

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: P981626

Luminaire Tested: **4WNLED-LD4-32SL-F-UNV-L830-CD1-U**

Issue Date: 04/17/2025

Test Information

Test Method: LM-79-08
Report Number: P981626
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-L830-CD1-U
Description: METALUX 4FT WNLED WRAPAROUND 3200LM PACKAGE 80CRI 3000K TROFFER
Light Source: 3000K CCT, 80+ CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

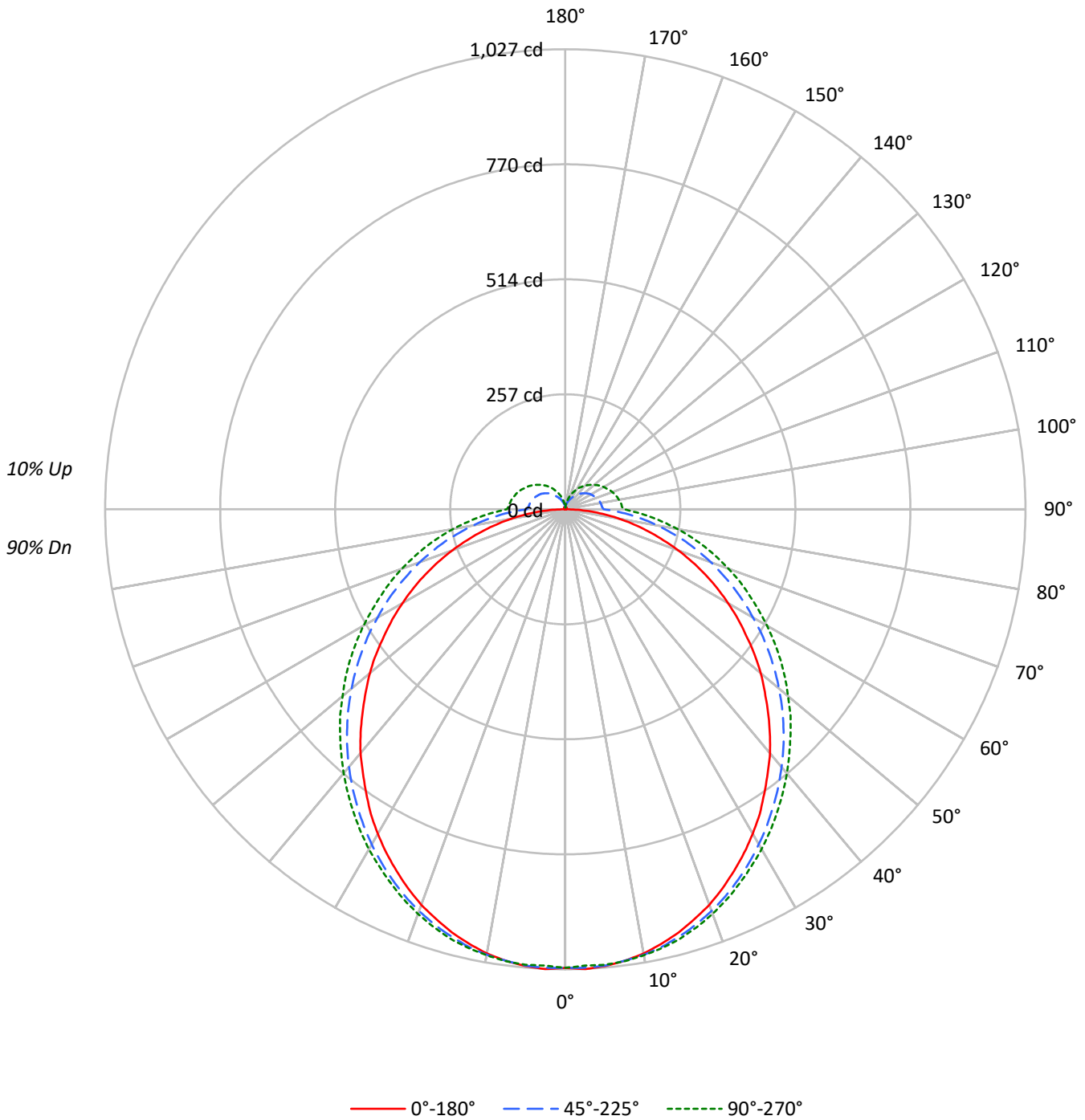
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3493.8 lumens
Efficiency: N/A
Efficacy: 125.7 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

TEST NUMBER: P981626
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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	50	30	10	0
RCR																					
0	117	117	117	117	113	113	113	113	106	106	106	99	99	99	93	93	93	93	93	93	90
1	105	100	95	91	101	97	92	88	91	87	84	85	82	79	80	78	75	75	75	75	73
2	95	86	79	73	91	84	77	71	78	73	68	74	69	65	69	66	62	62	62	62	59
3	86	75	67	60	83	73	65	59	69	62	57	65	59	54	61	56	52	52	52	52	50
4	79	67	57	51	76	65	56	50	61	54	48	57	51	46	54	49	45	45	45	45	42
5	72	59	50	43	70	58	49	43	54	47	41	51	45	40	48	43	39	39	39	39	36
6	67	53	44	38	64	52	43	37	49	42	36	46	40	35	44	38	34	34	34	34	32
7	62	48	39	33	60	47	39	33	44	37	32	42	36	31	40	34	30	30	30	30	28
8	58	44	35	29	55	43	35	29	41	33	28	39	32	28	37	31	27	27	27	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	24	24	24	22
10	50	37	29	24	49	36	29	24	35	28	23	33	27	22	32	26	22	22	22	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3672	3672	3672
5°	3673	3624	3605
10°	3642	3562	3544
15°	3592	3490	3479
20°	3534	3412	3395
25°	3460	3323	3304
30°	3384	3231	3218
35°	3295	3135	3126
40°	3217	3040	3037
45°	3117	2944	2951
50°	3030	2842	2862
55°	2915	2737	2783
60°	2809	2625	2694
65°	2686	2515	2603
70°	2530	2397	2524
75°	2325	2268	2435
80°	2067	2102	2324
85°	1628	1920	2208



