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: P895877

Luminaire Tested: **GRZ-15L-927-ASYMx40-X-UNV-STD-1F**

Issue Date: 11/20/2024

Report Generated By 670245763 / DESKTOP-DVLU35A

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

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P895877
Test Lab:	EVERFINE
Issue Date:	11/20/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	io LED
Catalog Number:	GRZ-15L-927-ASYMx40-X-UNV-STD-1F
Description:	iO LED 90CRI 2700K GRAZER 1500 lumens per ft WITH Asymmetric x 40 deg OPTIC
Light Source:	2700K CCT, 90 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	1067.6 lumens
Efficiency:	N/A
Efficacy:	71.7 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):	14.9
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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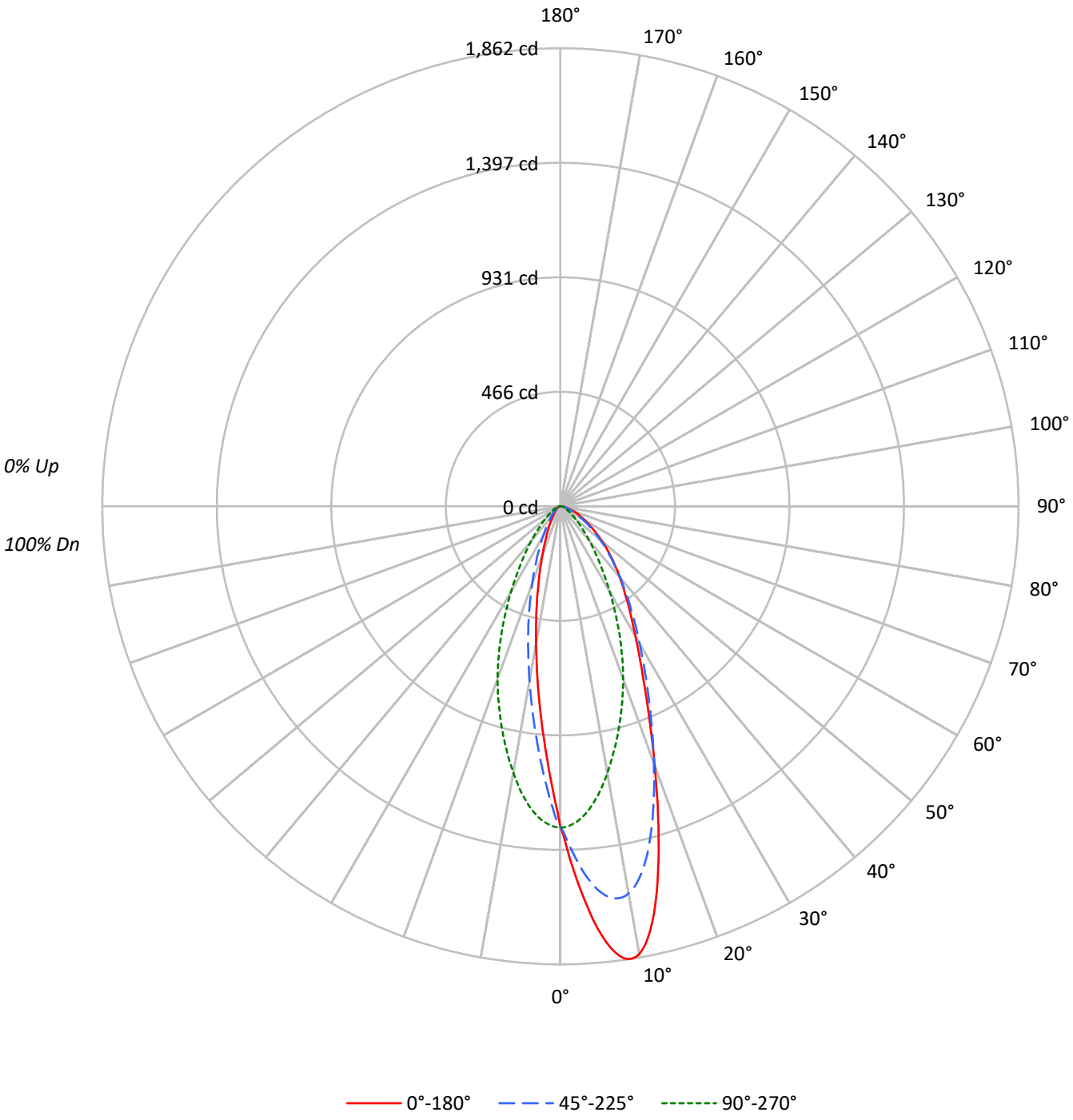
Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20			20			20			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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	112	109	106	103	110	107	104	101	103	100	98	99	97	95	95	94	93	91
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75
4	93	84	78	73	91	83	77	73	81	76	72	79	74	71	77	73	70	68
5	88	78	71	67	86	77	71	66	75	70	66	74	69	65	72	68	64	63
6	83	73	66	61	81	72	66	61	70	65	60	69	64	60	68	63	60	58
7	78	68	61	57	77	67	61	56	66	60	56	65	60	56	64	59	55	54
8	74	64	57	53	73	63	57	53	62	56	52	61	56	52	60	55	52	50
9	71	60	54	49	70	60	53	49	59	53	49	58	52	49	57	52	49	47
10	67	57	50	46	66	56	50	46	55	50	46	55	50	46	54	49	46	44

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	84206	84206	84206
5°	111408	80821	56981
10°	121141	72136	37275
15°	102626	61795	23852
20°	76974	51227	14897
25°	57802	40211	9604
30°	45511	30025	6524
35°	37474	21669	4682
40°	31584	15577	3557
45°	26710	11131	2995
50°	22251	8117	2431
55°	18271	6147	2139
60°	15174	4959	1976
65°	12742	4247	1910
70°	10516	3851	1907
75°	8308	3742	2021
80°	6879	3867	2268
85°	6890	4223	2741

