

# Test Report

Report Number: L21108

Date: Aug 11, 2021

Issued by:

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

Test of one Highbay

Unit manufacturer: Dialight Corporation

Unit model number: [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

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 14, 2021 through July 15, 2021

**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: L21108

Manufacturer: Dialight Corporation

Product Name: Highbay

Description: Highbay

Model Number: [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

## Report Summary

Sample number L21108

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	35852 (lumens)	35790 (lumens)
Electrical Power:	230.1 (W)	229.7 (W)
Luminous Efficacy:	155.8 (lumens/W)	155.8 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 230.1 (W)  
 Power Factor (120VAC): 0.9956  
 Current ATHD % (120VAC): 5.23  
 Input Power (277VAC): 222.4 (W)  
 Power Factor (277VAC): 0.9668  
 Current ATHD % (277VAC): 9.83

### Color Measurements:

Correlated Color Temperature (CCT): 4092  
 Color Rendering Index (CRI): 80.44  
 Chromaticity Coordinate (x): 0.377  
 Chromaticity Coordinate (y): 0.378  
 Chromaticity Coordinate (u'): 0.223  
 Chromaticity Coordinate (v'): 0.502  
 DUV: 0.0015

### Temperature Measurements:

In Situ LED Source Temperature: 57.0 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L21108.

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

### Test Conditions:

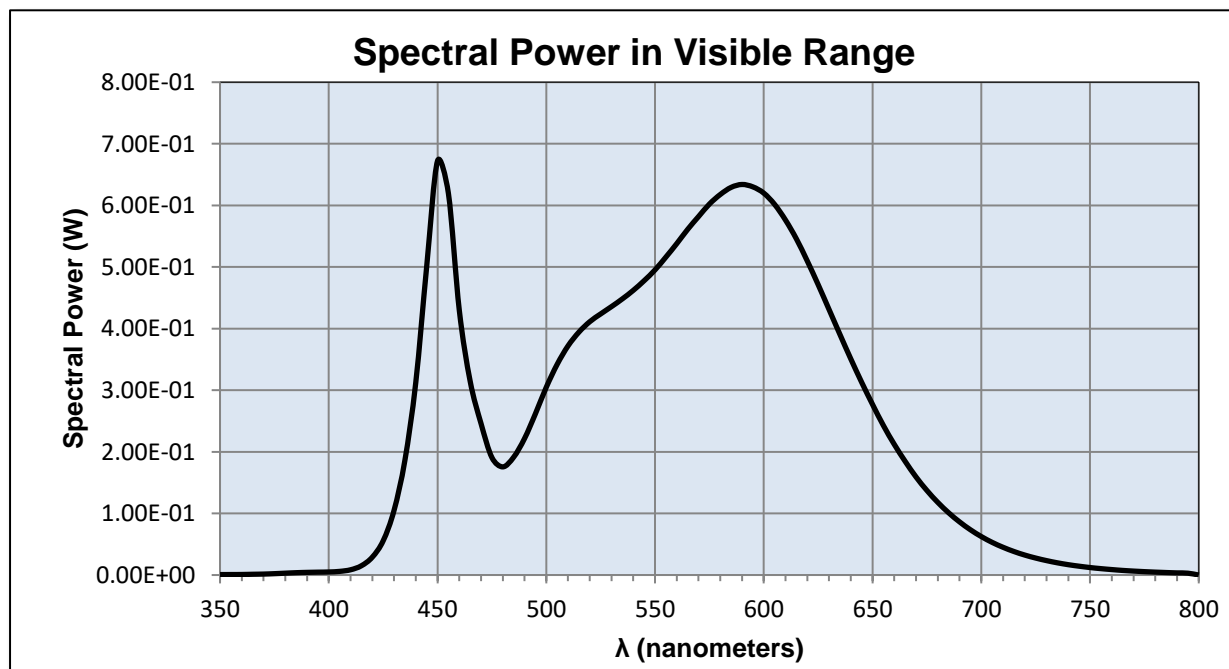
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120.1 (VAC)  
Input Current: 1.924 (A)  
Input Power: 230.1 (W)  
Input Power Factor: 0.9956  
Current ATHD: 5.23 (%)

