



UL Solutions
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300



Photometric Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-10-2014, UL 1598-2008
CIE 13.3-1995, CIE 15-2004, ANSI C78.377-2017
IES TM-30-2018

Prepared For
LDPI Inc
4404 Anderson Dr
Eau Claire, WI 54703
United States

Catalog Number
LE451-140-V1-D1-5

Order Number
14480670
Test Number
14480670.04

Test Date
2022-11-16 - 2022-12-05

Prepared By

Jesse Litchfield, Project Handler

Approved By

Tiffany Hamm, Engineering Project Handler

The results contained in this report pertain only to the tested sample.
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.
This report must not be used by the client to claim product certification, approval, or endorsement by
NVLAP, NIST, or any agency of the Federal Government.



Table of Contents

Summary of Results	Page 3
Integrating Sphere Results	Page 4
Distribution Results	
Conditions / Summary of Results / Polar Plot / Zonal Lumens	Page 5
Candela Tabulation / Average LuminanceFull TM-30 Report	Page 6
Coefficients of Utilization / Cone of Light	Page 7
ISOFootcandle Plot	Page 8
In-Situ Results	Page 9
Full TM-30 Report	Page 10

Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 3-meter integrating sphere using the 4π geometry method.

Absorption correction was employed for Sphere measurement



Luminaire Description: White aluminum housing, clear glass lens enclosure
Lamp: 540 LEDs
Mounting: Recessed
Ballast/Driver: 1 INVENTRONICS 150W 0-10V EUM-150S210DT and 1 INVENTRONICS 75W 0-10V EUM-075S210DT

Luminaire



Luminaire Characteristics

Luminous Length: 44.00 in.
Luminous Width: 18.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 19620 Lumens
Efficacy: 145.48 lm/w
CCT: 5262 K
CRI (Ra): 84.1

Distribution

Total Luminaire Output: 19380 Lumens
Luminaire Efficacy: 143.6 lm/w
Maximum Candela: 6868 Candela

Electrical Data at 277 VAC

Test Temperature: 25.2 °C
Voltage: 277.0 VAC
Current: 0.5375 A
Power: 132.8 W
Power Factor: 0.892
Frequency: 60 Hz
Current THD: 11.9 %

In-Situ

LED Temperature: 65.0 °C
Driver Temperature: 46.3 °C
Measured LED Current: 0.01443 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.

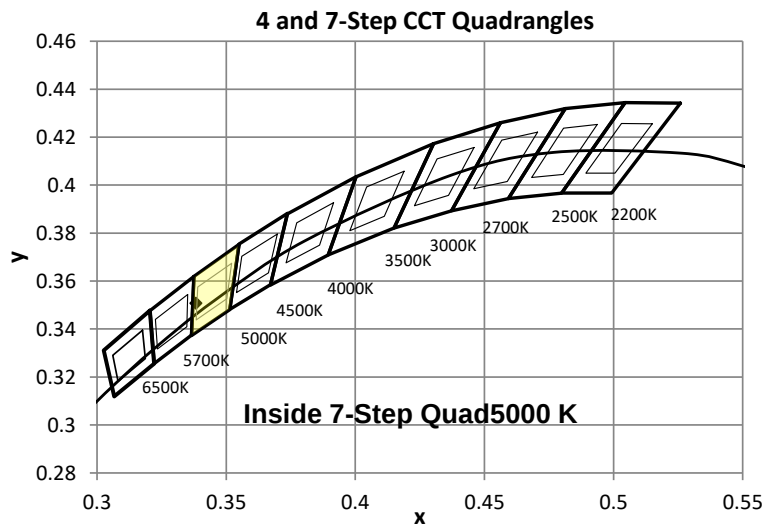
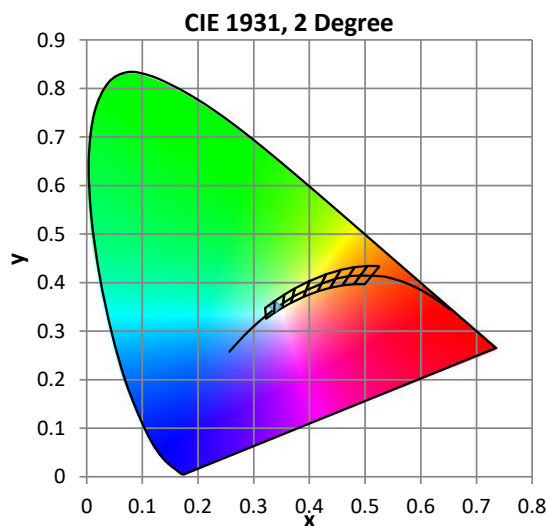
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	120.0 VAC	1.127 A	134.9 W	0.997	60 Hz	4.95 %

