



UL Verification Services
Inc.
7036 Snowdrift Road
Allentown, PA 18106



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
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United States

Catalog Number
CROLU22F816CRO4DA

Order Number
14718129
Test Number
14718129.01

Test Date
2023-03-15 - 2023-03-22

Prepared By

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Approved By

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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: Aluminum housing with brushed aluminum frame and double frosted lens panel
Lamp: 336 LED
Mounting: Recessed
Ballast/Driver: X1075C200V054BST1

Luminaire



Luminaire Characteristics

Luminous Length: 19.50 in.
Luminous Width: 19.50 in.

Summary of Results

Integrating Sphere

Luminous Flux: 15480 Lumens
Efficacy: 108.07 lm/w
CCT: 4133 K
CRI (Ra): 82.7

Distribution

Total Luminaire Output: 16240 Lumens
Luminaire Efficacy: 113.5 lm/w
Maximum Candela: 6592 Candela

Electrical Data at 120 VAC

Test Temperature: 25.2 °C
Voltage: 120.0 VAC
Current: 1.197 A
Power: 143.2 W
Power Factor: 0.997
Frequency: 60 Hz
Current THD: 7.22 %

In-Situ

LED Temperature: 87.6 °C
Driver Temperature: 72.0 °C
Measured LED Current: 0.1292 A

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

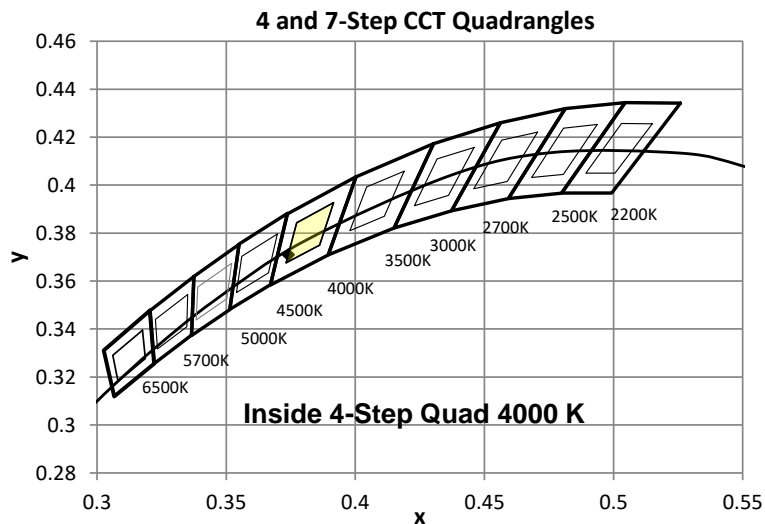
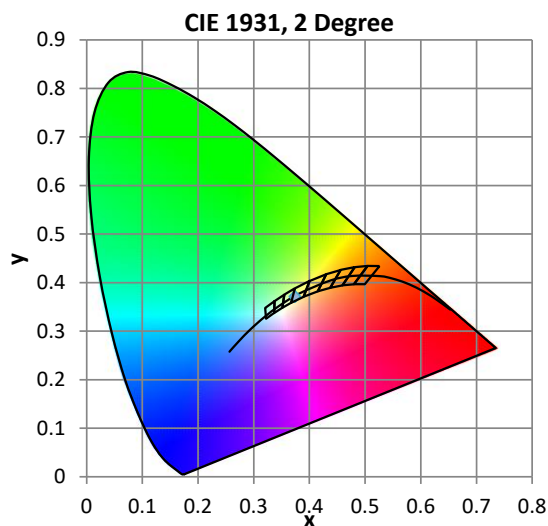
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	120.0 VAC	1.197 A	143.2 W	0.997	60 Hz	7.22 %

