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

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P641394

Luminaire Tested: GWS-SA5F-827-U-SLL-W-GRSBK

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-2019
Report Number:	P641394
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-38)
Test Lab:	COOPER LIGHTING SOLUTIONS
Issue Date:	1/10/2023
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	McGRAW-EDISON
Catalog Number:	GWS-SA5F-827-U-SLL-W-GRSBK
Description:	GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND SPILL LIGHT ELIMINATOR LEFT OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source:	(80) 2700K CCT, 80 CRI LEDS
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	16452.6 lumens
Efficiency:	N/A
Efficacy:	53.0 lumens/watt
Luminous Opening:	Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification:	Type III - Short
BUG Rating:	B3 - U0 - G2

Input Watts (W):	310.3
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	NR
Total Harmonic Distortion (THDi):	NR
Frequency (hertz):	0
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	28.75 FT

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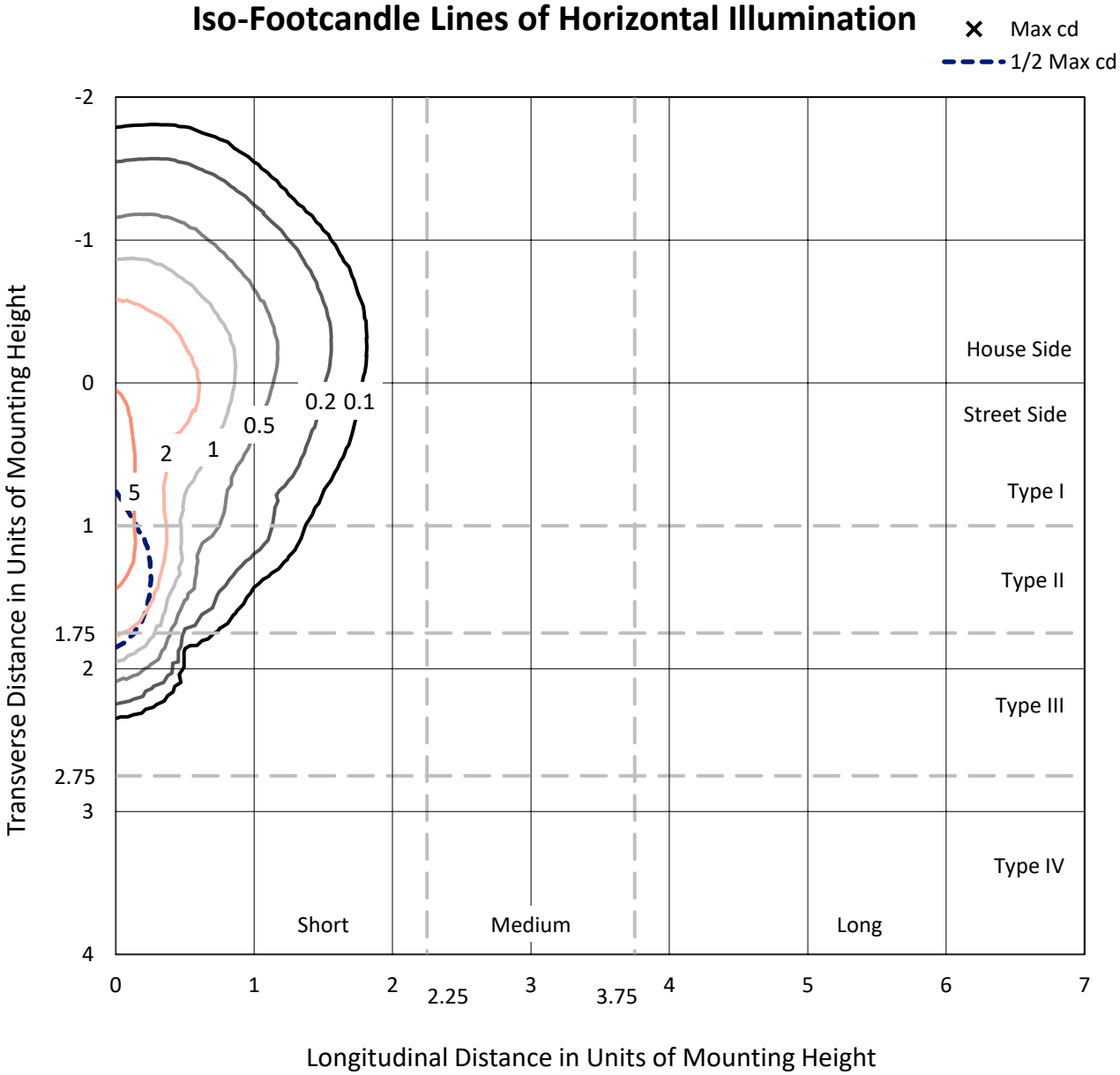
Iso-Footcandle Lines of Horizontal Illumination



Based on 25 foot mounting height. Maximum calculated value = 7 fc
Type III - Short - N/A

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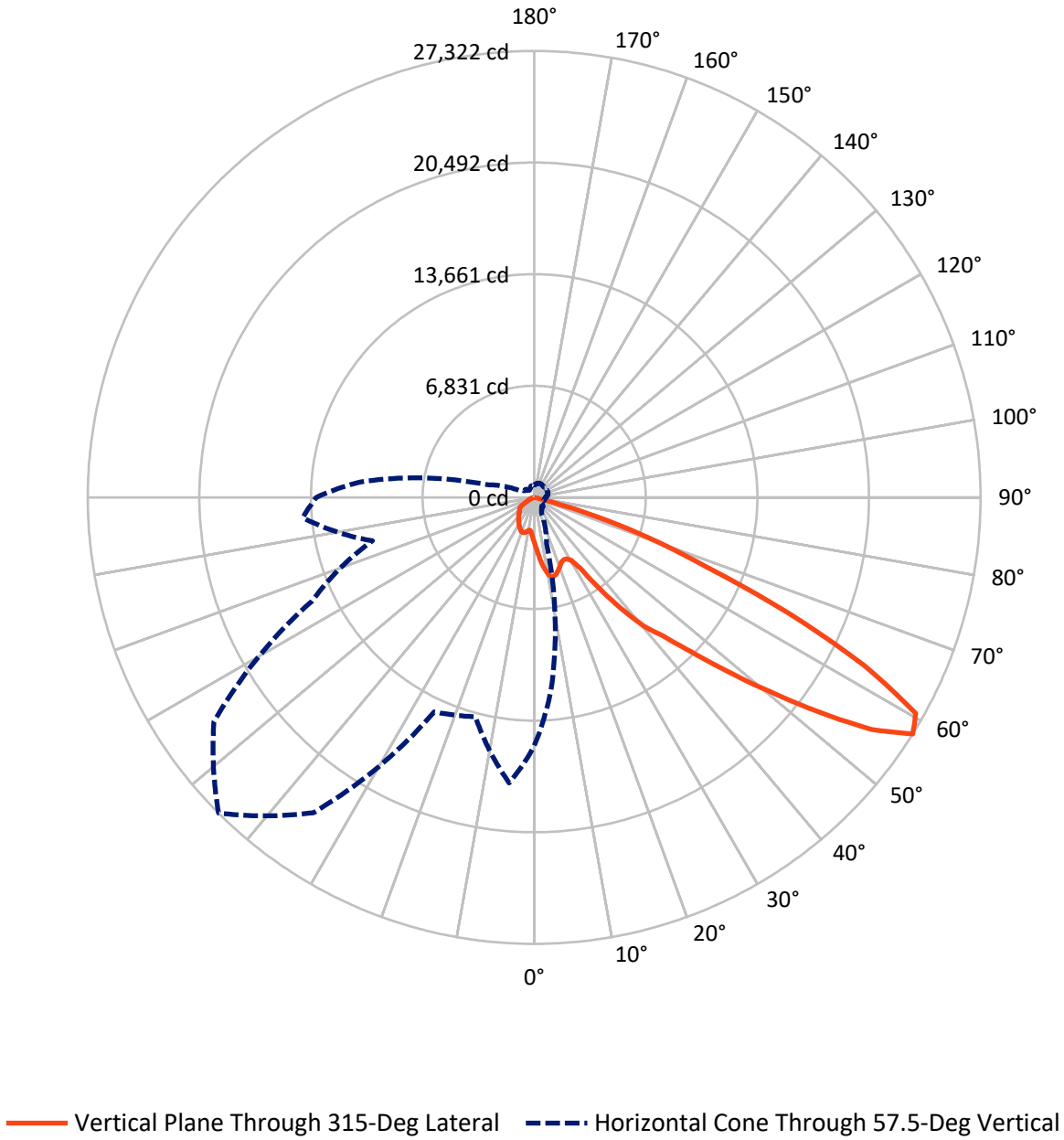
Luminous Intensity Polar Plot



