

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: P981634

Luminaire Tested: **4WNLED-LD4-32SL-F-UNV-L840-CD1-U**

Issue Date: 04/17/2025

Test Information

Test Method: LM-79-08
Report Number: P981634
Test Lab: INNOVATION CENTER(P3)
Issue Date: 04/17/2025
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 4WNLED-LD4-32SL-F-UNV-L840-CD1-U
Description: METALUX 4FT WNLED WRAPAROUND 3200LM PACKAGE 80CRI 4000K TROFFER
Light Source: 4000K CCT, 80+ CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

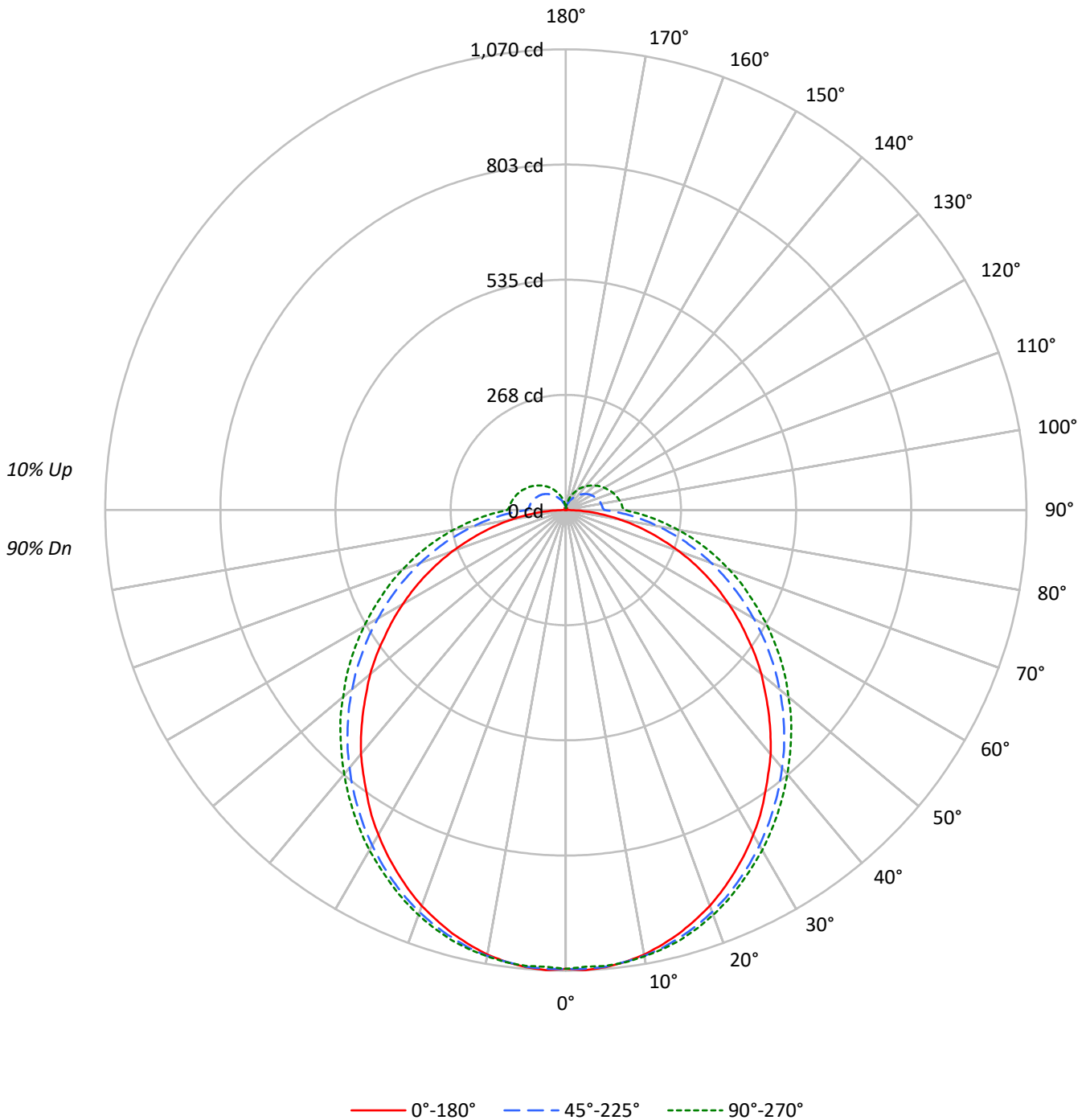
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3637.9 lumens
Efficiency: N/A
Efficacy: 130.9 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.27 / 1.38
Luminous Opening: Rectangular w/ Sides (W: 0.75' x L: 4' x H: 0.17')
CIE Type: Direct

Input Watts (W): 27.8
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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Luminous Intensity Polar Plot





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

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3823	3823	3823
5°	3824	3773	3754
10°	3792	3709	3690
15°	3740	3633	3622
20°	3680	3553	3535
25°	3603	3460	3441
30°	3524	3364	3351
35°	3431	3264	3255
40°	3350	3166	3162
45°	3245	3066	3073
50°	3155	2958	2980
55°	3035	2849	2898
60°	2925	2733	2805
65°	2797	2619	2711
70°	2634	2496	2628
75°	2421	2362	2535
80°	2153	2188	2419
85°	1695	1998	2299



