

# Test Report

Report Number: L17028

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: ALU5BC23-xxxx-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 21, 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: L17028  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Area Light  
Description: Vigilant Area Light  
Model Number: ALU5BC23-xxxx-N

## Report Summary

Sample number L17028  
Dialight unit model number ALU5BC23-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:	2824 (lumens)	2750 (lumens)
Electrical Power:	23.5 (W)	23.5 (W)
Luminous Efficacy:	120.4 (lumens/W)	117 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 23.5 (W)  
Power Factor (120VAC): 0.995  
Current ATHD % (120VAC): 7.42  
Input Power (277VAC): 23.3 (W)  
Power Factor (277VAC): 0.925  
Current ATHD % (277VAC): 16.45

### Color Measurements:

Correlated Color Temperature (CCT): 4831  
Color Rendering Index (CRI): 82.8  
Chromaticity Coordinate (x): 0.351  
Chromaticity Coordinate (y): 0.362  
Chromaticity Coordinate (u'): 0.211  
Chromaticity Coordinate (v'): 0.327  
DUV: 0.0031

### Temperature Measurements:

In Situ LED Source Temperature: 41.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L17028.

Dialight unit model number ALU5BC23-xxxxx-N

### Test Conditions:

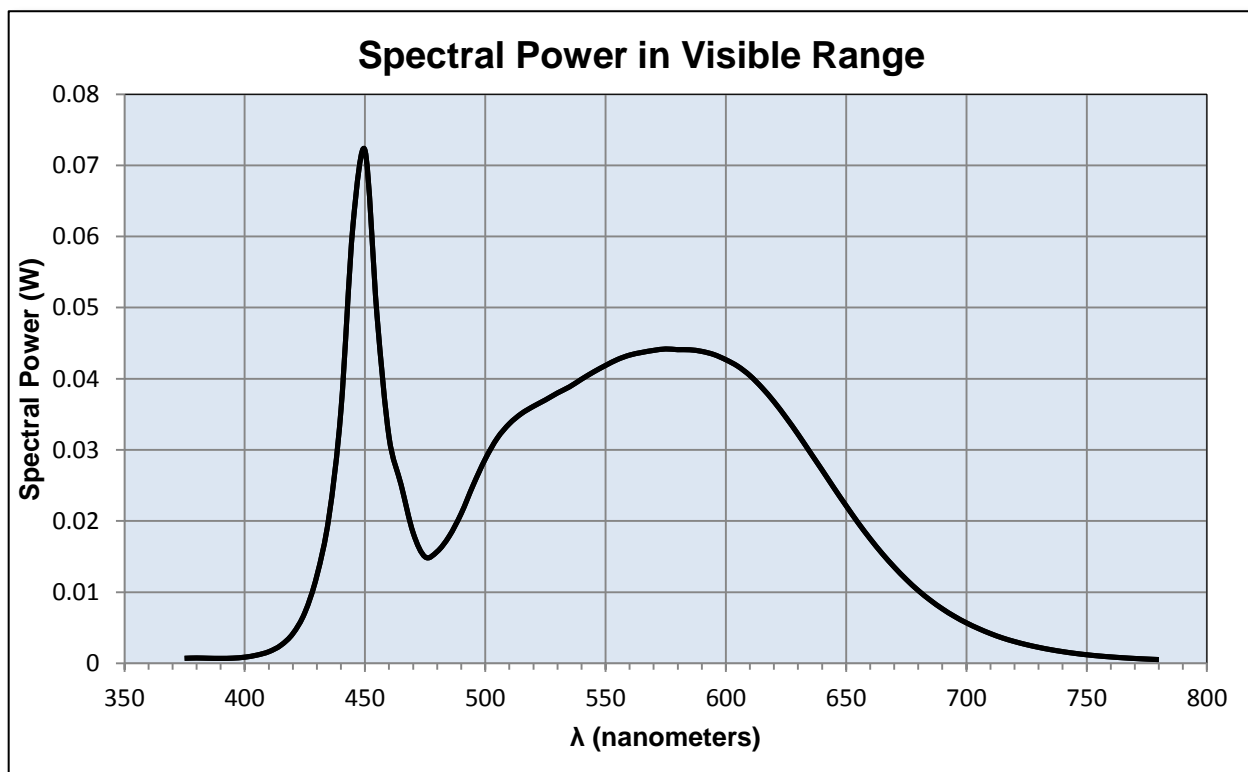
Ambient Temperature: 25 ± 1 (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 0.196 (A)  
Input Power: 23.5 (W)  
Input Power Factor: 0.995  
Current ATHD: 7.42 (%)

### Photometric measurements:

Luminous Flux: 2824 (lumens)  
Luminous Efficacy: 120.4 (lumens/W)  
Correlated Color Temperature (CCT): 4831 (K)  
CRI -Ra: 82.8  
CRI -R9: 10.3  
DUV: 0.0031  
CIE Coordinate (x): 0.351  
CIE Coordinate (y): 0.362  
CIE Coordinate (u'): 0.211  
CIE Coordinate (v'): 0.327



