

# Test Report

Report Number: L16044

Date: May 5, 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: FLx466xC4NP

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 29, 2016 through May 3, 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: L16044  
Manufacturer: Dialight Corporation  
Product Name: Die Cast Floodlight  
Description: Die Cast Floodlight  
Model Number: FLx466xC4NP

**Report Summary**  
Sample number L16044  
Dialight unit model number FLx466xC4NP

**Photograph(s) of sample:**



\*Photographs not to scale. For reference only.

**Summary of Results:**

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	14170 (lumens)	14244 (lumens)
Electrical Power:	140.2 (W)	140.9 (W)
Luminous Efficacy:	101.1 (lumens/W)	101.1 (lumens/W)

**Electrical Measurements:**

Input Power (120VAC): 140.2 (W)  
 Power Factor (120VAC): 0.998  
 Current ATHD % (120VAC): 3.26  
 Input Power (277VAC): 135.5 (W)  
 Power Factor (277VAC): 0.949  
 Current ATHD % (277VAC): 7.67

**Color Measurements:**

Correlated Color Temperature (CCT): 5009  
 Color Rendering Index (CRI): 72.8  
 Chromaticity Coordinate (x): 0.345  
 Chromaticity Coordinate (y): 0.356  
 Chromaticity Coordinate (u'): 0.21  
 Chromaticity Coordinate (v'): 0.324  
 DUV: 0.0019

**Temperature Measurements:**

In Situ LED Source Temperature: 71.4 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16044.

Dialight unit model number FLx466xC4NP

### Test Conditions:

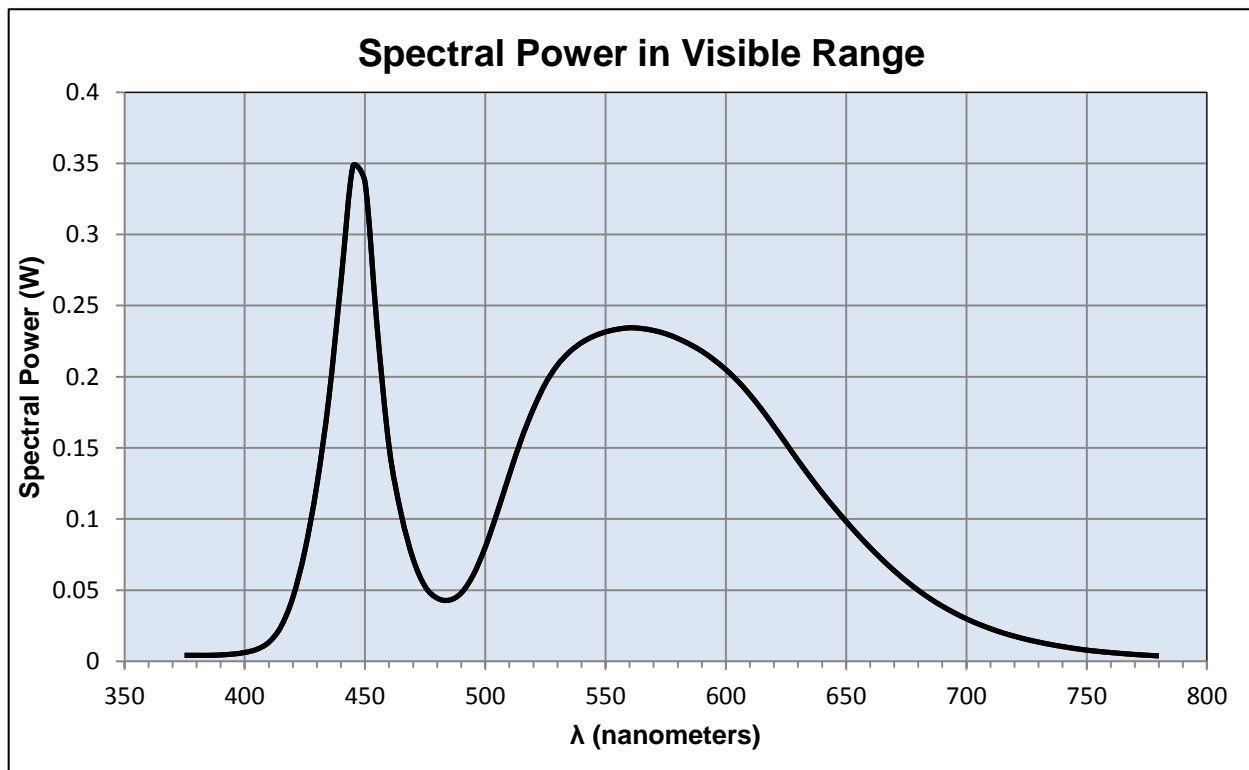
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 1.169 (A)  
Input Power: 140.2 (W)  
Input Power Factor: 0.998  
Current ATHD: 3.26 (%)

