

# Test Report

Report Number: L21122

Date: Aug 23, 2021

Issued by:

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

Test of one Ultra Wide/Dome Lens/Neutral White Lens Highbay  
Unit manufacturer: Dialight Corporation  
Unit model number: [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-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:** August 16, 2021 through August 23, 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: L21122

Manufacturer: Dialight Corporation

Product Name: Highbay

Description: Ultra Wide/Dome Lens/Neutral White Lens Highbay

Model Number: [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-xxx-xx

## Report Summary

Sample number L21122

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-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:	16815 (lumens)	16629 (lumens)
Electrical Power:	115.1 (W)	115.0 (W)
Luminous Efficacy:	146.1 (lumens/W)	144.6 (lumens/W)

### Electrical Measurements:

Input Power (480VAC): 115.1 (W)  
 Power Factor (480VAC): 0.9544  
 Current ATHD % (480VAC): 12.70  
 Input Power (347VAC): 114.8 (W)  
 Power Factor (347VAC): 0.9888  
 Current ATHD % (347VAC): 0.12

### Color Measurements:

Correlated Color Temperature (CCT): 4101  
 Color Rendering Index (CRI): 82.19  
 Chromaticity Coordinate (x): 0.377  
 Chromaticity Coordinate (y): 0.378  
 Chromaticity Coordinate (u'): 0.223  
 Chromaticity Coordinate (v'): 0.501  
 DUV: 0.0014

### Temperature Measurements:

In Situ LED Source Temperature: 40.3 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L21122.

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-xxx-xx

### Test Conditions:

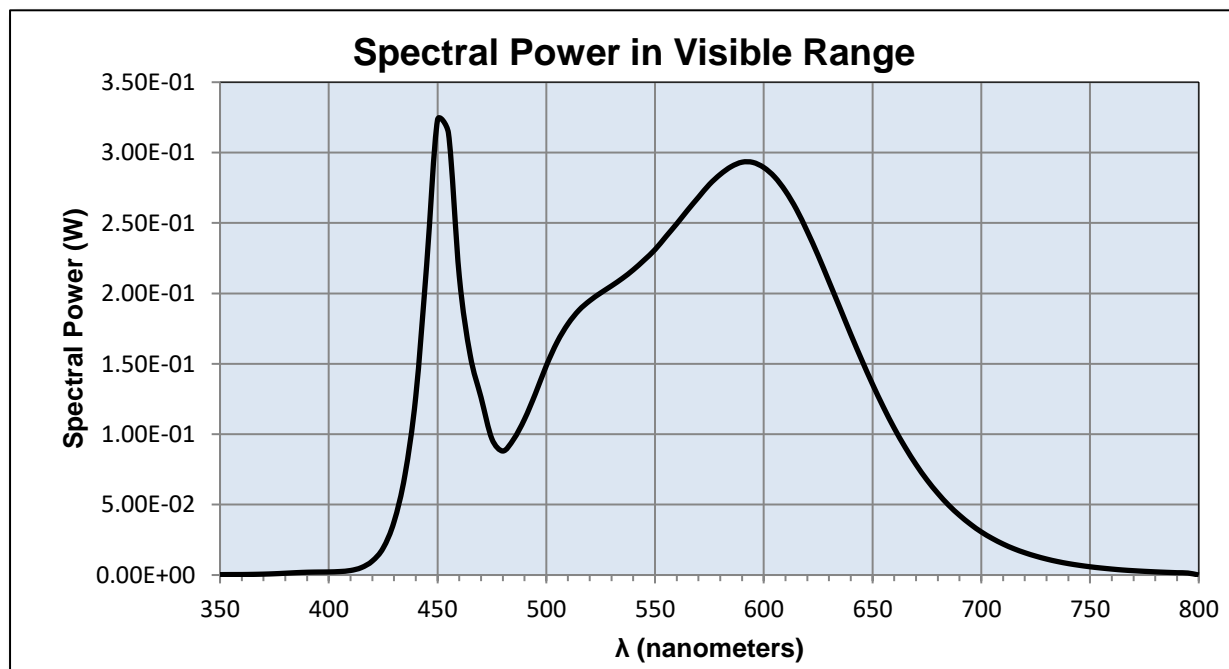
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 480.0 (VAC)  
Input Current: 0.251 (A)  
Input Power: 115.1 (W)  
Input Power Factor: 0.9544  
Current ATHD: 12.70 (%)