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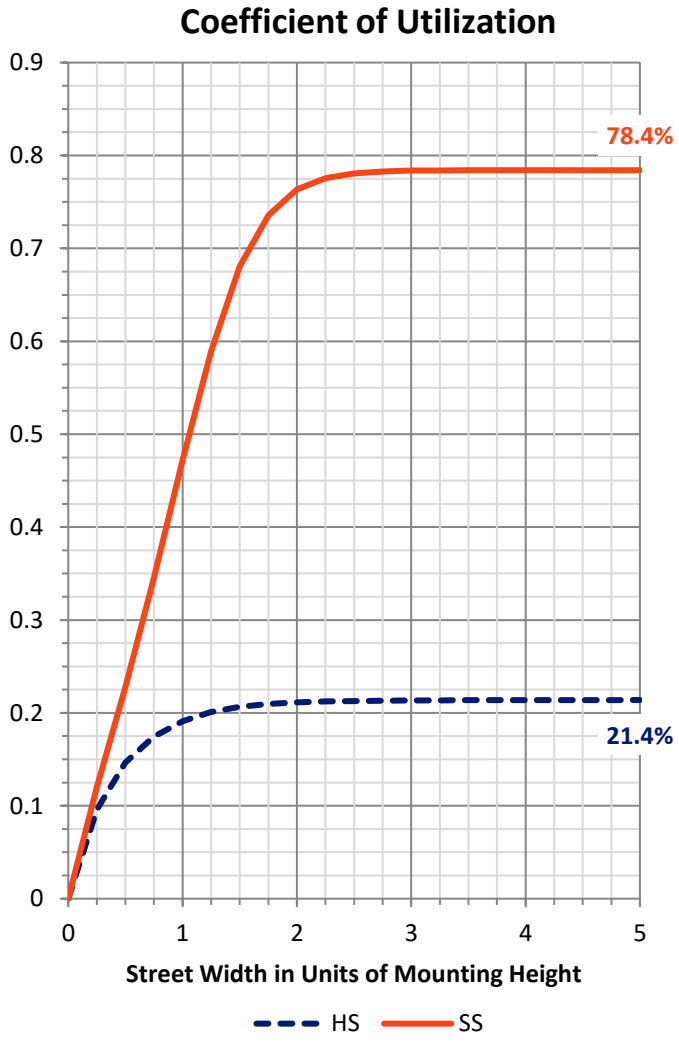
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	3544.5	0.0	3544.5
	% Fixture	21.5	0.0	21.5
Street Side	Lumens	12908.2	0.0	12908.2
	% Fixture	78.5	0.0	78.5
Total	Lumens	16452.6	0.0	16452.6
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	276.3	1.7
10°-20°	909.2	5.5
20°-30°	1475.5	9.0
30°-40°	2264.6	13.8
40°-50°	3616.6	22.0
50°-60°	5064.0	30.8
60°-70°	2596.4	15.8
70°-80°	250.0	1.5
80°-90°	0.0	0.0
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°-90°	16452.6	100.0
0°-180°	16452.6	100.0



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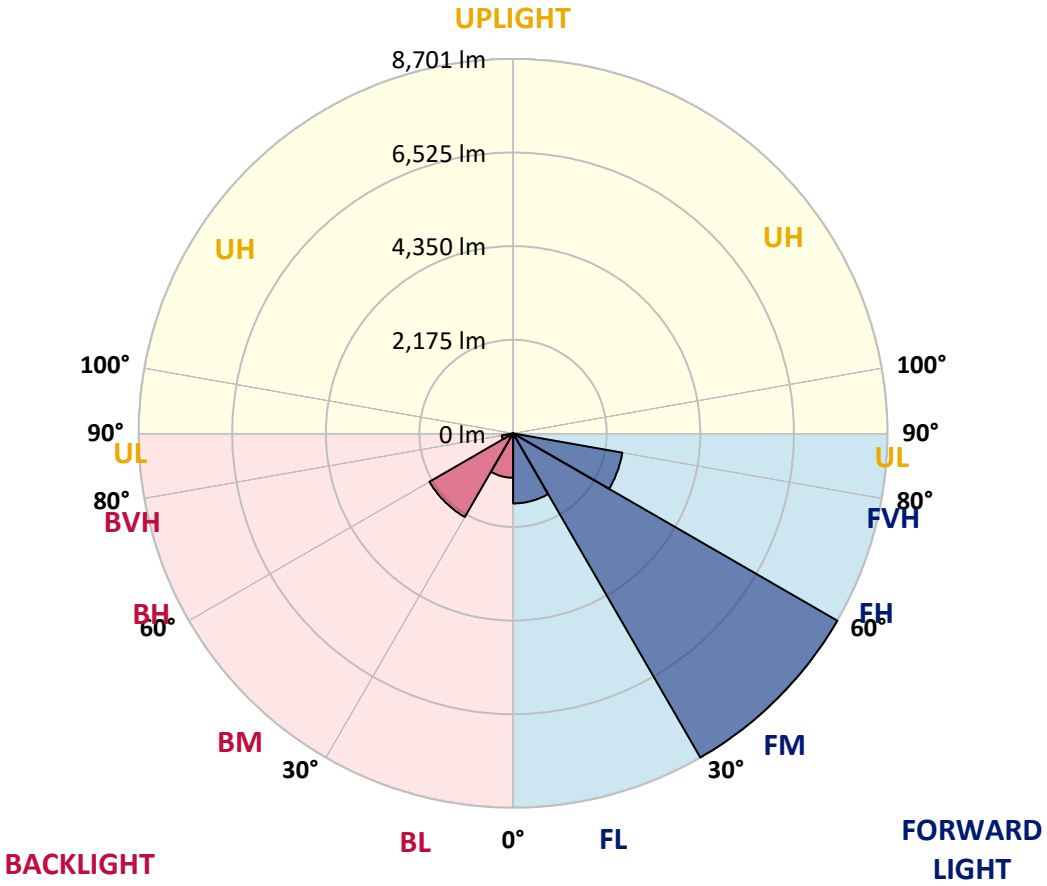
LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	1628.9	9.9			
FM	(30°-60°)	8700.5	52.9			
FH	(60°-80°)	2578.7	15.7			G2/5000
FVH	(80°-90°)	0.0	0.0			G0/10
BL	(0°-30°)	1032.1	6.3	B3/2500		
BM	(30°-60°)	2244.7	13.6	B2/2500		
BH	(60°-80°)	267.7	1.6	B1/500		G1/500
BVH	(80°-90°)	0.0	0.0			G0/10
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G2
Type III Short



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CANDELA DISTRIBUTION (FULL):

	0°	1°	5°	15°	25°	35°	45°	55°	65°	75°	85°
0°	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5
2.5°	3105.7	3099.1	3077.1	3002.3	2956.1	2883.5	2830.7	2762.5	2687.8	2641.6	2595.4
5°	3435.6	3418.0	3358.6	3187.0	3055.1	2912.1	2797.7	2672.4	2538.2	2450.2	2368.8
7.5°	3752.3	3725.9	3646.7	3356.4	3156.3	2951.7	2788.9	2606.4	2417.2	2285.3	2184.1
10°	4062.4	4003.1	3877.7	3521.4	3250.8	3004.5	2813.1	2604.2	2382.0	2214.9	2102.7
12.5°	4317.6	4273.6	4102.0	3677.5	3330.0	3015.5	2780.1	2586.6	2437.0	2324.9	2221.5
15°	4537.5	4489.1	4326.4	3818.3	3398.2	2971.5	2641.6	2472.2	2496.4	2540.4	2452.4
17.5°	4739.9	4689.3	4513.3	3934.9	3424.6	2863.7	2448.0	2366.6	2500.8	2665.8	2632.8
20°	4948.8	4891.6	4676.1	4029.4	3415.8	2694.4	2252.3	2276.5	2465.6	2654.8	2672.4
22.5°	5193.0	5133.6	4882.8	4150.4	3409.2	2492.0	2082.9	2197.3	2399.6	2560.2	2591.0
25°	5516.3	5445.9	5171.0	4328.6	3426.8	2307.3	1961.9	2120.3	2287.5	2432.6	2450.2
27.5°	5943.0	5852.8	5503.1	4548.5	3464.2	2162.1	1909.1	2014.7	2144.5	2274.3	2289.7
30°	6499.5	6385.1	5883.6	4739.9	3446.6	2060.9	1874.0	1909.1	1986.1	2091.7	2093.9
32.5°	7150.5	6994.3	6310.3	4904.8	3294.8	1986.1	1825.6	1801.4	1819.0	1900.4	1915.7
35°	7915.9	7713.6	6781.0	5061.0	3017.7	1841.0	1737.6	1656.2	1649.6	1689.2	1726.6
37.5°	8793.5	8551.6	7374.9	5261.2	2690.0	1689.2	1607.8	1526.4	1491.2	1511.0	1568.2
40°	9602.9	9334.6	7995.1	5503.1	2355.6	1552.8	1456.1	1372.5	1330.7	1337.3	1407.7
42.5°	10553.1	10276.0	8753.9	5819.8	2078.5	1460.5	1297.7	1211.9	1156.9	1187.7	1269.1
45°	11996.0	11681.4	9860.3	6094.8	1858.6	1438.5	1159.1	1038.2	1011.8	1064.5	1161.3
47.5°	13966.7	13581.8	11380.1	6261.9	1671.6	1458.3	1062.3	897.4	904.0	963.4	1060.1
50°	15922.0	15506.3	13137.5	6042.0	1517.6	1418.7	1014.0	787.4	829.2	882.0	970.0
52.5°	17265.9	16724.9	13993.1	5406.3	1376.9	1269.1	1009.6	684.0	763.2	780.8	855.6
55°	17318.7	16652.3	13555.4	4262.6	1185.5	1071.1	963.4	598.3	690.6	697.2	761.0
57.5°	*15180.8*	*14578.2*	*11846.4*	*2927.5*	*1053.6*	*785.2*	*767.6*	*523.5*	*567.5*	*622.5*	*662.0*
60°	11549.5	11037.0	8859.5	1341.7	800.6	499.3	525.7	450.9	424.5	505.9	545.5
62.5°	7073.5	6745.8	5313.9	593.9	510.3	266.1	318.9	358.5	318.9	349.7	382.7
65°	2808.7	2663.6	2016.9	252.9	209.0	134.2	145.2	209.0	224.3	246.3	277.1
67.5°	488.3	461.9	338.7	112.2	85.8	81.4	70.4	96.8	136.4	151.8	176.0
70°	63.8	61.6	55.0	46.2	44.0	39.6	30.8	61.6	92.4	96.8	112.2
72.5°	15.4	13.2	13.2	11.0	13.2	4.4	4.4	33.0	66.0	68.2	79.2
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	41.8	46.2	55.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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CANDELA DISTRIBUTION (continued):

