Test Report

Report Number: L21073 Date: May 5, 2021

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one F2 - Flood Light
Unit manufacturer: Dialight Corporation
Unit model number: F2x-7FB5-Nxxx-xxx

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 29, 2021 through May 5, 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

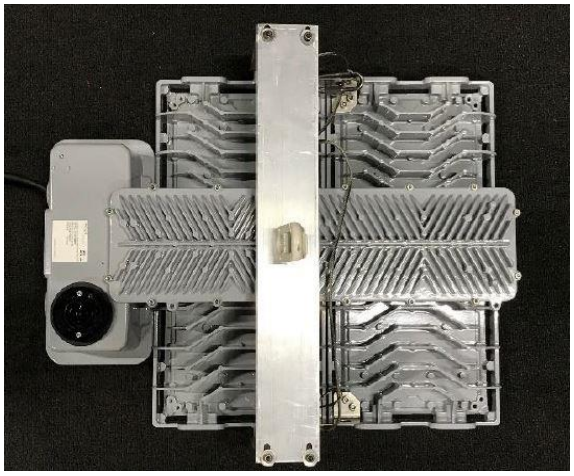
Description of sample:

Sample Number:	L21073
Manufacturer:	Dialight Corporation
Product Name:	Glass Window, Asym Type IV, 70 CRI CW, 347-480V, 60K
Description:	F2 - Flood Light
Model Number:	F2x-7FB5-Nxxx-xxx

Report Summary

Sample number L21073
Dialight unit model number F2x-7FB5-Nxxx-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere	Goniophotometer
Luminous Flux:	59868 (lumens)	59368 (lumens)
Electrical Power:	496.0 (W)	496.8 (W)
Luminous Efficacy:	120.7 (lumens/W)	119.5 (lumens/W)

Electrical Measurements:

Input Power (480VAC):	496.0	(W)
Power Factor (480VAC):	0.982118	
Current ATHD % (480VAC):	10.0124	
Input Power (347VAC):	496.0	(W)
Power Factor (347VAC):	0.9932	
Current ATHD % (347VAC):	6.6	

Color Measurements:

Correlated Color Temperature (CCT):	5218
Color Rendering Index (CRI):	71.7539
Chromaticity Coordinate (x):	0.339
Chromaticity Coordinate (y):	0.347
Chromaticity Coordinate (u'):	0.209
Chromaticity Coordinate (v'):	0.321
DUV:	0.0000

Temperature Measurements:

In Situ LED Source Temperature:	69.6	(°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L21073.
Dialight unit model number F2x-7FB5-Nxxx-xxx

Test Conditions:

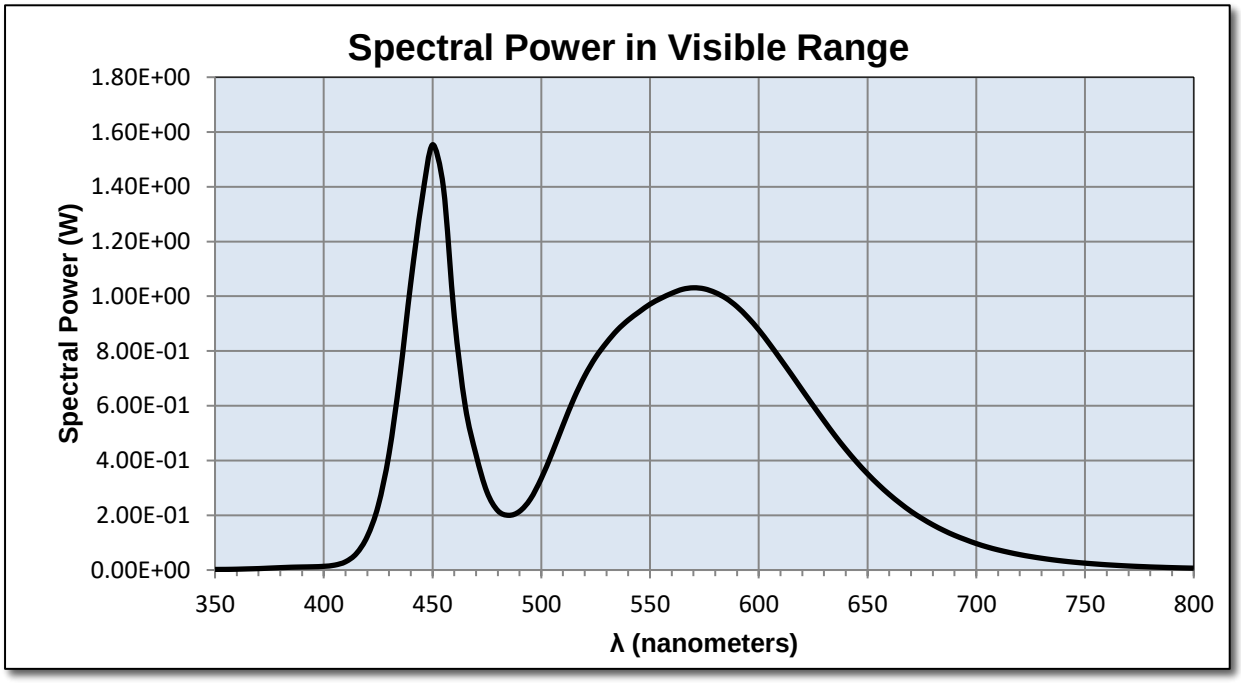
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	480	(VAC)
Input Current:	1.05228	(A)
Input Power:	496.0	(W)
Input Power Factor:	0.982118	
Current ATHD:	10.0124	(%)

Photometric measurements:

Luminous Flux:	59868.28	(lumens)
Luminous Efficacy:	120.7	(lumens/W)
Correlated Color Temperature (CCT):	5218	(K)
CRI -Ra:	71.7539	
CRI -R9:	-31.3702	
DUV:	0.0000	
CIE Coordinate (x):	0.339	
CIE Coordinate (y):	0.347	
CIE Coordinate (u'):	0.209	
CIE Coordinate (v'):	0.321	
TM30_Rf:	69.2	
TM30_Rg:	93.4	
TM30_Rcs_hue1:	-18.29	%



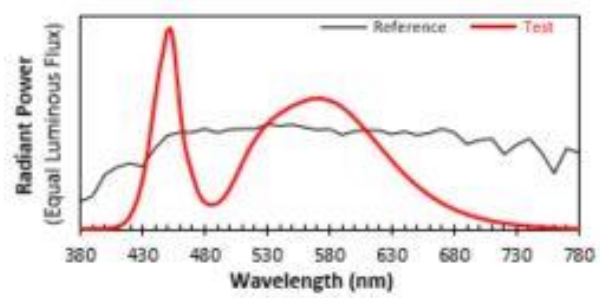
Test Results: Integrating Sphere

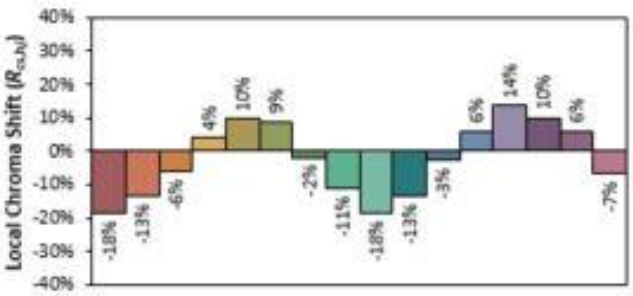
Results continued from previous page.

