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: P642946

Luminaire Tested: GWS-SA6D-830-U-T2-W

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P642946 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-19) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA6D-830-U-T2-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS |
| Light Source: | (96) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 28232.9 lumens |
| Efficiency: | N/A |
| Efficacy: | 114.9 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type II - Medium |
| BUG Rating: | B3 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 245.7 |
| 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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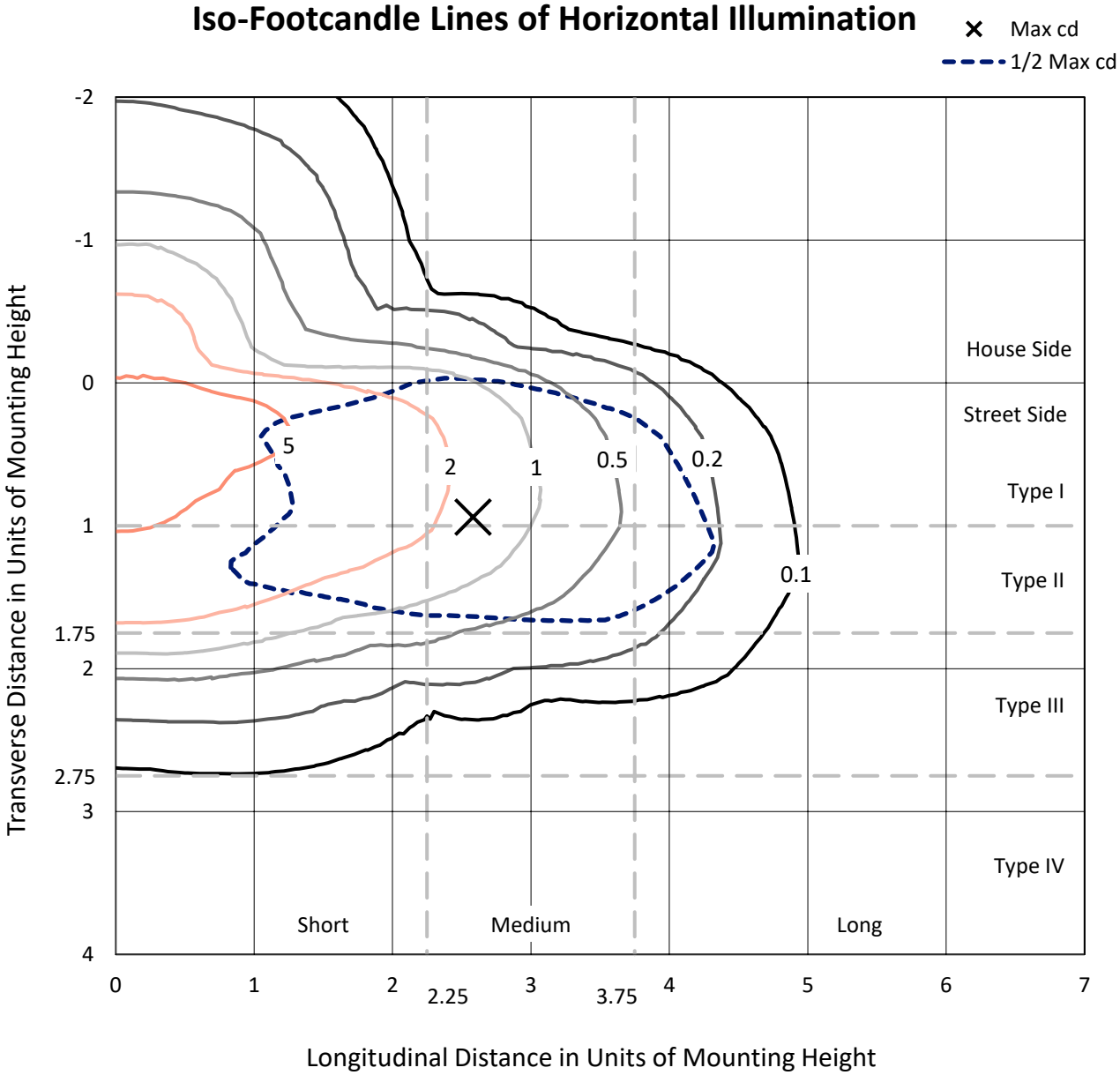
Scaled Data Report

REPORT NUMBER: P642946
CATALOG NUMBER: GWS-SA6D-830-U-T2-W

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 7.6 fc
Type II - Medium - N/A

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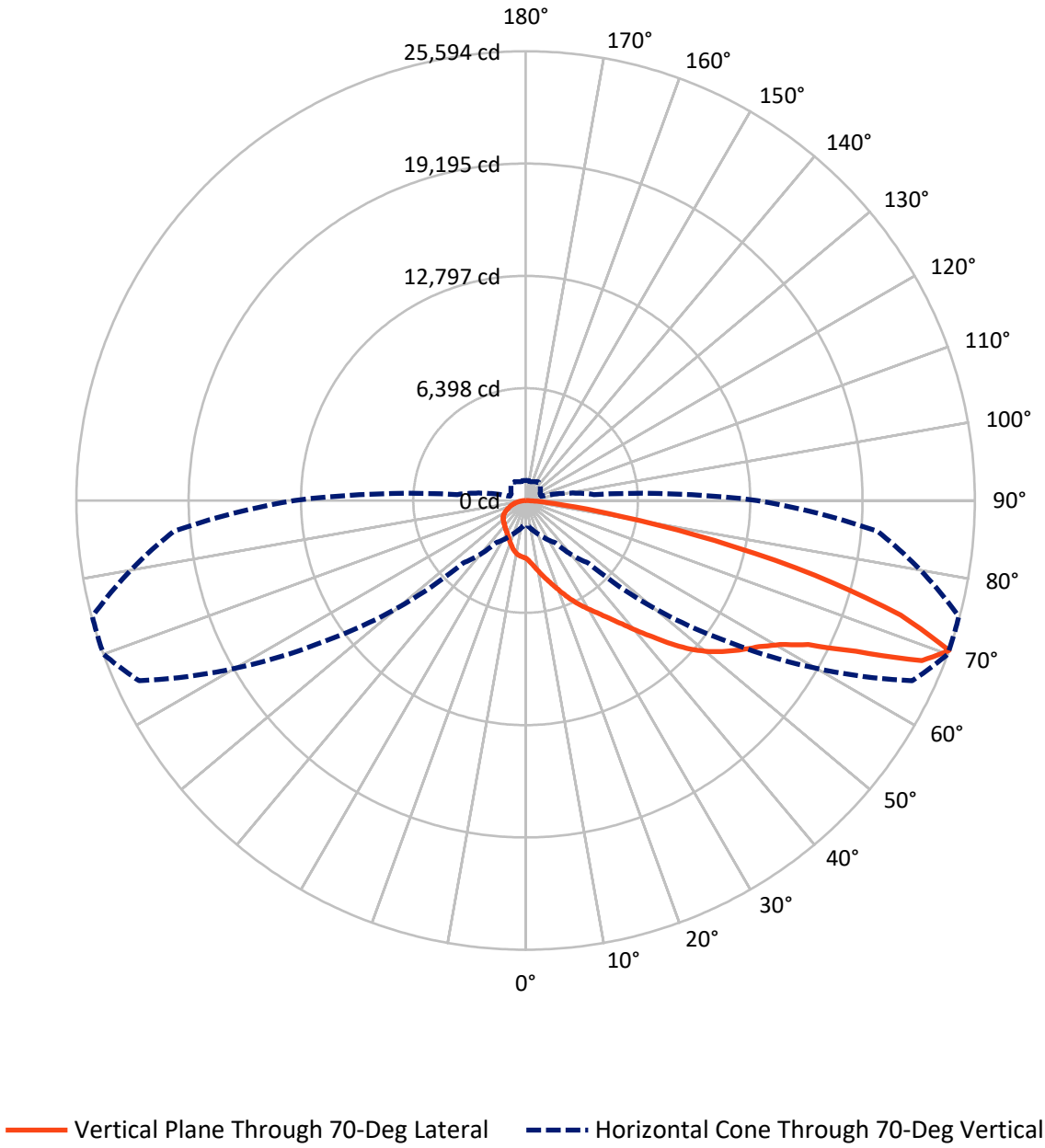
## Luminous Intensity Polar Plot



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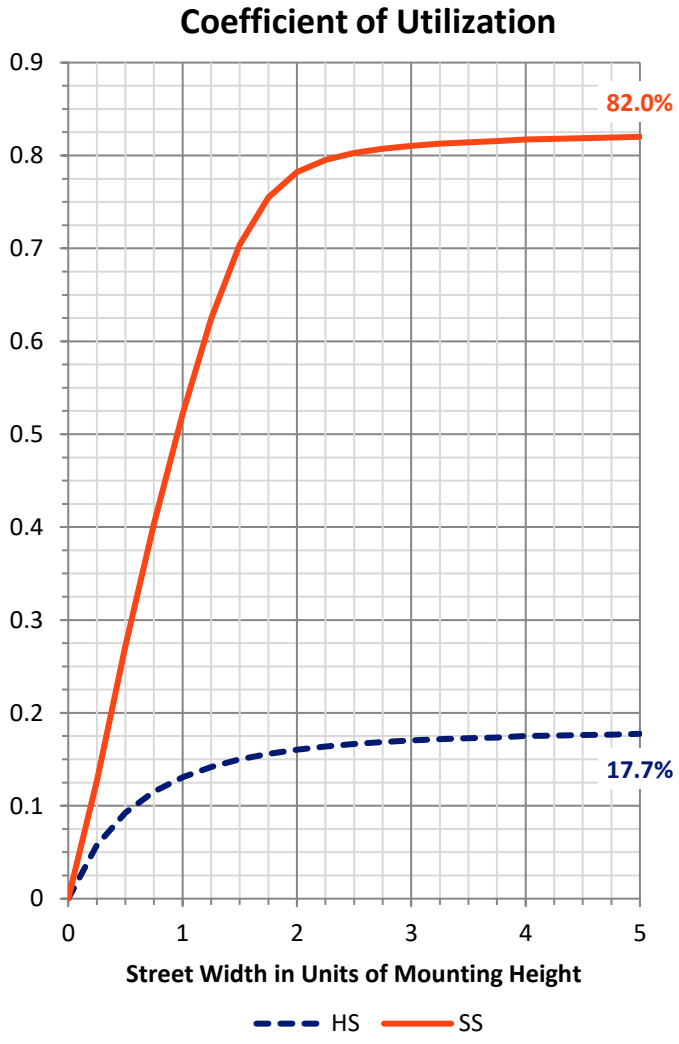
REPORT NUMBER: P642946
CATALOG NUMBER: GWS-SA6D-830-U-T2-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 5059.4 | 0.0 | 5059.4 |
| | % Fixture | 17.9 | 0.0 | 17.9 |
| **Street Side** | Lumens | 23173.5 | 0.0 | 23173.5 |
