

# Test Report

Report Number: L15126

Date: Oct 13, 2015

Issued by:

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

Test of one Vigilant Highbay  
Unit manufacturer: Dialight Corporation  
Unit model number: HEF2MC4KN-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:** October 9, 2015 through October 13, 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

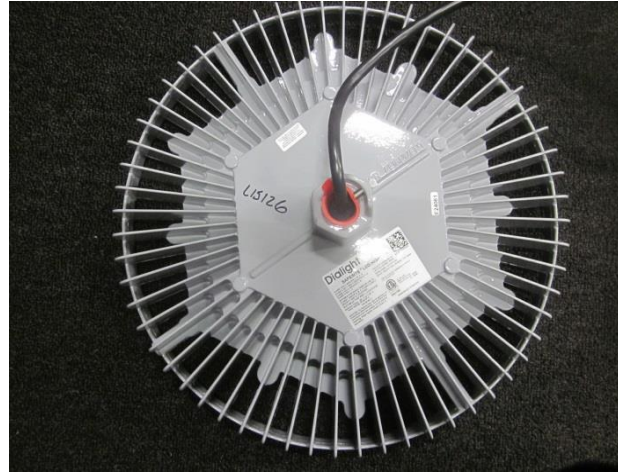
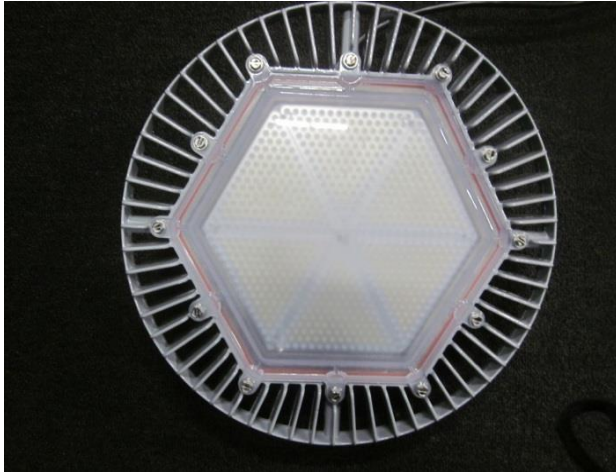
**Description of sample:**

Sample Number: L15126  
Manufacturer: Dialight Corporation  
Product Name: Vigilant  
Description: Vigilant Highbay  
Model Number: HEF2MC4KN-xxx

## Report Summary

Sample number L15126  
Dialight unit model number HEF2MC4KN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	14590 (lumens)	14442 (lumens)
Electrical Power:	144.8 (W)	145.1 (W)
Luminous Efficacy:	100.8 (lumens/W)	99.55 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 144.8 (W)  
 Power Factor (120VAC): 0.995  
 Current ATHD % (120VAC): 8.049  
 Input Power (277VAC): 141.2 (W)  
 Power Factor (277VAC): 0.968  
 Current ATHD % (277VAC): 14.01

### Color Measurements:

Correlated Color Temperature (CCT): 5039  
 Color Rendering Index (CRI): 80.2  
 Chromaticity Coordinate (x): 0.344  
 Chromaticity Coordinate (y): 0.349  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.322  
 DUV: 0.00076

### Temperature Measurements:

In Situ LED Source Temperature: 53.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15126.

