (347VAC): 444.6 (W)  
 Power Factor (347VAC): 0.999  
 Current ATHD % (347VAC): 7.2  
 Input Power (480VAC): 414.5 (W)  
 Power Factor (480VAC): 0.869  
 Current ATHD % (480VAC): 9.2

### Color Measurements:

Correlated Color Temperature (CCT): 5010  
 Color Rendering Index (CRI): 77.5  
 Chromaticity Coordinate (x): 0.345  
 Chromaticity Coordinate (y): 0.355  
 Chromaticity Coordinate (u'): 0.21  
 Chromaticity Coordinate (v'): 0.324  
 DUV: 0.0015

### Temperature Measurements:

In Situ LED Source Temperature: 57.5 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16051.

Dialight unit model number FLxB76xC5NG

### Test Conditions:

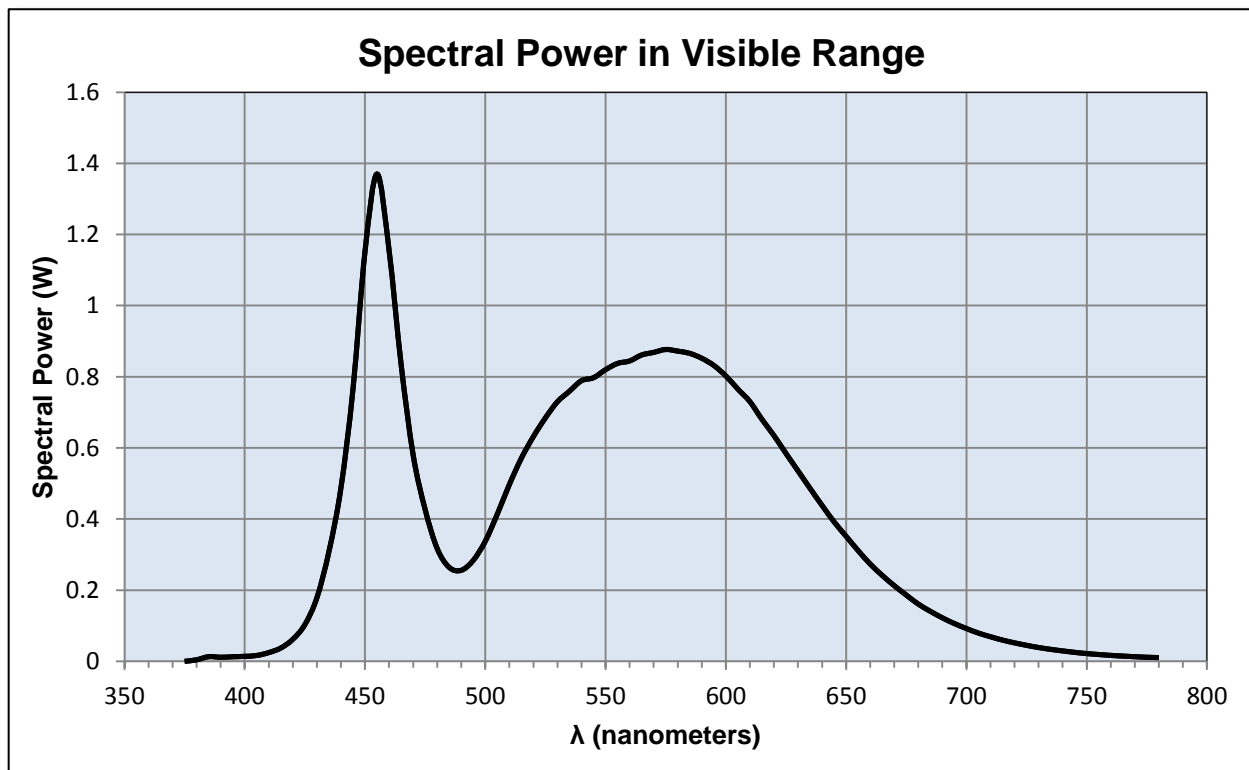
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 347 (VAC)  
 Input Current: 1.258 (A)  
 Input Power: 444.6 (W)  
 Input Power Factor: 0.999  
 Current ATHD: 7.2 (%)

