

# Test Report

Report Number: L19085

Date: Oct 15, 2019

Issued by:

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

Test of one GRP Linear  
Unit manufacturer: Dialight Corporation  
Unit model number: P2xBMC23AxxxxN

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 8, 2019 through October 14, 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

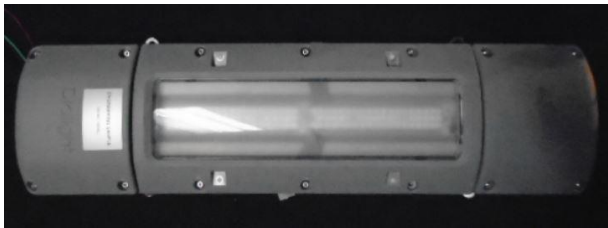
**Description of sample:**

Sample Number: L19085  
Manufacturer: Dialight Corporation  
Product Name: SafeSite GRP LED Linear, 2ft, Medium  
Description: GRP Linear  
Model Number: P2xBMC23AxxxxN

## Report Summary

Sample number L19085  
Dialight unit model number P2xBMC23AxxxxN

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	2775 (lumens)	2776 (lumens)
Electrical Power:	25.7 (W)	25.7 (W)
Luminous Efficacy:	108.1 (lumens/W)	108.2 (lumens/W)

### Electrical Measurements:

Input Power (120 VAC): 25.7 (W)  
Power Factor (120 VAC): 0.992  
Current ATHD % (120 VAC): 10.47  
Input Power (277VAC): 25.6 (W)  
Power Factor (277VAC): 0.953  
Current ATHD % (277VAC): 11.78

### Color Measurements:

Correlated Color Temperature (CCT): 5203  
Color Rendering Index (CRI): 85.47  
Chromaticity Coordinate (x): 0.340  
Chromaticity Coordinate (y): 0.352  
Chromaticity Coordinate (u'): 0.208  
Chromaticity Coordinate (v'): 0.484  
DUV: 0.0024

### Temperature Measurements:

In Situ LED Source Temperature: 50.6 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L19085.

Dialight unit model number P2xBMC23AxxxxN

### Test Conditions:

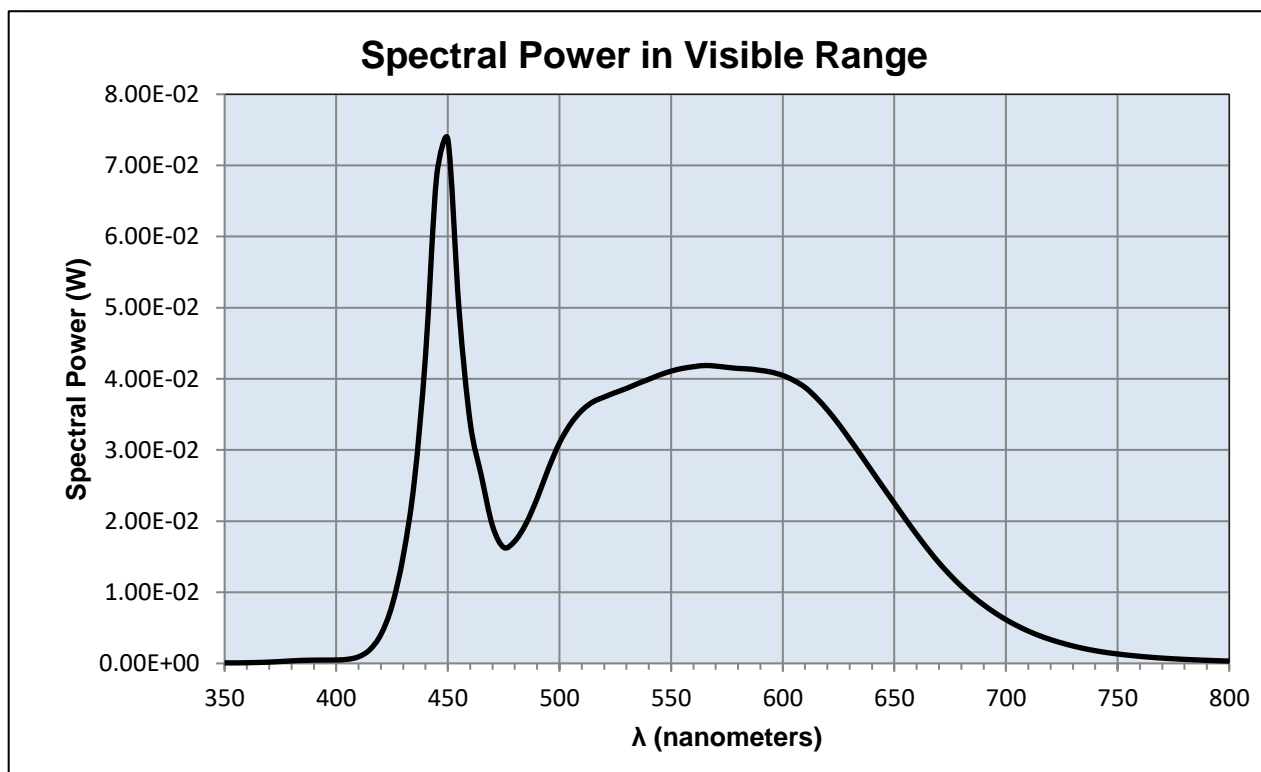
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120.4 (VAC)  
Input Current: 0.215 (A)  
Input Power: 25.7 (W)  
Input Power Factor: 0.992  
Current ATHD: 10.47 (%)