Dialight unit model number HEF2MC4KN-xxx

### Test Conditions:

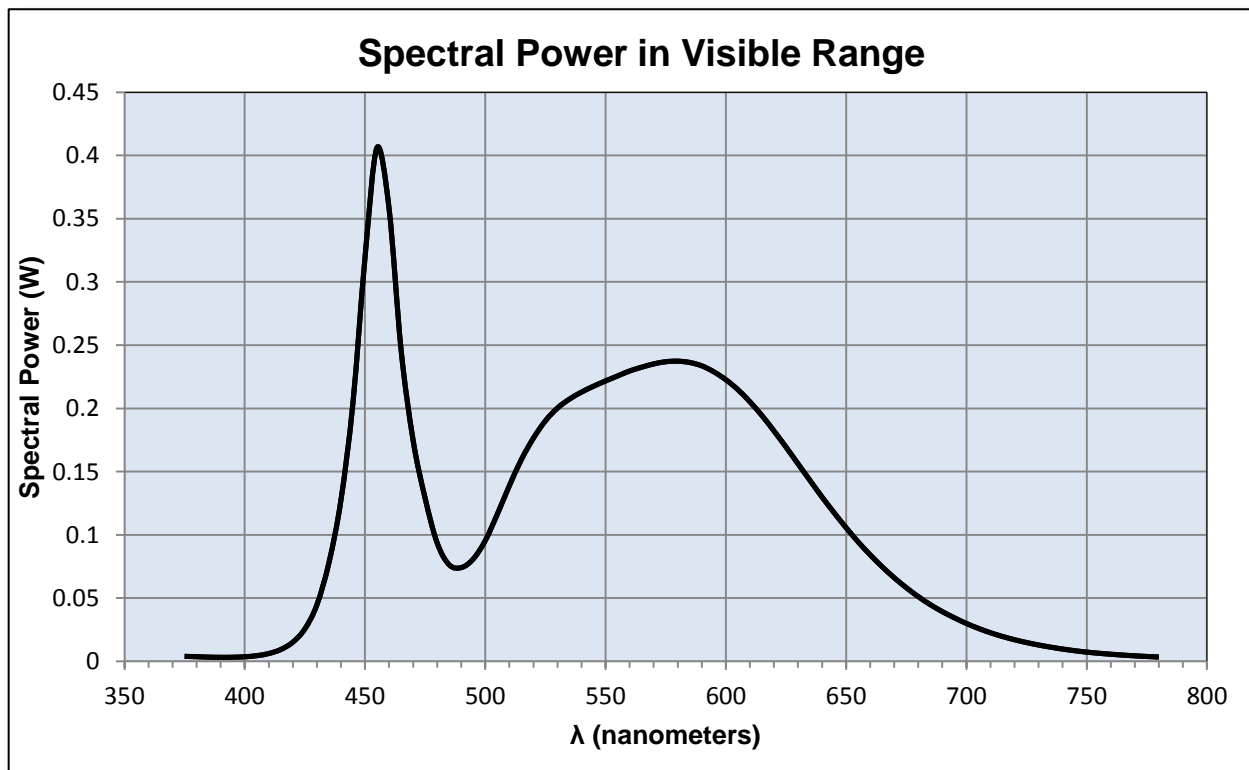
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 1.211 (A)  
Input Power: 144.8 (W)  
Input Power Factor: 0.995  
Current ATHD: 8.049 (%)

### Photometric measurements:

Luminous Flux: 14590 (lumens)  
Luminous Efficacy: 100.8 (lumens/W)  
Correlated Color Temperature (CCT): 5039 (K)  
CRI -Ra: 80.2  
CRI -R9: 1.3  
DUV: 0.00076  
CIE Coordinate (x): 0.344  
CIE Coordinate (y): 0.349  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.322



## 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	0.004	515	0.16	655	0.094
380	0.004	520	0.176	660	0.084
385	0.003	525	0.19	665	0.075
390	0.003	530	0.2	670	0.066
395	0.003	535	0.207	675	0.058
400	0.004	540	0.213	680	0.051
405	0.004	545	0.218	685	0.045
410	0.006	550	0.222	690	0.039
415	0.009	555	0.226	695	0.034
420	0.015	560	0.23	700	0.03
425	0.026	565	0.233	705	0.026
430	0.045	570	0.235	710	0.023
435	0.078	575	0.237	715	0.02
440	0.128	580	0.237	720	0.017
445	0.205	585	0.236	725	0.015
450	0.319	590	0.234	730	0.013
455	0.406	595	0.229	735	0.011
460	0.358	600	0.223	740	0.01
465	0.246	605	0.215	745	0.008
470	0.175	610	0.205	750	0.007
475	0.129	615	0.194	755	0.006
480	0.094	620	0.182	760	0.006
485	0.076	625	0.169	765	0.005
490	0.074	630	0.156	770	0.004
495	0.081	635	0.143	775	0.004
500	0.095	640	0.13	780	0.003
505	0.116	645	0.118		
510	0.139	650	0.106		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15126.  
Dialight unit model number HEF2MC4KN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.21 (A)  
Input Power: 145.1 (W)  
Power Factor: 0.995

### Photometric measurements:

Absolute Luminous Flux: 14442 (lumens)  
Luminous Efficacy: 99.6 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	6040	6040	6040	6040	6040	
5	6043	6043	6043	6043	6043	226
15	6032	6032	6032	6032	6032	1290
25	5862	5862	5862	5862	5862	2361
35	5072	5072	5072	5072	5072	3075
45	3604	3604	3604	3604	3604	3007
55	2089	2089	2089	2089	2089	2234
65	1059	1059	1059	1059	1059	1340
75	454	454	454	454	454	680
85	81	81	81	81	81	220
95	0	0	0	0	0	8
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

