

Test Report

Report Number: L17012

Date: May 16, 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: ALC7AC29DxxxxN

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: May 2, 2017 through May 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

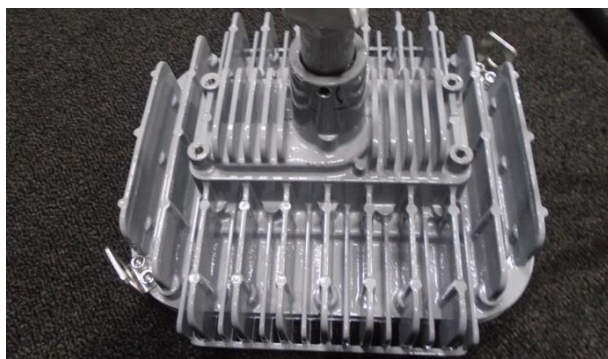
Description of sample:

Sample Number: L17012
Manufacturer: Dialight Corporation
Product Name: Vigilant Area Light
Description: Vigilant Area Light
Model Number: ALC7AC29DxxxxN

Report Summary

Sample number L17012
Dialight unit model number ALC7AC29DxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	8508 (lumens)	8444 (lumens)
Electrical Power:	65.7 (W)	65.4 (W)
Luminous Efficacy:	129.7 (lumens/W)	129.1 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 65.7 (W)
Power Factor (120VAC): 0.995
Current ATHD % (120VAC): 6.176
Input Power (277VAC): 63.5 (W)
Power Factor (277VAC): 0.95
Current ATHD % (277VAC): 11.54

Color Measurements:

Correlated Color Temperature (CCT): 4756
Color Rendering Index (CRI): 82.7
Chromaticity Coordinate (x): 0.353
Chromaticity Coordinate (y): 0.365
Chromaticity Coordinate (u'): 0.212
Chromaticity Coordinate (v'): 0.328
DUV: 0.0035

Temperature Measurements:

In Situ LED Source Temperature: 60.3 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L17012.

Dialight unit model number ALC7AC29DxxxxN

Test Conditions:

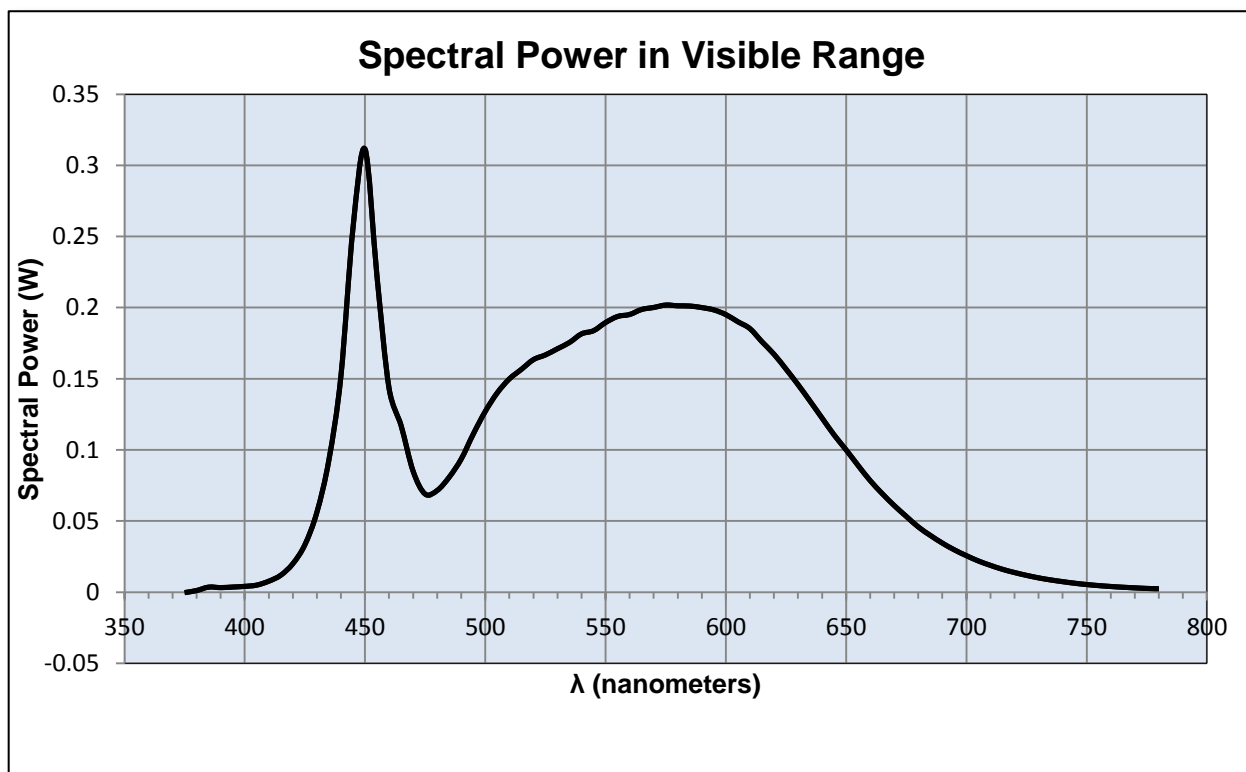
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.55 (A)
 Input Power: 65.7 (W)
 Input Power Factor: 0.995
 Current ATHD: 6.176 (%)

