Dialight
OPTICS LABORATORY

NVLAP
NVLAP Lab Code 201033-0

Test Report

Report Number: L15114 Date: Aug 26, 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: FLx466xC4NG

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: August 14, 2015 through August 26, 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:	L15114
Manufacturer:	Dialight Corporation
Product Name:	FLx466xC4NG
Description:	Die Cast Floodlight
Model Number:	FLx466xC4NG

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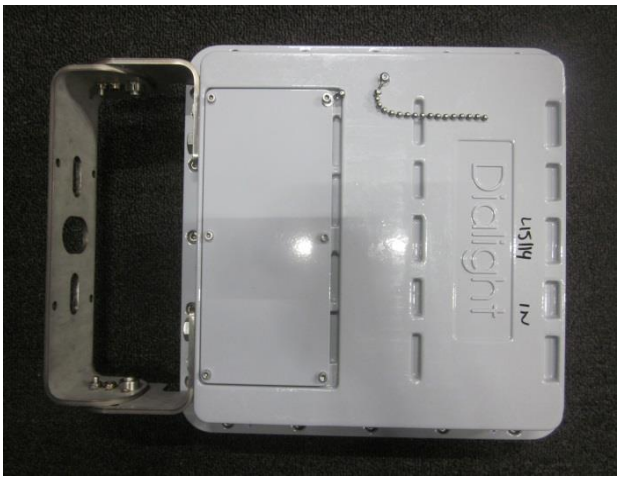
Report Summary

Sample number L15114

Dialight unit model number FLx466xC4NG

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	15590	(lumens)	15646	(lumens)
Electrical Power:	131.7	(W)	132.2	(W)
Luminous Efficacy:	118.5	(lumens/W)	118.4	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	131.7	(W)
Power Factor (120VAC):	0.997	
Current ATHD % (120VAC):	3.506	
Input Power (277VAC):	127.5	(W)
Power Factor (277VAC):	0.943	
Current ATHD % (277VAC):	8.79	

Color Measurements:

Correlated Color Temperature (CCT):	4812
Color Rendering Index (CRI):	71.5
Chromaticity Coordinate (x):	0.354
Chromaticity Coordinate (y):	0.384
Chromaticity Coordinate (u'):	0.205
Chromaticity Coordinate (v'):	0.334
DUV:	0.012

Temperature Measurements:

In Situ LED Source Temperature:	68.5	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15114.
Dialight unit model number FLx466xC4NG

Test Conditions:

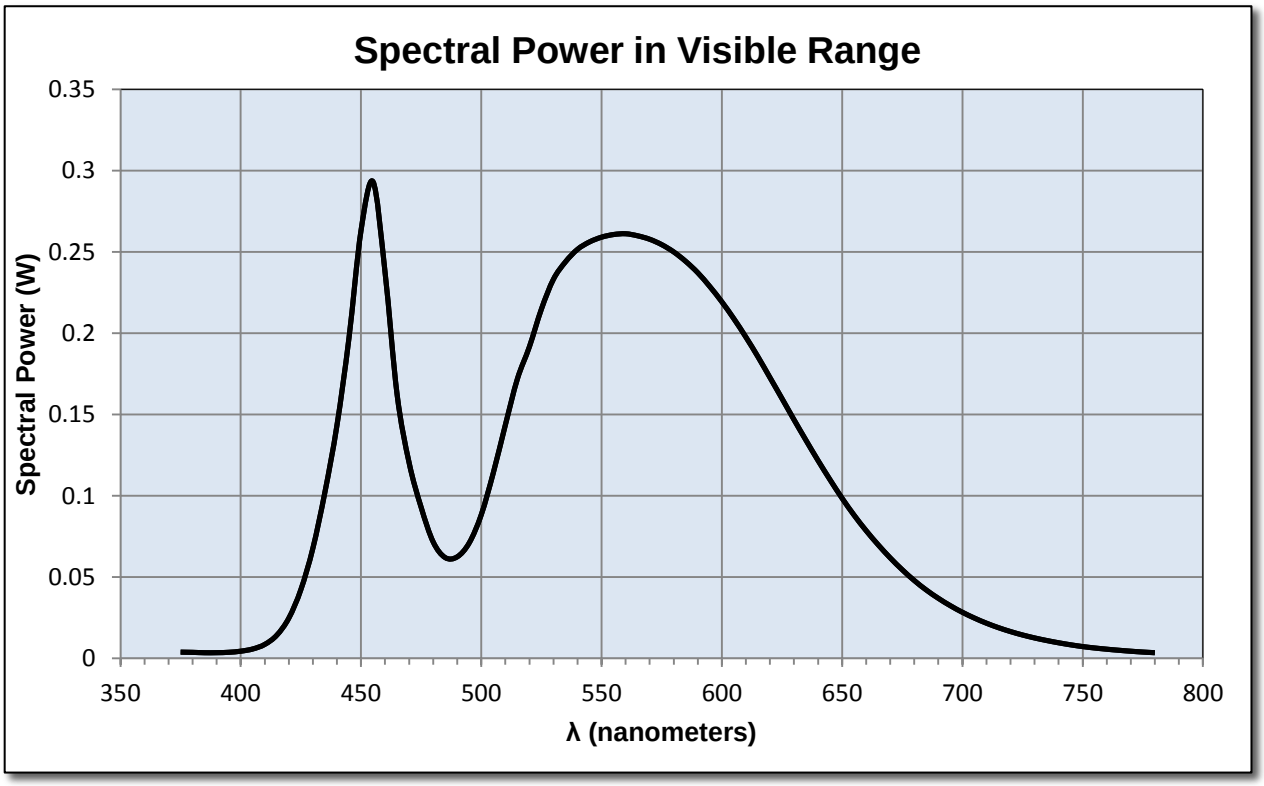
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.101	(A)
Input Power:	131.7	(W)
Input Power Factor:	0.997	
Current ATHD:	3.506	(%)

