Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L16040 Date: May 2, 2016

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

Test of one Die Cast Floodlight
Unit manufacturer: Dialight Corporation
Unit model number: FLx276xC2NP

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 28, 2016 through April 29, 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:	L16040
Manufacturer:	Dialight Corporation
Product Name:	Die Cast Floodlight
Description:	Die Cast Floodlight
Model Number:	FLx276xC2NP

Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Report Summary

Sample number L16040
Dialight unit model number FLx276xC2NP

Photograph(s) of sample:

*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	10220	(lumens)	10189	(lumens)
Electrical Power:	104.8	(W)	105.0	(W)
Luminous Efficacy:	97.53	(lumens/W)	97	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	104.8	(W)
Power Factor (120VAC):	0.995	
Current ATHD % (120VAC):	3.995	
Input Power (277VAC):	102.0	(W)
Power Factor (277VAC):	0.92	
Current ATHD % (277VAC):	8.215	

Color Measurements:

Correlated Color Temperature (CCT):	4863
Color Rendering Index (CRI):	72
Chromaticity Coordinate (x):	0.35
Chromaticity Coordinate (y):	0.36
Chromaticity Coordinate (u'):	0.211
Chromaticity Coordinate (v'):	0.326
DUV:	0.0023

Temperature Measurements:

In Situ LED Source Temperature:	64.4	(°C)

Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16040.
Dialight unit model number FLx276xC2NP

Test Conditions:

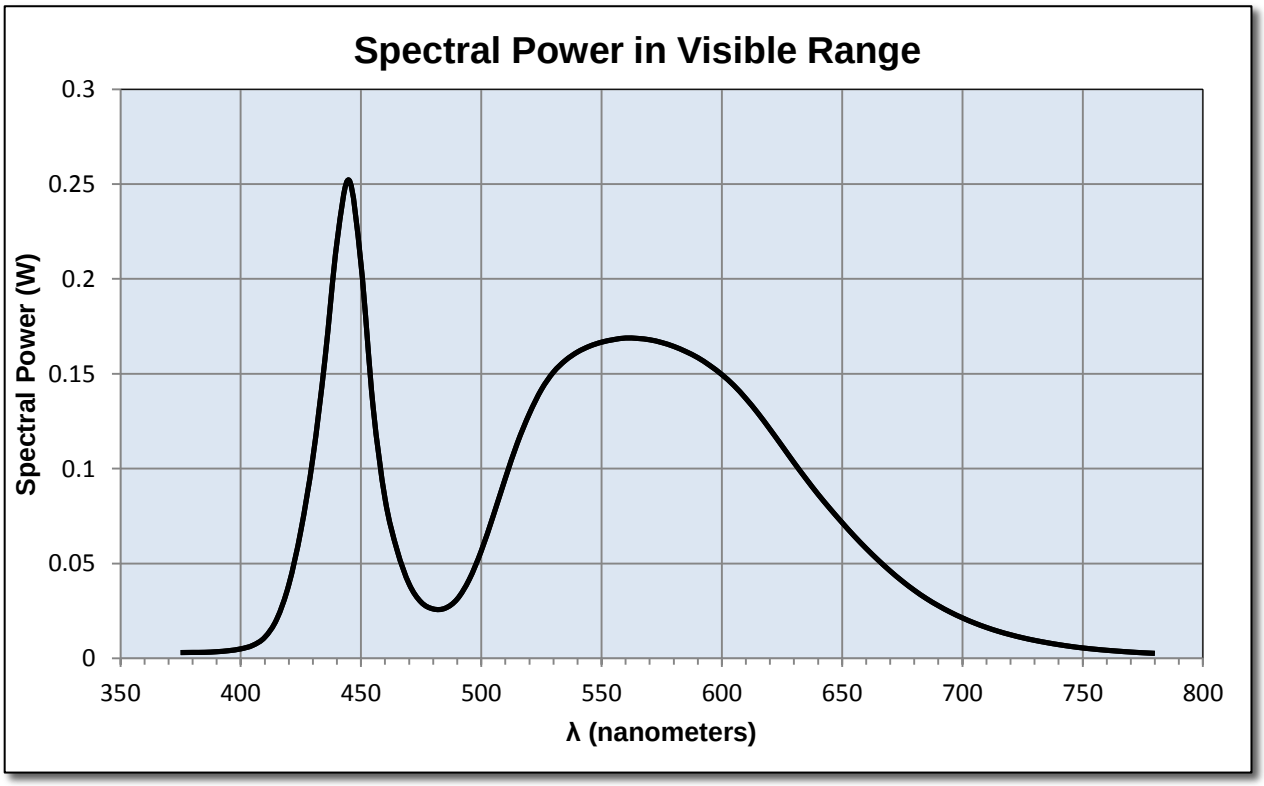
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	0.877	(A)
Input Power:	104.8	(W)
Input Power Factor:	0.995	
Current ATHD:	3.995	(%)