### Photometric measurements:

Luminous Flux: 14170 (lumens)  
Luminous Efficacy: 101.1 (lumens/W)  
Correlated Color Temperature (CCT): 5009 (K)  
CRI -Ra: 72.8  
CRI -R9: -16.6  
DUV: 0.0019  
CIE Coordinate (x): 0.345  
CIE Coordinate (y): 0.356  
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:

$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)
375	0.004	515	0.156	655	0.089
380	0.004	520	0.177	660	0.080
385	0.004	525	0.195	665	0.072
390	0.005	530	0.208	670	0.064
395	0.005	535	0.217	675	0.056
400	0.006	540	0.224	680	0.050
405	0.008	545	0.228	685	0.044
410	0.013	550	0.232	690	0.039
415	0.024	555	0.233	695	0.034
420	0.045	560	0.234	700	0.030
425	0.078	565	0.234	705	0.026
430	0.124	570	0.233	710	0.023
435	0.185	575	0.230	715	0.020
440	0.267	580	0.227	720	0.018
445	0.348	585	0.223	725	0.015
450	0.337	590	0.218	730	0.014
455	0.236	595	0.212	735	0.012
460	0.151	600	0.205	740	0.010
465	0.104	605	0.197	745	0.009
470	0.072	610	0.187	750	0.008
475	0.053	615	0.177	755	0.007
480	0.044	620	0.165	760	0.006
485	0.043	625	0.153	765	0.005
490	0.048	630	0.141	770	0.005
495	0.061	635	0.130	775	0.004
500	0.080	640	0.119	780	0.004
505	0.105	645	0.108		
510	0.131	650	0.098		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16044.  
Dialight unit model number FLx466xC4NP

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.177 (A)  
Input Power: 140.9 (W)  
Power Factor: 0.997

### Photometric measurements:

Absolute Luminous Flux: 14244 (lumens)  
Luminous Efficacy: 101.1 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	15428	15428	15428	15428	15428	
5	14934	14934	14934	14934	14934	563
15	10807	10807	10807	10807	10807	2670
25	6483	6483	6483	6483	6483	3024
35	4236	4236	4236	4236	4236	2869
45	3255	3255	3255	3255	3255	2543
55	1584	1584	1584	1584	1584	2067
65	168	168	168	168	168	408
75	53	53	53	53	53	82
85	5	5	5	5	5	19
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

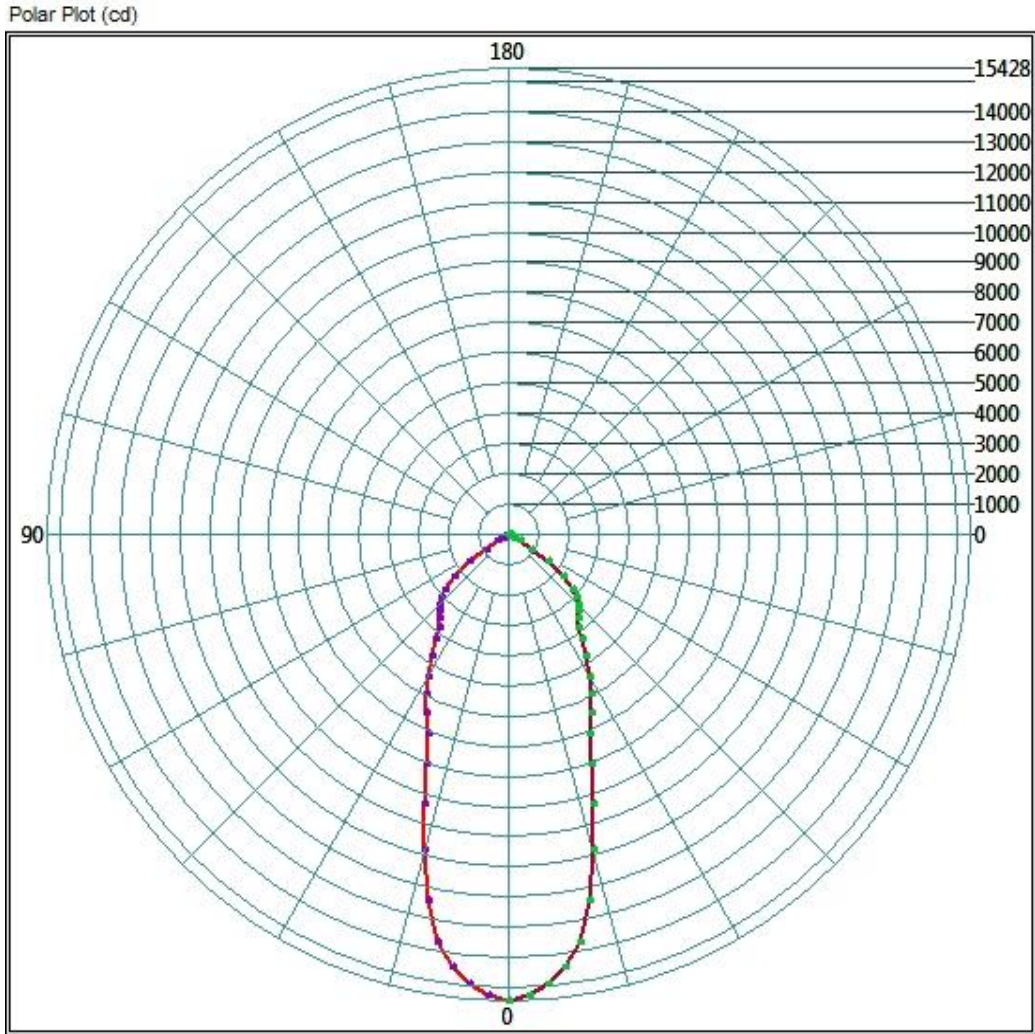
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	7753.28	54.4%
0-40	10402.88	73.0%
0-60	14045.44	98.6%
60-90	298.72	2.1%
0-90	14244	100.0%
90-180	0	0.0%
0-180	14244	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	41.89	41.89