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	97.1	2.8
10°-20°	277.8	8.0
20°-30°	418.8	12.0
30°-40°	503.3	14.4
40°-50°	526.5	15.1
50°-60°	490.0	14.0
60°-70°	404.1	11.6
70°-80°	284.0	8.1
80°-90°	149.9	4.3
90°-100°	81.2	2.3
100°-110°	73.7	2.1
110°-120°	63.1	1.8
120°-130°	50.0	1.4
130°-140°	35.6	1.0
140°-150°	22.3	0.6
150°-160°	11.6	0.3
160°-170°	4.3	0.1
170°-180°	0.7	0.0
0°-30°	793.7	22.7
0°-40°	1297.0	37.1
0°-60°	2313.4	66.2
0°-90°	3151.5	90.2
90°-120°	217.9	6.2
90°-150°	325.8	9.3
90°-180°	342.0	9.8
0°-180°	3493.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1024	1024	1024	1024	1024	
5°	1024	1018	1022	1022	1020	97
15°	978	976	986	992	992	276
25°	891	896	912	920	921	411
35°	774	786	809	822	825	485
45°	640	660	688	705	711	494
55°	494	520	554	576	586	443
65°	345	375	415	442	453	341
75°	194	231	278	310	321	205
85°	58	98	146	177	190	61
90°	2	40	86	119	130	4
95°	0	37	82	114	126	0
105°	1	35	77	106	117	1
115°	2	33	70	96	106	2
125°	3	28	61	85	92	3
135°	4	22	50	71	77	3
145°	4	18	36	54	60	3
155°	5	14	25	36	42	2
165°	6	10	15	20	23	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°	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5
2.5°	1027.4	1026.4	1024.4	1022.5	1021.5	1021.5	1020.5	1020.5	1020.5	1023.5	1024.4
5°	1023.5	1022.5	1020.5	1019.6	1018.6	1017.6	1017.6	1017.6	1018.6	1021.5	1022.5
7.5°	1016.6	1015.7	1013.7	1012.8	1011.8	1011.8	1011.8	1011.8	1012.8	1015.7	1016.6
10°	1006.9	1005.9	1004.0	1003.0	1003.0	1003.0	1003.0	1003.0	1005.0	1007.9	1009.8
12.5°	993.3	992.3	991.3	991.3	990.4	990.4	991.3	991.3	993.3	997.2	1000.1
15°	977.7	976.7	975.7	975.7	975.7	975.7	976.7	977.7	980.6	984.5	986.5
17.5°	959.2	959.2	958.2	959.2	959.2	959.2	960.2	962.1	964.1	968.9	971.9
20°	939.7	938.7	937.8	939.7	939.7	939.7	940.7	943.6	946.5	951.4	954.3
22.5°	916.3	916.3	916.3	917.3	918.3	919.3	920.2	923.2	927.1	931.0	934.8
25°	891.0	891.0	891.0	893.0	894.9	895.9	896.9	899.8	904.7	908.6	912.5
27.5°	864.7	864.7	864.7	865.7	868.6	869.6	871.6	875.4	880.3	884.2	889.1
30°	836.5	836.5	837.5	839.4	842.3	843.3	845.3	849.2	855.0	858.9	863.8
32.5°	807.3	806.3	807.3	810.2	813.1	816.0	817.0	821.9	827.7	832.6	837.5
35°	774.2	775.1	777.1	780.0	782.9	785.9	787.8	792.7	799.5	804.4	809.2
37.5°	742.0	743.0	745.0	748.9	752.7	755.7	758.6	762.5	770.3	775.1	781.0
40°	710.9	708.9	712.8	716.7	721.6	724.5	727.4	732.3	740.1	745.0	750.8
42.5°	675.8	675.8	678.7	684.6	689.5	692.4	695.3	701.1	708.9	714.8	720.6
45°	639.8	640.8	644.7	650.5	656.3	660.2	662.2	669.0	676.8	682.6	688.5
47.5°	603.8	605.7	609.6	616.4	622.3	626.2	628.1	635.9	643.7	650.5	656.3
50°	569.7	569.7	574.5	580.4	587.2	591.1	594.0	601.8	609.6	616.4	622.3
52.5°	532.7	532.7	537.5	545.3	551.2	556.0	559.0	567.7	575.5	582.3	589.1
55°	493.7	495.7	500.5	509.3	516.1	520.0	523.9	532.7	540.5	548.3	554.1
57.5°	457.7	458.7	464.5	472.3	480.1	484.0	488.8	496.6	505.4	514.2	520.0
60°	419.7	421.7	426.5	436.3	444.1	447.9	451.8	461.6	470.3	478.1	484.0
62.5°	382.7	383.7	390.5	399.3	407.0	411.9	416.8	425.6	434.3	442.1	449.9
65°	344.7	346.7	352.5	362.3	370.0	374.9	378.8	390.5	398.3	407.0	414.8
67.5°	306.7	308.7	315.5	325.2	334.0	338.9	342.8	353.5	363.2	372.0	379.8
70°	268.8	270.7	278.5	288.2	297.0	301.9	307.7	317.5	328.2	336.9	345.7
72.5°	229.8	232.7	239.6	250.3	262.0	266.8	271.7	283.4	293.1	302.9	310.6
75°	193.8	196.7	204.5	214.2	224.0	230.8	234.7	246.4	259.0	268.8	277.5
77.5°	157.8	160.7	168.5	179.2	189.9	195.7	201.6	212.3	223.0	232.7	242.5
80°	123.7	126.6	135.4	145.1	155.8	162.6	168.5	180.2	190.9	200.6	209.4
82.5°	90.6	93.5	102.2	113.0	124.6	130.5	136.3	147.0	158.7	168.5	178.2
85°	58.4	63.3	71.1	80.8	92.5	98.4	104.2	115.9	126.6	136.3	146.1
87.5°	28.2	32.1	40.9	51.6	62.3	69.1	74.0	84.7	96.4	105.2	114.9
90°	1.9	5.8	13.6	23.4	34.1	39.9	45.8	56.5	67.2	76.9	85.7
92.5°	0.0	3.9	11.7	21.4	32.1	38.0	42.8	53.6	64.3	74.0	82.8
95°	0.0	3.9	11.7	21.4	32.1	37.0	42.8	53.6	63.3	73.0	81.8
97.5°	1.0	3.9	11.7	21.4	31.2	37.0	41.9	52.6	62.3	72.1	80.8
100°	1.0	3.9	11.7	20.4	31.2	36.0	41.9	51.6	61.3	71.1	79.9
102.5°	1.0	3.9	11.7	20.4	31.2	36.0	40.9	50.6	60.4	70.1	78.9
105°	1.0	4.9	11.7	20.4	30.2	35.1	39.9	50.6	59.4	68.2	76.9
107.5°	1.0	4.9	11.7	20.4	30.2	35.1	39.9	49.7	58.4	67.2	75.0
110°	1.9	4.9	11.7	20.4	29.2	34.1	39.0	48.7	57.5	66.2	74.0