## 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	0.001	515	0.035	655	0.020
380	0.001	520	0.036	660	0.018
385	0.001	525	0.037	665	0.015
390	0.001	530	0.038	670	0.014
395	0.001	535	0.039	675	0.012
400	0.001	540	0.040	680	0.010
405	0.001	545	0.041	685	0.009
410	0.002	550	0.042	690	0.008
415	0.003	555	0.043	695	0.007
420	0.004	560	0.043	700	0.006
425	0.007	565	0.044	705	0.005
430	0.012	570	0.044	710	0.004
435	0.021	575	0.044	715	0.004
440	0.036	580	0.044	720	0.003
445	0.062	585	0.044	725	0.003
450	0.072	590	0.044	730	0.002
455	0.049	595	0.043	735	0.002
460	0.032	600	0.043	740	0.002
465	0.025	605	0.042	745	0.001
470	0.018	610	0.040	750	0.001
475	0.015	615	0.039	755	0.001
480	0.016	620	0.037	760	0.001
485	0.018	625	0.035	765	0.001
490	0.021	630	0.032	770	0.001
495	0.025	635	0.030	775	0.001
500	0.029	640	0.027	780	0.001
505	0.032	645	0.025		
510	0.034	650	0.022		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L17028.  
Dialight unit model number ALU5BC23-xxxxx-N

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.197 (A)  
Input Power: 23.5 (W)  
Power Factor: 0.99

### Photometric measurements:

Absolute Luminous Flux: 2750 (lumens)  
Luminous Efficacy: 117.0 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	1081	1081	1081	1081	1081	
5	1080	1076	1077	1080	1084	40
15	1065	1062	1058	1055	1059	230
25	1021	1014	1005	977	964	412
35	888	892	903	862	843	537
45	635	672	736	740	708	569
55	259	342	488	599	601	476
65	75	86	170	420	436	304
75	36	36	44	120	220	135
85	16	16	17	24	47	40
95	0	0	0	0	0	5
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

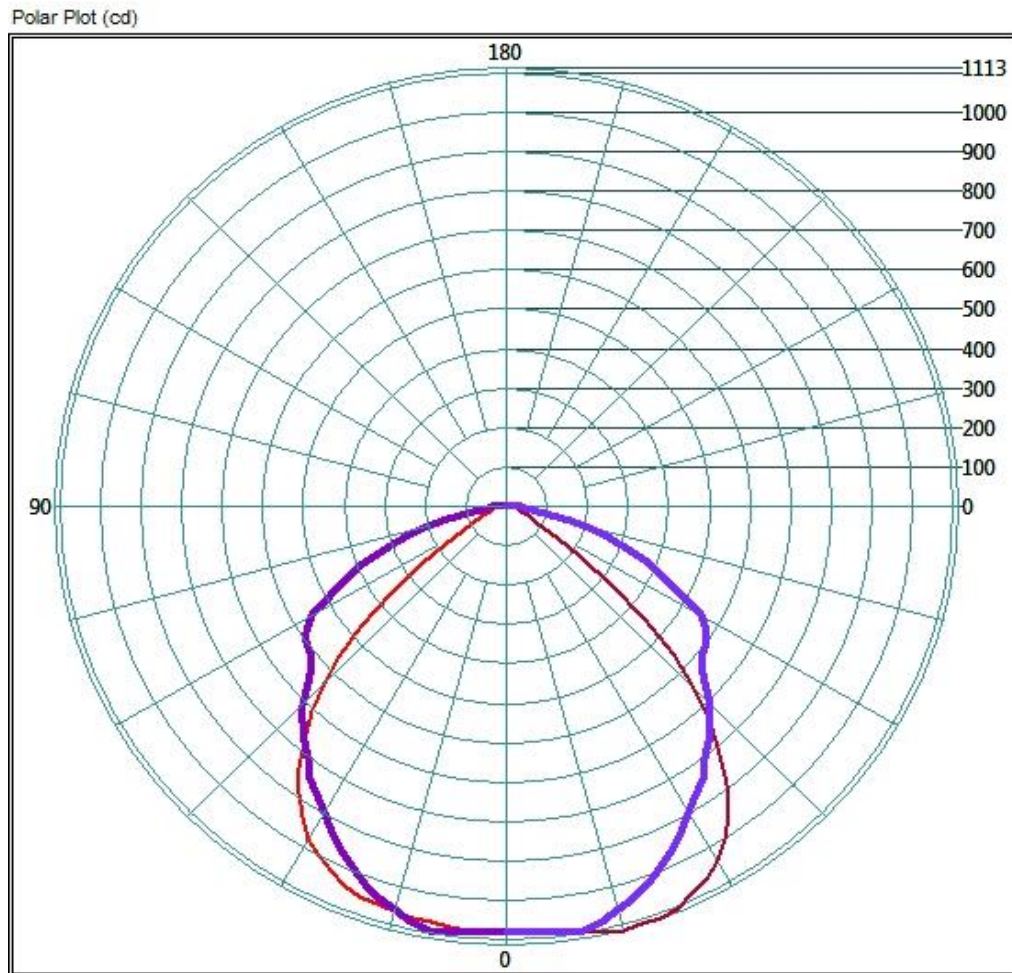
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	939.77	34.2%
0-40	1506.98	54.8%
0-60	2440.22	88.8%
60-90	391.65	14.2%
0-90	2749.46	100.0%
90-180	0	0.0%
0-180	2749.46	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

