

# Test Report

Report Number: L15144

Date: Oct 6, 2015

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: FLx476xC4NG

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 1, 2015 through October 2, 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: L15144  
Manufacturer: Dialight Corporation  
Product Name: Floodlight  
Description: Die Cast Floodlight  
Model Number: FLx476xC4NG

**Report Summary**  
Sample number L15144  
Dialight unit model number FLx476xC4NG

**Photograph(s) of sample:**



\*Photographs not to scale. For reference only.

**Summary of Results:**

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	15320 (lumens)	15369 (lumens)
Electrical Power:	130.9 (W)	131.2 (W)
Luminous Efficacy:	117 (lumens/W)	117.1 (lumens/W)

**Electrical Measurements:**

Input Power (120VAC): 130.9 (W)  
 Power Factor (120VAC): 0.997  
 Current ATHD % (120VAC): 3.48  
 Input Power (277VAC): 127.1 (W)  
 Power Factor (277VAC): 0.94  
 Current ATHD % (277VAC): 8.5

**Color Measurements:**

Correlated Color Temperature (CCT): 4799  
 Color Rendering Index (CRI): 71  
 Chromaticity Coordinate (x): 0.354  
 Chromaticity Coordinate (y): 0.38  
 Chromaticity Coordinate (u'): 0.207  
 Chromaticity Coordinate (v'): 0.333  
 DUV: 0.01

**Temperature Measurements:**

In Situ LED Source Temperature: 72.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15144.

Dialight unit model number FLx476xC4NG

### Test Conditions:

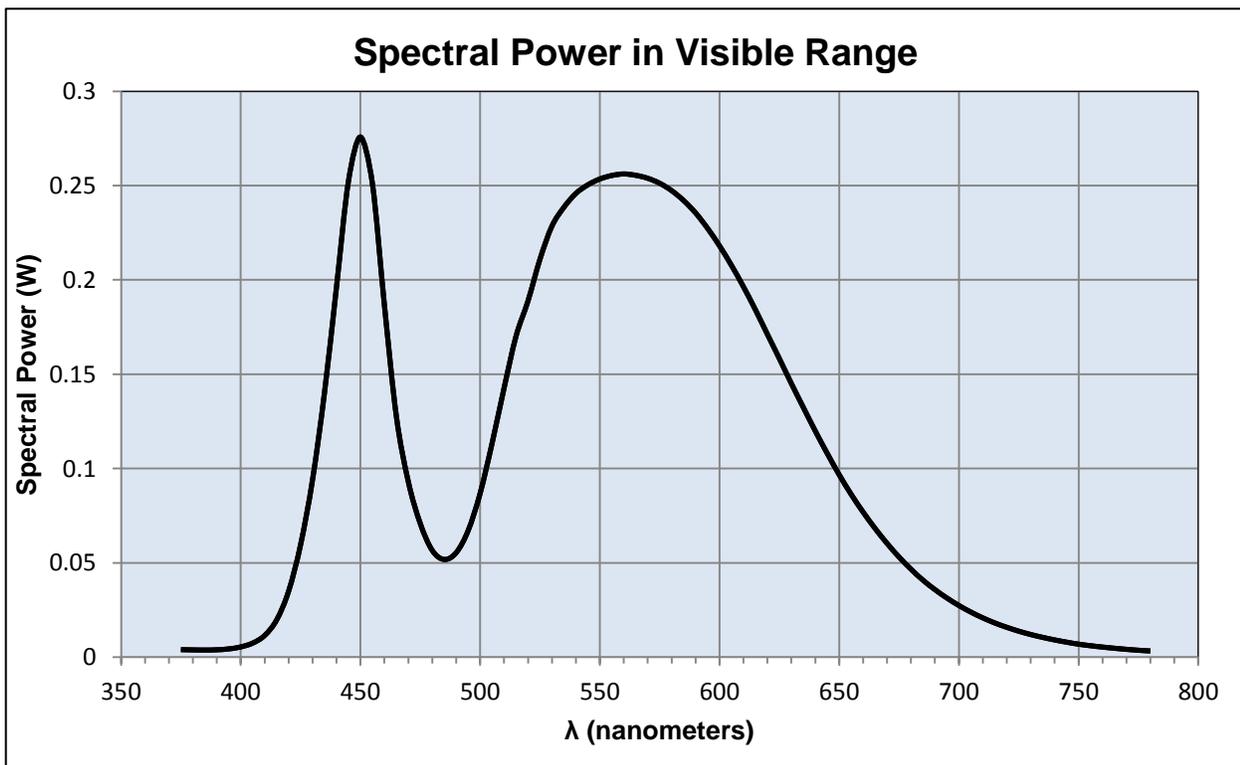
Ambient Temperature: 25 ± 1 (°C)

### Electrical Measurements:

Input Voltage: 120.5 (VAC)  
 Input Current: 1.09 (A)  
 Input Power: 130.9 (W)  
 Input Power Factor: 0.997  
 Current ATHD: 3.48 (%)