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	1.9	4.9	11.7	19.5	29.2	33.1	38.0	47.7	56.5	64.3	72.1
115°	1.9	4.9	11.7	19.5	28.2	33.1	37.0	46.7	54.5	63.3	70.1
117.5°	1.9	5.8	11.7	18.5	27.3	32.1	36.0	44.8	53.6	61.3	68.2
120°	2.9	5.8	10.7	18.5	26.3	31.2	35.1	43.8	51.6	59.4	66.2
122.5°	2.9	5.8	10.7	17.5	25.3	29.2	34.1	41.9	49.7	57.5	64.3
125°	2.9	5.8	10.7	16.6	24.3	28.2	32.1	39.9	47.7	54.5	61.3
127.5°	2.9	5.8	10.7	16.6	23.4	26.3	30.2	38.0	44.8	51.6	58.4
130°	2.9	5.8	9.7	15.6	21.4	25.3	28.2	36.0	41.9	48.7	55.5
132.5°	2.9	5.8	9.7	14.6	20.4	24.3	27.3	34.1	39.9	45.8	52.6
135°	3.9	5.8	9.7	14.6	19.5	22.4	25.3	31.2	37.0	42.8	49.7
137.5°	3.9	5.8	8.8	13.6	18.5	21.4	24.3	29.2	35.1	40.9	45.8
140°	3.9	5.8	8.8	12.7	17.5	20.4	22.4	27.3	33.1	38.0	42.8
142.5°	3.9	5.8	8.8	12.7	16.6	18.5	21.4	25.3	30.2	35.1	39.9
145°	3.9	5.8	8.8	11.7	15.6	17.5	19.5	24.3	28.2	32.1	36.0
147.5°	4.9	5.8	8.8	11.7	14.6	16.6	18.5	22.4	26.3	29.2	33.1
150°	4.9	5.8	7.8	10.7	13.6	15.6	17.5	20.4	24.3	27.3	30.2
152.5°	4.9	5.8	7.8	10.7	13.6	14.6	15.6	19.5	22.4	25.3	27.3
155°	4.9	5.8	7.8	9.7	12.7	13.6	14.6	17.5	20.4	22.4	25.3
157.5°	4.9	5.8	7.8	9.7	11.7	12.7	13.6	15.6	18.5	20.4	22.4
160°	4.9	5.8	7.8	8.8	10.7	11.7	12.7	14.6	16.6	18.5	19.5
162.5°	5.8	5.8	6.8	8.8	9.7	10.7	11.7	12.7	14.6	15.6	17.5
165°	5.8	5.8	6.8	7.8	8.8	9.7	9.7	11.7	12.7	13.6	14.6
167.5°	5.8	5.8	6.8	7.8	7.8	8.8	8.8	9.7	10.7	11.7	12.7
170°	5.8	5.8	5.8	6.8	7.8	7.8	7.8	8.8	9.7	9.7	10.7
172.5°	5.8	5.8	5.8	5.8	6.8	6.8	6.8	7.8	7.8	8.8	8.8
175°	5.8	5.8	5.8	5.8	5.8	5.8	6.8	6.8	6.8	6.8	6.8
177.5°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
180°	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5	1023.5
2.5°	1025.4	1027.4	1026.4	1024.4	1024.4	1024.4	1023.5	1021.5	1020.5	1019.6
5°	1023.5	1025.4	1023.5	1022.5	1022.5	1022.5	1022.5	1021.5	1020.5	1020.5
7.5°	1018.6	1020.5	1019.6	1018.6	1018.6	1018.6	1018.6	1017.6	1017.6	1017.6
10°	1011.8	1014.7	1013.7	1012.8	1011.8	1012.8	1011.8	1011.8	1010.8	1010.8
12.5°	1001.1	1004.0	1004.0	1003.0	1003.0	1003.0	1003.0	1003.0	1002.0	1003.0
15°	989.4	992.3	992.3	992.3	992.3	992.3	992.3	992.3	991.3	992.3
17.5°	974.8	977.7	978.7	977.7	978.7	978.7	978.7	977.7	977.7	977.7
20°	957.2	960.2	961.1	960.2	960.2	960.2	961.1	961.1	961.1	961.1
22.5°	937.8	940.7	940.7	940.7	941.7	941.7	941.7	942.6	942.6	942.6
25°	915.4	918.3	918.3	919.3	920.2	920.2	921.2	921.2	921.2	921.2
27.5°	893.9	895.9	895.9	896.9	897.8	897.8	897.8	897.8	899.8	898.8
30°	868.6	870.6	871.6	873.5	873.5	874.5	874.5	875.4	876.4	876.4
32.5°	842.3	844.3	845.3	847.2	848.2	849.2	849.2	851.1	852.1	851.1
35°	814.1	816.0	819.0	819.9	821.9	821.9	823.8	823.8	825.8	824.8
37.5°	785.9	787.8	789.8	791.7	793.6	794.6	795.6	797.5	799.5	797.5
40°	755.7	758.6	761.5	763.5	764.4	766.4	766.4	769.3	771.3	769.3
42.5°	725.5	728.4	731.3	735.2	735.2	736.2	738.1	741.1	741.1	740.1
45°	694.3	696.3	701.1	704.1	705.0	706.0	708.0	708.9	710.9	710.9
47.5°	661.2	665.1	670.0	672.9	673.9	674.8	676.8	678.7	681.7	681.7
50°	628.1	633.0	634.9	639.8	641.7	642.7	645.6	647.6	649.5	648.6
52.5°	594.0	597.9	603.8	607.7	609.6	610.6	613.5	616.4	617.4	618.4
55°	559.9	564.8	570.6	574.5	576.5	578.4	580.4	582.3	585.3	586.2
57.5°	525.9	530.7	537.5	541.4	543.4	544.4	548.3	551.2	552.1	553.1
60°	490.8	496.6	503.5	507.4	509.3	512.2	513.2	518.1	519.0	520.0
62.5°	456.7	462.6	469.4	474.2	476.2	478.1	482.0	485.0	486.9	485.9
65°	422.6	428.5	435.3	440.2	442.1	445.0	447.9	450.9	452.8	452.8
67.5°	387.6	394.4	402.2	407.0	409.0	411.9	414.8	416.8	419.7	421.7
70°	353.5	361.3	368.1	373.0	374.9	377.8	380.8	385.6	385.6	387.6
72.5°	319.4	327.2	334.0	340.8	342.8	344.7	348.6	351.5	352.5	354.5
75°	286.3	294.1	300.9	305.8	309.7	311.6	315.5	317.5	319.4	321.4
77.5°	251.2	261.0	267.8	273.6	276.6	278.5	282.4	285.3	287.3	288.2
80°	218.1	225.9	232.7	238.6	241.5	244.4	248.3	250.3	253.2	254.2
82.5°	186.0	193.8	200.6	205.5	209.4	211.3	215.2	219.1	219.1	221.1
85°	153.9	161.7	168.5	174.3	177.2	180.2	183.1	187.0	187.9	189.9
87.5°	122.7	131.5	137.3	144.1	146.1	149.0	153.9	156.8	158.7	158.7
90°	94.5	102.2	109.1	115.9	118.8	120.8	125.6	128.5	130.5	130.5
92.5°	91.5	99.3	106.1	113.0	114.9	117.8	121.7	124.6	126.6	126.6
95°	90.6	98.4	105.2	111.0	113.9	115.9	120.8	122.7	124.6	125.6
97.5°	89.6	97.4	104.2	110.0	112.0	114.9	118.8	121.7	123.7	123.7
100°	87.6	95.4	102.2	108.1	111.0	113.0	116.9	119.8	120.8	121.7
102.5°	86.7	93.5	100.3	106.1	109.1	111.0	114.9	117.8	118.8	119.8
105°	84.7	92.5	98.4	104.2	106.1	109.1	112.0	114.9	116.9	116.9
107.5°	82.8	90.6	96.4	102.2	104.2	106.1	110.0	113.0	113.9	114.9
110°	80.8	88.6	94.5	99.3	102.2	104.2	107.1	110.0	111.0	112.0



