

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: io LED

Report Number: P895879

Luminaire Tested: **GRZ-10L-930-ASYMx40-X-UNV-STD-1F**

Issue Date: 11/20/2024

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

**Test Information**

Test Method: LM-79-08
Report Number: P895879
Test Lab: EVERFINE
Issue Date: 11/20/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: GRZ-10L-930-ASYMx40-X-UNV-STD-1F
Description: io LED 90CRI 3000K GRAZER 1000 lumens per ft WITH Asymmetric x 40 deg OPTIC
Light Source: 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

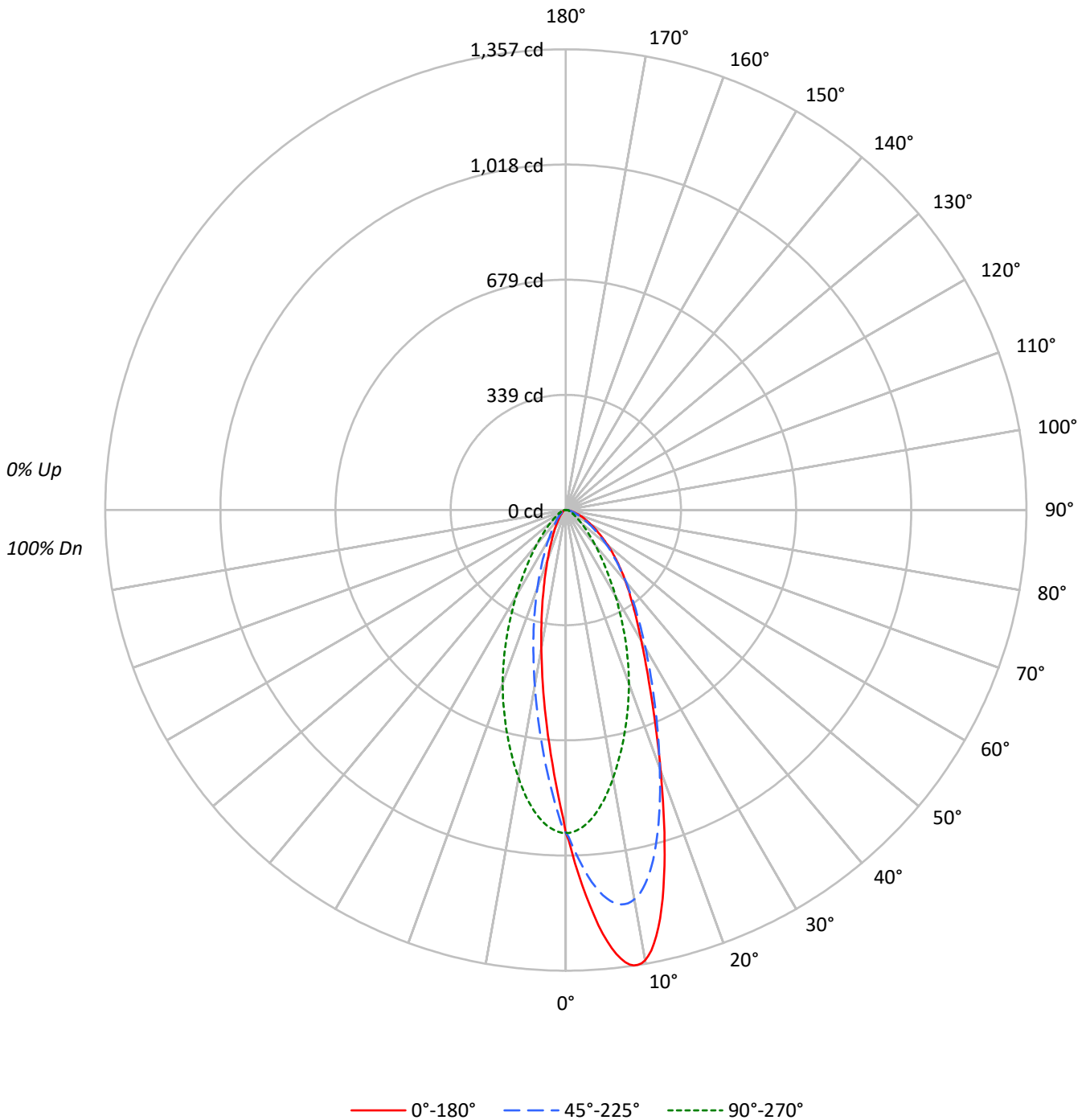
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 778.1 lumens
Efficiency: N/A
Efficacy: 77.8 lumens/watt
Spacing Criteria (0/90/45): 0.66 / 0.7 / 0.73
Luminous Opening: Rectangular (W 1' x L: 0.17' x H: 0')
CIE Type: Direct

Input Watts (W): 10
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: GRZ-10L-930-ASYMx40-X-UNV-STD-1F

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100			100
1	112	109	106	103	110	107	104	101	103	100	98	99	97	95	95	94	93	91			91
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82			82
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75			75
4	93	84	78	73	91	83	77	73	81	76	72	79	74	71	77	73	70	68			68
5	88	78	71	67	86	77	71	66	75	70	66	74	69	65	72	68	64	63			63
6	83	73	66	61	81	72	66	61	70	65	60	69	64	60	68	63	60	58			58
7	78	68	61	57	77	67	61	56	66	60	56	65	60	56	64	59	55	54			54
8	74	64	57	53	73	63	57	53	62	56	52	61	56	52	60	55	52	50			50
9	71	60	54	49	70	60	53	49	59	53	49	58	52	49	57	52	49	47			47
10	67	57	50	46	66	56	50	46	55	50	46	55	50	46	54	49	46	44			44

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	61368	61368	61368
5°	81190	58899	41528
10°	88286	52571	27164
15°	74790	45029	17381
20°	56099	37333	10857
25°	42128	29311	7003
30°	33164	21883	4757
35°	27305	15789	3413
40°	23020	11354	2596
45°	19469	8109	2182
50°	16213	5917	1778
55°	13318	4480	1565
60°	11067	3603	1446
65°	9274	3102	1390
70°	7665	2813	1397
75°	6037	2719	1472
80°	5020	2826	1636
85°	5038	3112	2000



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.0	11.1
10°-20°	190.0	24.4
20°-30°	177.5	22.8
30°-40°	131.5	16.9
40°-50°	89.3	11.5
50°-60°	54.6	7.0
60°-70°	29.7	3.8
70°-80°	14.6	1.9
80°-90°	4.9	0.6
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	453.5	58.3
0°-40°	585.0	75.2
0°-60°	728.9	93.7
0°-90°	778.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	778.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	950	950	950	950	950	
5°	1253	1127	909	730	641	123
15°	1119	1024	674	366	260	305
25°	591	617	411	160	98	275
35°	346	360	200	68	43	218
45°	213	208	89	33	24	165
55°	118	109	40	19	14	107
65°	61	49	20	12	9	61
75°	24	20	11	8	6	27
85°	7	6	4	3	3	7
90°	0	0	0	0	0	



TEST NUMBER: P895879

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CANDELA DISTRIBUTION (FULL):