### Photometric measurements:

Luminous Flux: 2775 (lumens)  
Luminous Efficacy: 108.1 (lumens/W)  
Correlated Color Temperature (CCT): 5203 (K)  
CRI -Ra: 85.47  
CRI -R9: 24.68  
DUV: 0.0024  
CIE Coordinate (x): 0.340  
CIE Coordinate (y): 0.352  
CIE Coordinate (u'): 0.208  
CIE Coordinate (v'): 0.484



## Test Results: Integrating Sphere

Results continued from previous page.

### Tabulated Spectral Power in Visible Range:

$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)
350	0.00008	490	0.02320	630	0.03150	770	0.00075
355	0.00008	495	0.02734	635	0.02929	775	0.00065
360	0.00010	500	0.03100	640	0.02701	780	0.00057
365	0.00014	505	0.03368	645	0.02475	785	0.00050
370	0.00018	510	0.03556	650	0.02252	790	0.00044
375	0.00027	515	0.03676	655	0.02029	795	0.00038
380	0.00036	520	0.03744	660	0.01813	800	0.00033
385	0.00043	525	0.03807	665	0.01606		
390	0.00046	530	0.03865	670	0.01414		
395	0.00047	535	0.03932	675	0.01242		
400	0.00048	540	0.03993	680	0.01085		
405	0.00058	545	0.04056	685	0.00946		
410	0.00093	550	0.04108	690	0.00823		
415	0.00192	555	0.04146	695	0.00713		
420	0.00406	560	0.04171	700	0.00615		
425	0.00814	565	0.04188	705	0.00530		
430	0.01510	570	0.04179	710	0.00455		
435	0.02565	575	0.04162	715	0.00390		
440	0.04326	580	0.04146	720	0.00335		
445	0.06851	585	0.04138	725	0.00287		
450	0.07367	590	0.04119	730	0.00245		
455	0.04979	595	0.04094	735	0.00209		
460	0.03388	600	0.04048	740	0.00179		
465	0.02638	605	0.03977	745	0.00153		
470	0.01934	610	0.03881	750	0.00133		
475	0.01632	615	0.03737	755	0.00115		
480	0.01720	620	0.03563	760	0.00099		
485	0.01964	625	0.03367	765	0.00086		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L19085.  
Dialight unit model number P2xBMC23AxxxxN

### Electrical Measurements:

Input Voltage: 120.3 (VAC)  
Input current: 0.216 (A)  
Input Power: 25.7 (W)  
Power Factor: 0.989