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	101.1	2.8
10°-20°	289.3	8.0
20°-30°	436.0	12.0
30°-40°	524.0	14.4
40°-50°	548.2	15.1
50°-60°	510.2	14.0
60°-70°	420.8	11.6
70°-80°	295.7	8.1
80°-90°	156.1	4.3
90°-100°	84.5	2.3
100°-110°	76.7	2.1
110°-120°	65.7	1.8
120°-130°	52.0	1.4
130°-140°	37.1	1.0
140°-150°	23.2	0.6
150°-160°	12.1	0.3
160°-170°	4.5	0.1
170°-180°	0.8	0.0
0°-30°	826.4	22.7
0°-40°	1350.4	37.1
0°-60°	2408.8	66.2
0°-90°	3281.3	90.2
90°-120°	226.9	6.2
90°-150°	339.2	9.3
90°-180°	357.0	9.8
0°-180°	3637.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1066	1066	1066	1066	1066	
5°	1066	1060	1065	1065	1063	101
15°	1018	1016	1027	1033	1033	287
25°	928	933	950	958	959	428
35°	806	818	843	856	859	505
45°	666	687	717	734	740	514
55°	514	541	577	600	610	461
65°	359	390	432	460	472	355
75°	202	240	289	322	335	214
85°	61	102	152	184	198	64
90°	2	42	89	124	136	5
95°	0	38	85	119	131	0
105°	1	36	80	110	122	1
115°	2	34	73	100	110	2
125°	3	29	64	88	96	3
135°	4	23	52	74	80	3
145°	4	18	38	56	63	3
155°	5	14	26	38	44	2
165°	6	10	15	20	24	2
175°	6	6	7	7	8	1
180°	5	5	5	5	5	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6
2.5°	1069.7	1068.7	1066.7	1064.6	1063.6	1063.6	1062.6	1062.6	1062.6	1065.6	1066.7
5°	1065.6	1064.6	1062.6	1061.6	1060.6	1059.6	1059.6	1059.6	1060.6	1063.6	1064.6
7.5°	1058.5	1057.5	1055.5	1054.5	1053.5	1053.5	1053.5	1053.5	1054.5	1057.5	1058.5
10°	1048.4	1047.4	1045.4	1044.4	1044.4	1044.4	1044.4	1044.4	1046.4	1049.4	1051.5
12.5°	1034.2	1033.2	1032.2	1032.2	1031.2	1031.2	1032.2	1032.2	1034.2	1038.3	1041.3
15°	1018.0	1017.0	1016.0	1016.0	1016.0	1016.0	1017.0	1018.0	1021.0	1025.1	1027.1
17.5°	998.7	998.7	997.7	998.7	998.7	998.7	999.7	1001.8	1003.8	1008.9	1011.9
20°	978.4	977.4	976.4	978.4	978.4	978.4	979.5	982.5	985.5	990.6	993.7
22.5°	954.1	954.1	954.1	955.1	956.1	957.2	958.2	961.2	965.3	969.3	973.4
25°	927.8	927.8	927.8	929.8	931.8	932.8	933.8	936.9	941.9	946.0	950.1
27.5°	900.4	900.4	900.4	901.4	904.4	905.4	907.5	911.5	916.6	920.7	925.7
30°	871.0	871.0	872.0	874.0	877.1	878.1	880.1	884.2	890.2	894.3	899.4
32.5°	840.6	839.5	840.6	843.6	846.6	849.7	850.7	855.8	861.8	866.9	872.0
35°	806.1	807.1	809.1	812.2	815.2	818.2	820.3	825.3	832.4	837.5	842.6
37.5°	772.6	773.6	775.7	779.7	783.8	786.8	789.9	793.9	802.0	807.1	813.2
40°	740.2	738.1	742.2	746.3	751.3	754.4	757.4	762.5	770.6	775.7	781.7
42.5°	703.7	703.7	706.7	712.8	717.9	720.9	723.9	730.0	738.1	744.2	750.3
45°	666.2	667.2	671.2	677.3	683.4	687.4	689.5	696.6	704.7	710.8	716.9
47.5°	628.6	630.7	634.7	641.8	647.9	652.0	654.0	662.1	670.2	677.3	683.4
50°	593.2	593.2	598.2	604.3	611.4	615.5	618.5	626.6	634.7	641.8	647.9
52.5°	554.6	554.6	559.7	567.8	573.9	579.0	582.0	591.1	599.2	606.3	613.4
55°	514.1	516.1	521.2	530.3	537.4	541.4	545.5	554.6	562.7	570.8	576.9
57.5°	476.5	477.6	483.6	491.8	499.9	503.9	509.0	517.1	526.2	535.4	541.4
60°	437.0	439.0	444.1	454.2	462.4	466.4	470.5	480.6	489.7	497.8	503.9
62.5°	398.5	399.5	406.6	415.7	423.8	428.9	434.0	443.1	452.2	460.3	468.4
65°	358.9	361.0	367.0	377.2	385.3	390.4	394.4	406.6	414.7	423.8	431.9
67.5°	319.4	321.4	328.5	338.7	347.8	352.8	356.9	368.1	378.2	387.3	395.4
70°	279.8	281.9	290.0	300.1	309.3	314.3	320.4	330.5	341.7	350.8	359.9
72.5°	239.3	242.3	249.4	260.6	272.7	277.8	282.9	295.1	305.2	315.3	323.4
75°	201.8	204.8	212.9	223.1	233.2	240.3	244.4	256.5	269.7	279.8	289.0
77.5°	164.3	167.3	175.4	186.6	197.7	203.8	209.9	221.0	232.2	242.3	252.5
80°	128.8	131.8	140.9	151.1	162.2	169.3	175.4	187.6	198.7	208.9	218.0
82.5°	94.3	97.3	106.5	117.6	129.8	135.9	142.0	153.1	165.3	175.4	185.6
85°	60.8	65.9	74.0	84.2	96.3	102.4	108.5	120.7	131.8	142.0	152.1
87.5°	29.4	33.5	42.6	53.7	64.9	72.0	77.1	88.2	100.4	109.5	119.6
90°	2.0	6.1	14.2	24.3	35.5	41.6	47.7	58.8	70.0	80.1	89.2
92.5°	0.0	4.1	12.2	22.3	33.5	39.5	44.6	55.8	66.9	77.1	86.2
95°	0.0	4.1	12.2	22.3	33.5	38.5	44.6	55.8	65.9	76.0	85.2
97.5°	1.0	4.1	12.2	22.3	32.4	38.5	43.6	54.8	64.9	75.0	84.2
100°	1.0	4.1	12.2	21.3	32.4	37.5	43.6	53.7	63.9	74.0	83.1
102.5°	1.0	4.1	12.2	21.3	32.4	37.5	42.6	52.7	62.9	73.0	82.1
105°	1.0	5.1	12.2	21.3	31.4	36.5	41.6	52.7	61.9	71.0	80.1
107.5°	1.0	5.1	12.2	21.3	31.4	36.5	41.6	51.7	60.8	70.0	78.1
110°	2.0	5.1	12.2	21.3	30.4	35.5	40.6	50.7	59.8	68.9	77.1



