Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15129 Date: Oct 22, 2015

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Dual Vigilant Floodlight
Unit manufacturer: Dialight Corporation
Unit model number: FLxBM0xC2NG

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: October 21, 2015 through October 22, 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:	L15129
Manufacturer:	Dialight Corporation
Product Name:	Dual Vigilant Floodlight
Description:	Dual Vigilant Floodlight
Model Number:	FLxBM0xC2NG

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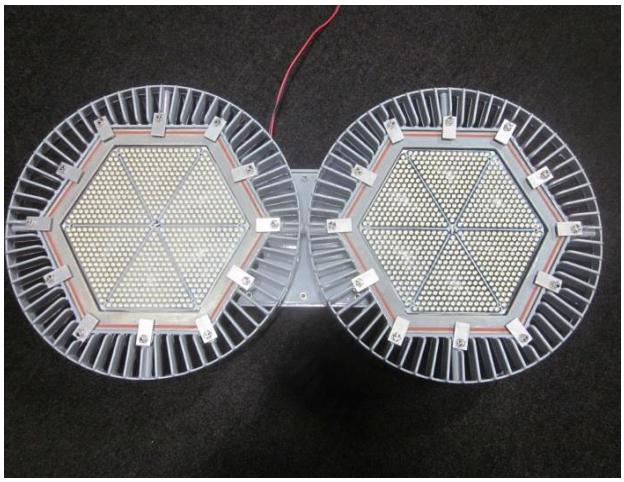
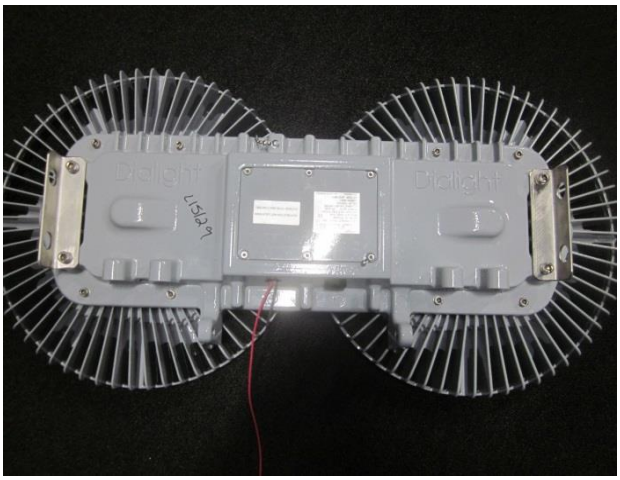
Report Summary

Sample number L15129

Dialight unit model number FLxBM0xC2NG

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	53870	(lumens)	53313	(lumens)
Electrical Power:	422.2	(W)	420.5	(W)
Luminous Efficacy:	127.6	(lumens/W)	126.8	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	422.2	(W)
Power Factor (120VAC):	0.997	
Current ATHD % (120VAC):	5.6	
Input Power (277VAC):	407.5	(W)
Power Factor (277VAC):	0.974	
Current ATHD % (277VAC):	13.17	

Color Measurements:

Correlated Color Temperature (CCT):	5018
Color Rendering Index (CRI):	78.2
Chromaticity Coordinate (x):	0.345
Chromaticity Coordinate (y):	0.353
Chromaticity Coordinate (u'):	0.211
Chromaticity Coordinate (v'):	0.324
DUV:	0.00092

Temperature Measurements:

In Situ LED Source Temperature:	61.3	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15129.
Dialight unit model number FLxBM0xC2NG

Test Conditions:

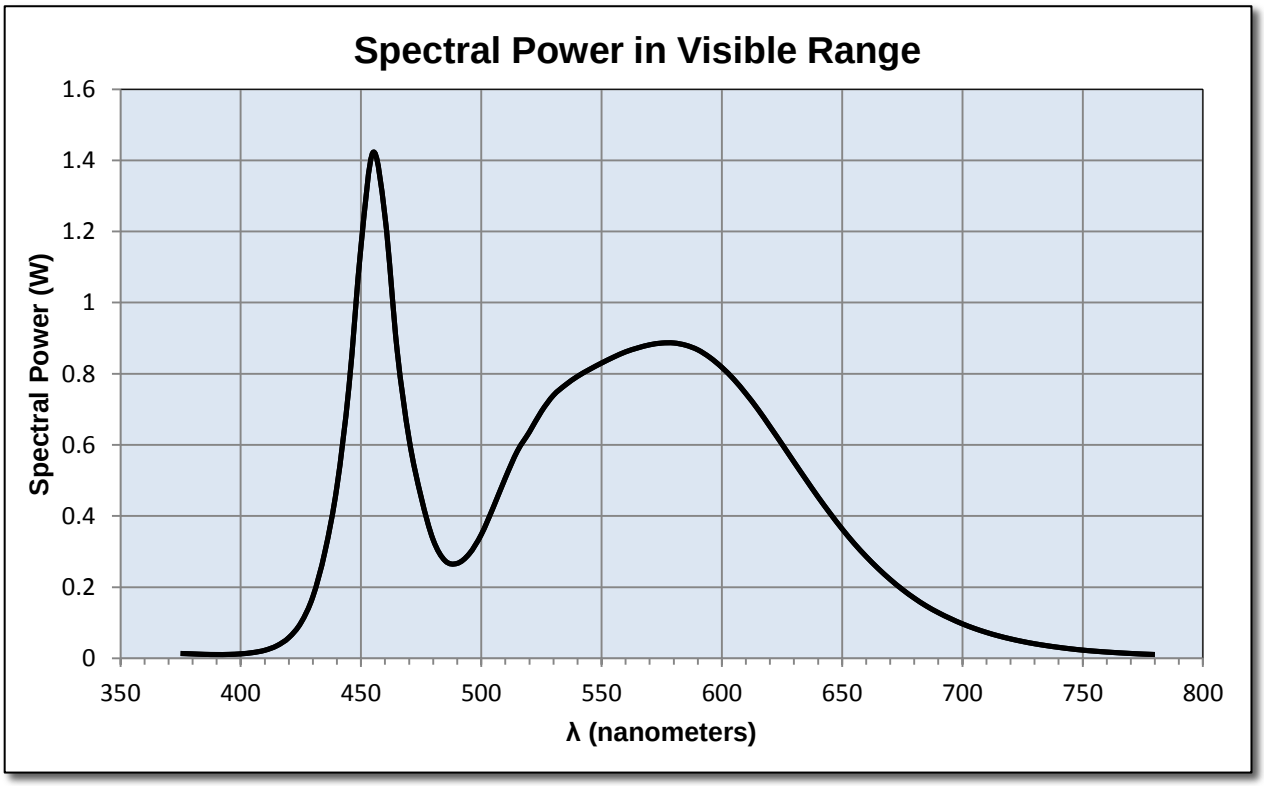
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	3.532	(A)
Input Power:	422.2	(W)
Input Power Factor:	0.997	
Current ATHD:	5.6	(%)

Photometric measurements:

Luminous Flux:	53870	(lumens)
Luminous Efficacy:	127.6	(lumens/W)
Correlated Color Temperature (CCT):	5018	(K)
CRI -Ra:	78.2	
CRI -R9:	-9.8	
DUV:	0.00092	
CIE Coordinate (x):	0.345	
CIE Coordinate (y):	0.353	
CIE Coordinate (u'):	0.211	
CIE Coordinate (v'):	0.324	



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
375	0.014	515	0.583	655	0.323
380	0.012	520	0.636	660	0.286
385	0.011	525	0.694	665	0.252
390	0.011	530	0.74	670	0.222
395	0.011	535	0.769	675	0.194
400	0.013	540	0.793	680	0.169
405	0.016	545	0.812	685	0.147
410	0.023	550	0.83	690	0.128
415	0.035	555	0.847	695	0.112
420	0.058	560	0.862	700	0.097
425	0.1	565	0.873	705	0.084
430	0.174	570	0.881	710	0.073
435	0.3	575	0.886	715	0.063
440	0.483	580	0.887	720	0.055
445	0.764	585	0.88	725	0.047
450	1.159	590	0.867	730	0.041
455	1.422	595	0.846	735	0.036
460	1.24	600	0.818	740	0.031
465	0.867	605	0.784	745	0.027
470	0.616	610	0.744	750	0.023
475	0.453	615	0.7	755	0.02
480	0.333	620	0.652	760	0.018
485	0.274	625	0.602	765	0.016
490	0.267	630	0.552	770	0.014
495	0.294	635	0.502	775	0.012
500	0.348	640	0.454	780	0.011
505	0.425	645	0.408		
510	0.507	650	0.364		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15129.
Dialight unit model number FLxBM0xC2NG

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	3.5	(A)
Input Power:	420.5	(W)
Power Factor:	0.997	

Photometric measurements:

Absolute Luminous Flux:	53313	(lumens)
Luminous Efficacy:	126.8	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	5	10	15	ACROSS	OUTPUT LUMENS
0	20734	20734	20734	20734	20734	
5	20702	20747	20764	20783	20756	776
15	21335	21487	21553	21616	21597	4545
25	23047	23299	23439	23454	23437	9071
35	22307	22529	22462	22514	22601	13220
45	16320	16456	16329	16376	16551	13769
55	6681	6658	6654	6632	6788	8913
65	1205	1211	1224	1201	1228	2693
75	63	64	64	63	63	299
85	9	9	8	8	7	27
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	

