

# Test Report

Report Number: L17029

Date: Jul 24, 2017

Issued by:

Dialight Optics Laboratory  
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Vigilant Area Light  
Unit manufacturer: Dialight Corporation  
Unit model number: ALC7BC23-xxxxx-N

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:** July 12, 2017 through July 24, 2017

**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

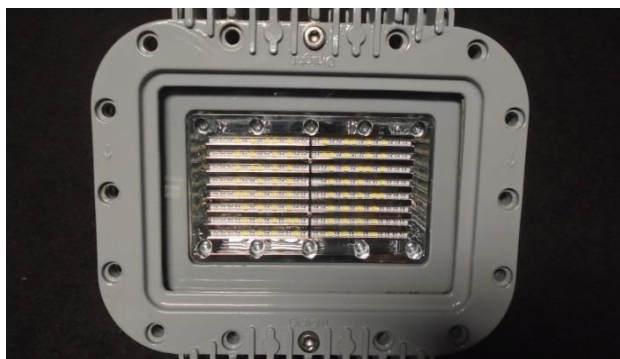
**Description of sample:**

Sample Number: L17029  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Area Light  
Description: Vigilant Area Light  
Model Number: ALC7BC23-xxxxx-N

## Report Summary

Sample number L17029  
Dialight unit model number ALC7BC23-xxxxx-N

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	2894 (lumens)	2876 (lumens)
Electrical Power:	23.5 (W)	23.6 (W)
Luminous Efficacy:	122.4 (lumens/W)	121.6 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 23.5 (W)  
 Power Factor (120VAC): 0.992  
 Current ATHD % (120VAC): 7.409  
 Input Power (277VAC): 23.4 (W)  
 Power Factor (277VAC): 0.92  
 Current ATHD % (277VAC): 16.86

### Color Measurements:

Correlated Color Temperature (CCT): 4905  
 Color Rendering Index (CRI): 82.6  
 Chromaticity Coordinate (x): 0.349  
 Chromaticity Coordinate (y): 0.361  
 Chromaticity Coordinate (u'): 0.21  
 Chromaticity Coordinate (v'): 0.327  
 DUV: 0.0033

### Temperature Measurements:

In Situ LED Source Temperature: 39.8 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L17029.