	90°	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5
2.5°	2558.0	2514.0	2498.6	2476.6	2448.0	2456.8	2417.2	2404.0	2423.8	2450.2	2443.6
5°	2324.9	2276.5	2243.5	2192.9	2184.1	2164.3	2151.1	2133.5	2155.5	2186.3	2192.9
7.5°	2140.1	2098.3	2065.3	2049.9	2038.9	2030.1	2003.7	1990.5	1990.5	2003.7	2014.7
10°	2060.9	2030.1	2023.5	2027.9	2045.5	2043.3	2019.1	2001.5	1979.5	1968.5	1981.7
12.5°	2170.9	2120.3	2111.5	2113.7	2135.7	2133.5	2107.1	2085.1	2080.7	2085.1	2126.9
15°	2357.8	2280.9	2223.7	2212.7	2223.7	2219.3	2199.5	2186.3	2192.9	2256.7	2327.1
17.5°	2525.0	2406.2	2302.9	2263.3	2261.1	2254.5	2234.7	2230.3	2263.3	2382.0	2485.4
20°	2573.4	2456.8	2309.5	2258.9	2247.9	2241.3	2219.3	2225.9	2267.7	2410.6	2498.6
22.5°	2509.6	2397.4	2243.5	2192.9	2184.1	2181.9	2159.9	2168.7	2203.9	2329.3	2401.8
25°	2388.6	2294.1	2133.5	2089.5	2089.5	2085.1	2065.3	2069.7	2091.7	2201.7	2272.1
27.5°	2241.3	2151.1	2016.9	1972.9	1979.5	1986.1	1961.9	1955.3	1972.9	2076.3	2118.1
30°	2071.9	2008.1	1902.6	1863.0	1860.8	1887.2	1854.2	1845.4	1869.6	1950.9	1959.7
32.5°	1907.0	1876.2	1801.4	1770.6	1772.8	1777.2	1759.6	1759.6	1781.6	1825.6	1823.4
35°	1746.4	1726.6	1713.4	1691.4	1689.2	1680.4	1680.4	1684.8	1709.0	1724.4	1695.8
37.5°	1592.4	1612.2	1627.6	1605.6	1588.0	1588.0	1588.0	1607.8	1629.8	1623.2	1574.8
40°	1456.1	1497.8	1546.2	1522.0	1480.3	1478.1	1486.8	1519.8	1552.8	1513.2	1469.3
42.5°	1339.5	1392.3	1460.5	1447.3	1401.1	1394.5	1401.1	1442.9	1469.3	1418.7	1370.3
45°	1225.1	1291.1	1372.5	1372.5	1321.9	1315.3	1317.5	1372.5	1387.9	1328.5	1266.9
47.5°	1128.3	1200.9	1286.7	1286.7	1244.9	1231.7	1242.7	1299.9	1310.9	1227.3	1170.1
50°	1036.0	1115.1	1209.7	1203.1	1174.5	1163.5	1183.3	1244.9	1231.7	1139.3	1079.9
52.5°	919.4	1003.0	1132.7	1139.3	1123.9	1126.1	1150.3	1189.9	1152.5	1040.4	989.8
55°	813.8	899.6	1029.4	1064.5	1064.5	1062.3	1073.3	1104.1	1073.3	939.2	877.6
57.5°	*699.4*	*772.0*	*879.8*	*888.6*	*895.2*	*871.0*	*886.4*	*928.2*	*912.8*	*798.4*	*763.2*
60°	574.1	635.7	697.2	703.8	675.2	624.7	653.2	701.6	712.6	626.9	587.3
62.5°	406.9	466.3	538.9	538.9	510.3	459.7	497.1	538.9	523.5	435.5	411.3
65°	303.5	358.5	413.5	437.7	413.5	378.3	406.9	437.7	413.5	340.9	305.7
67.5°	195.8	233.1	266.1	285.9	290.3	285.9	299.1	290.3	261.7	213.3	193.6
70°	118.8	138.6	156.2	173.8	187.0	193.6	200.2	180.4	151.8	125.4	118.8
72.5°	85.8	103.4	118.8	132.0	147.4	151.8	151.8	138.6	112.2	88.0	81.4
75°	59.4	74.8	88.0	96.8	110.0	114.4	114.4	103.4	83.6	63.8	57.2
77.5°	2.2	15.4	15.4	13.2	17.6	22.0	22.0	26.4	24.2	17.6	15.4
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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CANDELA DISTRIBUTION (continued):

	185°	195°	205°	215°	225°	235°	245°	255°	265°	270°	275°
0°	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5
2.5°	2456.8	2536.0	2558.0	2639.4	2712.0	2784.5	2872.5	2925.3	3004.5	3059.5	3090.3
5°	2214.9	2280.9	2360.0	2481.0	2606.4	2745.0	2912.1	3057.3	3239.8	3374.0	3418.0
7.5°	2038.9	2124.7	2217.1	2368.8	2540.4	2725.2	2960.5	3198.0	3477.4	3659.9	3776.5
10°	2005.9	2093.9	2217.1	2366.6	2547.0	2758.1	3046.3	3354.2	3703.9	3926.1	4058.0
12.5°	2164.3	2258.9	2311.7	2379.8	2516.2	2751.6	3121.1	3512.6	3923.9	4165.8	4306.6
15°	2397.4	2481.0	2395.2	2309.5	2397.4	2681.2	3162.9	3644.5	4117.4	4396.8	4541.9
17.5°	2558.0	2564.6	2377.6	2195.1	2219.3	2553.6	3178.3	3776.5	4324.2	4616.7	4768.5
20°	2542.6	2489.8	2300.7	2098.3	2023.5	2388.6	3160.7	3893.1	4533.1	4838.9	4988.4
22.5°	2423.8	2362.2	2201.7	2003.7	1858.6	2192.9	3129.9	3998.7	4724.5	5072.0	5212.8
25°	2280.9	2214.9	2082.9	1909.1	1753.0	2003.7	3105.7	4143.8	4966.4	5375.5	5485.5
27.5°	2113.7	2056.5	1944.3	1819.0	1709.0	1860.8	3099.1	4335.2	5259.0	5745.0	5822.0
30°	1950.9	1898.2	1810.2	1737.6	1691.4	1777.2	3077.1	4539.7	5608.7	6169.5	6253.1
32.5°	1794.8	1742.0	1687.0	1676.0	1678.2	1746.4	3002.3	4742.1	6024.4	6785.4	6847.0
35°	1660.6	1599.0	1577.0	1603.4	1651.8	1693.6	2791.1	4909.2	6470.9	7456.2	7506.8
37.5°	1533.0	1471.5	1469.3	1533.0	1585.8	1612.2	2542.6	5074.2	7073.5	8138.1	8201.9
40°	1416.5	1354.9	1376.9	1453.9	1495.6	1508.8	2241.3	5324.9	7711.4	8857.3	8822.1
42.5°	1317.5	1253.7	1266.9	1365.9	1403.3	1438.5	1964.1	5533.9	8325.0	9539.1	9528.2
45°	1220.7	1172.3	1163.5	1271.3	1304.3	1445.1	1761.8	5694.5	9114.6	10407.9	10425.5
47.5°	1126.1	1088.7	1090.9	1137.1	1218.5	1478.1	1590.2	5800.0	10260.6	11784.8	11479.1
50°	1040.4	1011.8	1036.0	983.2	1163.5	1436.3	1442.9	5778.0	11540.7	13104.5	12490.9
52.5°	945.8	939.2	950.2	822.6	1075.5	1266.9	1304.3	5485.5	12141.1	14006.3	13656.6
55°	849.0	846.8	758.8	657.6	899.6	1011.8	1117.3	4577.1	12121.3	14485.8	14910.3
57.5°	*734.6*	*717.0*	*576.3*	*536.7*	*699.4*	*703.8*	*1018.4*	*2997.9*	*10742.3*	*13337.7*	*14217.4*
60°	556.5	543.3	422.3	435.5	488.3	450.9	811.6	1493.4	8028.1	10390.3	11382.3
62.5°	384.9	367.3	314.5	336.5	314.5	257.3	497.1	739.0	4863.1	6561.1	7460.6
65°	281.5	261.7	215.5	184.8	147.4	147.4	189.2	283.7	1882.8	2788.9	3363.0
67.5°	173.8	165.0	127.6	92.4	90.2	96.8	99.0	140.8	303.5	483.9	591.7
70°	112.2	103.4	85.8	59.4	55.0	57.2	59.4	66.0	77.0	83.6	101.2
72.5°	77.0	72.6	61.6	33.0	26.4	28.6	30.8	30.8	37.4	35.2	41.8
75°	55.0	50.6	44.0	15.4	8.8	11.0	13.2	11.0	13.2	8.8	11.0
77.5°	15.4	15.4	11.0	2.2	0.0	2.2	4.4	4.4	2.2	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Scaled Data Report

