

Test Report

Report Number: L21079

Date: Jun 23, 2021

Issued by:

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

Test of one IECEx High Bay / Flood
Unit manufacturer: Dialight Corporation
Unit model number: HxA FSA-7MN2-Exxx-NGN

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 25, 2021 through May 27, 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:

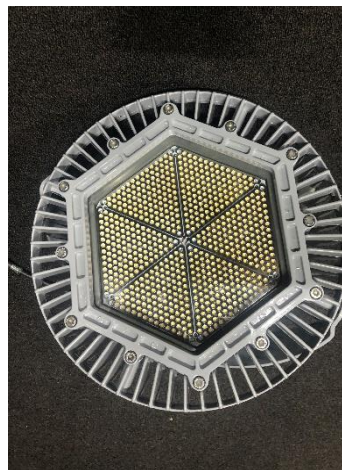
Sample Number: L21079
Manufacturer: Dialight Corporation
Product Name: Glass, Medium, NW, 100-277V, 21k
Description: IECEx High Bay / Flood
Model Number: HxA FSA-7MN2-Exxx-NGN

Report Summary

Sample number L21079

Dialight unit model number HxA FSA-7MN2-Exxx-NGN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	19678 (lumens)	19801 (lumens)
Electrical Power:	147.9 (W)	147.9 (W)
Luminous Efficacy:	133 (lumens/W)	133.9 (lumens/W)

Electrical Measurements:

Input Power (230VAC): 147.9 (W)
 Power Factor (230VAC): 0.981074
 Current ATHD % (230VAC): 10.8718
 Input Power (110VAC): 152.6 (W)
 Power Factor (110VAC): 0.9952
 Current ATHD % (110VAC): 8.4

Color Measurements:

Correlated Color Temperature (CCT): 3984
 Color Rendering Index (CRI): 84.5202
 Chromaticity Coordinate (x): 0.380
 Chromaticity Coordinate (y): 0.375
 Chromaticity Coordinate (u'): 0.226
 Chromaticity Coordinate (v'): 0.334
 DUV: -0.0009

Temperature Measurements:

In Situ LED Source Temperature: 48.9 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L21079.
Dialight unit model number HxA FSA-7MN2-Exxx-NGN

Test Conditions:

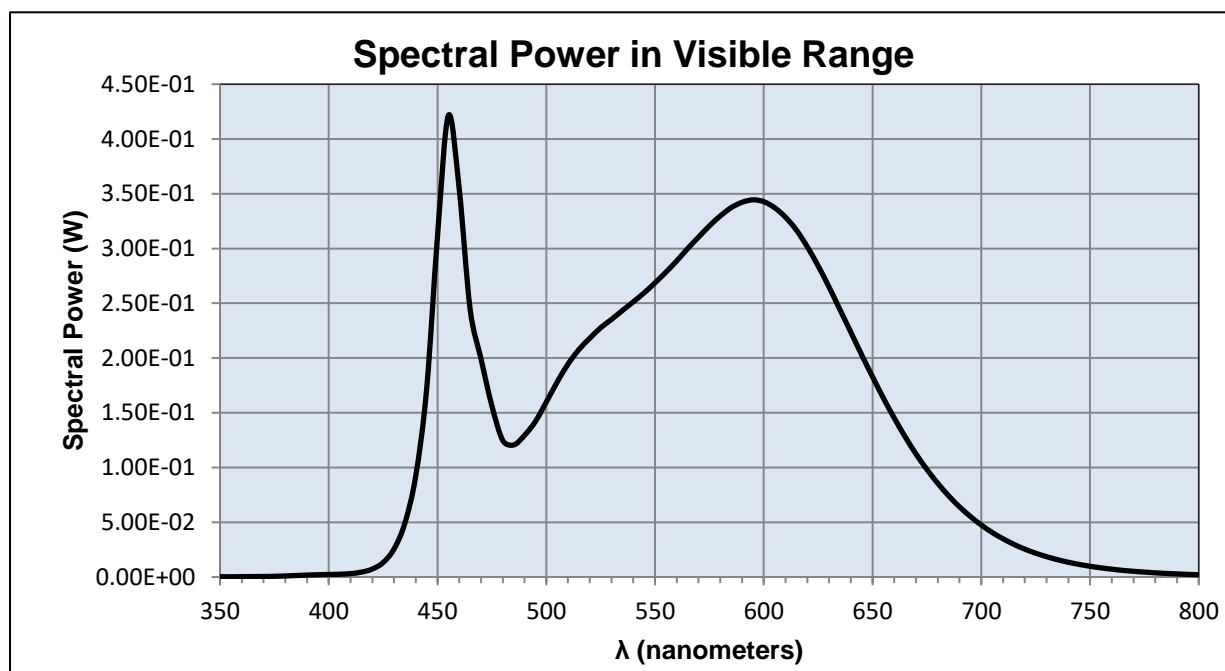
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 230 (VAC)
Input Current: 0.657288 (A)
Input Power: 147.9 (W)
Input Power Factor: 0.981074
Current ATHD: 10.8718 (%)

