

Classified  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: METALUX

Report Number: P981625

Luminaire Tested: **2WNLED-LD4-28SL-F-UNV-L830-CD1-U**

Issue Date: 04/17/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P981625  
Test Lab: INNOVATION CENTER(P3)  
Issue Date: 04/17/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 2WNLED-LD4-28SL-F-UNV-L830-CD1-U  
Description: METALUX 2FT WNLED WRAPAROUND 2800LM PACKAGE 80CRI 3000K TROFFER  
Light Source: 3000K CCT, 80+ CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

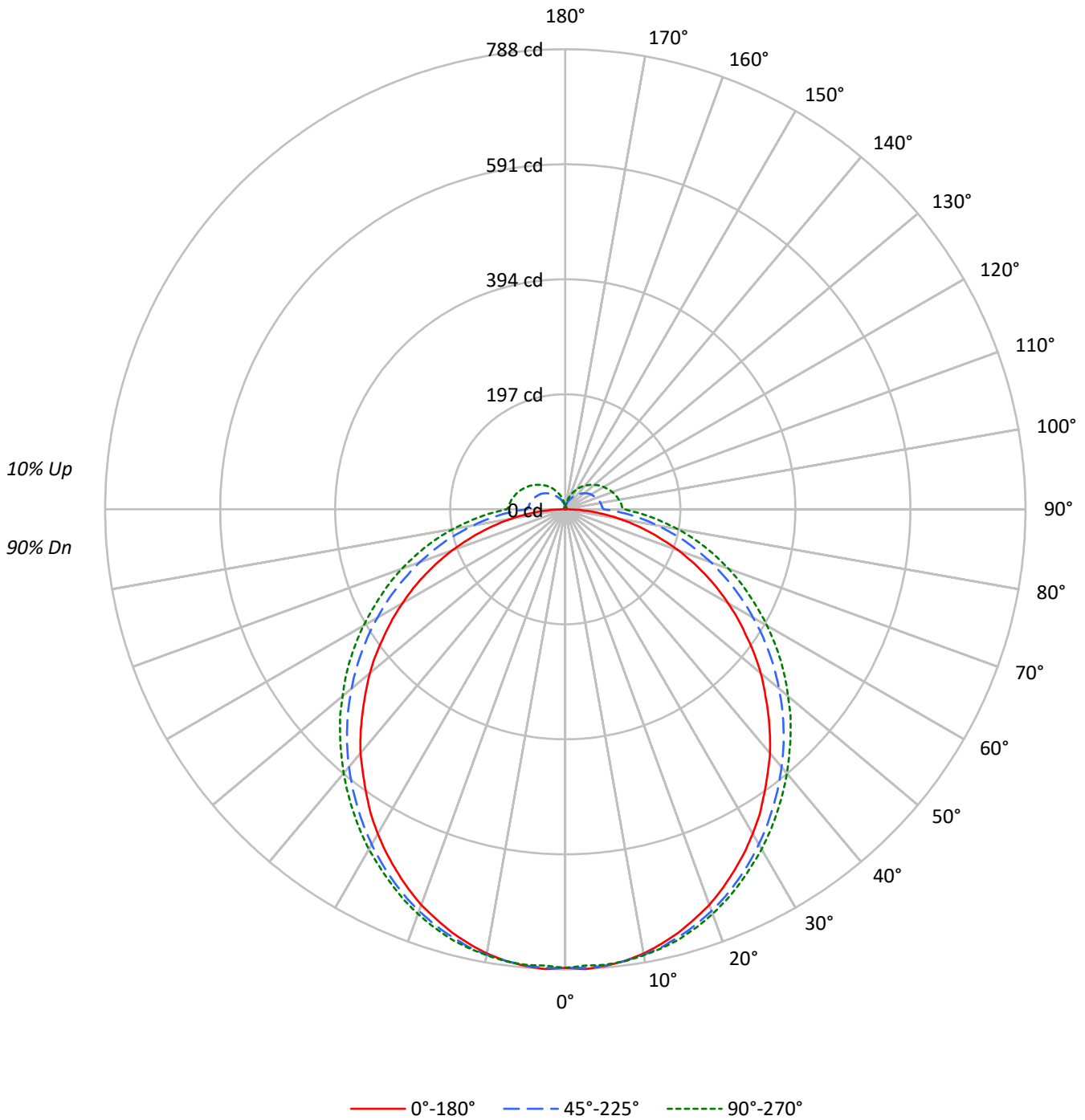
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2680.9 lumens  
Efficiency: N/A  
Efficacy: 116.1 lumens/watt  
Spacing Criteria (0/90/45): 1.22 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.75' x L: 2' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 23.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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CATALOG NUMBER: 2WNLED-LD4-28SL-F-UNV-L830-CD1-U

### Luminous Intensity Polar Plot





TEST NUMBER: P981625

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20			
RC	80				70				50				30				10		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	117	117	117	117	113	113	113	113	106	106	106	99	99	99	93	93	93	90	90	90
1	105	100	95	91	101	97	92	88	91	87	84	85	82	79	80	78	75	73	73	73
2	95	86	79	73	91	84	77	71	78	73	68	74	69	65	69	66	62	59	59	59
3	86	75	67	60	83	73	65	59	69	62	57	65	59	54	61	56	52	50	50	50
4	79	67	57	51	76	65	56	50	61	54	48	57	51	46	54	49	45	42	42	42
5	72	59	50	43	70	58	49	43	54	47	41	51	45	40	48	43	39	36	36	36
6	67	53	44	38	64	52	43	37	49	42	36	46	40	35	44	38	34	32	32	32
7	62	48	39	33	60	47	39	33	44	37	32	42	36	31	40	34	30	28	28	28
8	58	44	35	29	55	43	35	29	41	33	28	39	32	28	37	31	27	25	25	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22	22	22
10	50	37	29	24	49	36	29	24	35	28	23	33	27	22	32	26	22	20	20	20

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	5635	5635	5635
5°	5616	5547	5533
10°	5548	5439	5438
15°	5452	5315	5339
20°	5345	5184	5210
25°	5211	5036	5071
30°	5075	4883	4939
35°	4917	4724	4798
40°	4776	4568	4660
45°	4599	4409	4529
50°	4439	4239	4392
55°	4235	4065	4271
60°	4038	3879	4135
65°	3810	3693	3996
70°	3520	3493	3874
75°	3145	3269	3737
80°	2663	2984	3565
85°	1889	2660	3388



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	74.5	2.8
10°-20°	213.2	8.0
20°-30°	321.3	12.0
30°-40°	386.2	14.4
40°-50°	404.0	15.1
50°-60°	376.0	14.0
60°-70°	310.1	11.6
70°-80°	217.9	8.1
80°-90°	115.0	4.3
90°-100°	62.3	2.3
100°-110°	56.5	2.1
110°-120°	48.4	1.8
120°-130°	38.3	1.4
130°-140°	27.3	1.0
140°-150°	17.1	0.6
150°-160°	8.9	0.3
160°-170°	3.3	0.1
170°-180°	0.6	0.0
0°-30°	609.0	22.7
0°-40°	995.2	37.1
0°-60°	1775.1	66.2
0°-90°	2418.2	90.2
90°-120°	167.2	6.2
90°-150°	250.0	9.3
90°-180°	263.0	9.8
0°-180°	2680.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	785	785	785	785	785	
5°	785	781	785	785	783	75
15°	750	749	757	761	761	212
25°	684	687	700	706	707	315
35°	594	603	621	631	633	372
45°	491	507	528	541	546	379
55°	379	399	425	442	450	340
65°	264	288	318	339	348	262
75°	149	177	213	238	247	157
85°	45	76	112	136	146	47
90°	2	31	66	91	100	3
95°	0	28	63	87	96	0
105°	1	27	59	81	90	1
115°	2	25	54	74	81	2
125°	2	22	47	65	71	2
135°	3	17	38	54	59	2
145°	3	13	28	41	46	2
155°	4	10	19	28	32	2
165°	4	8	11	15	18	1
175°	4	4	5	5	6	0
180°	4	4	4	4	4	