### Photometric measurements:

Luminous Flux: 35851.7 (lumens)  
Luminous Efficacy: 155.8 (lumens/W)  
Correlated Color Temperature (CCT): 4092 (K)  
CRI -Ra: 80.44  
CRI -R9: -7.99  
DUV: 0.0015  
CIE Coordinate (x): 0.377  
CIE Coordinate (y): 0.378  
CIE Coordinate (u'): 0.223  
CIE Coordinate (v'): 0.502  
TM30\_Rf: 82.4  
TM30\_Rg: 94.0  
TM30\_Rcs\_hue1: -14.02 %



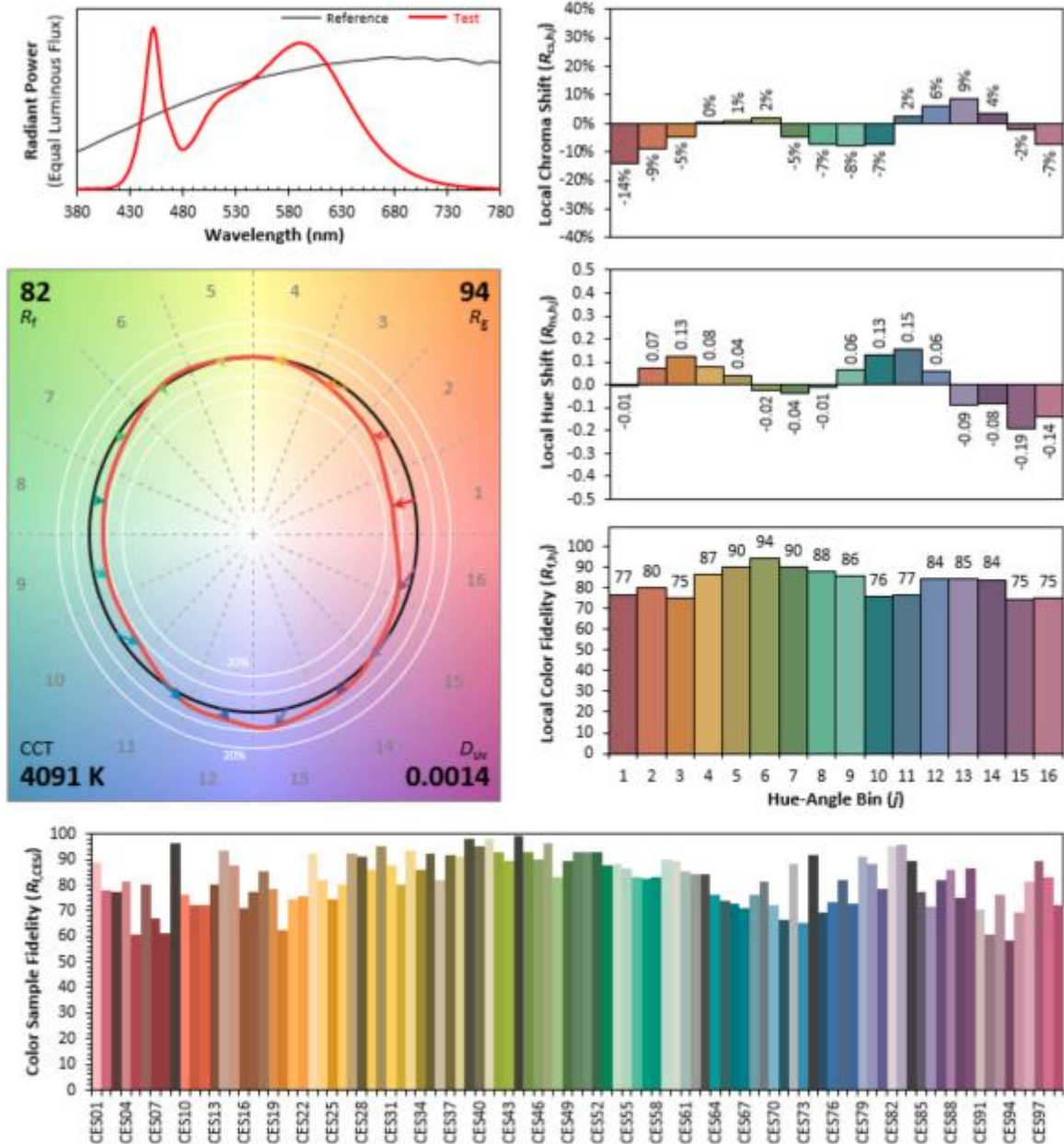
## Test Results: Integrating Sphere

Results continued from previous page.