| | % Fixture | 82.1 | 0.0 | 82.1 |
| **Total** | Lumens | 28232.9 | 0.0 | 28232.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 334.6 | 1.2 |
| 10°-20° | 1088.6 | 3.9 |
| 20°-30° | 1928.5 | 6.8 |
| 30°-40° | 2902.5 | 10.3 |
| 40°-50° | 4391.1 | 15.6 |
| 50°-60° | 6290.5 | 22.3 |
| 60°-70° | 6953.4 | 24.6 |
| 70°-80° | 3924.0 | 13.9 |
| 80°-90° | 419.7 | 1.5 |
| 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° | 28232.9 | 100.0 |
| 0°-180° | 28232.9 | 100.0 |



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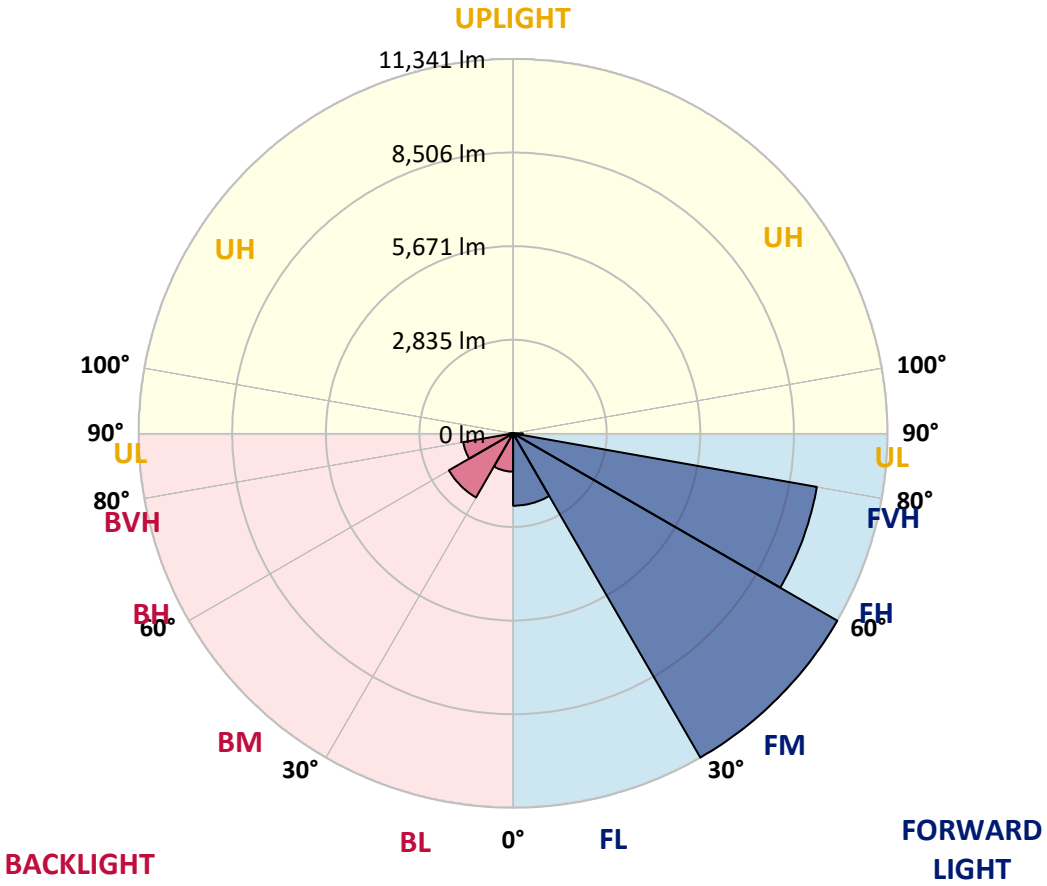
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2191.7 | 7.8 | | | |
| FM | (30°-60°) | 11341.1 | 40.2 | | | |
| FH | (60°-80°) | 9343.9 | 33.1 | | | G4/12000 |
| FVH | (80°-90°) | 296.7 | 1.1 | | | G3/500 |
| BL | (0°-30°) | 1160.0 | 4.1 | B3/2500 | | |
| BM | (30°-60°) | 2242.9 | 7.9 | B2/2500 | | |
| BH | (60°-80°) | 1533.5 | 5.4 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 123.0 | 0.4 | | | G2/225 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G4**
Type II Medium



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REPORT NUMBER: P642946
CATALOG NUMBER: GWS-SA6D-830-U-T2-W

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 70° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | *3292.5* | 3292.5 | 3292.5 |