TEST NUMBER: P981625

CATALOG NUMBER: 2WNLED-LD4-28SL-F-UNV-L830-CD1-U

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3
2.5°	788.3	787.6	786.1	784.6	783.8	783.8	783.1	783.1	783.1	785.3	786.1
5°	785.3	784.6	783.1	782.3	781.6	780.8	780.8	780.8	781.6	783.8	784.6
7.5°	780.1	779.3	777.8	777.1	776.4	776.4	776.4	776.4	777.1	779.3	780.1
10°	772.6	771.9	770.4	769.6	769.6	769.6	769.6	769.6	771.1	773.4	774.9
12.5°	762.2	761.4	760.7	760.7	759.9	759.9	760.7	760.7	762.2	765.1	767.4
15°	750.2	749.5	748.7	748.7	748.7	748.7	749.5	750.2	752.4	755.4	756.9
17.5°	736.0	736.0	735.3	736.0	736.0	736.0	736.8	738.2	739.7	743.5	745.7
20°	721.1	720.3	719.6	721.1	721.1	721.1	721.8	724.0	726.3	730.0	732.3
22.5°	703.1	703.1	703.1	703.9	704.6	705.4	706.1	708.4	711.3	714.3	717.3
25°	683.7	683.7	683.7	685.2	686.7	687.4	688.2	690.4	694.2	697.1	700.1
27.5°	663.5	663.5	663.5	664.3	666.5	667.3	668.8	671.7	675.5	678.5	682.2
30°	641.9	641.9	642.6	644.1	646.3	647.1	648.6	651.6	656.1	659.0	662.8
32.5°	619.4	618.7	619.4	621.7	623.9	626.2	626.9	630.6	635.1	638.9	642.6
35°	594.0	594.8	596.3	598.5	600.8	603.0	604.5	608.2	613.5	617.2	620.9
37.5°	569.4	570.1	571.6	574.6	577.6	579.8	582.1	585.1	591.0	594.8	599.3
40°	545.5	544.0	547.0	549.9	553.7	555.9	558.2	561.9	567.9	571.6	576.1
42.5°	518.6	518.6	520.8	525.3	529.0	531.3	533.5	538.0	544.0	548.5	552.9
45°	490.9	491.7	494.7	499.1	503.6	506.6	508.1	513.3	519.3	523.8	528.3
47.5°	463.3	464.8	467.8	473.0	477.5	480.5	482.0	487.9	493.9	499.1	503.6
50°	437.1	437.1	440.9	445.3	450.6	453.6	455.8	461.8	467.8	473.0	477.5
52.5°	408.7	408.7	412.5	418.4	422.9	426.7	428.9	435.6	441.6	446.8	452.1
55°	378.8	380.3	384.1	390.8	396.0	399.0	402.0	408.7	414.7	420.7	425.2
57.5°	351.2	351.9	356.4	362.4	368.4	371.4	375.1	381.1	387.8	394.5	399.0
60°	322.0	323.5	327.3	334.8	340.7	343.7	346.7	354.2	360.9	366.9	371.4
62.5°	293.7	294.4	299.6	306.4	312.3	316.1	319.8	326.5	333.3	339.2	345.2
65°	264.5	266.0	270.5	278.0	283.9	287.7	290.7	299.6	305.6	312.3	318.3
67.5°	235.4	236.9	242.1	249.6	256.3	260.0	263.0	271.2	278.7	285.4	291.4
70°	206.2	207.7	213.7	221.2	227.9	231.6	236.1	243.6	251.8	258.5	265.3
72.5°	176.3	178.6	183.8	192.0	201.0	204.7	208.5	217.4	224.9	232.4	238.4
75°	148.7	150.9	156.9	164.4	171.9	177.1	180.1	189.0	198.8	206.2	213.0
77.5°	121.0	123.3	129.3	137.5	145.7	150.2	154.7	162.9	171.1	178.6	186.1
80°	94.9	97.1	103.9	111.3	119.6	124.8	129.3	138.2	146.5	153.9	160.7
82.5°	69.5	71.7	78.5	86.7	95.6	100.1	104.6	112.8	121.8	129.3	136.7
85°	44.8	48.6	54.5	62.0	71.0	75.5	80.0	88.9	97.1	104.6	112.1
87.5°	21.7	24.7	31.4	39.6	47.8	53.1	56.8	65.0	74.0	80.7	88.2
90°	1.5	4.5	10.5	17.9	26.2	30.6	35.1	43.3	51.6	59.0	65.8
92.5°	0.0	3.0	9.0	16.4	24.7	29.1	32.9	41.1	49.3	56.8	63.5
95°	0.0	3.0	9.0	16.4	24.7	28.4	32.9	41.1	48.6	56.0	62.8
97.5°	0.7	3.0	9.0	16.4	23.9	28.4	32.1	40.3	47.8	55.3	62.0
100°	0.7	3.0	9.0	15.7	23.9	27.6	32.1	39.6	47.1	54.5	61.3
102.5°	0.7	3.0	9.0	15.7	23.9	27.6	31.4	38.9	46.3	53.8	60.5
105°	0.7	3.7	9.0	15.7	23.2	26.9	30.6	38.9	45.6	52.3	59.0
107.5°	0.7	3.7	9.0	15.7	23.2	26.9	30.6	38.1	44.8	51.6	57.5
110°	1.5	3.7	9.0	15.7	22.4	26.2	29.9	37.4	44.1	50.8	56.8