	0°	30°	60°	90°	120°	150°	180°
0°	950.4	950.4	950.4	950.4	950.4	950.4	950.4
0.5°	974.0	962.3	962.7	951.7	940.5	939.9	907.3
1°	1007.2	989.9	978.0	949.9	921.9	911.3	874.6
1.5°	1040.4	1017.9	991.6	947.4	903.8	882.4	841.6
2°	1073.5	1045.4	1005.1	943.9	885.2	853.4	810.2
2.5°	1106.0	1071.8	1017.8	940.1	866.3	825.5	780.0
3°	1137.4	1098.1	1029.6	935.3	847.1	797.2	750.1
3.5°	1168.7	1122.7	1040.0	929.9	828.0	769.3	720.8
4°	1198.2	1146.4	1049.9	923.7	808.4	742.6	693.3
4.5°	1226.7	1168.6	1058.4	916.4	788.8	716.4	666.8
5°	1252.6	1189.0	1065.3	908.7	769.3	691.3	640.7
5.5°	1276.5	1207.8	1071.2	900.4	749.6	667.1	615.4
6°	1297.9	1224.5	1075.4	891.5	730.0	642.5	590.3
6.5°	1316.6	1238.8	1078.7	881.7	710.8	619.1	565.3
7°	1331.9	1250.7	1080.6	871.3	691.9	596.5	541.5
7.5°	1344.0	1259.6	1081.2	861.2	673.1	574.2	517.7
8°	1352.1	1266.2	1080.3	850.0	654.4	552.0	495.4
8.5°	1356.4	1270.4	1077.7	838.5	636.2	530.6	474.0
9°	1356.8	1271.5	1074.2	826.5	618.5	509.0	453.1
9.5°	1353.5	1270.0	1069.5	814.1	600.7	488.4	433.5
10°	1346.5	1265.1	1063.5	801.8	582.8	468.2	414.3
10.5°	1335.4	1258.4	1056.2	789.1	565.9	449.1	395.9
11°	1321.3	1249.1	1048.0	776.2	549.2	430.8	378.8
11.5°	1303.0	1236.8	1038.7	763.7	533.1	413.3	361.3
12°	1283.2	1221.9	1028.8	750.9	517.1	396.0	345.0
12.5°	1259.9	1205.4	1017.7	738.0	501.5	379.3	329.7
13°	1234.8	1186.4	1006.1	725.3	485.5	363.4	315.1
13.5°	1207.6	1166.2	993.4	712.4	470.6	348.1	301.3
14°	1178.9	1144.2	980.7	699.4	455.8	333.3	287.5
14.5°	1149.0	1120.8	966.5	686.5	441.1	319.1	273.8
15°	1118.8	1095.8	951.8	673.6	426.5	305.9	260.0
15.5°	1087.8	1070.4	937.2	660.5	412.7	292.7	246.3
16°	1056.6	1044.2	921.7	647.2	398.7	279.5	234.4
16.5°	1024.9	1017.2	906.0	634.6	384.8	266.4	223.3
17°	993.2	990.5	889.6	621.7	371.6	253.3	212.8
17.5°	962.3	963.5	873.4	608.9	358.6	241.7	202.3
18°	932.2	936.4	856.7	596.0	345.8	230.9	192.7
18.5°	902.2	910.0	839.7	582.9	333.3	220.6	183.2
19°	872.7	883.5	822.6	569.8	321.4	210.3	174.3
19.5°	844.4	856.8	805.4	556.7	309.4	200.6	165.9
20°	816.4	831.4	788.2	543.3	297.9	191.4	158.0
20.5°	790.4	806.2	771.1	530.1	286.9	182.7	150.3
21°	764.7	782.1	753.3	516.7	275.7	174.4	143.2
21.5°	739.5	758.6	736.6	503.6	265.2	166.2	136.5
22°	716.1	735.4	719.3	490.5	254.7	158.6	130.1



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CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
22.5°	692.4	713.2	702.1	477.0	244.6	151.4	124.0
23°	670.1	691.7	685.1	463.7	234.9	144.6	118.3
23.5°	649.4	671.4	667.8	450.7	225.5	137.9	112.8
24°	629.0	651.5	651.7	437.4	216.3	131.6	107.7
24.5°	609.9	632.1	635.2	424.5	207.4	125.8	102.9
25°	591.3	613.8	619.4	411.4	199.1	120.2	98.3
25.5°	573.9	596.2	603.5	398.4	190.8	114.9	93.8
26°	556.7	579.5	588.0	385.6	183.0	109.8	89.8
26.5°	540.6	562.9	572.7	373.3	175.3	104.9	85.8
27°	525.2	546.9	557.9	361.0	167.9	100.5	82.2
27.5°	510.2	532.3	543.1	348.9	160.8	96.1	78.7
28°	496.1	517.8	528.9	337.2	154.1	92.0	75.3
28.5°	482.2	503.9	514.7	325.5	147.6	88.0	72.2
29°	469.5	490.5	500.9	314.6	141.3	84.4	69.2
29.5°	457.1	477.3	487.5	304.1	135.5	80.9	66.4
30°	444.8	465.0	474.4	293.5	130.0	77.5	63.8
30.5°	433.5	453.0	461.8	282.9	124.5	74.4	61.2
31°	422.3	441.5	449.2	272.4	119.0	71.4	58.8
31.5°	411.7	430.0	436.9	261.8	113.5	68.6	56.5
32°	401.5	419.0	425.1	251.3	109.0	65.8	54.3
32.5°	391.4	408.7	413.3	242.1	104.3	63.3	52.2
33°	381.8	398.5	402.0	233.3	100.1	60.8	50.2
33.5°	372.4	388.5	390.5	224.7	95.9	58.5	48.4
34°	363.5	379.0	379.8	216.2	91.9	56.3	46.6
34.5°	354.7	369.9	368.9	208.1	88.2	54.2	44.9
35°	346.4	360.9	358.7	200.3	84.6	52.2	43.3
35.5°	338.2	352.2	348.3	192.8	81.2	50.3	41.8
36°	330.2	343.5	338.5	185.5	78.0	48.5	40.3
36.5°	322.4	335.3	328.8	178.3	74.9	46.8	38.9
37°	314.8	327.5	319.3	171.4	71.9	45.1	37.6
37.5°	307.7	319.6	310.0	164.9	69.1	43.6	36.3
38°	300.6	312.0	301.0	158.6	66.4	42.1	35.1
38.5°	293.4	304.4	292.4	152.1	63.8	40.6	33.9
39°	286.5	297.3	283.7	146.0	61.4	39.3	32.8
39.5°	279.7	290.1	275.1	140.2	59.1	38.0	31.8
40°	273.1	282.8	267.2	134.7	56.7	36.8	30.8
40.5°	266.6	275.6	259.4	129.2	54.7	35.6	29.8
41°	260.3	268.3	251.7	124.0	52.7	34.5	28.9
41.5°	254.2	261.1	244.3	119.1	50.8	33.4	28.1
42°	247.8	254.4	237.0	114.1	48.9	32.4	27.2
42.5°	242.0	247.9	229.9	109.5	47.2	31.4	26.5
43°	236.0	241.7	223.0	105.0	45.5	30.4	25.7
43.5°	230.2	235.4	216.4	100.7	43.9	29.6	25.0
44°	224.4	229.7	210.1	96.6	42.4	28.9	24.4
44.5°	218.7	225.3	203.8	92.6	41.2	28.2	24.1



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CATALOG NUMBER: GRZ-10L-930-ASYMx40-X-UNV-STD-1F

CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
45°	213.2	217.6	197.7	88.8	39.6	27.1	23.9
45.5°	207.6	211.7	191.4	85.2	38.3	26.3	23.2
46°	202.2	205.9	185.4	81.7	36.9	25.6	23.0
46.5°	196.8	200.4	179.6	78.4	35.7	24.9	22.5
47°	191.6	194.8	174.0	75.2	34.6	24.2	21.5
47.5°	186.3	189.5	168.5	72.2	33.5	23.6	20.8
48°	181.1	183.9	163.3	69.3	32.4	23.0	20.4
48.5°	176.2	178.7	158.1	66.5	31.4	22.4	19.9
49°	171.2	173.5	152.8	63.8	30.5	21.8	18.8
49.5°	166.4	168.5	147.9	61.3	29.5	21.3	18.1
50°	161.4	163.5	143.0	58.9	28.7	20.7	17.7
50.5°	156.8	158.5	138.3	56.5	27.8	20.2	17.2
51°	152.1	153.6	133.7	54.3	27.0	19.7	16.7
51.5°	147.6	148.9	129.0	52.1	26.2	19.3	16.3
52°	143.2	144.3	124.3	50.2	25.5	18.8	15.9
52.5°	138.9	139.6	119.7	48.2	24.8	18.4	15.6
53°	134.5	135.1	115.5	46.4	24.1	18.0	15.2
53.5°	130.5	130.7	111.4	44.6	23.4	17.5	14.8
54°	126.4	126.3	107.4	43.0	22.8	17.1	14.5
54.5°	122.3	122.0	103.5	41.3	22.2	16.8	14.2
55°	118.3	117.9	99.6	39.8	21.6	16.4	13.9
55.5°	114.5	113.8	95.9	38.4	21.0	16.0	13.6
56°	110.9	109.8	92.2	37.0	20.5	15.6	13.3
56.5°	107.5	106.0	88.7	35.7	20.0	15.3	13.0
57°	104.1	102.2	85.3	34.4	19.5	15.0	12.7
57.5°	100.8	98.5	81.9	33.2	19.0	14.6	12.4
58°	97.6	95.0	78.6	32.0	18.5	14.3	12.2
58.5°	94.4	91.5	75.4	30.9	18.0	14.0	11.9
59°	91.5	88.1	72.4	29.9	17.6	13.7	11.7
59.5°	88.6	84.7	69.4	28.9	17.2	13.4	11.4
60°	85.7	81.6	66.5	27.9	16.8	13.1	11.2
60.5°	82.8	78.5	63.7	27.0	16.4	12.9	11.0
61°	80.0	75.4	61.1	26.1	16.0	12.6	10.7
61.5°	77.3	72.5	58.5	25.3	15.6	12.3	10.5
62°	74.6	69.7	56.0	24.5	15.3	12.1	10.3
62.5°	72.0	67.0	53.6	23.7	14.9	11.8	10.1
63°	69.5	64.4	51.3	23.0	14.6	11.6	9.9
63.5°	67.1	61.9	49.1	22.3	14.2	11.3	9.7
64°	64.9	59.5	47.0	21.6	13.9	11.1	9.5
64.5°	62.7	57.1	44.9	20.9	13.6	10.8	9.3
65°	60.7	54.9	42.9	20.3	13.3	10.6	9.1
65.5°	58.8	52.7	41.0	19.6	13.0	10.4	8.9
66°	56.9	50.6	39.3	19.1	12.7	10.2	8.8
66.5°	54.8	48.6	37.5	18.5	12.4	9.9	8.6
67°	52.8	46.6	35.9	17.9	12.1	9.7	8.4



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CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
67.5°	50.7	44.8	34.3	17.4	11.9	9.5	8.2
68°	48.6	42.9	32.7	16.8	11.6	9.3	8.1
68.5°	46.5	41.2	31.2	16.3	11.3	9.1	7.9
69°	44.5	39.5	29.8	15.8	11.1	8.9	7.7
69.5°	42.5	37.9	28.5	15.4	10.8	8.7	7.6
70°	40.6	36.3	27.2	14.9	10.6	8.5	7.4
70.5°	38.7	34.8	26.0	14.4	10.3	8.3	7.2
71°	36.9	33.4	24.8	14.0	10.1	8.1	7.1
71.5°	35.1	31.9	23.6	13.6	9.9	7.9	6.9
72°	33.3	30.5	22.5	13.2	9.6	7.8	6.8
72.5°	31.7	29.2	21.5	12.8	9.4	7.6	6.6
73°	30.0	27.9	20.5	12.4	9.2	7.4	6.5
73.5°	28.5	26.7	19.5	12.0	8.9	7.2	6.3
74°	27.0	25.5	18.6	11.6	8.7	7.0	6.2
74.5°	25.6	24.3	17.8	11.3	8.5	6.8	6.0
75°	24.2	23.2	16.9	10.9	8.3	6.7	5.9
75.5°	22.9	22.1	16.1	10.6	8.0	6.5	5.7
76°	21.6	21.0	15.3	10.2	7.8	6.3	5.6
76.5°	20.4	20.0	14.6	9.9	7.6	6.2	5.4
77°	19.3	19.1	13.9	9.5	7.4	6.0	5.3
77.5°	18.2	18.1	13.2	9.2	7.2	5.8	5.2
78°	17.2	17.2	12.6	8.9	6.9	5.6	5.0
78.5°	16.2	16.3	11.9	8.5	6.7	5.5	4.9
79°	15.3	15.5	11.3	8.2	6.5	5.3	4.7
79.5°	14.4	14.7	10.8	7.9	6.3	5.1	4.6
80°	13.5	13.9	10.2	7.6	6.1	5.0	4.4
80.5°	12.7	13.1	9.6	7.3	5.8	4.8	4.3
81°	12.0	12.4	9.1	6.9	5.6	4.6	4.1
81.5°	11.3	11.6	8.6	6.6	5.4	4.4	4.0
82°	10.6	11.0	8.1	6.3	5.1	4.2	3.8
82.5°	9.9	10.3	7.6	5.9	4.9	4.0	3.6
83°	9.2	9.6	7.1	5.6	4.6	3.9	3.5
83.5°	8.6	8.9	6.6	5.3	4.3	3.7	3.3
84°	8.0	8.3	6.1	4.9	4.1	3.4	3.1
84.5°	7.4	7.6	5.6	4.6	3.8	3.2	2.9
85°	6.8	6.9	5.1	4.2	3.5	3.0	2.7
85.5°	6.2	6.3	4.6	3.8	3.2	2.8	2.5
86°	5.6	5.6	4.1	3.4	2.9	2.5	2.3
86.5°	5.0	5.0	3.6	3.0	2.6	2.3	2.0
87°	4.4	4.3	3.0	2.5	2.2	2.0	1.8
87.5°	3.7	3.5	2.5	2.0	1.8	1.7	1.5
88°	3.0	2.8	1.9	1.6	1.4	1.4	1.2
88.5°	2.3	2.0	1.3	1.1	1.0	1.0	0.9
89°	1.6	1.3	0.8	0.7	0.6	0.7	0.5
89.5°	1.0	0.6	0.4	0.3	0.3	0.4	0.3

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

Scaled Data Report



TEST NUMBER: P895879
CATALOG NUMBER: GRZ-10L-930-ASYMx40-X-UNV-STD-1F

CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
90°	0.5	0.3	0.3	0.2	0.2	0.2	0.2

LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

iO LED

Report Number: SP1-2101-124-2

Luminaire Tested: GRZ-05L-930-10X10-X-UNV-STD-2F

Test Date: 02/10/2021

Test Information

Test Method: LM-79-08
 Report Number: SP1-2101-124-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1
 Measurement Geometry: 4π
 Issue Date: 02/10/2021
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: iO LED
 Catalog Number: **GRZ-05L-930-10X10-X-UNV-STD-2F**
 Description: IO LED Wall Grazer GRZ

