



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
LE451-62-V1-A-D1-5

Order Number
14480670
Test Number
14480670.01

Test Date
2022-11-17 - 2022-12-01

Prepared By

Bhavik Shah, Laboratory Leader

Approved By

Tiffany Hamm, Engineering Project Handler

The results contained in this report pertain only to the tested sample.
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Laboratory results may not be representative of field performance
Ballast factors have not been applied

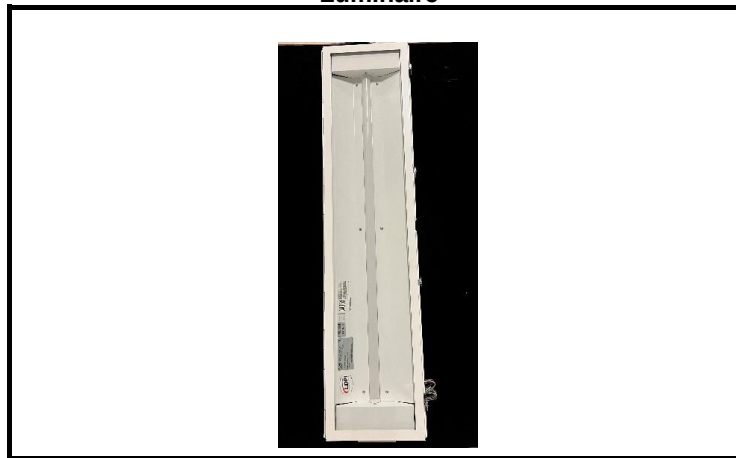
Testing was performed in a 3-meter integrating sphere using the 4π geometry method.

Absorption correction was employed for Sphere measurement



Luminaire Description: White aluminum housing, clear glass lens enclosure
Lamp: 180 LEDs
Mounting: Recessed
Ballast/Driver: 1 INVENTRONICS 75W 0-10V EUM-075S210DT

Luminaire



Luminaire Characteristics

Luminous Length: 44.00 in.
Luminous Width: 13.50 in.

Summary of Results

Integrating Sphere

Luminous Flux: 6668 Lumens
Efficacy: 108.23 lm/w
CCT: 5067 K
CRI (Ra): 82.9

Distribution

Total Luminaire Output: 6621 Lumens
Luminaire Efficacy: 107.3 lm/w
Maximum Candela: 2335 Candela

Electrical Data at 120 VAC

Test Temperature: 25.0 °C
Voltage: 120.1 VAC
Current: 0.5145 A
Power: 61.61 W
Power Factor: 0.997
Frequency: 60 Hz
Current THD: 3.57 %

In-Situ

LED Temperature: 52.0 °C
Driver Temperature: 48.3 °C
Measured LED Current: 0.01470 A
Tb Temperature: 48.3 °C

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

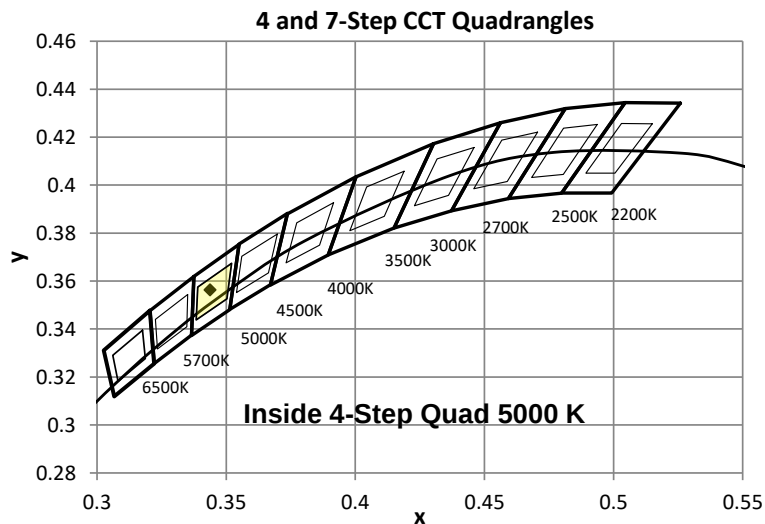
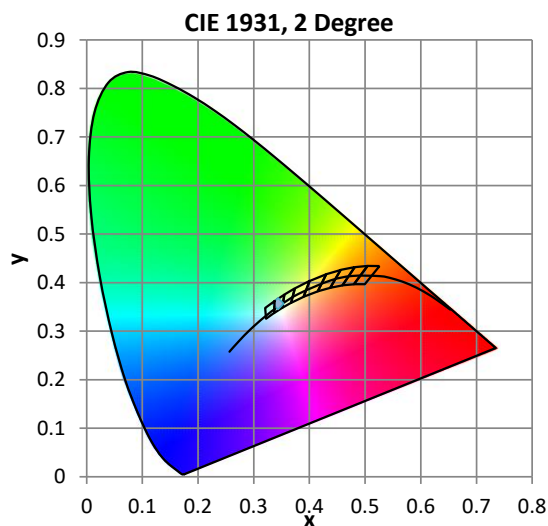
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.1 VAC	0.5145 A	61.61 W	0.997	60 Hz	3.57 %