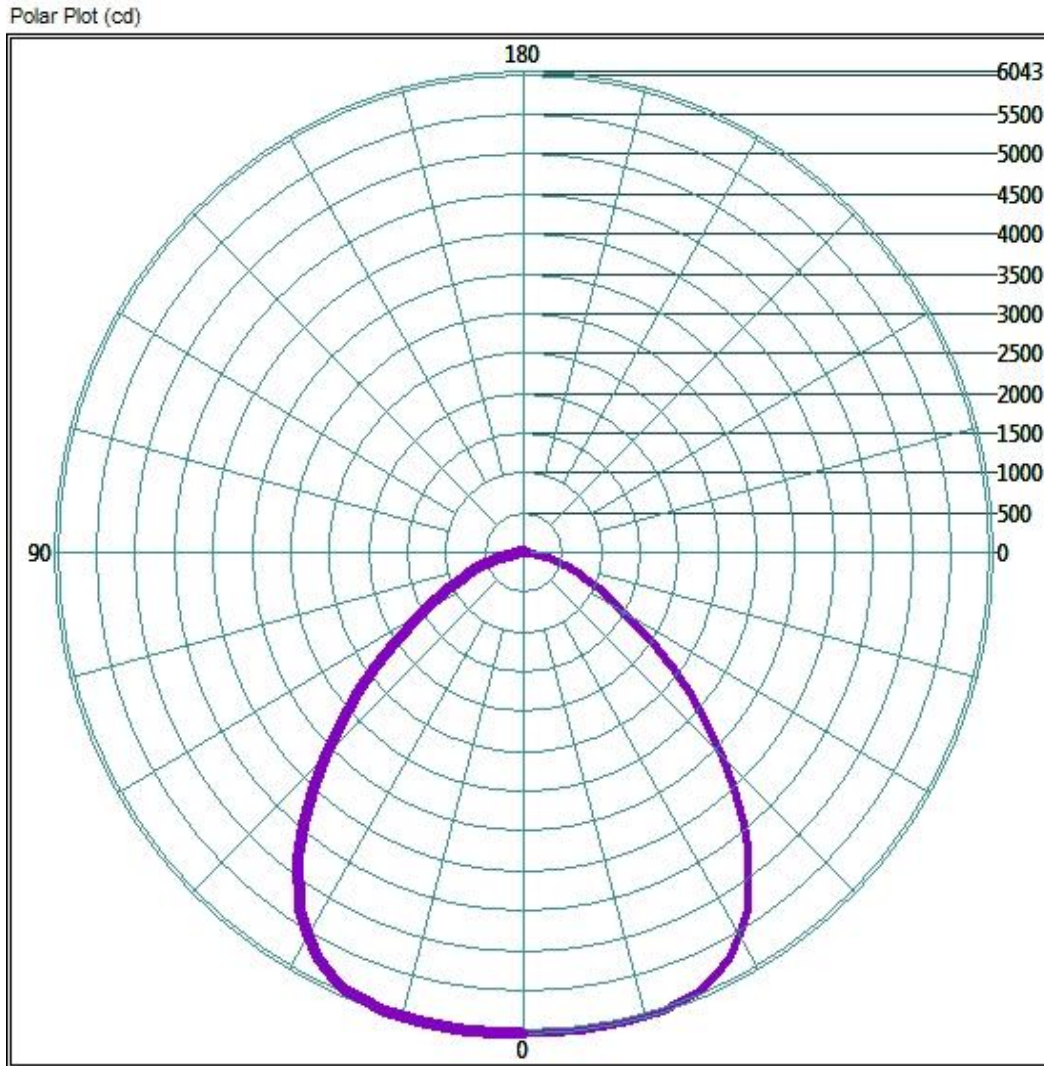
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5366.24	37.2%
0-40	8517.76	59.0%
0-60	12961.92	89.8%
60-90	1837.44	12.7%
0-90	14441.6	100.0%
90-180	0	0.0%
0-180	14441.6	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