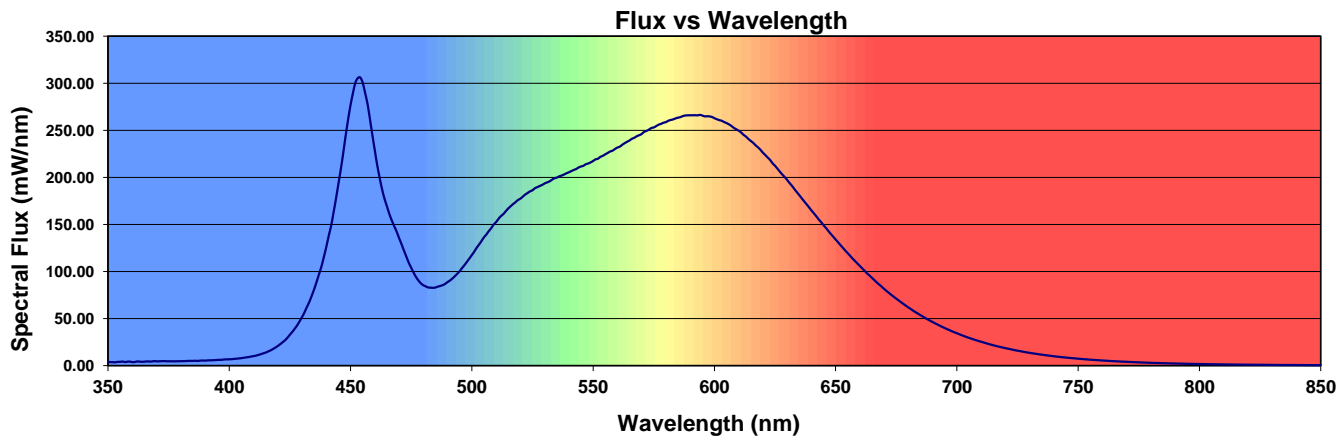
Summary of Results

Total Output:	15480 Lumens	Chromaticity (x):	0.3741
Efficacy:	108.1 lm/w	Chromaticity (y):	0.3710
CCT:	4133 K	Chromaticity (u'):	0.2232
CRI (Ra):	82.7	Chromaticity (v'):	0.4981
CRI (R9):	8.8	TM-30 Rf:	83
Peak Wavelength:	454 nm	TM-30 Rg:	95
Dominant Wavelength:	555 nm	TM-30 Rcs,h1:	-12%
S/P Ratio:	1.73	Duv:	-0.0008
M/P Ratio:	0.71	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
82.7	81.2	89.4	94.3	80.8	81.0	84.5	85.9	64.8	8.8	73.8	79.0	60.7	83.4	97.0	75.9



Distribution - Goniophotometer

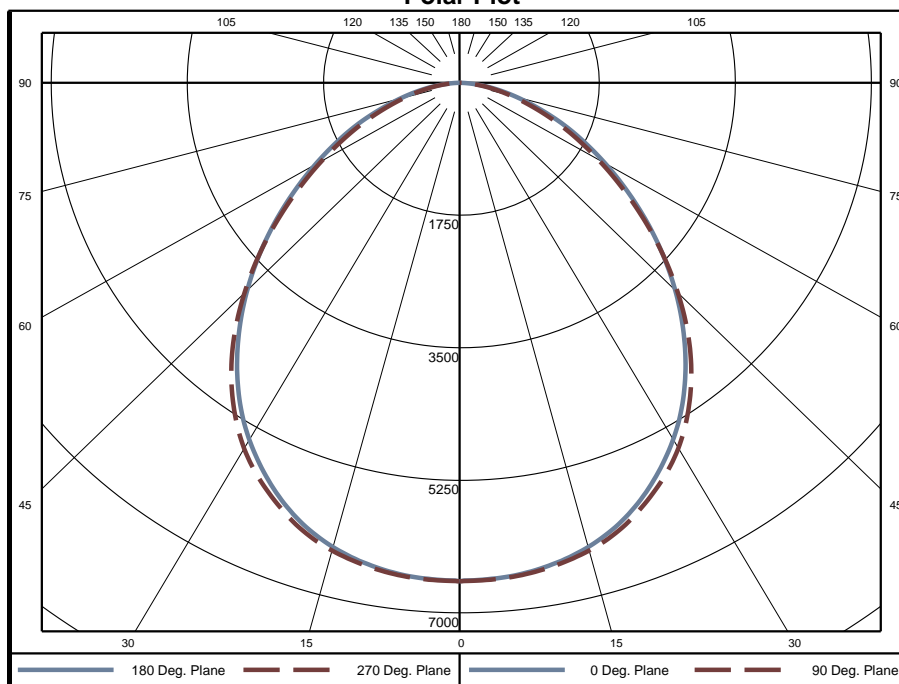
Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.7 °C	120.0 VAC	1.196 A	143.1 W	0.997	60 Hz	7.29 %