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	1.5	3.7	9.0	14.9	22.4	25.4	29.1	36.6	43.3	49.3	55.3
115°	1.5	3.7	9.0	14.9	21.7	25.4	28.4	35.9	41.8	48.6	53.8
117.5°	1.5	4.5	9.0	14.2	20.9	24.7	27.6	34.4	41.1	47.1	52.3
120°	2.2	4.5	8.2	14.2	20.2	23.9	26.9	33.6	39.6	45.6	50.8
122.5°	2.2	4.5	8.2	13.4	19.4	22.4	26.2	32.1	38.1	44.1	49.3
125°	2.2	4.5	8.2	12.7	18.7	21.7	24.7	30.6	36.6	41.8	47.1
127.5°	2.2	4.5	8.2	12.7	17.9	20.2	23.2	29.1	34.4	39.6	44.8
130°	2.2	4.5	7.5	12.0	16.4	19.4	21.7	27.6	32.1	37.4	42.6
132.5°	2.2	4.5	7.5	11.2	15.7	18.7	20.9	26.2	30.6	35.1	40.3
135°	3.0	4.5	7.5	11.2	14.9	17.2	19.4	23.9	28.4	32.9	38.1
137.5°	3.0	4.5	6.7	10.5	14.2	16.4	18.7	22.4	26.9	31.4	35.1
140°	3.0	4.5	6.7	9.7	13.4	15.7	17.2	20.9	25.4	29.1	32.9
142.5°	3.0	4.5	6.7	9.7	12.7	14.2	16.4	19.4	23.2	26.9	30.6
145°	3.0	4.5	6.7	9.0	12.0	13.4	14.9	18.7	21.7	24.7	27.6
147.5°	3.7	4.5	6.7	9.0	11.2	12.7	14.2	17.2	20.2	22.4	25.4
150°	3.7	4.5	6.0	8.2	10.5	12.0	13.4	15.7	18.7	20.9	23.2
152.5°	3.7	4.5	6.0	8.2	10.5	11.2	12.0	14.9	17.2	19.4	20.9
155°	3.7	4.5	6.0	7.5	9.7	10.5	11.2	13.4	15.7	17.2	19.4
157.5°	3.7	4.5	6.0	7.5	9.0	9.7	10.5	12.0	14.2	15.7	17.2
160°	3.7	4.5	6.0	6.7	8.2	9.0	9.7	11.2	12.7	14.2	14.9
162.5°	4.5	4.5	5.2	6.7	7.5	8.2	9.0	9.7	11.2	12.0	13.4
165°	4.5	4.5	5.2	6.0	6.7	7.5	7.5	9.0	9.7	10.5	11.2
167.5°	4.5	4.5	5.2	6.0	6.0	6.7	6.7	7.5	8.2	9.0	9.7
170°	4.5	4.5	4.5	5.2	6.0	6.0	6.0	6.7	7.5	7.5	8.2
172.5°	4.5	4.5	4.5	4.5	5.2	5.2	5.2	6.0	6.0	6.7	6.7
175°	4.5	4.5	4.5	4.5	4.5	4.5	5.2	5.2	5.2	5.2	5.2
177.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3	785.3
2.5°	786.8	788.3	787.6	786.1	786.1	786.1	785.3	783.8	783.1	782.3
5°	785.3	786.8	785.3	784.6	784.6	784.6	784.6	783.8	783.1	783.1
7.5°	781.6	783.1	782.3	781.6	781.6	781.6	781.6	780.8	780.8	780.8
10°	776.4	778.6	777.8	777.1	776.4	777.1	776.4	776.4	775.6	775.6
12.5°	768.1	770.4	770.4	769.6	769.6	769.6	769.6	769.6	768.9	769.6
15°	759.2	761.4	761.4	761.4	761.4	761.4	761.4	761.4	760.7	761.4
17.5°	748.0	750.2	750.9	750.2	750.9	750.9	750.9	750.2	750.2	750.2
20°	734.5	736.8	737.5	736.8	736.8	736.8	737.5	737.5	737.5	737.5
22.5°	719.6	721.8	721.8	721.8	722.6	722.6	722.6	723.3	723.3	723.3
25°	702.4	704.6	704.6	705.4	706.1	706.1	706.9	706.9	706.9	706.9
27.5°	685.9	687.4	687.4	688.2	688.9	688.9	688.9	688.9	690.4	689.7
30°	666.5	668.0	668.8	670.2	670.2	671.0	671.0	671.7	672.5	672.5
32.5°	646.3	647.8	648.6	650.1	650.8	651.6	651.6	653.1	653.8	653.1
35°	624.7	626.2	628.4	629.2	630.6	630.6	632.1	632.1	633.6	632.9
37.5°	603.0	604.5	606.0	607.5	609.0	609.7	610.5	612.0	613.5	612.0
40°	579.8	582.1	584.3	585.8	586.6	588.1	588.1	590.3	591.8	590.3
42.5°	556.7	558.9	561.2	564.1	564.1	564.9	566.4	568.6	568.6	567.9
45°	532.8	534.3	538.0	540.2	541.0	541.7	543.2	544.0	545.5	545.5
47.5°	507.4	510.3	514.1	516.3	517.1	517.8	519.3	520.8	523.0	523.0
50°	482.0	485.7	487.2	490.9	492.4	493.2	495.4	496.9	498.4	497.6
52.5°	455.8	458.8	463.3	466.3	467.8	468.5	470.7	473.0	473.7	474.5
55°	429.6	433.4	437.9	440.9	442.4	443.8	445.3	446.8	449.1	449.8
57.5°	403.5	407.2	412.5	415.5	416.9	417.7	420.7	422.9	423.7	424.4
60°	376.6	381.1	386.3	389.3	390.8	393.0	393.8	397.5	398.3	399.0
62.5°	350.4	354.9	360.2	363.9	365.4	366.9	369.9	372.1	373.6	372.9
65°	324.3	328.8	334.0	337.7	339.2	341.5	343.7	346.0	347.5	347.5
67.5°	297.4	302.6	308.6	312.3	313.8	316.1	318.3	319.8	322.0	323.5
70°	271.2	277.2	282.4	286.2	287.7	289.9	292.2	295.9	295.9	297.4
72.5°	245.1	251.1	256.3	261.5	263.0	264.5	267.5	269.7	270.5	272.0
75°	219.7	225.7	230.9	234.6	237.6	239.1	242.1	243.6	245.1	246.6
77.5°	192.8	200.3	205.5	210.0	212.2	213.7	216.7	218.9	220.4	221.2
80°	167.4	173.4	178.6	183.1	185.3	187.6	190.5	192.0	194.3	195.0
82.5°	142.7	148.7	153.9	157.7	160.7	162.1	165.1	168.1	168.1	169.6
85°	118.1	124.0	129.3	133.8	136.0	138.2	140.5	143.5	144.2	145.7
87.5°	94.1	100.9	105.4	110.6	112.1	114.3	118.1	120.3	121.8	121.8
90°	72.5	78.5	83.7	88.9	91.2	92.7	96.4	98.6	100.1	100.1
92.5°	70.2	76.2	81.4	86.7	88.2	90.4	93.4	95.6	97.1	97.1
95°	69.5	75.5	80.7	85.2	87.4	88.9	92.7	94.1	95.6	96.4
97.5°	68.7	74.7	80.0	84.4	85.9	88.2	91.2	93.4	94.9	94.9
100°	67.2	73.2	78.5	82.9	85.2	86.7	89.7	91.9	92.7	93.4
102.5°	66.5	71.7	77.0	81.4	83.7	85.2	88.2	90.4	91.2	91.9
105°	65.0	71.0	75.5	80.0	81.4	83.7	85.9	88.2	89.7	89.7
107.5°	63.5	69.5	74.0	78.5	80.0	81.4	84.4	86.7	87.4	88.2
110°	62.0	68.0	72.5	76.2	78.5	80.0	82.2	84.4	85.2	85.9