Photometric measurements:

Luminous Flux: 19678.42 (lumens)
Luminous Efficacy: 133.0 (lumens/W)
Correlated Color Temperature (CCT): 3984 (K)
CRI -Ra: 84.5202
CRI -R9: 16.4688
DUV: -0.0009
CIE Coordinate (x): 0.380
CIE Coordinate (y): 0.375
CIE Coordinate (u): 0.226
CIE Coordinate (v): 0.334
TM30_Rf: 81.5
TM30_Rg: 93.4
TM30_Rcs_hue1: -11.35 %



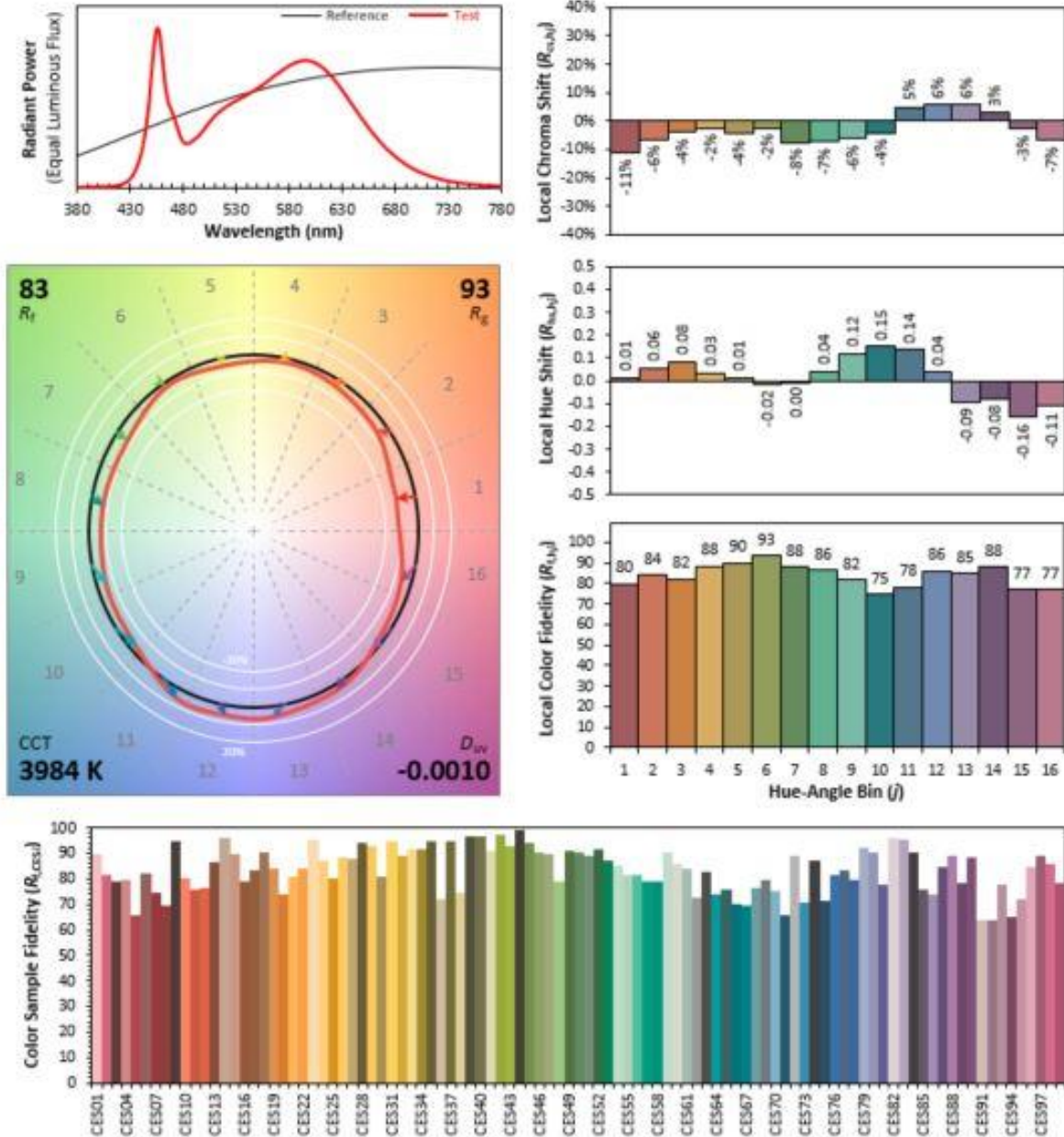
Test Results: Integrating Sphere

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)	$\lambda(\text{nm})$	(W/nm)
350	0.00033	490	0.12941	630	0.26485	770	0.00523
355	0.00022	495	0.14202	635	0.24428	775	0.00450
360	0.00036	500	0.15972	640	0.22367	780	0.00385
365	0.00042	505	0.17803	645	0.20289	785	0.00328
370	0.00051	510	0.19446	650	0.18292	790	0.00283
375	0.00066	515	0.20768	655	0.16338	795	0.00242
380	0.00096	520	0.21800	660	0.14511	800	0.00209
385	0.00139	525	0.22758	665	0.12805		
390	0.00178	530	0.23526	670	0.11233		
395	0.00209	535	0.24337	675	0.09826		
400	0.00233	540	0.25123	680	0.08556		
405	0.00257	545	0.25949	685	0.07416		
410	0.00314	550	0.26863	690	0.06405		
415	0.00444	555	0.27835	695	0.05530		
420	0.00729	560	0.28871	700	0.04750		
425	0.01324	565	0.29991	705	0.04071		
430	0.02560	570	0.31033	710	0.03495		
435	0.04930	575	0.32065	715	0.02983		
440	0.09248	580	0.32968	720	0.02549		