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	2.0	5.1	12.2	20.3	30.4	34.5	39.5	49.7	58.8	66.9	75.0
115°	2.0	5.1	12.2	20.3	29.4	34.5	38.5	48.7	56.8	65.9	73.0
117.5°	2.0	6.1	12.2	19.3	28.4	33.5	37.5	46.6	55.8	63.9	71.0
120°	3.0	6.1	11.2	19.3	27.4	32.4	36.5	45.6	53.7	61.9	68.9
122.5°	3.0	6.1	11.2	18.3	26.4	30.4	35.5	43.6	51.7	59.8	66.9
125°	3.0	6.1	11.2	17.2	25.3	29.4	33.5	41.6	49.7	56.8	63.9
127.5°	3.0	6.1	11.2	17.2	24.3	27.4	31.4	39.5	46.6	53.7	60.8
130°	3.0	6.1	10.1	16.2	22.3	26.4	29.4	37.5	43.6	50.7	57.8
132.5°	3.0	6.1	10.1	15.2	21.3	25.3	28.4	35.5	41.6	47.7	54.8
135°	4.1	6.1	10.1	15.2	20.3	23.3	26.4	32.4	38.5	44.6	51.7
137.5°	4.1	6.1	9.1	14.2	19.3	22.3	25.3	30.4	36.5	42.6	47.7
140°	4.1	6.1	9.1	13.2	18.3	21.3	23.3	28.4	34.5	39.5	44.6
142.5°	4.1	6.1	9.1	13.2	17.2	19.3	22.3	26.4	31.4	36.5	41.6
145°	4.1	6.1	9.1	12.2	16.2	18.3	20.3	25.3	29.4	33.5	37.5
147.5°	5.1	6.1	9.1	12.2	15.2	17.2	19.3	23.3	27.4	30.4	34.5
150°	5.1	6.1	8.1	11.2	14.2	16.2	18.3	21.3	25.3	28.4	31.4
152.5°	5.1	6.1	8.1	11.2	14.2	15.2	16.2	20.3	23.3	26.4	28.4
155°	5.1	6.1	8.1	10.1	13.2	14.2	15.2	18.3	21.3	23.3	26.4
157.5°	5.1	6.1	8.1	10.1	12.2	13.2	14.2	16.2	19.3	21.3	23.3
160°	5.1	6.1	8.1	9.1	11.2	12.2	13.2	15.2	17.2	19.3	20.3
162.5°	6.1	6.1	7.1	9.1	10.1	11.2	12.2	13.2	15.2	16.2	18.3
165°	6.1	6.1	7.1	8.1	9.1	10.1	10.1	12.2	13.2	14.2	15.2
167.5°	6.1	6.1	7.1	8.1	8.1	9.1	9.1	10.1	11.2	12.2	13.2
170°	6.1	6.1	6.1	7.1	8.1	8.1	8.1	9.1	10.1	10.1	11.2
172.5°	6.1	6.1	6.1	6.1	7.1	7.1	7.1	8.1	8.1	9.1	9.1
175°	6.1	6.1	6.1	6.1	6.1	6.1	7.1	7.1	7.1	7.1	7.1
177.5°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
180°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6	1065.6
2.5°	1067.7	1069.7	1068.7	1066.7	1066.7	1066.7	1065.6	1063.6	1062.6	1061.6
5°	1065.6	1067.7	1065.6	1064.6	1064.6	1064.6	1064.6	1063.6	1062.6	1062.6
7.5°	1060.6	1062.6	1061.6	1060.6	1060.6	1060.6	1060.6	1059.6	1059.6	1059.6
10°	1053.5	1056.5	1055.5	1054.5	1053.5	1054.5	1053.5	1053.5	1052.5	1052.5
12.5°	1042.3	1045.4	1045.4	1044.4	1044.4	1044.4	1044.4	1044.4	1043.3	1044.4
15°	1030.2	1033.2	1033.2	1033.2	1033.2	1033.2	1033.2	1033.2	1032.2	1033.2
17.5°	1014.9	1018.0	1019.0	1018.0	1019.0	1019.0	1019.0	1018.0	1018.0	1018.0
20°	996.7	999.7	1000.8	999.7	999.7	999.7	1000.8	1000.8	1000.8	1000.8
22.5°	976.4	979.5	979.5	979.5	980.5	980.5	980.5	981.5	981.5	981.5
25°	953.1	956.1	956.1	957.2	958.2	958.2	959.2	959.2	959.2	959.2
27.5°	930.8	932.8	932.8	933.8	934.8	934.8	934.8	934.8	936.9	935.9
30°	904.4	906.5	907.5	909.5	909.5	910.5	910.5	911.5	912.5	912.5
32.5°	877.1	879.1	880.1	882.1	883.1	884.2	884.2	886.2	887.2	886.2
35°	847.6	849.7	852.7	853.7	855.8	855.8	857.8	857.8	859.8	858.8
37.5°	818.2	820.3	822.3	824.3	826.4	827.4	828.4	830.4	832.4	830.4
40°	786.8	789.9	792.9	794.9	795.9	798.0	798.0	801.0	803.0	801.0
42.5°	755.4	758.4	761.5	765.5	765.5	766.5	768.6	771.6	771.6	770.6
45°	722.9	725.0	730.0	733.1	734.1	735.1	737.1	738.1	740.2	740.2
47.5°	688.5	692.5	697.6	700.6	701.6	702.7	704.7	706.7	709.8	709.8
50°	654.0	659.1	661.1	666.2	668.2	669.2	672.2	674.3	676.3	675.3
52.5°	618.5	622.6	628.6	632.7	634.7	635.7	638.8	641.8	642.8	643.8
55°	583.0	588.1	594.2	598.2	600.2	602.3	604.3	606.3	609.4	610.4
57.5°	547.5	552.6	559.7	563.7	565.8	566.8	570.8	573.9	574.9	575.9
60°	511.0	517.1	524.2	528.3	530.3	533.3	534.3	539.4	540.4	541.4
62.5°	475.5	481.6	488.7	493.8	495.8	497.8	501.9	504.9	507.0	506.0
65°	440.0	446.1	453.2	458.3	460.3	463.4	466.4	469.5	471.5	471.5
67.5°	403.5	410.6	418.8	423.8	425.9	428.9	431.9	434.0	437.0	439.0
70°	368.1	376.2	383.3	388.3	390.4	393.4	396.4	401.5	401.5	403.5
72.5°	332.6	340.7	347.8	354.9	356.9	358.9	363.0	366.0	367.0	369.1
75°	298.1	306.2	313.3	318.4	322.4	324.5	328.5	330.5	332.6	334.6
77.5°	261.6	271.7	278.8	284.9	288.0	290.0	294.0	297.1	299.1	300.1
80°	227.1	235.2	242.3	248.4	251.5	254.5	258.6	260.6	263.6	264.6
82.5°	193.7	201.8	208.9	213.9	218.0	220.0	224.1	228.1	228.1	230.2
85°	160.2	168.3	175.4	181.5	184.5	187.6	190.6	194.7	195.7	197.7
87.5°	127.8	136.9	143.0	150.1	152.1	155.1	160.2	163.2	165.3	165.3
90°	98.4	106.5	113.6	120.7	123.7	125.7	130.8	133.8	135.9	135.9
92.5°	95.3	103.4	110.5	117.6	119.6	122.7	126.7	129.8	131.8	131.8
95°	94.3	102.4	109.5	115.6	118.6	120.7	125.7	127.8	129.8	130.8
97.5°	93.3	101.4	108.5	114.6	116.6	119.6	123.7	126.7	128.8	128.8
100°	91.3	99.4	106.5	112.5	115.6	117.6	121.7	124.7	125.7	126.7
102.5°	90.2	97.3	104.4	110.5	113.6	115.6	119.6	122.7	123.7	124.7
105°	88.2	96.3	102.4	108.5	110.5	113.6	116.6	119.6	121.7	121.7
107.5°	86.2	94.3	100.4	106.5	108.5	110.5	114.6	117.6	118.6	119.6
110°	84.2	92.3	98.4	103.4	106.5	108.5	111.5	114.6	115.6	116.6



TEST NUMBER: P981634

CATALOG NUMBER: 4WNLED-LD4-32SL-F-UNV-L840-CD1-U

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
112.5°	82.1	89.2	95.3	101.4	103.4	105.4	108.5	111.5	112.5	113.6
115°	80.1	87.2	93.3	98.4	100.4	102.4	105.4	108.5	109.5	110.5
117.5°	78.1	85.2	90.2	95.3	97.3	99.4	102.4	105.4	106.5	106.5
120°	76.0	82.1	88.2	92.3	94.3	96.3	99.4	101.4	103.4	103.4
122.5°	73.0	79.1	85.2	89.2	91.3	93.3	96.3	98.4	99.4	100.4
125°	71.0	77.1	82.1	86.2	88.2	90.2	92.3	94.3	95.3	96.3
127.5°	67.9	73.0	79.1	83.1	85.2	87.2	89.2	91.3	92.3	92.3
130°	63.9	70.0	75.0	80.1	82.1	83.1	86.2	87.2	88.2	88.2
132.5°	60.8	65.9	71.0	76.0	78.1	80.1	82.1	83.1	84.2	84.2
135°	56.8	61.9	66.9	72.0	74.0	76.0	78.1	79.1	80.1	80.1
137.5°	53.7	58.8	62.9	67.9	70.0	72.0	74.0	75.0	76.0	76.0
140°	49.7	53.7	58.8	63.9	65.9	66.9	70.0	71.0	72.0	72.0
142.5°	45.6	50.7	54.8	58.8	60.8	62.9	65.9	66.9	67.9	67.9
145°	42.6	46.6	49.7	53.7	55.8	57.8	60.8	62.9	62.9	62.9
147.5°	38.5	42.6	45.6	49.7	51.7	52.7	56.8	57.8	58.8	58.8
150°	35.5	38.5	41.6	44.6	46.6	48.7	51.7	53.7	53.7	53.7
152.5°	32.4	34.5	37.5	40.6	41.6	43.6	46.6	48.7	48.7	48.7
155°	28.4	31.4	33.5	35.5	37.5	38.5	41.6	43.6	43.6	43.6
157.5°	25.3	27.4	29.4	31.4	32.4	33.5	36.5	38.5	39.5	39.5
160°	22.3	24.3	25.3	27.4	28.4	29.4	30.4	33.5	34.5	34.5
162.5°	19.3	20.3	22.3	23.3	24.3	24.3	26.4	27.4	29.4	29.4
165°	16.2	17.2	18.3	19.3	20.3	20.3	21.3	23.3	24.3	24.3
167.5°	14.2	14.2	15.2	16.2	16.2	16.2	17.2	18.3	20.3	20.3
170°	11.2	12.2	12.2	12.2	13.2	13.2	13.2	14.2	15.2	16.2
172.5°	9.1	9.1	10.1	10.1	10.1	10.1	10.1	10.1	11.2	12.2
175°	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	8.1
177.5°	6.1	6.1	6.1	5.1	5.1	5.1	5.1	5.1	5.1	4.1
180°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP3-2508-516-11