Dialight unit model number ALC7BC23-xxxxx-N

### Test Conditions:

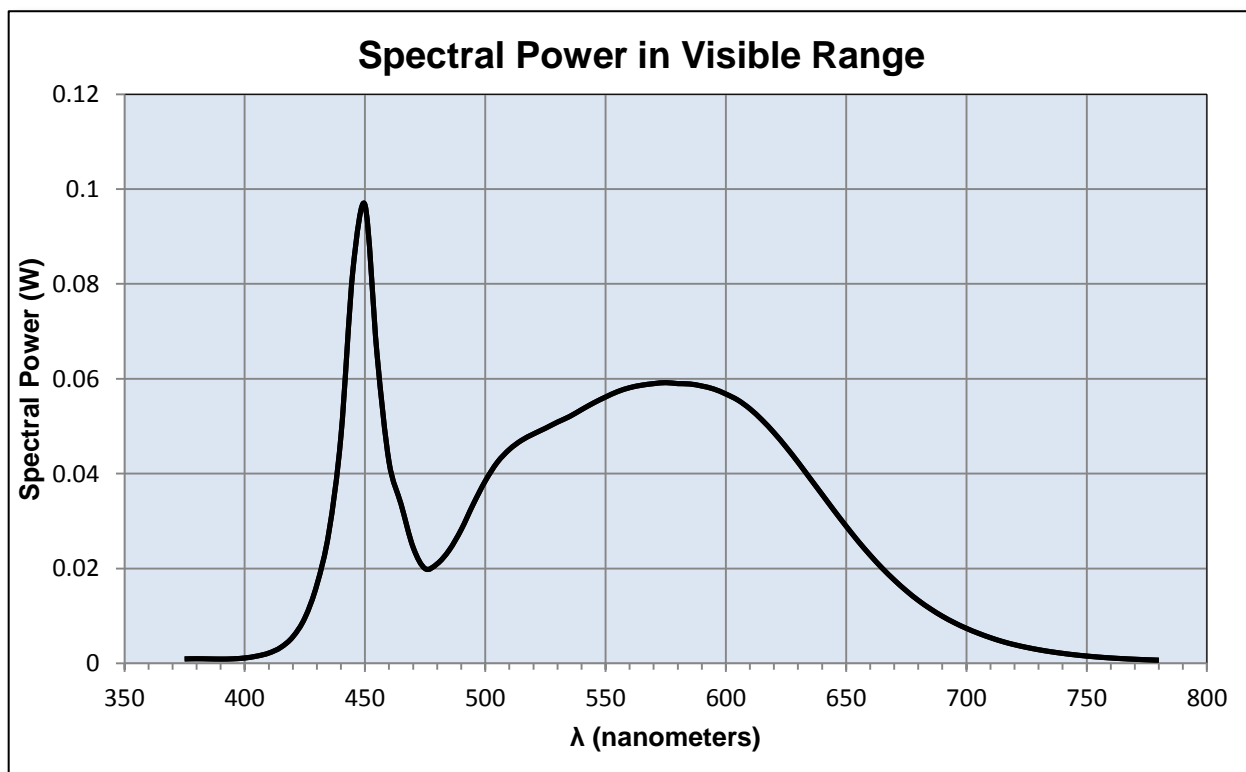
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
 Input Current: 0.198 (A)  
 Input Power: 23.5 (W)  
 Input Power Factor: 0.992  
 Current ATHD: 7.409 (%)

### Photometric measurements:

Luminous Flux: 2894 (lumens)  
 Luminous Efficacy: 122.4 (lumens/W)  
 Correlated Color Temperature (CCT): 4905 (K)  
 CRI -Ra: 82.6  
 CRI -R9: 9.9  
 DUV: 0.0033  
 CIE Coordinate (x): 0.349  
 CIE Coordinate (y): 0.361  
 CIE Coordinate (u'): 0.21  
 CIE Coordinate (v'): 0.327



## 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	0.001	515	0.047	655	0.026
380	0.001	520	0.048	660	0.023
385	0.001	525	0.050	665	0.020
390	0.001	530	0.051	670	0.018
395	0.001	535	0.052	675	0.015
400	0.001	540	0.053	680	0.013
405	0.002	545	0.055	685	0.012
410	0.002	550	0.056	690	0.010
415	0.003	555	0.057	695	0.009
420	0.006	560	0.058	700	0.007
425	0.010	565	0.059	705	0.006
430	0.017	570	0.059	710	0.005
435	0.028	575	0.059	715	0.005
440	0.048	580	0.059	720	0.004
445	0.083	585	0.059	725	0.003
450	0.097	590	0.058	730	0.003
455	0.065	595	0.058	735	0.002
460	0.042	600	0.057	740	0.002
465	0.034	605	0.056	745	0.002
470	0.024	610	0.054	750	0.002
475	0.020	615	0.051	755	0.001
480	0.021	620	0.049	760	0.001
485	0.024	625	0.046	765	0.001
490	0.028	630	0.042	770	0.001
495	0.034	635	0.039	775	0.001
500	0.038	640	0.036	780	0.001
505	0.042	645	0.032		
510	0.045	650	0.029		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L17029.  
Dialight unit model number ALC7BC23-xxxxx-N

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.19 (A)  
Input Power: 23.6 (W)  
Power Factor: 0.991

### Photometric measurements:

Absolute Luminous Flux: 2876 (lumens)  
Luminous Efficacy: 121.6 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	1114	1114	1114	1114	1114	
5	1121	1121	1119	1127	1132	42
15	1125	1139	1167	1174	1135	249
25	1101	1107	1122	1091	1039	453
35	1005	1041	1013	972	931	606
45	710	764	868	855	790	657
55	216	319	547	667	610	527
65	31	32	93	387	362	264
75	8	8	10	34	85	73
85	0	1	1	2	2	5
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

