

Test Report

Report Number: L17008

Date: Apr 13, 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: ALF5AN23-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: April 6, 2017 through April 13, 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

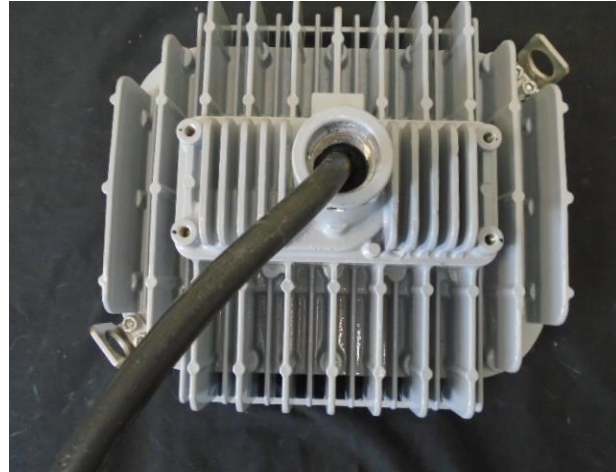
Description of sample:

Sample Number: L17008
Manufacturer: Dialight Corporation
Product Name: Vigilant Area Light
Description: Vigilant Area Light
Model Number: ALF5AN23-XXXXX-N

Report Summary

Sample number L17008
Dialight unit model number ALF5AN23-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:	2797 (lumens)	2823 (lumens)
Electrical Power:	23.8 (W)	23.9 (W)
Luminous Efficacy:	117.7 (lumens/W)	118.2 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 23.8 (W)
Power Factor (120VAC): 0.992
Current ATHD % (120VAC): 7.112
Input Power (277VAC): 23.6 (W)
Power Factor (277VAC): 0.926
Current ATHD % (277VAC): 16.4

Color Measurements:

Correlated Color Temperature (CCT): 3945
Color Rendering Index (CRI): 83.6
Chromaticity Coordinate (x): 0.384
Chromaticity Coordinate (y): 0.381
Chromaticity Coordinate (u'): 0.226
Chromaticity Coordinate (v'): 0.336
DUV: 0.0012

Temperature Measurements:

In Situ LED Source Temperature: 40.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L17008.

Dialight unit model number ALF5AN23-XXXXX-N

Test Conditions:

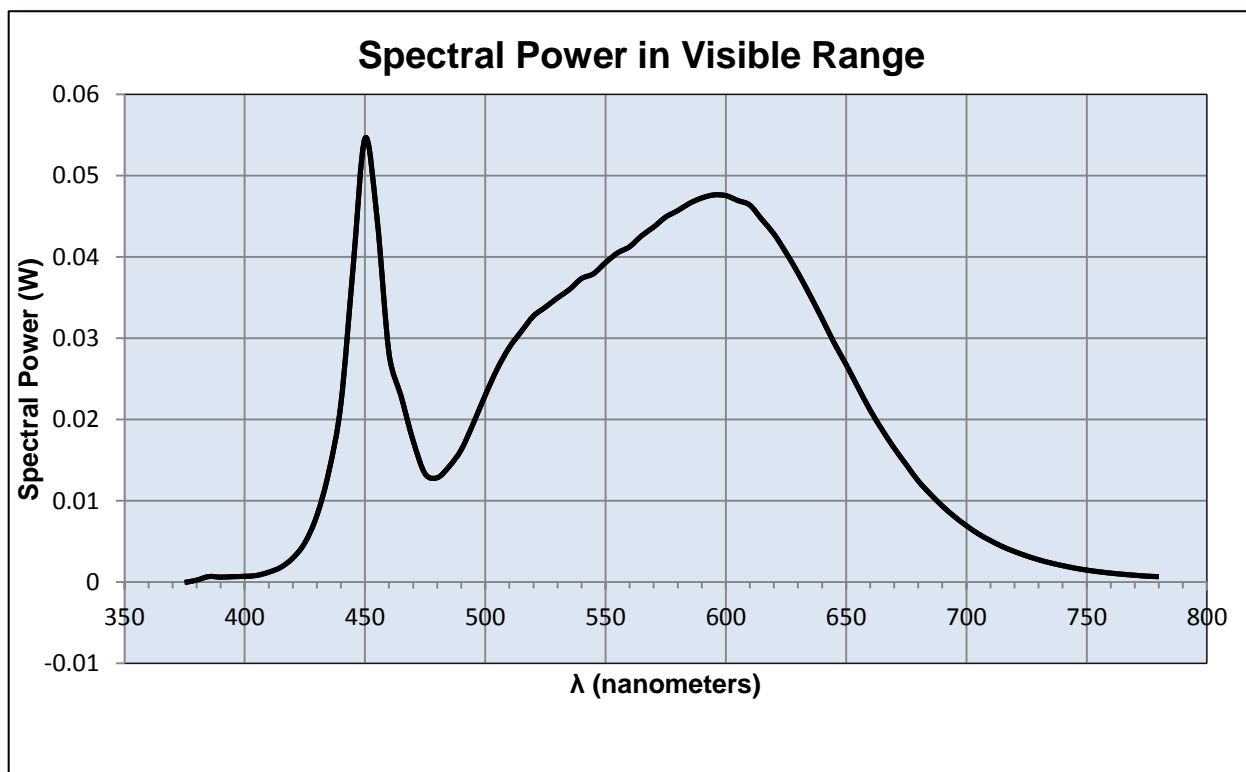
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.2 (A)
 Input Power: 23.8 (W)
 Input Power Factor: 0.992
 Current ATHD: 7.112 (%)