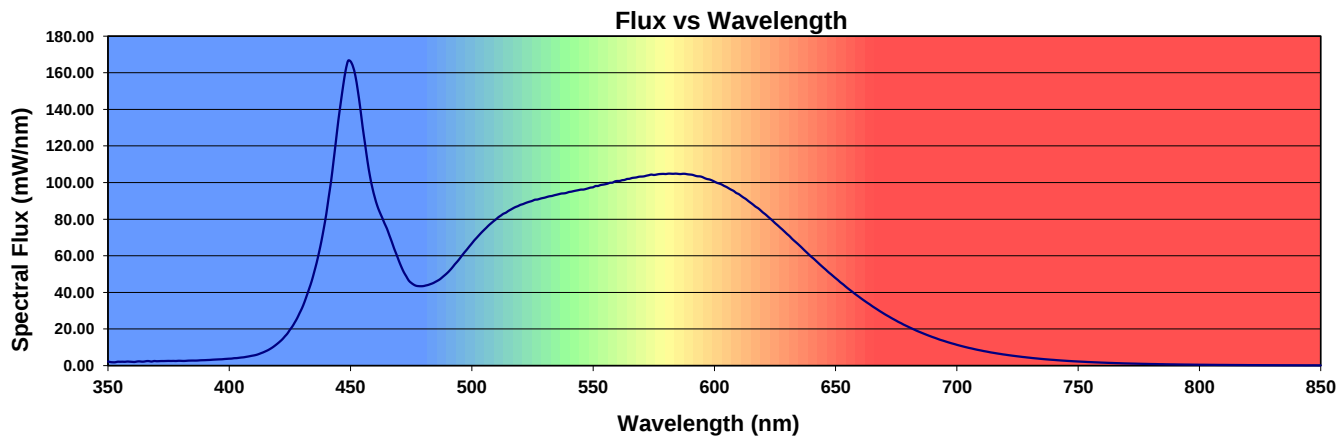
Summary of Results

Total Output:	6668 Lumens	Chromaticity (x):	0.3437
Efficacy:	108.2 lm/w	Chromaticity (y):	0.3564
CCT:	5067 K	Chromaticity (u'):	0.2086
CRI (Ra):	82.9	Chromaticity (v'):	0.4868
CRI (R9):	5.1	TM-30 Rf:	84
Peak Wavelength:	450 nm	TM-30 Rg:	96
Dominant Wavelength:	555 nm	TM-30 Rcs,h1:	-12%
S/P Ratio:	1.97	Duv:	0.0030
M/P Ratio:	0.82	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
82.9	80.9	87.6	92.6	83.2	82.1	83.3	86.7	66.8	5.1	70.9	82.8	64.6	82.5	96.1	74.7