REPORT NUMBER: P641394
CATALOG NUMBER: GWS-SA5F-827-U-SLL-W-GRSBK

CANDELA DISTRIBUTION (continued):

	285°	295°	305°	315°	325°	335°	345°	355°	359°	360°
0°	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5	2795.5
2.5°	3169.5	3220.0	3239.8	3211.2	3235.4	3195.8	3180.4	3121.1	3116.7	3105.7
5°	3596.2	3710.5	3778.7	3820.5	3772.1	3719.3	3640.1	3503.8	3462.0	3435.6
7.5°	4016.3	4194.4	4311.0	4366.0	4352.8	4245.0	4102.0	3873.3	3791.9	3752.3
10°	4381.4	4599.1	4739.9	4808.1	4779.5	4684.9	4480.3	4194.4	4086.6	4062.4
12.5°	4636.5	4836.7	4933.4	4992.8	4995.0	4957.6	4764.1	4475.9	4348.4	4317.6
15°	4797.1	4882.8	4885.0	4920.2	4981.8	5065.4	4975.2	4720.1	4583.7	4537.5
17.5°	4898.2	4803.7	4706.9	4715.7	4816.9	5039.0	5131.4	4935.6	4790.5	4739.9
20°	4970.8	4671.7	4491.3	4493.5	4596.9	4933.4	5239.2	5144.6	4995.0	4948.8
22.5°	5017.0	4555.1	4297.8	4291.2	4401.2	4808.1	5338.1	5393.1	5245.8	5193.0
25°	5111.6	4500.1	4181.2	4218.6	4315.4	4768.5	5472.3	5723.0	5586.7	5516.3
27.5°	5281.0	4555.1	4170.2	4256.0	4366.0	4885.0	5705.5	6162.9	6022.2	5943.0
30°	5573.5	4761.9	4339.6	4458.3	4590.3	5190.8	6097.0	6776.6	6574.2	6499.5
32.5°	6044.2	5190.8	4863.1	5118.2	5245.8	5692.3	6684.2	7465.0	7300.1	7150.5
35°	6693.0	6169.5	6132.2	6726.0	6695.2	6642.4	7405.7	8309.6	8061.1	7915.9
37.5°	7586.0	7744.4	8021.5	8611.0	8591.2	8188.7	8353.6	9108.1	8980.5	8793.5
40°	8701.1	9037.7	9508.4	10353.0	10089.0	9583.1	9517.2	9926.3	9822.9	9602.9
42.5°	9358.8	9939.5	10836.8	11595.7	11384.5	10500.3	10425.5	11019.4	10792.9	10553.1
45°	9664.5	10674.1	12433.7	13460.8	12820.8	11109.6	11081.0	12444.7	12317.1	11996.0
47.5°	9805.3	11415.3	14303.2	15858.3	14661.7	11644.1	11540.7	14512.2	14345.0	13966.7
50°	9961.5	12438.1	16555.5	18636.2	16885.4	12248.9	12323.7	16438.9	16368.5	15922.0
52.5°	10304.6	13520.2	19329.0	21812.3	19582.0	13196.9	13667.6	18255.7	17780.6	17265.9
55°	10819.2	14699.1	22214.8	25056.5	22333.5	14470.4	15121.4	19221.3	17888.4	17318.7
57.5°	10249.6	14993.9	23923.8	27322.0	23554.2	14474.8	13891.9	17547.5	15732.9	15180.8
60°	8133.7	13949.1	23266.1	26831.5	22513.9	12853.8	10636.7	13700.6	11919.0	11549.5
62.5°	5498.7	11699.0	20481.6	22692.0	19269.7	10111.0	6913.0	8910.1	7379.3	7073.5
65°	3013.3	8727.5	16548.9	17167.0	15081.8	7062.5	3556.6	3866.7	2945.1	2808.7
67.5°	831.4	6075.0	12176.3	11388.9	10581.7	4599.1	919.4	690.6	492.7	488.3
70°	209.0	4018.5	7295.7	7520.0	6488.5	2945.1	176.0	83.6	66.0	63.8
72.5°	88.0	1728.8	3462.0	3978.9	3321.2	1363.7	63.8	24.2	19.8	15.4
75°	11.0	138.6	294.7	446.5	305.7	147.4	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

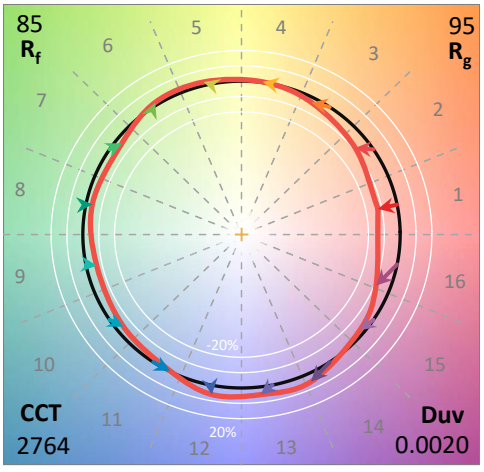
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-157-9
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	10/03/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Invue
Catalog Number:	**EMM2-HTN-SA1A-827-U-5WQ**
Description:	Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K):	2764
CIE u':	0.2591
CIE v':	0.5290
Duv:	0.0020
CIE x:	0.4581
CIE y:	0.4156
CIE z:	0.1263
Peak Wavelength (nm):	603
Dominant Wavelength (nm):	583
Purity:	62.2537
Rf:	84.7
Rg:	94.6

CRI (Ra):	80.9
R1:	78.8
R2:	89.9
R3:	96.2
R4:	79.1
R5:	79.1
R6:	88.8
R7:	81.3
R8:	54.3
R9:	-1.5
R10:	77.9
R11:	78.9
R12:	71.6
R13:	81.2
R14:	98.5
R15:	69.9



Test Conditions

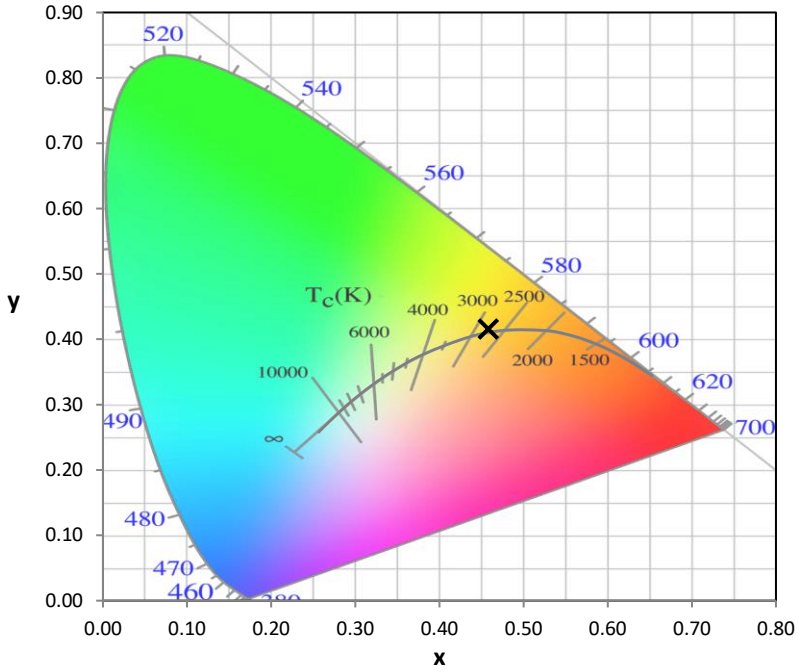
Stabilization Time:	81M
Operation Time:	2H 21M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-157-9