TEST NUMBER: P981625

CATALOG NUMBER: 2WNLED-LD4-28SL-F-UNV-L830-CD1-U

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
112.5°	60.5	65.8	70.2	74.7	76.2	77.7	80.0	82.2	82.9	83.7
115°	59.0	64.3	68.7	72.5	74.0	75.5	77.7	80.0	80.7	81.4
117.5°	57.5	62.8	66.5	70.2	71.7	73.2	75.5	77.7	78.5	78.5
120°	56.0	60.5	65.0	68.0	69.5	71.0	73.2	74.7	76.2	76.2
122.5°	53.8	58.3	62.8	65.8	67.2	68.7	71.0	72.5	73.2	74.0
125°	52.3	56.8	60.5	63.5	65.0	66.5	68.0	69.5	70.2	71.0
127.5°	50.1	53.8	58.3	61.3	62.8	64.3	65.8	67.2	68.0	68.0
130°	47.1	51.6	55.3	59.0	60.5	61.3	63.5	64.3	65.0	65.0
132.5°	44.8	48.6	52.3	56.0	57.5	59.0	60.5	61.3	62.0	62.0
135°	41.8	45.6	49.3	53.1	54.5	56.0	57.5	58.3	59.0	59.0
137.5°	39.6	43.3	46.3	50.1	51.6	53.1	54.5	55.3	56.0	56.0
140°	36.6	39.6	43.3	47.1	48.6	49.3	51.6	52.3	53.1	53.1
142.5°	33.6	37.4	40.3	43.3	44.8	46.3	48.6	49.3	50.1	50.1
145°	31.4	34.4	36.6	39.6	41.1	42.6	44.8	46.3	46.3	46.3
147.5°	28.4	31.4	33.6	36.6	38.1	38.9	41.8	42.6	43.3	43.3
150°	26.2	28.4	30.6	32.9	34.4	35.9	38.1	39.6	39.6	39.6
152.5°	23.9	25.4	27.6	29.9	30.6	32.1	34.4	35.9	35.9	35.9
155°	20.9	23.2	24.7	26.2	27.6	28.4	30.6	32.1	32.1	32.1
157.5°	18.7	20.2	21.7	23.2	23.9	24.7	26.9	28.4	29.1	29.1
160°	16.4	17.9	18.7	20.2	20.9	21.7	22.4	24.7	25.4	25.4
162.5°	14.2	14.9	16.4	17.2	17.9	17.9	19.4	20.2	21.7	21.7
165°	12.0	12.7	13.4	14.2	14.9	14.9	15.7	17.2	17.9	17.9
167.5°	10.5	10.5	11.2	12.0	12.0	12.0	12.7	13.4	14.9	14.9
170°	8.2	9.0	9.0	9.0	9.7	9.7	9.7	10.5	11.2	12.0
172.5°	6.7	6.7	7.5	7.5	7.5	7.5	7.5	7.5	8.2	9.0
175°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	6.0
177.5°	4.5	4.5	4.5	3.7	3.7	3.7	3.7	3.7	3.7	3.0
180°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP3-2508-516-9

Test Date: 09/05/2025

Luminaire Tested: 4WNLED-LD4-50SL-F-UNVL930-CD1-U

Data in this report applies to families of products including 4WNLED-LD4-50SL-F-UNVL930-CD1-U

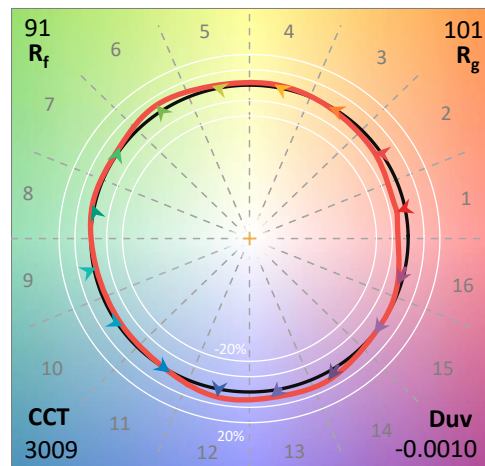
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP3-2508-516-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP3 - 3M SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 09/05/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Metalux  
 Catalog Number: **4WNLED-LD4-50SL-F-UNVL930-CD1-U**  
 Description: 4FT WNLED 5000LM 930

**Spectral Parameters**

CCT (K): 3009  
 CIE u': 0.2506  
 CIE v': 0.5199  
 Duv: -0.0010  
 CIE x: 0.4349  
 CIE y: 0.4010  
 CIE z: 0.1641  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 583  
 Purity: 50.88854  
 Rf: 91  
 Rg: 101.1

CRI (Ra):	93.2		
R1:	94.6	R9:	57.2
R2:	96.2	R10:	89.7
R3:	96.5	R11:	95.8
R4:	94.7	R12:	84.5
R5:	94.3	R13:	94.9
R6:	96.0	R14:	96.9
R7:	91.6	R15:	89.9
R8:	81.9		



**Test Conditions**

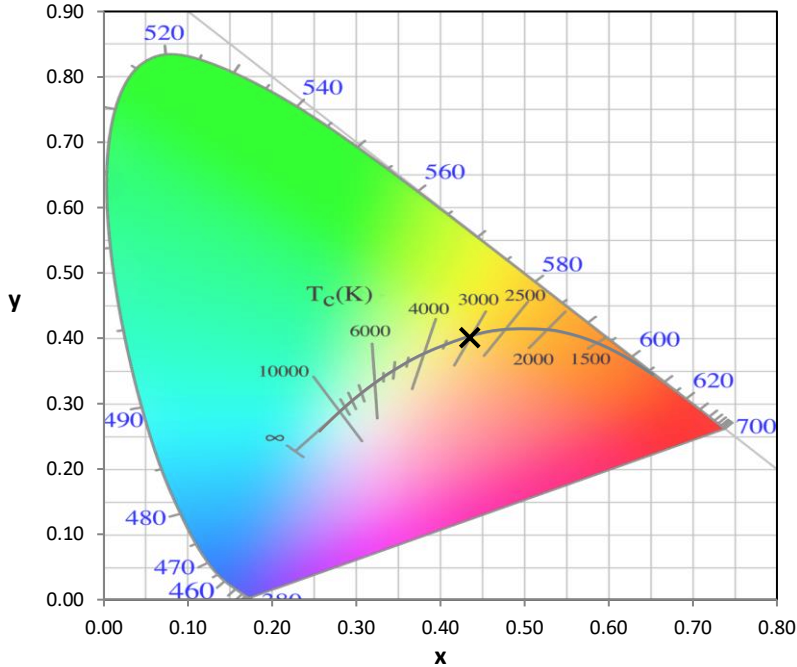
Stabilization Time: 23M  
 Operation Time: 1H 23M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP3-2508-516-9

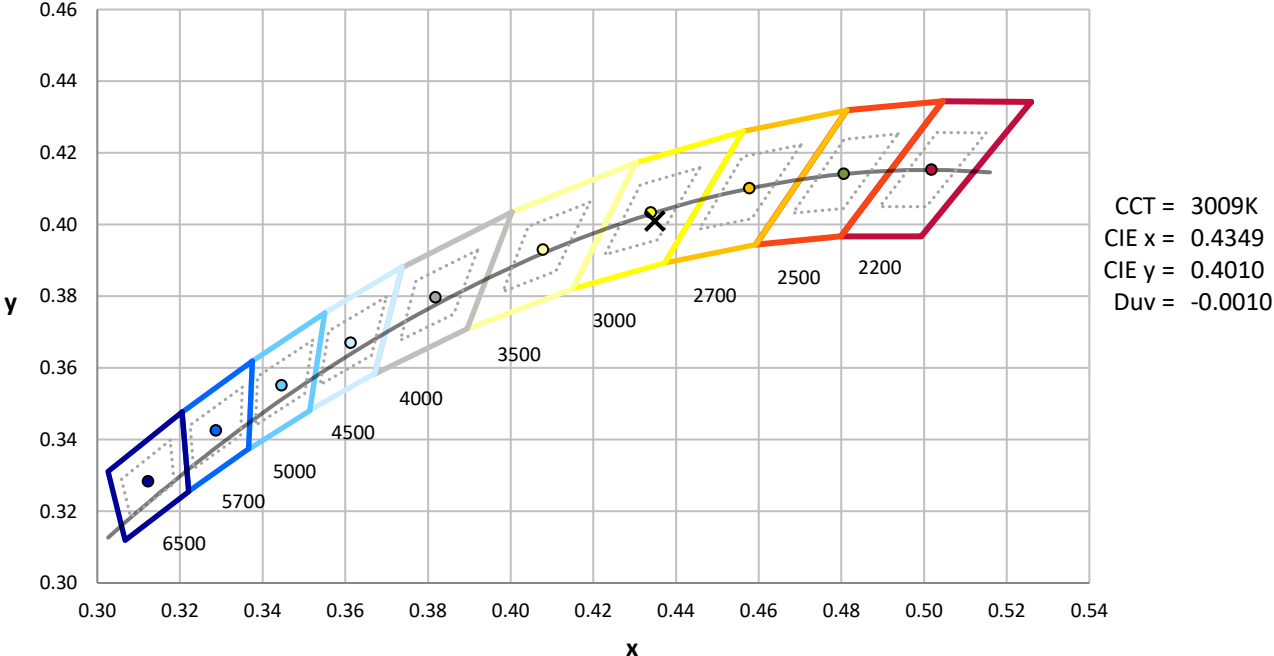
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	3M SPHERE IN02505	7/1/2025	1/1/2026
Power Meter	XITRON INXT2011006	1/20/2025	1/20/2026
AC Power Source	CHROMA 61604 IN6064A	10/22/2024	10/22/2025
DC Power Source	EYSIGHT N5770A IN0534	10/22/2024	10/22/2025
Sphere Thermometer	TANDD IN4036E	10/22/2024	10/22/2025