### Photometric measurements:

Luminous Flux: 15320 (lumens)  
 Luminous Efficacy: 117.0 (lumens/W)  
 Correlated Color Temperature (CCT): 4799 (K)  
 CRI -Ra: 71  
 CRI -R9: -34.3  
 DUV: 0.01  
 CIE Coordinate (x): 0.354  
 CIE Coordinate (y): 0.38  
 CIE Coordinate (u'): 0.207  
 CIE Coordinate (v'): 0.333



## 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	0.004	515	0.17	655	0.086
380	0.004	520	0.189	660	0.077
385	0.004	525	0.211	665	0.068
390	0.004	530	0.228	670	0.06
395	0.004	535	0.238	675	0.053
400	0.005	540	0.246	680	0.047
405	0.007	545	0.25	685	0.041
410	0.012	550	0.253	690	0.036
415	0.02	555	0.255	695	0.031
420	0.035	560	0.256	700	0.027
425	0.06	565	0.255	705	0.024
430	0.094	570	0.254	710	0.021
435	0.14	575	0.251	715	0.018
440	0.196	580	0.247	720	0.016
445	0.252	585	0.242	725	0.014
450	0.276	590	0.235	730	0.012
455	0.251	595	0.227	735	0.01
460	0.187	600	0.218	740	0.009
465	0.128	605	0.208	745	0.008
470	0.093	610	0.196	750	0.007
475	0.071	615	0.184	755	0.006
480	0.057	620	0.171	760	0.005
485	0.052	625	0.158	765	0.005
490	0.055	630	0.145	770	0.004
495	0.067	635	0.132	775	0.004
500	0.087	640	0.12	780	0.003
505	0.113	645	0.108		
510	0.143	650	0.097		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15144.  
Dialight unit model number FLx476xC4NG

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.09 (A)  
Input Power: 131.2 (W)  
Power Factor: 0.997

### Photometric measurements:

Absolute Luminous Flux: 15369 (lumens)  
Luminous Efficacy: 117.1 (lumens/W)

### Intensity Summary:

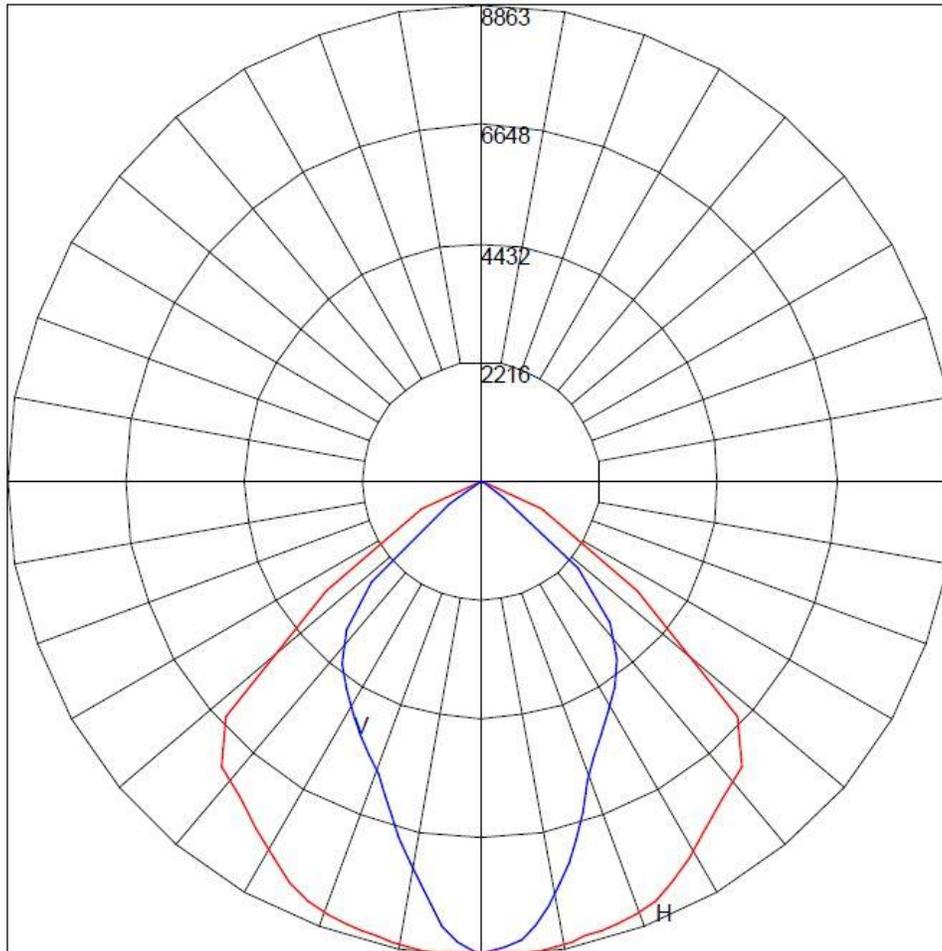
<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	30	45	60	ACROSS	OUTPUT LUMENS
0	8829	8829	8829	8829	8829	
5	8610	8665	8729	8797	8863	325
15	6912	7137	7580	8155	8683	1692
25	5277	5596	6173	7061	8338	2691
35	4419	4730	5090	5682	7600	3309
45	3073	3557	3908	4635	7024	3477
55	522	1307	2276	3149	3569	2665
65	34	110	253	1263	1252	1099
75	6	11	9	25	15	105
85	2	2	2	2	2	6
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	0