| 2.5° | 3647.5 | 3641.4 | 3645.5 | 3641.4 | 3618.9 | 3563.9 | 3519.0 | 3461.9 | *3423.1* | 3400.7 | 3347.6 |
| 5° | 4075.9 | 4069.8 | 4055.5 | 4035.1 | 3994.3 | 3918.8 | 3806.6 | 3682.2 | *3606.7* | 3549.6 | 3437.4 |
| 7.5° | 4383.9 | 4383.9 | 4381.9 | 4357.4 | 4328.9 | 4249.3 | 4116.7 | 3953.5 | *3843.3* | 3745.4 | 3561.8 |
| 10° | 4541.0 | 4551.2 | 4565.5 | 4600.2 | 4594.1 | 4551.2 | 4426.8 | 4251.3 | *4112.6* | 3998.4 | 3725.0 |
| 12.5° | 4626.7 | 4632.8 | 4657.3 | 4728.7 | 4802.1 | 4812.3 | 4738.9 | 4555.3 | *4404.3* | 4251.3 | 3906.6 |
| 15° | 4736.9 | 4738.9 | 4771.5 | 4857.2 | 4965.3 | 5073.5 | 5055.1 | 4871.5 | *4716.5* | 4547.1 | 4108.5 |
| 17.5° | 4822.5 | 4836.8 | 4896.0 | 4995.9 | 5130.6 | 5279.5 | 5369.2 | 5255.0 | *5063.3* | 4869.5 | 4328.9 |
| 20° | 4853.1 | 4863.3 | 4940.9 | 5093.9 | 5277.4 | 5487.6 | 5687.5 | 5656.9 | *5463.1* | 5234.6 | 4577.7 |
| 22.5° | 4963.3 | 4963.3 | 5020.4 | 5148.9 | 5365.2 | 5671.2 | 5995.5 | 6075.1 | *5903.7* | 5636.5 | 4845.0 |
| 25° | 5206.0 | 5197.9 | 5224.4 | 5277.4 | 5440.6 | 5818.0 | 6299.5 | 6538.2 | *6346.4* | 6046.5 | 5112.2 |
| 27.5° | 5538.6 | 5534.5 | 5532.4 | 5540.6 | 5595.7 | 5946.6 | 6556.5 | 6970.6 | *6778.9* | 6440.2 | 5350.9 |
| 30° | 5899.6 | 5887.4 | 5913.9 | 5889.4 | 5877.2 | 6099.6 | 6774.8 | 7358.2 | *7209.3* | 6829.9 | 5548.8 |
| 32.5° | 6391.3 | 6368.8 | 6362.7 | 6283.2 | 6234.2 | 6338.2 | 6950.2 | 7798.9 | *7680.6* | 7250.1 | 5771.1 |