Distribution - Goniophotometer

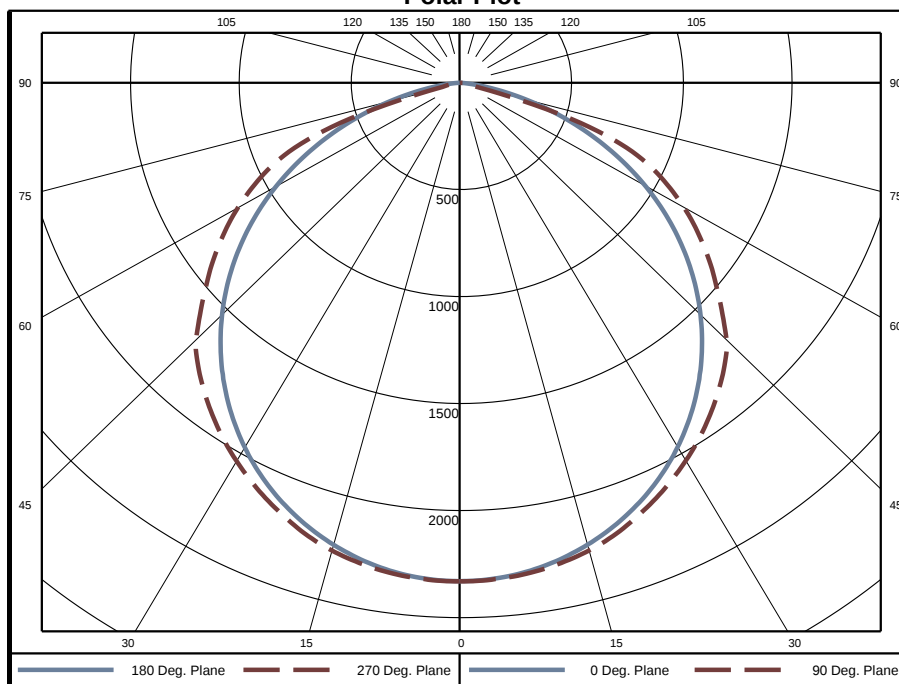
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.1 VAC	0.5140 A	61.68 W	0.997	60 Hz	3.62 %

Summary of Results

Spacing Criteria	Total Lumen Output:	6621 Lumens
0-180: 1.25	Luminaire Efficacy:	107.3 lm/w
90-270: 1.30	Maximum Candela:	2335 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)		
Crosswise: 21.4	Endwise: 21.5	

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	55.7	0.8%	60-65	470.1	7.1%	120-125	0	0.0%
5-10	165.3	2.5%	65-70	380.3	5.7%	125-130	0	0.0%
10-15	269.9	4.1%	70-75	245.4	3.7%	130-135	0	0.0%
15-20	366.1	5.5%	75-80	96.3	1.5%	135-140	0	0.0%
20-25	450.5	6.8%	80-85	28.8	0.4%	140-145	0	0.0%
25-30	520.7	7.9%	85-90	5.9	0.1%	145-150	0	0.0%
30-35	574.6	8.7%	90-95	0	0.0%	150-155	0	0.0%
35-40	610.6	9.2%	95-100	0	0.0%	155-160	0	0.0%
40-45	627.5	9.5%	100-105	0	0.0%	160-165	0	0.0%
45-50	621.3	9.4%	105-110	0	0.0%	165-170	0	0.0%
50-55	591.7	8.9%	110-115	0	0.0%	170-175	0	0.0%
55-60	540.4	8.2%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	3013	45.5%
0-60	5394	81.5%
0-90	6621	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	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331	2331
	5	2320	2329	2320	2323	2325	2323	2320	2329	2320	2329	2320	2323	2325	2323	2320
	10	2288	2300	2297	2299	2302	2299	2297	2300	2288	2300	2297	2299	2302	2299	2297
	15	2236	2250	2251	2259	2262	2259	2251	2250	2236	2250	2251	2259	2262	2259	2251
	20	2165	2183	2190	2200	2202	2200	2190	2183	2165	2183	2190	2200	2202	2200	2190
	25	2077	2097	2108	2120	2125	2120	2108	2097	2077	2097	2108	2120	2125	2120	2108
	30	1969	1993	2005	2029	2038	2029	2005	1993	1969	1993	2005	2029	2038	2029	2005
	35	1842	1869	1890	1927	1939	1927	1890	1869	1842	1869	1890	1927	1939	1927	1890
	40	1699	1728	1761	1811	1829	1811	1761	1728	1699	1728	1761	1811	1829	1811	1761
	45	1540	1566	1618	1685	1699	1685	1618	1566	1540	1566	1618	1685	1699	1685	1618
	50	1366	1391	1464	1509	1516	1509	1464	1391	1366	1391	1464	1509	1516	1509	1464
	55	1177	1202	1288	1326	1346	1326	1288	1202	1177	1202	1288	1326	1346	1326	1288
	60	973	1005	1064	1141	1166	1141	1064	1005	973	1005	1064	1141	1166	1141	1064
	65	757	796	857	940	967	940	857	796	757	796	857	940	967	940	857
	70	537	576	644	690	663	690	644	576	537	576	644	690	663	690	644
	75	325	349	401	221	144	221	401	349	325	349	401	221	144	221	401
	80	145	170	61	48	46	48	61	170	145	170	61	48	46	48	61
	85	32	22	20	20	20	20	20	22	32	22	20	20	20	20	20
	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)