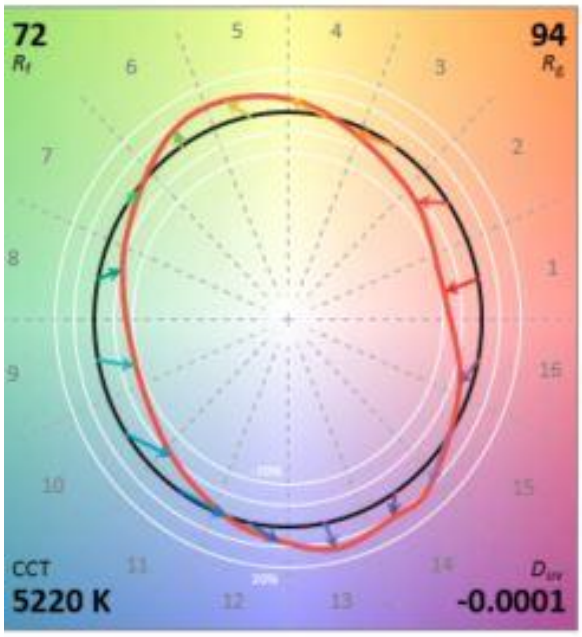
Tabulated Spectral Power in Visible Range:

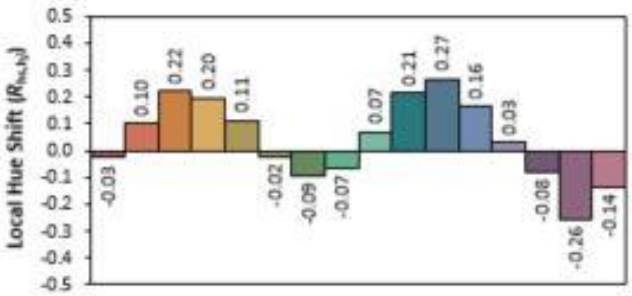
λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
350	0.00209	**490**	0.21411	**630**	0.54512	**770**	0.01467
355	0.00232	**495**	0.25918	**635**	0.49126	**775**	0.01296
360	0.00303	**500**	0.33441	**640**	0.44105	**780**	0.01131
365	0.00414	**505**	0.42806	**645**	0.39446	**785**	0.00997
370	0.00520	**510**	0.52947	**650**	0.35144	**790**	0.00875
375	0.00700	**515**	0.62619	**655**	0.31206	**795**	0.00768
380	0.00860	**520**	0.70919	**660**	0.27608	**800**	0.00681
385	0.01017	**525**	0.77700	**665**	0.24375		
390	0.01111	**530**	0.83048	**670**	0.21412		
395	0.01189	**535**	0.87678	**675**	0.18854		
400	0.01347	**540**	0.91299	**680**	0.16527		
405	0.01794	**545**	0.94282	**685**	0.14483		
410	0.03019	**550**	0.97097	**690**	0.12666		
415	0.06020	**555**	0.99248	**695**	0.11115		
420	0.12269	**560**	1.01091	**700**	0.09670		
425	0.23436	**565**	1.02549	**705**	0.08419		
430	0.42455	**570**	1.03089	**710**	0.07365		
435	0.70786	**575**	1.02690	**715**	0.06445		
440	1.04910	**580**	1.01345	**720**	0.05629		
445	1.34529	**585**	0.99235	**725**	0.04922		
450	1.55327	**590**	0.96187	**730**	0.04300		
455	1.39760	**595**	0.92270	**735**	0.03750		
460	0.92616	**600**	0.87704	**740**	0.03265		
465	0.60153	**605**	0.82516	**745**	0.02859		
470	0.42128	**610**	0.77020	**750**	0.02508		
475	0.28558	**615**	0.71426	**755**	0.02201		
480	0.21689	**620**	0.65715	**760**	0.01920		
485	0.19984	**625**	0.60066	**765**	0.01683		