REPORT NUMBER: SP3-2508-516-9

CIE 1931 Chromaticity Diagram



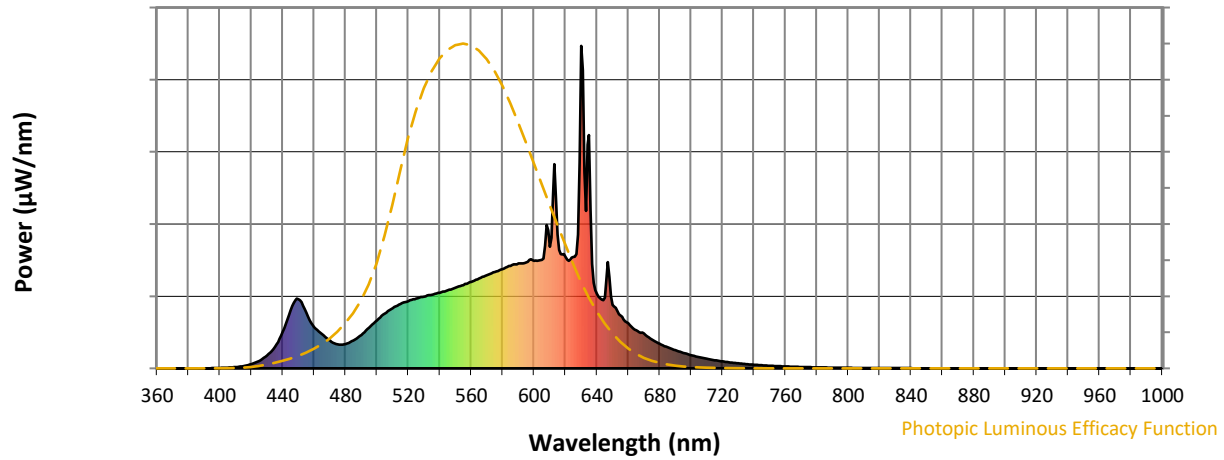
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP3-2508-516-9

**Photopic Flux vs. Wavelength**

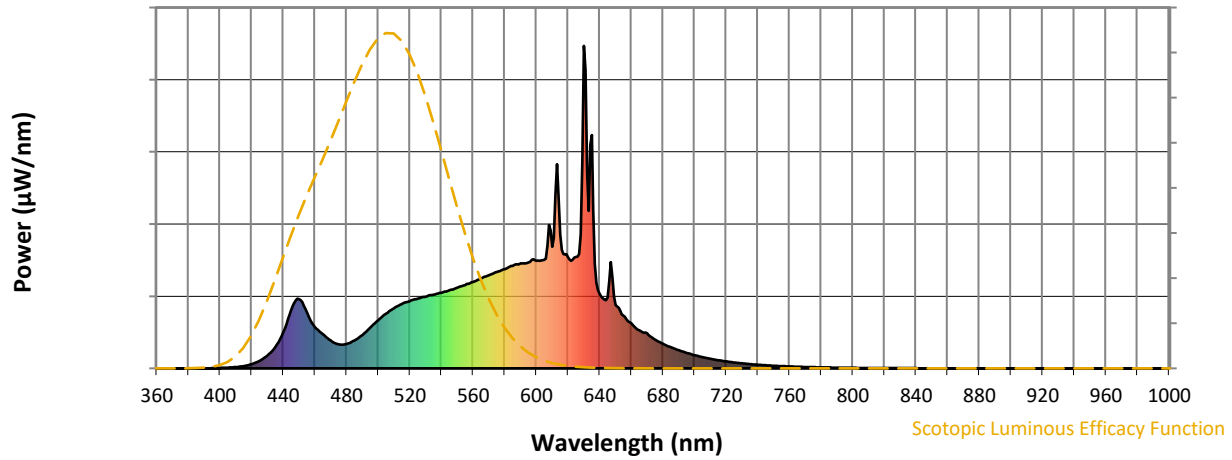


**Photopic Lumens: NR**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	104	NR	620	345	NR	750	8	NR	880	0	NR
365	0	NR	495	126	NR	625	345	NR	755	7	NR	885	0	NR
370	0	NR	500	149	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	170	NR	635	724	NR	765	5	NR	895	0	NR
380	0	NR	510	186	NR	640	231	NR	770	4	NR	900	0	NR
385	0	NR	515	200	NR	645	219	NR	775	4	NR	905	0	NR
390	0	NR	520	208	NR	650	197	NR	780	3	NR	910	0	NR
395	1	NR	525	216	NR	655	163	NR	785	3	NR	915	0	NR
400	1	NR	530	223	NR	660	140	NR	790	2	NR	920	0	NR
405	2	NR	535	228	NR	665	118	NR	795	2	NR	925	0	NR
410	4	NR	540	235	NR	670	108	NR	800	2	NR	930	0	NR
415	7	NR	545	242	NR	675	89	NR	805	1	NR	935	0	NR
420	13	NR	550	250	NR	680	76	NR	810	1	NR	940	0	NR
425	23	NR	555	258	NR	685	66	NR	815	1	NR	945	0	NR
430	40	NR	560	268	NR	690	56	NR	820	1	NR	950	0	NR
435	66	NR	565	279	NR	695	48	NR	825	1	NR	955	0	NR
440	113	NR	570	288	NR	700	41	NR	830	1	NR	960	0	NR
445	181	NR	575	299	NR	705	35	NR	835	1	NR	965	0	NR
450	215	NR	580	308	NR	710	30	NR	840	1	NR	970	0	NR
455	173	NR	585	318	NR	715	25	NR	845	0	NR	975	0	NR
460	128	NR	590	325	NR	720	22	NR	850	0	NR	980	0	NR
465	106	NR	595	328	NR	725	18	NR	855	0	NR	985	0	NR
470	86	NR	600	333	NR	730	16	NR	860	0	NR	990	0	NR
475	74	NR	605	336	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	377	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	415	NR	745	10	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-9