<u>ZONAL LUMEN AND PERCENTAGES</u>		
ZONE	LUMENS	% LUMINAIRE
0-30	6310.74	41.1%
0-40	9766.02	63.5%
0-60	14858	96.7%
60-90	819.04	5.3%
0-90	15369.03	100.0%
90-180	0	0.0%
0-180	15369.03	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	71.06	104.98

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
105.58	71.01	135.91	108.13	7	6

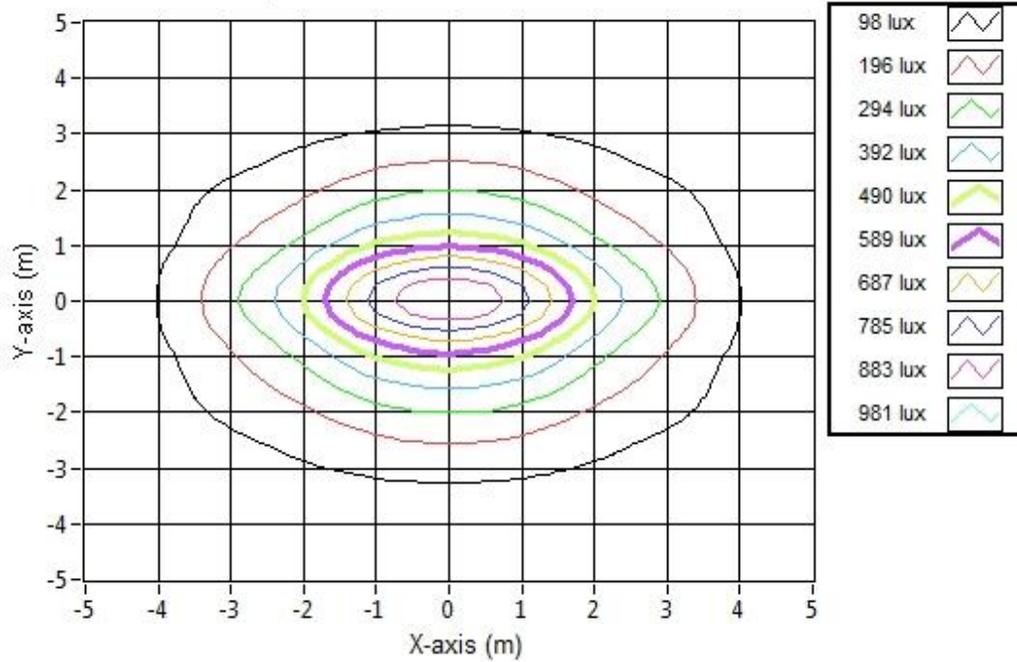
Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
15259.26	97.16	14826.60	70.19	10709.80	2.84	432.66

## 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	4.35	7.94	950.3
6.096	8.71	15.88	237.6
9.144	13.06	23.82	105.6
12.192	17.41	31.77	59.4
15.24	21.77	39.71	38.0
18.288	26.12	47.65	26.4
21.336	30.47	55.59	19.4
24.384	34.83	63.53	14.8
27.432	39.18	71.47	11.7
30.48	43.53	79.41	9.5

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15144.  
Dialight unit model number FLx476xC4NG

LED identified as Cree part number XTE.

LED drive current (as indicated by customer): 380 (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:

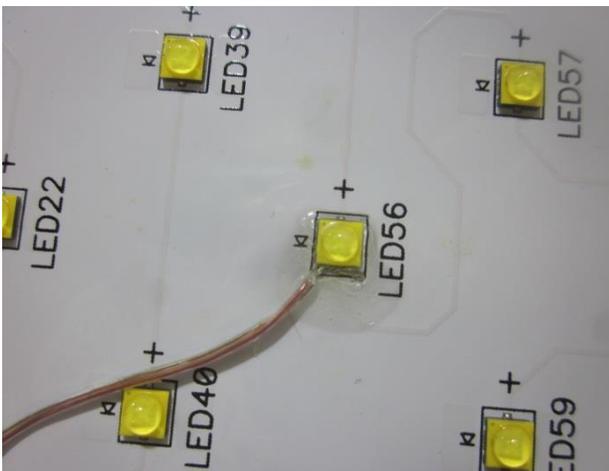
Maximum Power at Indicated Current: 1.33 (W)  
Maximum Source Temperature: 143.4 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 24.1 (°C)  
Relative humidity at time of measurement: 42%

### Results:

**Measured LED source temperature: 72.2 (°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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