Spectral Parameters

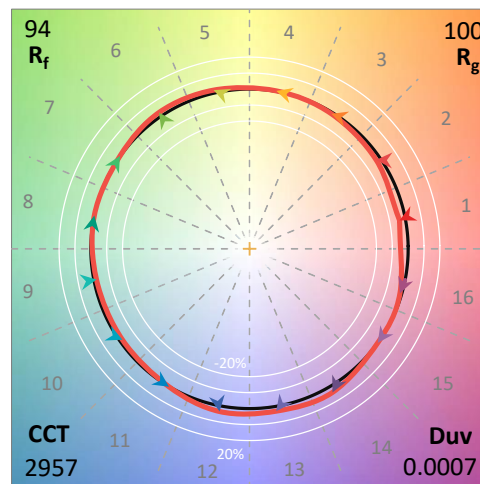
CCT (K): 2957
 CIE u': 0.2518
 CIE v': 0.5232
 Duv: 0.0007
 CIE x: 0.4409
 CIE y: 0.4072
 CIE z: 0.1519
 Peak Wavelength (nm): 624
 Dominant Wavelength (nm): 582
 Purity: 54.9

 Rf: 93.7
 Rg: 100.3

CRI (Ra):	94.1		
R1:	94.6	R9:	66.4
R2:	96.3	R10:	90.2
R3:	96.6	R11:	96.1
R4:	95.3	R12:	86.8
R5:	94.2	R13:	95.0
R6:	95.7	R14:	97.3
R7:	94.2		
R8:	85.7		

Test Conditions

Stabilization Time: 48M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.4/38%
 Sphere Temperature (°C): 24.4

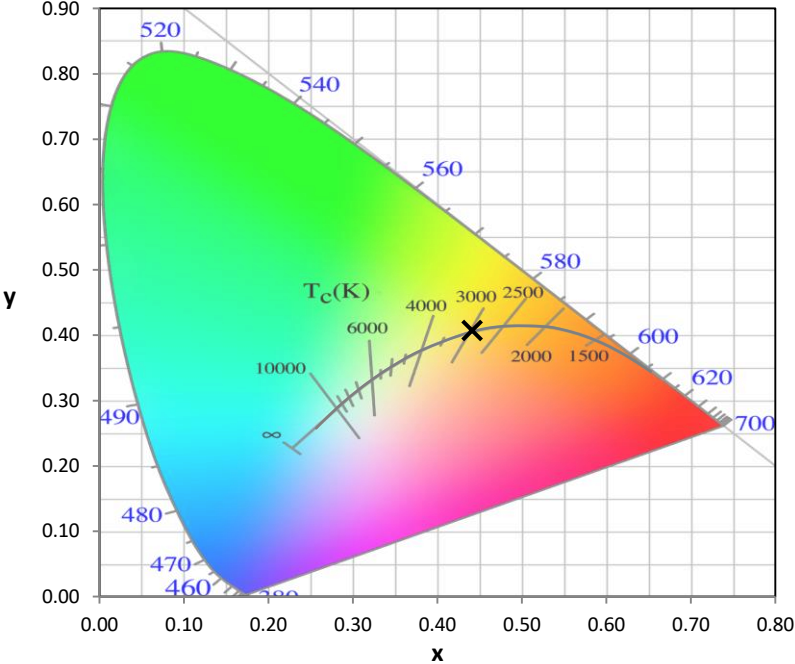


REPORT NUMBER: SP1-2101-124-2

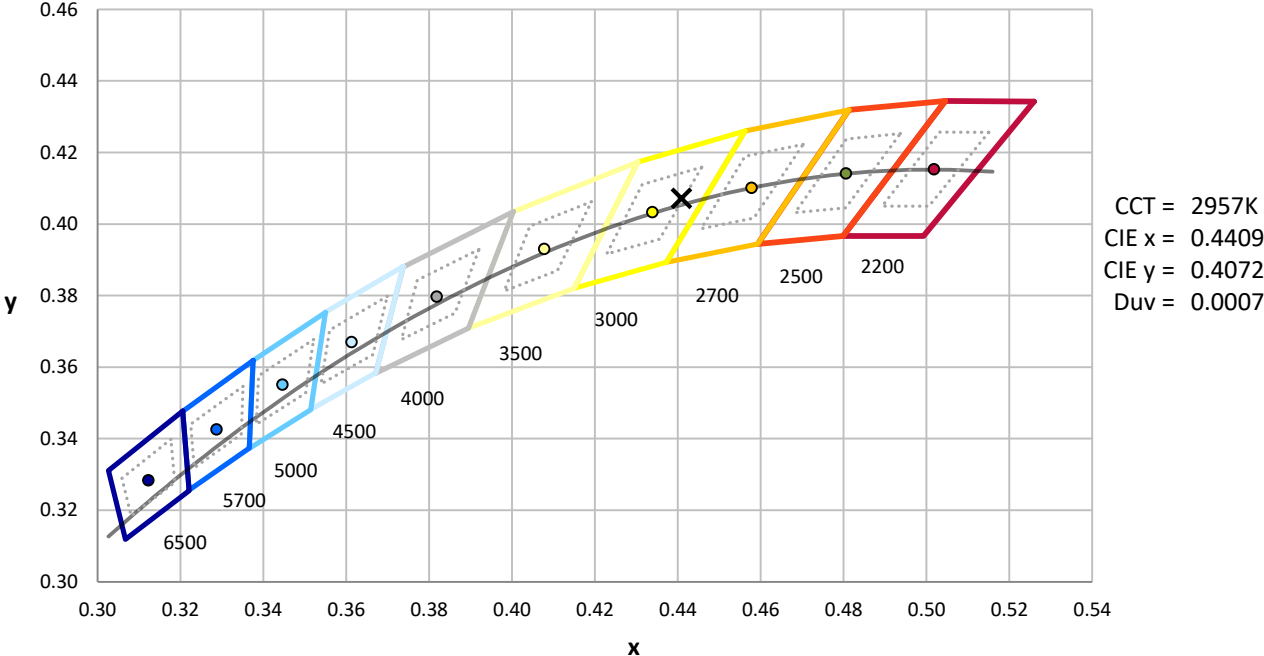
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	1/31/2021	7/31/2021
Power Meter	IN0071	12/1/2020	12/1/2021
AC Power Source	IN0063	12/1/2020	12/1/2021
DC Power Source	IN0208	12/1/2020	12/1/2021
Sphere Thermometer	IN0085	12/1/2020	12/1/2021
Room Thermometer	IN0046	12/1/2020	12/1/2021

REPORT NUMBER: SP1-2101-124-2

CIE 1931 Chromaticity Diagram



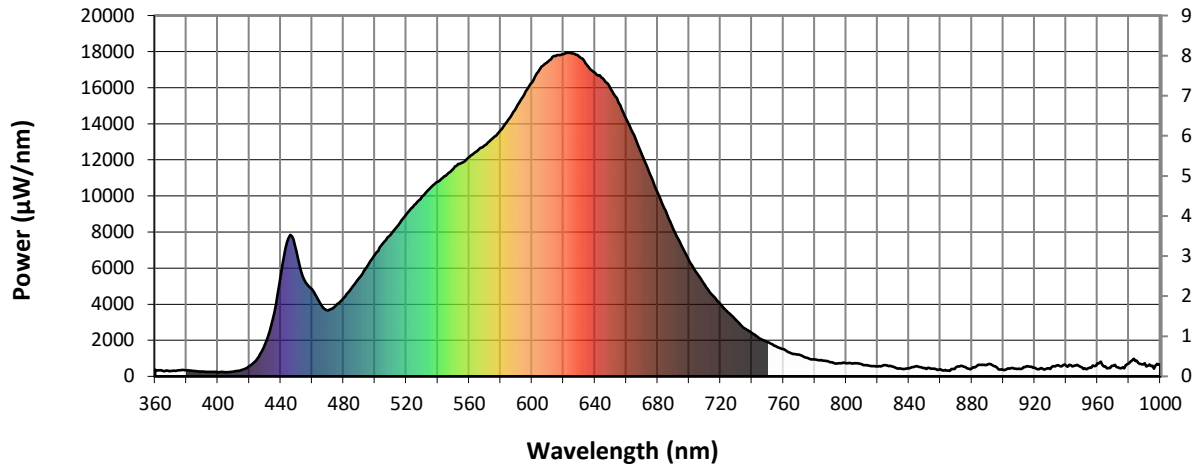
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2101-124-2

