

Test Report

Report Number: L16049

Date: May 24, 2016

Issued by:

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

Test of one Vigilant Floodlight
Unit manufacturer: Dialight Corporation
Unit model number: FLx676xC2NG

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: May 18, 2016 through May 18, 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

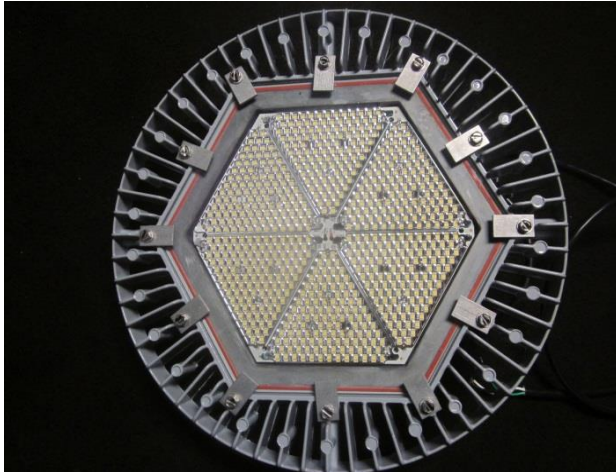
Description of sample:

Sample Number: L16049
Manufacturer: Dialight Corporation
Product Name: Vigilant Floodlight
Description: Vigilant Floodlight
Model Number: FLx676xC2NG

Report Summary

Sample number L16049
Dialight unit model number FLx676xC2NG

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	25990 (lumens)	26066 (lumens)
Electrical Power:	200.8 (W)	200.7 (W)
Luminous Efficacy:	129.4 (lumens/W)	129.9 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 200.8 (W)
 Power Factor (120VAC): 0.997
 Current ATHD % (120VAC): 6.664
 Input Power (277VAC): 193.8 (W)
 Power Factor (277VAC): 0.985
 Current ATHD % (277VAC): 9.76

Color Measurements:

Correlated Color Temperature (CCT): 4950
 Color Rendering Index (CRI): 79.3
 Chromaticity Coordinate (x): 0.347
 Chromaticity Coordinate (y): 0.354
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.324
 DUV: 0.00056

Temperature Measurements:

In Situ LED Source Temperature: 59.7 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16049.

Dialight unit model number FLx676xC2NG

Test Conditions:

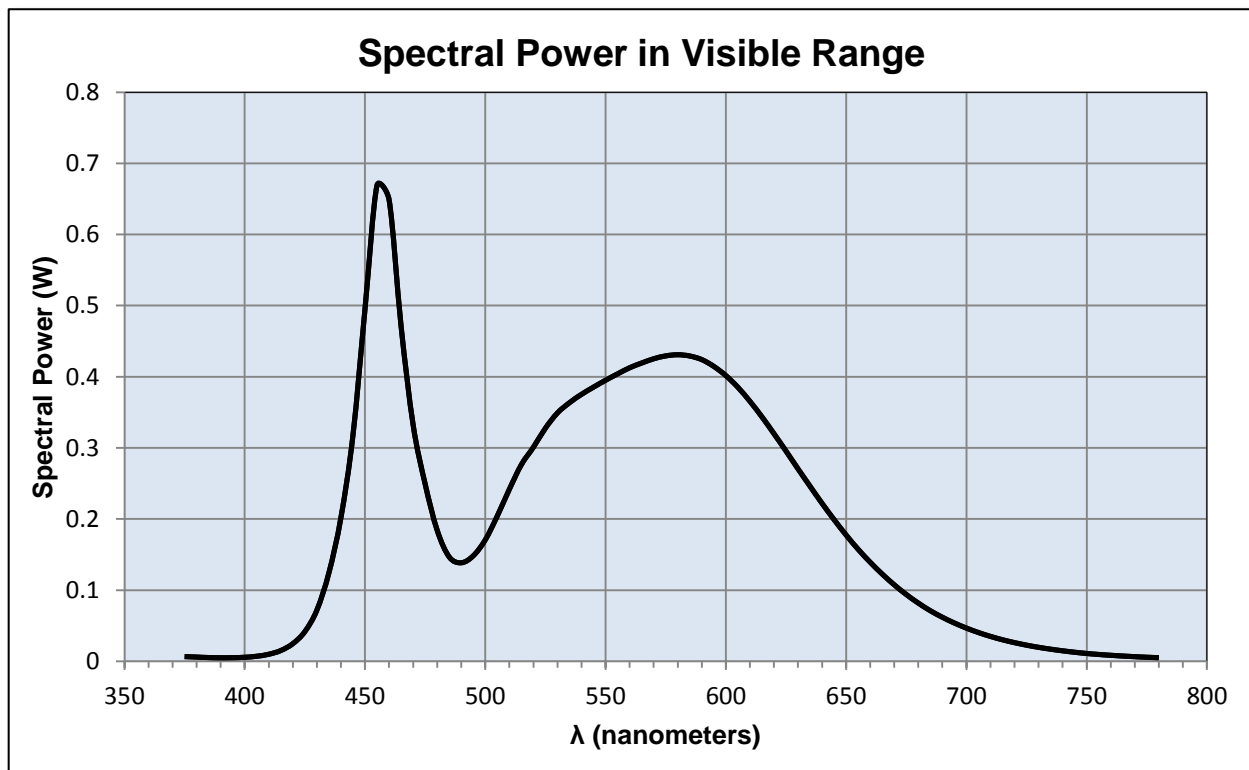
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 1.676 (A)
Input Power: 200.8 (W)
Input Power Factor: 0.997
Current ATHD: 6.664 (%)

Photometric measurements:

Luminous Flux: 25990 (lumens)
Luminous Efficacy: 129.4 (lumens/W)
Correlated Color Temperature (CCT): 4950 (K)
CRI -Ra: 79.3
CRI -R9: -5.8
DUV: 0.00056
CIE Coordinate (x): 0.347
CIE Coordinate (y): 0.354
CIE Coordinate (u'): 0.212
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	0.007	515	0.276	655	0.157
380	0.006	520	0.301	660	0.139
385	0.005	525	0.328	665	0.123
390	0.005	530	0.349	670	0.108
395	0.005	535	0.363	675	0.094
400	0.006	540	0.375	680	0.082
405	0.007	545	0.385	685	0.071
410	0.010	550	0.395	690	0.062
415	0.015	555	0.404	695	0.054
420	0.025	560	0.413	700	0.047
425	0.042	565	0.419	705	0.041
430	0.072	570	0.425	710	0.035
435	0.125	575	0.429	715	0.030
440	0.202	580	0.431	720	0.026
445	0.318	585	0.429	725	0.023
450	0.495	590	0.424	730	0.020
455	0.669	595	0.415	735	0.017
460	0.649	600	0.402	740	0.015
465	0.471	605	0.385	745	0.013
470	0.332	610	0.366	750	0.011
475	0.249	615	0.344	755	0.010
480	0.184	620	0.320	760	0.009
485	0.147	625	0.296	765	0.007
490	0.139	630	0.271	770	0.007
495	0.148	635	0.246	775	0.006
500	0.171	640	0.222	780	0.005
505	0.204	645	0.199		
510	0.242	650	0.178		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16049.
Dialight unit model number FLx676xC2NG

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 1.681 (A)
Input Power: 200.7 (W)
Power Factor: 0.994

Photometric measurements:

Absolute Luminous Flux: 26066 (lumens)
Luminous Efficacy: 129.9 (lumens/W)

Intensity Summary:

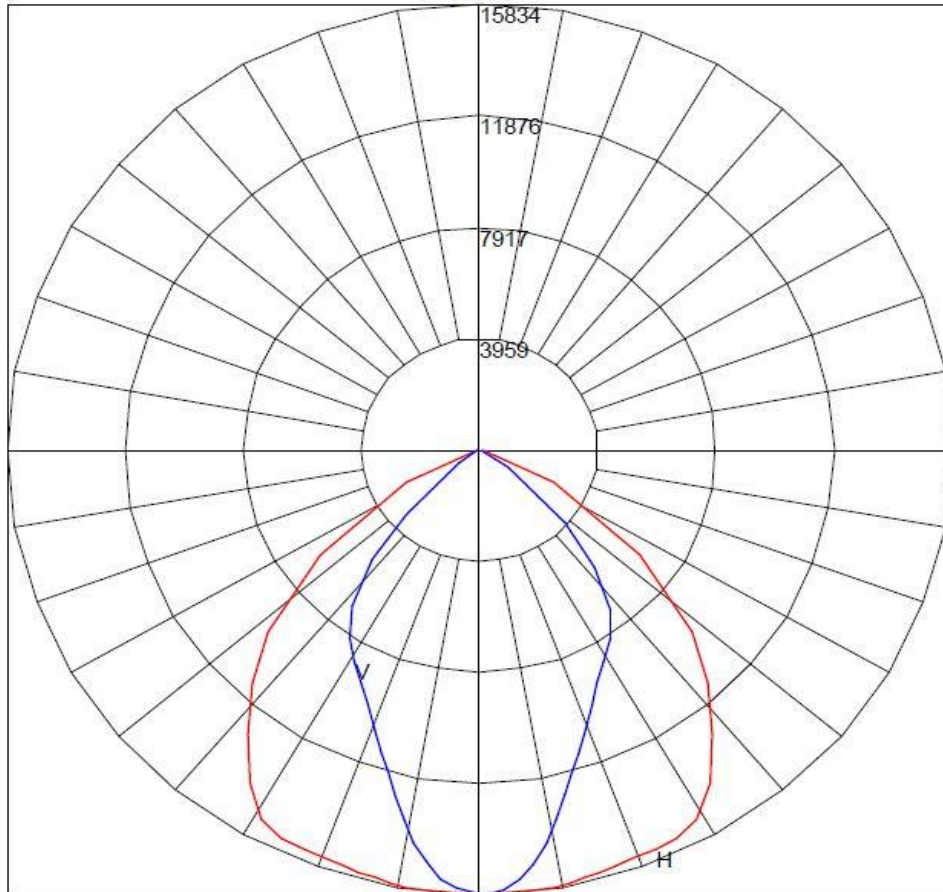
INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	30	45	60	ACROSS	OUTPUT LUMENS
0	15834	15834	15834	15834	15834	
5	15388	15479	15604	15726	15827	585
15	11881	12502	13365	14444	15597	3056
25	9293	9861	10878	12360	15367	4845
35	7726	8166	9049	10222	13542	5896
45	4796	5938	6789	6986	10510	5623
55	1136	2204	3646	4943	6570	3944
65	74	120	498	1927	2708	1774
75	29	32	43	49	102	322
85	5	4	5	7	7	20
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	11365.52	43.6%
0-40	17328.35	66.5%
0-60	25074.3	96.2%
60-90	1486.1	5.7%
0-90	26066.05	100.0%
90-180	0	0.0%
0-180	26066.05	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	67.20	103.59

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
103.41	67.02	138.63	106.59	7	6