### Photometric measurements:

Luminous Flux: 16814.7 (lumens)  
Luminous Efficacy: 146.1 (lumens/W)  
Correlated Color Temperature (CCT): 4101 (K)  
CRI -Ra: 82.19  
CRI -R9: 0.15  
DUV: 0.0014  
CIE Coordinate (x): 0.377  
CIE Coordinate (y): 0.378  
CIE Coordinate (u'): 0.223  
CIE Coordinate (v'): 0.501  
TM30\_Rf: 83.5  
TM30\_Rg: 94.1  
TM30\_Rcs\_hue1: -13.02 %



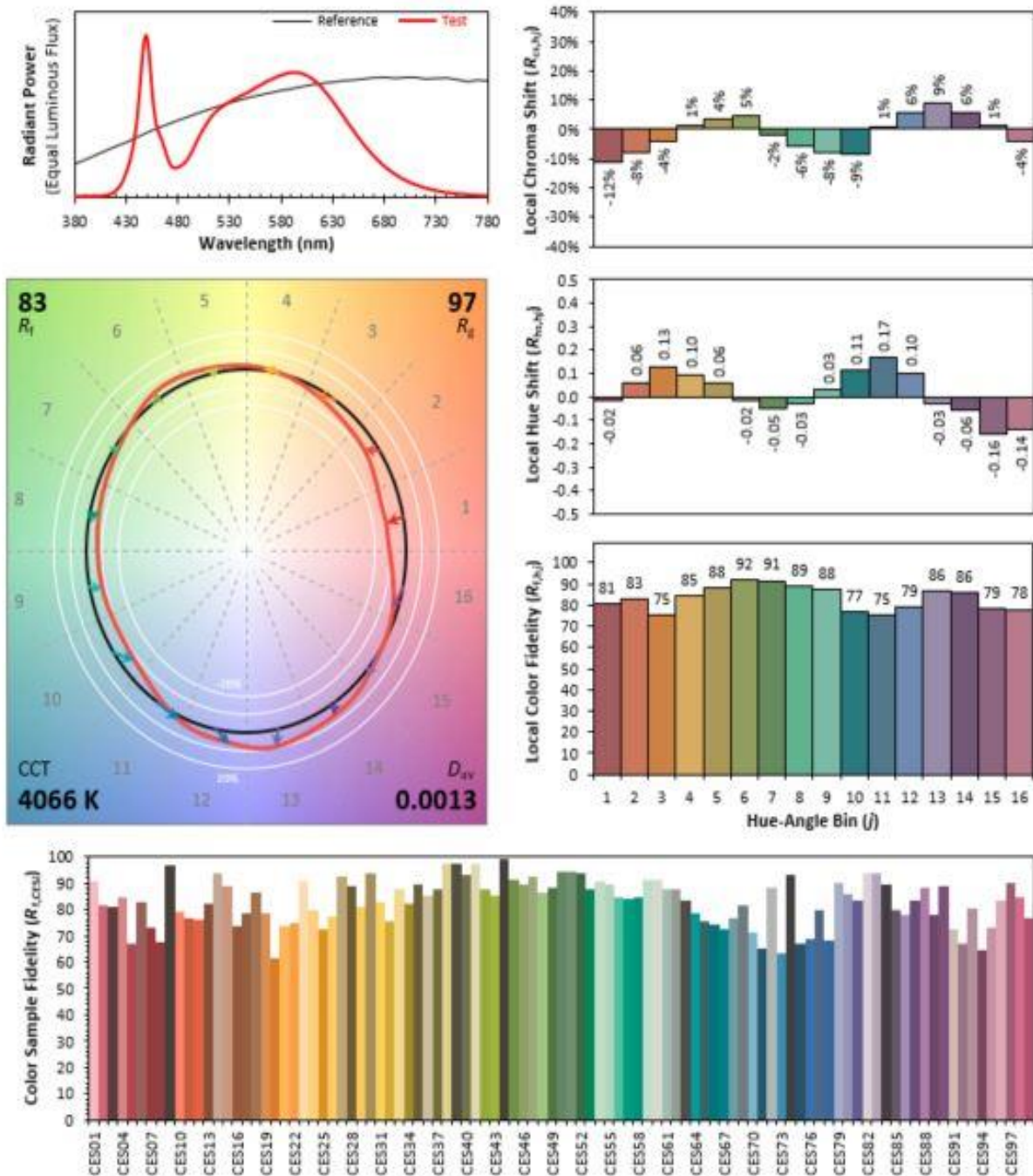
## Test Results: Integrating Sphere

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	0.00029	490	0.11065	630	0.20837	770	0.00306
355	0.00034	495	0.12877	635	0.18977	775	0.00262
360	0.00036	500	0.14859	640	0.17094	780	0.00226
365	0.00047	505	0.16549	645	0.15288	785	0.00192
370	0.00064	510	0.17840	650	0.13553	790	0.00165
375	0.00090	515	0.18803	655	0.11927	795	0.00141
380	0.00128	520	0.19482	660	0.10425	800	0.00122
385	0.00167	525	0.20033	665	0.09073		
390	0.00198	530	0.20537	670	0.07852		
395	0.00211	535	0.21070	675	0.06760		
400	0.00220	540	0.21676	680	0.05808		
405	0.00248	545	0.22365	685	0.04962		
410	0.00322	550	0.23113	690	0.04242		
415	0.00527	555	0.24033	695	0.03611		
420	0.00991	560	0.24950	700	0.03062		
425	0.01914	565	0.25915	705	0.02602		
430	0.03781	570	0.26834	710	0.02204		
435	0.07089	575	0.27738	715	0.01866		
440	0.12679	580	0.28453	720	0.01585		
445	0.22013	585	0.29003	725	0.01343		