### Tabulated Spectral Power in Visible Range:

$\lambda(\text{nm})$	$(\text{W/nm})$	$\lambda(\text{nm})$	$(\text{W/nm})$	$\lambda(\text{nm})$	$(\text{W/nm})$	$\lambda(\text{nm})$	$(\text{W/nm})$
350	0.00077	490	0.22156	630	0.43115	770	0.00640
355	0.00079	495	0.26172	635	0.39065	775	0.00549
360	0.00090	500	0.30482	640	0.35088	780	0.00471
365	0.00122	505	0.34195	645	0.31293	785	0.00405
370	0.00157	510	0.37194	650	0.27697	790	0.00346
375	0.00218	515	0.39428	655	0.24273	795	0.00299
380	0.00300	520	0.41123	660	0.21209	800	0.00256
385	0.00378	525	0.42384	665	0.18454		
390	0.00432	530	0.43578	670	0.15926		
395	0.00464	535	0.44831	675	0.13731		
400	0.00496	540	0.46210	680	0.11796		
405	0.00592	545	0.47778	685	0.10102		
410	0.00852	550	0.49534	690	0.08629		
415	0.01504	555	0.51616	695	0.07350		
420	0.02896	560	0.53801	700	0.06251		
425	0.05552	565	0.56111	705	0.05301		
430	0.10492	570	0.58187	710	0.04505		
435	0.18632	575	0.60215	715	0.03821		
440	0.31246	580	0.61773	720	0.03240		
445	0.50016	585	0.62931	725	0.02757		
450	0.67229	590	0.63399	730	0.02339		
455	0.61949	595	0.63010	735	0.01983		
460	0.42988	600	0.61997	740	0.01680		
465	0.31479	605	0.60156	745	0.01431		
470	0.24596	610	0.57618	750	0.01216		
475	0.19076	615	0.54565	755	0.01036		
480	0.17555	620	0.50985	760	0.00884		
485	0.19133	625	0.47143	765	0.00749		

## IES TM-30-18 Color Rendition Report



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3774  
 $y$  0.3779  
 $u'$  0.2227  
 $v'$  0.5016

CIE 13.3-1995  
(CRI)

$R_a$  80  
 $R_g$  -8

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L21108.

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

### Electrical Measurements:

Input Voltage: 120.0 (VAC)  
 Input current: 1.92 (A)  
 Input Power: 229.70 (W)  
 Power Factor: 0.9954

### Photometric measurements:

Absolute Luminous Flux: 35790.3 (lumens)  
 Luminous Efficacy: 155.8 (lumens/W)

### Intensity Summary:

#### Candlepower Summary

H/V	0.00	45.00	90.00	135.00	180.00	Lumens
0.00	20777	20777	20777	20777	20777	
5.00	20249	20382	20688	20321	19748	2050
15.00	16146	17548	19994	17362	15285	4730
25.00	12221	13792	18558	13591	11786	6131
35.00	9546	10821	16480	10758	9155	6660
45.00	5496	8176	13817	8189	4686	5386
55.00	1744	4384	10540	4273	1386	3031
65.00	685	1392	6938	1296	628	1602
75.00	453	555	3063	535	441	845
85.00	353	347	635	347	352	211
90.00	0	0	0	0	0	