Test Date: 09/05/2025

Luminaire Tested: 4WNLED-LD4-50SL-F-UNVL940-CD1-U

Data in this report applies to families of products including 4WNLED-LD4-50SL-F-UNVL940-CD1-U

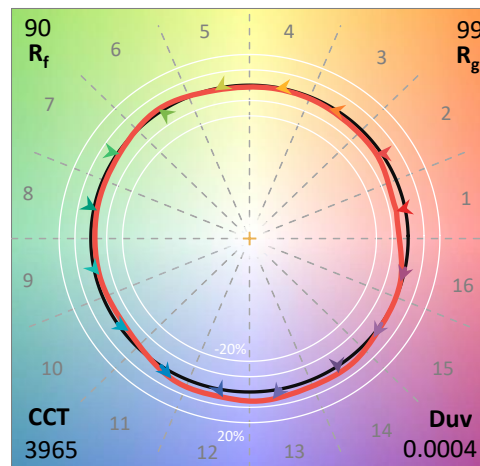
Test Information

Test Method: LM-79-2019
 Report Number: SP3-2508-516-11
 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-UNVL940-CD1-U**
 Description: 4FT WNLED 5000LM 940

Spectral Parameters

CCT (K): 3965
 CIE u': 0.2255
 CIE v': 0.5028
 Duv: 0.0004
 CIE x: 0.3823
 CIE y: 0.3788
 CIE z: 0.2389
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 578
 Purity: 28.40976
 R_f: 90.2
 R_g: 99.3

CRI (Ra):	92.3		
R1:	93.3	R9:	59.9
R2:	94.5	R10:	85.4
R3:	94.2	R11:	93.6
R4:	93.6	R12:	71.2
R5:	92.2	R13:	93.5
R6:	92.1	R14:	96.1
R7:	93.9	R15:	90.0
R8:	85.0		



Test Conditions

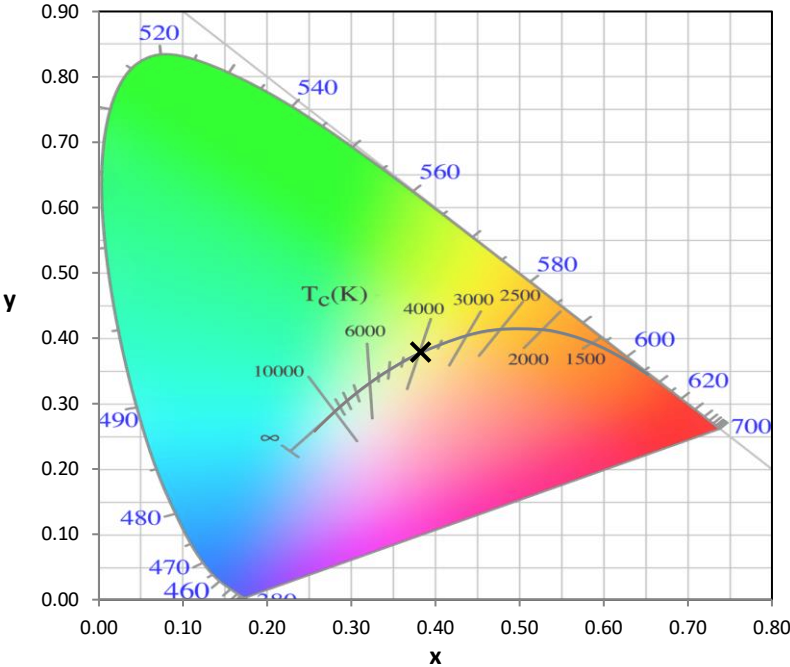
Stabilization Time: 21M
 Operation Time: 1H 21M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP3-2508-516-11

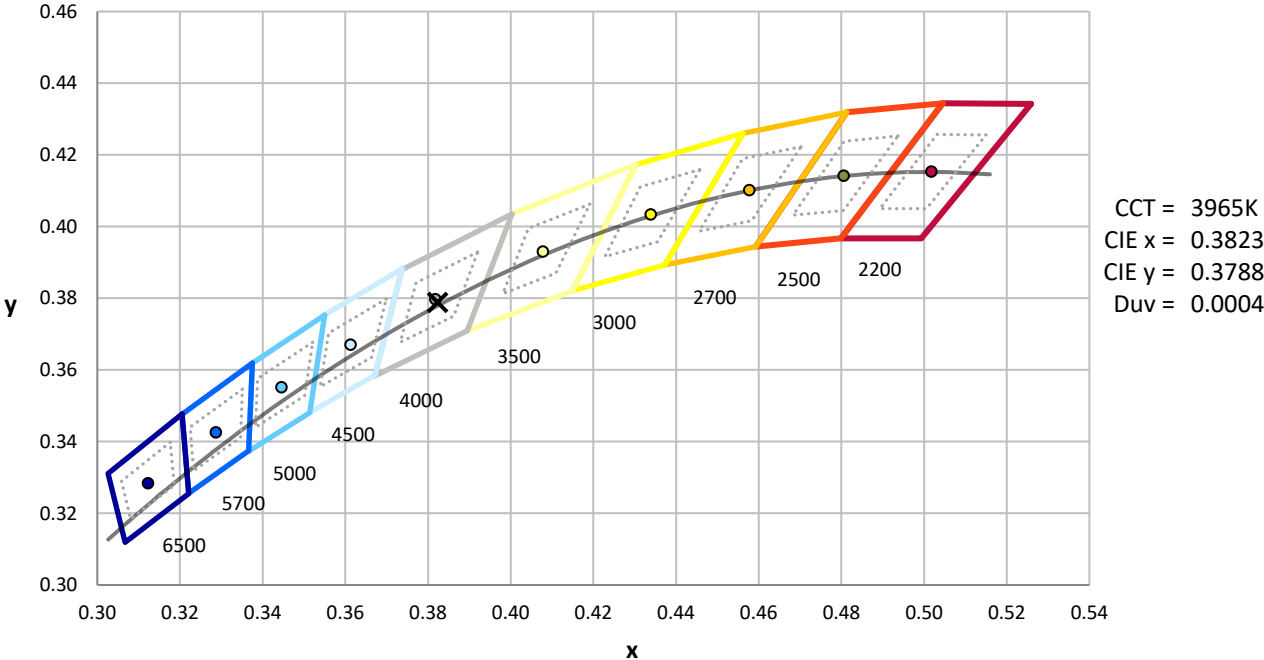
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	3M SPHERE IN02505	7/1/2025	1/1/2026
Power Meter	XITRON INXT2011006	1/20/2025	1/20/2026
AC Power Source	CHROMA 61604 IN6064A	10/22/2024	10/22/2025
DC Power Source	EYSIGHT N5770A IN0534	10/22/2024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

