

Test Report

Report Number: L14039

Date: Aug 15, 2014

Issued by:

Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Highbay fixture
Unit manufacturer: Dialight Corporation
Unit model number: HE1MC4PNSNG

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: August 14, 2014 through August 15, 2014

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

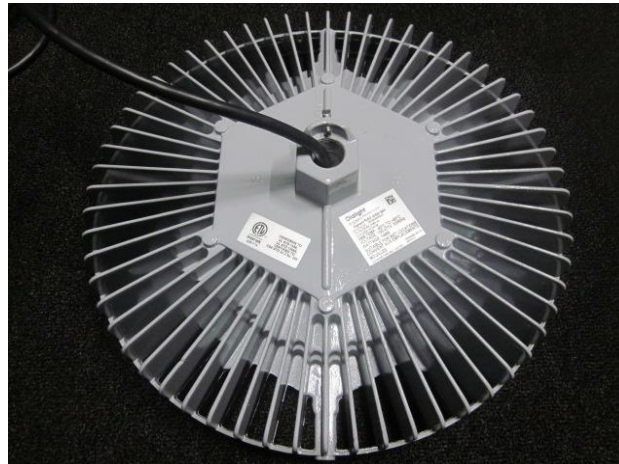
Description of sample:

Sample Number: L14039
Manufacturer: Dialight Corporation
Product Name: Vigilant 26K high bay
Description: Highbay fixture
Model Number: HE1MC4PNSNG

Report Summary

Sample number L14039
Dialight unit model number HE1MC4PNSNG

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	26340 (lumens)	26293 (lumens)
Electrical Power:	212.8 (W)	212.5 (W)
Luminous Efficacy:	123.8 (lumens/W)	123.7 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 212.8 (W)
Power Factor (120VAC): 0.99
Current ATHD % (120VAC): 4.735
Input Power (277VAC): 205.9 (W)
Power Factor (277VAC): 0.967
Current ATHD % (277VAC): 11.55

Color Measurements:

Correlated Color Temperature (CCT): 4918
Color Rendering Index (CRI): 78.1
Chromaticity Coordinate (x): 0.348
Chromaticity Coordinate (y): 0.356
Chromaticity Coordinate (u'): 0.211
Chromaticity Coordinate (v'): 0.325
DUV: 0.0012

Temperature Measurements:

In Situ LED Source Temperature: 60.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14039.

Dialight unit model number HE1MC4PNSNG

Test Conditions:

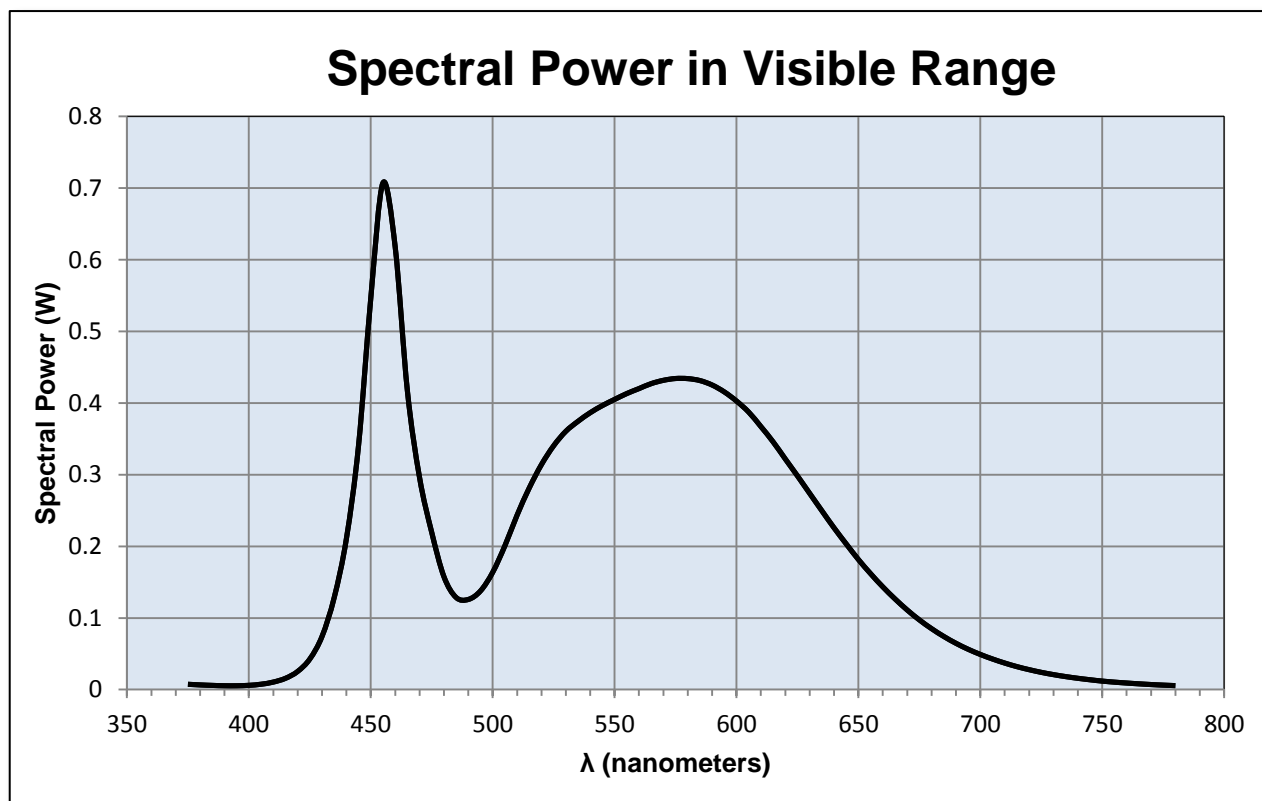
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 1.771 (A)
Input Power: 212.8 (W)
Input Power Factor: 0.99
Current ATHD: 4.735 (%)