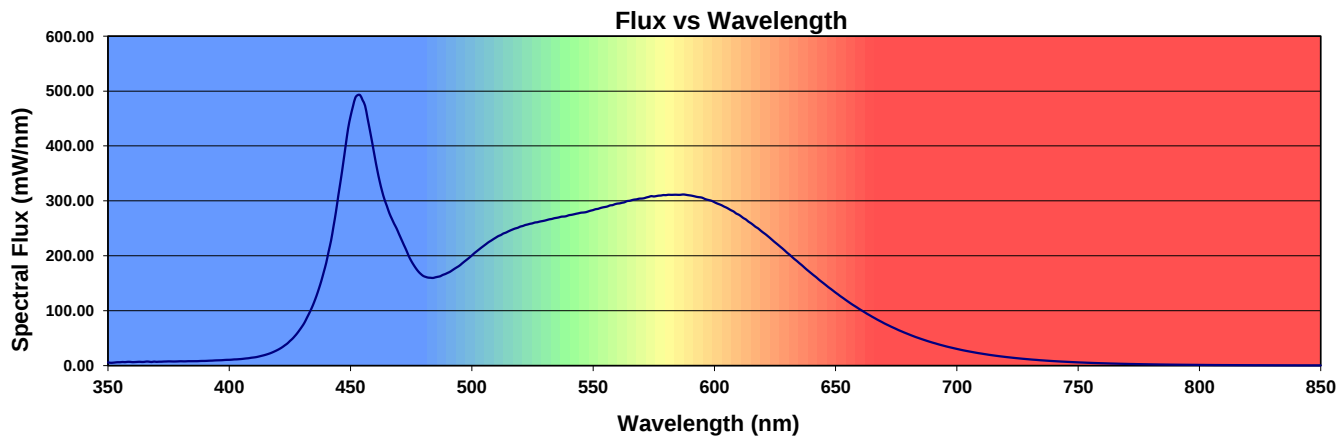
Summary of Results

Total Output:	19620 Lumens	Chromaticity (x):	0.3383
Efficacy:	145.5 lm/w	Chromaticity (y):	0.3508
CCT:	5262 K	Chromaticity (u'):	0.2071
CRI (Ra):	84.1	Chromaticity (v'):	0.4833
CRI (R9):	6.4	TM-30 Rf:	84
Peak Wavelength:	453 nm	TM-30 Rg:	94
Dominant Wavelength:	555 nm	TM-30 Rcs,h1:	-13%
S/P Ratio:	2.06	Duv:	0.0024
M/P Ratio:	0.88	WELL Building Standard v2	



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
84.1	82.4	91.0	94.9	82.2	83.0	86.6	86.1	66.2	6.4	78.1	81.6	65.0	85.1	97.7	76.4



