

# Test Report

Report Number: L19025

Date: Apr 29, 2019

Issued by:

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

Test of one High Bay

Unit manufacturer: Dialight Corporation  
Unit model number: RRE-5MC2-Jxxx-xxN

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:** April 15, 2019 through April 17, 2019

**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: L19025  
Manufacturer: Dialight Corporation  
Product Name: Reliant High Bay  
Description: High Bay  
Model Number: RRE-5MC2-Jxxx-xxN

## Report Summary

Sample number L19025  
Dialight unit model number RRE-5MC2-Jxxx-xxN

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	29970 (lumens)	30030 (lumens)
Electrical Power:	230.2 (W)	230.6 (W)
Luminous Efficacy:	130.2 (lumens/W)	130.2 (lumens/W)

### Electrical Measurements:

Input Power (230VAC): 230.2 (W)  
Power Factor (230VAC): 0.986  
Current ATHD % (230VAC): 8.9  
Input Power (110VAC): 239.2 (W)  
Power Factor (110VAC): 0.998  
Current ATHD % (110VAC): 4.04

### Color Measurements:

Correlated Color Temperature (CCT): 5110  
Color Rendering Index (CRI): 87.1  
Chromaticity Coordinate (x): 0.342  
Chromaticity Coordinate (y): 0.352  
Chromaticity Coordinate (u'): 0.21  
Chromaticity Coordinate (v'): 0.323  
DUV: 0.0012

### Temperature Measurements:

In Situ LED Source Temperature: 57.8 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L19025.

Dialight unit model number RRE-5MC2-Jxxx-xxN

### Test Conditions:

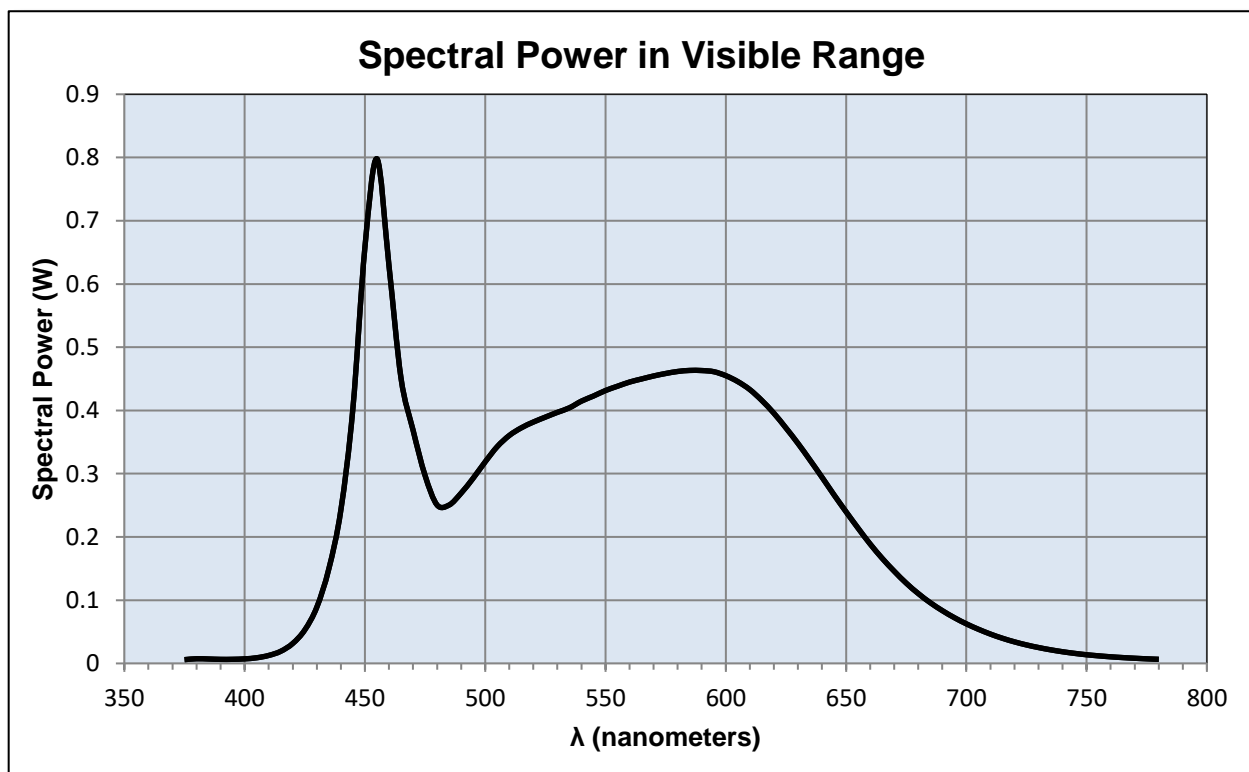
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 230 (VAC)  
Input Current: 1.014 (A)  
Input Power: 230.2 (W)  
Input Power Factor: 0.986  
Current ATHD: 8.9 (%)