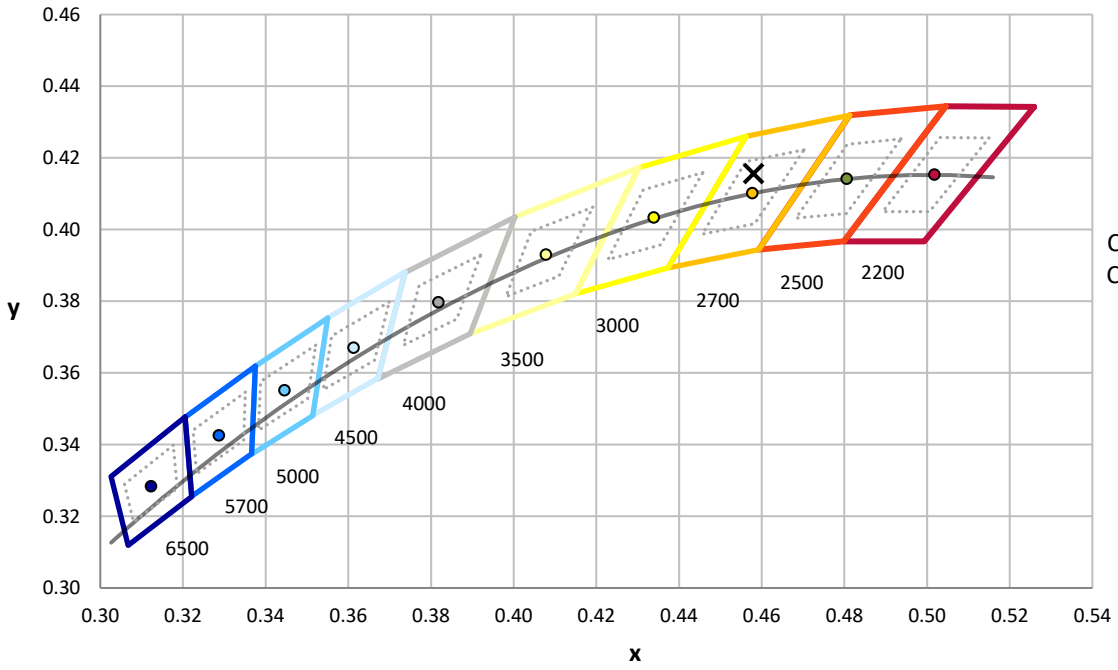
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

REPORT NUMBER: SP1-2407-157-9

CIE 1931 Chromaticity Diagram



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

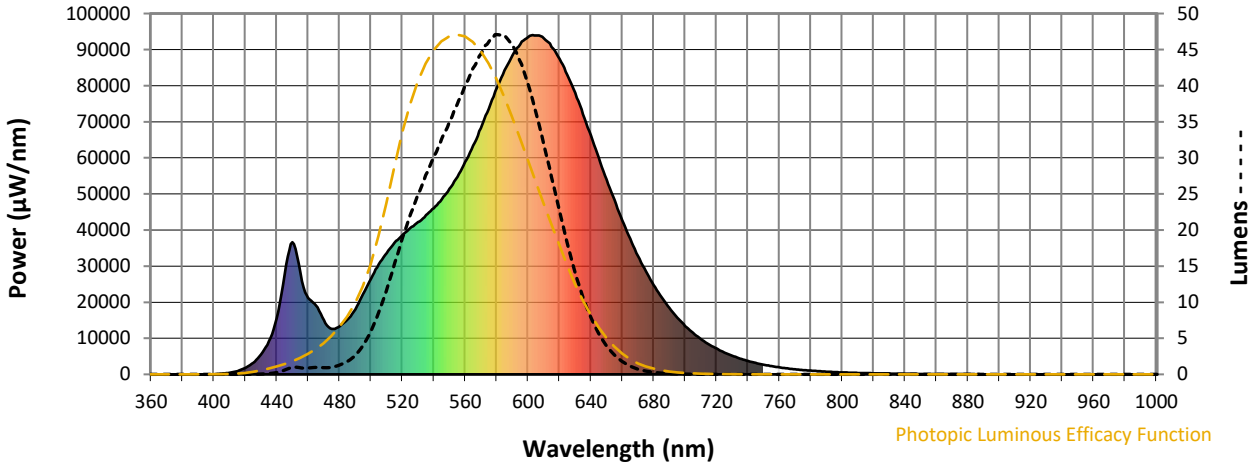


CCT = 2764K
CIE x = 0.4581
CIE y = 0.4156
Duv = 0.0020

Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-9

Photopic Flux vs. Wavelength

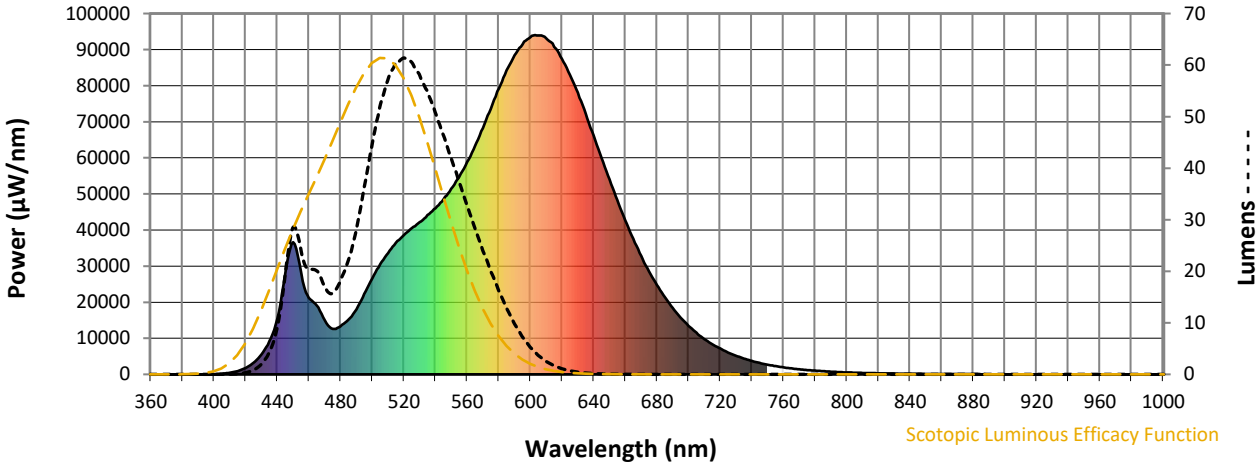


Photopic Lumens: 4337.9

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	0	0.0	490	18018	2.6	620	87426	22.8	750	2680	0.0	880	58	0.0
365	0	0.0	495	22295	3.9	625	83013	18.2	755	2287	0.0	885	46	0.0
370	0	0.0	500	26478	5.8	630	78077	14.1	760	1944	0.0	890	45	0.0
375	0	0.0	505	30524	8.5	635	72080	10.7	765	1653	0.0	895	41	0.0
380	0	0.0	510	33611	11.5	640	66249	7.9	770	1413	0.0	900	38	0.0
385	0	0.0	515	36490	15.2	645	59973	5.7	775	1198	0.0	905	33	0.0
390	0	0.0	520	38610	18.7	650	53972	3.9	780	1025	0.0	910	30	0.0
395	0	0.0	525	40511	21.9	655	48369	2.7	785	874	0.0	915	23	0.0
400	48	0.0	530	42223	24.9	660	42641	1.8	790	747	0.0	920	24	0.0
405	201	0.0	535	44137	27.6	665	37602	1.1	795	639	0.0	925	22	0.0
410	457	0.0	540	46032	30.0	670	32798	0.7	800	547	0.0	930	22	0.0
415	925	0.0	545	48553	32.5	675	28558	0.5	805	473	0.0	935	17	0.0
420	1816	0.0	550	51408	34.9	680	24782	0.3	810	401	0.0	940	13	0.0
425	3217	0.0	555	54711	37.4	685	21386	0.2	815	351	0.0	945	6	0.0
430	5520	0.0	560	58847	40.0	690	18413	0.1	820	307	0.0	950	10	0.0
435	9225	0.1	565	63386	42.4	695	15721	0.1	825	261	0.0	955	11	0.0
440	15522	0.2	570	68196	44.3	700	13432	0.0	830	228	0.0	960	8	0.0
445	27642	0.6	575	73613	46.0	705	11513	0.0	835	193	0.0	965	12	0.0
450	36602	0.9	580	79207	47.1	710	9780	0.0	840	174	0.0	970	3	0.0
455	28292	0.9	585	84248	47.0	715	8356	0.0	845	151	0.0	975	8	0.0
460	21166	0.9	590	88397	45.7	720	7161	0.0	850	123	0.0	980	2	0.0
465	19092	1.0	595	91428	43.4	725	6067	0.0	855	106	0.0	985	13	0.0
470	14951	0.9	600	93452	40.3	730	5164	0.0	860	95	0.0	990	16	0.0
475	12606	1.0	605	93959	36.4	735	4393	0.0	865	82	0.0	995	20	0.0
480	13323	1.3	610	93079	32.0	740	3694	0.0	870	77	0.0	1000	0	0.0
485	15164	1.8	615	90707	27.3	745	3157	0.0	875	65	0.0			

