Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15098 Date: Jul 28, 2015

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one 18k C1D2 Vigilant High Bay
Unit manufacturer: Dialight Corporation
Unit model number: HEDGMC4KN-xxx

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 22, 2015 through July 28, 2015

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: L15098
Manufacturer: Dialight Corporation
Product Name: Vigilant High Bay
Description: 18k C1D2 Vigilant High Bay
Model Number: HEDGMC4KN-xxx

Dialight OPTICS LABORATORY

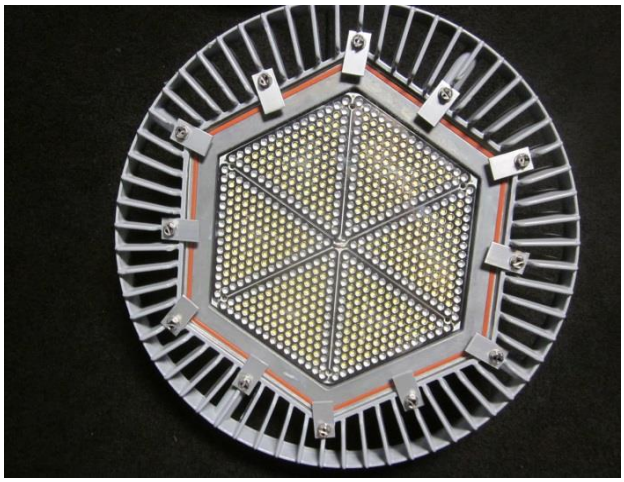
NVLAP Lab Code 201033-0

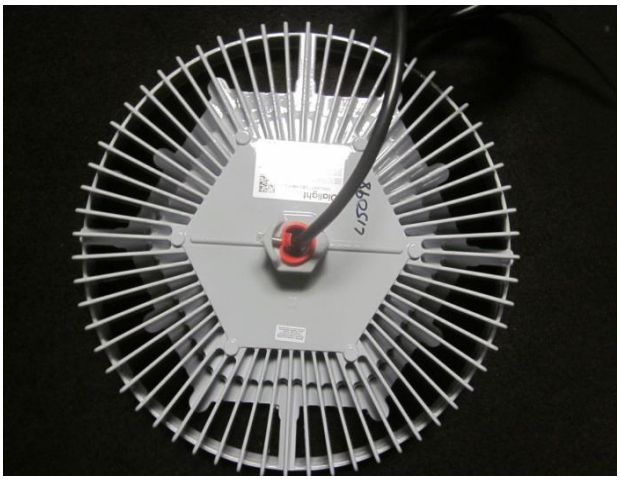
Report Summary

Sample number L15098

Dialight unit model number HEDGMC4KN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	17900	(lumens)	17760	(lumens)
Electrical Power:	144.4	(W)	144.9	(W)
Luminous Efficacy:	124	(lumens/W)	122.6	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	144.4	(W)
Power Factor (120VAC):	0.994	
Current ATHD % (120VAC):	8.315	
Input Power (277VAC):	141.9	(W)
Power Factor (277VAC):	0.968	
Current ATHD % (277VAC):	14.75	

Color Measurements:

Correlated Color Temperature (CCT):	5013
Color Rendering Index (CRI):	78.6
Chromaticity Coordinate (x):	0.345
Chromaticity Coordinate (y):	0.355
Chromaticity Coordinate (u'):	0.21
Chromaticity Coordinate (v'):	0.324
DUV:	0.0016

Temperature Measurements:

In Situ LED Source Temperature:	50.5	(°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15098.
Dialight unit model number HEDGMC4KN-xxx

Test Conditions:

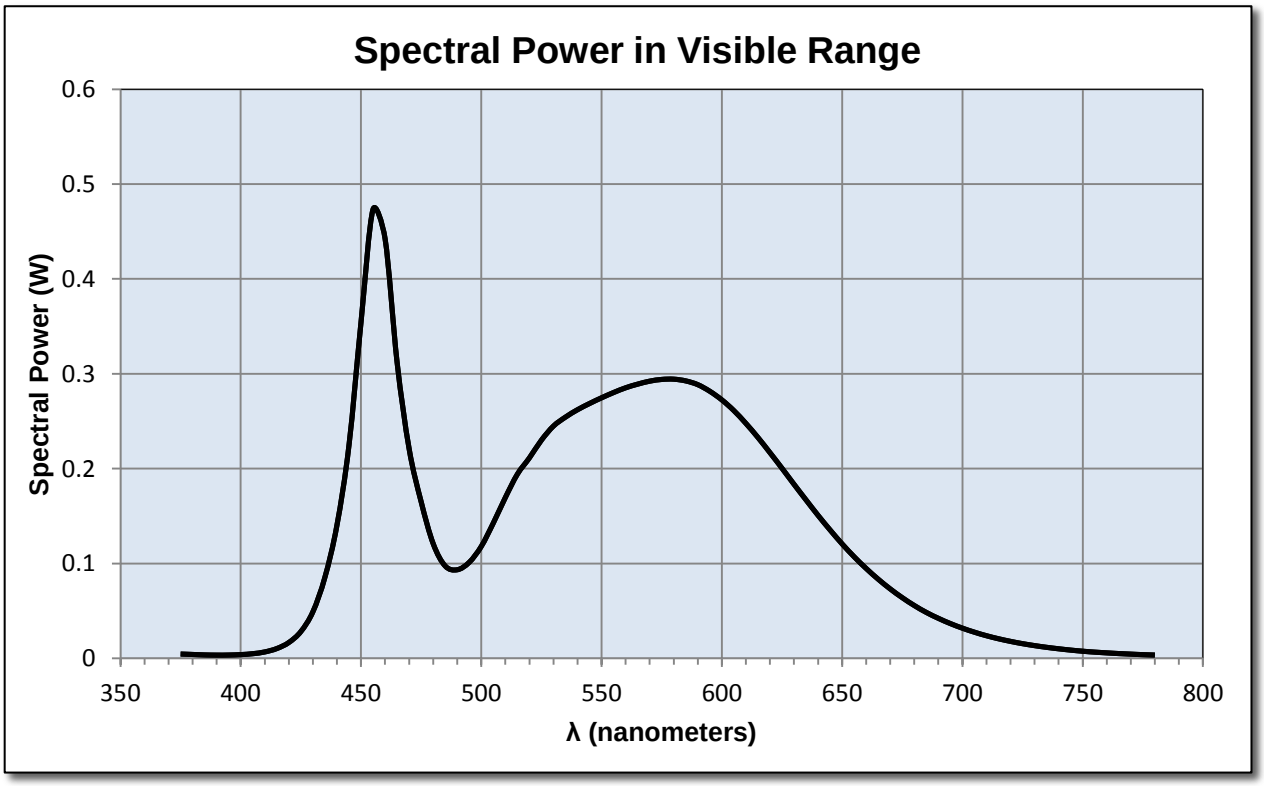
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.21	(A)
Input Power:	144.4	(W)
Input Power Factor:	0.994	
Current ATHD:	8.315	(%)

Photometric measurements:

Luminous Flux:	17900	(lumens)
Luminous Efficacy:	124.0	(lumens/W)
Correlated Color Temperature (CCT):	5013	(K)
CRI -Ra:	78.6	
CRI -R9:	-9.4	
DUV:	0.0016	
CIE Coordinate (x):	0.345	
CIE Coordinate (y):	0.355	
CIE Coordinate (u'):	0.21	
CIE Coordinate (v'):	0.324	



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
375	0.005	515	0.194	655	0.107
380	0.004	520	0.211	660	0.095
385	0.004	525	0.23	665	0.083
390	0.003	530	0.245	670	0.073
395	0.003	535	0.254	675	0.064
400	0.004	540	0.262	680	0.056
405	0.005	545	0.269	685	0.048
410	0.007	550	0.275	690	0.042
415	0.01	555	0.28	695	0.037
420	0.017	560	0.285	700	0.032
425	0.028	565	0.289	705	0.028
430	0.049	570	0.292	710	0.024
435	0.086	575	0.294	715	0.021
440	0.14	580	0.294	720	0.018
445	0.225	585	0.292	725	0.015
450	0.354	590	0.289	730	0.013
455	0.473	595	0.282	735	0.012
460	0.443	600	0.272	740	0.01
465	0.312	605	0.261	745	0.009
470	0.221	610	0.248	750	0.008
475	0.165	615	0.233	755	0.007
480	0.121	620	0.217	760	0.006
485	0.097	625	0.2	765	0.005
490	0.093	630	0.183	770	0.004
495	0.101	635	0.167	775	0.004
500	0.118	640	0.151	780	0.003
505	0.143	645	0.135		
510	0.17	650	0.121		

Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15098.
Dialight unit model number HEDGMC4KN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.218	(A)
Input Power:	144.9	(W)
Power Factor:	0.995	

Photometric measurements:

Absolute Luminous Flux:	17760	(lumens)
Luminous Efficacy:	122.6	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	6985	6985	6985	6985	6985	
5	7010	7010	7010	7010	7010	261
15	7304	7304	7304	7304	7304	1535
25	7863	7863	7863	7863	7863	3052
35	7485	7485	7485	7485	7485	4396
45	5426	5426	5426	5426	5426	4535
55	2244	2244	2244	2244	2244	2923
65	450	450	450	450	450	906
75	46	46	46	46	46	128
85	9	9	9	9	9	24
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	