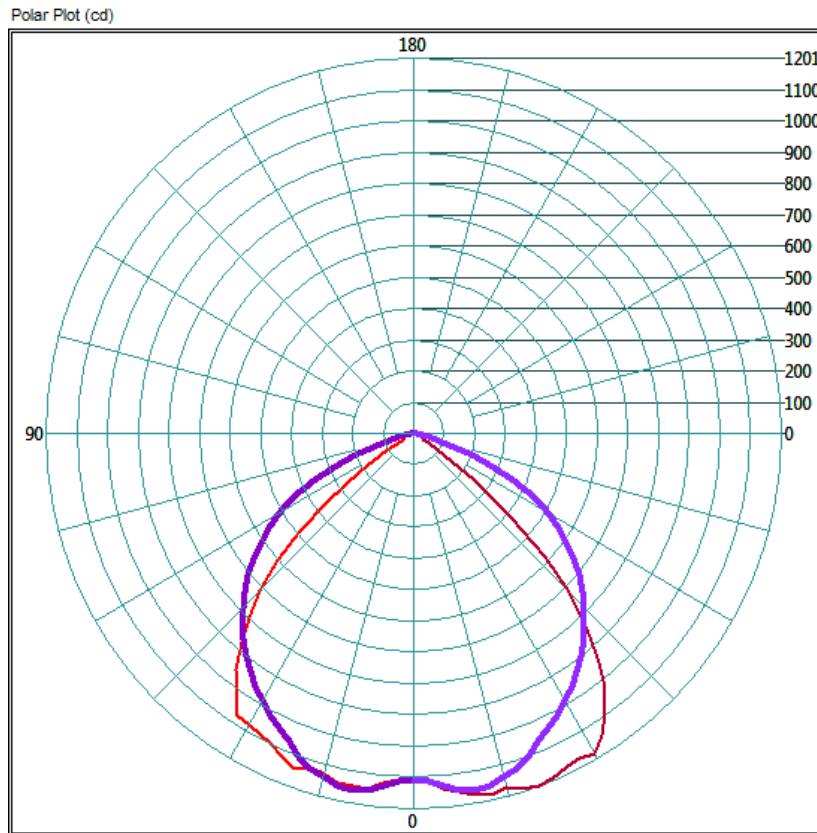
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1030.47	35.8%
0-40	1680.81	58.5%
0-60	2693.86	93.7%
60-90	253.88	8.8%
0-90	2875.4	100.0%
90-180	0	0.0%
0-180	2875.4	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