### Photometric measurements:

Luminous Flux: 52940 (lumens)  
 Luminous Efficacy: 119.1 (lumens/W)  
 Correlated Color Temperature (CCT): 5010 (K)  
 CRI -Ra: 77.5  
 CRI -R9: -13.2  
 DUV: 0.0015  
 CIE Coordinate (x): 0.345  
 CIE Coordinate (y): 0.355  
 CIE Coordinate (u'): 0.21  
 CIE Coordinate (v'): 0.324



## 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	0.571	655	0.311
380	0.004	520	0.632	660	0.274
385	0.013	525	0.684	665	0.242
390	0.012	530	0.730	670	0.213
395	0.013	535	0.759	675	0.186
400	0.014	540	0.789	680	0.161
405	0.016	545	0.797	685	0.141
410	0.025	550	0.820	690	0.122
415	0.037	555	0.838	695	0.106
420	0.062	560	0.844	700	0.092
425	0.103	565	0.861	705	0.080
430	0.179	570	0.869	710	0.069
435	0.308	575	0.877	715	0.060
440	0.488	580	0.872	720	0.052
445	0.765	585	0.866	725	0.045
450	1.152	590	0.852	730	0.039
455	1.370	595	0.832	735	0.034
460	1.156	600	0.802	740	0.029
465	0.835	605	0.765	745	0.025
470	0.581	610	0.730	750	0.022
475	0.427	615	0.680	755	0.019
480	0.317	620	0.635	760	0.017
485	0.264	625	0.585	765	0.015
490	0.256	630	0.535	770	0.013
495	0.284	635	0.486	775	0.011
500	0.338	640	0.438	780	0.011
505	0.414	645	0.392		
510	0.497	650	0.352		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16051.  
Dialight unit model number FLxB76xC5NG

### Electrical Measurements:

Input Voltage: 347 (VAC)  
Input current: 1.28 (A)  
Input Power: 445.4 (W)  
Power Factor: 0.996

### Photometric measurements:

Absolute Luminous Flux: 53286 (lumens)  
Luminous Efficacy: 119.6 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	30	45	60	ACROSS	OUTPUT LUMENS
0	32687	32687	32687	32687	32687	
5	31436	31670	31979	32263	32624	1207
15	23960	25215	27038	29274	32019	6294
25	18796	19855	21755	24997	31384	9948
35	15499	16477	18090	20404	27506	12078
45	8803	11134	13233	13979	20735	11483
55	1625	3552	6539	9472	12871	7984
65	152	220	750	3304	5350	3554
75	61	75	98	96	151	625
85	11	10	12	13	15	43
95	0	0	0	0	0	1
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