Photopic Flux vs. Wavelength

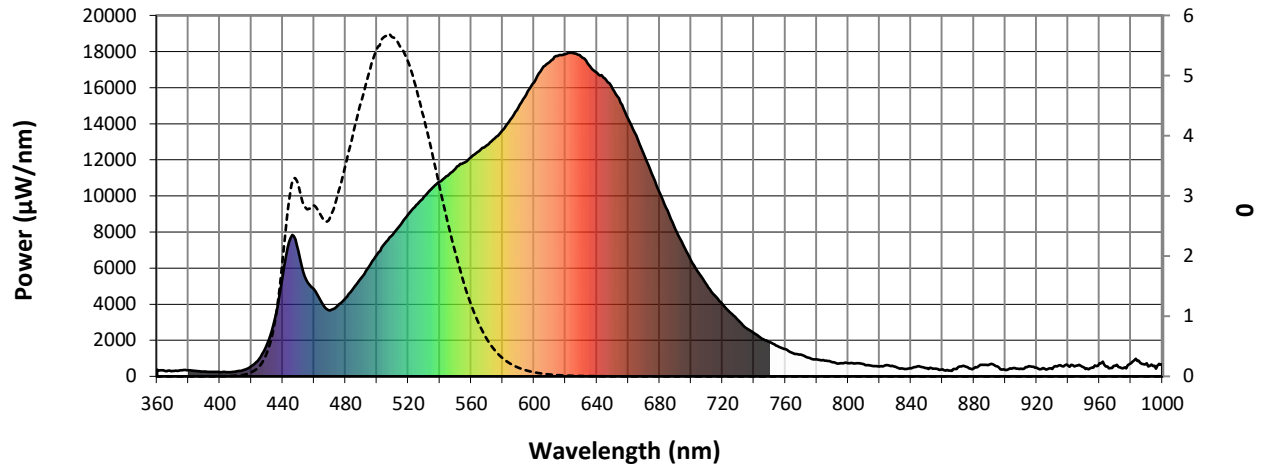


#####

λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	368	0.0	490	5466	0.8	620	17862	4.6	750	1898	0.0	880	436	0.0
365	310	0.0	495	6091	1.1	625	17922	4.0	755	1681	0.0	885	632	0.0
370	293	0.0	500	6757	1.5	630	17723	3.2	760	1509	0.0	890	653	0.0
375	346	0.0	505	7358	2.1	635	17256	2.6	765	1279	0.0	895	546	0.0
380	338	0.0	510	7854	2.7	640	16836	2.0	770	1201	0.0	900	354	0.0
385	299	0.0	515	8389	3.5	645	16513	1.6	775	1028	0.0	905	454	0.0
390	270	0.0	520	8991	4.4	650	15949	1.2	780	937	0.0	910	426	0.0
395	252	0.0	525	9495	5.1	655	15172	0.9	785	877	0.0	915	565	0.0
400	234	0.0	530	9972	5.9	660	14269	0.6	790	784	0.0	920	483	0.0
405	236	0.0	535	10431	6.5	665	13357	0.4	795	723	0.0	925	418	0.0
410	267	0.0	540	10792	7.0	670	12286	0.3	800	735	0.0	930	416	0.0
415	349	0.0	545	11118	7.4	675	11211	0.2	805	729	0.0	935	626	0.0
420	560	0.0	550	11517	7.8	680	10179	0.1	810	667	0.0	940	584	0.0
425	974	0.0	555	11837	8.1	685	9184	0.1	815	584	0.0	945	579	0.0
430	1769	0.0	560	12154	8.3	690	8166	0.0	820	546	0.0	950	504	0.0
435	3208	0.0	565	12489	8.3	695	7279	0.0	825	620	0.0	955	485	0.0
440	5576	0.1	570	12803	8.3	700	6419	0.0	830	532	0.0	960	719	0.0
445	7682	0.2	575	13201	8.2	705	5709	0.0	835	420	0.0	965	552	0.0
450	6958	0.2	580	13645	8.1	710	5055	0.0	840	444	0.0	970	586	0.0
455	5347	0.2	585	14250	7.9	715	4482	0.0	845	562	0.0	975	439	0.0
460	4823	0.2	590	14919	7.7	720	3984	0.0	850	454	0.0	980	736	0.0
465	4070	0.2	595	15606	7.4	725	3526	0.0	855	433	0.0	985	863	0.0
470	3650	0.2	600	16305	7.0	730	3109	0.0	860	383	0.0	990	722	0.0
475	3914	0.3	605	17030	6.6	735	2684	0.0	865	322	0.0	995	579	0.0
480	4339	0.4	610	17428	6.0	740	2396	0.0	870	523	0.0	1000	672	0.0
485	4881	0.6	615	17762	5.4	745	2098	0.0	875	541	0.0			