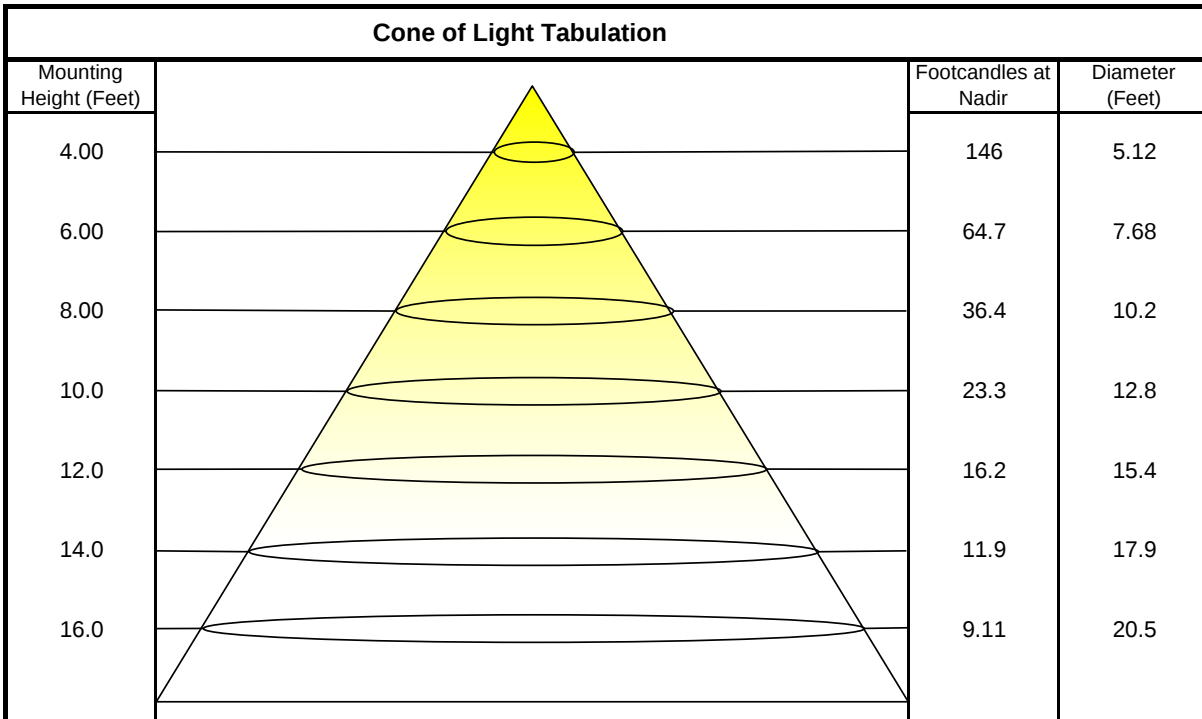
Vertical Angle (Degrees)	0	45	90
	0	6082	6082
	45	5682	6269
	55	5353	6121
	65	4676	5968
	75	3276	1451
	85	967	591