450	0.32327	590	0.29320	730	0.01136		
455	0.31401	595	0.29304	735	0.00959		
460	0.21212	600	0.28943	740	0.00813		
465	0.15636	605	0.28272	745	0.00690		
470	0.12620	610	0.27266	750	0.00586		
475	0.09665	615	0.25976	755	0.00500		
480	0.08806	620	0.24404	760	0.00424		
485	0.09646	625	0.22687	765	0.00357		

## IES TM-30-18 Color Rendition Report



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

$x$  0.3785  
 $y$  0.3784  
 $u'$  0.2232  
 $v'$  0.5020

CIE 13.3-1995  
(CRI)

$R_a$  82  
 $R_g$  10



## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L21122.  
Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-xxx-xx

### Electrical Measurements:

Input Voltage: 480.0 (VAC)  
Input current: 0.25 (A)  
Input Power: 114.99 (W)  
Power Factor: 0.9538

### Photometric measurements:

Absolute Luminous Flux: 16628.8 (lumens)  
Luminous Efficacy: 144.6 (lumens/W)

### Intensity Summary:

#### Candlepower Summary

H/V	0.00	45.00	90.00	135.00	180.00	Lumens
0.00	1696	1696	1696	1696	1696	
5.00	1689	1691	1697	1699	1702	172
15.00	1661	1674	1685	1687	1674	474
25.00	1618	1630	1649	1634	1609	751
35.00	1624	1637	1644	1638	1614	1022
45.00	1792	1800	1782	1810	1801	1392
55.00	2147	2072	1982	2055	2103	1877
65.00	2077	1956	1863	1869	1920	1945
75.00	1061	1101	1204	1027	896	1087
85.00	261	297	324	270	213	181
90.00	149	154	157	145	128	

