

# Test Report

Report Number: L17022

Date: Jun 8, 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: ALC7AC23-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:** December 5, 2016 through June 7, 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

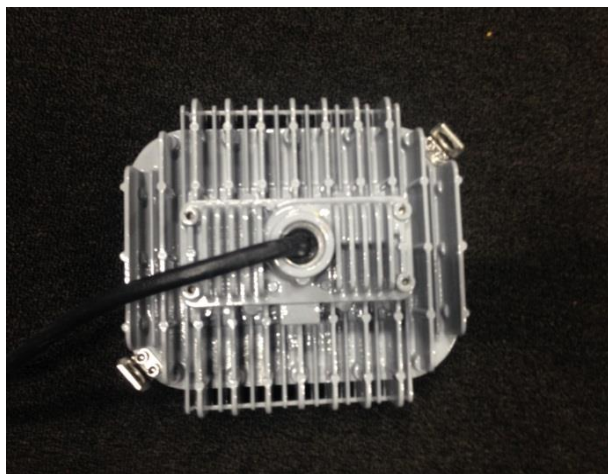
**Description of sample:**

Sample Number: L17022  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Area Light  
Description: Vigilant Area Light  
Model Number: ALC7AC23-xxxxx-N

## Report Summary

Sample number L17022  
Dialight unit model number ALC7AC23-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:	2923 (lumens)	2900 (lumens)
Electrical Power:	23.5 (W)	23.7 (W)
Luminous Efficacy:	124.3 (lumens/W)	122.5 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 23.5 (W)  
Power Factor (120VAC): 0.992  
Current ATHD % (120VAC): 7.439  
Input Power (277VAC): 23.3 (W)  
Power Factor (277VAC): 0.926  
Current ATHD % (277VAC): 17.2

### Color Measurements:

Correlated Color Temperature (CCT): 4010  
Color Rendering Index (CRI): 83.6  
Chromaticity Coordinate (x): 0.381  
Chromaticity Coordinate (y): 0.38  
Chromaticity Coordinate (u'): 0.224  
Chromaticity Coordinate (v'): 0.335  
DUV: 0.0012

### Temperature Measurements:

In Situ LED Source Temperature: 37.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L17022.

Dialight unit model number ALC7AC23-xxxxx-N

### Test Conditions:

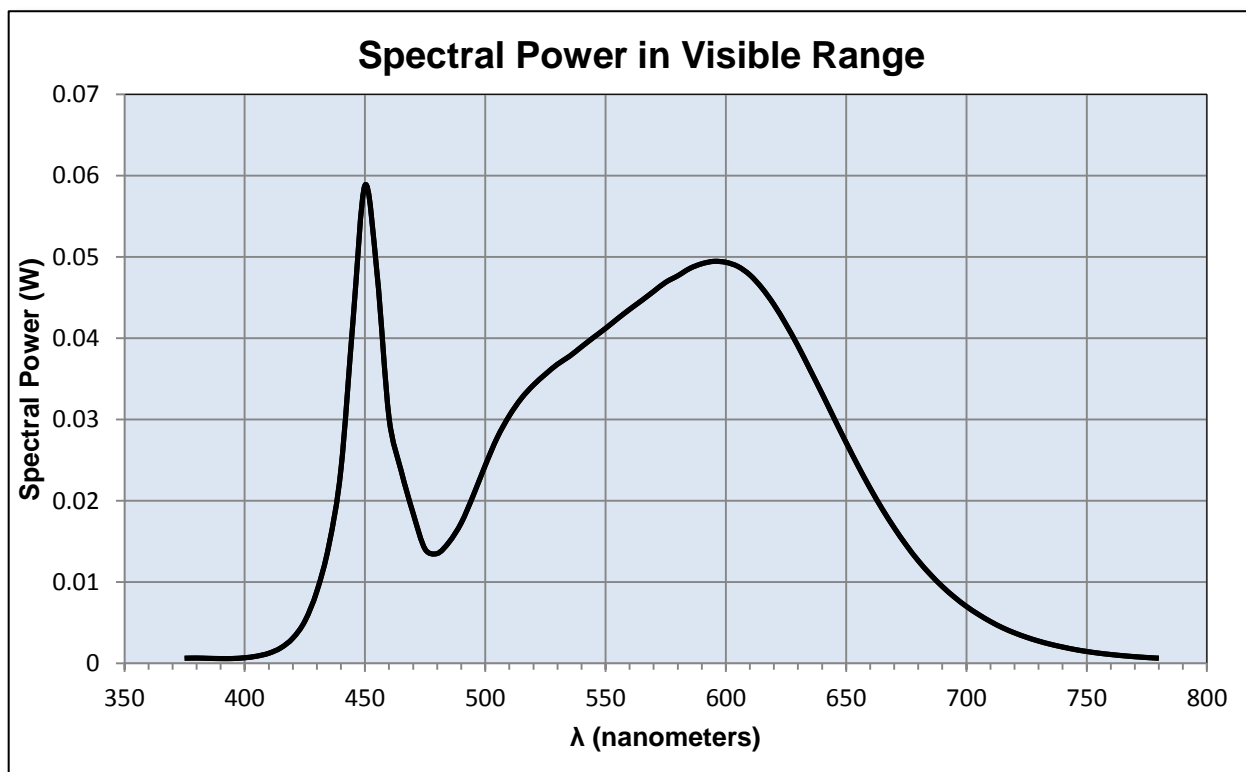
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 0.198 (A)  
Input Power: 23.5 (W)  
Input Power Factor: 0.992  
Current ATHD: 7.439 (%)