Distribution - Goniophotometer

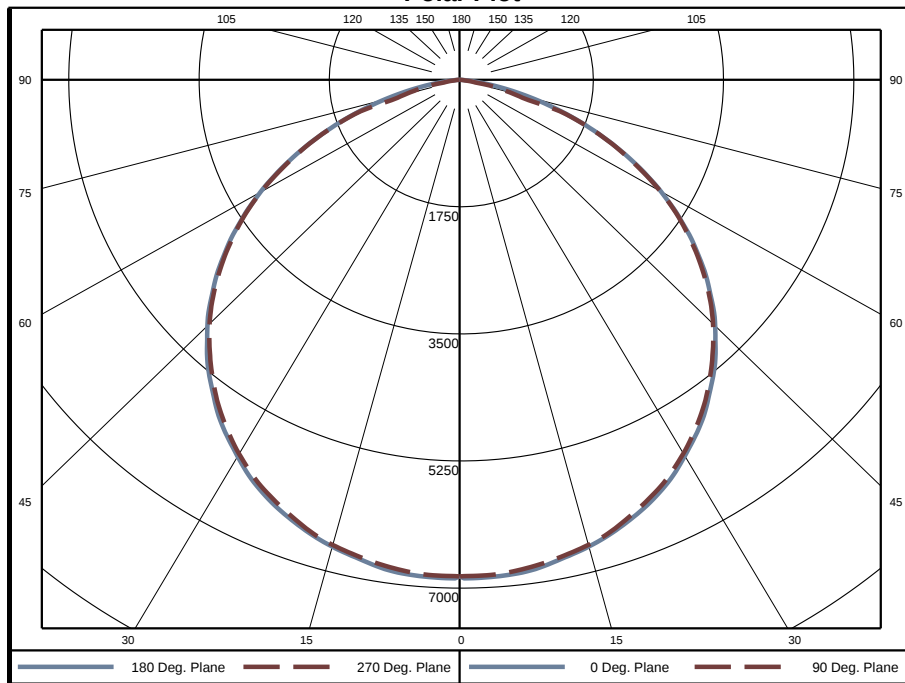
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.0 VAC	1.127 A	135.0 W	0.997	60 Hz	4.97 %

Summary of Results

Spacing Criteria	Total Lumen Output:	19380 Lumens
0-180: 1.30	Luminaire Efficacy:	143.6 lm/w
90-270: 1.29	Maximum Candela:	6868 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)		
Crosswise: 24.2	Endwise: 23.8	

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	163	0.8%	60-65	1329	6.9%	120-125	0	0.0%
5-10	486	2.5%	65-70	1033	5.3%	125-130	0	0.0%
10-15	794	4.1%	70-75	682	3.5%	130-135	0	0.0%
15-20	1079	5.6%	75-80	335	1.7%	135-140	0	0.0%
20-25	1332	6.9%	80-85	100	0.5%	140-145	0	0.0%
25-30	1543	8.0%	85-90	14	0.1%	145-150	0	0.0%
30-35	1704	8.8%	90-95	0	0.0%	150-155	0	0.0%
35-40	1809	9.3%	95-100	0	0.0%	155-160	0	0.0%
40-45	1850	9.5%	100-105	0	0.0%	160-165	0	0.0%
45-50	1825	9.4%	105-110	0	0.0%	165-170	0	0.0%
50-55	1731	8.9%	110-115	0	0.0%	170-175	0	0.0%
55-60	1565	8.1%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	8910	46.0%
0-60	15881	81.9%
0-90	19374	100.0%
90-180	0	0.0%