REPORT NUMBER: SP1-2101-124-2

Scotopic Flux vs. Wavelength



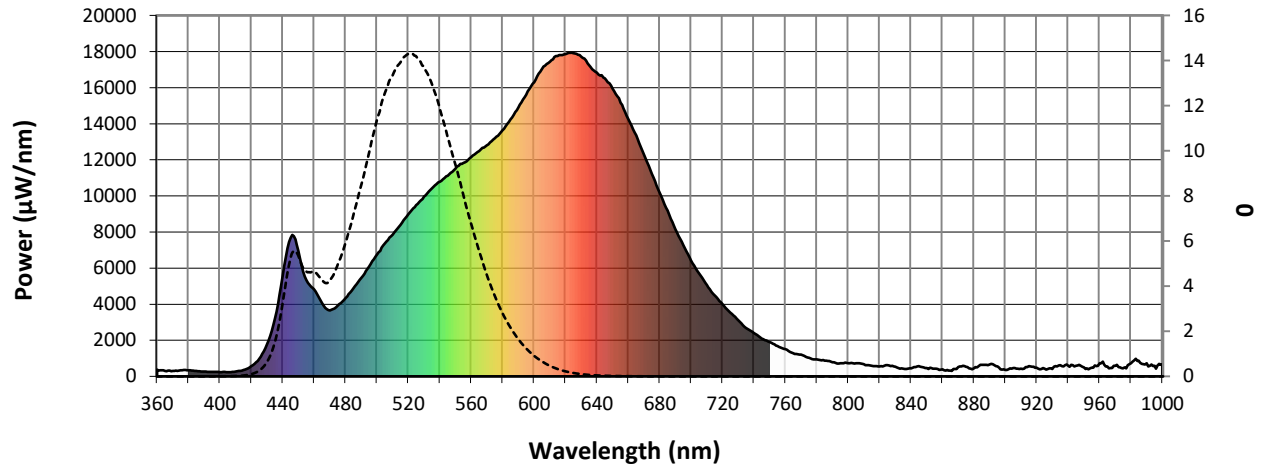
Scotopic Lumens: 1239

S/P: 1.4

λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	368	0.0	490	5466	8.4	620	17862	0.2	750	1898	0.0	880	436	0.0
365	310	0.0	495	6091	9.8	625	17922	0.2	755	1681	0.0	885	632	0.0
370	293	0.0	500	6757	11.3	630	17723	0.1	760	1509	0.0	890	653	0.0
375	346	0.0	505	7358	12.5	635	17256	0.1	765	1279	0.0	895	546	0.0
380	338	0.0	510	7854	13.3	640	16836	0.0	770	1201	0.0	900	354	0.0
385	299	0.0	515	8389	13.9	645	16513	0.0	775	1028	0.0	905	454	0.0
390	270	0.0	520	8991	14.3	650	15949	0.0	780	937	0.0	910	426	0.0
395	252	0.0	525	9495	14.2	655	15172	0.0	785	877	0.0	915	565	0.0
400	234	0.0	530	9972	13.7	660	14269	0.0	790	784	0.0	920	483	0.0
405	236	0.0	535	10431	13.0	665	13357	0.0	795	723	0.0	925	418	0.0
410	267	0.0	540	10792	11.9	670	12286	0.0	800	735	0.0	930	416	0.0
415	349	0.0	545	11118	10.7	675	11211	0.0	805	729	0.0	935	626	0.0
420	560	0.1	550	11517	9.4	680	10179	0.0	810	667	0.0	940	584	0.0
425	974	0.2	555	11837	8.1	685	9184	0.0	815	584	0.0	945	579	0.0
430	1769	0.6	560	12154	6.8	690	8166	0.0	820	546	0.0	950	504	0.0
435	3208	1.4	565	12489	5.6	695	7279	0.0	825	620	0.0	955	485	0.0
440	5576	3.1	570	12803	4.5	700	6419	0.0	830	532	0.0	960	719	0.0
445	7682	5.1	575	13201	3.6	705	5709	0.0	835	420	0.0	965	552	0.0
450	6958	5.4	580	13645	2.8	710	5055	0.0	840	444	0.0	970	586	0.0
455	5347	4.7	585	14250	2.2	715	4482	0.0	845	562	0.0	975	439	0.0
460	4823	4.7	590	14919	1.7	720	3984	0.0	850	454	0.0	980	736	0.0
465	4070	4.3	595	15606	1.2	725	3526	0.0	855	433	0.0	985	863	0.0
470	3650	4.2	600	16305	0.9	730	3109	0.0	860	383	0.0	990	722	0.0
475	3914	4.9	605	17030	0.7	735	2684	0.0	865	322	0.0	995	579	0.0
480	4339	5.9	610	17428	0.5	740	2396	0.0	870	523	0.0	1000	672	0.0
485	4881	7.1	615	17762	0.3	745	2098	0.0	875	541	0.0			

REPORT NUMBER: SP1-2101-124-2

Melanopic Flux vs. Wavelength



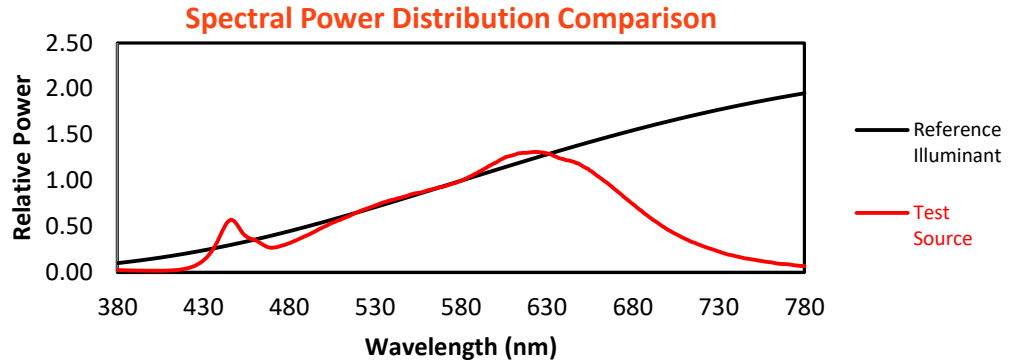
Melanopic Lumens: 471.9

M/P: 0.53