| 35° | 7040.0 | 7019.6 | 6915.6 | 6789.1 | 6644.2 | 6693.2 | 7168.5 | 8229.3 | *8237.5* | 7776.4 | 6062.8 |
| 37.5° | 7694.8 | 7698.9 | 7617.3 | 7319.5 | 7170.6 | 7142.0 | 7501.0 | 8753.6 | *8929.0* | 8404.8 | 6440.2 |
| 40° | 8239.5 | 8264.0 | 8264.0 | 7949.8 | 7727.5 | 7701.0 | 7968.2 | 9375.8 | *9724.6* | 9175.9 | 6917.6 |
| 42.5° | 8653.6 | 8676.1 | 8747.5 | 8521.0 | 8286.4 | 8378.2 | 8535.3 | 10000.0 | *10626.3* | 10128.5 | 7521.4 |
| 45° | 9108.5 | 9126.9 | 9165.7 | 9035.1 | 8898.4 | 9143.2 | 9177.9 | 10746.7 | *11658.5* | 11197.5 | 8223.2 |
| 47.5° | 9712.4 | 9696.1 | 9700.1 | 9604.3 | 9498.2 | 9893.9 | 9885.8 | 11375.0 | *12656.1* | 12368.4 | 8984.1 |
| 50° | 10463.1 | 10493.7 | 10465.1 | 10275.4 | 10151.0 | 10512.1 | 10559.0 | 12070.6 | *13533.3* | 13527.2 | 9751.1 |
| 52.5° | 11185.3 | 11197.5 | 11348.5 | 11356.6 | 11101.6 | 11026.1 | 11148.5 | 12772.4 | *14273.8* | 14588.0 | 10487.6 |
| 55° | 11222.0 | 11268.9 | 11721.8 | 12048.2 | 12460.2 | 11854.4 | 11744.2 | 13441.5 | *14989.8* | 15626.3 | 11252.6 |
| 57.5° | 10440.7 | 10516.1 | 11285.2 | 11989.0 | 13135.5 | 13276.2 | 12764.2 | 14306.4 | *15705.9* | 16648.3 | 12137.9 |
| 60° | 8771.9 | 8929.0 | 9973.5 | 11050.6 | 12831.5 | 14298.3 | 14851.1 | 15481.5 | *16646.3* | 17692.8 | 13213.0 |
| 62.5° | 5601.8 | 5663.0 | 7127.7 | 8931.1 | 11462.7 | 14198.3 | 17123.7 | 17552.1 | *18078.4* | 19053.5 | 14869.5 |