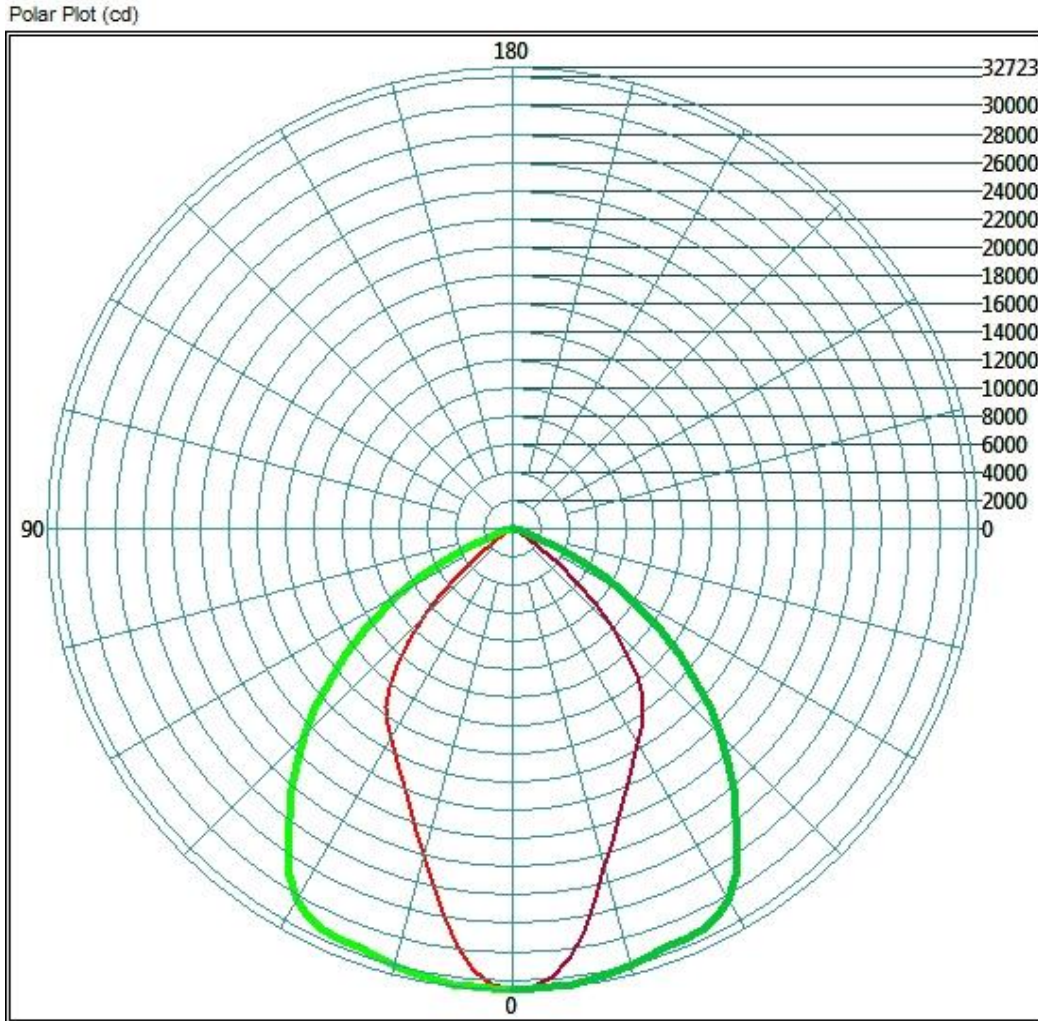
ZONE	LUMENS	% LUMINAIRE
0-30	23350.18	43.9%
0-40	35557.32	66.8%
0-60	51249.21	96.3%
60-90	2958.05	5.6%
0-90	53217.76	100.0%
90-180	0	0.0%
0-180	53217.76	100.0%



## 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	66.84	101.38

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
101.12	66.49	138.00	106.38	7	6