### Photometric measurements:

Luminous Flux: 29970 (lumens)  
Luminous Efficacy: 130.2 (lumens/W)  
Correlated Color Temperature (CCT): 5110 (K)  
CRI -Ra: 87.1  
CRI -R9: 26  
DUV: 0.0012  
CIE Coordinate (x): 0.342  
CIE Coordinate (y): 0.352  
CIE Coordinate (u'): 0.21  
CIE Coordinate (v'): 0.323



## 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	0.006	515	0.373	655	0.214
380	0.007	520	0.382	660	0.189
385	0.007	525	0.389	665	0.166
390	0.006	530	0.397	670	0.146
395	0.007	535	0.404	675	0.127
400	0.007	540	0.415	680	0.111
405	0.009	545	0.423	685	0.096
410	0.013	550	0.432	690	0.084
415	0.019	555	0.438	695	0.072
420	0.032	560	0.445	700	0.063
425	0.053	565	0.450	705	0.054
430	0.089	570	0.455	710	0.046
435	0.150	575	0.458	715	0.040
440	0.243	580	0.462	720	0.034
445	0.403	585	0.463	725	0.029
450	0.658	590	0.463	730	0.025
455	0.798	595	0.461	735	0.022
460	0.629	600	0.455	740	0.018
465	0.451	605	0.446	745	0.016
470	0.369	610	0.433	750	0.014
475	0.297	615	0.416	755	0.012
480	0.250	620	0.396	760	0.010
485	0.250	625	0.372	765	0.009
490	0.269	630	0.348	770	0.008
495	0.293	635	0.322	775	0.007
500	0.319	640	0.294	780	0.007
505	0.343	645	0.267		
510	0.360	650	0.240		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L19025.  
Dialight unit model number RRE-5MC2-Jxxx-xxN

### Electrical Measurements:

Input Voltage: 230 (VAC)  
Input current: 1.016 (A)  
Input Power: 230.6 (W)  
Power Factor: 0.986

### Photometric measurements:

Absolute Luminous Flux: 30030 (lumens)  
Luminous Efficacy: 130.2 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	12813	12813	12813	12813	12813	
5	12837	12837	12837	12837	12837	479
15	13016	13016	13016	13016	13016	2767
25	13030	13030	13030	13030	13030	5193
35	11426	11426	11426	11426	11426	6915
45	7721	7721	7721	7721	7721	6610
55	3877	3877	3877	3877	3877	4445
65	1572	1572	1572	1572	1572	2185
75	672	672	672	672	672	975
85	244	244	244	244	244	420
95	0	0	0	0	0	42
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

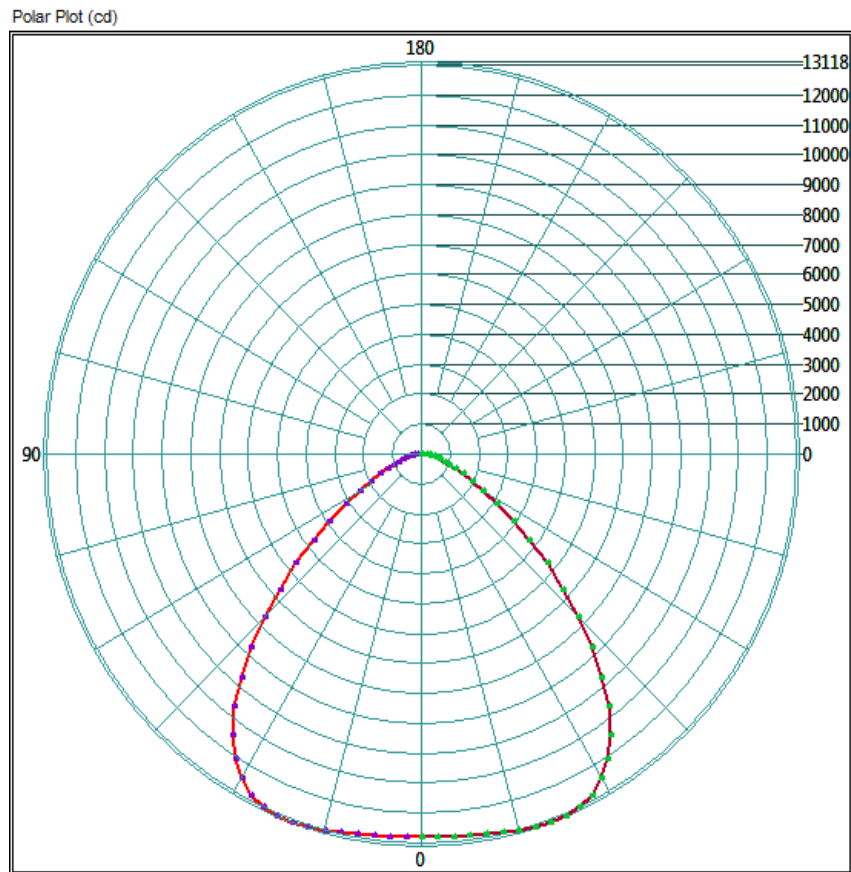
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	11781.44	39.2%
0-40	18845.6	62.8%
0-60	27722.08	92.3%
60-90	2900.16	9.7%
0-90	30030.4	100.0%
90-180	0	0.0%
0-180	30030.4	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