### Photometric measurements:

Luminous Flux: 2923 (lumens)  
Luminous Efficacy: 124.3 (lumens/W)  
Correlated Color Temperature (CCT): 4010 (K)  
CRI -Ra: 83.6  
CRI -R9: 14.4  
DUV: 0.0012  
CIE Coordinate (x): 0.381  
CIE Coordinate (y): 0.38  
CIE Coordinate (u'): 0.224  
CIE Coordinate (v'): 0.335



## 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	0.033	655	0.024
380	0.001	520	0.034	660	0.022
385	0.001	525	0.036	665	0.019
390	0.001	530	0.037	670	0.017
395	0.001	535	0.038	675	0.015
400	0.001	540	0.039	680	0.013
405	0.001	545	0.040	685	0.011
410	0.001	550	0.041	690	0.009
415	0.002	555	0.042	695	0.008
420	0.003	560	0.044	700	0.007
425	0.005	565	0.045	705	0.006
430	0.009	570	0.046	710	0.005
435	0.015	575	0.047	715	0.004
440	0.024	580	0.048	720	0.004
445	0.042	585	0.049	725	0.003
450	0.059	590	0.049	730	0.003
455	0.048	595	0.049	735	0.002
460	0.030	600	0.049	740	0.002
465	0.024	605	0.049	745	0.002
470	0.018	610	0.048	750	0.001
475	0.014	615	0.046	755	0.001
480	0.014	620	0.044	760	0.001
485	0.015	625	0.042	765	0.001
490	0.017	630	0.039	770	0.001
495	0.021	635	0.036	775	0.001
500	0.024	640	0.033	780	0.001
505	0.028	645	0.030		
510	0.030	650	0.027		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L17022.  
Dialight unit model number ALC7AC23-xxxxx-N

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.199 (A)  
Input Power: 23.7 (W)  
Power Factor: 0.991

### Photometric measurements:

Absolute Luminous Flux: 2900 (lumens)  
Luminous Efficacy: 122.5 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	1407	1407	1407	1407	1407	
5	1397	1399	1399	1416	1427	52
15	1503	1490	1486	1462	1428	298
25	1675	1638	1546	1365	1303	501
35	1639	1653	1568	1295	1159	602
45	1177	1296	1418	1216	973	615
55	321	508	908	1052	745	494
65	15	21	153	661	440	259
75	6	8	8	51	101	72
85	0	1	1	1	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