TEST NUMBER: P981626

CATALOG NUMBER: 4WNLED-LD4-32SL-F-UNV-L830-CD1-U

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
112.5°	78.9	85.7	91.5	97.4	99.3	101.3	104.2	107.1	108.1	109.1
115°	76.9	83.7	89.6	94.5	96.4	98.4	101.3	104.2	105.2	106.1
117.5°	75.0	81.8	86.7	91.5	93.5	95.4	98.4	101.3	102.2	102.2
120°	73.0	78.9	84.7	88.6	90.6	92.5	95.4	97.4	99.3	99.3
122.5°	70.1	76.0	81.8	85.7	87.6	89.6	92.5	94.5	95.4	96.4
125°	68.2	74.0	78.9	82.8	84.7	86.7	88.6	90.6	91.5	92.5
127.5°	65.2	70.1	76.0	79.9	81.8	83.7	85.7	87.6	88.6	88.6
130°	61.3	67.2	72.1	76.9	78.9	79.9	82.8	83.7	84.7	84.7
132.5°	58.4	63.3	68.2	73.0	75.0	76.9	78.9	79.9	80.8	80.8
135°	54.5	59.4	64.3	69.1	71.1	73.0	75.0	76.0	76.9	76.9
137.5°	51.6	56.5	60.4	65.2	67.2	69.1	71.1	72.1	73.0	73.0
140°	47.7	51.6	56.5	61.3	63.3	64.3	67.2	68.2	69.1	69.1
142.5°	43.8	48.7	52.6	56.5	58.4	60.4	63.3	64.3	65.2	65.2
145°	40.9	44.8	47.7	51.6	53.6	55.5	58.4	60.4	60.4	60.4
147.5°	37.0	40.9	43.8	47.7	49.7	50.6	54.5	55.5	56.5	56.5
150°	34.1	37.0	39.9	42.8	44.8	46.7	49.7	51.6	51.6	51.6
152.5°	31.2	33.1	36.0	39.0	39.9	41.9	44.8	46.7	46.7	46.7
155°	27.3	30.2	32.1	34.1	36.0	37.0	39.9	41.9	41.9	41.9
157.5°	24.3	26.3	28.2	30.2	31.2	32.1	35.1	37.0	38.0	38.0
160°	21.4	23.4	24.3	26.3	27.3	28.2	29.2	32.1	33.1	33.1
162.5°	18.5	19.5	21.4	22.4	23.4	23.4	25.3	26.3	28.2	28.2
165°	15.6	16.6	17.5	18.5	19.5	19.5	20.4	22.4	23.4	23.4
167.5°	13.6	13.6	14.6	15.6	15.6	15.6	16.6	17.5	19.5	19.5
170°	10.7	11.7	11.7	11.7	12.7	12.7	12.7	13.6	14.6	15.6
172.5°	8.8	8.8	9.7	9.7	9.7	9.7	9.7	9.7	10.7	11.7
175°	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	7.8
177.5°	5.8	5.8	5.8	4.9	4.9	4.9	4.9	4.9	4.9	3.9
180°	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9

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

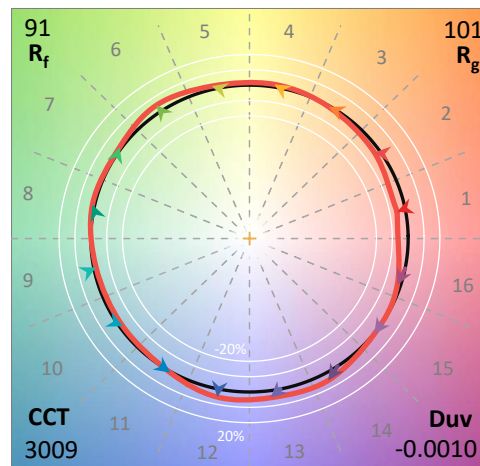
Test Information

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

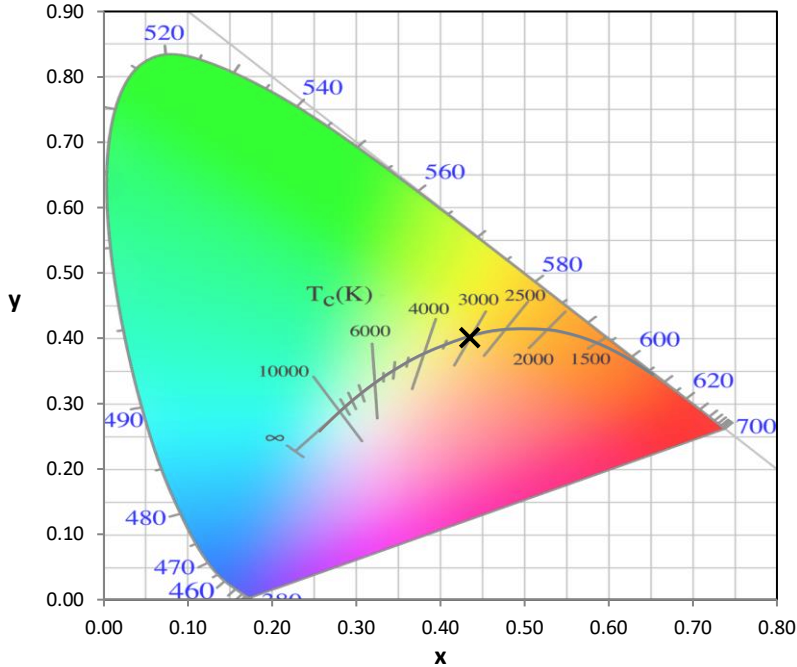
Stabilization Time: 23M
 Operation Time: 1H 23M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP3-2508-516-9