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.0	11.1
10°-20°	260.8	24.4
20°-30°	243.5	22.8
30°-40°	180.5	16.9
40°-50°	122.6	11.5
50°-60°	74.9	7.0
60°-70°	40.8	3.8
70°-80°	20.0	1.9
80°-90°	6.7	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°	622.3	58.3
0°-40°	802.7	75.2
0°-60°	1000.2	93.7
0°-90°	1067.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1067.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1304	1304	1304	1304	1304	
5°	1719	1547	1247	1002	879	169
15°	1535	1405	924	502	357	419
25°	811	846	564	219	135	377
35°	475	494	275	94	59	299
45°	292	285	122	46	33	226
55°	162	149	55	26	19	147
65°	83	67	28	16	12	83
75°	33	28	15	10	8	36
85°	9	8	6	4	4	10
90°	1	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	30°	60°	90°	120°	150°	180°
0°	*1304.1*	1304.1	1304.1	1304.1	1304.1	1304.1	1304.1
0.5°	*1336.5*	1320.4	1321.0	1305.8	1290.5	1289.8	1245.0
1°	*1382.0*	1358.3	1342.0	1303.4	1265.1	1250.4	1200.1
1.5°	*1427.6*	1396.7	1360.6	1300.1	1240.2	1210.8	1154.8
2°	*1473.0*	1434.4	1379.2	1295.1	1214.7	1171.0	1111.7
2.5°	*1517.6*	1470.7	1396.6	1290.0	1188.7	1132.7	1070.3
3°	*1560.7*	1506.7	1412.7	1283.3	1162.4	1093.8	1029.3
3.5°	*1603.6*	1540.6	1427.1	1275.9	1136.1	1055.6	989.1
4°	*1644.2*	1573.0	1440.7	1267.5	1109.2	1019.0	951.3
4.5°	*1683.2*	1603.4	1452.3	1257.4	1082.3	983.0	914.9
5°	*1718.8*	1631.5	1461.7	1246.9	1055.7	948.6	879.1
5.5°	*1751.5*	1657.4	1469.8	1235.5	1028.6	915.3	844.4
6°	*1781.0*	1680.2	1475.6	1223.2	1001.7	881.7	810.0
6.5°	*1806.6*	1699.9	1480.2	1209.8	975.4	849.6	775.7
7°	*1827.5*	1716.1	1482.7	1195.6	949.5	818.5	743.0
7.5°	*1844.2*	1728.4	1483.6	1181.7	923.6	788.0	710.4
8°	*1855.3*	1737.4	1482.3	1166.4	897.9	757.4	679.8
8.5°	*1861.3*	1743.2	1478.8	1150.6	873.0	728.1	650.5
9°	*1861.8*	*1744.8*	*1474.1*	*1134.1*	*848.7*	*698.4*	*621.7*
9.5°	*1857.2*	1742.7	1467.6	1117.1	824.2	670.1	594.8
10°	*1847.6*	1736.0	1459.2	1100.2	799.7	642.4	568.5
10.5°	*1832.4*	1726.8	1449.3	1082.7	776.5	616.3	543.2
11°	*1813.1*	1714.0	1438.0	1065.0	753.6	591.1	519.8
11.5°	*1788.0*	1697.1	1425.3	1047.9	731.5	567.1	495.7
12°	*1760.8*	1676.7	1411.7	1030.4	709.5	543.3	473.4
12.5°	*1728.8*	1654.0	1396.4	1012.6	688.2	520.5	452.5
13°	*1694.3*	1627.9	1380.6	995.2	666.2	498.6	432.4
13.5°	*1657.0*	1600.2	1363.1	977.5	645.7	477.6	413.5
14°	*1617.6*	1570.0	1345.6	959.6	625.4	457.3	394.6
14.5°	*1576.6*	1537.9	1326.2	942.1	605.2	437.8	375.7
15°	*1535.2*	1503.7	1306.0	924.4	585.2	419.7	356.8
15.5°	*1492.6*	1468.8	1285.9	906.3	566.3	401.7	338.0
16°	*1449.8*	1432.8	1264.7	888.0	547.1	383.6	321.7
16.5°	*1406.3*	1395.7	1243.2	870.7	527.9	365.5	306.4
17°	*1362.8*	1359.2	1220.7	853.1	509.9	347.5	292.0
17.5°	*1320.5*	1322.1	1198.5	835.5	492.1	331.7	277.6
18°	*1279.2*	1284.9	1175.6	817.8	474.5	316.9	264.4
18.5°	*1238.0*	1248.6	1152.2	799.9	457.4	302.7	251.4
19°	*1197.5*	1212.3	1128.7	781.9	441.0	288.6	239.2
19.5°	*1158.7*	1175.7	1105.1	763.8	424.5	275.3	227.6
20°	*1120.2*	1140.9	1081.5	745.5	408.8	262.7	216.8
20.5°	*1084.5*	1106.2	1058.1	727.4	393.7	250.7	206.3
21°	*1049.2*	1073.2	1033.7	708.9	378.3	239.2	196.5
21.5°	*1014.7*	1040.9	1010.8	691.0	364.0	228.1	187.3
22°	*982.6*	1009.2	987.0	673.1	349.5	217.7	178.5

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CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
22.5°	*950.0*	978.6	963.4	654.5	335.7	207.7	170.2
23°	*919.5*	949.1	940.0	636.3	322.3	198.4	162.3
23.5°	*891.0*	921.3	916.4	618.4	309.4	189.3	154.8
24°	*863.0*	894.0	894.2	600.2	296.8	180.6	147.8
24.5°	*836.9*	867.4	871.6	582.5	284.6	172.6	141.1
25°	*811.3*	842.3	850.0	564.4	273.2	164.9	134.8
25.5°	*787.5*	818.1	828.0	546.6	261.8	157.6	128.8
26°	*763.9*	795.2	806.9	529.1	251.1	150.7	123.2
26.5°	*741.8*	772.4	785.8	512.2	240.6	143.9	117.8
27°	*720.7*	750.5	765.6	495.4	230.4	137.8	112.8
27.5°	*700.1*	730.5	745.3	478.7	220.7	131.8	108.0
28°	*680.8*	710.5	725.8	462.6	211.4	126.2	103.4
28.5°	*661.6*	691.4	706.3	446.7	202.5	120.7	99.1
29°	*644.3*	673.1	687.3	431.7	193.9	115.9	95.0
29.5°	*627.2*	654.9	668.9	417.2	185.9	111.0	91.1
30°	*610.4*	638.0	651.0	402.7	178.4	106.4	87.5
30.5°	*594.9*	621.5	633.6	388.2	170.8	102.1	84.0
31°	*579.5*	605.7	616.4	373.7	163.3	98.0	80.6
31.5°	*564.9*	590.0	599.5	359.3	155.8	94.1	77.5
32°	*550.9*	575.0	583.3	344.8	149.5	90.3	74.5
32.5°	*537.1*	560.7	567.2	332.2	143.2	86.8	71.7
33°	*523.8*	546.9	551.7	320.1	137.3	83.5	68.9
33.5°	*511.1*	533.1	535.9	308.4	131.7	80.2	66.4
34°	*498.8*	520.1	521.2	296.7	126.1	77.2	64.0
34.5°	*486.8*	507.6	506.2	285.6	121.1	74.4	61.6
35°	*475.4*	495.2	492.1	274.9	116.1	71.6	59.4
35.5°	*464.1*	483.3	477.9	264.5	111.4	69.0	57.3
36°	*453.1*	471.4	464.5	254.5	107.0	66.5	55.3
36.5°	*442.4*	460.1	451.2	244.6	102.8	64.2	53.4
37°	*431.9*	449.4	438.1	235.2	98.7	61.9	51.5
37.5°	*422.2*	438.5	425.4	226.3	94.8	59.8	49.8
38°	*412.5*	428.1	413.1	217.6	91.1	57.8	48.1
38.5°	*402.6*	417.7	401.2	208.8	87.6	55.8	46.5
39°	*393.1*	408.0	389.3	200.4	84.2	53.9	45.0
39.5°	*383.9*	398.0	377.5	192.4	81.0	52.2	43.6
40°	*374.7*	388.1	366.6	184.8	77.8	50.5	42.2
40.5°	*365.8*	378.1	355.9	177.3	75.0	48.8	41.0
41°	*357.2*	368.2	345.4	170.1	72.3	47.3	39.7
41.5°	*348.8*	358.3	335.3	163.4	69.7	45.8	38.5
42°	*340.0*	349.1	325.3	156.6	67.2	44.4	37.4
42.5°	*332.0*	340.2	315.5	150.3	64.8	43.1	36.3
43°	*323.8*	331.6	306.0	144.1	62.5	41.8	35.3
43.5°	*315.8*	323.1	297.0	138.2	60.3	40.6	34.3
44°	*307.9*	315.2	288.3	132.6	58.2	39.6	33.4
44.5°	*300.1*	309.1	279.6	127.1	56.5	38.7	33.0