| 65° | 2805.0 | 3000.8 | 3859.7 | 5330.5 | 8266.0 | 12511.2 | 18272.2 | 21344.4 | *20699.8* | 21383.2 | 17554.1 |
| 67.5° | 1903.3 | 1966.5 | 2401.1 | 3202.8 | 4847.0 | 8863.7 | 17560.2 | 24539.0 | *24349.3* | 24461.5 | 20416.2 |
| 70° | *1403.5* | *1444.3* | *1787.0* | *2268.5* | *2931.5* | *5032.7* | *13980.0* | *24298.3* | *25593.7* | *25552.9* | *20116.3* |
| 72.5° | 1024.1 | 1044.5 | 1303.6 | 1731.9 | 2172.6 | 2603.0 | 8537.4 | 19628.8 | *22341.9* | 23519.0 | 17592.9 |
| 75° | 744.6 | 769.1 | 905.8 | 1295.4 | 1689.1 | 1623.8 | 4214.6 | 14177.9 | *17038.0* | 19302.4 | 14333.0 |
| 77.5° | 554.9 | 585.5 | 648.7 | 811.9 | 1183.2 | 1162.8 | 1821.7 | 9206.5 | *11020.0* | 12607.1 | 8706.7 |
| 80° | 399.8 | 406.0 | 442.7 | 520.2 | 750.7 | 681.4 | 867.0 | 4800.1 | *5503.9* | 6030.2 | 3412.9 |
| 82.5° | 242.8 | 248.9 | 295.8 | 320.3 | 465.1 | 428.4 | 450.8 | 1554.5 | *2227.7* | 2364.3 | 1275.0 |
| 85° | 71.4 | 75.5 | 134.6 | 146.9 | 193.8 | 183.6 | 181.6 | 632.4 | *754.8* | 964.9 | 501.8 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 12.2 | 22.4 | 112.2 | *169.3* | 234.6 | 122.4 |
| 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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Scaled Data Report

REPORT NUMBER: P642946
CATALOG NUMBER: GWS-SA6D-830-U-T2-W

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 | 3292.5 |