Coefficients of Utilization - Zonal Cavity Method

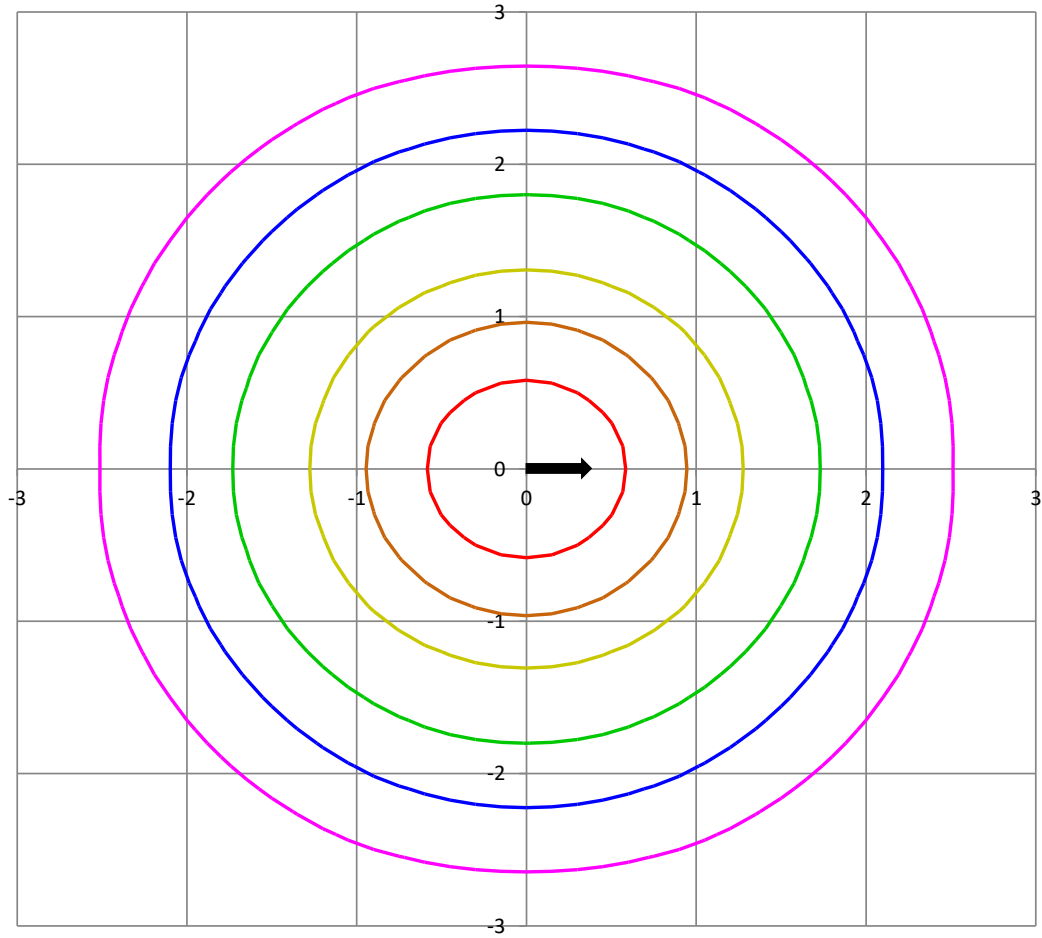
Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
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	98	95	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	73	71
3	91	81	73	66	88	79	72	66	76	70	64	73	68	63	71	66	62	60
4	83	71	63	56	81	70	62	56	68	60	55	65	59	54	63	58	53	51
5	76	64	55	48	74	63	54	48	60	53	47	58	52	47	57	51	46	44
6	70	57	48	42	69	56	48	42	54	47	41	53	46	41	51	45	41	39
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	47	41	36	34
8	61	47	39	33	59	47	38	33	45	38	33	44	37	32	43	37	32	30
9	57	43	35	30	55	43	35	29	42	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	27	38	31	27	37	31	26	37	31	26	25

Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	2331 Candela
Central Cone Intensity:	2328 Candela
Beam Flux:	5154.6 Lumens
Beam Angle (0-180):	110.6 Degrees
Beam Angle (90-270):	120.0 Degrees
Field Angle (0-180):	154.8 Degrees
Field Angle (90-270):	147.9 Degrees

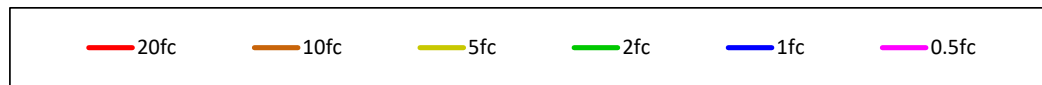


ISOFootcandle Plot

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
23.6 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 52.0 °C