445	0.17174	585	0.33728	725	0.02177		
450	0.31160	590	0.34216	730	0.01861		
455	0.42153	595	0.34440	735	0.01585		
460	0.35364	600	0.34271	740	0.01352		
465	0.24439	605	0.33720	745	0.01152		
470	0.19918	610	0.32855	750	0.00983		
475	0.15627	615	0.31680	755	0.00839		
480	0.12469	620	0.30159	760	0.00718		
485	0.12058	625	0.28408	765	0.00609		

IES TM-30-18 Color Rendition Report



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

x 0.3805
 y 0.3747
 u' 0.2259
 v' 0.5007

CIE 13.3-1995 (CRI)	
R_a	85
R_g	16

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L21079.
Dialight unit model number HxA FSA-7MN2-Exxx-NGN

Electrical Measurements:

Input Voltage: 230 (VAC)
Input current: 0.6572 (A)
Input Power: 147.9 (W)
Power Factor: 0.9779

Photometric measurements:

Absolute Luminous Flux: 19800.6 (lumens)
Luminous Efficacy: 133.9 (lumens/W)

Intensity Summary:

Candlepower Summary

H/V	0.00	45.00	90.00	135.00	180.00	Lumens
0.00	7759	7757	7761	7763	7759	
5.00	7885	7877	7864	7875	7885	799
15.00	8249	8257	8112	8249	8361	2344
25.00	8729	9085	8910	8999	8995	4126
35.00	8411	8450	8471	8686	8770	5384
45.00	5760	5911	6174	6324	6277	4695
55.00	2307	2455	2673	2808	2702	2294
65.00	414	469	539	548	509	479
75.00	64	62	61	64	67	68
85.00	33	33	35	36	35	19
90.00	0	1	4	3	1	