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength

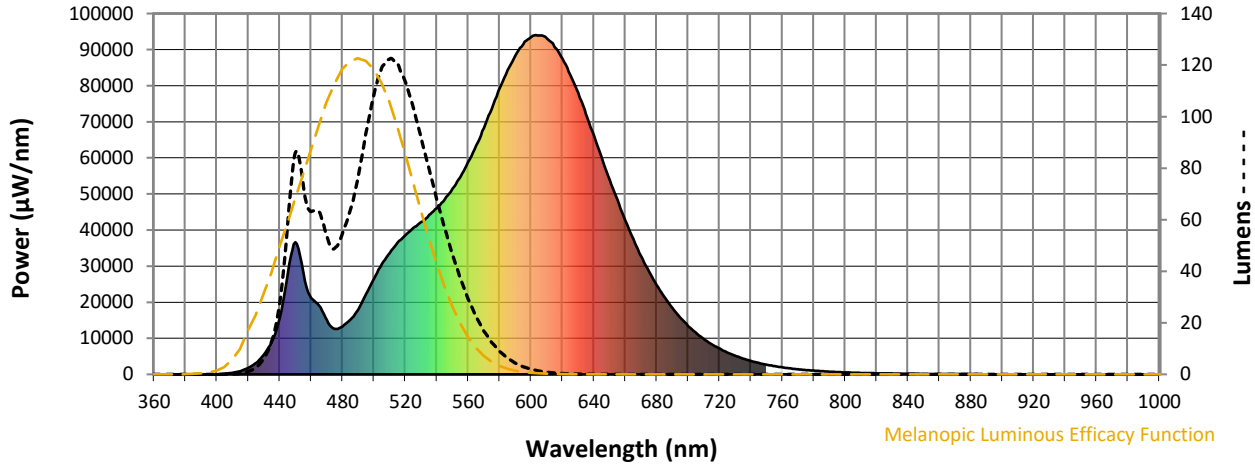


Scotopic Lumens: 5286.7 **S/P: 1.22**

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	0	0.0	490	18018	75.9	620	87426	0.4	750	2680	0.0	880	58	0.0
365	0	0.0	495	22295	93.2	625	83013	0.2	755	2287	0.0	885	46	0.0
370	0	0.0	500	26478	107.8	630	78077	0.1	760	1944	0.0	890	45	0.0
375	0	0.0	505	30524	118.7	635	72080	0.1	765	1653	0.0	895	41	0.0
380	0	0.0	510	33611	122.2	640	66249	0.1	770	1413	0.0	900	38	0.0
385	0	0.0	515	36490	120.8	645	59973	0.0	775	1198	0.0	905	33	0.0
390	0	0.0	520	38610	113.9	650	53972	0.0	780	1025	0.0	910	30	0.0
395	0	0.0	525	40511	104.1	655	48369	0.0	785	874	0.0	915	23	0.0
400	48	0.0	530	42223	92.4	660	42641	0.0	790	747	0.0	920	24	0.0
405	201	0.0	535	44137	80.5	665	37602	0.0	795	639	0.0	925	22	0.0
410	457	0.1	540	46032	68.2	670	32798	0.0	800	547	0.0	930	22	0.0
415	925	0.3	545	48553	57.1	675	28558	0.0	805	473	0.0	935	17	0.0
420	1816	1.1	550	51408	46.7	680	24782	0.0	810	401	0.0	940	13	0.0
425	3217	2.5	555	54711	37.4	685	21386	0.0	815	351	0.0	945	6	0.0
430	5520	5.9	560	58847	29.4	690	18413	0.0	820	307	0.0	950	10	0.0
435	9225	12.5	565	63386	22.5	695	15721	0.0	825	261	0.0	955	11	0.0
440	15522	26.3	570	68196	16.9	700	13432	0.0	830	228	0.0	960	8	0.0
445	27642	55.2	575	73613	12.4	705	11513	0.0	835	193	0.0	965	12	0.0
450	36602	85.4	580	79207	9.0	710	9780	0.0	840	174	0.0	970	3	0.0
455	28292	75.1	585	84248	6.3	715	8356	0.0	845	151	0.0	975	8	0.0
460	21166	63.2	590	88397	4.4	720	7161	0.0	850	123	0.0	980	2	0.0
465	19092	63.2	595	91428	3.0	725	6067	0.0	855	106	0.0	985	13	0.0
470	14951	54.2	600	93452	2.0	730	5164	0.0	860	95	0.0	990	16	0.0
475	12606	48.8	605	93959	1.3	735	4393	0.0	865	82	0.0	995	20	0.0
480	13323	54.2	610	93079	0.9	740	3694	0.0	870	77	0.0	1000	0	0.0
485	15164	63.3	615	90707	0.5	745	3157	0.0	875	65	0.0			

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: 9797 **M/P: 2.26**

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	0	0.0	490	18018	27.7	620	87426	1.1	750	2680	0.0	880	58	0.0
365	0	0.0	495	22295	36.0	625	83013	0.7	755	2287	0.0	885	46	0.0
370	0	0.0	500	26478	44.2	630	78077	0.4	760	1944	0.0	890	45	0.0
375	0	0.0	505	30524	51.8	635	72080	0.3	765	1653	0.0	895	41	0.0
380	0	0.0	510	33611	57.0	640	66249	0.2	770	1413	0.0	900	38	0.0
385	0	0.0	515	36490	60.5	645	59973	0.1	775	1198	0.0	905	33	0.0
390	0	0.0	520	38610	61.4	650	53972	0.1	780	1025	0.0	910	30	0.0
395	0	0.0	525	40511	60.6	655	48369	0.0	785	874	0.0	915	23	0.0
400	48	0.0	530	42223	58.2	660	42641	0.0	790	747	0.0	920	24	0.0
405	201	0.0	535	44137	55.0	665	37602	0.0	795	639	0.0	925	22	0.0
410	457	0.0	540	46032	50.9	670	32798	0.0	800	547	0.0	930	22	0.0
415	925	0.1	545	48553	46.6	675	28558	0.0	805	473	0.0	935	17	0.0
420	1816	0.3	550	51408	42.0	680	24782	0.0	810	401	0.0	940	13	0.0
425	3217	0.8	555	54711	37.4	685	21386	0.0	815	351	0.0	945	6	0.0
430	5520	1.9	560	58847	32.9	690	18413	0.0	820	307	0.0	950	10	0.0
435	9225	4.1	565	63386	28.4	695	15721	0.0	825	261	0.0	955	11	0.0
440	15522	8.7	570	68196	24.1	700	13432	0.0	830	228	0.0	960	8	0.0
445	27642	18.5	575	73613	20.0	705	11513	0.0	835	193	0.0	965	12	0.0
450	36602	28.3	580	79207	16.3	710	9780	0.0	840	174	0.0	970	3	0.0
455	28292	24.7	585	84248	12.9	715	8356	0.0	845	151	0.0	975	8	0.0
460	21166	20.4	590	88397	9.8	720	7161	0.0	850	123	0.0	980	2	0.0
465	19092	20.1	595	91428	7.3	725	6067	0.0	855	106	0.0	985	13	0.0
470	14951	17.2	600	93452	5.3	730	5164	0.0	860	95	0.0	990	16	0.0
475	12606	15.7	605	93959	3.7	735	4393	0.0	865	82	0.0	995	20	0.0
480	13323	18.0	610	93079	2.5	740	3694	0.0	870	77	0.0	1000	0	0.0
485	15164	21.9	615	90707	1.7	745	3157	0.0	875	65	0.0			