REPORT NUMBER: SP3-2508-516-11

CIE 1931 Chromaticity Diagram



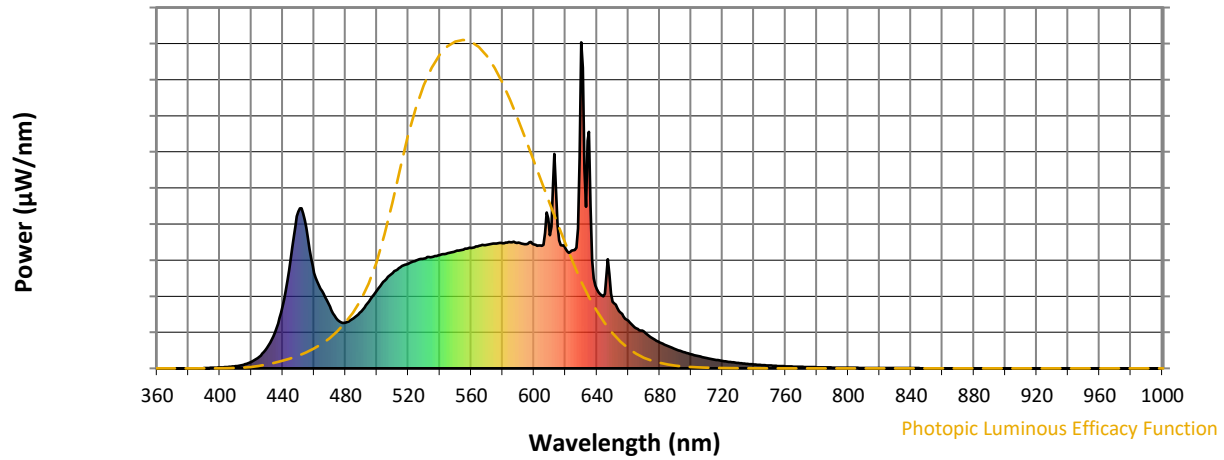
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP3-2508-516-11

Photopic Flux vs. Wavelength

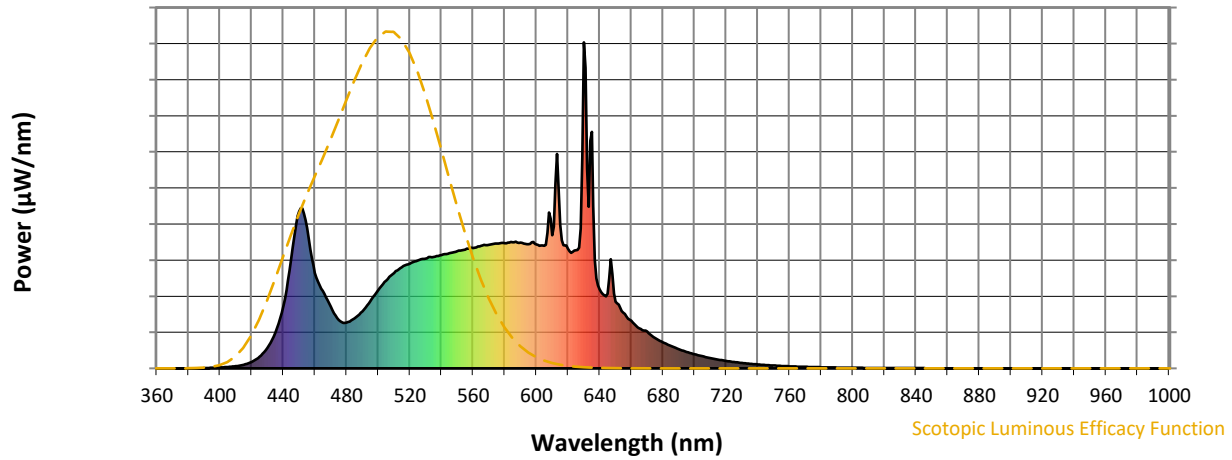


Photopic Lumens: NR

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	175	NR	620	367	NR	750	9	NR	880	0	NR
365	0	NR	495	206	NR	625	362	NR	755	7	NR	885	0	NR
370	0	NR	500	240	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	269	NR	635	725	NR	765	5	NR	895	0	NR
380	0	NR	510	292	NR	640	243	NR	770	5	NR	900	0	NR
385	0	NR	515	311	NR	645	228	NR	775	4	NR	905	0	NR
390	1	NR	520	321	NR	650	204	NR	780	3	NR	910	0	NR
395	2	NR	525	331	NR	655	171	NR	785	3	NR	915	0	NR
400	3	NR	530	337	NR	660	146	NR	790	2	NR	920	0	NR
405	4	NR	535	342	NR	665	123	NR	795	2	NR	925	0	NR
410	7	NR	540	347	NR	670	113	NR	800	2	NR	930	0	NR
415	11	NR	545	353	NR	675	93	NR	805	2	NR	935	0	NR
420	20	NR	550	359	NR	680	80	NR	810	1	NR	940	0	NR
425	35	NR	555	364	NR	685	69	NR	815	1	NR	945	0	NR
430	63	NR	560	369	NR	690	59	NR	820	1	NR	950	0	NR
435	110	NR	565	376	NR	695	51	NR	825	1	NR	955	0	NR
440	191	NR	570	379	NR	700	43	NR	830	1	NR	960	0	NR
445	335	NR	575	382	NR	705	37	NR	835	1	NR	965	0	NR
450	481	NR	580	384	NR	710	31	NR	840	1	NR	970	0	NR
455	431	NR	585	387	NR	715	27	NR	845	1	NR	975	0	NR
460	293	NR	590	386	NR	720	23	NR	850	0	NR	980	0	NR
465	237	NR	595	381	NR	725	19	NR	855	0	NR	985	0	NR
470	190	NR	600	380	NR	730	16	NR	860	0	NR	990	0	NR
475	148	NR	605	376	NR	735	14	NR	865	0	NR	995	0	NR
480	140	NR	610	408	NR	740	12	NR	870	0	NR	1000	0	NR
485	153	NR	615	439	NR	745	10	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-11