Photometric measurements:

Luminous Flux:	15590	(lumens)
Luminous Efficacy:	118.5	(lumens/W)
Correlated Color Temperature (CCT):	4812	(K)
CRI -Ra:	71.5	
CRI -R9:	-34.9	
DUV:	0.012	
CIE Coordinate (x):	0.354	
CIE Coordinate (y):	0.384	
CIE Coordinate (u'):	0.205	
CIE Coordinate (v'):	0.334	



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	0.004	515	0.172	655	0.088
380	0.004	520	0.192	660	0.079
385	0.003	525	0.215	665	0.07
390	0.003	530	0.233	670	0.062
395	0.004	535	0.244	675	0.054
400	0.004	540	0.252	680	0.048
405	0.006	545	0.256	685	0.042
410	0.009	550	0.259	690	0.037
415	0.014	555	0.261	695	0.032
420	0.025	560	0.261	700	0.028
425	0.042	565	0.26	705	0.025
430	0.068	570	0.258	710	0.022
435	0.102	575	0.254	715	0.019
440	0.143	580	0.25	720	0.016
445	0.197	585	0.244	725	0.014
450	0.263	590	0.237	730	0.013
455	0.293	595	0.229	735	0.011
460	0.237	600	0.219	740	0.01
465	0.162	605	0.209	745	0.008
470	0.12	610	0.198	750	0.007
475	0.093	615	0.185	755	0.006
480	0.072	620	0.173	760	0.006
485	0.062	625	0.16	765	0.005
490	0.062	630	0.147	770	0.004
495	0.071	635	0.134	775	0.004
500	0.088	640	0.122	780	0.003
505	0.114	645	0.11		
510	0.143	650	0.098		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15114.
Dialight unit model number FLx466xC4NG

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.1	(A)
Input Power:	132.2	(W)
Power Factor:	0.997	

Photometric measurements:

Absolute Luminous Flux:	15646	(lumens)
Luminous Efficacy:	118.4	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	30	45	60	ACROSS	OUTPUT LUMENS
0	15082	15082	15082	15082	15082	
5	14724	14724	14724	14724	14724	554
15	10607	10607	10607	10607	10607	2634
25	6709	6709	6709	6709	6709	3049
35	5076	5076	5076	5076	5076	3264
45	3466	3466	3466	3466	3466	2807
55	2442	2442	2442	2442	2442	2460
65	157	157	157	157	157	833
75	17	17	17	17	17	36
85	4	4	4	4	4	10
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	