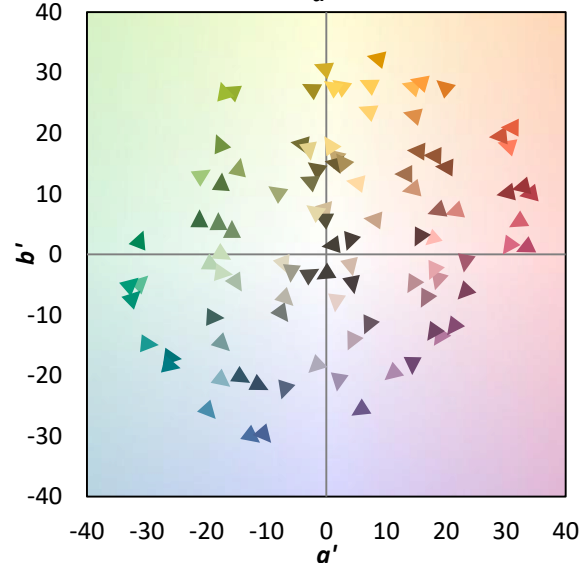
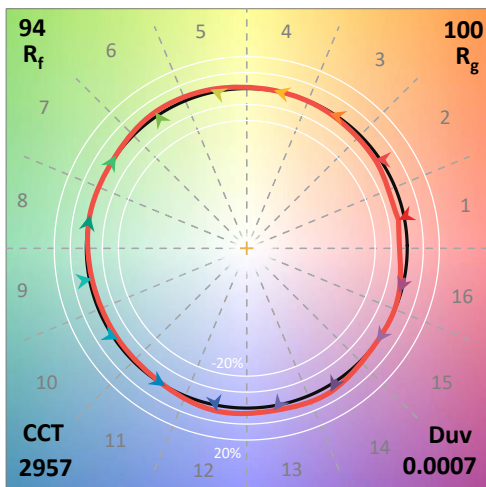
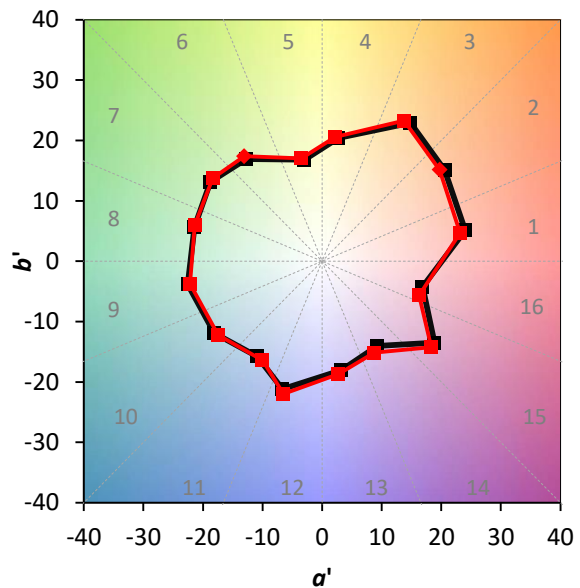
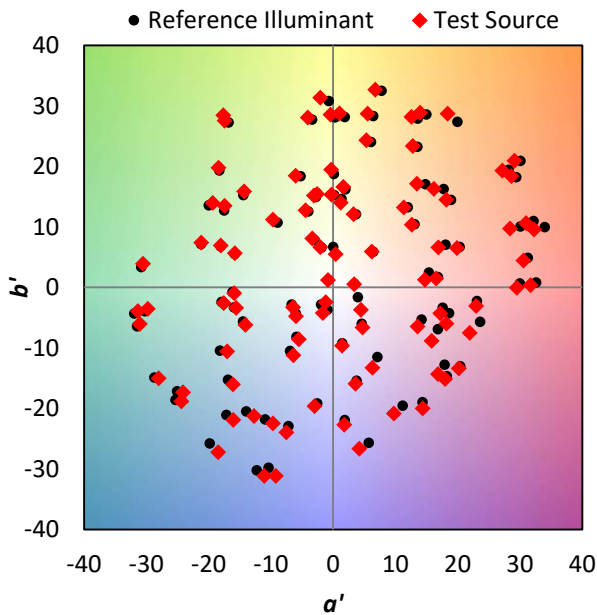
λ (nm)	Power (µW/nm)	Lumens (Φ/nm)	λ (nm)	Power (µW/nm)	Lumens (Φ/nm)	λ (nm)	Power (µW/nm)	Lumens (Φ/nm)	λ (nm)	Power (µW/nm)	Lumens (Φ/nm)	λ (nm)	Power (µW/nm)	Lumens (Φ/nm)
360	368	0.0	490	5466	4.5	620	17862	0.0	750	1898	0.0	880	436	0.0
365	310	0.0	495	6091	5.0	625	17922	0.0	755	1681	0.0	885	632	0.0
370	293	0.0	500	6757	5.4	630	17723	0.0	760	1509	0.0	890	653	0.0
375	346	0.0	505	7358	5.6	635	17256	0.0	765	1279	0.0	895	546	0.0
380	338	0.0	510	7854	5.6	640	16836	0.0	770	1201	0.0	900	354	0.0
385	299	0.0	515	8389	5.5	645	16513	0.0	775	1028	0.0	905	454	0.0
390	270	0.0	520	8991	5.2	650	15949	0.0	780	937	0.0	910	426	0.0
395	252	0.0	525	9495	4.8	655	15172	0.0	785	877	0.0	915	565	0.0
400	234	0.0	530	9972	4.3	660	14269	0.0	790	784	0.0	920	483	0.0
405	236	0.0	535	10431	3.8	665	13357	0.0	795	723	0.0	925	418	0.0
410	267	0.0	540	10792	3.2	670	12286	0.0	800	735	0.0	930	416	0.0
415	349	0.0	545	11118	2.6	675	11211	0.0	805	729	0.0	935	626	0.0
420	560	0.1	550	11517	2.1	680	10179	0.0	810	667	0.0	940	584	0.0
425	974	0.2	555	11837	1.6	685	9184	0.0	815	584	0.0	945	579	0.0
430	1769	0.4	560	12154	1.2	690	8166	0.0	820	546	0.0	950	504	0.0
435	3208	0.9	565	12489	0.9	695	7279	0.0	825	620	0.0	955	485	0.0
440	5576	1.9	570	12803	0.6	700	6419	0.0	830	532	0.0	960	719	0.0
445	7682	3.0	575	13201	0.4	705	5709	0.0	835	420	0.0	965	552	0.0
450	6958	3.2	580	13645	0.3	710	5055	0.0	840	444	0.0	970	586	0.0
455	5347	2.8	585	14250	0.2	715	4482	0.0	845	562	0.0	975	439	0.0
460	4823	2.8	590	14919	0.1	720	3984	0.0	850	454	0.0	980	736	0.0
465	4070	2.7	595	15606	0.1	725	3526	0.0	855	433	0.0	985	863	0.0
470	3650	2.6	600	16305	0.1	730	3109	0.0	860	383	0.0	990	722	0.0
475	3914	3.0	605	17030	0.0	735	2684	0.0	865	322	0.0	995	579	0.0
480	4339	3.5	610	17428	0.0	740	2396	0.0	870	523	0.0	1000	672	0.0
485	4881	4.0	615	17762	0.0	745	2098	0.0	875	541	0.0			