Summary of Results

Spacing Criteria	Total Lumen Output:	16240 Lumens
0-180: 1.22	Luminaire Efficacy:	113.5 lm/w
90-270: 1.25	Maximum Candela:	6592 Candela
Corrected UGR (Room Dimension: X=4H, Y=8H, Reflectances: 70/50/20%, S/H: 1)		
Crosswise: 25.3	Endwise: 24.9	

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	157	1.0%	60-65	893	5.5%	120-125	0	0.0%
5-10	468	2.9%	65-70	686	4.2%	125-130	0	0.0%
10-15	764	4.7%	70-75	482	3.0%	130-135	0	0.0%
15-20	1034	6.4%	75-80	306	1.9%	135-140	0	0.0%
20-25	1262	7.8%	80-85	157	1.0%	140-145	0	0.0%
25-30	1440	8.9%	85-90	35	0.2%	145-150	0	0.0%
30-35	1554	9.6%	90-95	0	0.0%	150-155	0	0.0%
35-40	1593	9.8%	95-100	0	0.0%	155-160	0	0.0%
40-45	1558	9.6%	100-105	0	0.0%	160-165	0	0.0%
45-50	1454	9.0%	105-110	0	0.0%	165-170	0	0.0%
50-55	1294	8.0%	110-115	0	0.0%	170-175	0	0.0%
55-60	1099	6.8%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	8272	50.9%
0-60	13677	84.2%
0-90	16236	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	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584	6584
	5	6554	6567	6575	6566	6566	6566	6575	6567	6554	6567	6575	6566	6566	6566	6575
	10	6476	6493	6505	6503	6506	6503	6505	6493	6476	6493	6505	6503	6506	6503	6505
	15	6335	6359	6381	6389	6395	6389	6381	6359	6335	6359	6381	6389	6395	6389	6381
	20	6110	6138	6174	6195	6207	6195	6174	6138	6110	6138	6174	6195	6207	6195	6174
	25	5791	5823	5876	5914	5927	5914	5876	5823	5791	5823	5876	5914	5927	5914	5876
	30	5406	5444	5509	5563	5584	5563	5509	5444	5406	5444	5509	5563	5584	5563	5509
	35	4940	4980	5050	5107	5125	5107	5050	4980	4940	4980	5050	5107	5125	5107	5050
	40	4405	4448	4513	4562	4580	4562	4513	4448	4405	4448	4513	4562	4580	4562	4513
	45	3833	3875	3925	3950	3954	3950	3925	3875	3833	3875	3925	3950	3954	3950	3925
	50	3242	3277	3307	3306	3301	3306	3307	3277	3242	3277	3307	3306	3301	3306	3307
	55	2657	2683	2688	2665	2654	2665	2688	2683	2657	2683	2688	2665	2654	2665	2688
	60	2110	2122	2110	2073	2065	2073	2110	2122	2110	2122	2110	2073	2065	2073	2110
	65	1620	1621	1595	1560	1552	1560	1595	1621	1620	1621	1595	1560	1552	1560	1595
	70	1161	1157	1127	1095	1089	1095	1127	1157	1161	1157	1127	1095	1089	1095	1127
	75	767	760	734	712	706	712	734	760	767	760	734	712	706	712	734
	80	444	437	419	403	401	403	419	437	444	437	419	403	401	403	419
	85	177	177	169	153	146	153	169	177	177	177	169	153	146	153	169
	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	26840	26840
	45	22100	22790
	55	18880	18860
	65	15620	14960
	75	12080	11110
	85	8268	6849