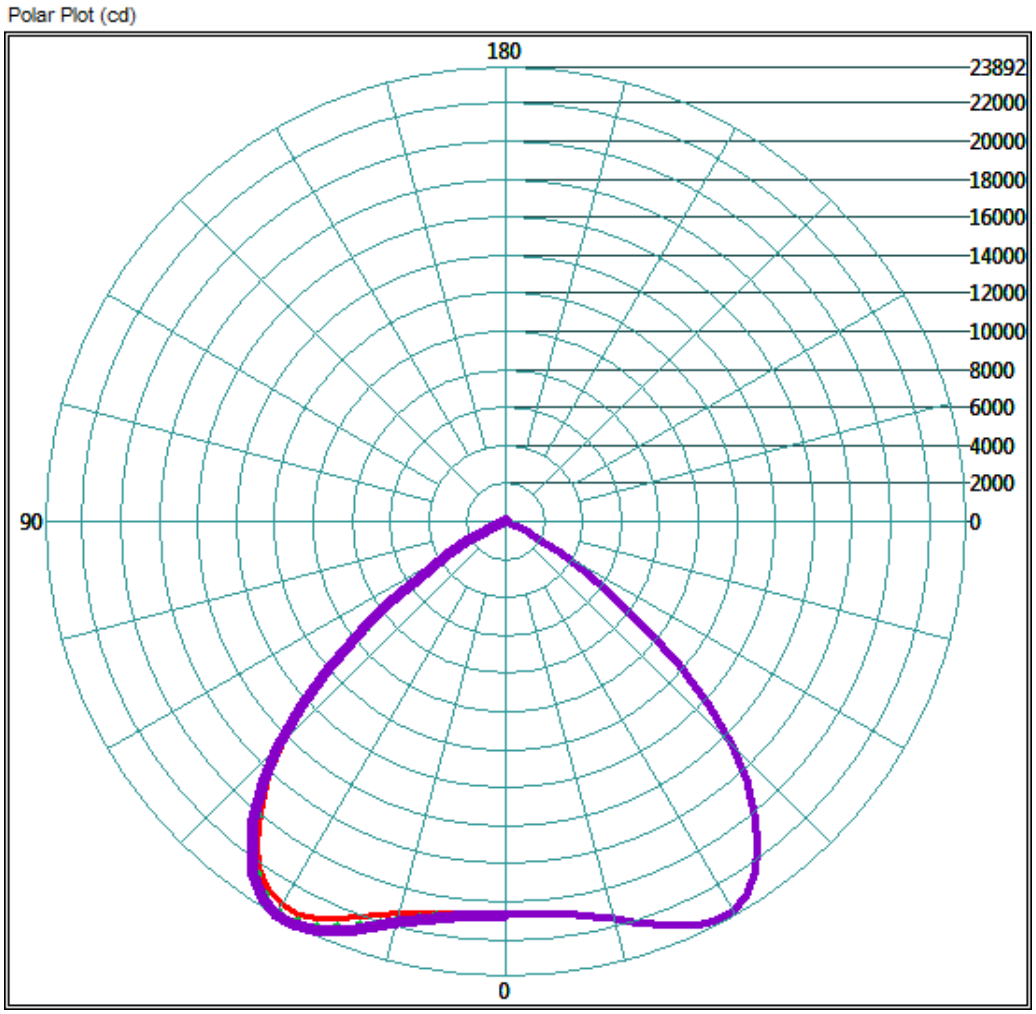
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	20628.88	38.7%
0-40	34752.19	65.2%
0-60	52174.35	97.9%
60-90	1907.45	3.6%
0-90	53313.29	100.0%
90-180	0	0.0%
0-180	53313.29	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	102.85	102.76