Summary

$R_f = 93.7$
 $R_g = 100.3$
 CIE $R_a = 94.1$
 $R_9 = 66.4$

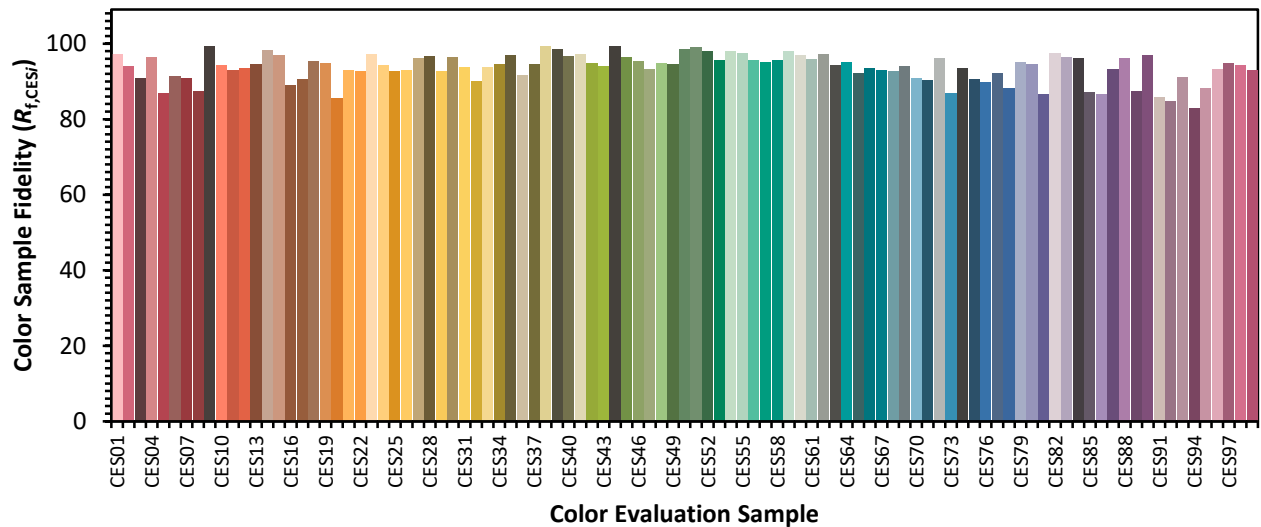


Color Vector Graphics

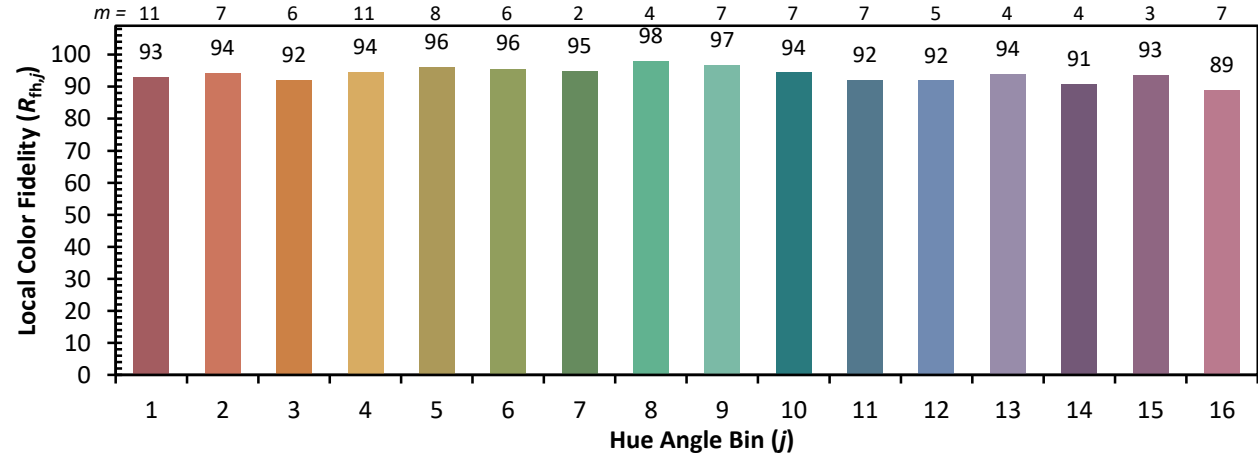
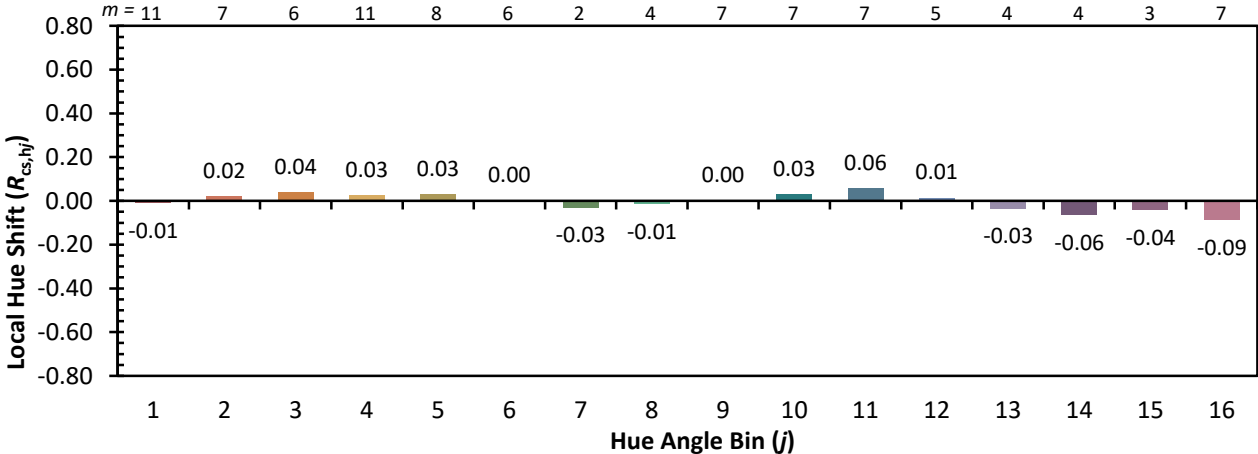
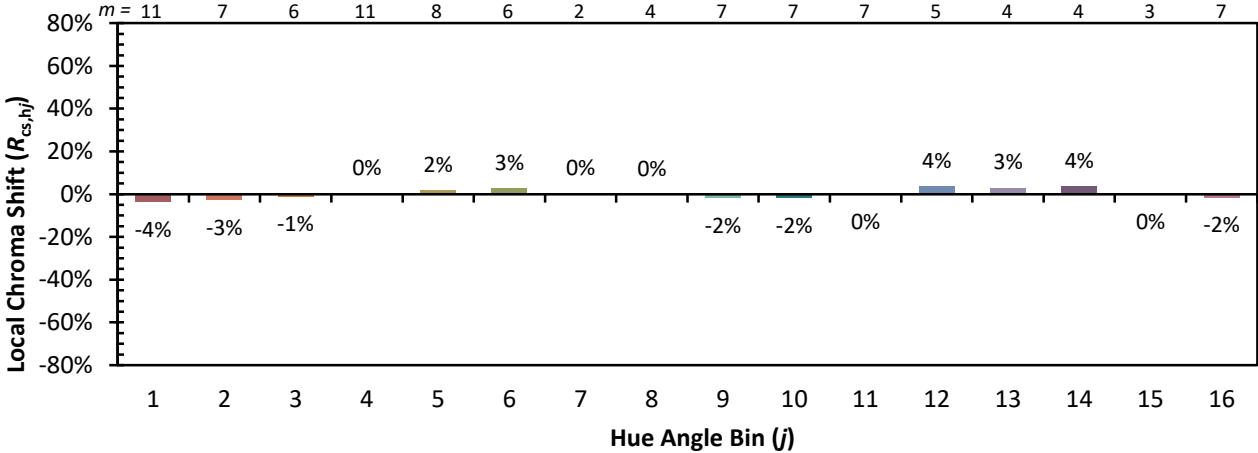


Individual Sample Fidelity Index ($R_{f,i}$)

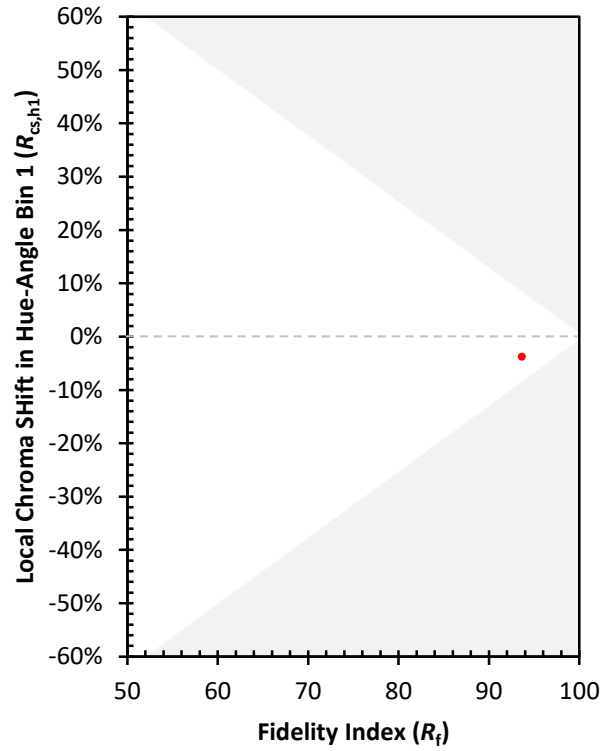
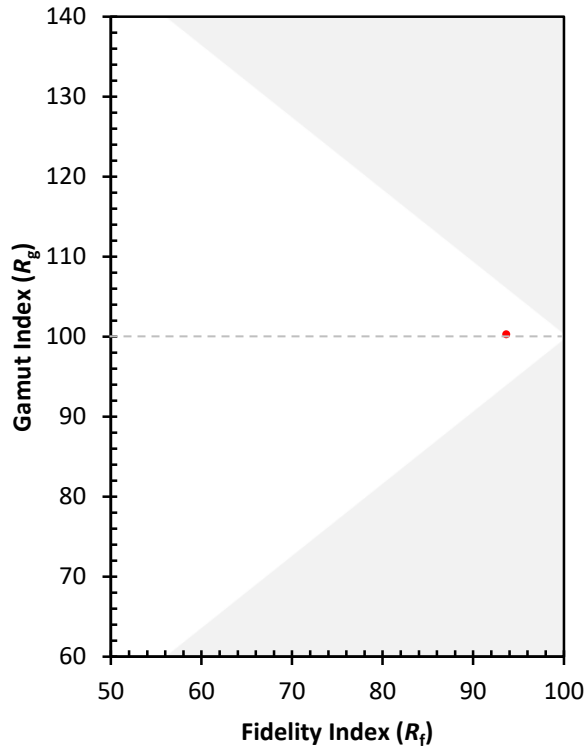
CES01 = 86	CES26 = 93	CES51 = 99	CES76 = 90
CES02 = 63	CES27 = 96	CES52 = 98	CES77 = 92
CES03 = 32	CES28 = 97	CES53 = 96	CES78 = 88
CES04 = 70	CES29 = 93	CES54 = 98	CES79 = 95
CES05 = 51	CES30 = 96	CES55 = 98	CES80 = 95
CES06 = 51	CES31 = 94	CES56 = 96	CES81 = 87
CES07 = 44	CES32 = 90	CES57 = 95	CES82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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)