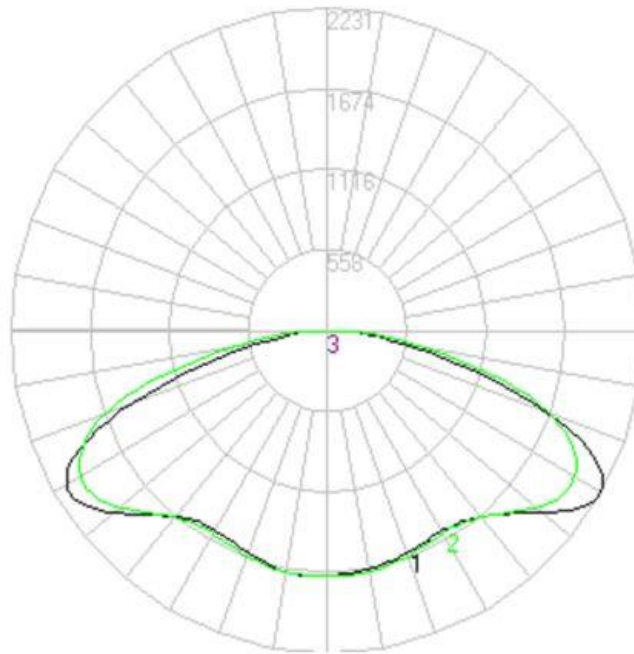
#### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0 to 30	1390.53	15.41	15.41
0 to 40	2419.59	26.82	26.82
0 to 60	5666.58	62.80	62.80
0 to 90	9022.63	100.00	100.00
90 to 180	0.00	0.00	0.00
0 to 180	9022.63	100.00	100.00

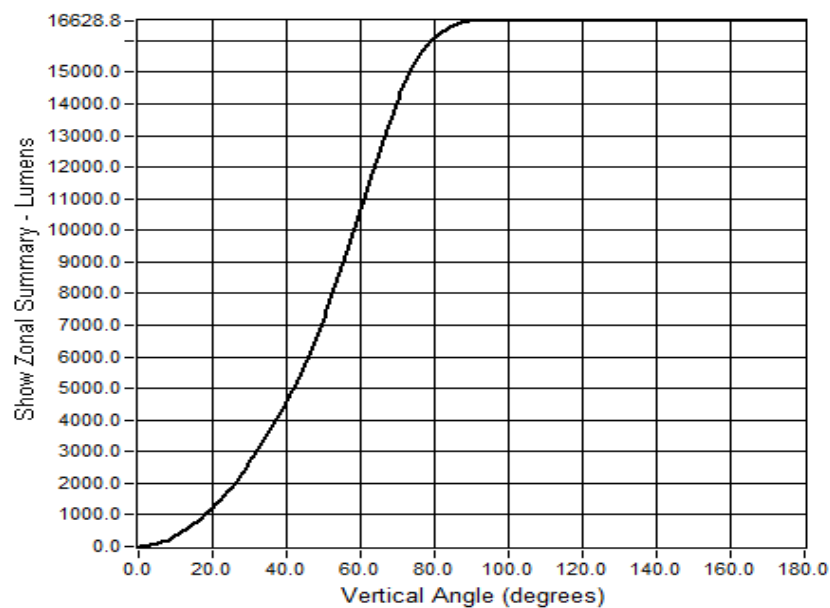
## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:



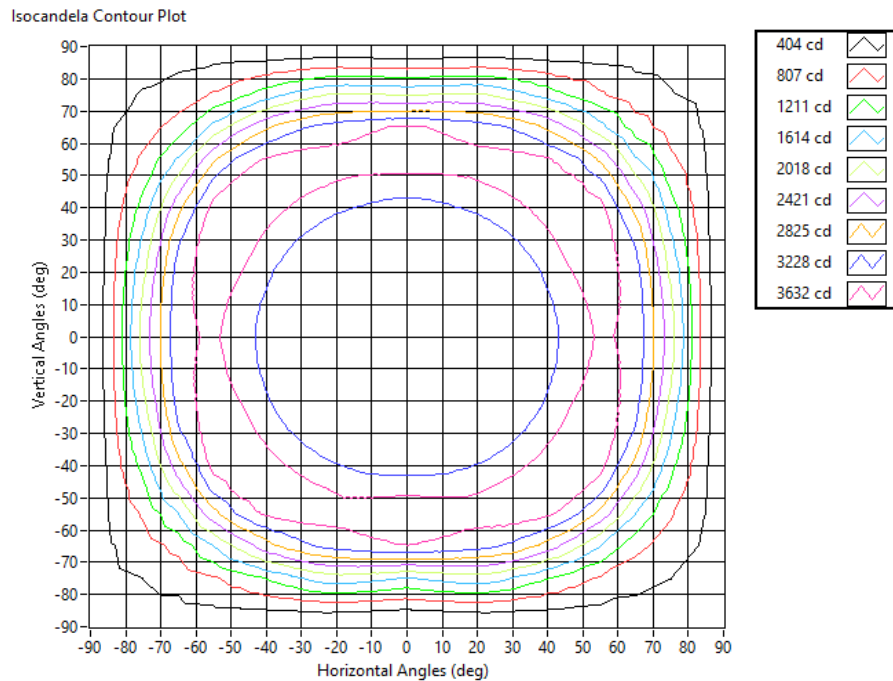
Zonal Flux Graph



## 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	17.30	19.97	777.0
4	34.61	39.94	194.3
6	51.91	59.90	86.3
8	69.22	79.87	48.6
10	86.52	99.84	31.1
12	103.83	119.81	21.6
14	121.13	139.77	15.9
16	138.43	159.74	12.1
18	155.74	179.71	9.6
20	173.04	199.68	7.8



## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L21122.

Dialight unit model number [K,V][C,E,F,W][D,U]-[L,Z]UN-[5,9]Cx-xxx-xx

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

LED drive current (as indicated by customer): 55 (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:	0.1595	(W)
Maximum Source Temperature:	108.8038	(°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below

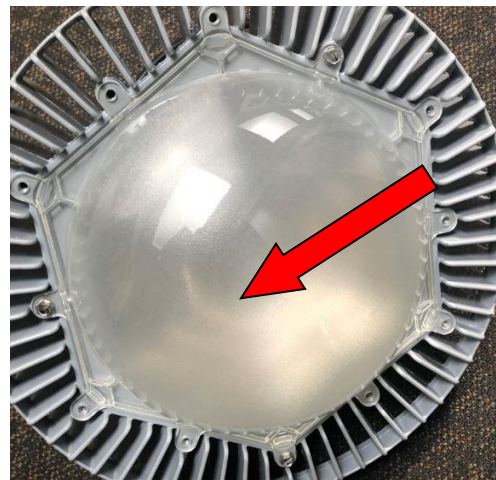
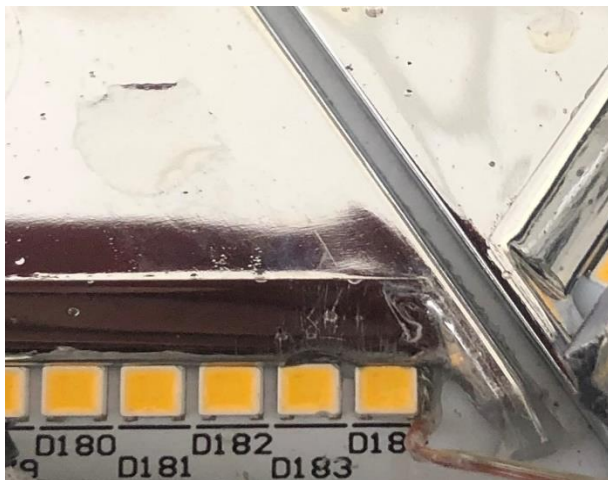
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)

Ambient temperature at time of measurement: 23.9 (°C)

Relative humidity at time of measurement: 45%

### Results:

**Measured LED source temperature:** 40.3 (°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