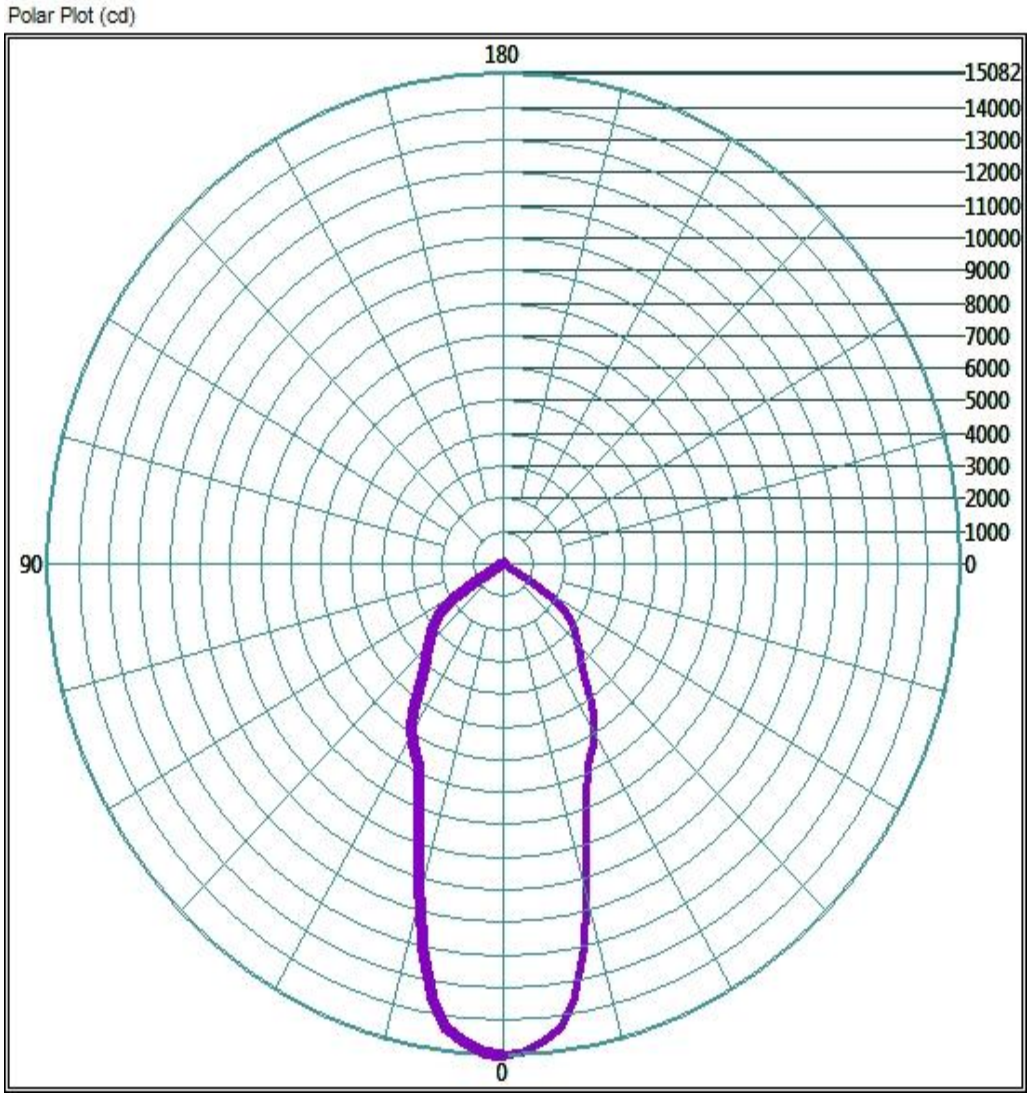
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	7873.2	50.3%
0-40	10951.92	70.0%
0-60	15443.28	98.7%
60-90	462.96	3.0%
0-90	15647.76	100.0%
90-180	0	0.0%
0-180	15647.76	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	43.17	43.17