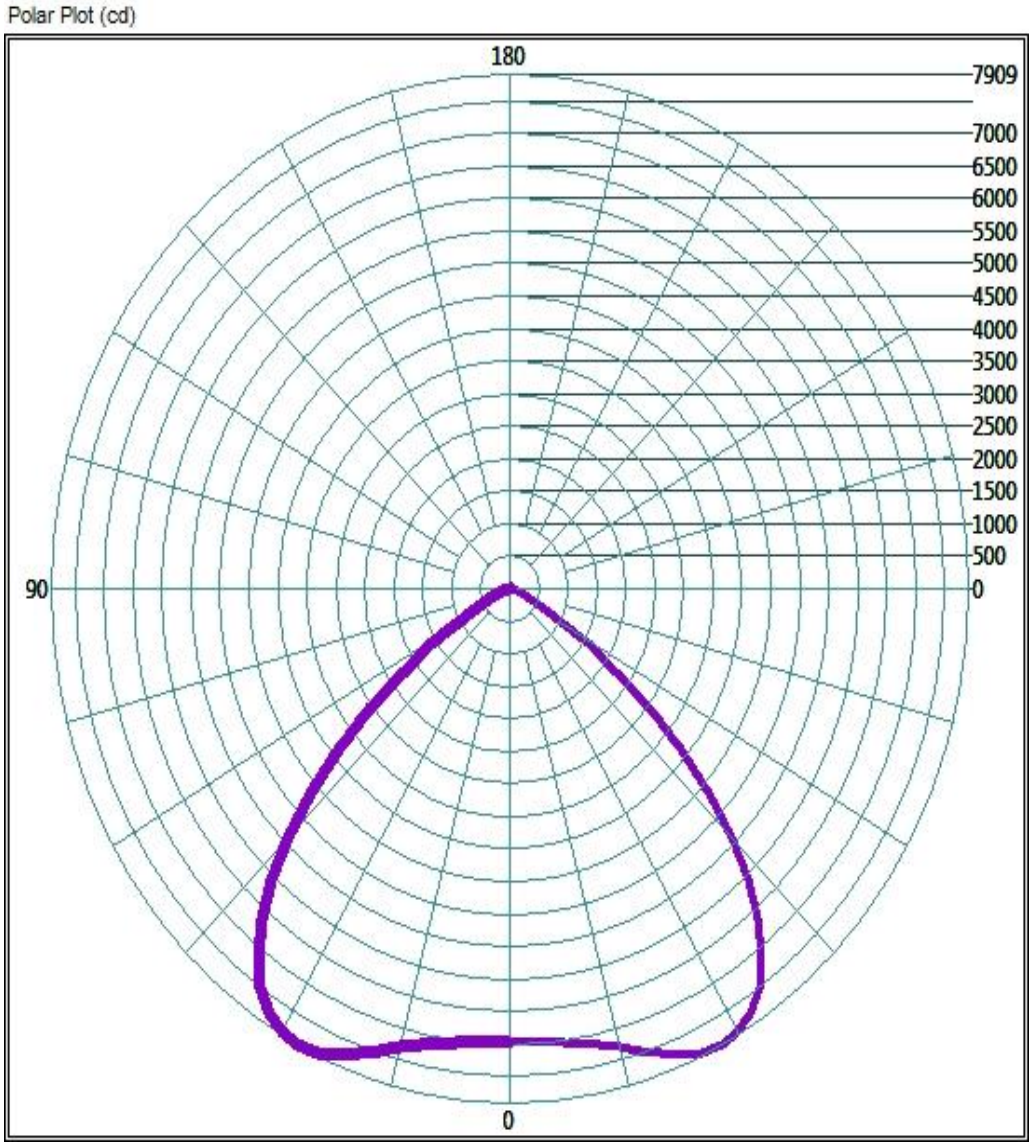
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	6928.16	39.0%
0-40	11601.76	65.3%
0-60	17323.84	97.5%
60-90	692.64	3.9%
0-90	17760.16	100.0%
90-180	0	0.0%
0-180	17760.16	100.0%

Test Results: Goniometer

Results continued from previous page.