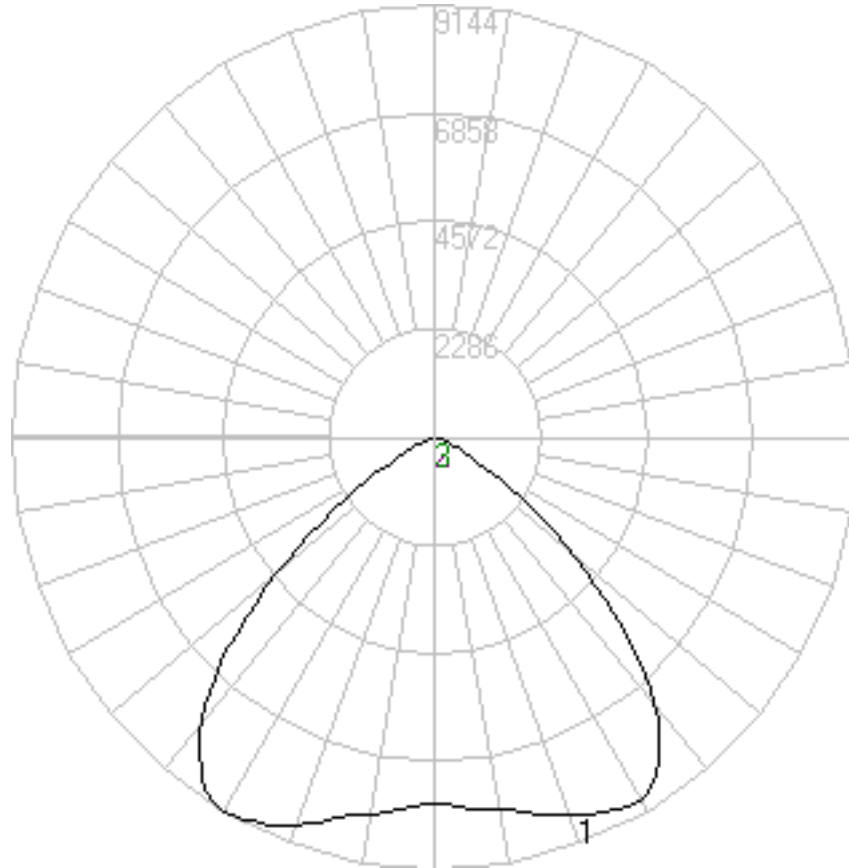
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0 to 30	7250.36	36.62	36.62
0 to 40	12461.37	62.93	62.93
0 to 60	19178.61	96.86	96.86
0 to 90	19800.62	100.00	100.00
90 to 180	0.00	0.00	0.00
0 to 180	19800.62	100.00	100.00

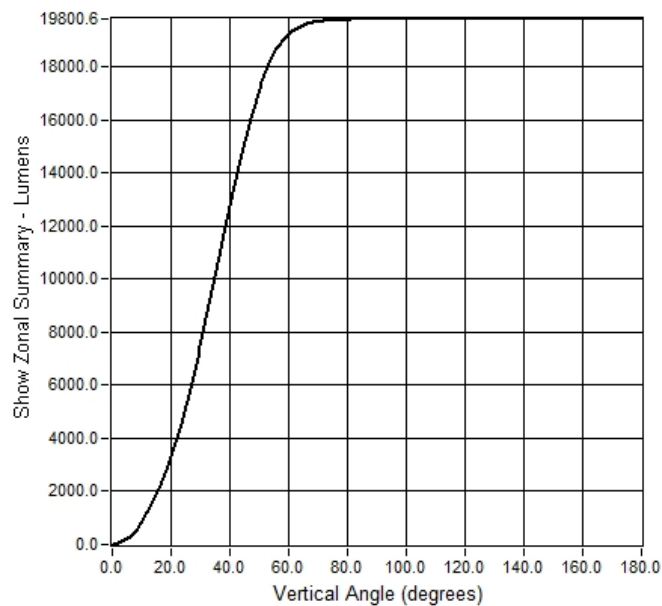
Test Results: Goniometer

Results continued from previous page.