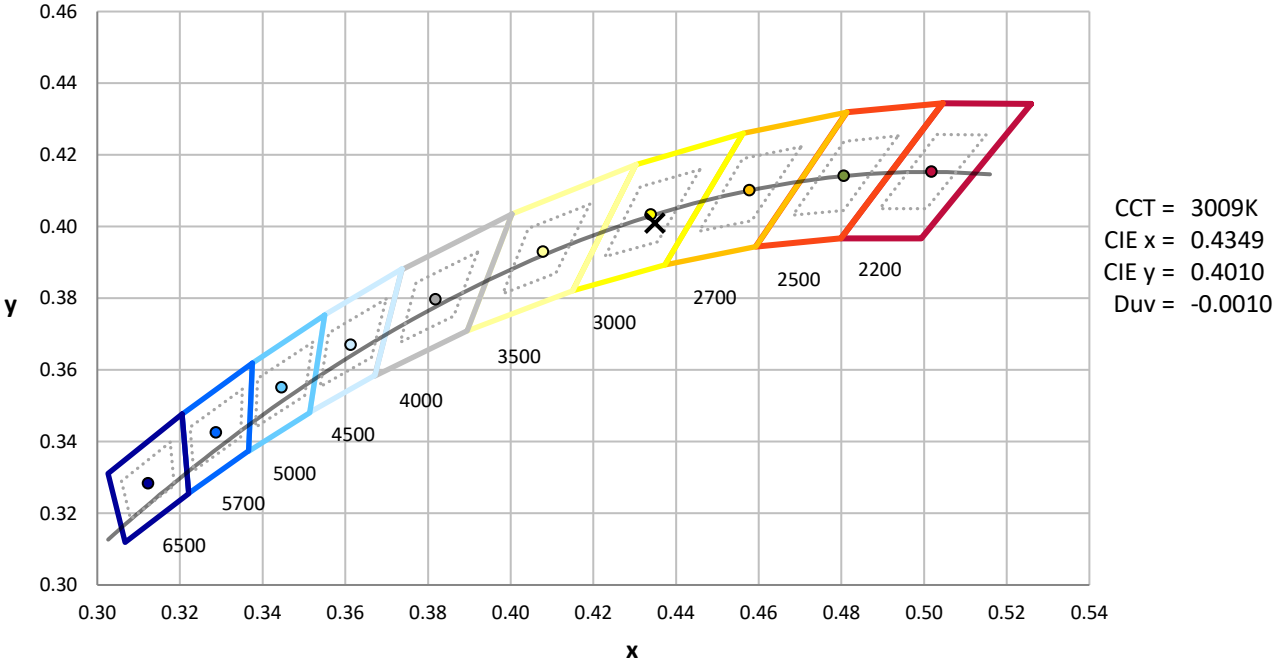
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	3M SPHERE IN02505	7/1/2025	1/1/2026
Power Meter	XITRON INXT2011006	1/20/2025	1/20/2026
AC Power Source	CHROMA 61604 IN6064A	10/22/2024	10/22/2025
DC Power Source	EYSIGHT N5770A IN0534	10/22/2024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

REPORT NUMBER: SP3-2508-516-9

CIE 1931 Chromaticity Diagram



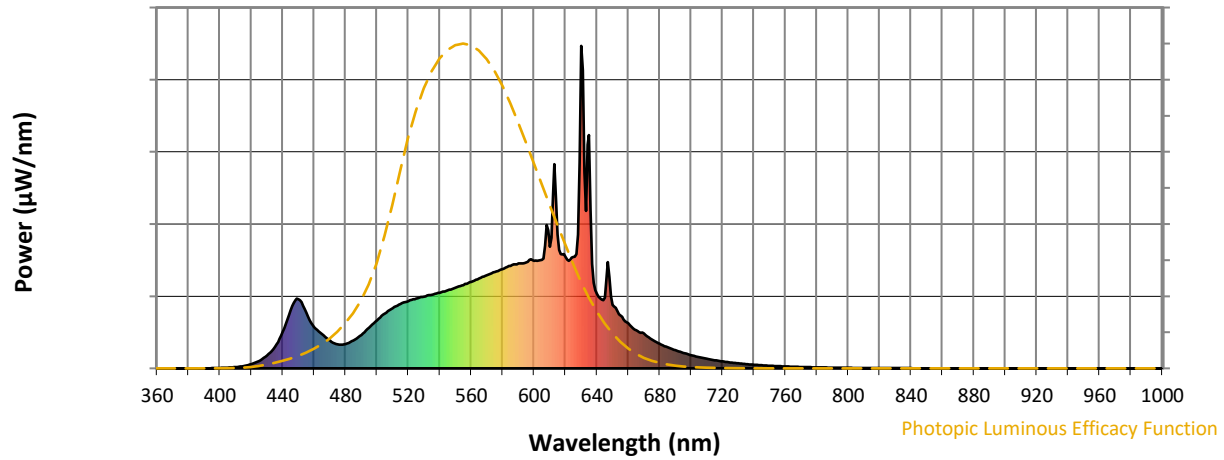
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP3-2508-516-9