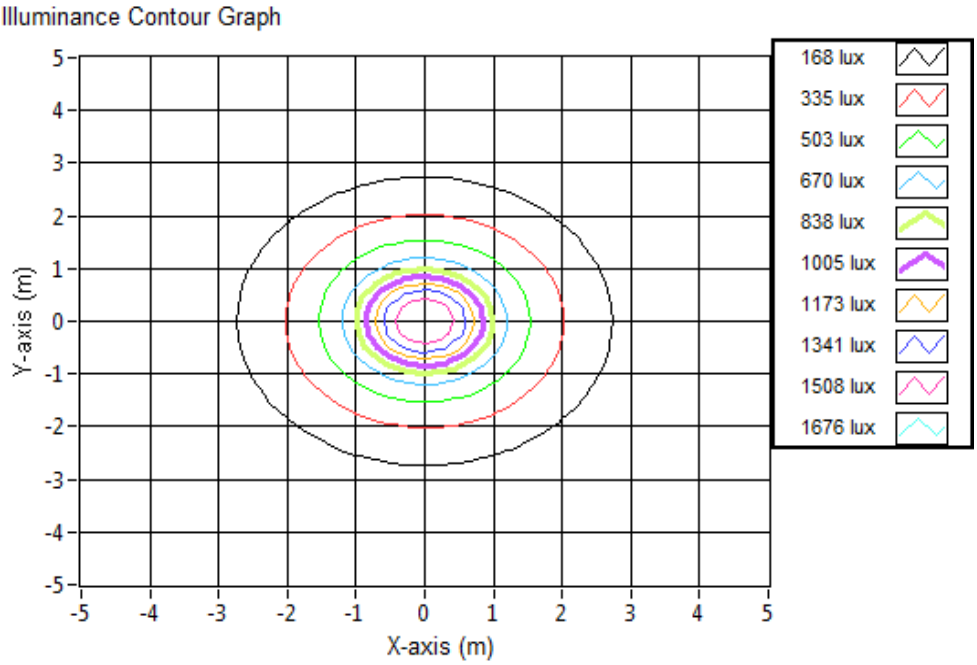
Beam Spread (at 50% Max CD)		Field Spread (at 10% Max CD)		IESNA LM-35-02 Floodlight Designation	
(deg) Horiz	(deg) Vert	(deg) Horiz	(deg) Vert	IESNA LM-35-02 Floodlight H Designation	IESNA LM-35-02 Floodlight V Designation
43.28	43.28	118.17	118.17	6	6

Total Luminous Flux	Field (%)	Field Flux (lm)	Beam Flux (%)	Beam Flux (lm)	Beam Spill (%)	Spill Flux (lm)
15599.68	97.40	15193.58	30.93	4825.76	2.60	406.11

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	2.41	2.41	1623.4
6.096	4.82	4.82	405.9
9.144	7.24	7.24	180.4
12.192	9.65	9.65	101.5
15.24	12.06	12.06	64.9
18.288	14.47	14.47	45.1
21.336	16.88	16.88	33.1
24.384	19.29	19.29	25.4
27.432	21.71	21.71	20.0
30.48	24.12	24.12	16.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15114.
Dialight unit model number FLx466xC4NG

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:

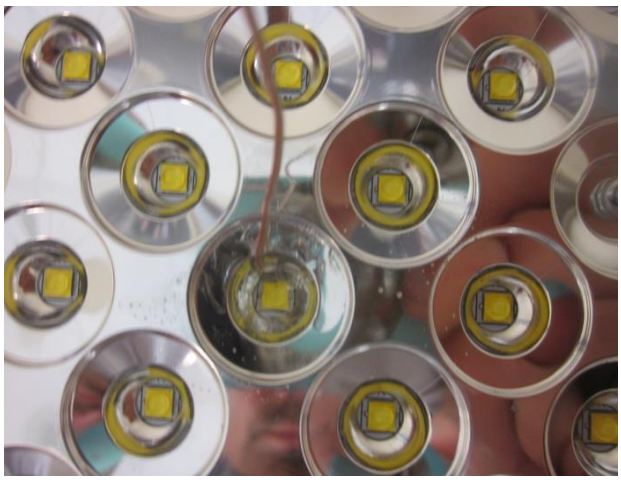
Maximum Power at Indicated Current:	1.33	(W)
Maximum Source Temperature:	143.4	(°C)

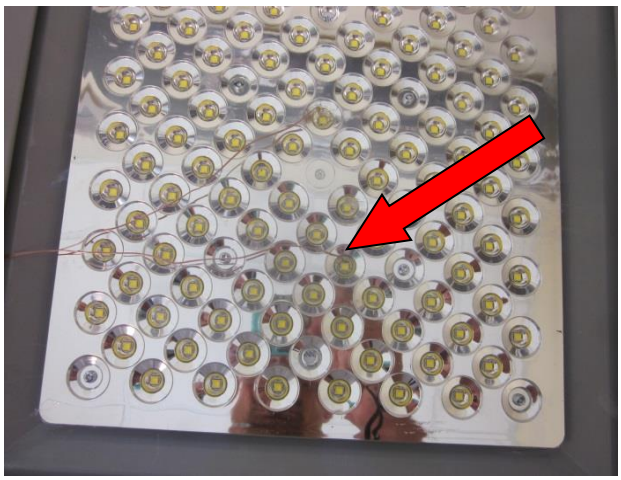
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	25.9	(°C)
Relative humidity at time of measurement:	40%	

Results:

Measured LED source temperature: 68.5 (°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