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
42.04	42.04	110.58	110.58	6	6

Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
14174.62	94.29	13365.93	32.93	4668.12	5.71	808.70

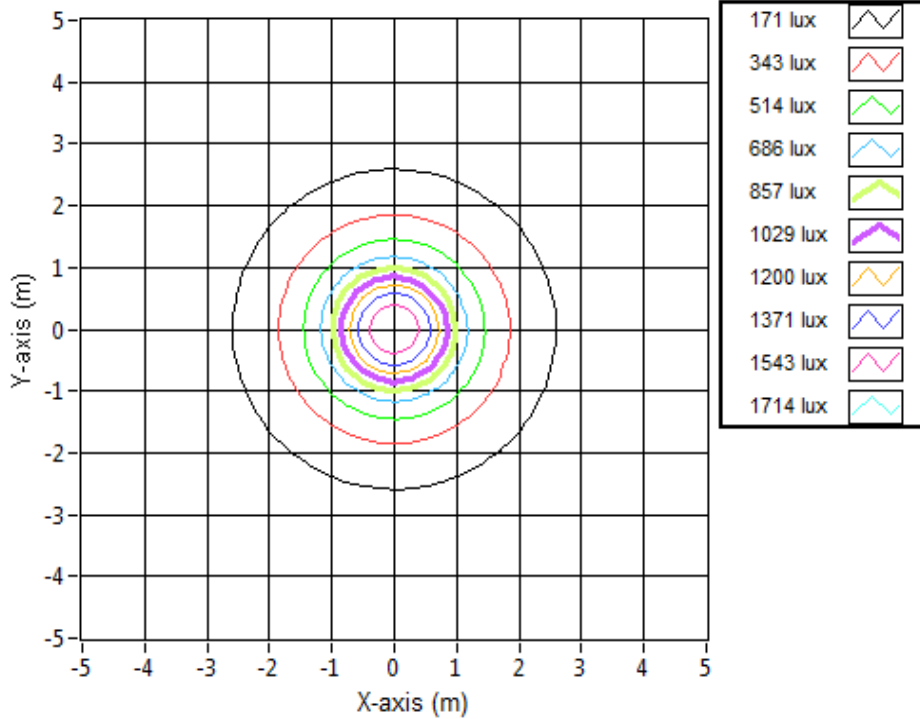


## Test Results: Goniometer

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	2.33	2.33	1660.7
6.096	4.67	4.67	415.2
9.144	7.00	7.00	184.5
12.192	9.33	9.33	103.8
15.24	11.67	11.67	66.4
18.288	14.00	14.00	46.1
21.336	16.33	16.33	33.9
24.384	18.67	18.67	25.9
27.432	21.00	21.00	20.5
30.48	23.33	23.33	16.6

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16044.  
Dialight unit model number FLx466xC4NP

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:

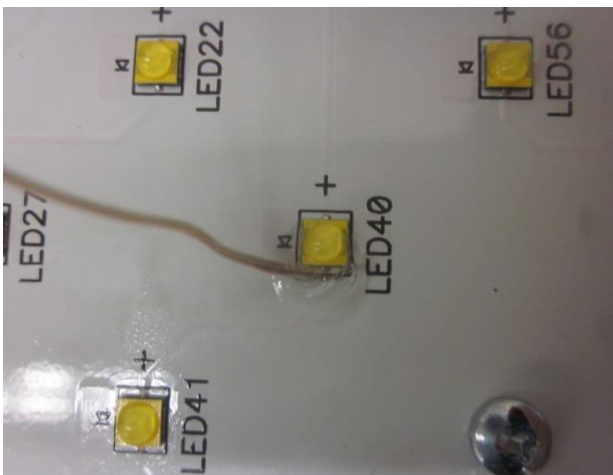
Maximum Power at Indicated Current: 1.33 (W)  
Maximum Source Temperature: 143.4 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)  
Ambient temperature at time of measurement: 23.8 (°C)  
Relative humidity at time of measurement: 21%

### Results:

Measured LED source temperature: 71.4 (°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 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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