Photometric measurements:

Luminous Flux: 26340 (lumens)
Luminous Efficacy: 123.8 (lumens/W)
Correlated Color Temperature (CCT): 4918 (K)
CRI -Ra: 78.1
CRI -R9: -8
DUV: 0.0012
CIE Coordinate (x): 0.348
CIE Coordinate (y): 0.356
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.325



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	0.007	515	0.282	655	0.162
380	0.007	520	0.314	660	0.143
385	0.006	525	0.34	665	0.127
390	0.005	530	0.361	670	0.111
395	0.005	535	0.375	675	0.097
400	0.006	540	0.387	680	0.085
405	0.008	545	0.397	685	0.074
410	0.011	550	0.405	690	0.065
415	0.016	555	0.413	695	0.056
420	0.025	560	0.42	700	0.049
425	0.043	565	0.427	705	0.043
430	0.074	570	0.432	710	0.037
435	0.129	575	0.434	715	0.032
440	0.211	580	0.434	720	0.028
445	0.341	585	0.431	725	0.024
450	0.546	590	0.425	730	0.021
455	0.707	595	0.416	735	0.018
460	0.618	600	0.403	740	0.016
465	0.417	605	0.387	745	0.014
470	0.296	610	0.367	750	0.012
475	0.219	615	0.346	755	0.01
480	0.158	620	0.322	760	0.009
485	0.129	625	0.298	765	0.008
490	0.126	630	0.274	770	0.007
495	0.138	635	0.25	775	0.006
500	0.164	640	0.226	780	0.006
505	0.201	645	0.203		
510	0.244	650	0.182		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14039.
Dialight unit model number HE1MC4PNSNG

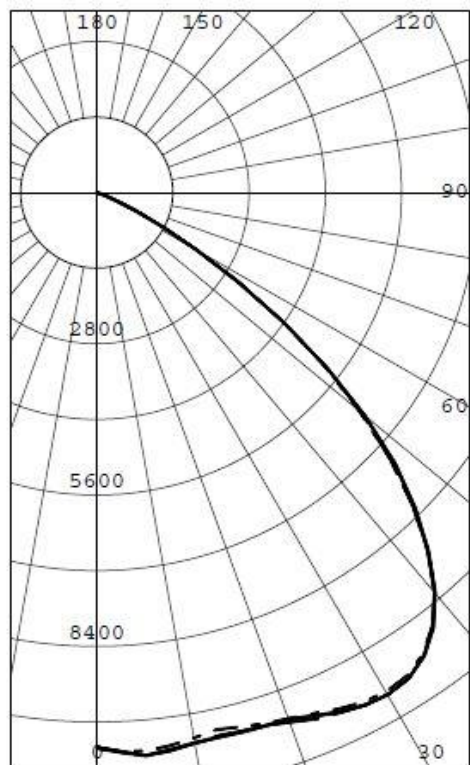
Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 1.77 (A)
Input Power: 212.5 (W)
Power Factor: 0.997