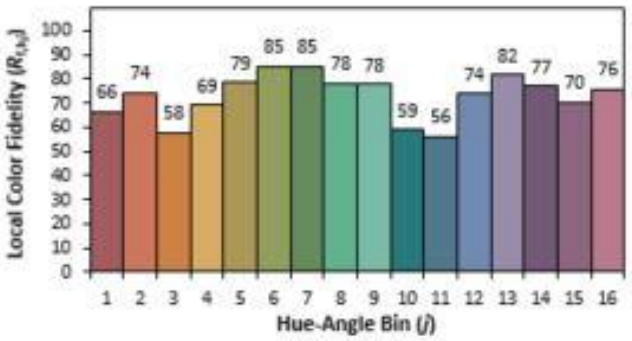
IES TM-30-18 Color Renditon Report

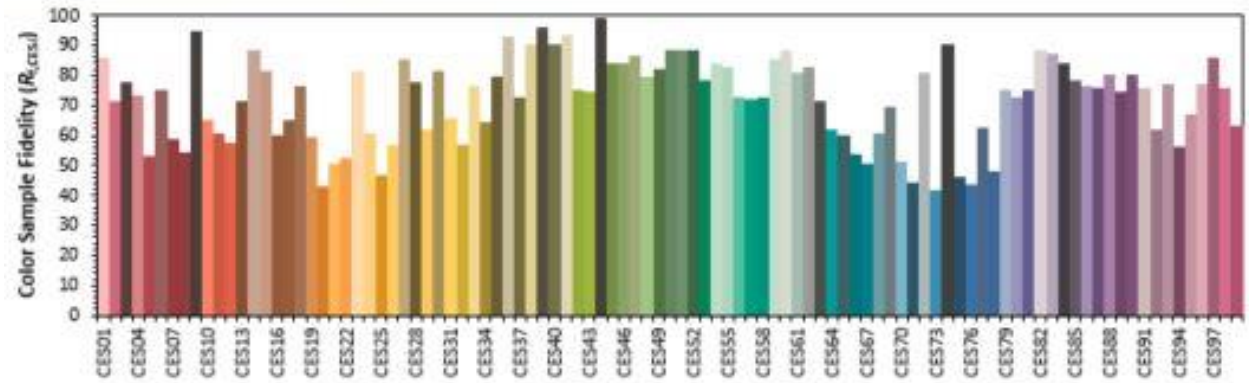












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3392
y	0.3467
u'	0.2093
v'	0.4814

CIE 13.3-1995 (CRI)

R_a	72
R_9	-31

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L21073.
Dialight unit model number F2x-7FB5-Nxxx-xxx

Electrical Measurements:

Input Voltage:	480	(VAC)
Input current:	1.0557	(A)
Input Power:	496.8	(W)
Power Factor:	0.9821	

Photometric measurements:

Absolute Luminous Flux:	59368.1	(lumens)
Luminous Efficacy:	119.5	(lumens/W)

Intensity Summary:

Candlepower Summary

H/V	0.00	45.00	90.00	135.00	180.00	Lumens
0.00	8846	8948	9020	9123	8846	
5.00	11864	10944	9100	7896	7430	962
15.00	25730	19134	9877	6888	6120	4093
25.00	40941	24733	11337	6171	4370	8998
35.00	50372	23158	13145	5818	3807	13944
45.00	64333	28455	13742	5585	3123	20951
55.00	18582	35456	13428	5366	2588	12019
65.00	6547	5335	5533	1836	1995	4226
75.00	2378	781	737	704	2450	1890
85.00	147	97	116	125	190	84
90.00	14	10	15	22	5	