Scotopic Flux vs. Wavelength



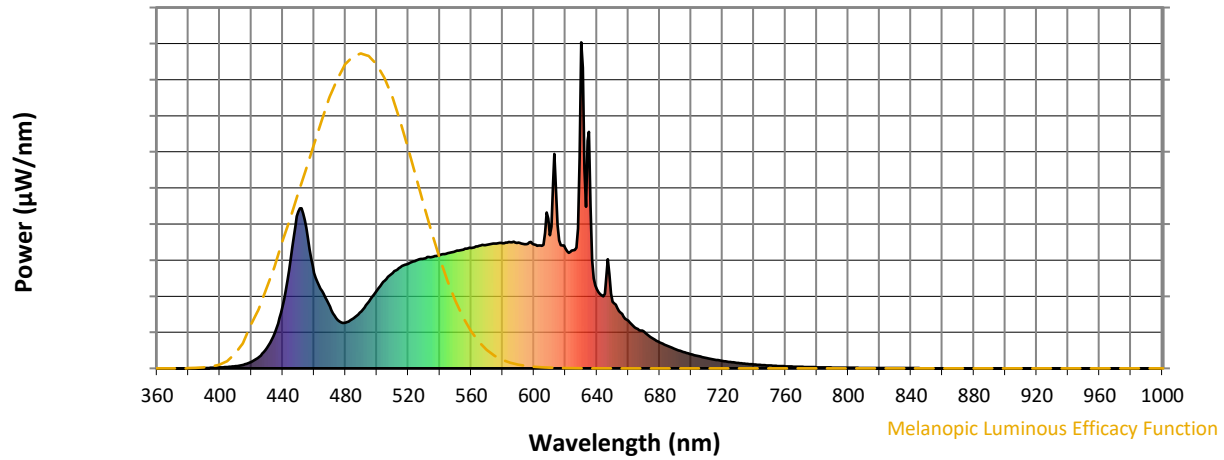
Scotopic Lumens: NR

S/P: 1.75

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	175	NR	620	367	NR	750	9	NR	880	0	NR
365	0	NR	495	206	NR	625	362	NR	755	7	NR	885	0	NR
370	0	NR	500	240	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	269	NR	635	725	NR	765	5	NR	895	0	NR
380	0	NR	510	292	NR	640	243	NR	770	5	NR	900	0	NR
385	0	NR	515	311	NR	645	228	NR	775	4	NR	905	0	NR
390	1	NR	520	321	NR	650	204	NR	780	3	NR	910	0	NR
395	2	NR	525	331	NR	655	171	NR	785	3	NR	915	0	NR
400	3	NR	530	337	NR	660	146	NR	790	2	NR	920	0	NR
405	4	NR	535	342	NR	665	123	NR	795	2	NR	925	0	NR
410	7	NR	540	347	NR	670	113	NR	800	2	NR	930	0	NR
415	11	NR	545	353	NR	675	93	NR	805	2	NR	935	0	NR
420	20	NR	550	359	NR	680	80	NR	810	1	NR	940	0	NR
425	35	NR	555	364	NR	685	69	NR	815	1	NR	945	0	NR
430	63	NR	560	369	NR	690	59	NR	820	1	NR	950	0	NR
435	110	NR	565	376	NR	695	51	NR	825	1	NR	955	0	NR
440	191	NR	570	379	NR	700	43	NR	830	1	NR	960	0	NR
445	335	NR	575	382	NR	705	37	NR	835	1	NR	965	0	NR
450	481	NR	580	384	NR	710	31	NR	840	1	NR	970	0	NR
455	431	NR	585	387	NR	715	27	NR	845	1	NR	975	0	NR
460	293	NR	590	386	NR	720	23	NR	850	0	NR	980	0	NR
465	237	NR	595	381	NR	725	19	NR	855	0	NR	985	0	NR
470	190	NR	600	380	NR	730	16	NR	860	0	NR	990	0	NR
475	148	NR	605	376	NR	735	14	NR	865	0	NR	995	0	NR
480	140	NR	610	408	NR	740	12	NR	870	0	NR	1000	0	NR
485	153	NR	615	439	NR	745	10	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-11

Melanopic Flux vs. Wavelength



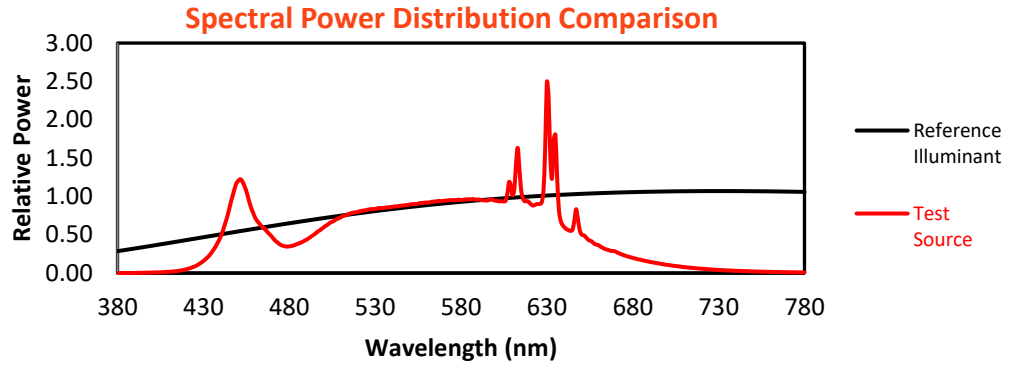
Melanopic Lumens: NR

M/P: 3.62

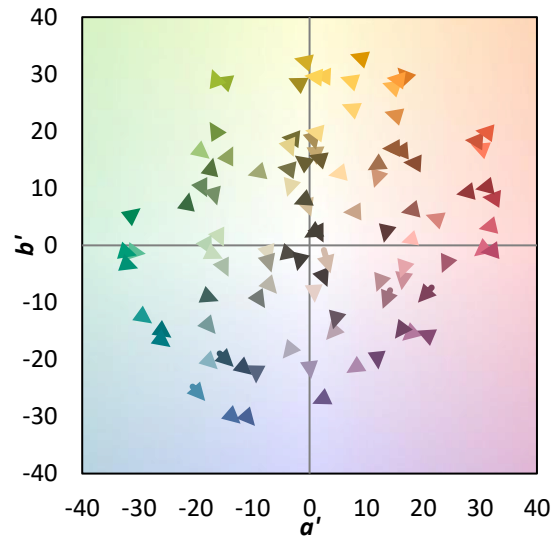
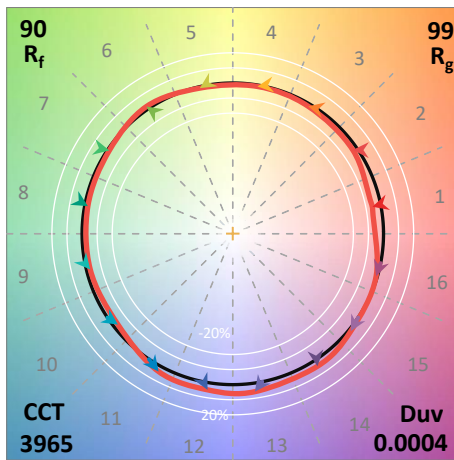
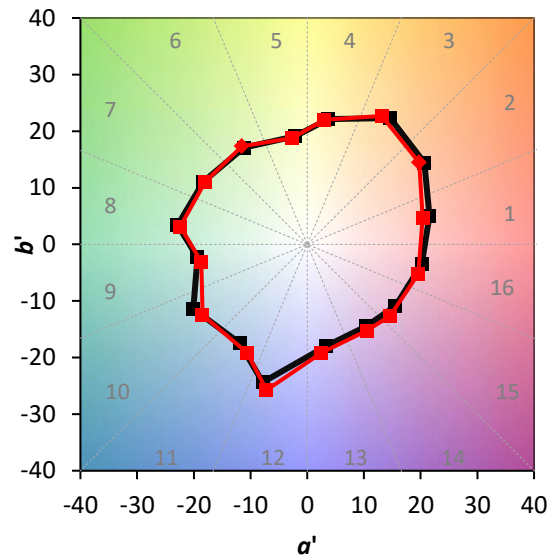
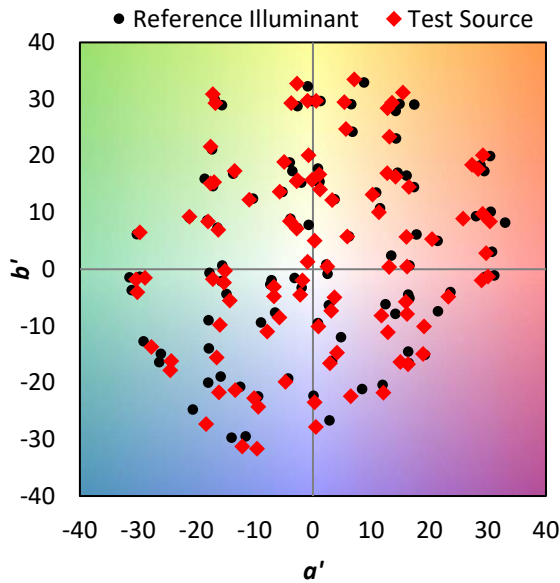
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	175	NR	620	367	NR	750	9	NR	880	0	NR
365	0	NR	495	206	NR	625	362	NR	755	7	NR	885	0	NR
370	0	NR	500	240	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	269	NR	635	725	NR	765	5	NR	895	0	NR
380	0	NR	510	292	NR	640	243	NR	770	5	NR	900	0	NR
385	0	NR	515	311	NR	645	228	NR	775	4	NR	905	0	NR
390	1	NR	520	321	NR	650	204	NR	780	3	NR	910	0	NR
395	2	NR	525	331	NR	655	171	NR	785	3	NR	915	0	NR
400	3	NR	530	337	NR	660	146	NR	790	2	NR	920	0	NR
405	4	NR	535	342	NR	665	123	NR	795	2	NR	925	0	NR
410	7	NR	540	347	NR	670	113	NR	800	2	NR	930	0	NR
415	11	NR	545	353	NR	675	93	NR	805	2	NR	935	0	NR
420	20	NR	550	359	NR	680	80	NR	810	1	NR	940	0	NR
425	35	NR	555	364	NR	685	69	NR	815	1	NR	945	0	NR
430	63	NR	560	369	NR	690	59	NR	820	1	NR	950	0	NR
435	110	NR	565	376	NR	695	51	NR	825	1	NR	955	0	NR
440	191	NR	570	379	NR	700	43	NR	830	1	NR	960	0	NR
445	335	NR	575	382	NR	705	37	NR	835	1	NR	965	0	NR
450	481	NR	580	384	NR	710	31	NR	840	1	NR	970	0	NR
455	431	NR	585	387	NR	715	27	NR	845	1	NR	975	0	NR
460	293	NR	590	386	NR	720	23	NR	850	0	NR	980	0	NR
465	237	NR	595	381	NR	725	19	NR	855	0	NR	985	0	NR
470	190	NR	600	380	NR	730	16	NR	860	0	NR	990	0	NR
475	148	NR	605	376	NR	735	14	NR	865	0	NR	995	0	NR
480	140	NR	610	408	NR	740	12	NR	870	0	NR	1000	0	NR
485	153	NR	615	439	NR	745	10	NR	875	0	NR			