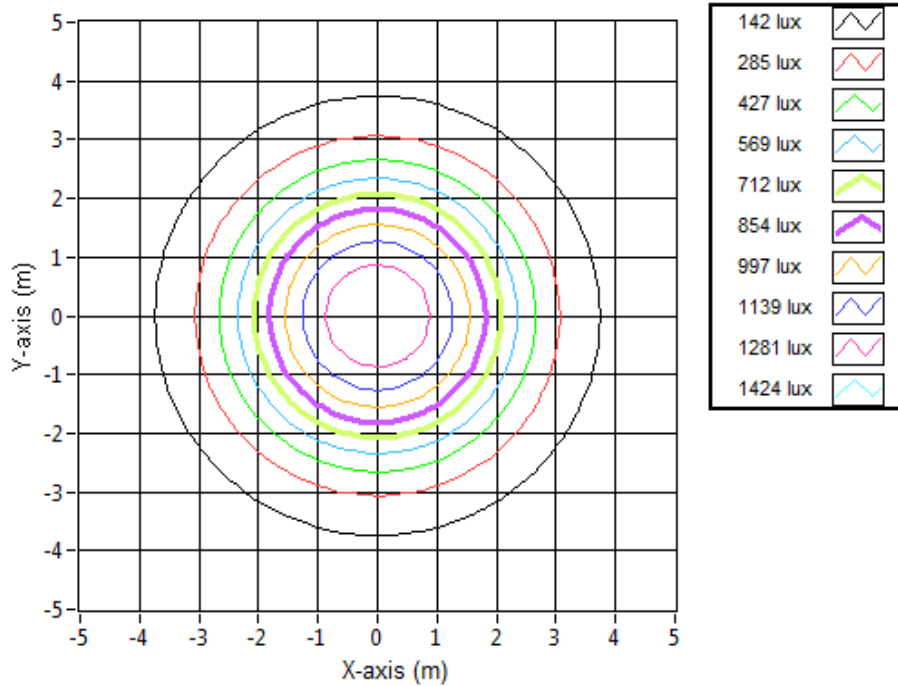


## Test Results: Goniometer

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	6.82	6.82	1379.2
6.096	13.63	13.63	344.8
9.144	20.45	20.45	153.2
12.192	27.27	27.27	86.2
15.24	34.09	34.09	55.2
18.288	40.90	40.90	38.3
21.336	47.72	47.72	28.1
24.384	54.54	54.54	21.6
27.432	61.35	61.35	17.0
30.48	68.17	68.17	13.8

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L19025.  
Dialight unit model number RRE-5MC2-Jxxx-xxN

LED identified as Seoul Semiconductor part number SAW8C22B.

LED drive current (as indicated by customer): 35 (mA)

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 250 (mA)  
Maximum Rated Power Dissipation: 1.5 (W)  
Maximum Junction Temp. (Tj): 125 (°C)  
Thermal Resistance (Rth): 17 (°C/W)

Derived Specifications:

Maximum Power at Indicated Current: 0.21 (W)  
Maximum Source Temperature: 121.4 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)  
Ambient temperature at time of measurement: 24.5 (°C)  
Relative humidity at time of measurement: 38%

### Results:

**Measured LED source temperature: 57.8 (°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
Delta Elektronika DC Power Supply	SM.300-5
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
TPI Digital Thermometer	TPI 343
Fluke 52II Thermometer	068158
Fluke 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
BK Precision	1715A
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640
GwINSTEK DC Power Supply	GEP172679
Osram Sylvania Calibration Lamp for Sphere	STD-20WF-3

**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.

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