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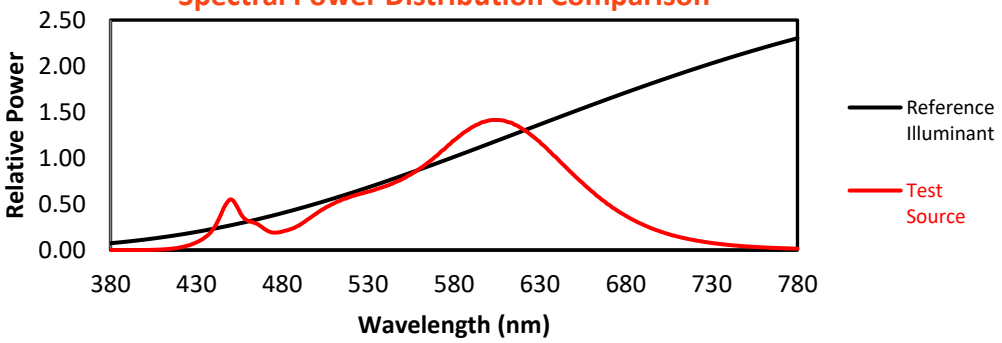
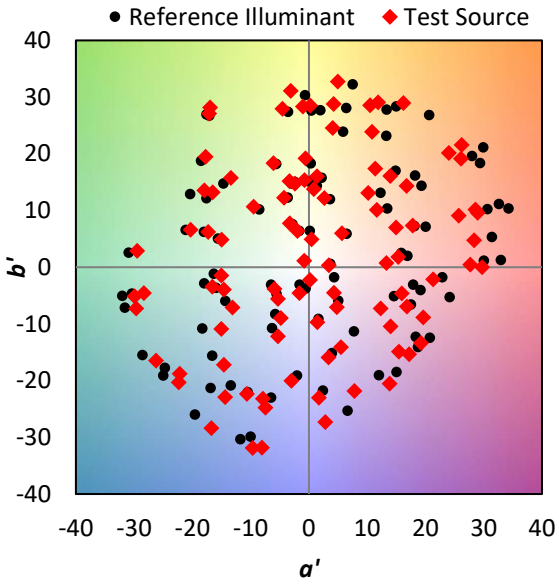
Summary

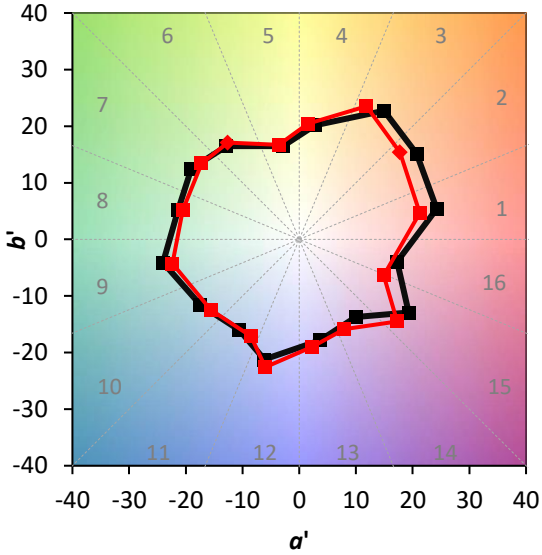
R_f = 84.7
R_g = 94.6
CIE R_a = 80.9
R_9 = -1.5

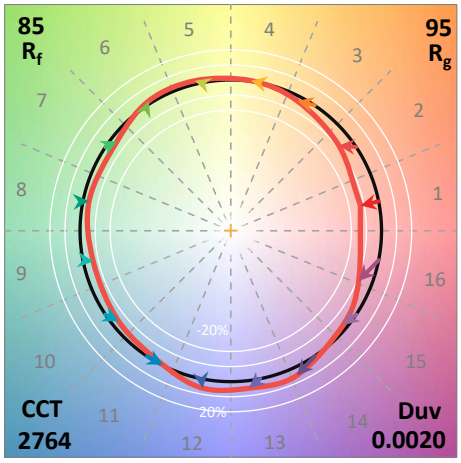
Spectral Power Distribution Comparison

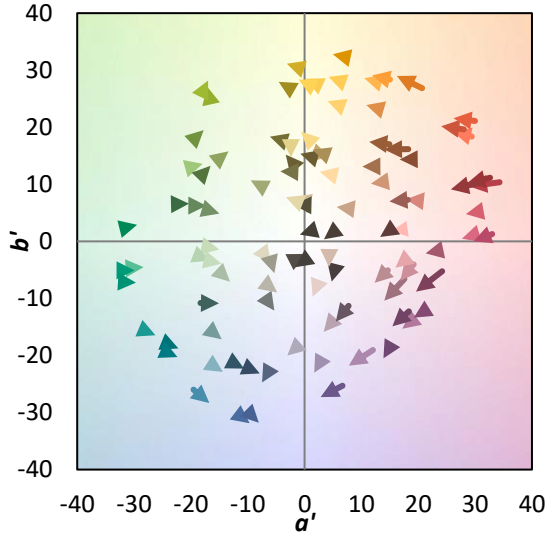


Color Vector Graphics









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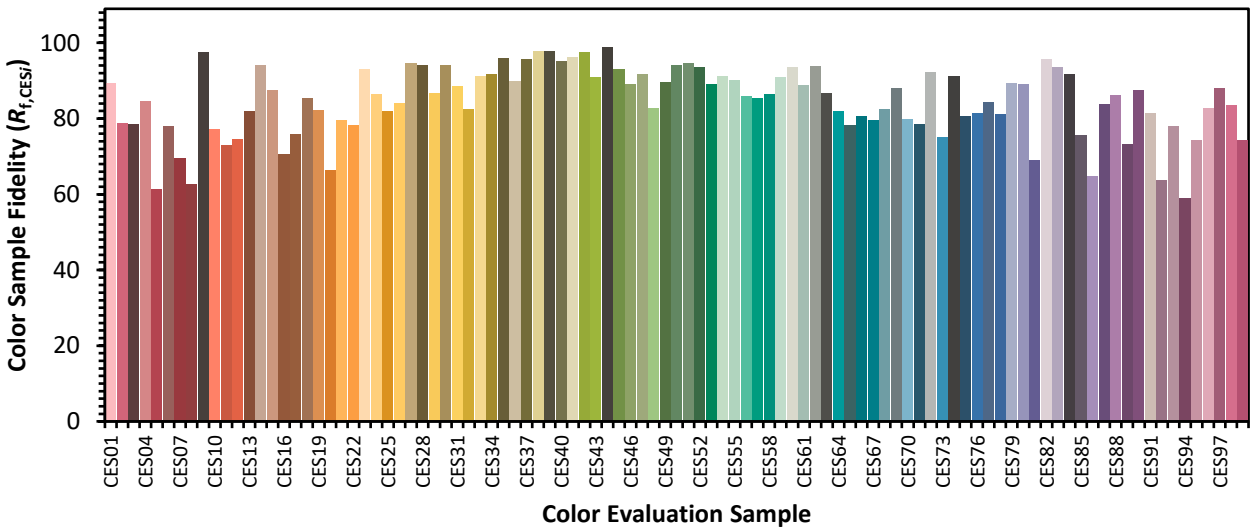
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 84	CES51 = 95	CES76 = 81
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 84
CES03 = 31	CES28 = 94	CES53 = 89	CES78 = 81
CES04 = 71	CES29 = 87	CES54 = 91	CES79 = 89
CES05 = 50	CES30 = 94	CES55 = 90	CES80 = 89
CES06 = 52	CES31 = 89	CES56 = 86	CES81 = 69
CES07 = 43	CES32 = 82	CES57 = 85	CES82 = 96
CES08 = 41	CES33 = 91	CES58 = 86	CES83 = 93
CES09 = 29	CES34 = 92	CES59 = 91	CES84 = 92
CES10 = 77	CES35 = 96	CES60 = 94	CES85 = 76
CES11 = 60	CES36 = 90	CES61 = 89	CES86 = 65
CES12 = 66	CES37 = 96	CES62 = 94	CES87 = 84
CES13 = 44	CES38 = 98	CES63 = 87	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 82	CES89 = 73
CES15 = 72	CES40 = 95	CES65 = 78	CES90 = 88
CES16 = 48	CES41 = 96	CES66 = 81	CES91 = 82
CES17 = 50	CES42 = 97	CES67 = 80	CES92 = 64
CES18 = 57	CES43 = 91	CES68 = 83	CES93 = 78
CES19 = 73	CES44 = 99	CES69 = 88	CES94 = 59
CES20 = 67	CES45 = 93	CES70 = 80	CES95 = 74
CES21 = 87	CES46 = 89	CES71 = 79	CES96 = 83
CES22 = 79	CES47 = 92	CES72 = 92	CES97 = 88
CES23 = 92	CES48 = 83	CES73 = 75	CES98 = 83
CES24 = 91	CES49 = 90	CES74 = 91	CES99 = 74
CES25 = 72	CES50 = 94	CES75 = 81	