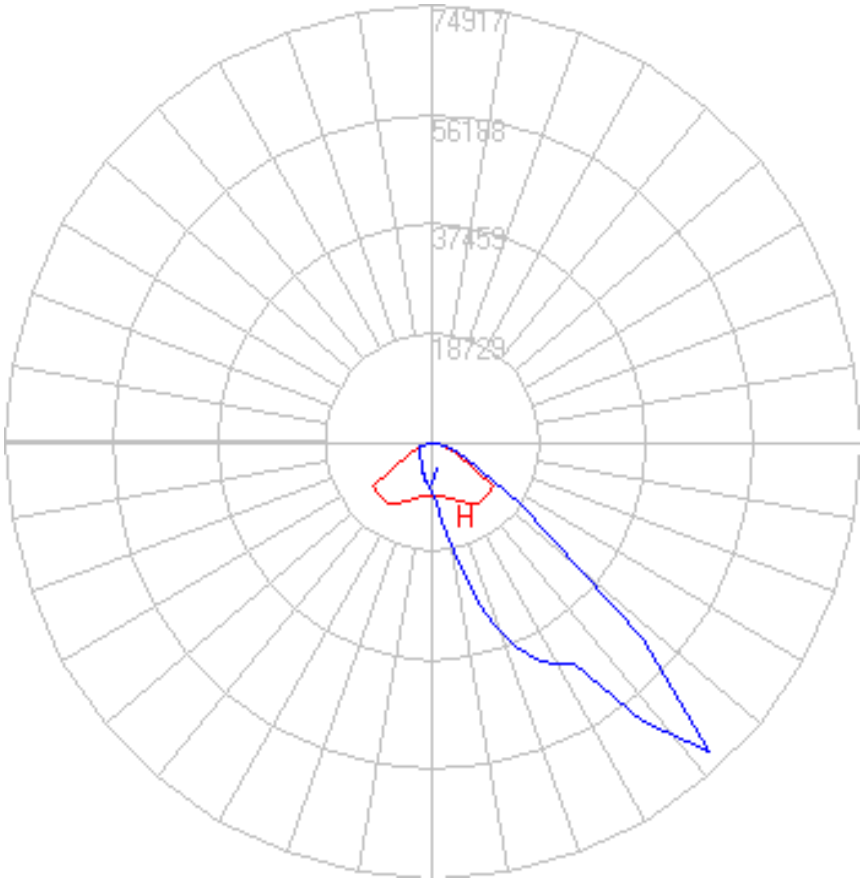
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0 to 30	12076.52	20.34	20.34
0 to 40	23362.48	39.35	39.35
0 to 60	53673.73	90.41	90.41
0 to 90	59368.07	100.00	100.00
90 to 180	0.00	0.00	0.00
0 to 180	59368.07	100.00	100.00

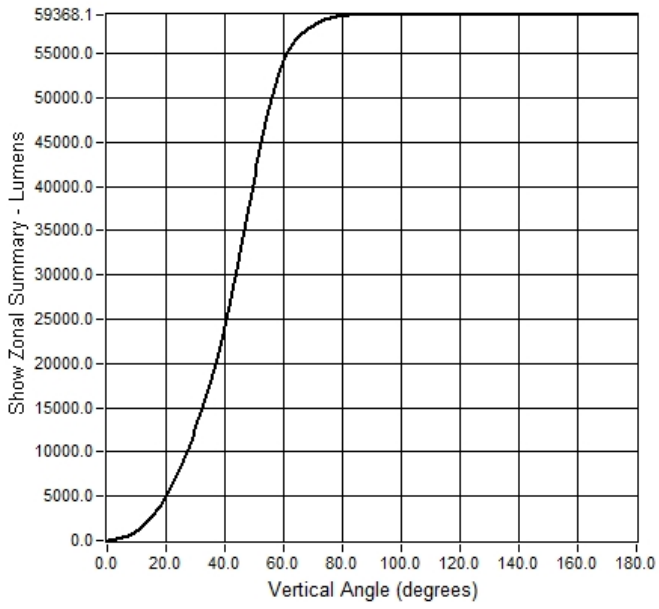
Test Results: Goniometer

Results continued from previous page.

Polar Plot:



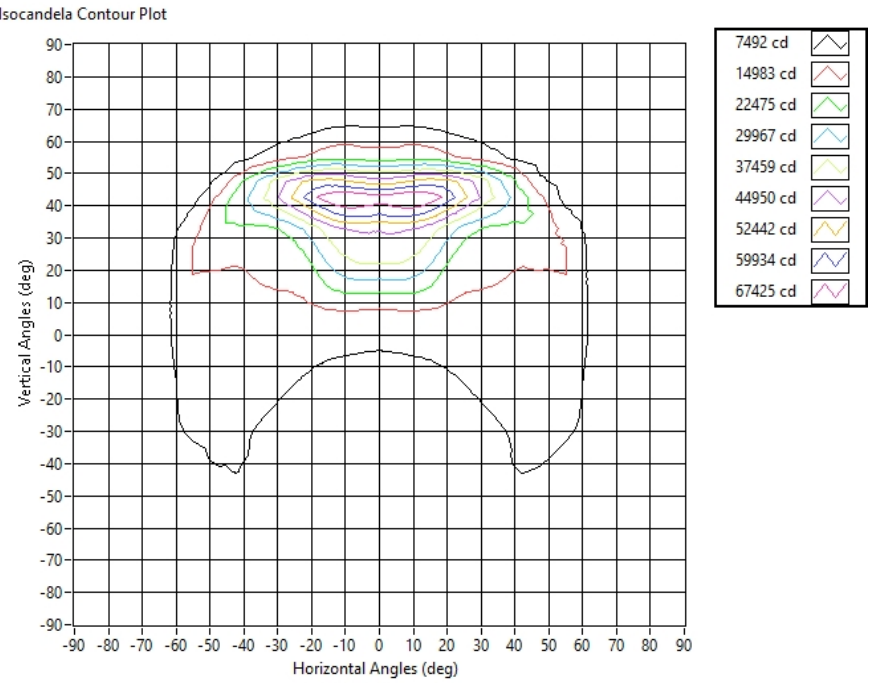
Zonal Flux Graph



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	6.26	8.95	2253.4
4	12.53	17.90	563.3
6	18.79	26.84	250.4
8	25.05	35.79	140.8
10	31.31	44.74	90.1
12	37.58	53.69	62.6
14	43.84	62.64	46.0
16	50.10	71.58	35.2
18	56.36	80.53	27.8
20	62.63	89.48	22.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L21073.
Dialight unit model number F2x-7FB5-Nxxx-xxx

LED identified as Samsung part number LH231B.

LED drive current (as indicated by customer):	1100	(mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	2000	(mA)
Maximum Rated Power Dissipation:	6.4	(W)
Maximum Junction Temp. (Tj):	135	(°C)
Thermal Resistance (Rth):	2	(°C/W)

Derived Specifications:

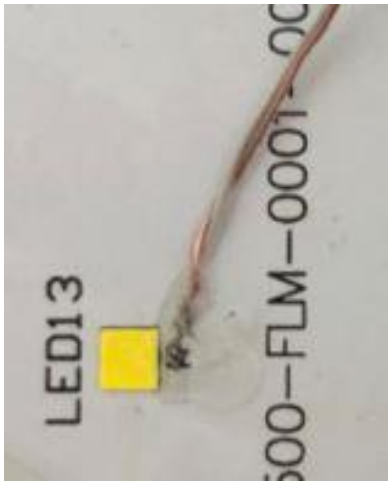
Maximum Power at Indicated Current:	3.432	(W)
Maximum Source Temperature:	128.136	(°C)

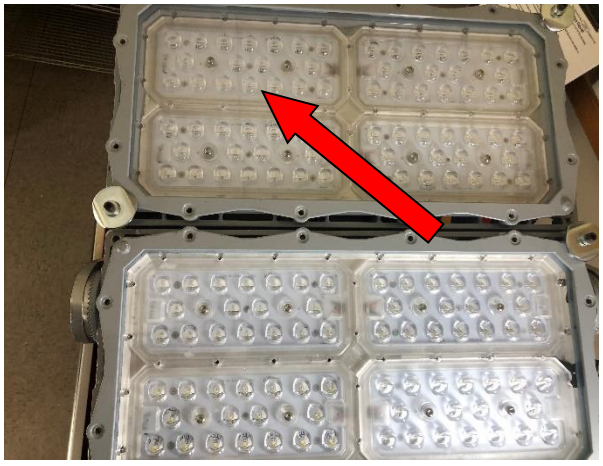
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5°	(°C)
Ambient temperature at time of measurement:	25	(°C)
Relative humidity at time of measurement:	31%	

Results:

Measured LED source temperature:	69.6	(°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.

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