| 2.5° | 3327.2 | 3280.3 | 3255.8 | 3213.0 | 3182.4 | 3151.8 | 3121.2 | 3092.6 | 3080.4 | 3062.0 | 3066.1 |
| 5° | 3386.4 | 3312.9 | 3239.5 | 3155.9 | 3084.5 | 3025.3 | 2972.3 | 2925.3 | 2904.9 | 2886.6 | 2894.7 |
| 7.5° | 3476.1 | 3366.0 | 3225.2 | 3072.2 | 2960.0 | 2878.4 | 2823.3 | 2790.7 | 2780.5 | 2766.2 | 2766.2 |
| 10° | 3590.4 | 3425.1 | 3178.3 | 2960.0 | 2825.4 | 2760.1 | 2735.6 | 2733.6 | 2743.8 | 2745.8 | 2741.7 |
| 12.5° | 3716.9 | 3482.3 | 3108.9 | 2827.4 | 2713.2 | 2692.8 | 2711.1 | 2745.8 | 2780.5 | 2798.9 | 2794.8 |
| 15° | 3847.4 | 3519.0 | 2990.6 | 2700.9 | 2631.6 | 2658.1 | 2717.3 | 2786.6 | 2853.9 | 2888.6 | 2886.6 |
| 17.5° | 3969.8 | 3527.1 | 2837.6 | 2578.5 | 2560.2 | 2627.5 | 2729.5 | 2837.6 | 2929.4 | 2978.4 | 2980.4 |
| 20° | 4106.5 | 3512.9 | 2680.5 | 2468.4 | 2488.8 | 2598.9 | 2733.6 | 2864.1 | 2972.3 | 3021.2 | 3033.5 |
| 22.5° | 4230.9 | 3463.9 | 2527.5 | 2364.3 | 2427.6 | 2564.3 | 2700.9 | 2823.3 | 2919.2 | 2966.1 | 2982.5 |
| 25° | 4343.1 | 3370.1 | 2360.3 | 2276.6 | 2380.7 | 2515.3 | 2619.3 | 2705.0 | 2772.3 | 2800.9 | 2823.3 |
| 27.5° | 4404.3 | 3229.3 | 2233.8 | 2207.3 | 2335.8 | 2445.9 | 2503.1 | 2529.6 | 2552.0 | 2543.9 | 2560.2 |
| 30° | 4416.6 | 3053.9 | 2123.6 | 2152.2 | 2268.5 | 2350.1 | 2362.3 | 2335.8 | 2297.0 | 2233.8 | 2248.1 |
| 32.5° | 4404.3 | 2851.9 | 2031.8 | 2093.0 | 2193.0 | 2241.9 | 2225.6 | 2156.3 | 2062.4 | 1964.5 | 1970.6 |