Summary

$R_f = 90.2$
 $R_g = 99.3$
 $CIE R_a = 92.3$
 $R_9 = 59.9$

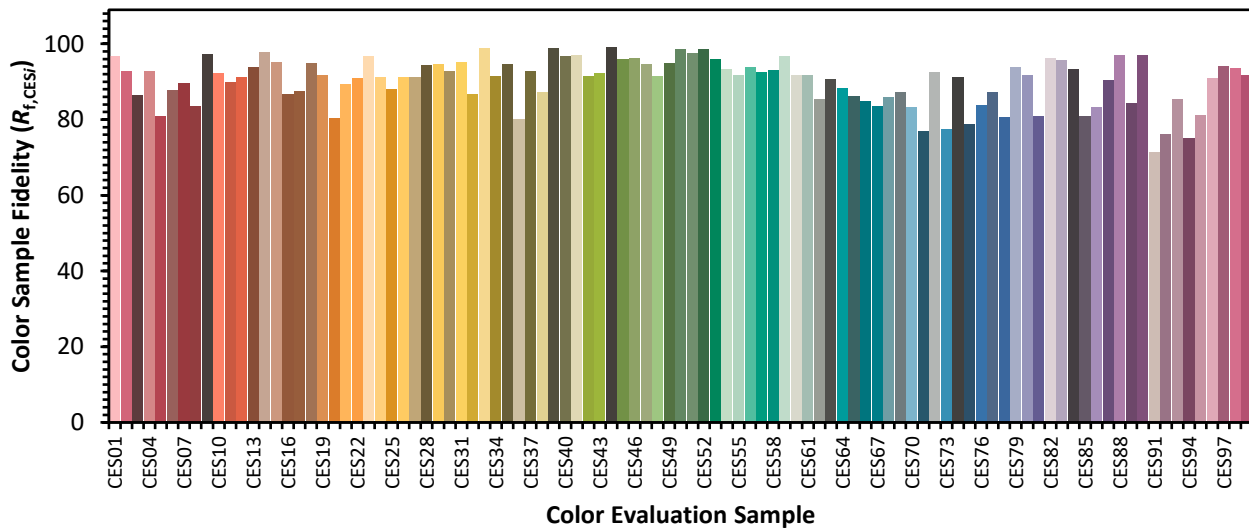


Color Vector Graphics

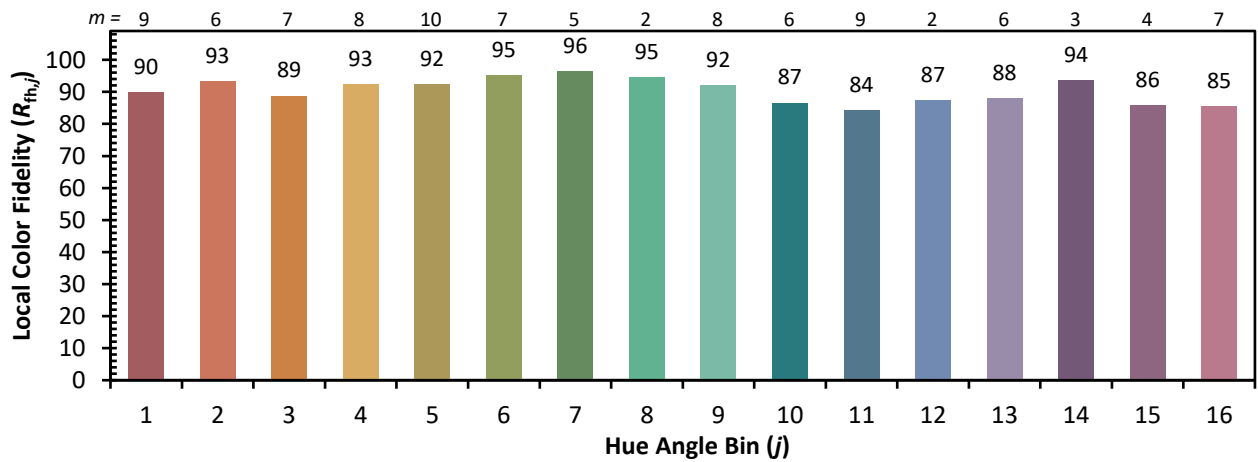
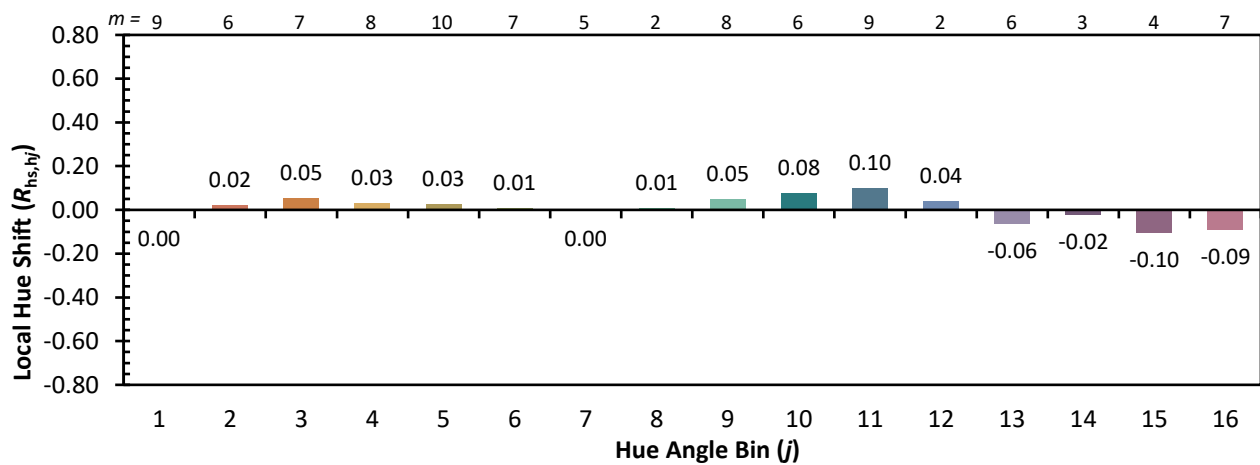
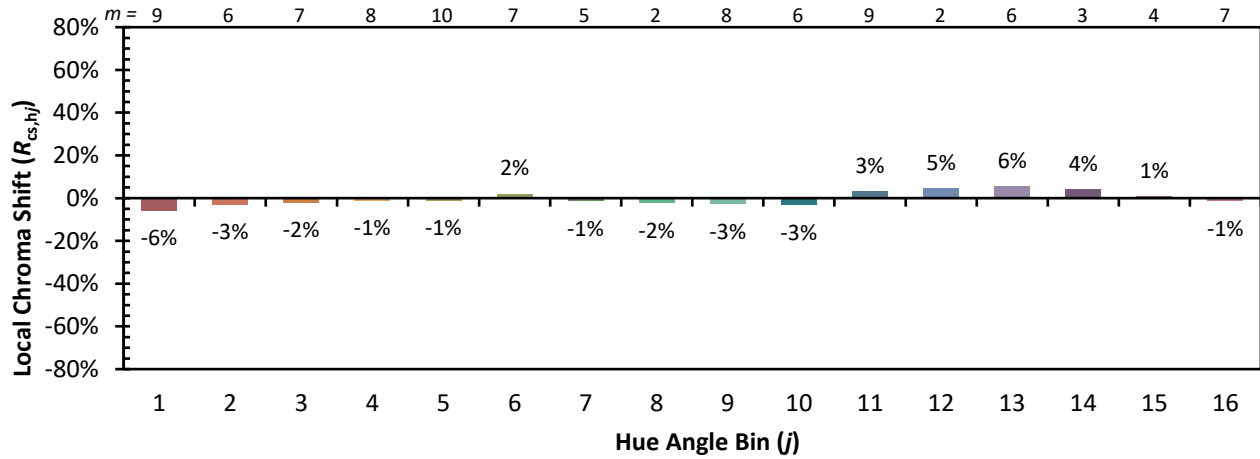