Photometric measurements:

Absolute Luminous Flux: 26293 (lumens)
Luminous Efficacy: 123.7 (lumens/W)

Intensity Summary:



INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	10279	10279	10279	10279	10279	
5	10378	10415	10464	10481	10464	1007
15	10245	10346	10319	10327	10338	2927
25	10541	10561	10623	10640	10609	4898
35	10432	10464	10462	10468	10473	6482
45	8241	8202	8206	8182	8269	6255
55	4194	4189	4221	4182	4186	3733
65	815	797	841	818	788	925
75	36	39	39	39	39	65
85	0	0	0	0	0	1
90	0	0	0	0	0	
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

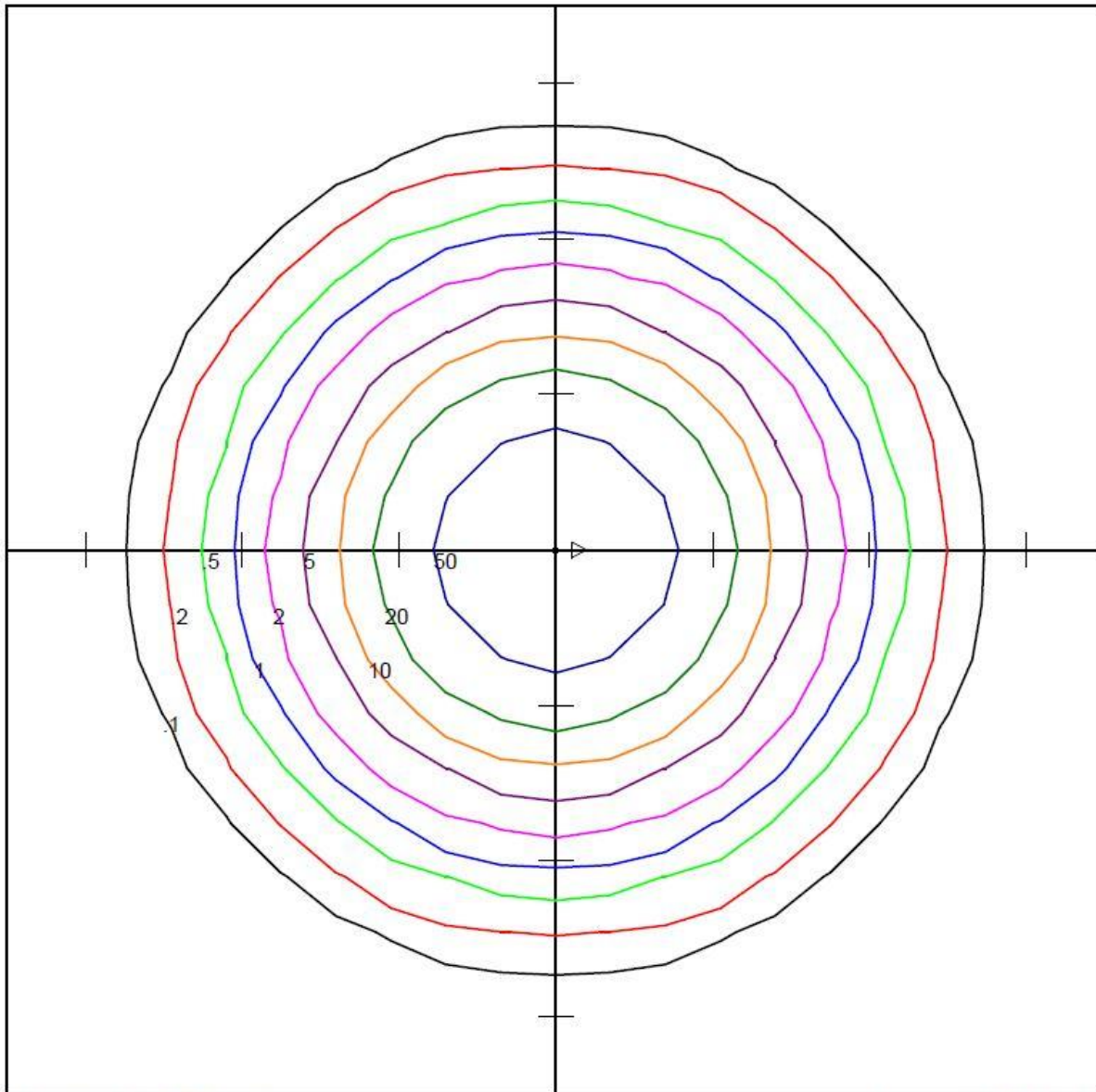
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	8832	33.59
0-40	15315	58.25
0-60	25302	96.23
0-90	26293	100.00
40-90	10979	41.75
60-90	991	3.77
90-180	0	0.00
0-180	26293	100.00