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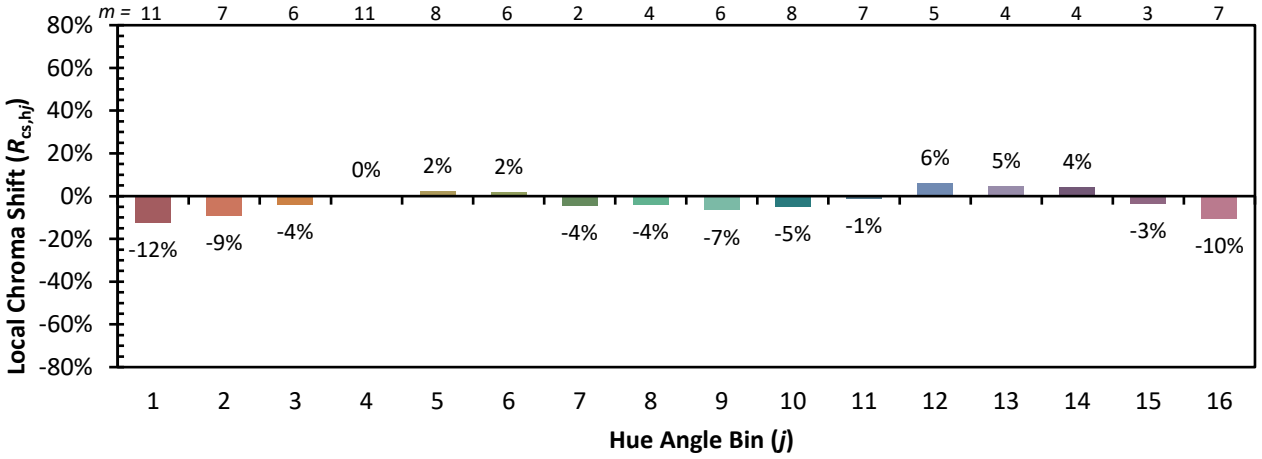
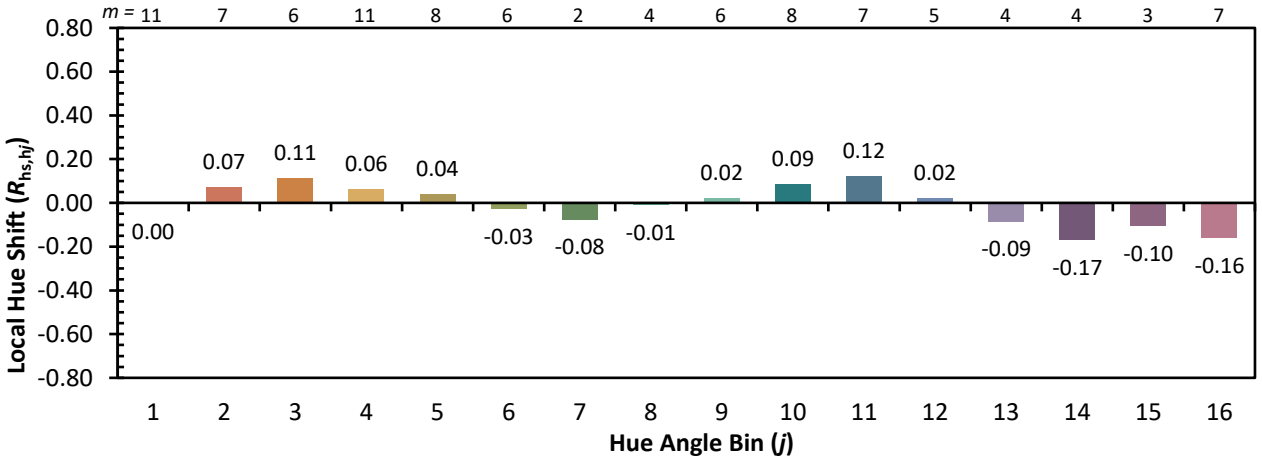
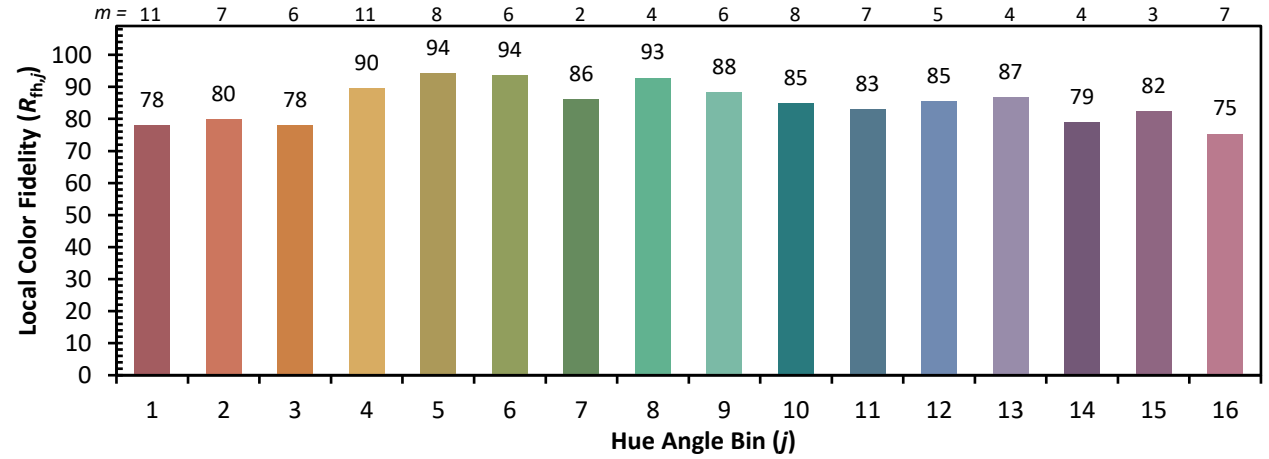
Color Rendition by Hue-Angle Bin







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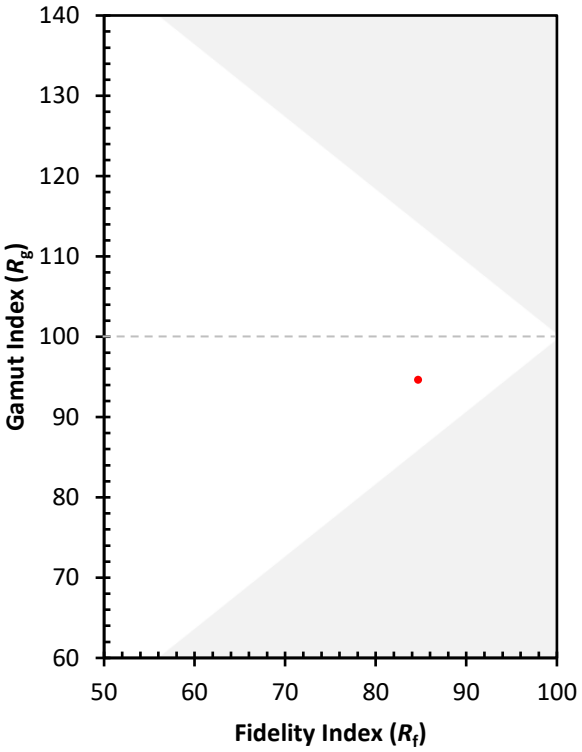
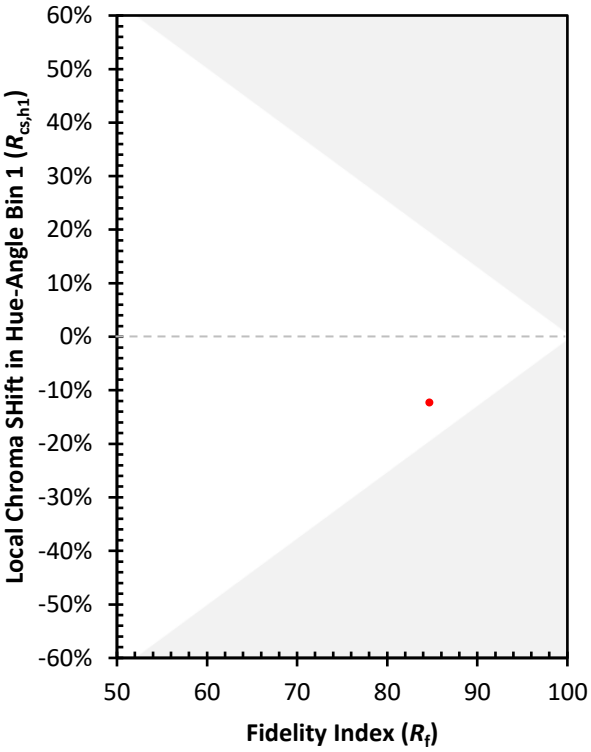
Measure Comparisons





(END OF REPORT)