Photometric measurements:

Luminous Flux: 2797 (lumens)
 Luminous Efficacy: 117.7 (lumens/W)
 Correlated Color Temperature (CCT): 3945 (K)
 CRI -Ra: 83.6
 CRI -R9: 13.9
 DUV: 0.0012
 CIE Coordinate (x): 0.384
 CIE Coordinate (y): 0.381
 CIE Coordinate (u'): 0.226
 CIE Coordinate (v'): 0.336



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	0.000	515	0.031	655	0.024
380	0.000	520	0.033	660	0.021
385	0.001	525	0.034	665	0.019
390	0.001	530	0.035	670	0.016
395	0.001	535	0.036	675	0.014
400	0.001	540	0.037	680	0.012
405	0.001	545	0.038	685	0.011
410	0.001	550	0.039	690	0.009
415	0.002	555	0.040	695	0.008
420	0.003	560	0.041	700	0.007
425	0.005	565	0.043	705	0.006
430	0.008	570	0.044	710	0.005
435	0.014	575	0.045	715	0.004
440	0.022	580	0.046	720	0.004
445	0.039	585	0.047	725	0.003
450	0.055	590	0.047	730	0.003
455	0.045	595	0.048	735	0.002
460	0.028	600	0.048	740	0.002
465	0.023	605	0.047	745	0.002
470	0.017	610	0.046	750	0.001
475	0.013	615	0.045	755	0.001
480	0.013	620	0.043	760	0.001
485	0.014	625	0.041	765	0.001
490	0.016	630	0.038	770	0.001
495	0.019	635	0.035	775	0.001
500	0.023	640	0.032	780	0.001
505	0.026	645	0.029		
510	0.029	650	0.027		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L17008.
Dialight unit model number ALF5AN23-XXXXX-N

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.2 (A)
Input Power: 23.9 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 2823 (lumens)
Luminous Efficacy: 118.2 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	1366	1366	1366	1366	1366	
5	1372	1371	1375	1378	1374	51
15	1388	1375	1362	1350	1335	279
25	1499	1449	1356	1250	1211	459
35	1474	1449	1354	1133	1050	549
45	1067	1138	1216	1032	875	553
55	457	588	821	910	736	459
65	82	125	304	698	521	302
75	30	32	48	191	241	130
85	13	13	15	27	46	37
95	0	0	0	0	0	4
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