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CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
45°	292.5	298.6	271.2	121.9	54.4	37.2	32.8
45.5°	284.9	290.5	262.6	116.8	52.5	36.1	31.8
46°	277.5	282.6	254.5	112.1	50.7	35.1	31.5
46.5°	270.1	275.0	246.5	107.6	49.0	34.2	30.9
47°	263.0	267.3	238.8	103.2	47.4	33.3	29.5
47.5°	255.7	260.0	231.3	99.1	45.9	32.4	28.6
48°	248.5	252.4	224.0	95.1	44.5	31.5	28.0
48.5°	241.8	245.3	216.9	91.3	43.1	30.7	27.4
49°	234.9	238.1	209.7	87.6	41.8	29.9	25.8
49.5°	228.3	231.2	203.0	84.1	40.5	29.2	24.8
50°	221.5	224.4	196.2	80.8	39.3	28.5	24.2
50.5°	215.1	217.5	189.8	77.6	38.2	27.8	23.6
51°	208.7	210.8	183.4	74.5	37.0	27.1	22.9
51.5°	202.5	204.3	177.0	71.6	36.0	26.4	22.4
52°	196.4	198.0	170.6	68.8	34.9	25.8	21.8
52.5°	190.6	191.5	164.2	66.1	34.0	25.2	21.4
53°	184.6	185.4	158.5	63.7	33.0	24.6	20.9
53.5°	179.0	179.3	152.9	61.3	32.1	24.1	20.3
54°	173.4	173.3	147.4	59.0	31.3	23.5	19.9
54.5°	167.9	167.4	142.0	56.7	30.4	23.0	19.4
55°	162.3	161.7	136.7	54.6	29.6	22.4	19.0
55.5°	157.1	156.1	131.6	52.7	28.8	22.0	18.6
56°	152.1	150.7	126.5	50.8	28.1	21.5	18.2
56.5°	147.5	145.5	121.7	48.9	27.4	21.0	17.8
57°	142.8	140.3	117.0	47.2	26.7	20.5	17.4
57.5°	138.4	135.2	112.4	45.5	26.0	20.1	17.0
58°	134.0	130.3	107.9	43.9	25.4	19.7	16.7
58.5°	129.6	125.5	103.5	42.4	24.8	19.2	16.3
59°	125.6	120.8	99.3	41.0	24.2	18.8	16.0
59.5°	121.5	116.3	95.2	39.6	23.6	18.4	15.7
60°	117.5	111.9	91.2	38.4	23.0	18.0	15.3
60.5°	113.7	107.7	87.5	37.1	22.5	17.7	15.0
61°	109.8	103.5	83.8	35.9	21.9	17.3	14.7
61.5°	106.0	99.5	80.2	34.7	21.4	16.9	14.4
62°	102.4	95.7	76.8	33.6	20.9	16.5	14.1
62.5°	98.8	92.0	73.6	32.6	20.5	16.2	13.9
63°	95.4	88.4	70.4	31.5	20.0	15.9	13.6
63.5°	92.1	85.0	67.3	30.5	19.5	15.5	13.3
64°	89.0	81.6	64.5	29.6	19.1	15.2	13.0
64.5°	86.1	78.4	61.6	28.7	18.7	14.9	12.8
65°	83.4	75.3	58.9	27.8	18.2	14.6	12.5
65.5°	80.8	72.3	56.3	27.0	17.8	14.2	12.3
66°	78.0	69.4	53.9	26.2	17.4	14.0	12.0
66.5°	75.2	66.6	51.5	25.4	17.0	13.6	11.8
67°	72.4	64.0	49.2	24.6	16.7	13.3	11.5

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CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
67.5°	*69.6*	61.4	47.1	23.8	16.3	13.1	11.3
68°	*66.7*	58.9	44.9	23.1	15.9	12.8	11.1
68.5°	*63.9*	56.5	42.9	22.4	15.6	12.5	10.8
69°	*61.0*	54.2	41.0	21.7	15.2	12.2	10.6
69.5°	*58.3*	52.0	39.1	21.1	14.9	11.9	10.4
70°	*55.7*	49.8	37.3	20.4	14.5	11.7	10.1
70.5°	*53.1*	47.7	35.6	19.8	14.2	11.4	9.9
71°	*50.6*	45.8	34.0	19.2	13.9	11.2	9.7
71.5°	*48.1*	43.8	32.4	18.7	13.5	10.9	9.5
72°	*45.7*	41.9	30.9	18.1	13.2	10.6	9.3
72.5°	*43.5*	40.1	29.5	17.6	12.9	10.4	9.1
73°	*41.2*	38.3	28.1	17.0	12.6	10.1	8.9
73.5°	*39.1*	36.6	26.8	16.5	12.3	9.9	8.7
74°	*37.1*	35.0	25.6	16.0	12.0	9.6	8.5
74.5°	*35.1*	33.4	24.4	15.5	11.7	9.4	8.3
75°	*33.3*	31.8	23.2	15.0	11.3	9.1	8.1
75.5°	*31.4*	30.3	22.1	14.5	11.0	8.9	7.9
76°	*29.7*	28.9	21.1	14.0	10.7	8.7	7.7
76.5°	*28.1*	27.5	20.0	13.5	10.4	8.5	7.5
77°	*26.5*	26.1	19.1	13.1	10.1	8.2	7.3
77.5°	*25.0*	24.9	18.1	12.6	9.8	8.0	7.1
78°	*23.6*	23.6	17.2	12.2	9.5	7.7	6.9
78.5°	*22.2*	22.4	16.4	11.7	9.2	7.5	6.7
79°	*21.0*	21.3	15.6	11.3	8.9	7.3	6.5
79.5°	*19.7*	20.1	14.8	10.8	8.6	7.0	6.3
80°	*18.5*	19.0	14.0	10.4	8.3	6.8	6.1
80.5°	*17.5*	18.0	13.2	10.0	8.0	6.6	5.9
81°	*16.4*	17.0	12.5	9.5	7.7	6.3	5.7
81.5°	*15.5*	16.0	11.8	9.0	7.3	6.1	5.4
82°	*14.5*	15.0	11.1	8.6	7.0	5.8	5.2
82.5°	*13.6*	14.1	10.4	8.2	6.7	5.6	5.0
83°	*12.7*	13.2	9.7	7.7	6.3	5.3	4.8
83.5°	*11.8*	12.2	9.0	7.2	5.9	5.0	4.5
84°	*11.0*	11.3	8.4	6.7	5.6	4.7	4.3
84.5°	*10.1*	10.4	7.7	6.2	5.2	4.4	4.0
85°	*9.3*	9.5	7.0	5.7	4.8	4.1	3.7
85.5°	*8.5*	8.6	6.4	5.2	4.4	3.8	3.4
86°	*7.7*	7.7	5.7	4.6	4.0	3.5	3.1
86.5°	*6.9*	6.8	4.9	4.1	3.5	3.1	2.8
87°	*6.0*	5.8	4.2	3.5	3.0	2.7	2.4
87.5°	*5.1*	4.8	3.4	2.8	2.5	2.3	2.0
88°	*4.2*	3.8	2.6	2.1	1.9	1.9	1.6
88.5°	*3.2*	2.7	1.8	1.5	1.4	1.4	1.2
89°	*2.2*	1.8	1.1	1.0	0.9	0.9	0.7
89.5°	*1.4*	0.9	0.5	0.4	0.4	0.5	0.4

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

Scaled Data Report

TEST NUMBER: P895877
CATALOG NUMBER: GRZ-15L-927-ASYMx40-X-UNV-STD-1F

CANDELA DISTRIBUTION (continued):

	0°	30°	60°	90°	120°	150°	180°
90°	*0.7*	0.5	0.4	0.3	0.3	0.3	0.3

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

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

iO LED

Report Number: SP1-2101-124-1

Luminaire Tested: GRZ-05L-927-10X10-X-UNV-STD-2F

Test Date: 02/10/2021

Report Generated By controller / USPTCWHP6086842

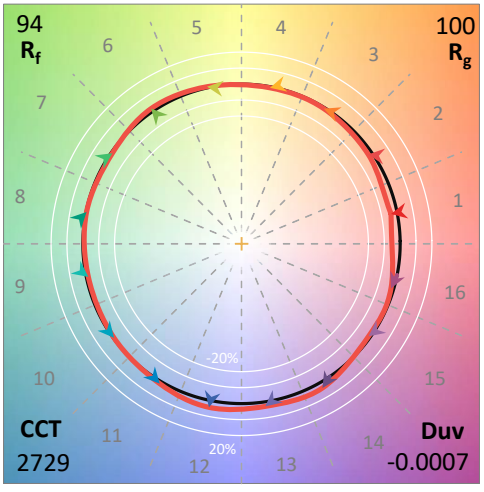
Test Information

Test Method:	LM-79-08
Report Number:	SP1-2101-124-1
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-927-10X10-X-UNV-STD-2F**
Description:	IO LED Wall Grazer GRZ