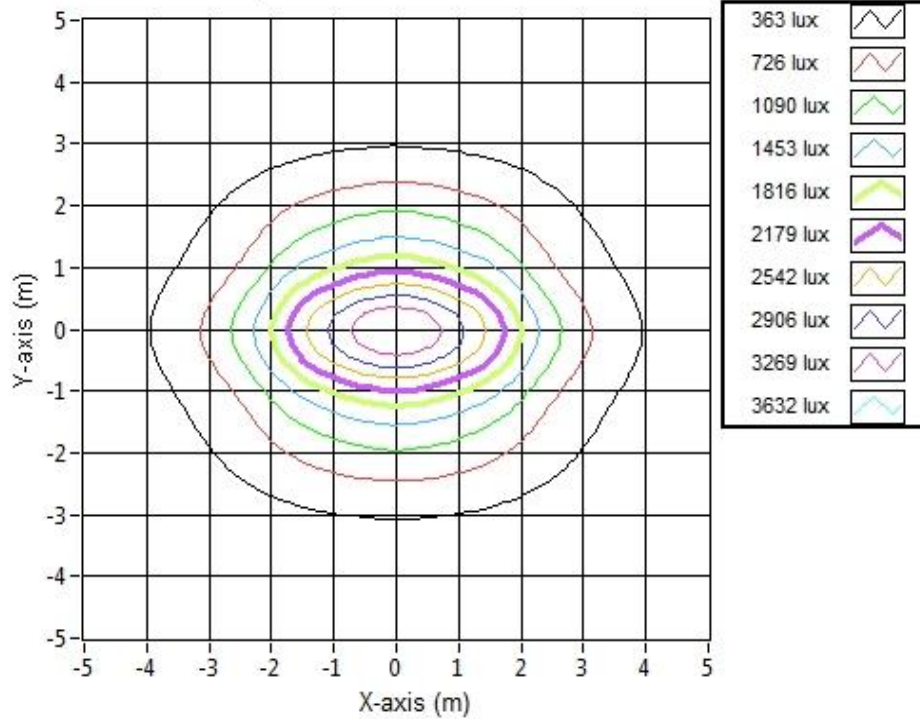
Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
52987.01	97.24	51523.46	65.51	34710.04	2.76	1463.56

## 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	4.02	7.45	3518.4
6.096	8.05	14.89	879.6
9.144	12.07	22.34	390.9
12.192	16.10	29.78	219.9
15.84	20.91	38.69	130.3
18.288	24.14	44.67	97.7
21.336	28.17	52.12	71.8
24.384	32.19	59.56	55.0
27.432	36.22	67.01	43.4
30.48	40.24	74.45	35.2

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16051.  
Dialight unit model number FLxB76xC5NG

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:

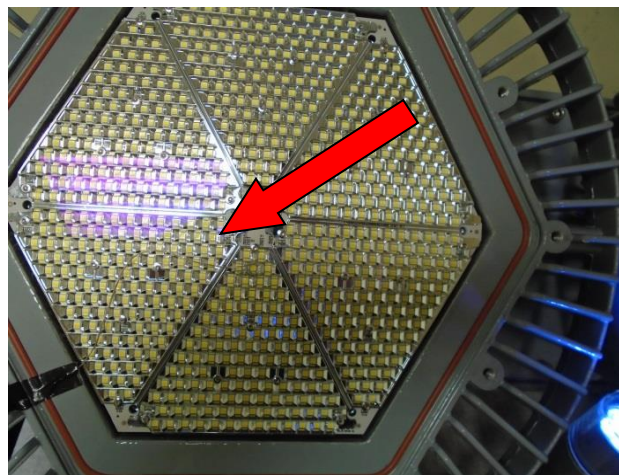
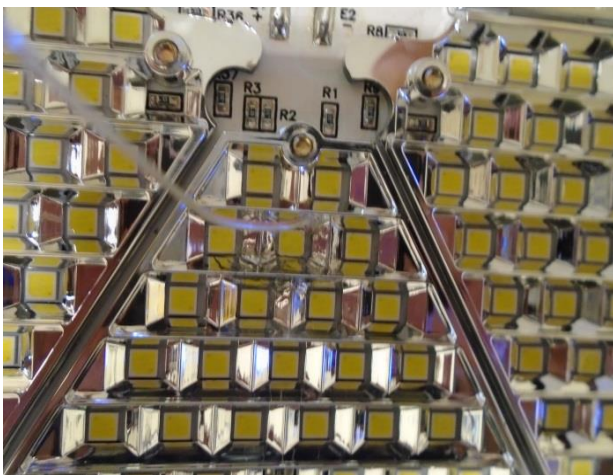
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)  
Ambient temperature at time of measurement: 23.1 (°C)  
Relative humidity at time of measurement: 34%

### Results:

**Measured LED source temperature: 57.5 (°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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Approved Signatory