Candela Tabulation
Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
	0	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840	6840
	5	6854	6835	6817	6818	6820	6818	6817	6835	6854	6835	6817	6818	6820	6818	6817
	10	6778	6773	6757	6742	6740	6742	6757	6773	6778	6773	6757	6742	6740	6742	6757
	15	6652	6627	6610	6635	6629	6635	6610	6627	6652	6627	6610	6635	6629	6635	6610
	20	6487	6457	6445	6474	6450	6474	6445	6457	6487	6457	6445	6474	6450	6474	6445
	25	6274	6235	6233	6233	6228	6233	6233	6235	6274	6235	6233	6233	6228	6233	6235
	30	5981	5957	5953	5943	5943	5943	5953	5957	5981	5957	5953	5943	5943	5943	5957
	35	5651	5626	5632	5601	5601	5601	5632	5626	5651	5626	5632	5601	5601	5601	5632
	40	5250	5228	5218	5207	5199	5207	5218	5228	5250	5228	5218	5207	5199	5207	5218
	45	4797	4772	4771	4754	4760	4754	4771	4772	4797	4772	4771	4754	4760	4754	4771
	50	4289	4267	4242	4264	4256	4264	4242	4267	4289	4267	4242	4264	4256	4264	4242
	55	3722	3694	3674	3700	3695	3700	3674	3694	3722	3694	3674	3700	3695	3700	3674
	60	3092	3068	3050	3085	3085	3085	3050	3068	3092	3068	3050	3085	3085	3085	3050
	65	2417	2376	2386	2394	2403	2394	2386	2376	2417	2376	2386	2394	2403	2394	2386
	70	1713	1668	1678	1697	1706	1697	1678	1668	1713	1668	1678	1697	1706	1697	1678
	75	1036	1001	1003	733	728	733	1003	1001	1036	1001	1003	733	728	733	1003
	80	465	442	329	320	210	320	329	442	465	442	329	320	210	320	329
	85	104	83	51	46	43	46	51	83	104	83	51	46	43	46	51
	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Average Luminance (cd/m²)
Horizontal Angle (Degrees)

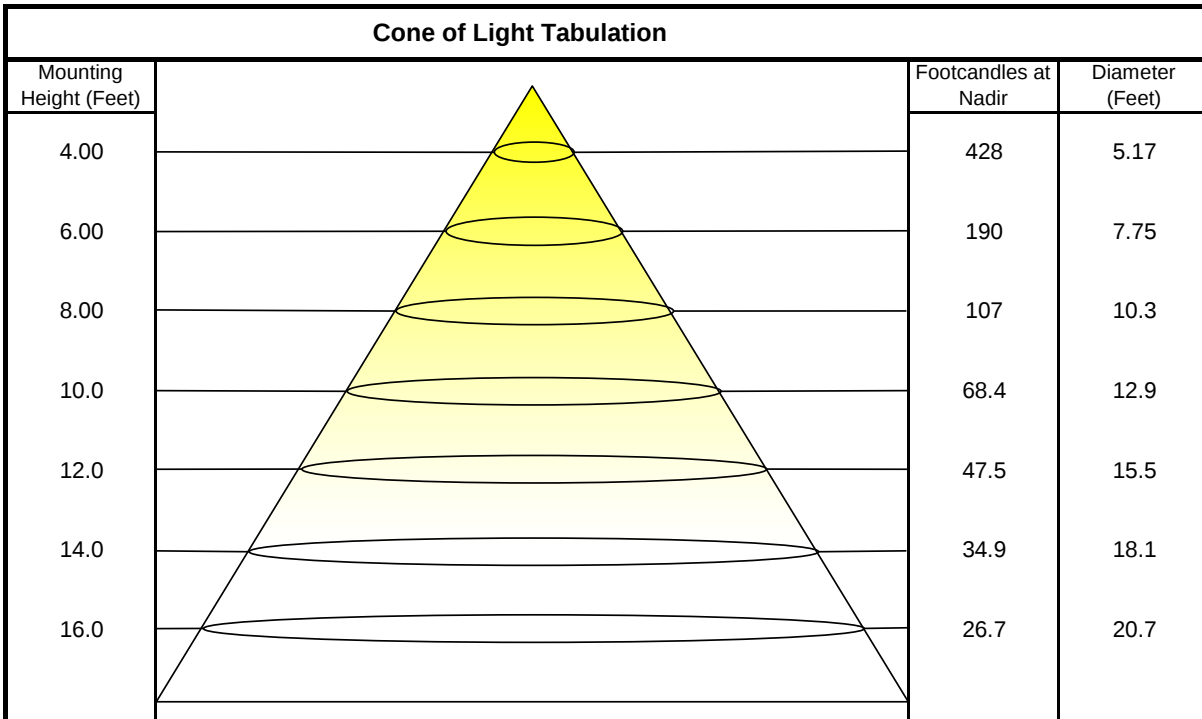
Vertical Angle (Degrees)	0	45	90
	0	13390	13390
	45	13280	13210
	55	12700	12540
	65	11190	11050
	75	7834	5502
	85	2324	1154