Photopic Flux vs. Wavelength

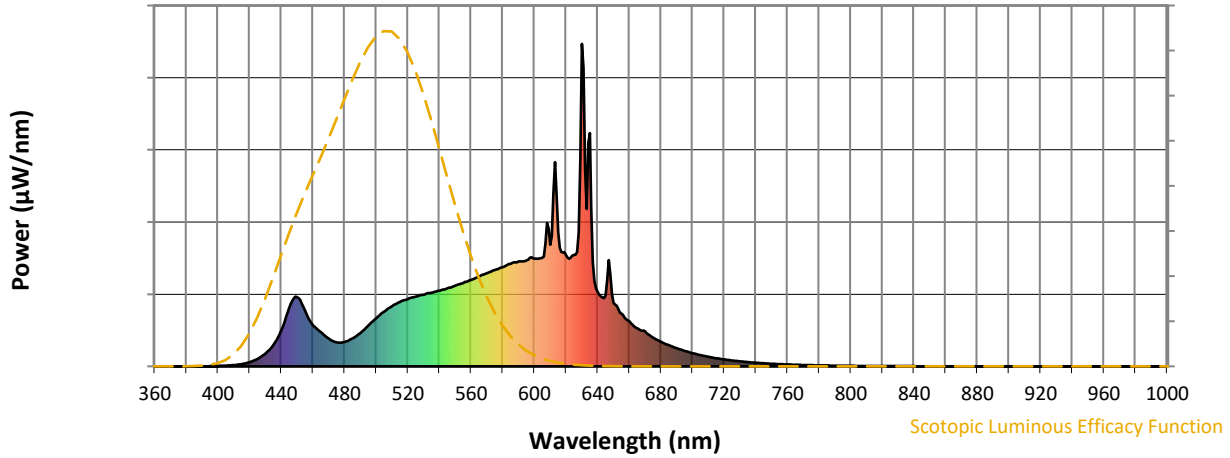


Photopic Lumens: NR

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	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



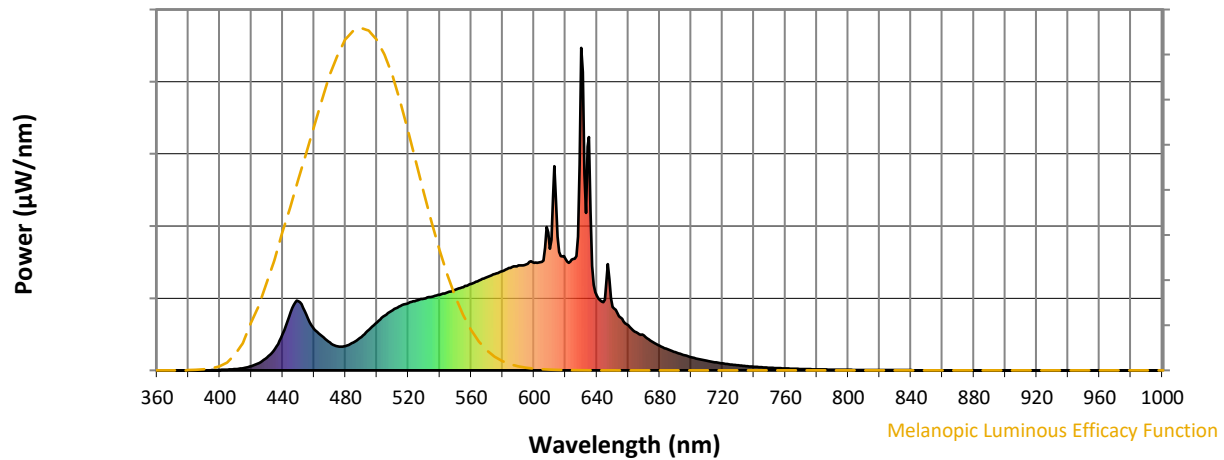
Scotopic Lumens: NR

S/P: 1.42

λ (nm)	Power W [^] /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	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



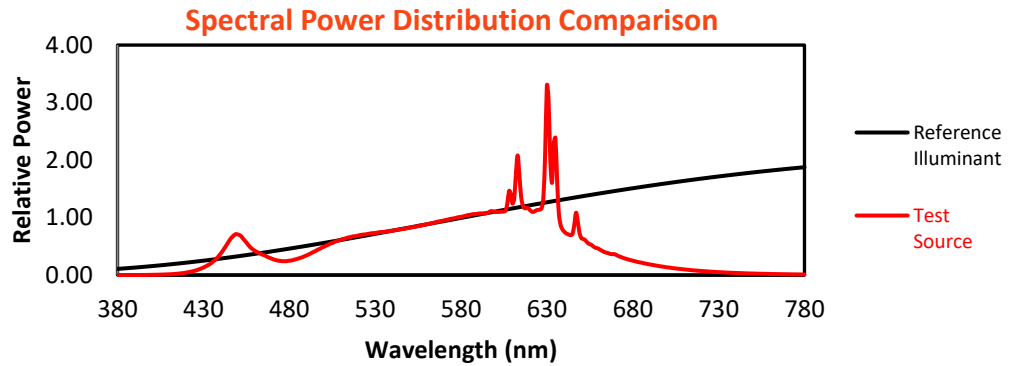
Melanopic Lumens: NR

M/P: 2.75

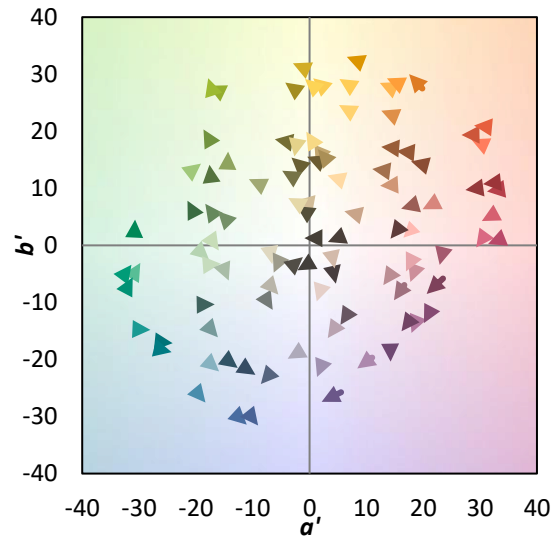
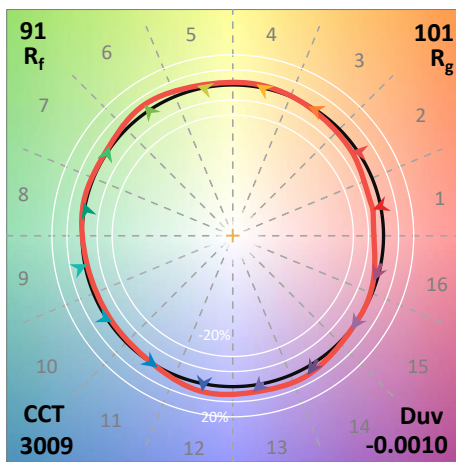
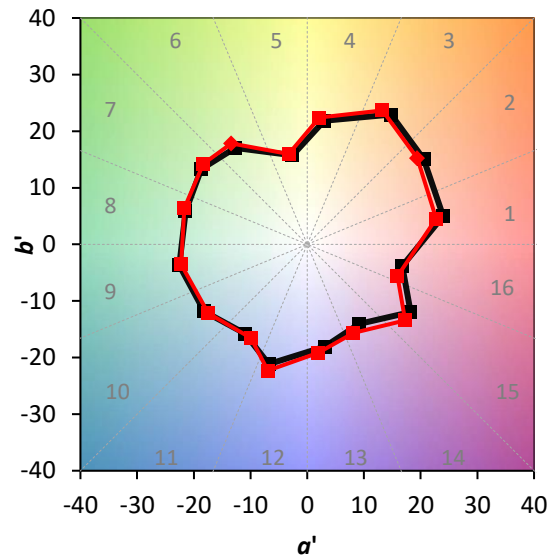
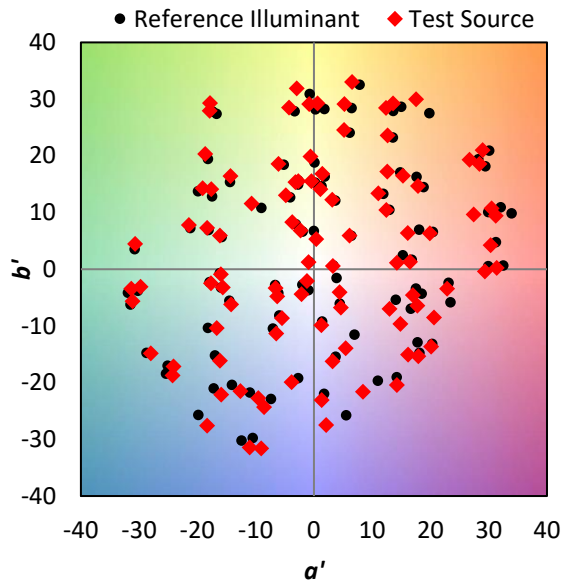
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	104	NR	620	345	NR	750	8	NR	880	0	NR
365	0	NR	495	126	NR	625	345	NR	755	7	NR	885	0	NR
370	0	NR	500	149	NR	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