Spectral Parameters

CCT (K):	2729	CRI (Ra):	94.7		
CIE u':	0.2613	R1:	95.4	R9:	67.0
CIE v':	0.5257	R2:	98.0	R10:	94.1
Duv:	-0.0007	R3:	98.7	R11:	96.2
CIE x:	0.4561	R4:	95.1	R12:	88.6
CIE y:	0.4078	R5:	95.2	R13:	96.3
CIE z:	0.1361	R6:	97.5	R14:	98.5
Peak Wavelength (nm):	624	R7:	92.8		
Dominant Wavelength (nm):	584	R8:	84.7		
Purity:	59.5				

Rf:	93.5
Rg:	99.9



Test Conditions

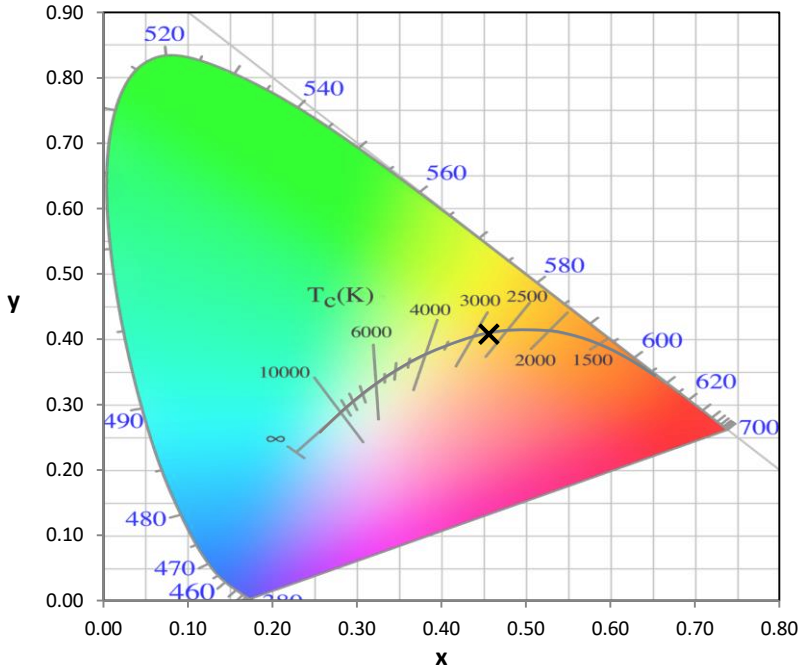
Stabilization Time:	176M
Operation Time:	12H
Room Temperature (°C) / RH%:	25.1/39%
Sphere Temperature (°C):	24.5

REPORT NUMBER: SP1-2101-124-1

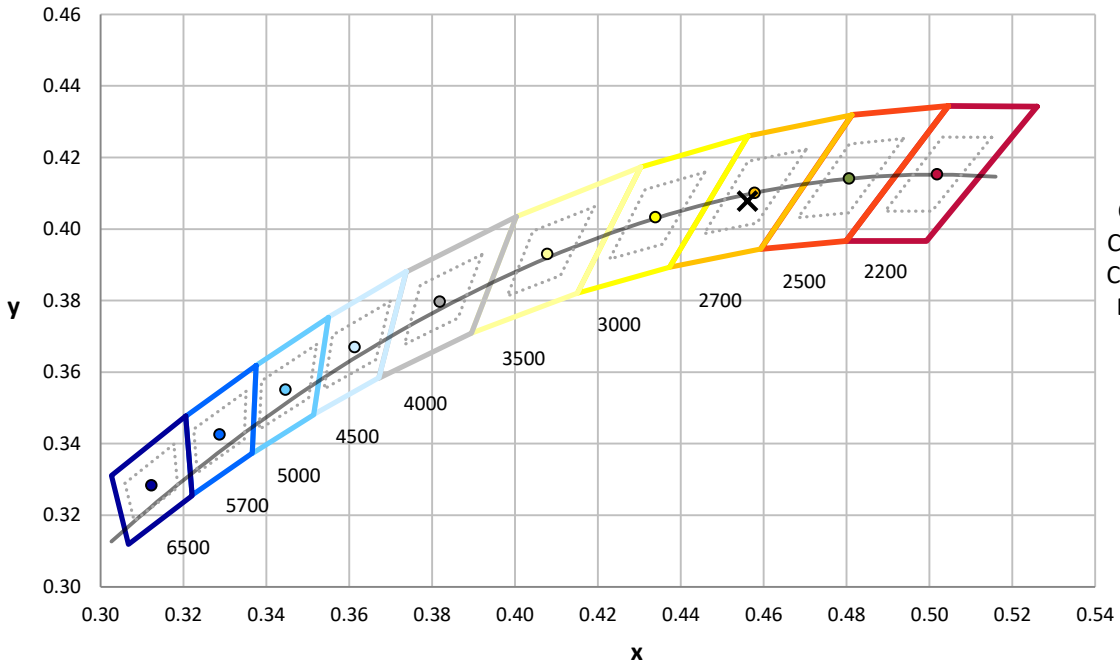
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	1/31/2021	7/31/2021
Power Meter	IN0071	12/1/2020	12/1/2021
AC Power Source	IN0063	12/1/2020	12/1/2021
DC Power Source	IN0208	12/1/2020	12/1/2021
Sphere Thermometer	IN0085	12/1/2020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