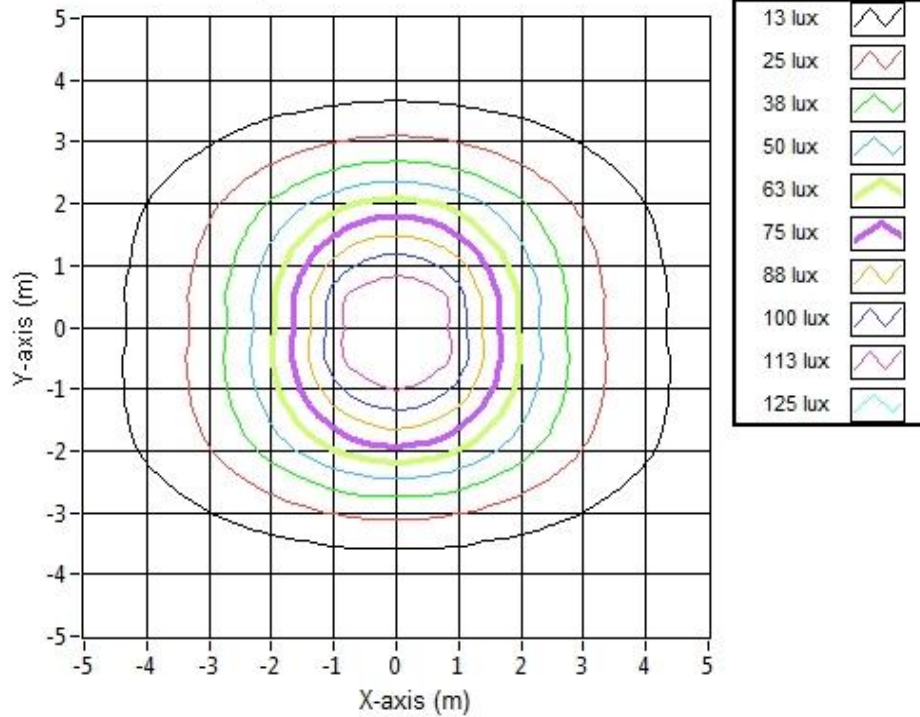


## Test Results: Goniometer

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	6.81	9.60	119.9
6.096	13.63	19.20	30.0
9.144	20.44	28.80	13.3
12.192	27.25	38.41	7.5
15.24	34.07	48.01	4.8
18.288	40.88	57.61	3.3
21.336	47.69	67.21	2.4
24.384	54.51	76.81	1.9
27.432	61.32	86.41	1.5
30.48	68.13	96.02	1.2

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L17029.

Dialight unit model number ALC7BC23-xxxxx-N

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 48 (mA)

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 250 (mA)  
Maximum Rated Power Dissipation: 1.5 (W)  
Maximum Junction Temp. (Tj): 125 (°C)  
Thermal Resistance (Rth): 17 (°C/W)

Derived Specifications:

Maximum Power at Indicated Current: 0.288 (W)  
Maximum Source Temperature: 120.1 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below

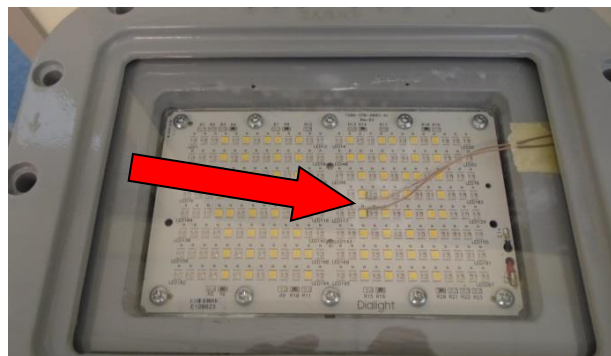
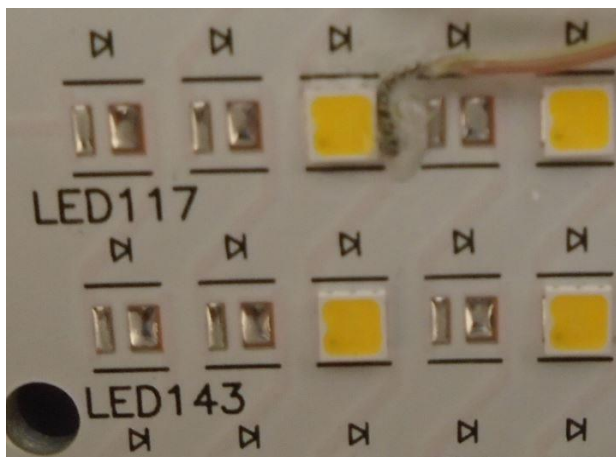
Ambient Temperature: 25° ± 5' (°C)

Ambient temperature at time of measurement: 24.1 (°C)

Relative humidity at time of measurement: 30%

### Results:

Measured LED source temperature: 39.8 (°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
Delta Elektronika DC Power Supply	SM.300-5
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
TPI Digital Thermometer	TPI 343
Fluke 52II Thermometer	068158
Fluke 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
BK Precision	1715A
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640
GwINSTEK DC Power Supply	GEP172679
Osram Sylvania Calibration Lamp for Sphere	STD-20WF-3

**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.

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