| 35° | 4408.4 | 2647.9 | 1956.3 | 2027.7 | 2105.3 | 2131.8 | 2091.0 | 1995.1 | 1895.1 | 1805.4 | 1801.3 |
| 37.5° | 4453.3 | 2476.5 | 1893.1 | 1964.5 | 2019.6 | 2023.7 | 1978.8 | 1878.8 | 1827.8 | 1760.5 | 1752.3 |
| 40° | 4577.7 | 2350.1 | 1836.0 | 1901.3 | 1935.9 | 1933.9 | 1882.9 | 1811.5 | 1846.2 | 1823.7 | 1817.6 |
| 42.5° | 4781.7 | 2272.5 | 1789.1 | 1833.9 | 1858.4 | 1862.5 | 1821.7 | 1776.8 | 1852.3 | 1823.7 | 1813.5 |
| 45° | 5110.2 | 2268.5 | 1756.4 | 1766.6 | 1805.4 | 1833.9 | 1805.4 | 1754.4 | 1782.9 | 1644.2 | 1617.7 |
| 47.5° | 5499.8 | 2337.8 | 1731.9 | 1707.5 | 1774.8 | 1825.8 | 1780.9 | 1699.3 | 1640.2 | 1513.7 | 1495.3 |
| 50° | 5969.0 | 2478.6 | 1709.5 | 1644.2 | 1729.9 | 1795.2 | 1750.3 | 1638.1 | 1548.4 | 1481.0 | 1470.8 |
| 52.5° | 6525.9 | 2664.2 | 1681.0 | 1572.8 | 1662.6 | 1778.9 | 1750.3 | 1632.0 | 1513.7 | 1452.5 | 1442.3 |
| 55° | 7109.4 | 2878.4 | 1648.3 | 1487.2 | 1587.1 | 1782.9 | 1764.6 | 1589.2 | 1487.2 | 1454.5 | 1446.4 |
| 57.5° | 7833.6 | 3135.5 | 1589.2 | 1387.2 | 1519.8 | 1746.2 | 1707.5 | 1564.7 | 1468.8 | 1442.3 | 1434.1 |
| 60° | 8774.0 | 3516.9 | 1477.0 | 1285.2 | 1442.3 | 1681.0 | 1656.5 | 1523.9 | 1419.8 | 1397.4 | 1391.3 |
| 62.5° | 10263.2 | 4163.6 | 1340.3 | 1187.3 | 1350.5 | 1544.3 | 1581.0 | 1446.4 | 1358.6 | 1356.6 | 1354.6 |