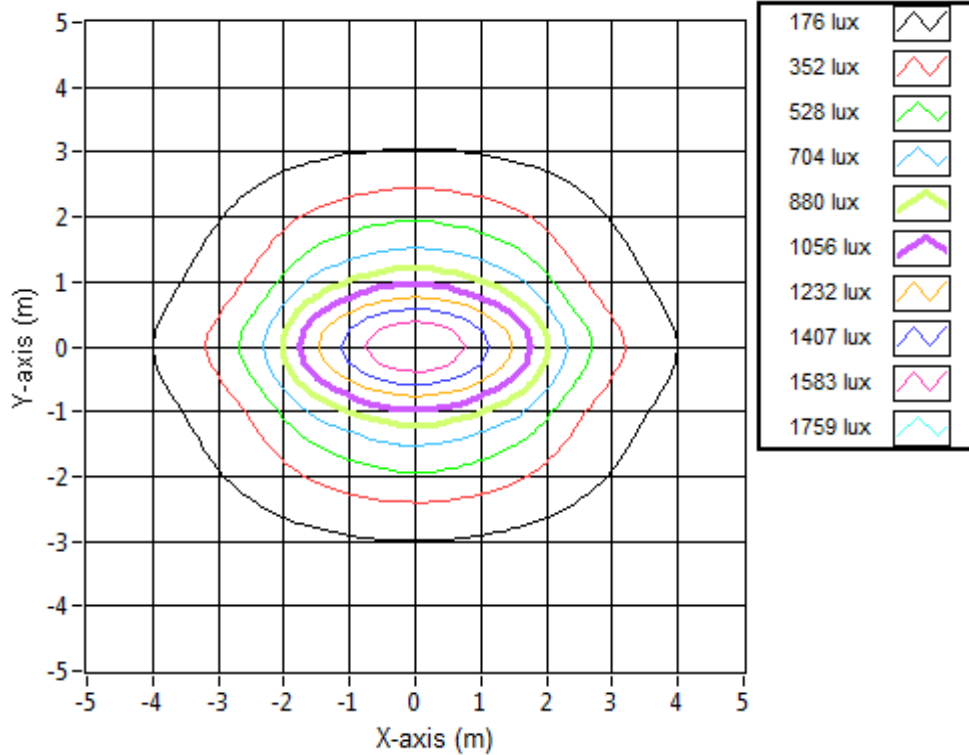
Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
25951.73	97.16	25215.73	65.64	17034.13	2.84	736.00

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	4.05	7.75	1704.4
6.096	8.10	15.49	426.1
9.144	12.15	23.24	189.4
12.192	16.20	30.98	106.5
15.24	20.25	38.73	68.2
18.288	24.30	46.47	47.3
21.336	28.35	54.22	34.8
24.384	32.40	61.97	26.6
27.432	36.45	69.71	21.0
30.48	40.50	77.46	17.0

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16049.
Dialight unit model number FLx676xC2NG

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:

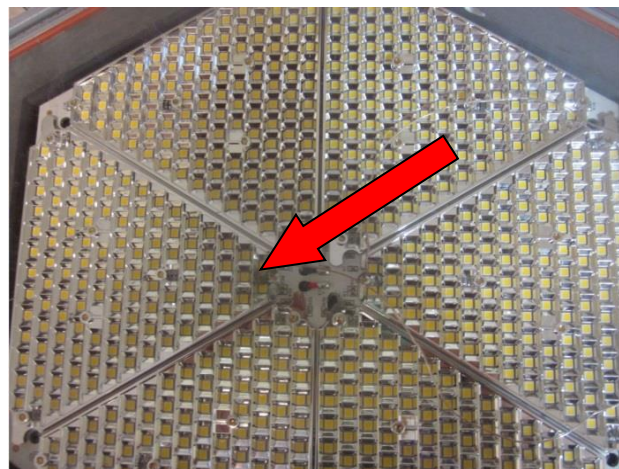
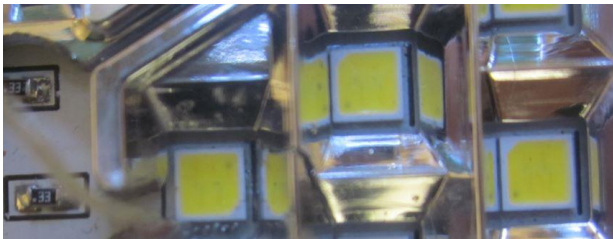
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

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: 19%

Results:

Measured LED source temperature: 59.7 (°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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Optical Engineer
Approved Signatory