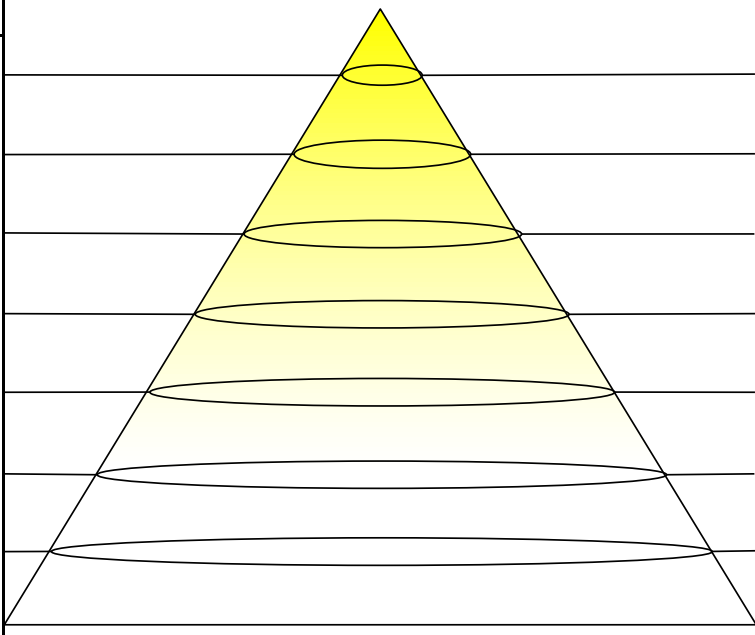
Coefficients of Utilization - Zonal Cavity Method

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	110	105	101	98	107	103	100	96	99	96	93	95	93	90	91	90	88	86
2	100	93	86	81	98	91	85	80	87	83	78	84	80	77	81	78	75	73
3	92	82	75	68	90	81	74	68	78	72	67	75	70	66	73	68	64	62
4	85	73	65	59	82	72	64	58	70	63	58	67	61	57	65	60	56	54
5	78	66	57	51	76	65	57	51	63	56	50	61	55	50	59	54	49	47
6	72	60	51	45	71	59	51	45	57	50	44	55	49	44	54	48	44	42
7	67	54	46	40	66	53	45	40	52	45	39	51	44	39	49	43	39	37
8	63	50	41	36	61	49	41	36	48	41	35	46	40	35	45	39	35	33
9	59	46	38	32	57	45	37	32	44	37	32	43	36	32	42	36	32	30
10	55	42	35	29	54	42	34	29	41	34	29	40	34	29	39	33	29	27

Beam and Field Information

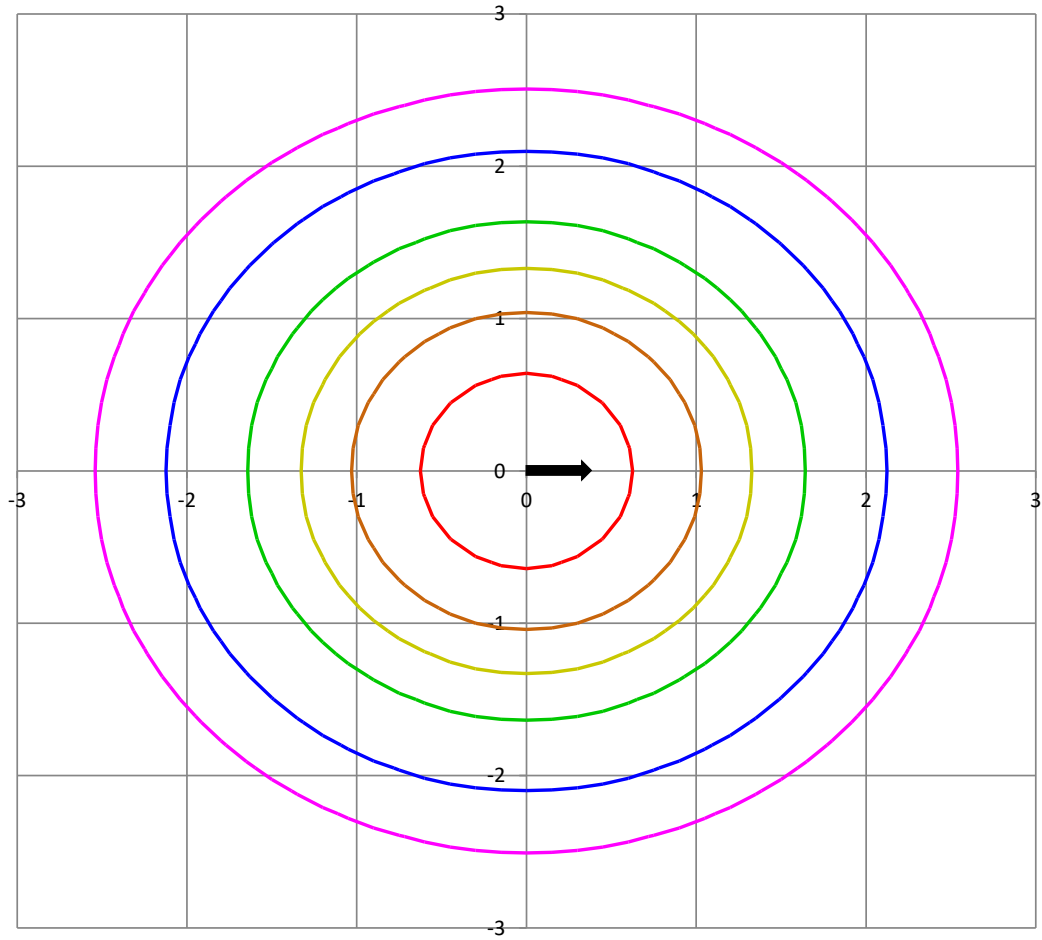
CIE Type:	Direct
Center Beam Intensity:	6584 Candela
Central Cone Intensity:	6579 Candela
Beam Flux:	11279.2 Lumens
Beam Angle (0-180):	99.2 Degrees
Beam Angle (90-270):	100.1 Degrees
Field Angle (0-180):	153.2 Degrees
Field Angle (90-270):	151.4 Degrees