**Scotopic Flux vs. Wavelength**



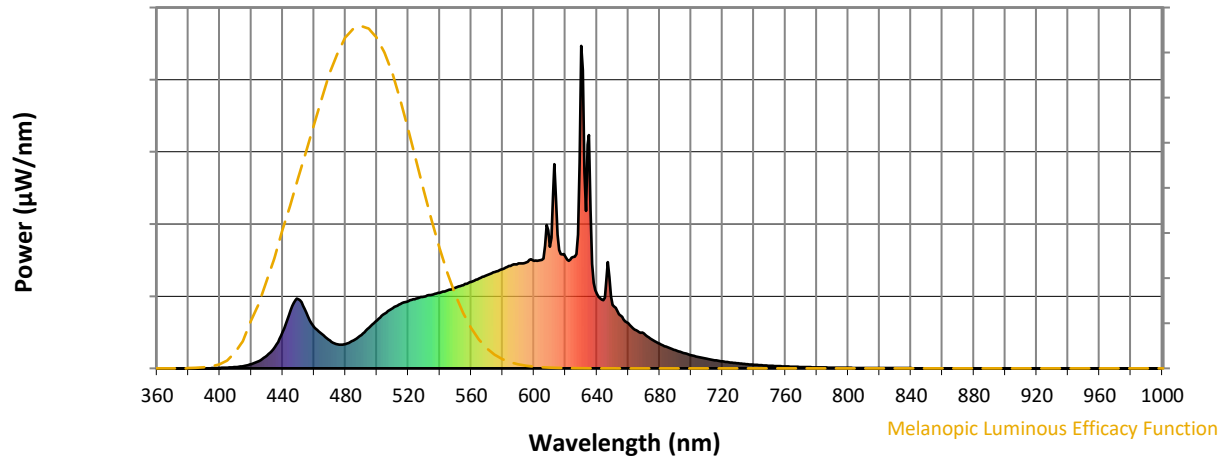
**Scotopic Lumens: NR**

**S/P: 1.42**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	104	NR	620	345	NR	750	8	NR	880	0	NR
365	0	NR	495	126	NR	625	345	NR	755	7	NR	885	0	NR
370	0	NR	500	149	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	170	NR	635	724	NR	765	5	NR	895	0	NR
380	0	NR	510	186	NR	640	231	NR	770	4	NR	900	0	NR
385	0	NR	515	200	NR	645	219	NR	775	4	NR	905	0	NR
390	0	NR	520	208	NR	650	197	NR	780	3	NR	910	0	NR
395	1	NR	525	216	NR	655	163	NR	785	3	NR	915	0	NR
400	1	NR	530	223	NR	660	140	NR	790	2	NR	920	0	NR
405	2	NR	535	228	NR	665	118	NR	795	2	NR	925	0	NR
410	4	NR	540	235	NR	670	108	NR	800	2	NR	930	0	NR
415	7	NR	545	242	NR	675	89	NR	805	1	NR	935	0	NR
420	13	NR	550	250	NR	680	76	NR	810	1	NR	940	0	NR
425	23	NR	555	258	NR	685	66	NR	815	1	NR	945	0	NR
430	40	NR	560	268	NR	690	56	NR	820	1	NR	950	0	NR
435	66	NR	565	279	NR	695	48	NR	825	1	NR	955	0	NR
440	113	NR	570	288	NR	700	41	NR	830	1	NR	960	0	NR
445	181	NR	575	299	NR	705	35	NR	835	1	NR	965	0	NR
450	215	NR	580	308	NR	710	30	NR	840	1	NR	970	0	NR
455	173	NR	585	318	NR	715	25	NR	845	0	NR	975	0	NR
460	128	NR	590	325	NR	720	22	NR	850	0	NR	980	0	NR
465	106	NR	595	328	NR	725	18	NR	855	0	NR	985	0	NR
470	86	NR	600	333	NR	730	16	NR	860	0	NR	990	0	NR
475	74	NR	605	336	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	377	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	415	NR	745	10	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-9

Melanopic Flux vs. Wavelength



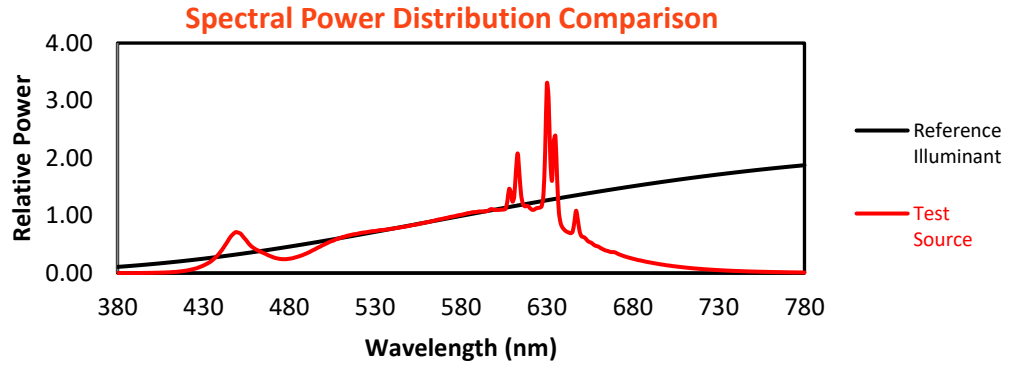
Melanopic Lumens: NR

M/P: 2.75

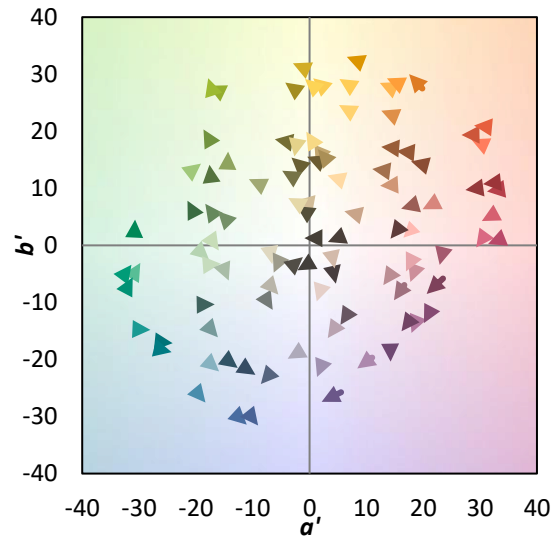
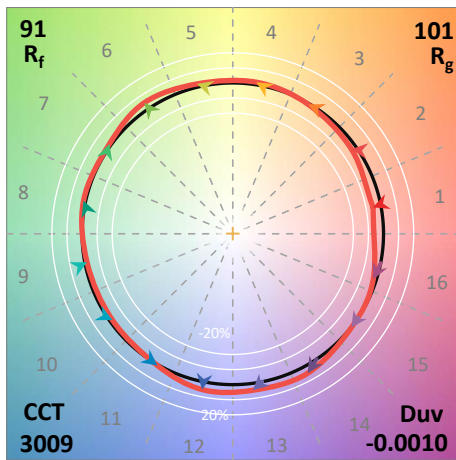
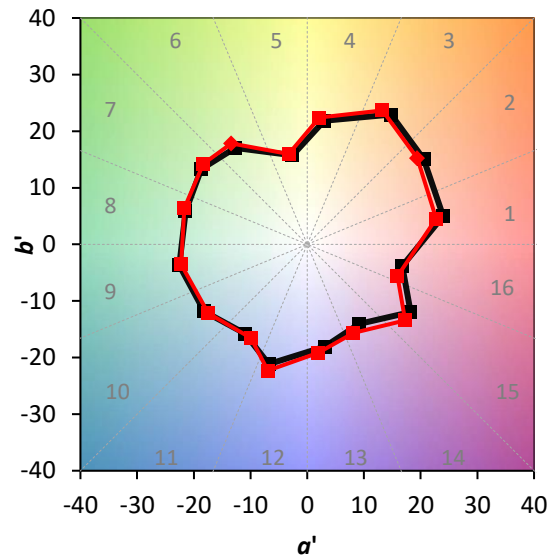
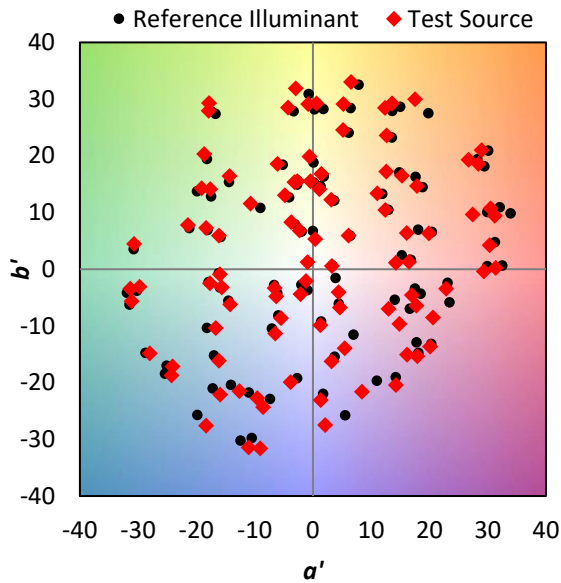
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	104	NR	620	345	NR	750	8	NR	880	0	NR
365	0	NR	495	126	NR	625	345	NR	755	7	NR	885	0	NR
370	0	NR	500	149	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	170	NR	635	724	NR	765	5	NR	895	0	NR
380	0	NR	510	186	NR	640	231	NR	770	4	NR	900	0	NR
385	0	NR	515	200	NR	645	219	NR	775	4	NR	905	0	NR
390	0	NR	520	208	NR	650	197	NR	780	3	NR	910	0	NR
395	1	NR	525	216	NR	655	163	NR	785	3	NR	915	0	NR
400	1	NR	530	223	NR	660	140	NR	790	2	NR	920	0	NR
405	2	NR	535	228	NR	665	118	NR	795	2	NR	925	0	NR
410	4	NR	540	235	NR	670	108	NR	800	2	NR	930	0	NR
415	7	NR	545	242	NR	675	89	NR	805	1	NR	935	0	NR
420	13	NR	550	250	NR	680	76	NR	810	1	NR	940	0	NR
425	23	NR	555	258	NR	685	66	NR	815	1	NR	945	0	NR
430	40	NR	560	268	NR	690	56	NR	820	1	NR	950	0	NR
435	66	NR	565	279	NR	695	48	NR	825	1	NR	955	0	NR
440	113	NR	570	288	NR	700	41	NR	830	1	NR	960	0	NR
445	181	NR	575	299	NR	705	35	NR	835	1	NR	965	0	NR
450	215	NR	580	308	NR	710	30	NR	840	1	NR	970	0	NR
455	173	NR	585	318	NR	715	25	NR	845	0	NR	975	0	NR
460	128	NR	590	325	NR	720	22	NR	850	0	NR	980	0	NR
465	106	NR	595	328	NR	725	18	NR	855	0	NR	985	0	NR
470	86	NR	600	333	NR	730	16	NR	860	0	NR	990	0	NR
475	74	NR	605	336	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	377	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	415	NR	745	10	NR	875	0	NR			