Photometric measurements:

Luminous Flux: 8508 (lumens)
 Luminous Efficacy: 129.7 (lumens/W)
 Correlated Color Temperature (CCT): 4756 (K)
 CRI -Ra: 82.7
 CRI -R9: 10.1
 DUV: 0.0035
 CIE Coordinate (x): 0.353
 CIE Coordinate (y): 0.365
 CIE Coordinate (u'): 0.212
 CIE Coordinate (v'): 0.328



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	0.157	655	0.089
380	0.001	520	0.163	660	0.078
385	0.004	525	0.167	665	0.069
390	0.003	530	0.171	670	0.061
395	0.004	535	0.176	675	0.053
400	0.004	540	0.182	680	0.046
405	0.005	545	0.184	685	0.040
410	0.008	550	0.190	690	0.035
415	0.012	555	0.194	695	0.030
420	0.020	560	0.195	700	0.026
425	0.033	565	0.199	705	0.022
430	0.056	570	0.200	710	0.019
435	0.093	575	0.202	715	0.016
440	0.152	580	0.201	720	0.014
445	0.256	585	0.201	725	0.012
450	0.311	590	0.200	730	0.010
455	0.222	595	0.198	735	0.009
460	0.143	600	0.195	740	0.007
465	0.117	605	0.190	745	0.006
470	0.085	610	0.185	750	0.005
475	0.069	615	0.176	755	0.005
480	0.072	620	0.167	760	0.004
485	0.081	625	0.157	765	0.003
490	0.094	630	0.146	770	0.003
495	0.111	635	0.134	775	0.003
500	0.127	640	0.122	780	0.002
505	0.140	645	0.111		
510	0.150	650	0.100		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L17012.
Dialight unit model number ALC7AC29DxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.547 (A)
Input Power: 65.4 (W)
Power Factor: 0.995

Photometric measurements:

Absolute Luminous Flux: 8444 (lumens)
Luminous Efficacy: 129.1 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	4182	4182	4182	4182	4182	
5	4142	4164	4193	4241	4253	156
15	4136	4133	4178	4274	4282	869
25	4593	4476	4259	3986	3996	1455
35	4796	4784	4417	3642	3530	1772
45	3403	3724	4208	3344	2931	1807
55	1098	1594	2631	2889	2119	1437
65	61	106	543	1666	1173	729
75	23	27	34	165	283	201
85	1	1	2	4	6	17
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

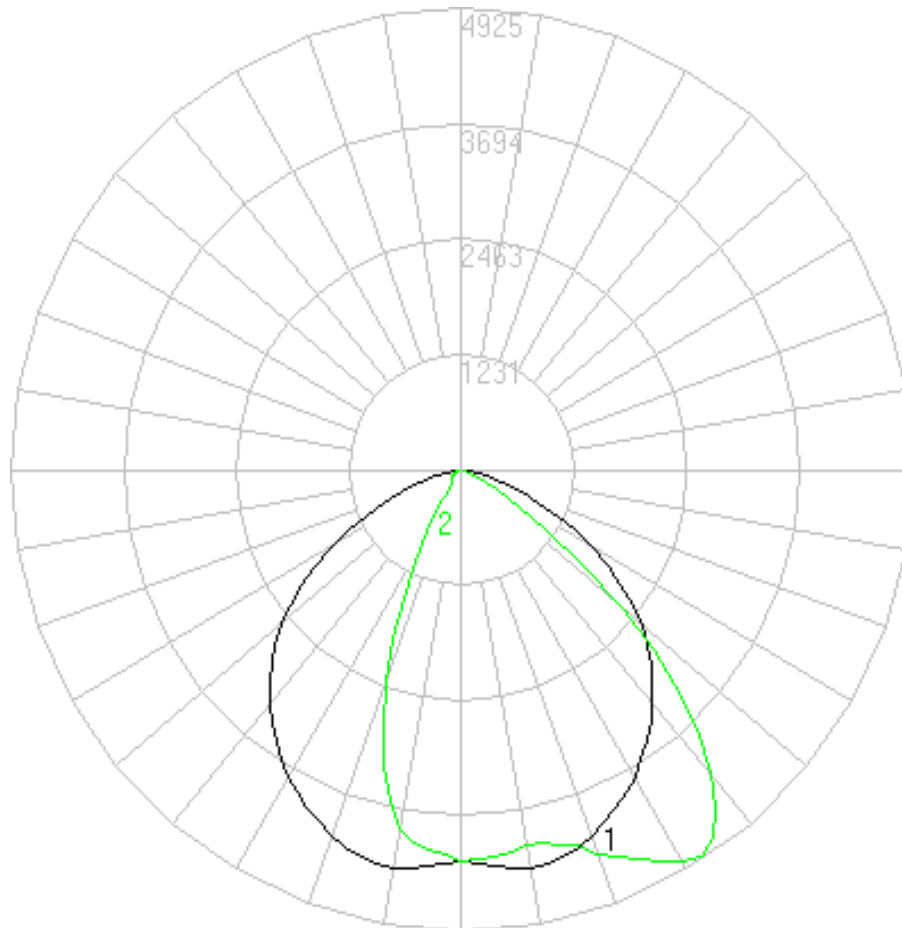
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3342.66	39.6%
0-40	5172.59	61.3%
0-60	7949.39	94.2%
60-90	697.52	8.3%
0-90	8443.18	100.0%
90-180	0	0.0%
0-180	8443.18	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