Photometric measurements:

Luminous Flux:	10220	(lumens)
Luminous Efficacy:	97.5	(lumens/W)
Correlated Color Temperature (CCT):	4863	(K)
CRI -Ra:	72	
CRI -R9:	-16.2	
DUV:	0.0023	
CIE Coordinate (x):	0.35	
CIE Coordinate (y):	0.36	
CIE Coordinate (u'):	0.211	
CIE Coordinate (v'):	0.326	



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	0.003	515	0.114	655	0.065
380	0.003	520	0.129	660	0.058
385	0.003	525	0.142	665	0.052
390	0.003	530	0.151	670	0.046
395	0.004	535	0.157	675	0.041
400	0.005	540	0.161	680	0.036
405	0.007	545	0.165	685	0.032
410	0.011	550	0.167	690	0.028
415	0.021	555	0.168	695	0.024
420	0.039	560	0.169	700	0.021
425	0.067	565	0.169	705	0.019
430	0.106	570	0.168	710	0.016
435	0.157	575	0.166	715	0.014
440	0.219	580	0.164	720	0.012
445	0.252	585	0.162	725	0.011
450	0.208	590	0.159	730	0.009
455	0.133	595	0.154	735	0.008
460	0.084	600	0.150	740	0.007
465	0.057	605	0.144	745	0.006
470	0.039	610	0.137	750	0.005
475	0.030	615	0.129	755	0.005
480	0.026	620	0.121	760	0.004
485	0.026	625	0.112	765	0.004
490	0.031	630	0.103	770	0.003
495	0.042	635	0.095	775	0.003
500	0.057	640	0.086	780	0.003
505	0.075	645	0.079		
510	0.095	650	0.072		

Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16040.
Dialight unit model number FLx276xC2NP

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	0.879	(A)
Input Power:	105.0	(W)
Power Factor:	0.995	

Photometric measurements:

Absolute Luminous Flux:	10189	(lumens)
Luminous Efficacy:	97.0	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	30	45	60	ACROSS	OUTPUT LUMENS
0	5753	5753	5753	5753	5753	
5	5580	5598	5637	5606	5631	211
15	4490	4799	5026	5318	5850	1125
25	3583	3578	3987	4719	5774	1826
35	2921	3203	3358	3760	4948	2193
45	2054	2461	2607	3220	4551	2292
55	354	893	1524	2146	2551	1739
65	34	78	193	831	797	707
75	31	38	18	36	20	83
85	2	2	3	3	4	13
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	0	0	0	0	0	0
180	0	0	0	0	0	