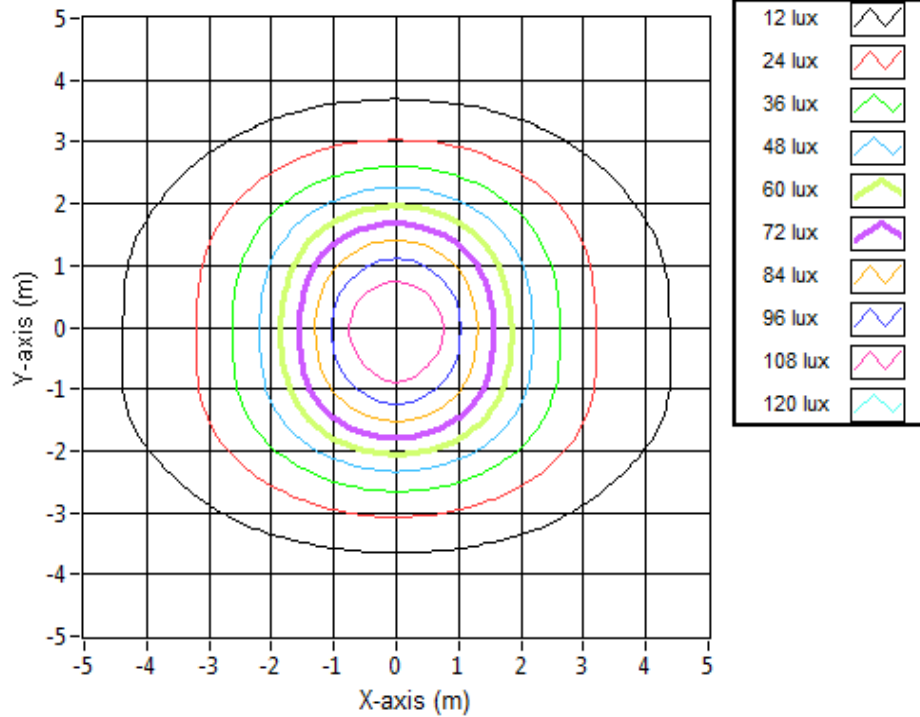


## Test Results: Goniometer

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	6.76	10.75	116.3
6.096	13.52	21.50	29.1
9.144	20.29	32.25	12.9
12.192	27.05	43.00	7.3
15.24	33.81	53.75	4.7
18.288	40.57	64.50	3.2
21.336	47.34	75.25	2.4
24.384	54.10	86.00	1.8
27.432	60.86	96.75	1.4
30.48	67.62	107.50	1.2

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L17028.

Dialight unit model number ALU5BC23-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

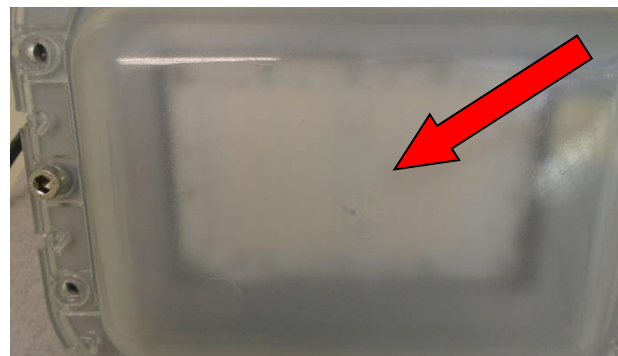
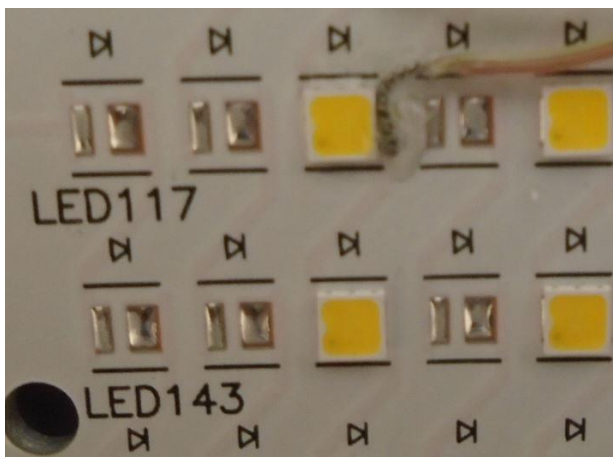
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)

Ambient temperature at time of measurement: 23.6 (°C)

Relative humidity at time of measurement: 42%

### Results:

Measured LED source temperature: 41.2 (°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
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
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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.

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Approved Signatory