Cone of Light Tabulation

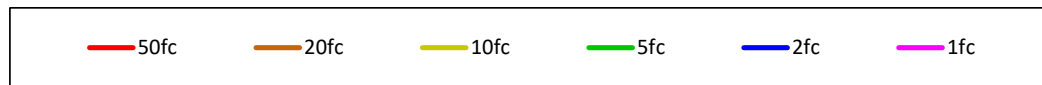
Mounting Height (Feet)		Footcandles at Nadir	Diameter (Feet)
4.00		412	4.95
6.00		183	7.42
8.00		103	9.90
10.0		65.8	12.4
12.0		45.7	14.8
14.0		33.6	17.3
16.0		25.7	19.8

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
23.3 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

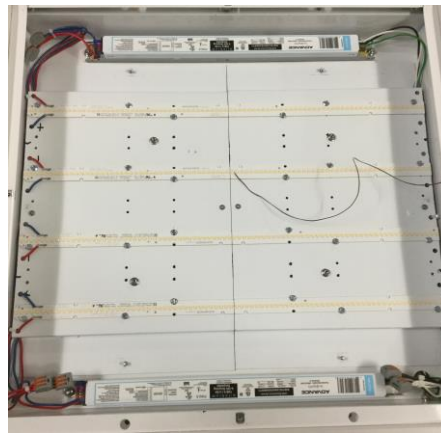
LED Temperature: 87.6 °C
 Driver Temperature: 72.0 °C
 Measured LED Current: 0.1292 A