REPORT NUMBER: SP1-2101-124-1

CIE 1931 Chromaticity Diagram



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

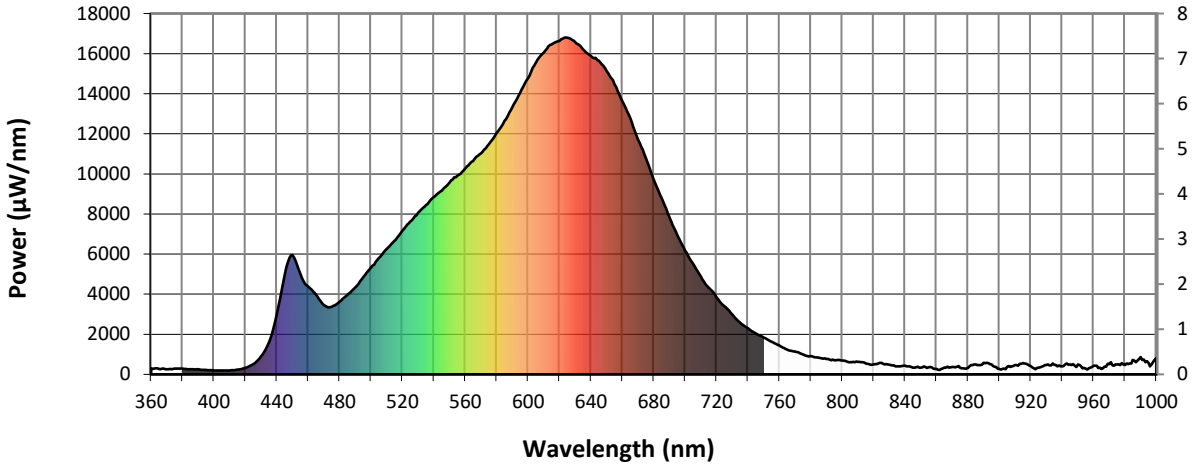


CCT = 2729K
CIE x = 0.4561
CIE y = 0.4078
Duv = -0.0007

Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2101-124-1

Photopic Flux vs. Wavelength



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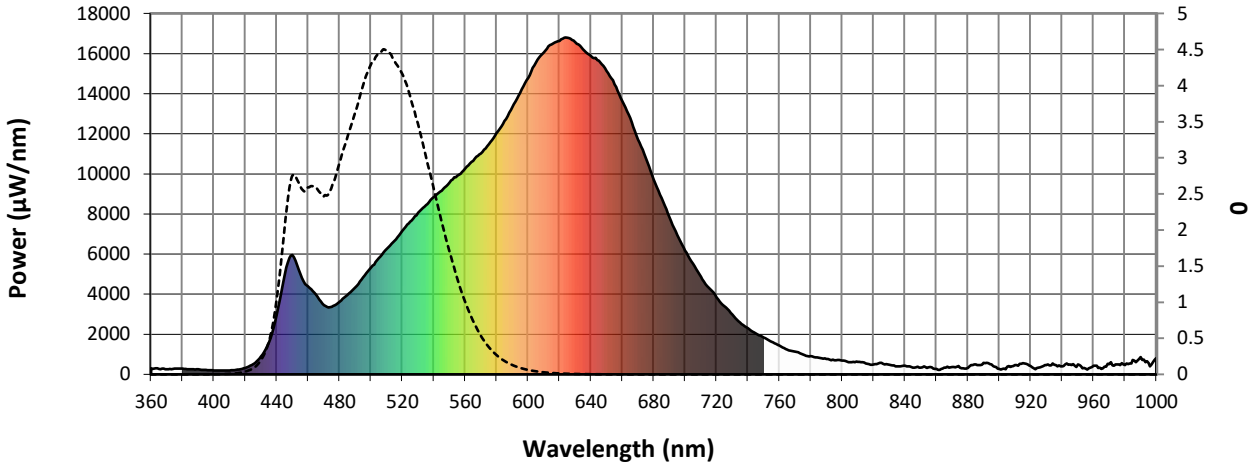
λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	309	0.0	490	4342	0.6	620	16630	4.3	750	1836	0.0	880	324	0.0
365	277	0.0	495	4830	0.9	625	16799	3.7	755	1629	0.0	885	500	0.0
370	260	0.0	500	5328	1.2	630	16562	3.0	760	1434	0.0	890	571	0.0
375	295	0.0	505	5798	1.6	635	16219	2.4	765	1231	0.0	895	494	0.0
380	288	0.0	510	6250	2.1	640	15881	1.9	770	1141	0.0	900	267	0.0
385	260	0.0	515	6656	2.8	645	15637	1.5	775	986	0.0	905	379	0.0
390	252	0.0	520	7162	3.5	650	15133	1.1	780	904	0.0	910	465	0.0
395	226	0.0	525	7622	4.1	655	14463	0.8	785	827	0.0	915	557	0.0
400	191	0.0	530	8063	4.7	660	13640	0.6	790	768	0.0	920	412	0.0
405	196	0.0	535	8439	5.2	665	12787	0.4	795	711	0.0	925	332	0.0
410	195	0.0	540	8846	5.8	670	11721	0.3	800	693	0.0	930	466	0.0
415	235	0.0	545	9169	6.1	675	10776	0.2	805	609	0.0	935	480	0.0
420	323	0.0	550	9555	6.5	680	9728	0.1	810	615	0.0	940	404	0.0
425	510	0.0	555	9909	6.8	685	8803	0.1	815	547	0.0	945	502	0.0
430	889	0.0	560	10257	7.0	690	7856	0.0	820	491	0.0	950	495	0.0
435	1599	0.0	565	10655	7.1	695	6947	0.0	825	570	0.0	955	285	0.0
440	2967	0.0	570	11020	7.2	700	6181	0.0	830	477	0.0	960	433	0.0
445	4944	0.1	575	11481	7.1	705	5516	0.0	835	401	0.0	965	277	0.0
450	5950	0.2	580	12032	7.1	710	4865	0.0	840	440	0.0	970	517	0.0
455	5013	0.2	585	12647	7.0	715	4321	0.0	845	330	0.0	975	498	0.0
460	4393	0.2	590	13350	6.9	720	3839	0.0	850	336	0.0	980	465	0.0
465	3971	0.2	595	14054	6.7	725	3403	0.0	855	350	0.0	985	724	0.0
470	3442	0.2	600	14775	6.4	730	2978	0.0	860	266	0.0	990	861	0.0
475	3372	0.3	605	15552	6.0	735	2581	0.0	865	338	0.0	995	562	0.0
480	3623	0.3	610	16054	5.5	740	2292	0.0	870	363	0.0	1000	816	0.0
485	3960	0.5	615	16452	5.0	745	2037	0.0	875	335	0.0			