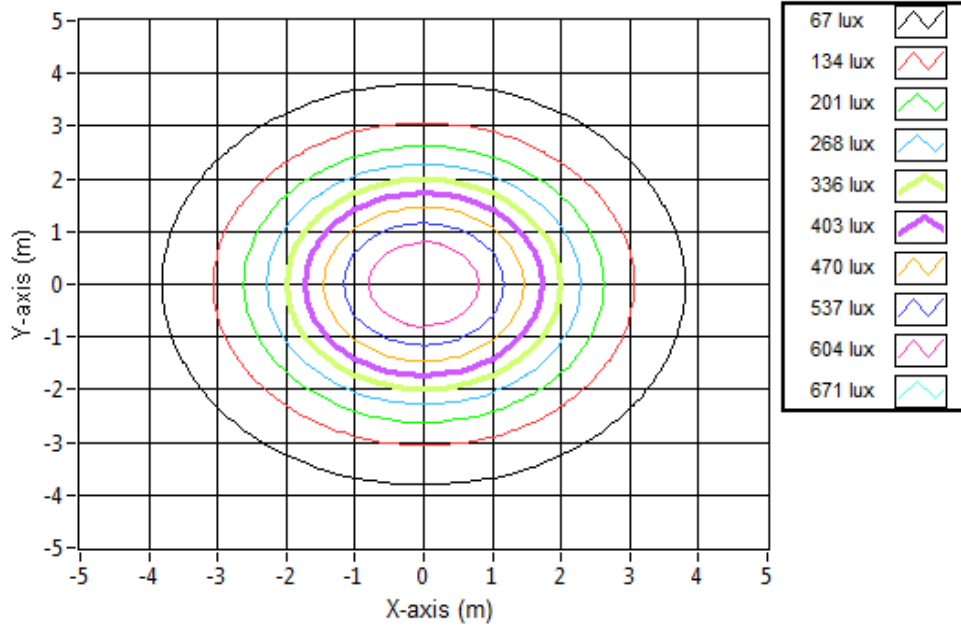


## Test Results: Goniometer

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	6.92	6.92	650.2
6.096	13.85	13.85	162.5
9.144	20.77	20.77	72.2
12.192	27.69	27.69	40.6
15.24	34.62	34.62	26.0
18.288	41.54	41.54	18.1
21.336	48.47	48.47	13.3
24.384	55.39	55.39	10.2
27.432	62.31	62.31	8.0
30.48	69.24	69.24	6.5

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15126.  
Dialight unit model number HEF2MC4KN-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:

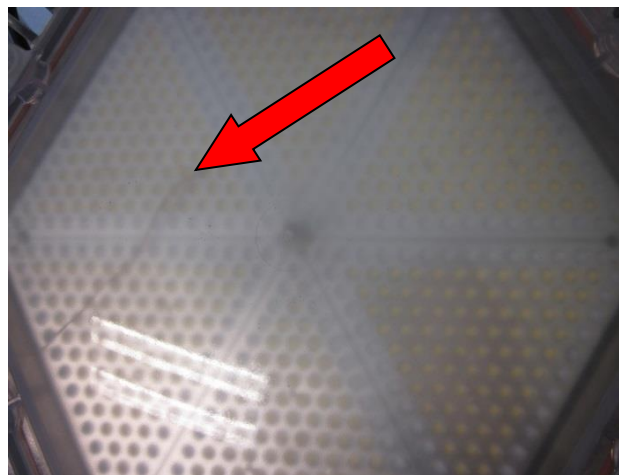
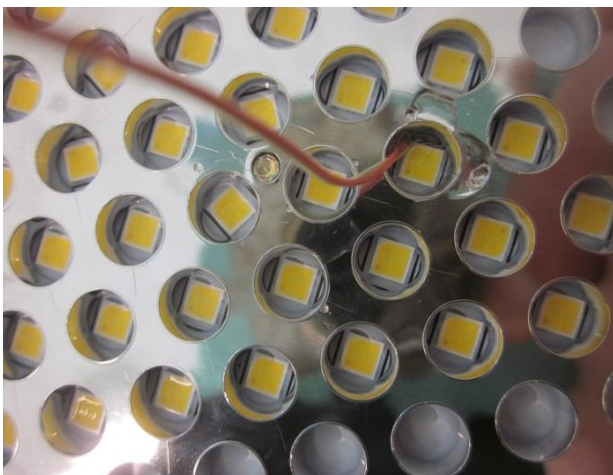
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 25.9 (°C)  
Relative humidity at time of measurement: 26%

### Results:

**Measured LED source temperature: 53.2 (°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
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 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