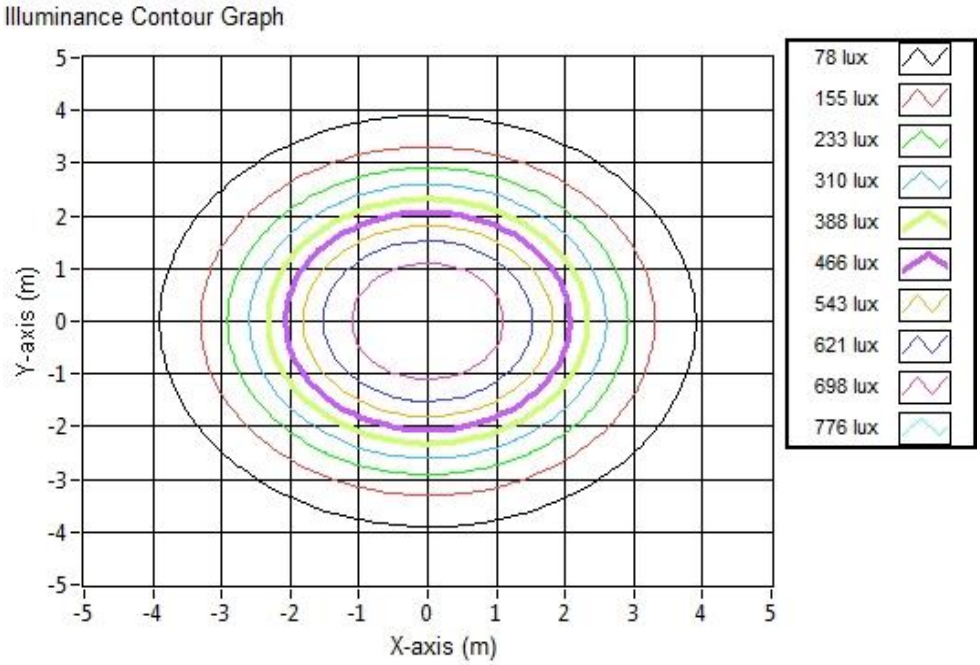
Polar Plot:



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	7.56	7.56	751.8
6.096	15.12	15.12	188.0
9.144	22.69	22.69	83.5
12.192	30.25	30.25	47.0
15.24	37.81	37.81	30.1
18.288	45.37	45.37	20.9
21.336	52.94	52.94	15.3
24.384	60.50	60.50	11.7
27.432	68.06	68.06	9.3
30.48	75.62	75.62	7.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15098.
Dialight unit model number HEDGMC4KN-xxx

LED identified as Nichia part number NT2W757DT.

LED drive current (as indicated by customer):	100	(mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	300	(mA)
Maximum Rated Power Dissipation:	1.05	(W)
Maximum Junction Temp. (Tj):	120	(°C)
Thermal Resistance (Rth):	18	(°C/W)

Derived Specifications:

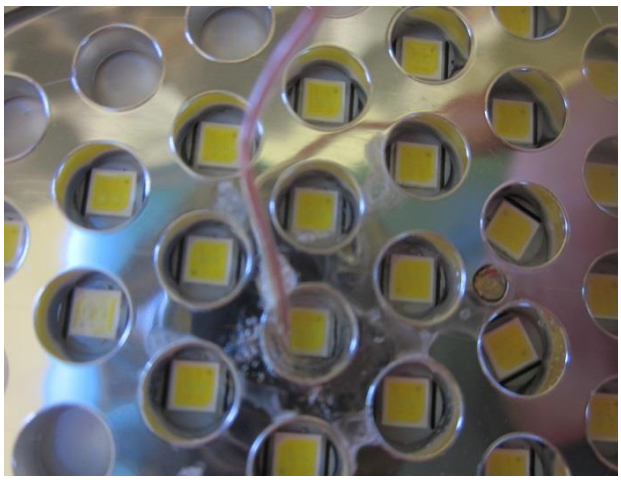
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

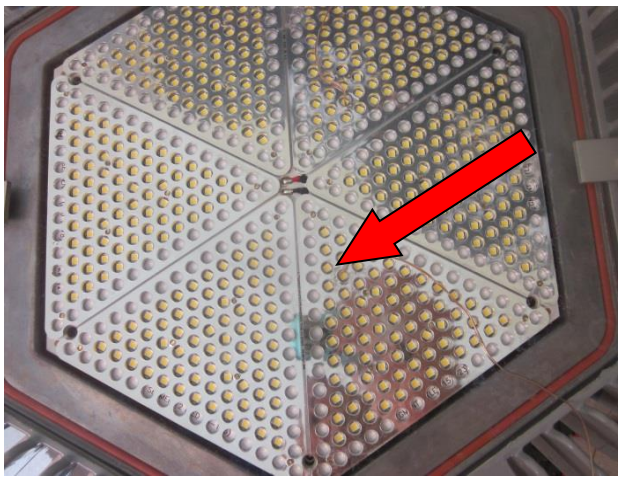
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	24.6	(°C)
Relative humidity at time of measurement:	41%	

Results:

Measured LED source temperature:	50.5	(°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
Extech Hygro-Thermometer	4/16/3120
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
BK Precison	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digitial Thermometer 343	TPI 343
TPI Digitial 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.

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