REPORT NUMBER: SP1-2101-124-1

Scotopic Flux vs. Wavelength

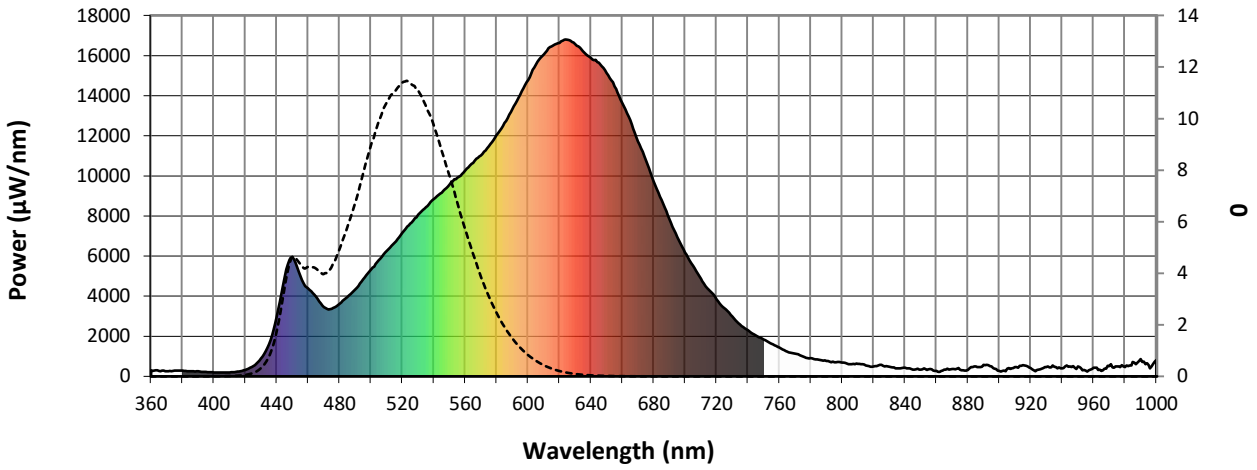


Scotopic Lumens: 1011.1 **S/P: 1.32**

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	309	0.0	490	4342	6.7	620	16630	0.2	750	1836	0.0	880	324	0.0
365	277	0.0	495	4830	7.8	625	16799	0.1	755	1629	0.0	885	500	0.0
370	260	0.0	500	5328	8.9	630	16562	0.1	760	1434	0.0	890	571	0.0
375	295	0.0	505	5798	9.9	635	16219	0.1	765	1231	0.0	895	494	0.0
380	288	0.0	510	6250	10.6	640	15881	0.0	770	1141	0.0	900	267	0.0
385	260	0.0	515	6656	11.0	645	15637	0.0	775	986	0.0	905	379	0.0
390	252	0.0	520	7162	11.4	650	15133	0.0	780	904	0.0	910	465	0.0
395	226	0.0	525	7622	11.4	655	14463	0.0	785	827	0.0	915	557	0.0
400	191	0.0	530	8063	11.1	660	13640	0.0	790	768	0.0	920	412	0.0
405	196	0.0	535	8439	10.5	665	12787	0.0	795	711	0.0	925	332	0.0
410	195	0.0	540	8846	9.8	670	11721	0.0	800	693	0.0	930	466	0.0
415	235	0.0	545	9169	8.8	675	10776	0.0	805	609	0.0	935	480	0.0
420	323	0.1	550	9555	7.8	680	9728	0.0	810	615	0.0	940	404	0.0
425	510	0.1	555	9909	6.8	685	8803	0.0	815	547	0.0	945	502	0.0
430	889	0.3	560	10257	5.7	690	7856	0.0	820	491	0.0	950	495	0.0
435	1599	0.7	565	10655	4.8	695	6947	0.0	825	570	0.0	955	285	0.0
440	2967	1.7	570	11020	3.9	700	6181	0.0	830	477	0.0	960	433	0.0
445	4944	3.3	575	11481	3.1	705	5516	0.0	835	401	0.0	965	277	0.0
450	5950	4.6	580	12032	2.5	710	4865	0.0	840	440	0.0	970	517	0.0
455	5013	4.4	585	12647	1.9	715	4321	0.0	845	330	0.0	975	498	0.0
460	4393	4.2	590	13350	1.5	720	3839	0.0	850	336	0.0	980	465	0.0
465	3971	4.2	595	14054	1.1	725	3403	0.0	855	350	0.0	985	724	0.0
470	3442	4.0	600	14775	0.8	730	2978	0.0	860	266	0.0	990	861	0.0
475	3372	4.2	605	15552	0.6	735	2581	0.0	865	338	0.0	995	562	0.0
480	3623	4.9	610	16054	0.4	740	2292	0.0	870	363	0.0	1000	816	0.0
485	3960	5.7	615	16452	0.3	745	2037	0.0	875	335	0.0			

REPORT NUMBER: SP1-2101-124-1

Melanopic Flux vs. Wavelength



Melanopic Lumens: 382.4 **M/P: 0.5**

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	309	0.0	490	4342	3.6	620	16630	0.0	750	1836	0.0	880	324	0.0
365	277	0.0	495	4830	4.0	625	16799	0.0	755	1629	0.0	885	500	0.0
370	260	0.0	500	5328	4.3	630	16562	0.0	760	1434	0.0	890	571	0.0
375	295	0.0	505	5798	4.5	635	16219	0.0	765	1231	0.0	895	494	0.0
380	288	0.0	510	6250	4.5	640	15881	0.0	770	1141	0.0	900	267	0.0
385	260	0.0	515	6656	4.3	645	15637	0.0	775	986	0.0	905	379	0.0
390	252	0.0	520	7162	4.2	650	15133	0.0	780	904	0.0	910	465	0.0
395	226	0.0	525	7622	3.9	655	14463	0.0	785	827	0.0	915	557	0.0
400	191	0.0	530	8063	3.5	660	13640	0.0	790	768	0.0	920	412	0.0
405	196	0.0	535	8439	3.0	665	12787	0.0	795	711	0.0	925	332	0.0
410	195	0.0	540	8846	2.6	670	11721	0.0	800	693	0.0	930	466	0.0
415	235	0.0	545	9169	2.1	675	10776	0.0	805	609	0.0	935	480	0.0
420	323	0.0	550	9555	1.7	680	9728	0.0	810	615	0.0	940	404	0.0
425	510	0.1	555	9909	1.3	685	8803	0.0	815	547	0.0	945	502	0.0
430	889	0.2	560	10257	1.0	690	7856	0.0	820	491	0.0	950	495	0.0
435	1599	0.4	565	10655	0.7	695	6947	0.0	825	570	0.0	955	285	0.0
440	2967	1.0	570	11020	0.5	700	6181	0.0	830	477	0.0	960	433	0.0
445	4944	2.0	575	11481	0.4	705	5516	0.0	835	401	0.0	965	277	0.0
450	5950	2.7	580	12032	0.3	710	4865	0.0	840	440	0.0	970	517	0.0
455	5013	2.6	585	12647	0.2	715	4321	0.0	845	330	0.0	975	498	0.0
460	4393	2.6	590	13350	0.1	720	3839	0.0	850	336	0.0	980	465	0.0
465	3971	2.6	595	14054	0.1	725	3403	0.0	855	350	0.0	985	724	0.0
470	3442	2.5	600	14775	0.1	730	2978	0.0	860	266	0.0	990	861	0.0
475	3372	2.6	605	15552	0.0	735	2581	0.0	865	338	0.0	995	562	0.0
480	3623	2.9	610	16054	0.0	740	2292	0.0	870	363	0.0	1000	816	0.0
485	3960	3.3	615	16452	0.0	745	2037	0.0	875	335	0.0			

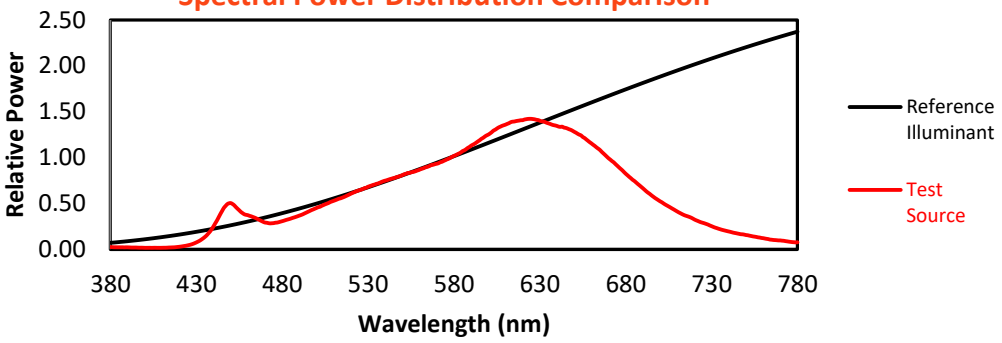
REPORT NUMBER: SP1-2101-124-1

TM-30-18

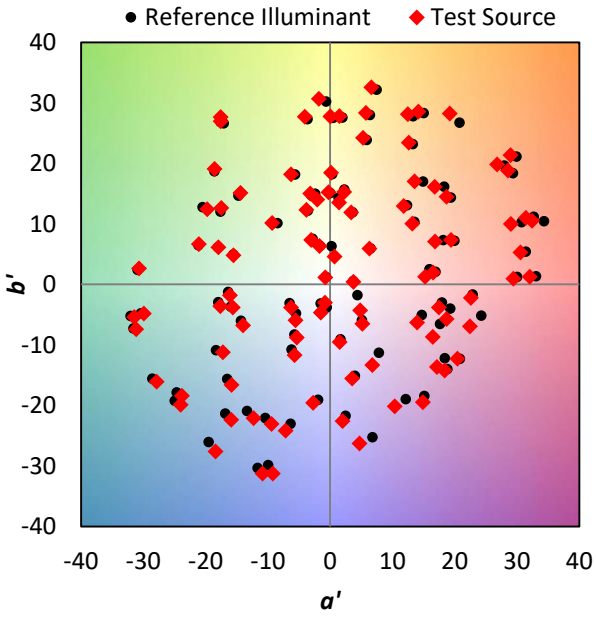
Summary

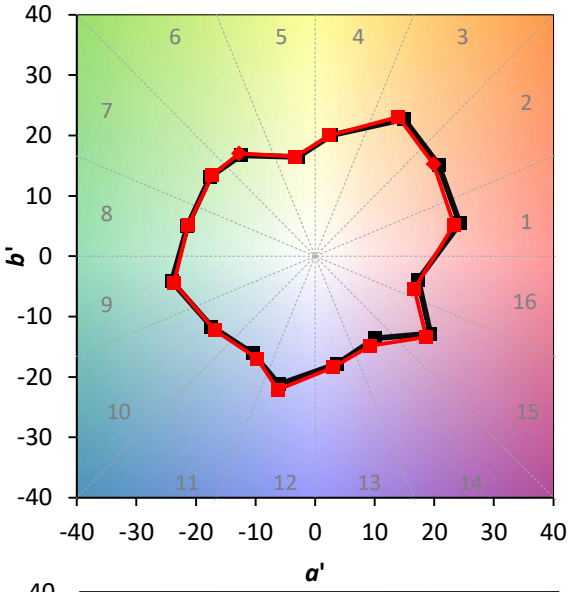
R_f = 93.5
R_g = 99.9
CIE R_a = 94.7
R_9 = 67.0