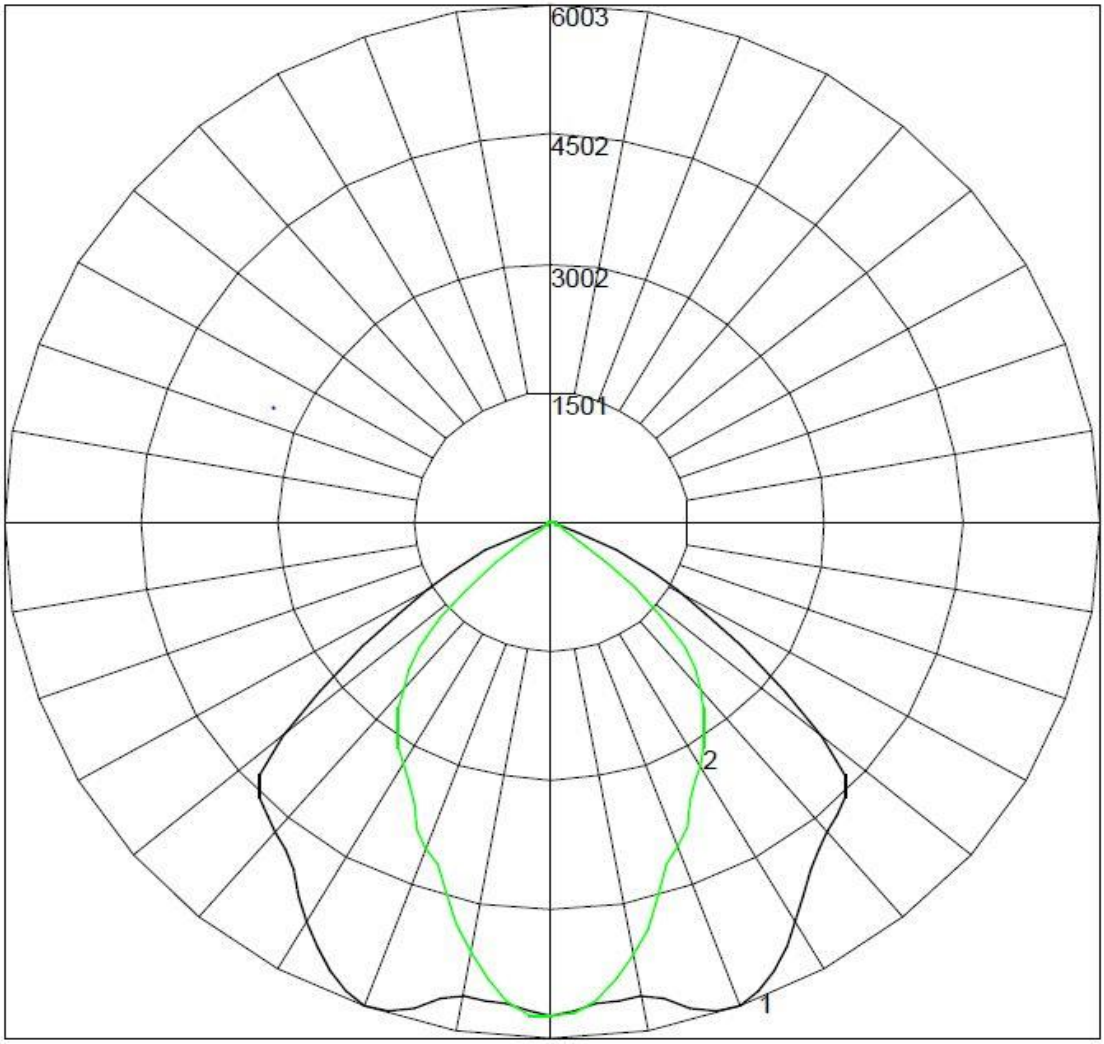
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	4227.26	41.5%
0-40	6509.26	63.9%
0-60	9832.33	96.5%
60-90	555.03	5.4%
0-90	10188.32	100.0%
90-180	0	0.0%
0-180	10188.32	100.0%

Test Results: Goniometer

Polar Plot:

Results continued from previous page.



Target % of Peak Intensity	Beam Angle to % Intensity Value (degrees)	Beam Angle to Specified % Intensity Value (degrees) [-]
50.00	71.25	107.56

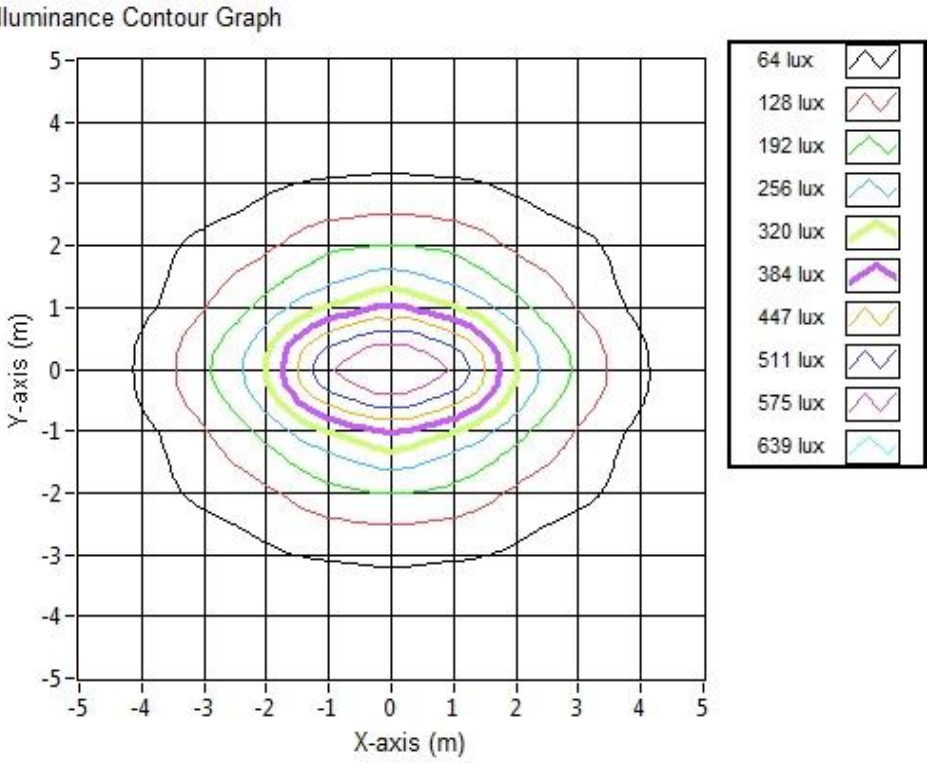
Beam Spread (at 50% Max CD)		Field Spread (at 10% Max CD)		IESNA LM-35-02 Floodlight Designation	
(deg) Horiz	(deg) Vert	(deg) Horiz	(deg) Vert	IESNA LM-35-02 Floodlight H Designation	IESNA LM-35-02 Floodlight V Designation
106.27	67.57	135.07	106.79	7	6

Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
10109.44	97.09	9815.37	70.26	7102.51	2.91	294.07

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	4.37	8.32	619.3
6.096	8.74	16.65	154.8
9.144	13.11	24.97	68.8
12.192	17.47	33.29	38.7
15.24	21.84	41.61	24.8
18.288	26.21	49.94	17.2
21.336	30.58	58.26	12.6
24.384	34.95	66.58	9.7
27.432	39.32	74.90	7.6
30.48	43.69	83.23	6.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16040.
Dialight unit model number FLx276xC2NP

LED identified as Cree part number XTE.

LED drive current (as indicated by customer): 425 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	1500	(mA)
Maximum Rated Power Dissipation:	5.25	(W)
Maximum Junction Temp. (Tj):	150	(°C)
Thermal Resistance (Rth):	5	(°C/W)

Derived Specifications:

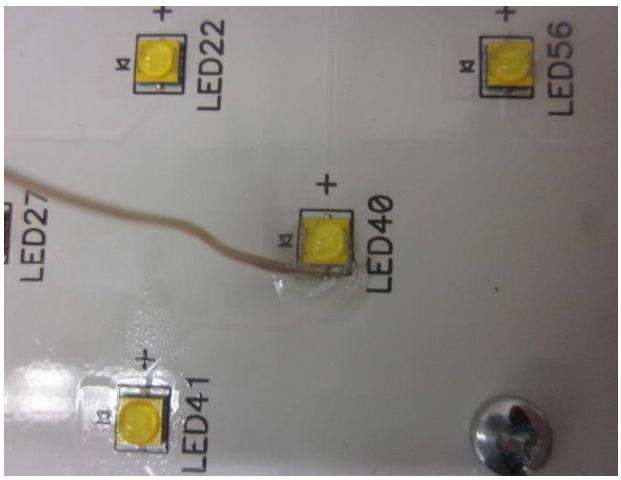
Maximum Power at Indicated Current:	1.488	(W)
Maximum Source Temperature:	142.6	(°C)

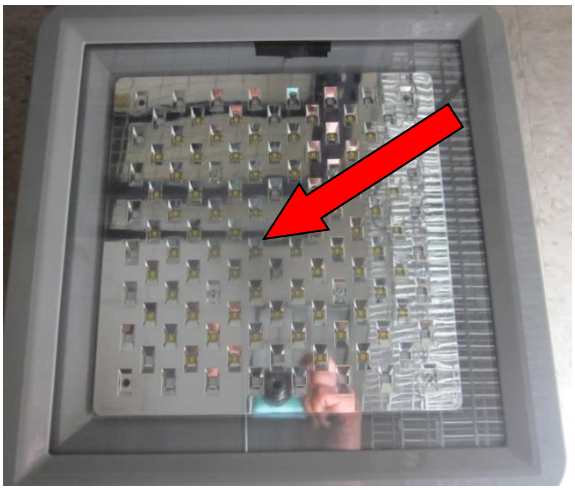
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5‘	(°C)
Ambient temperature at time of measurement:	23.9	(°C)
Relative humidity at time of measurement:	15%	

Results:

Measured LED source temperature: 64.4 (°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