Polar Plot:



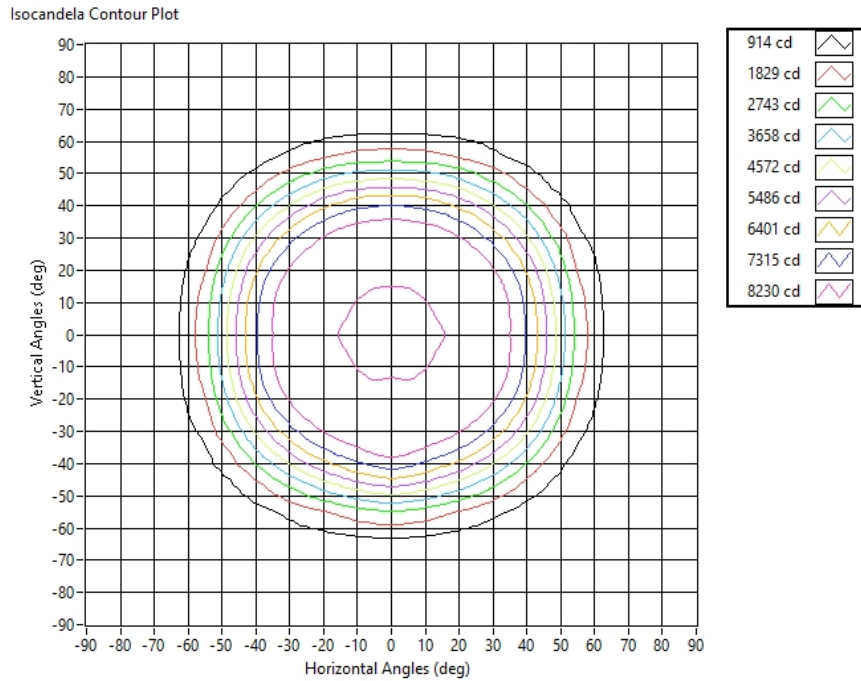
Zonal Flux Graph



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	4.95	4.88	1939.6
4	9.90	9.75	484.9
6	14.84	14.63	215.5
8	19.79	19.50	121.2
10	24.74	24.38	77.6
12	29.69	29.25	53.9
14	34.63	34.13	39.6
16	39.58	39.01	30.3
18	44.53	43.88	23.9
20	49.48	48.76	19.4

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L21079.
Dialight unit model number HxA FSA-7MN2-Exxx-NGN

LED identified as NICHIA part number NF2W757GRT-V1.

LED drive current (as indicated by customer): 47 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	200	(mA)
Maximum Rated Power Dissipation:	1.42	(W)
Maximum Junction Temp. (Tj):	120	(°C)
Thermal Resistance (Rth):	17	(°C/W)

Derived Specifications:

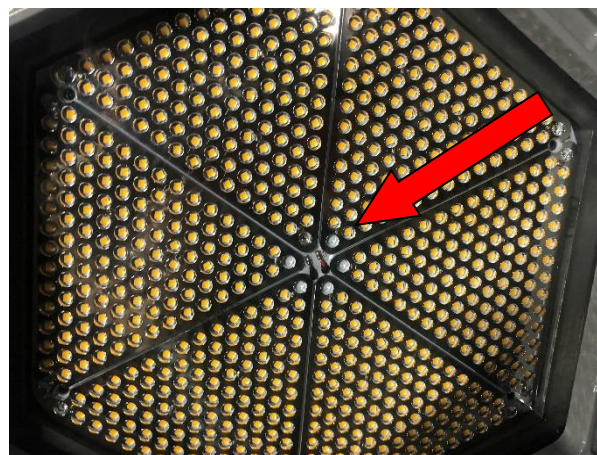
Maximum Power at Indicated Current:	0.3337	(W)
Maximum Source Temperature:	114.3271	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5° (°C)
Ambient temperature at time of measurement:	24.5 (°C)
Relative humidity at time of measurement:	30%

Results:

Measured LED source temperature: 48.9 (°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 Spectrometer- 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. 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