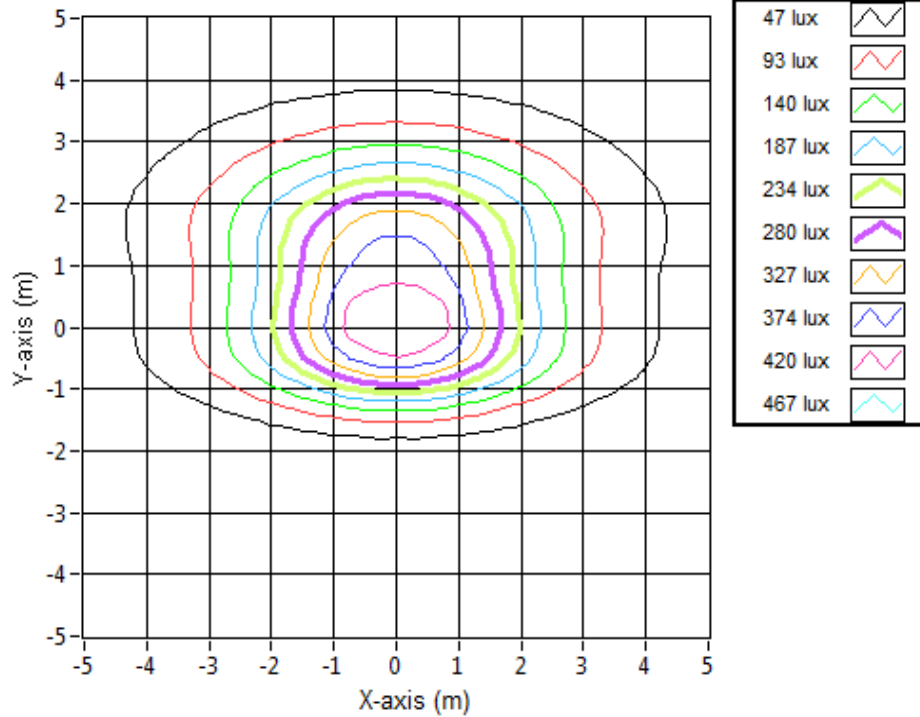


Test Results: Goniometer

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	4.95	8.81	450.2
6.096	9.91	17.61	112.5
9.144	14.86	26.42	50.0
12.192	19.81	35.23	28.1
15.24	24.76	44.04	18.0
18.288	29.72	52.84	12.5
21.336	34.67	61.65	9.2
24.384	39.62	70.46	7.0
27.432	44.58	79.27	5.6
30.48	49.53	88.07	4.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L17012.
Dialight unit model number ALC7AC29DxxxxN

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 53 (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:

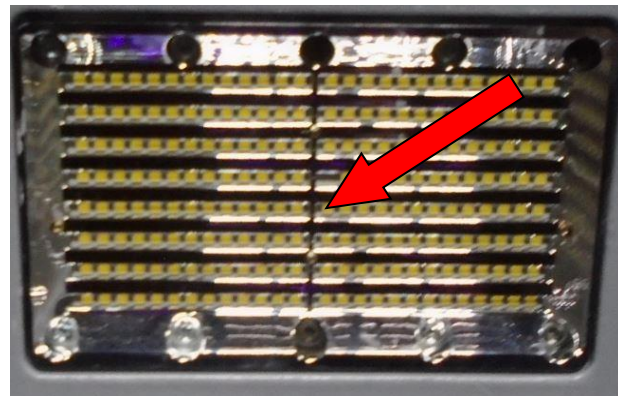
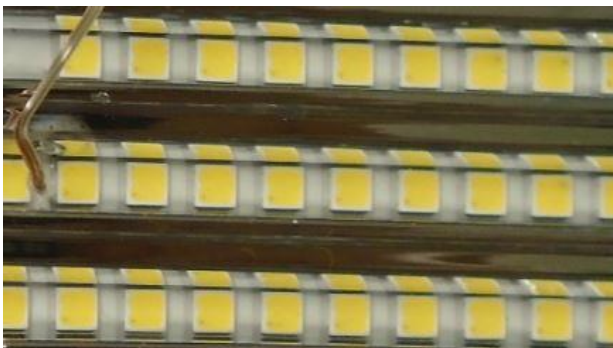
Maximum Power at Indicated Current: 0.318 (W)
Maximum Source Temperature: 119.6 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 24 (°C)
Relative humidity at time of measurement: 15%

Results:

Measured LED source temperature: 60.3 (°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.

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