#### Zonal Lumen Summary

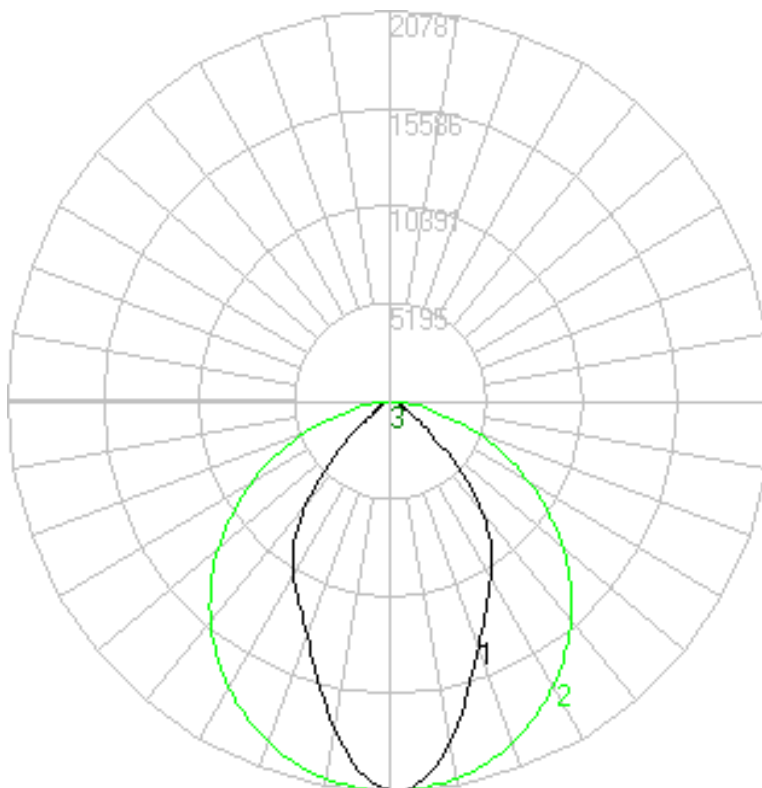
Zone	Lumens	% Lamp	% Fixture
0 to 30	13528.45	37.80	37.80
0 to 40	20841.05	58.23	58.23
0 to 60	31819.03	88.90	88.90
0 to 90	35790.28	100.00	100.00
90 to 180	0.00	0.00	0.00
0 to 180	35790.28	100.00	100.00



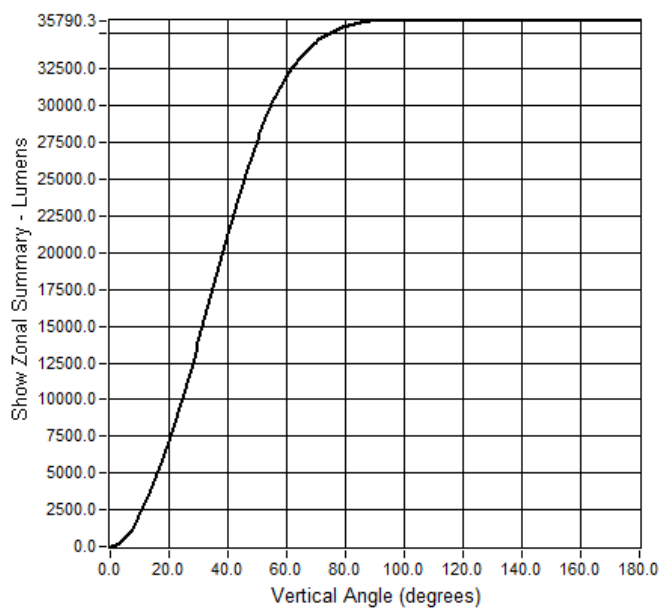
## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:



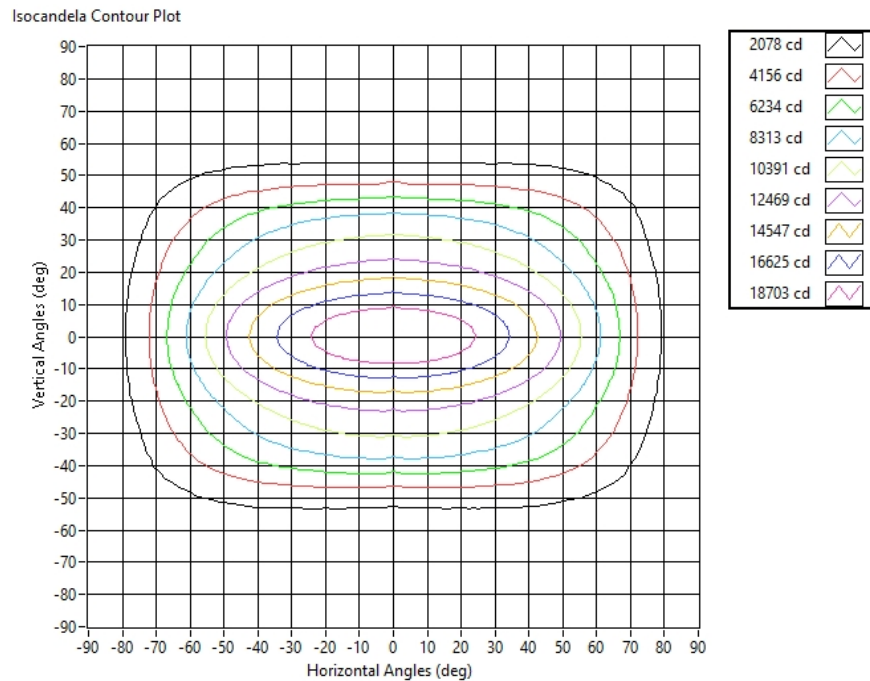
Zonal Flux Graph



## Test Results: Goniometer

Results continued from previous page.

### Illuminance Plot:



### Illuminance-Cone of Light:

Mounting Height (ft)	Beam Cone Width (ft)	Orthogonal Beam Cone Width (ft)	Projected Illuminance (fc)
2	2.37	5.83	5194.3
4	4.75	11.67	1298.6
6	7.12	17.50	577.1
8	9.50	23.34	324.6
10	11.87	29.17	207.8
12	14.25	35.01	144.3
14	16.62	40.84	106.0
16	19.00	46.68	81.2
18	21.37	52.51	64.1
20	23.75	58.35	51.9



## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L21108.

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]EN-[2,8]Jx-xxx-xx

LED identified as Samsung part number SPMWHD32-AM\*\*XA\*\*\*\*.

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

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	200	(mA)
Maximum Rated Power Dissipation:	0.58	(W)
Maximum Junction Temp. (Tj):	110	(°C)
Thermal Resistance (Rth):	7.5	(°C/W)

### Derived Specifications:

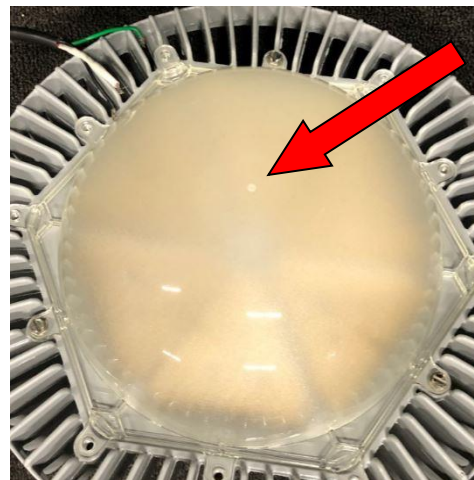
Maximum Power at Indicated Current:	0.29	(W)
Maximum Source Temperature:	107.83	(°C)

### Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5° (°C)
Ambient temperature at time of measurement:	23.2 (°C)
Relative humidity at time of measurement:	41%

### Results:

**Measured LED source temperature:** 57 (°C)



# Equipment Used:

Equipment Name	Model Number
Omega TC	DPI8
YOKOGAWA Digital Power Meter	11/26/3981
LSI High Speed Mirror Goniometer	6240T
Elgar AC Power Supply	CW1251P
Sorensen DC Power Supply	XHR150-7
Dialight Confirmation Sample	HB1N4N
Dialight Confirmation Sample	HB1N4J
Fluke 8808A Digit Multimeter	8808A
Step-Up Transformer	
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Fluke 971 Humidity Meter	8/28/1902
GwINSTEK DC Power Supply	GEP172679
Dialight Confirmation Sample	1/0/1900
Labsphere calibration lamp for 2M sphere	SCL-1400
Labshere 2M sphere	Illumia Plus 2600-1
Labshere Controller	PM-150-140
Labshere Spectrameter- CDS 2600 Spectrometer	CDS-2600
Xitron Power Analyzer	9/1/1907
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo

# 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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## Test Report Issued By:

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Dialight Optics Laboratory  
Senior Optical Engineering Technician  
Lighting Division

## Test Report Reviewed and Approved By:

Vishnu Shastry  
Dialight Optics Laboratory  
Optical Engineer  
Approved Signatory