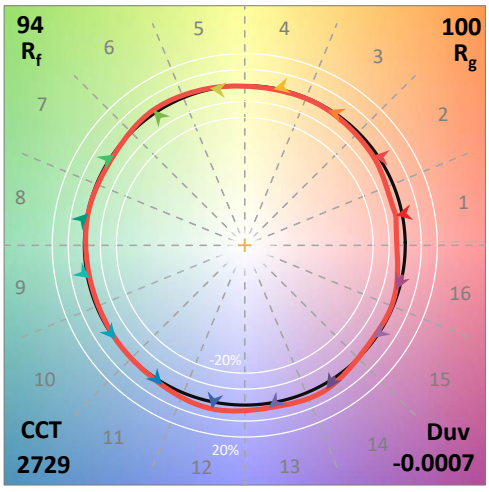
Spectral Power Distribution Comparison

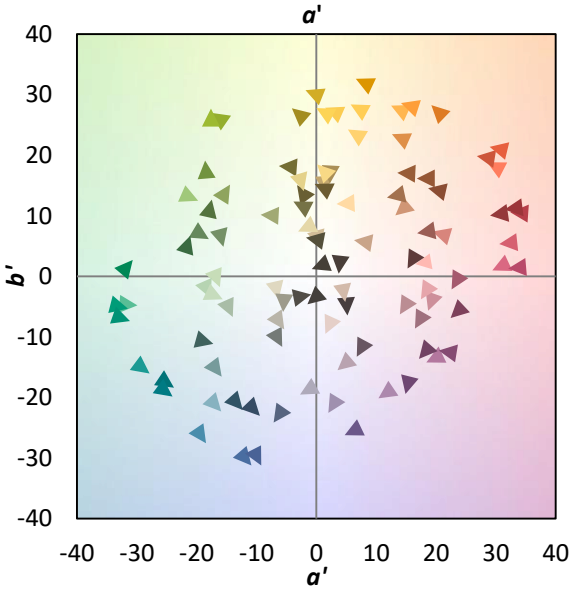


Color Vector Graphics







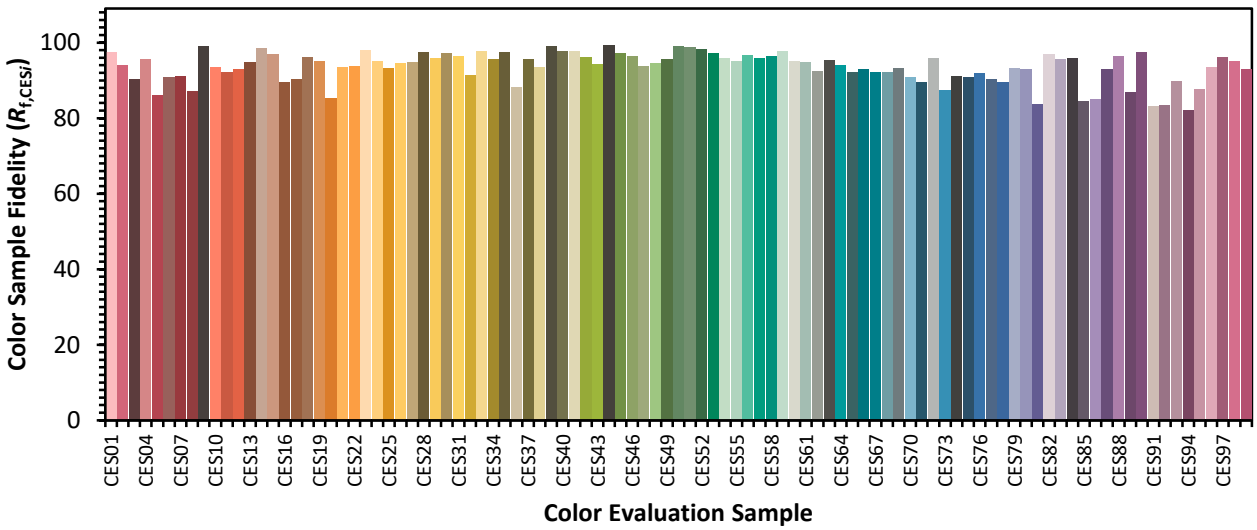


REPORT NUMBER: SP1-2101-124-1

TM-30-18

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

CES01 = 86	CES26 = 95	CES51 = 99	CES76 = 92
CES02 = 64	CES27 = 95	CES52 = 98	CES77 = 90
CES03 = 32	CES28 = 98	CES53 = 97	CES78 = 90
CES04 = 71	CES29 = 96	CES54 = 96	CES79 = 93
CES05 = 51	CES30 = 97	CES55 = 95	CES80 = 93
CES06 = 52	CES31 = 96	CES56 = 97	CES81 = 84
CES07 = 44	CES32 = 91	CES57 = 96	CES82 = 97
CES08 = 43	CES33 = 98	CES58 = 97	CES83 = 96
CES09 = 29	CES34 = 96	CES59 = 98	CES84 = 96
CES10 = 77	CES35 = 97	CES60 = 95	CES85 = 85
CES11 = 59	CES36 = 88	CES61 = 95	CES86 = 85
CES12 = 66	CES37 = 96	CES62 = 93	CES87 = 93
CES13 = 44	CES38 = 94	CES63 = 95	CES88 = 96
CES14 = 74	CES39 = 99	CES64 = 94	CES89 = 87
CES15 = 72	CES40 = 98	CES65 = 92	CES90 = 97
CES16 = 48	CES41 = 98	CES66 = 93	CES91 = 83
CES17 = 50	CES42 = 96	CES67 = 92	CES92 = 83
CES18 = 57	CES43 = 94	CES68 = 92	CES93 = 90
CES19 = 72	CES44 = 99	CES69 = 93	CES94 = 82
CES20 = 68	CES45 = 97	CES70 = 91	CES95 = 88
CES21 = 87	CES46 = 96	CES71 = 90	CES96 = 94
CES22 = 79	CES47 = 94	CES72 = 96	CES97 = 96
CES23 = 92	CES48 = 95	CES73 = 87	CES98 = 95
CES24 = 91	CES49 = 96	CES74 = 91	CES99 = 93
CES25 = 72	CES50 = 99	CES75 = 91	