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

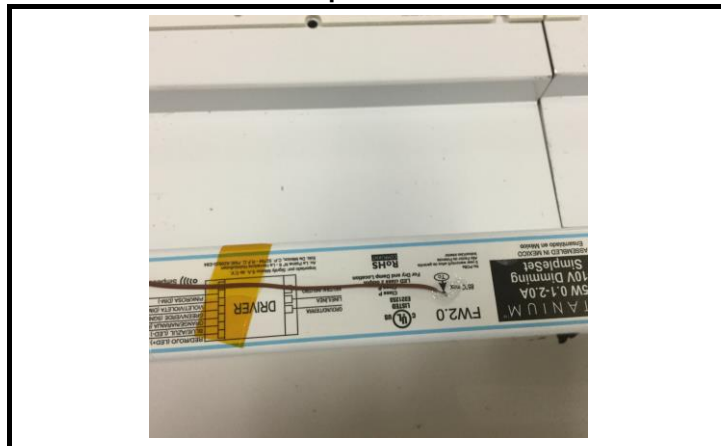
LED Temperature Location



Thermocouple Reference



Driver Temperature Location



ANSI/IES TM-30-18 Color Rendition Report

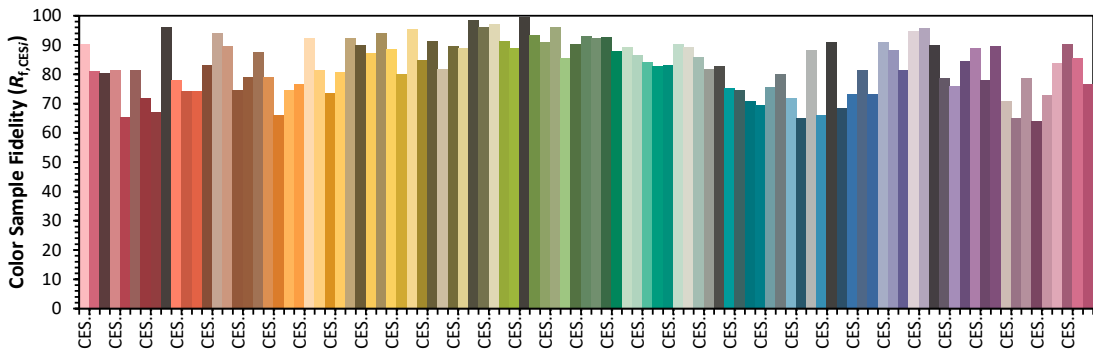
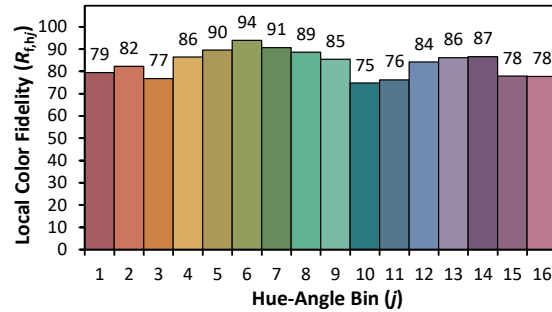
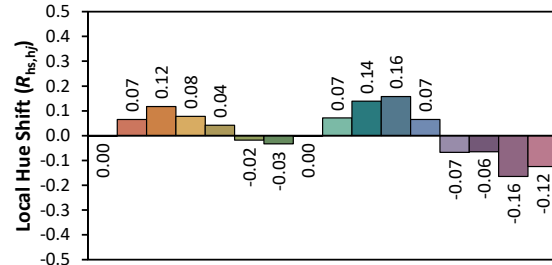
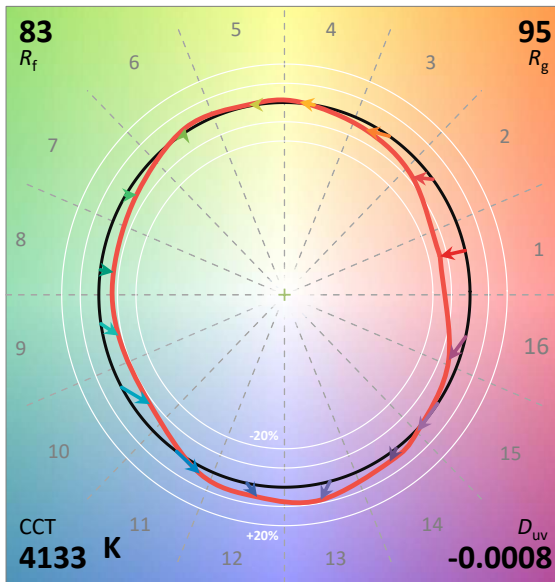
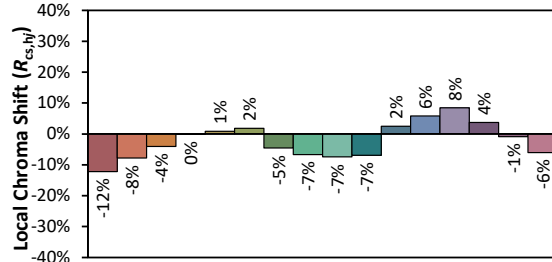
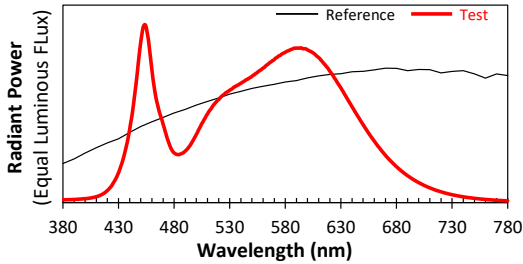
Date: 2023-03-16

Manufacturer:

Rig-A-Lite Partnership Ltd

Model:

CROLU22F816CRO4DA



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

x 0.3741

y 0.3710

u' 0.2232

v' 0.4981

CIE 13.3-1995
(CRI)

R_a 83

R_g 9

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