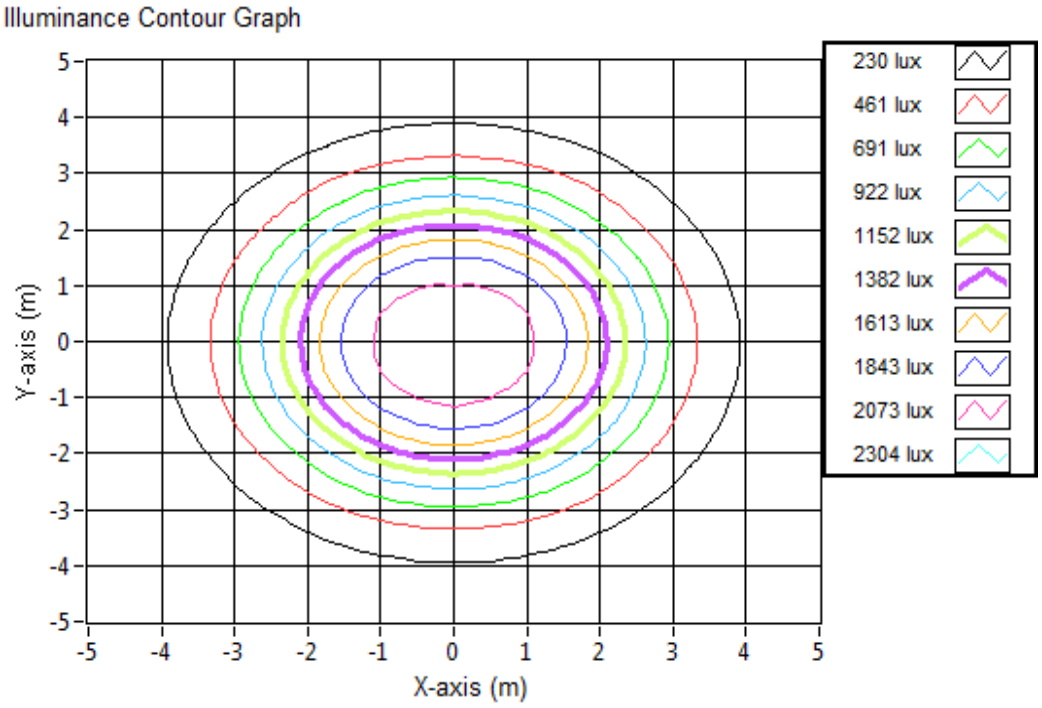
Beam Spread (at 50% Max CD)		Field Spread (at 10% Max CD)		IESNA LM-35-02 Floodlight Designation	
(deg) Horiz	(deg) Vert	(deg) Horiz	(deg) Vert	IESNA LM-35-02 Floodlight H Designation	IESNA LM-35-02 Floodlight V Designation
85.25	99.74	116.93	125.97	6	6

Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
53040.86	98.10	52032.68	85.71	45461.60	1.90	1008.18

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	7.64	7.63	2231.8
6.096	15.29	15.26	558.0
9.144	22.93	22.89	248.0
12.192	30.58	30.52	139.5
15.24	38.22	38.15	89.3
18.288	45.86	45.78	62.0
21.336	53.51	53.41	45.5
24.384	61.15	61.04	34.9
27.432	68.80	68.67	27.6
30.48	76.44	76.31	22.3

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15129.
Dialight unit model number FLxBM0xC2NG

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:

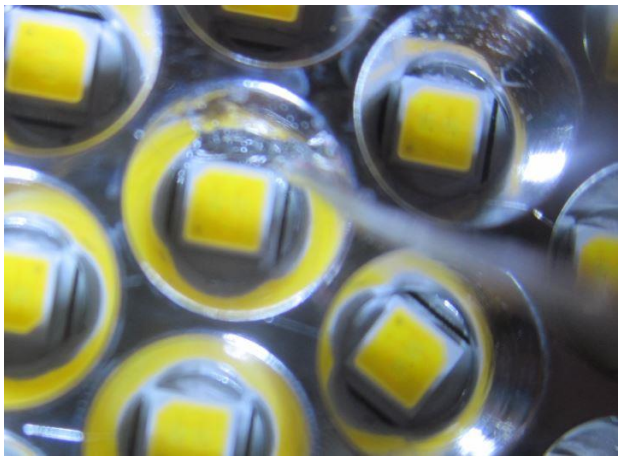
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

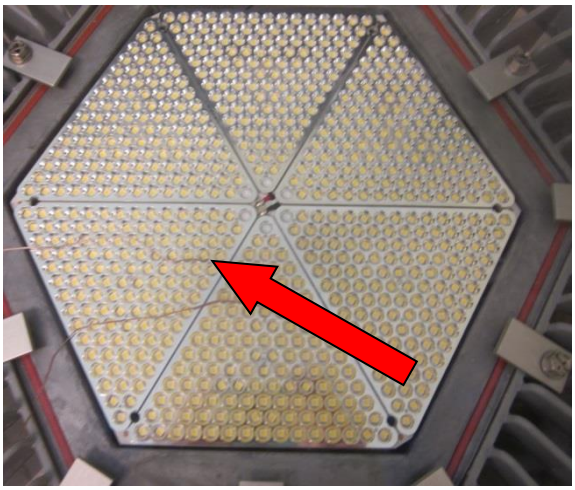
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	24.2	(°C)
Relative humidity at time of measurement:	18%	

Results:

Measured LED source temperature:	61.3	(°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 Precison	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digitial Thermometer 343	TPI 343
TPI Digitial 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.

Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry
Dialight Optics Laboratory
Optical Engineer
Approved Signatory