**Summary**

$R_f = 91$   
 $R_g = 101.1$   
 $CIE R_a = 93.2$   
 $R_9 = 57.2$

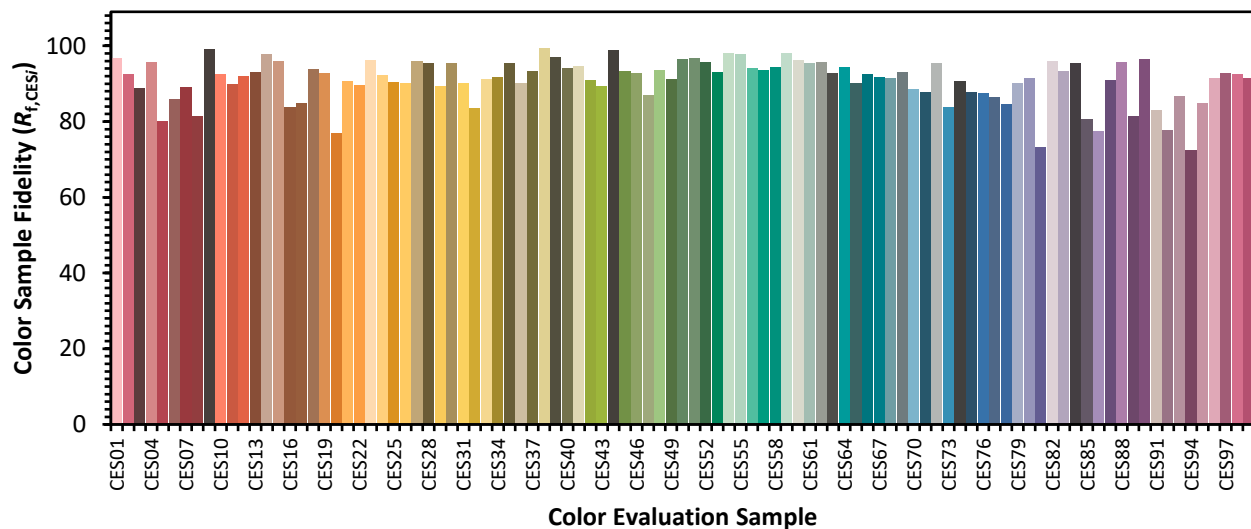


**Color Vector Graphics**

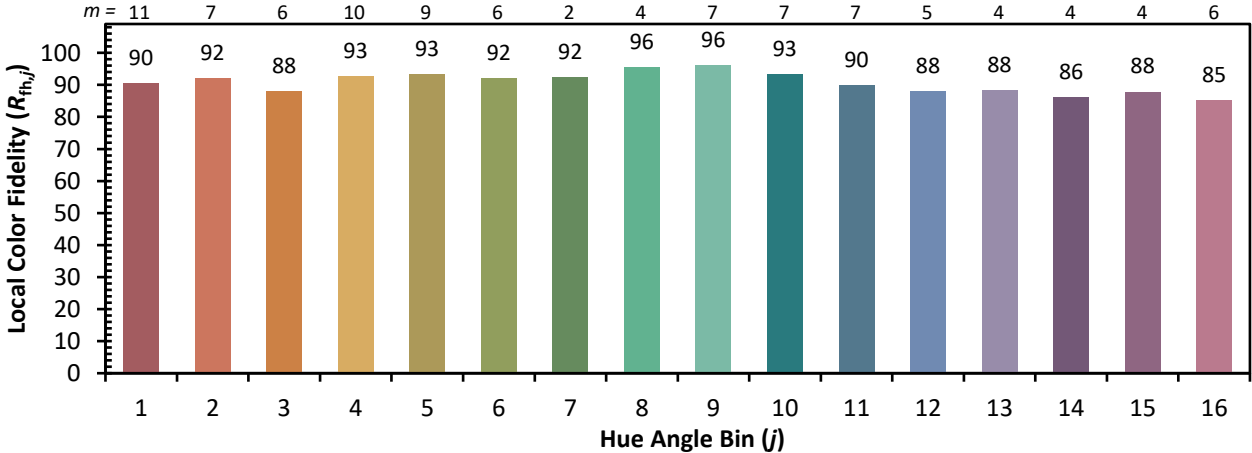
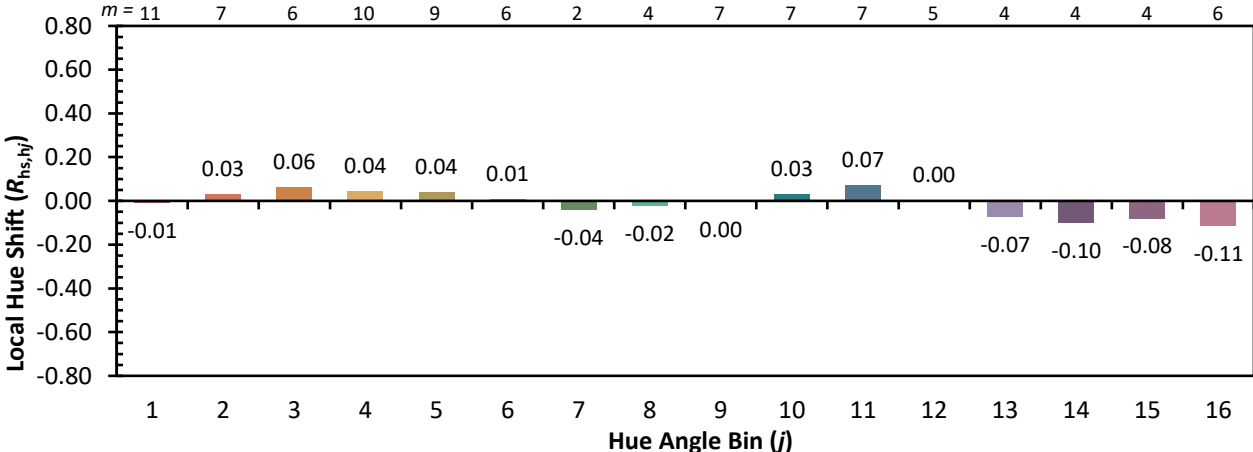
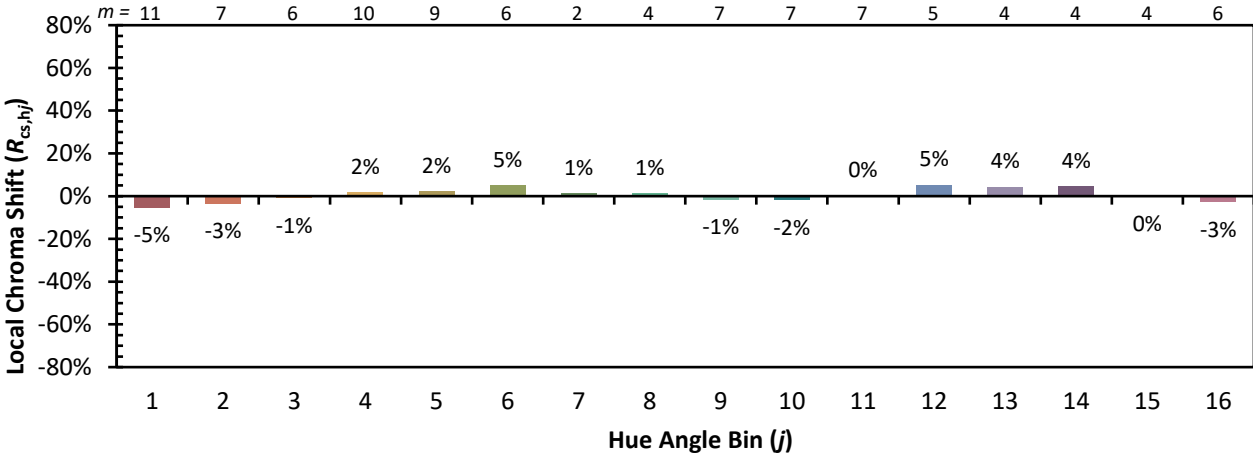