Test Results: Goniometer

Results continued from previous page.

Iso-illuminance Plot:



DIALIGHT COPORATION
HE1MC4PNSNG
MOD HE1MC4PNSNG
LED

Horizontal Footcandles
Scale: 1 Inch = 10 Ft.
Light Loss Factor = 1.00
Lumens Per Lamp = N.A. (absolute photometry)
Luminaire Lumens = 26326
Mounting Height = 10.00 Ft
Maximum Calculated Value = 102.79 Fc
Arrangement: Single

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14039.

Dialight unit model number HE1MC4PNSNG

LED identified as NICHIA part number NT2W757DT.

LED drive current (as indicated by customer): 95 (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:

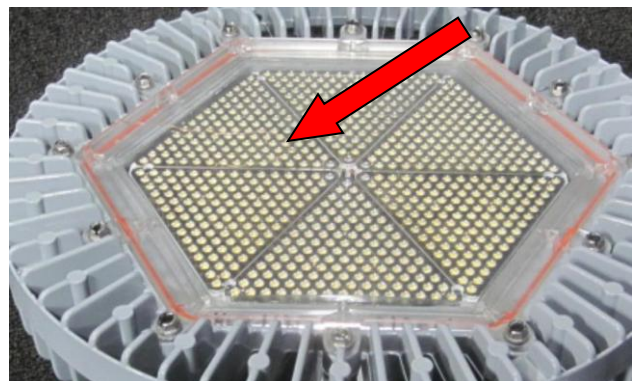
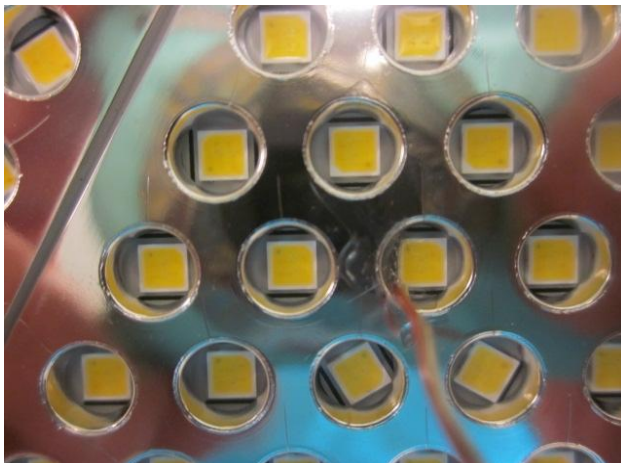
Maximum Power at Indicated Current: 0.333 (W)
Maximum Source Temperature: 114 (°C) (Tj - [power dissipation * Rth])

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 24 (°C)
Relative humidity at time of measurement: 45%

Results:

Measured LED source temperature: 60.1 (°C)



Equipment Used:

Equipment Name	Model Number	Calibration Due Date
Omega TC	Dpi8	3/7/2015
Fluke 8808A Digit Multimeter	8808A	4/7/2015
YOKOGAWA Digital Power Meter	760401	4/7/2015
LSI Standard Lamps	#30279	4/17/2015
LSI High Speed Mirror Goniometer	6240T	-
Instrument System Spectrometer	CAS140B-151	-
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System 1.5 Meter Sphere	ISP1500	-
TPI Digital Thermometer 342	343	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
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	445703	-
Extech Hygro-Thermometer	445703	-
Fluke 52II Thermometer	52II Thermometer	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
Tenma AC Power Source	72-7675	-
BK Precision	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015

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.

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