Coefficients of Utilization - Zonal Cavity Method

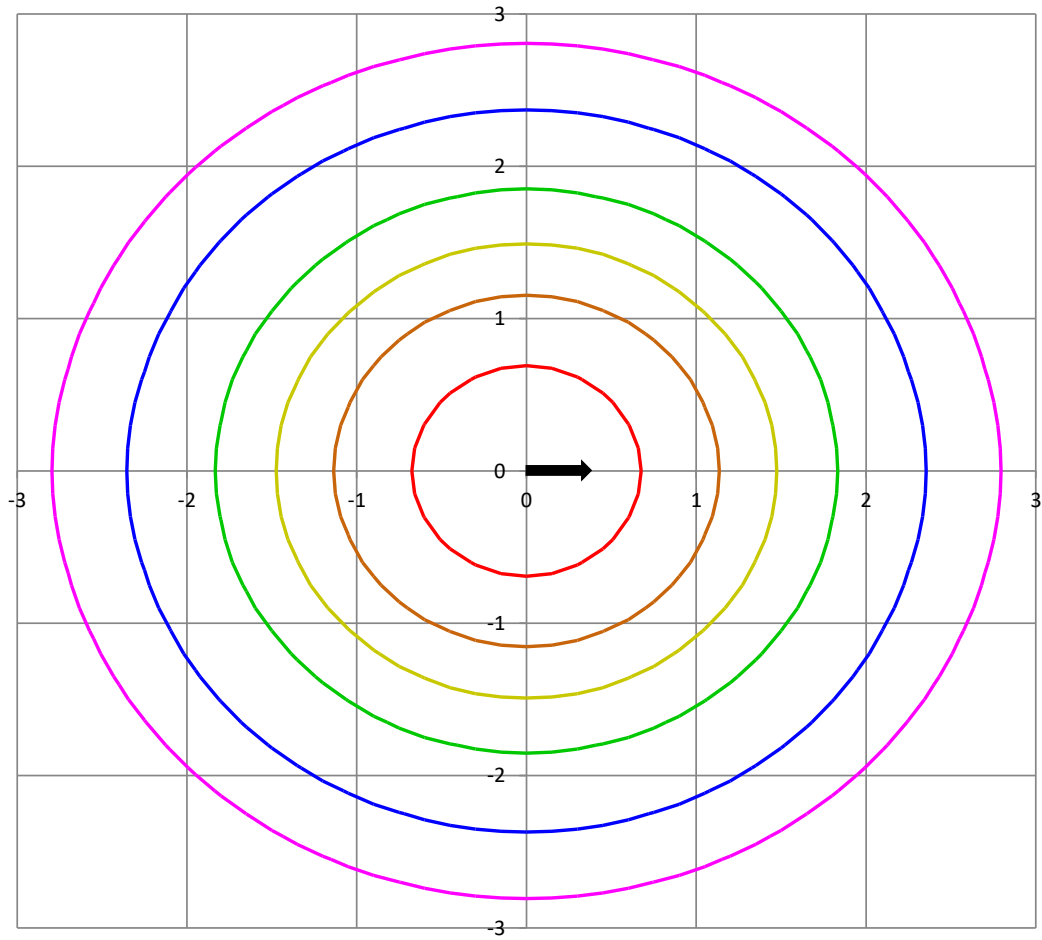
Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	99	96	93	95	92	90	91	89	87	85
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	74	71
3	91	81	73	66	89	79	72	66	76	70	65	73	68	64	71	66	62	60
4	83	72	63	56	81	70	62	56	68	61	55	65	59	54	63	58	54	52
5	77	64	55	48	74	63	54	48	61	53	48	59	52	47	57	51	47	45
6	71	57	49	42	69	57	48	42	55	47	42	53	46	41	51	46	41	39
7	65	52	43	37	64	51	43	37	50	42	37	48	42	37	47	41	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	38	33	43	37	32	31
9	57	44	35	30	55	43	35	30	42	35	30	41	34	29	40	34	29	27
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25

Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	6840 Candela
Central Cone Intensity:	6836 Candela
Beam Flux:	15049.9 Lumens
Beam Angle (0-180):	114.9 Degrees
Beam Angle (90-270):	114.8 Degrees
Field Angle (0-180):	155.8 Degrees
Field Angle (90-270):	151.0 Degrees

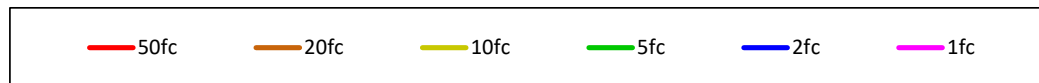


ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height



In-Situ Test

In-Situ Test Conditions

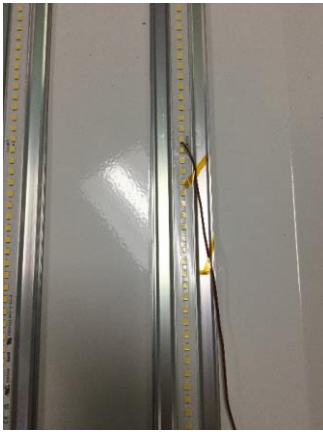
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.3 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 65.0 °C
Driver Temperature: 46.3 °C
Measured LED Current: 0.01443 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

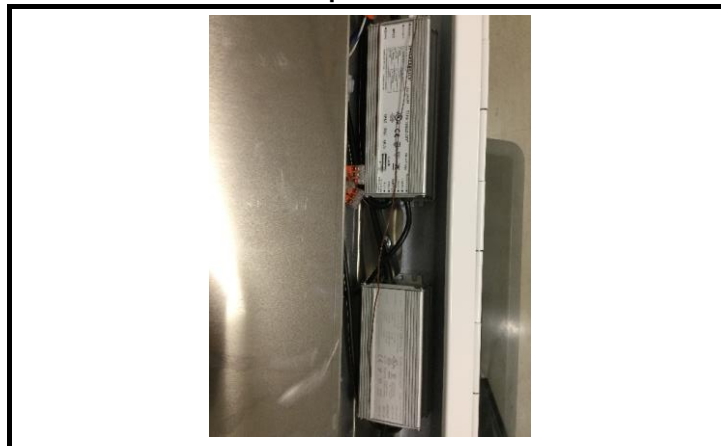
LED Temperature Location



Thermocouple Reference



Driver Temperature Location



ANSI/IES TM-30-18 Color Rendition Report

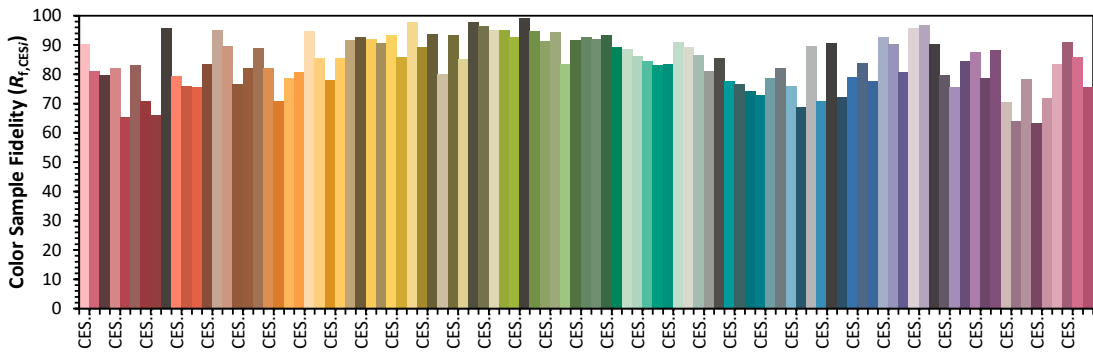
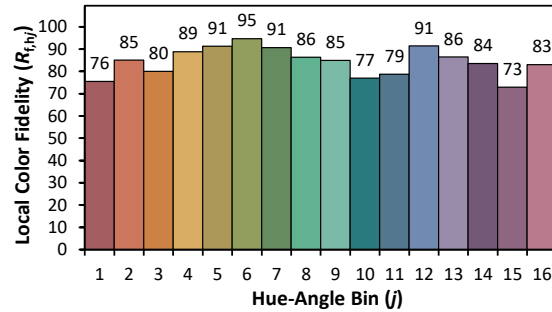
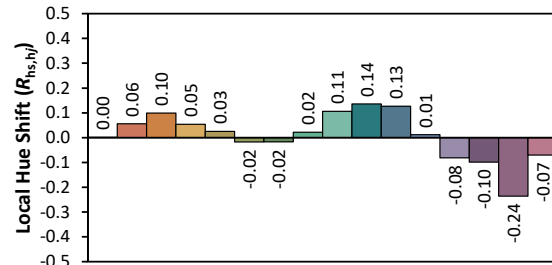
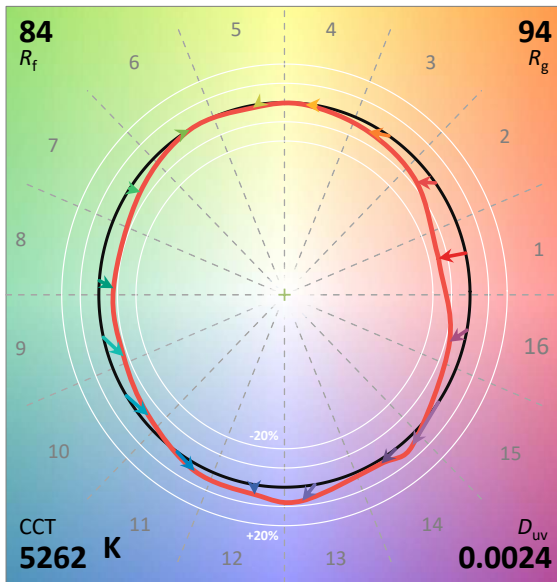
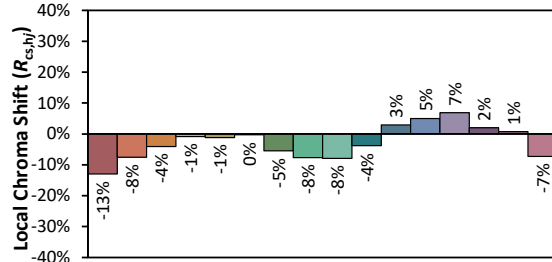
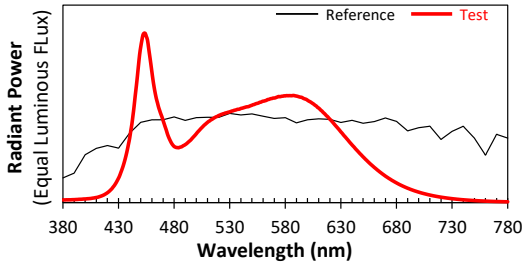
Date: 2022-11-16

Manufacturer:

LDPI Inc

Model:

LE451-140-V1-D1-5



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

x 0.3383

y 0.3508

u' 0.2071

v' 0.4833

CIE 13.3-1995
(CRI)

R_a 84

R_g 6

Colors are for visual orientation purposes only. Created with the IES TM-30-18 Calculator Version 2.00.