### Photometric measurements:

Absolute Luminous Flux: 2776 (lumens)  
Luminous Efficacy: 108.2 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	1015	1015	1015	1015	1015	
5	1004	1006	1011	1008	1005	38
15	961	967	979	983	988	213
25	888	907	938	951	957	382
35	771	805	851	872	877	511
45	598	633	682	708	719	551
55	407	431	460	486	498	481
65	227	241	261	273	280	329
75	99	111	128	134	135	183
85	15	26	41	48	50	73
95	0	0	4	10	12	15
105	0	0	0	0	0	1
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

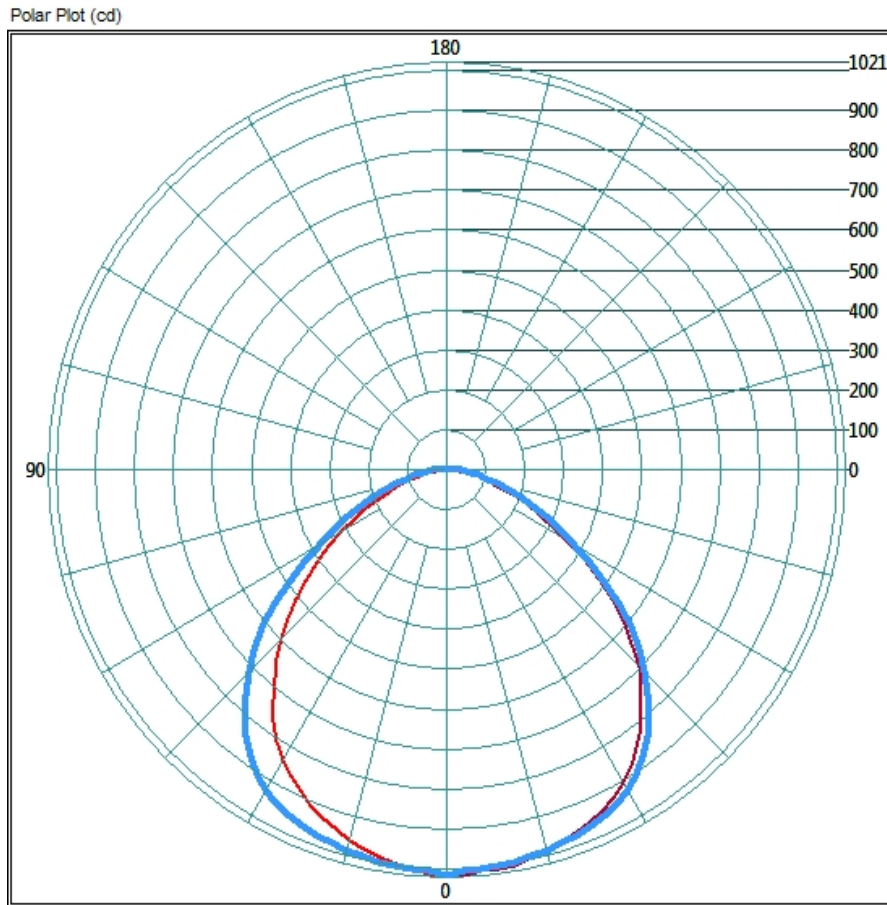
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	875.39	31.5%
0-40	1419.96	51.2%
0-60	2360.39	85.0%
60-90	498.04	17.9%
0-90	2771.02	99.8%
90-180	9.06	0.3%
0-180	2775.94	100.0%

## Test Results: Goniometer

Results continued from previous page.