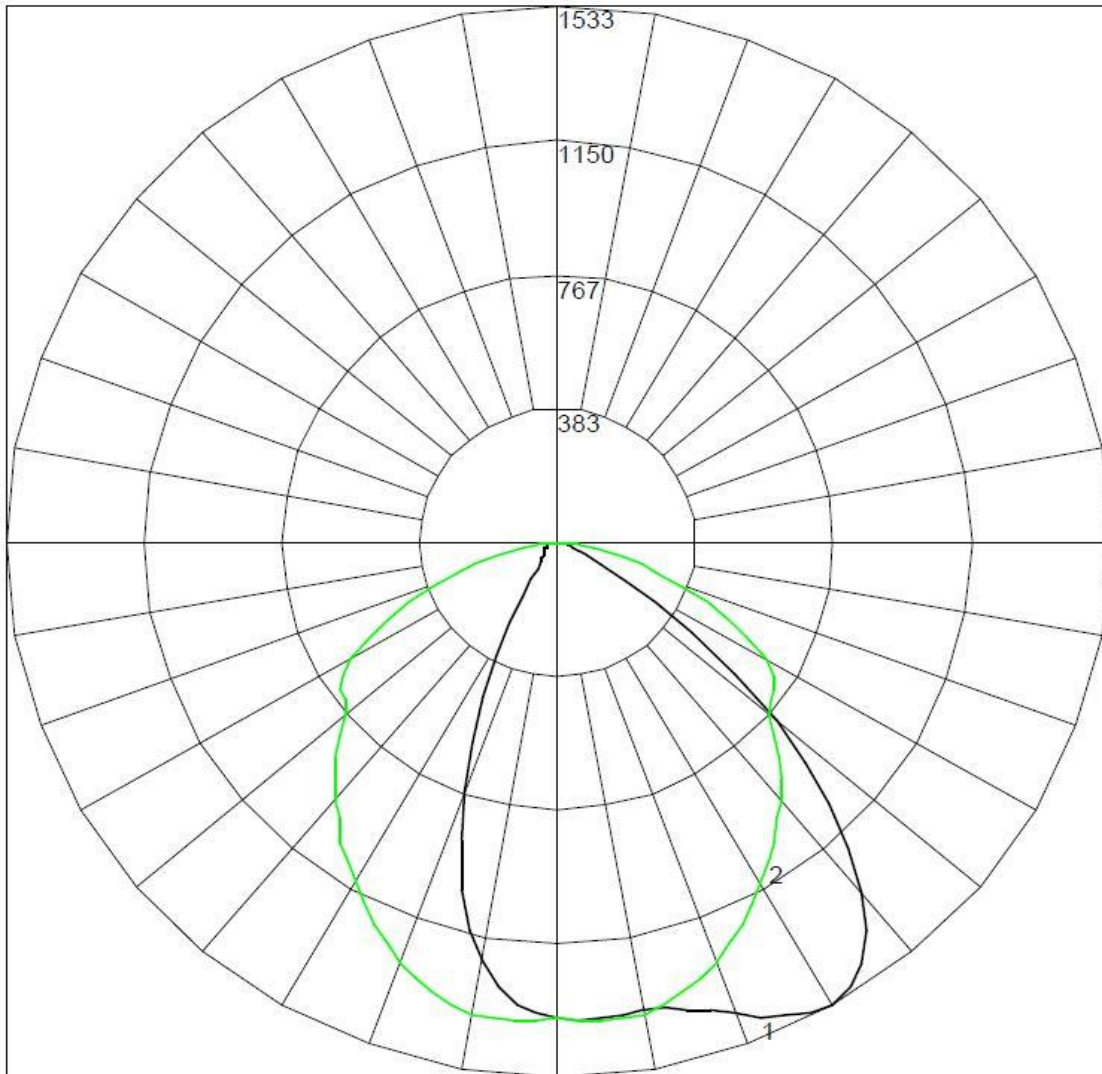
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1056.71	37.4%
0-40	1618.84	57.4%
0-60	2523.34	89.4%
60-90	381.16	13.5%
0-90	2822.27	100.0%
90-180	0	0.0%
0-180	2822.27	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