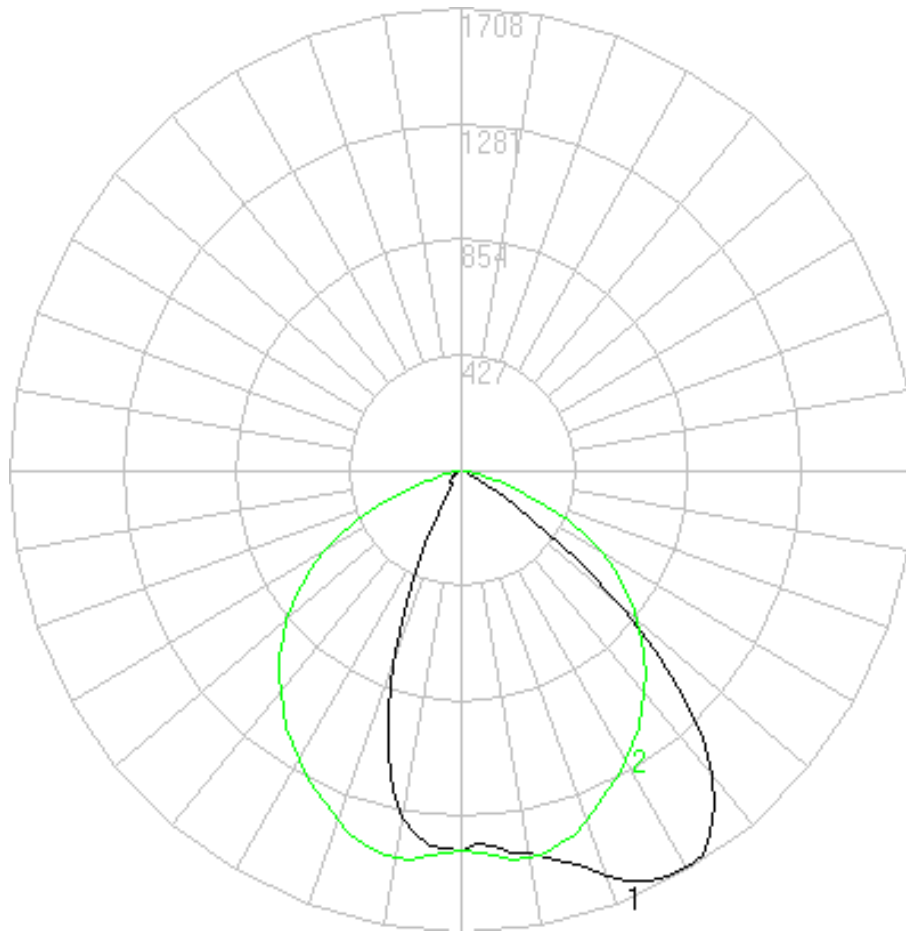
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1145.52	39.5%
0-40	1765.65	60.9%
0-60	2720.87	93.8%
60-90	250.29	8.6%
0-90	2899.24	100.0%
90-180	0	0.0%
0-180	2899.24	100.0%

## Test Results: Goniometer

Results continued from previous page.

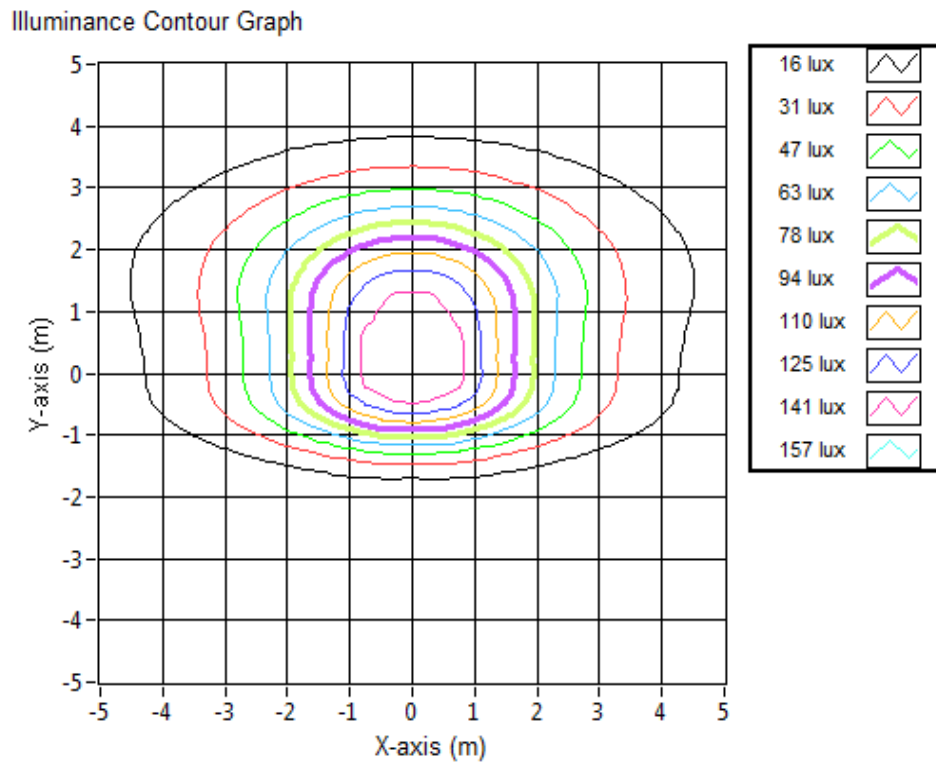
### Polar Plot:



## 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	4.92	9.25	151.4
6.096	9.84	18.50	37.9
9.144	14.76	27.75	16.8
12.192	19.68	37.00	9.5
15.24	24.60	46.25	6.1
18.288	29.52	55.50	4.2
21.336	34.44	64.75	3.1
24.384	39.37	74.00	2.4
27.432	44.29	83.25	1.9
30.48	49.21	92.50	1.5

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L17022.

Dialight unit model number ALC7AC23-xxxxx-N

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 39 (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:

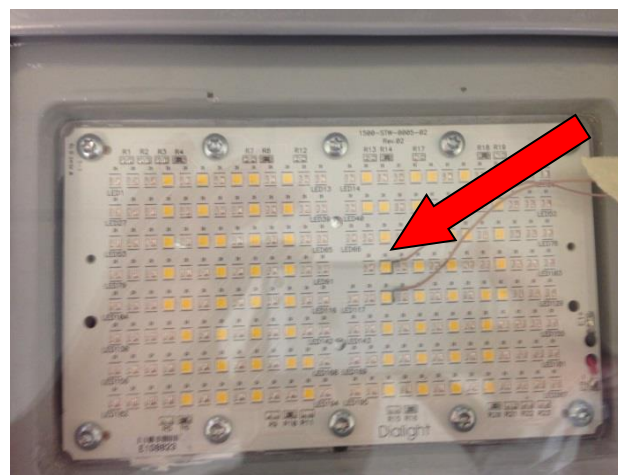
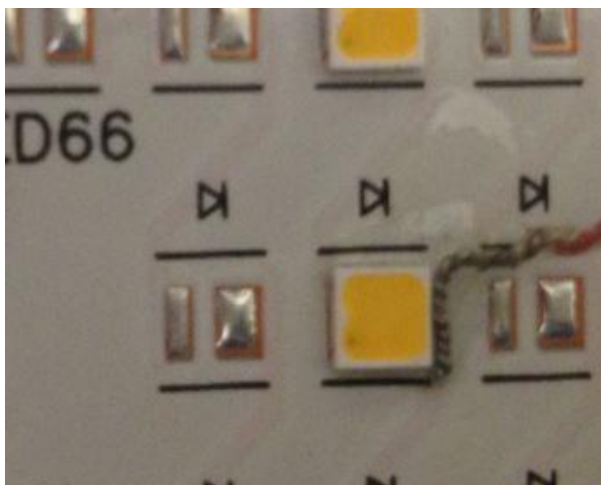
Maximum Power at Indicated Current: 0.234 (W)  
Maximum Source Temperature: 121 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature: 25° ± 5' (°C)  
Ambient temperature at time of measurement: 24 (°C)  
Relative humidity at time of measurement: 39%

### Results:

**Measured LED source temperature: 37.2 (°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
Delta Elektronika DC Power Supply	SM.300-5
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 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
Dialight Golden Sample	HB1N4N
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
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ITL Osram Calibraton lamps for Goniometer	J9a8
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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Optical Engineer  
Approved Signatory