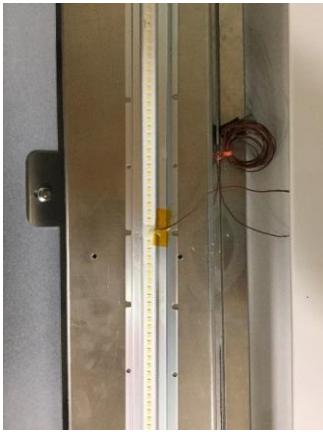
Driver Temperature: 48.3 °C

Measured LED Current: 0.01470 A

Tb Temperature: 48.3 °C

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

LED and Tb Temperature Location



Thermocouple Reference



Driver Temperature Location



ANSI/IES TM-30-18 Color Rendition Report

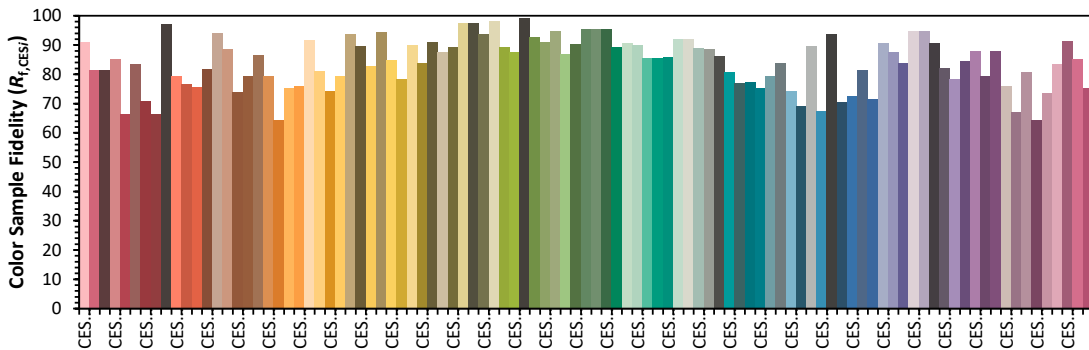
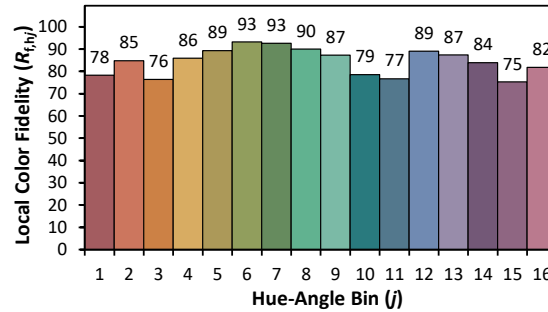
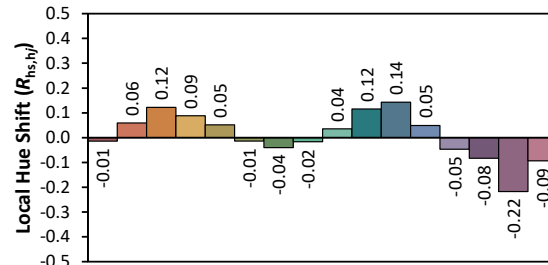
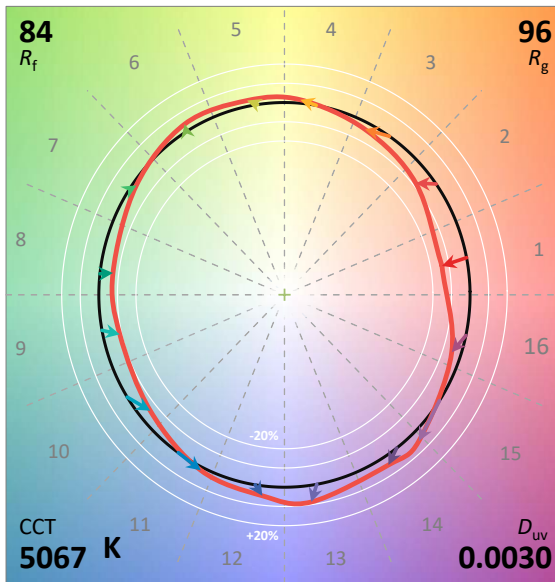
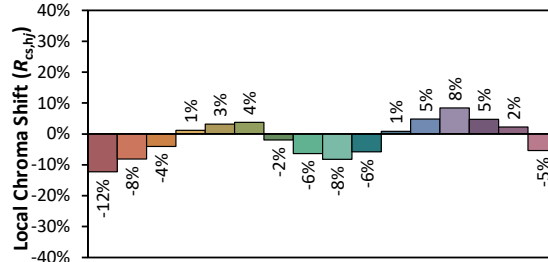
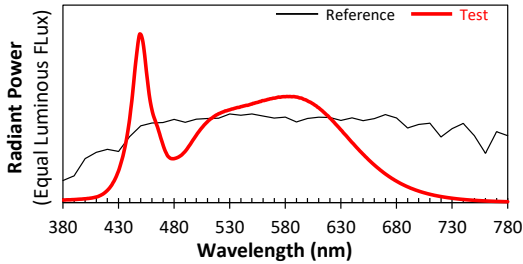
Date: 2022-11-17

Manufacturer:

LDPI Inc

Model:

LE451-62-V1-A-D1-5



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

x 0.3437
 y 0.3564
 u' 0.2086
 v' 0.4868

CIE 13.3-1995
(CRI)

R_a 83

R_g 5

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