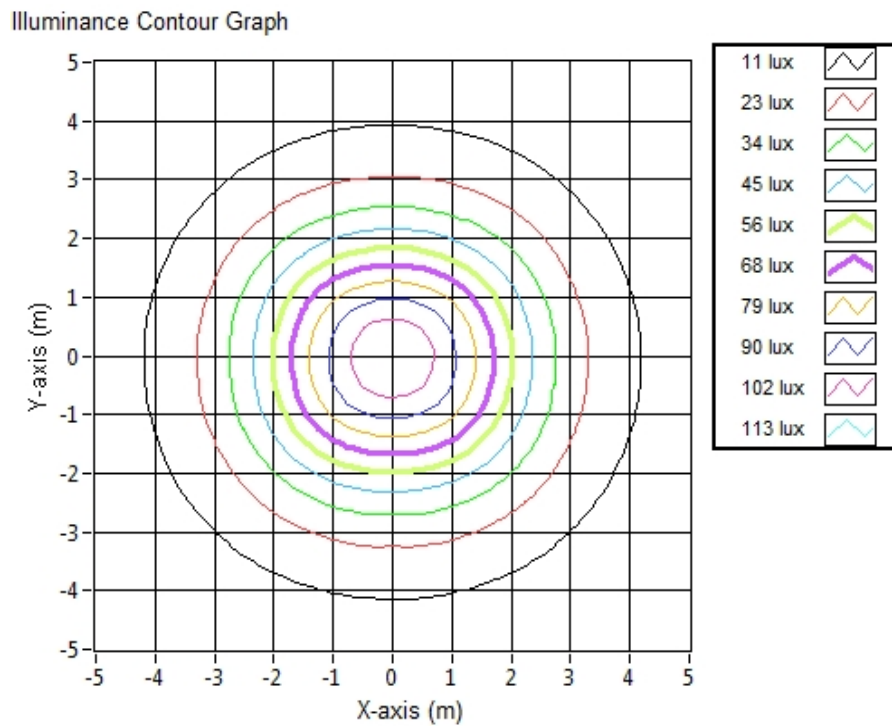
### Polar Plot:



## Test Results: Goniometer

Results continued from previous page.

### Illuminance Plot:



### Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	7.76	8.58	109.3
6.096	15.52	17.16	27.3
9.144	23.28	25.73	12.1
12.192	31.04	34.31	6.8
15.24	38.80	42.89	4.4
18.288	46.56	51.47	3.0
21.336	54.32	60.04	2.2
24.384	62.07	68.62	1.7
27.432	69.83	77.20	1.3
30.48	77.59	85.78	1.1

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L19085.  
Dialight unit model number P2xBMC23AxxxxN

LED identified as Seoul part number SAW8C22B-XX.

LED drive current (as indicated by customer): 36 (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:

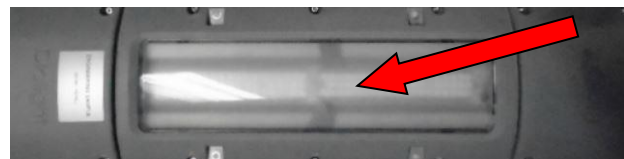
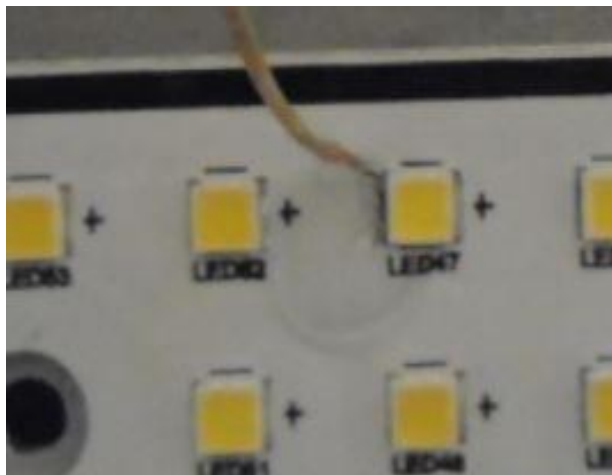
Maximum Power at Indicated Current: 0.216 (W)  
Maximum Source Temperature: 121.3 (°C)

### 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: 32%

### Results:

**Measured LED source temperature:** 50.6 (°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 Humdity 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. 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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 Lighting Division

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 Dialight Optics Laboratory  
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 Approved Signatory