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

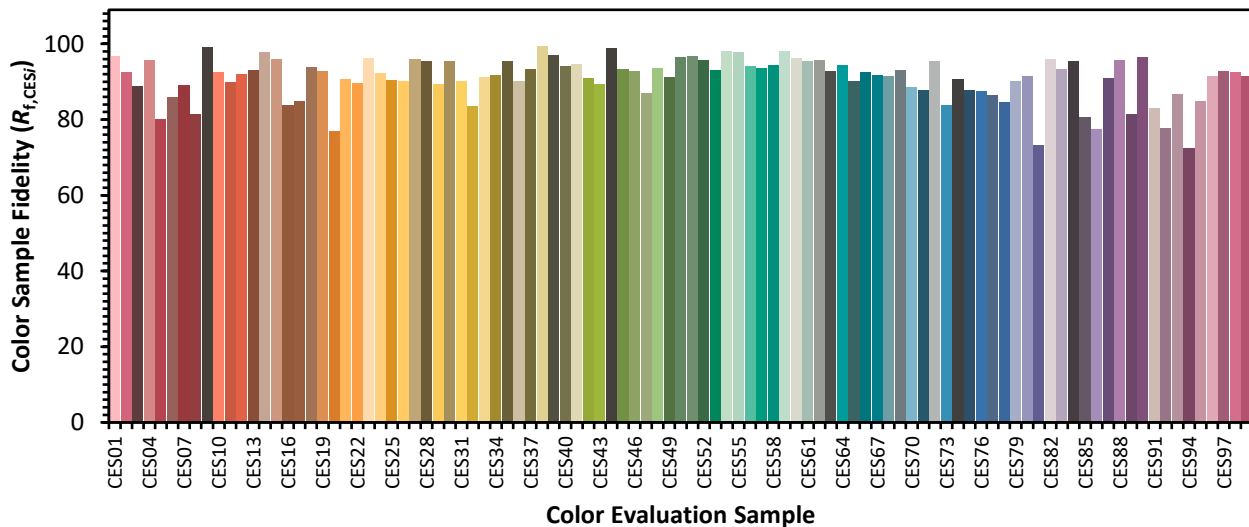


Color Vector Graphics

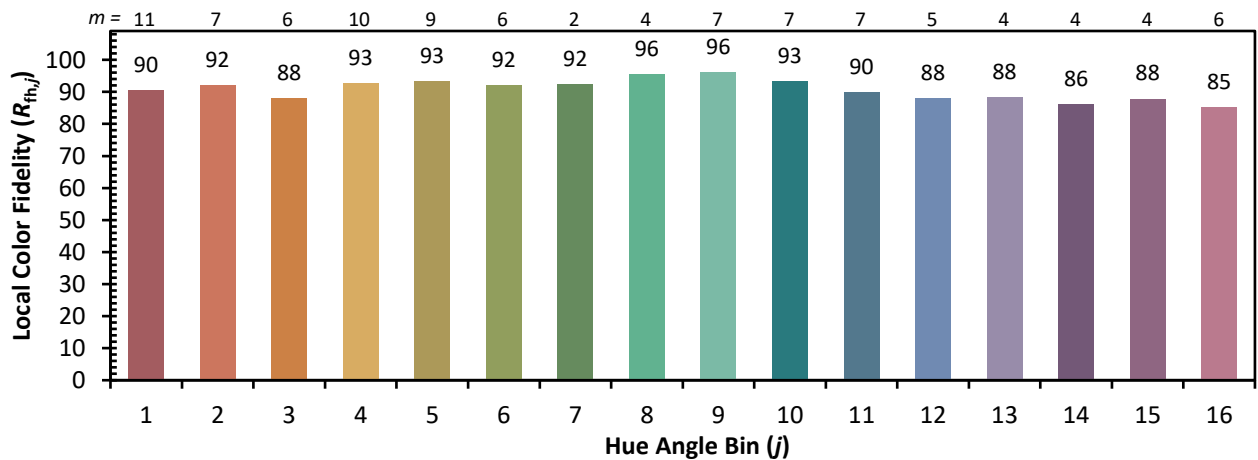
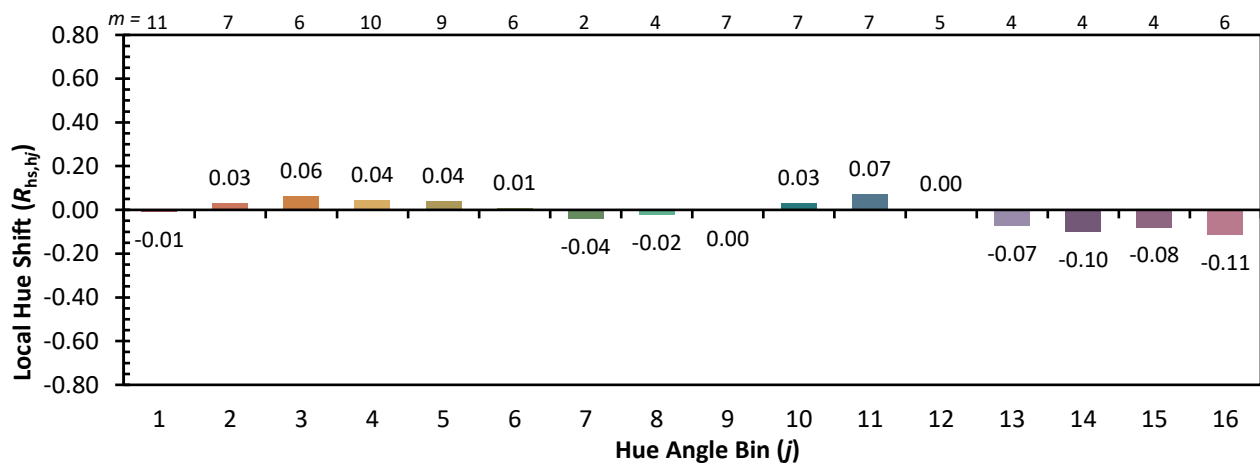
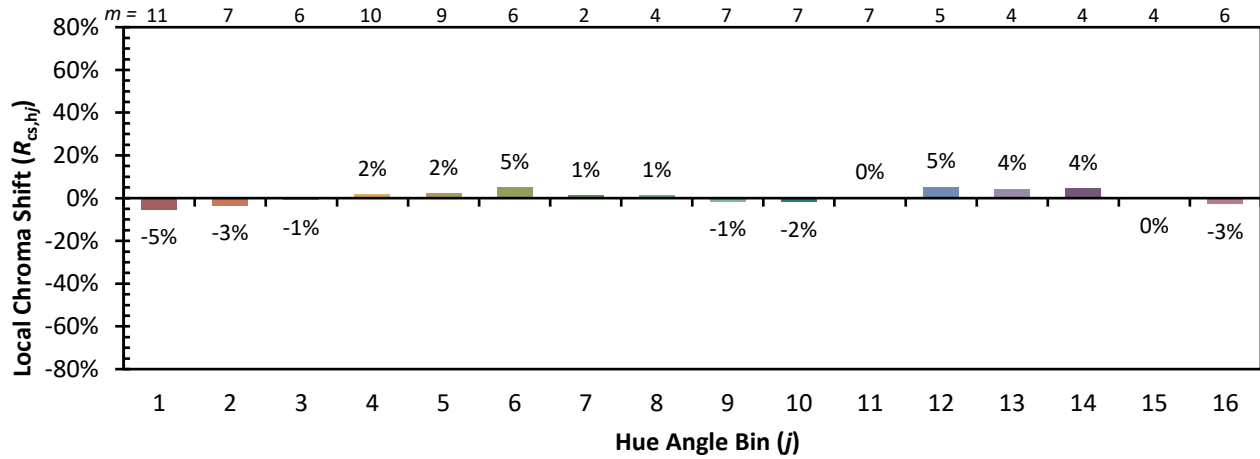


Individual Sample Fidelity Index ($R_{f,i}$)

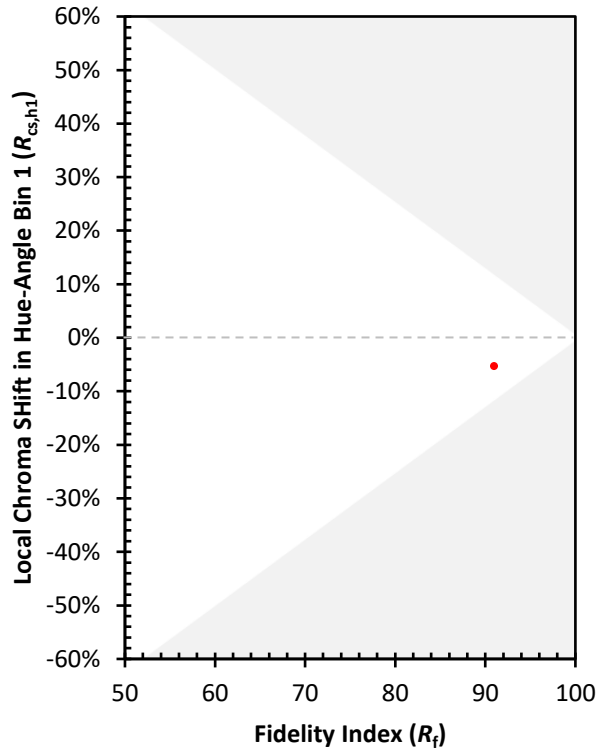
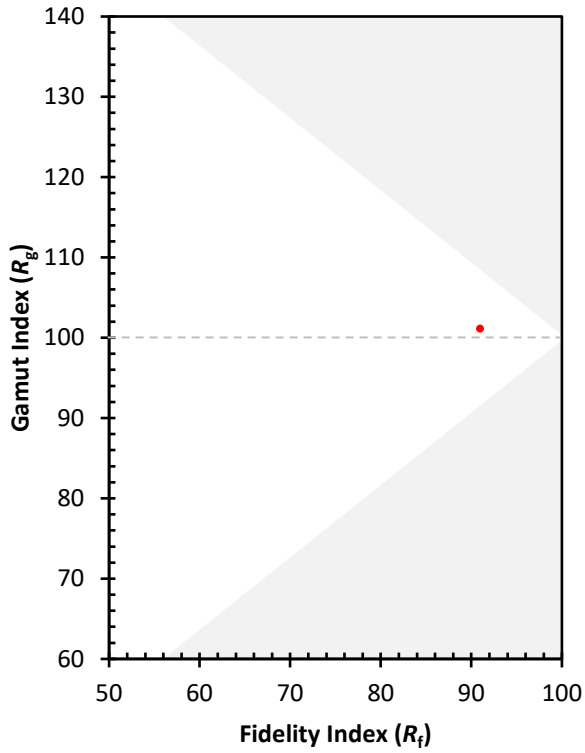
CES01 = 86	CES26 = 90	CES51 = 97	CES76 = 87
CES02 = 63	CES27 = 96	CES52 = 96	CES77 = 86
CES03 = 32	CES28 = 95	CES53 = 93	CES78 = 85
CES04 = 70	CES29 = 89	CES54 = 98	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 98	CES80 = 91
CES06 = 51	CES31 = 90	CES56 = 94	CES81 = 73
CES07 = 43	CES32 = 84	CES57 = 94	CES82 = 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)