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

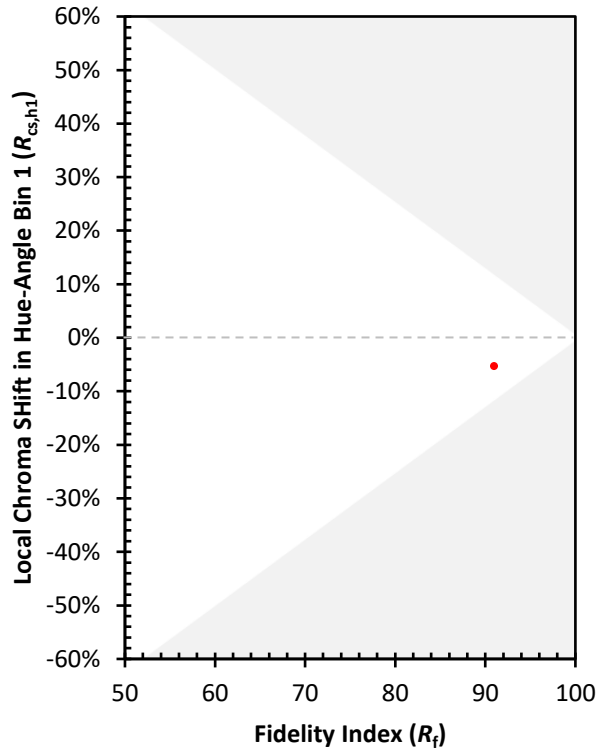
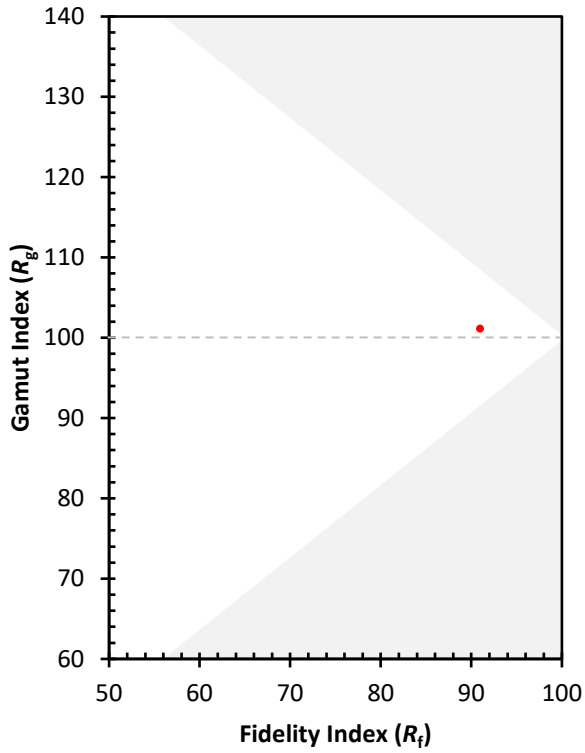
CES01 = 86	CES26 = 90	CES51 = 97	CES76 = 87
CES02 = 63	CES27 = 96	CES52 = 96	CES77 = 86
CES03 = 32	CES28 = 95	CES53 = 93	CES78 = 85
CES04 = 70	CES29 = 89	CES54 = 98	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 98	CES80 = 91
CES06 = 51	CES31 = 90	CES56 = 94	CES81 = 73
CES07 = 43	CES32 = 84	CES57 = 94	CES82 = 96
CES08 = 42	CES33 = 91	CES58 = 95	CES83 = 93
CES09 = 29	CES34 = 92	CES59 = 98	CES84 = 95
CES10 = 76	CES35 = 95	CES60 = 96	CES85 = 81
CES11 = 59	CES36 = 90	CES61 = 96	CES86 = 78
CES12 = 65	CES37 = 93	CES62 = 96	CES87 = 91
CES13 = 44	CES38 = 99	CES63 = 93	CES88 = 96
CES14 = 74	CES39 = 97	CES64 = 94	CES89 = 82
CES15 = 72	CES40 = 94	CES65 = 90	CES90 = 96
CES16 = 48	CES41 = 95	CES66 = 92	CES91 = 83
CES17 = 50	CES42 = 91	CES67 = 92	CES92 = 78
CES18 = 57	CES43 = 89	CES68 = 92	CES93 = 87
CES19 = 72	CES44 = 99	CES69 = 93	CES94 = 72
CES20 = 67	CES45 = 93	CES70 = 89	CES95 = 85
CES21 = 86	CES46 = 93	CES71 = 88	CES96 = 91
CES22 = 79	CES47 = 87	CES72 = 95	CES97 = 93
CES23 = 92	CES48 = 94	CES73 = 84	CES98 = 93
CES24 = 91	CES49 = 91	CES74 = 91	CES99 = 92
CES25 = 72	CES50 = 97	CES75 = 88	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)