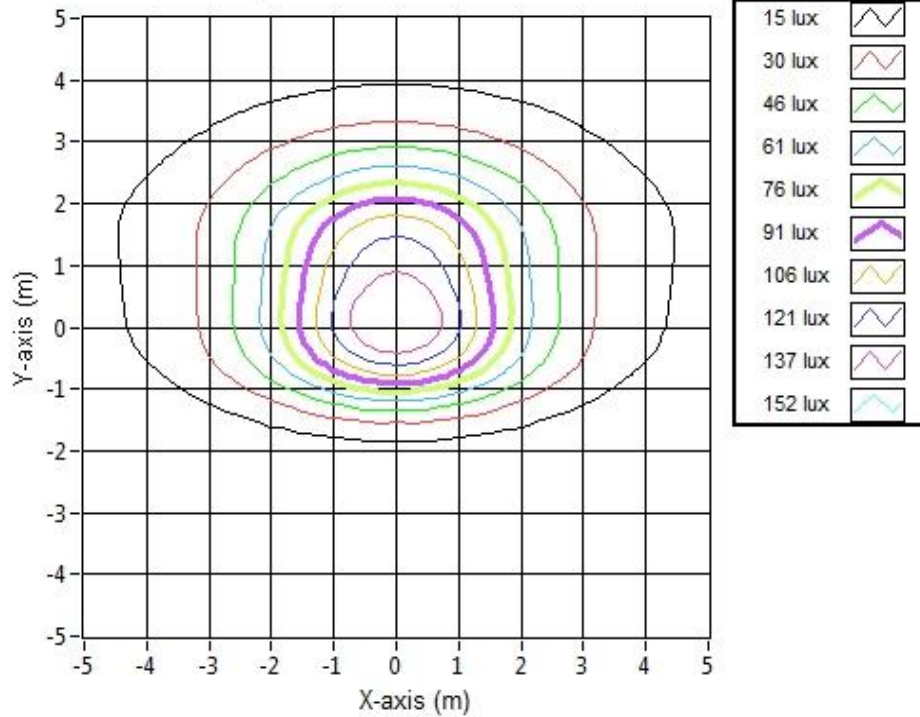


Test Results: Goniometer

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	5.03	10.22	147.1
6.096	10.07	20.44	36.8
9.144	15.10	30.66	16.3
12.192	20.14	40.88	9.2
15.24	25.17	51.10	5.9
18.288	30.21	61.32	4.1
21.336	35.24	71.54	3.0
24.384	40.27	81.76	2.3
27.432	45.31	91.97	1.8
30.49	50.36	102.23	1.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L17008.
Dialight unit model number ALF5AN23-XXXXX-N

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 50 (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:

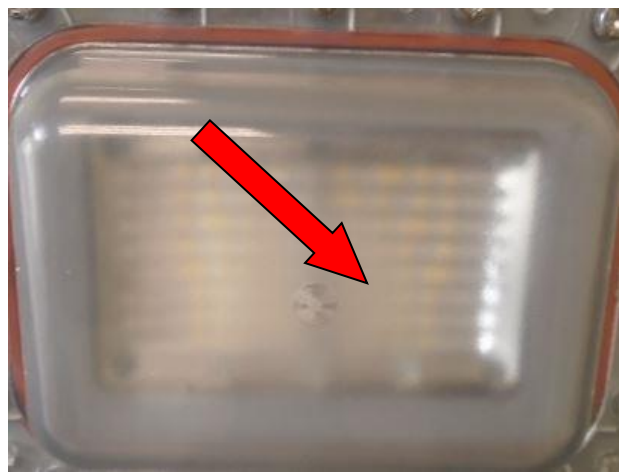
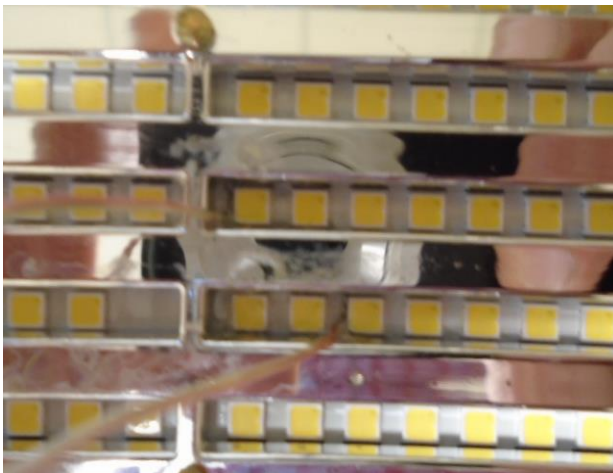
Maximum Power at Indicated Current: 0.3 (W)
Maximum Source Temperature: 119.9 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 23.9 (°C)
Relative humidity at time of measurement: 15%

Results:

Measured LED source temperature: 40.1 (°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
Fluke 971 Humidity Meter	971
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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Optical Engineer
Approved Signatory