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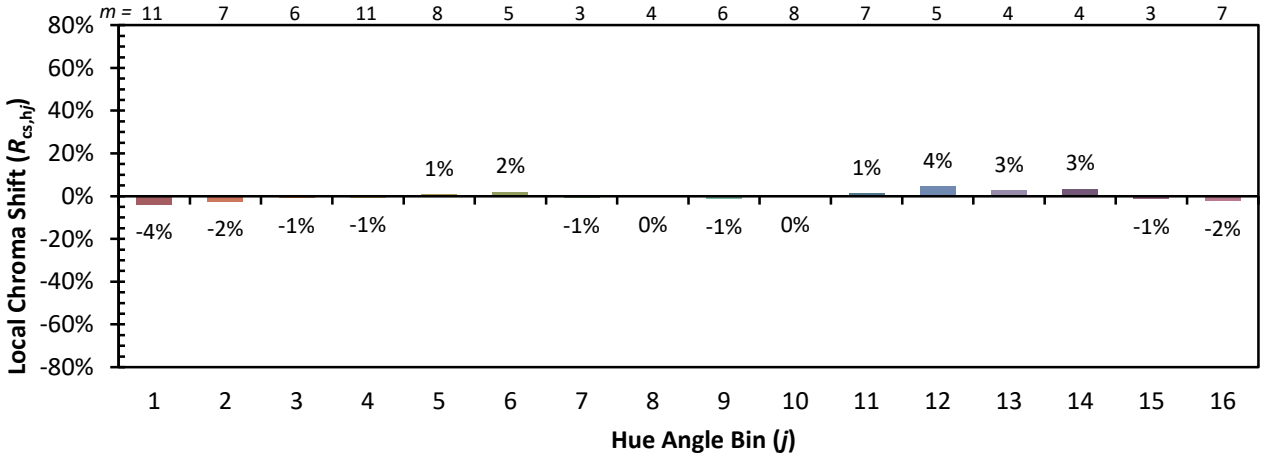
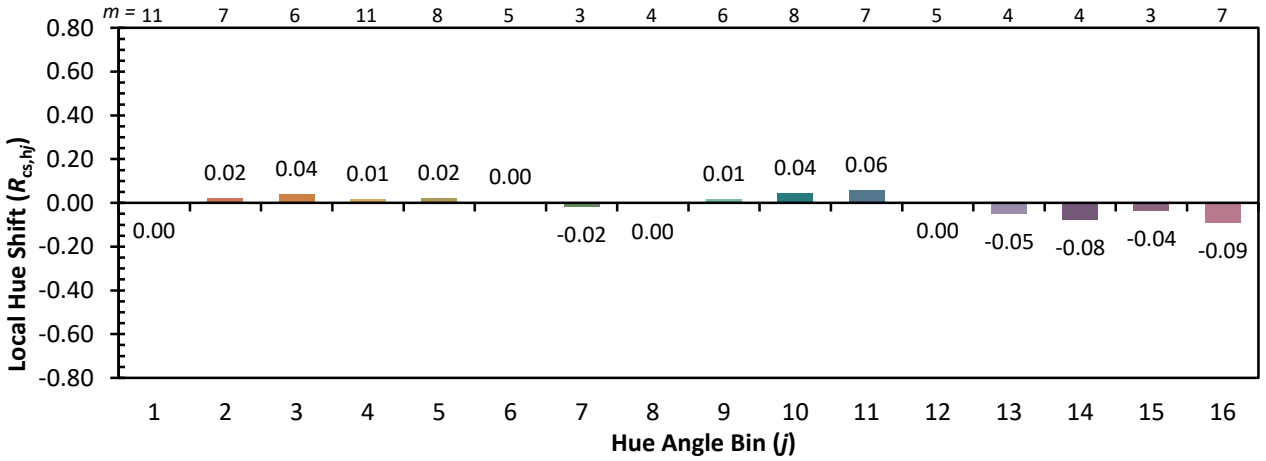
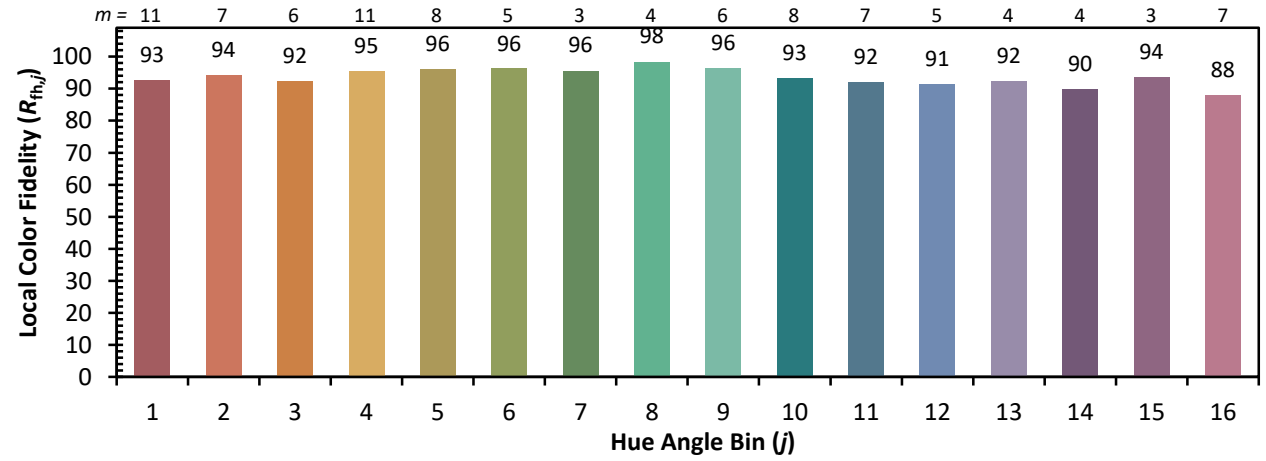
Color Rendition by Hue-Angle Bin







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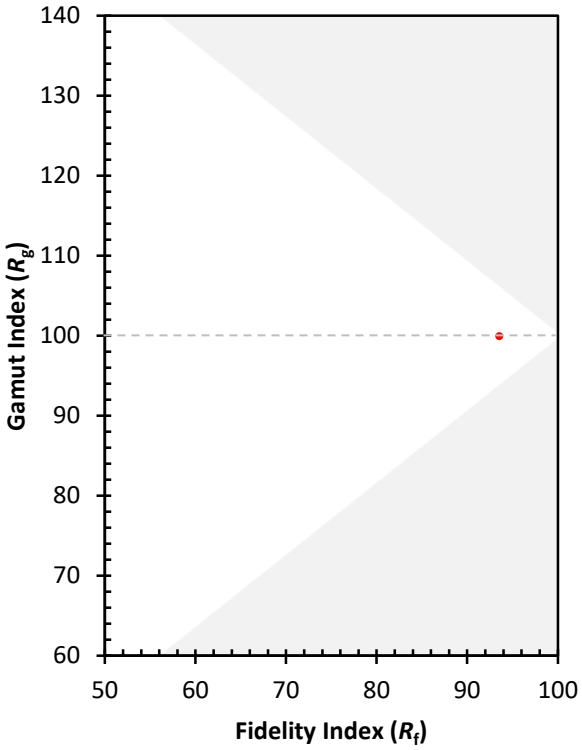
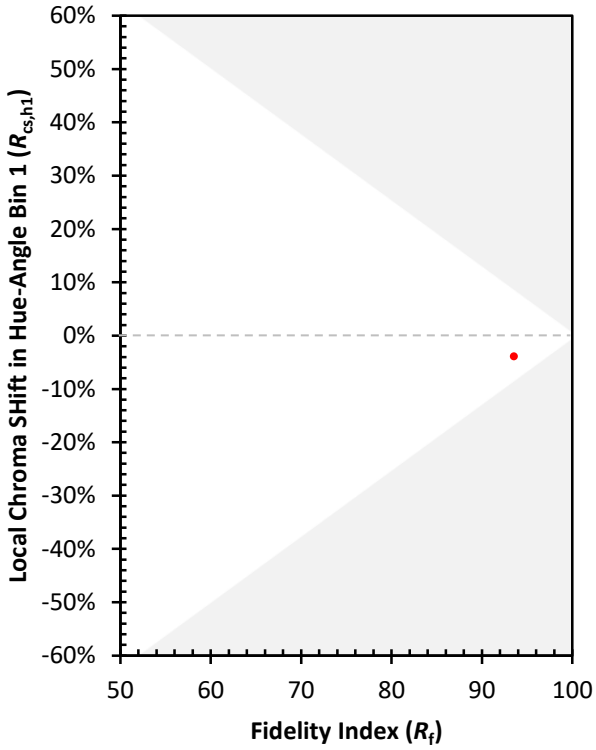
Measure Comparisons





(END OF REPORT)