Individual Sample Fidelity Index ($R_{f,i}$)

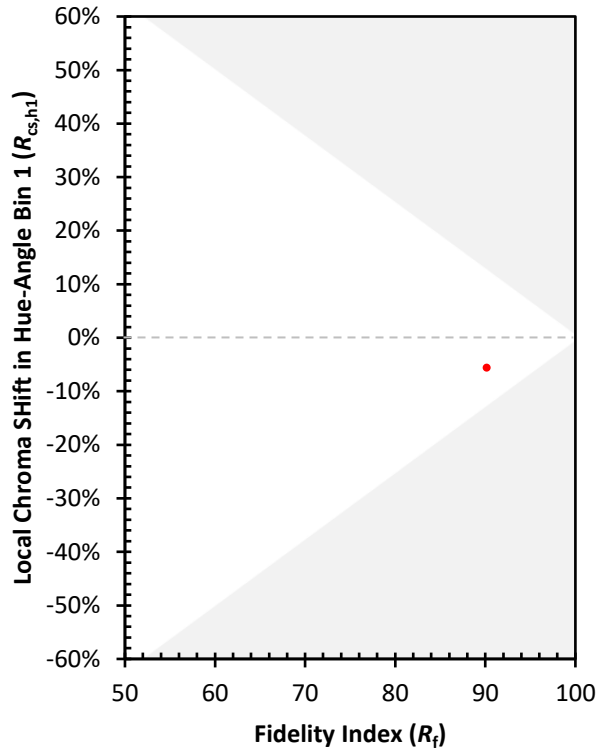
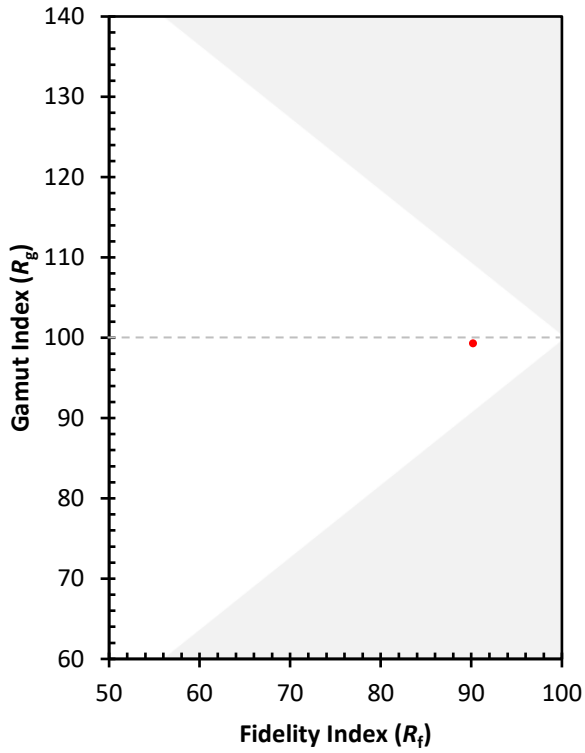
CES01 = 86	CES26 = 91	CES51 = 98	CES76 = 84
CES02 = 62	CES27 = 91	CES52 = 99	CES77 = 87
CES03 = 31	CES28 = 94	CES53 = 96	CES78 = 81
CES04 = 69	CES29 = 95	CES54 = 93	CES79 = 94
CES05 = 49	CES30 = 93	CES55 = 92	CES80 = 92
CES06 = 50	CES31 = 95	CES56 = 94	CES81 = 81
CES07 = 42	CES32 = 87	CES57 = 93	CES82 = 96
CES08 = 41	CES33 = 99	CES58 = 93	CES83 = 96
CES09 = 29	CES34 = 91	CES59 = 97	CES84 = 93
CES10 = 74	CES35 = 95	CES60 = 92	CES85 = 81
CES11 = 57	CES36 = 80	CES61 = 92	CES86 = 83
CES12 = 63	CES37 = 93	CES62 = 85	CES87 = 90
CES13 = 43	CES38 = 87	CES63 = 91	CES88 = 97
CES14 = 74	CES39 = 99	CES64 = 88	CES89 = 84
CES15 = 71	CES40 = 97	CES65 = 86	CES90 = 97
CES16 = 47	CES41 = 97	CES66 = 85	CES91 = 71
CES17 = 49	CES42 = 92	CES67 = 83	CES92 = 76
CES18 = 56	CES43 = 92	CES68 = 86	CES93 = 85
CES19 = 71	CES44 = 99	CES69 = 87	CES94 = 75
CES20 = 66	CES45 = 96	CES70 = 83	CES95 = 81
CES21 = 85	CES46 = 96	CES71 = 77	CES96 = 91
CES22 = 78	CES47 = 95	CES72 = 93	CES97 = 94
CES23 = 91	CES48 = 92	CES73 = 77	CES98 = 94
CES24 = 90	CES49 = 95	CES74 = 91	CES99 = 92
CES25 = 71	CES50 = 99	CES75 = 79	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)