| 65° | 12690.8 | 4940.9 | 1179.1 | 1099.6 | 1254.6 | 1432.1 | 1481.0 | 1366.8 | 1295.4 | 1317.8 | 1315.8 |
| 67.5° | 14392.1 | 5008.2 | 1046.5 | 1007.8 | 1142.4 | 1309.7 | 1381.1 | 1285.2 | 1207.7 | 1250.5 | 1248.5 |
| 70° | *13182.4* | *3906.6* | *932.3* | *911.9* | *1022.0* | *1177.1* | *1273.0* | *1183.2* | *1105.7* | *1146.5* | *1138.3* |
| 72.5° | 11117.9 | 2994.7 | 824.2 | 811.9 | 899.6 | 1038.4 | 1134.2 | 1081.2 | 999.6 | 999.6 | 981.2 |
| 75° | 8935.1 | 2470.4 | 709.9 | 703.8 | 763.0 | 897.6 | 1005.7 | 916.0 | 840.5 | 836.4 | 824.2 |
| 77.5° | 5124.5 | 1619.8 | 595.7 | 591.6 | 610.0 | 750.7 | 781.3 | 763.0 | 705.8 | 679.3 | 671.2 |
| 80° | 2042.0 | 842.5 | 469.2 | 442.7 | 461.0 | 550.8 | 616.1 | 585.5 | 536.5 | 503.9 | 485.5 |
| 82.5° | 791.5 | 422.3 | 330.5 | 289.7 | 316.2 | 397.8 | 446.8 | 436.6 | 403.9 | 330.5 | 310.1 |
| 85° | 322.3 | 206.0 | 197.9 | 167.3 | 183.6 | 214.2 | 257.0 | 222.4 | 183.6 | 130.6 | 124.4 |
| 87.5° | 85.7 | 75.5 | 73.4 | 44.9 | 34.7 | 10.2 | 2.0 | 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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# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

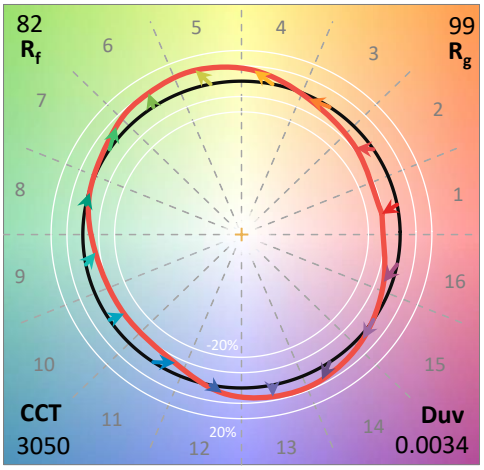
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

| 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 |

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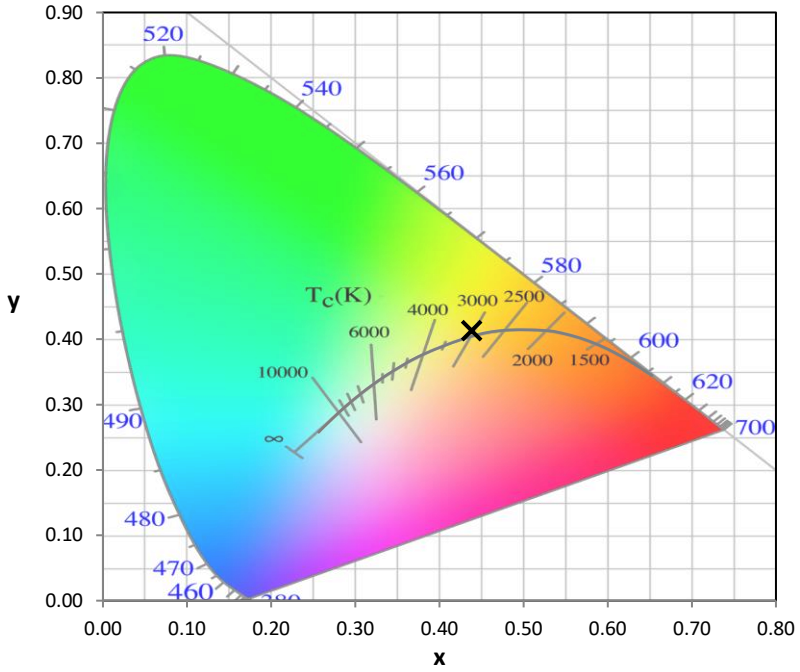
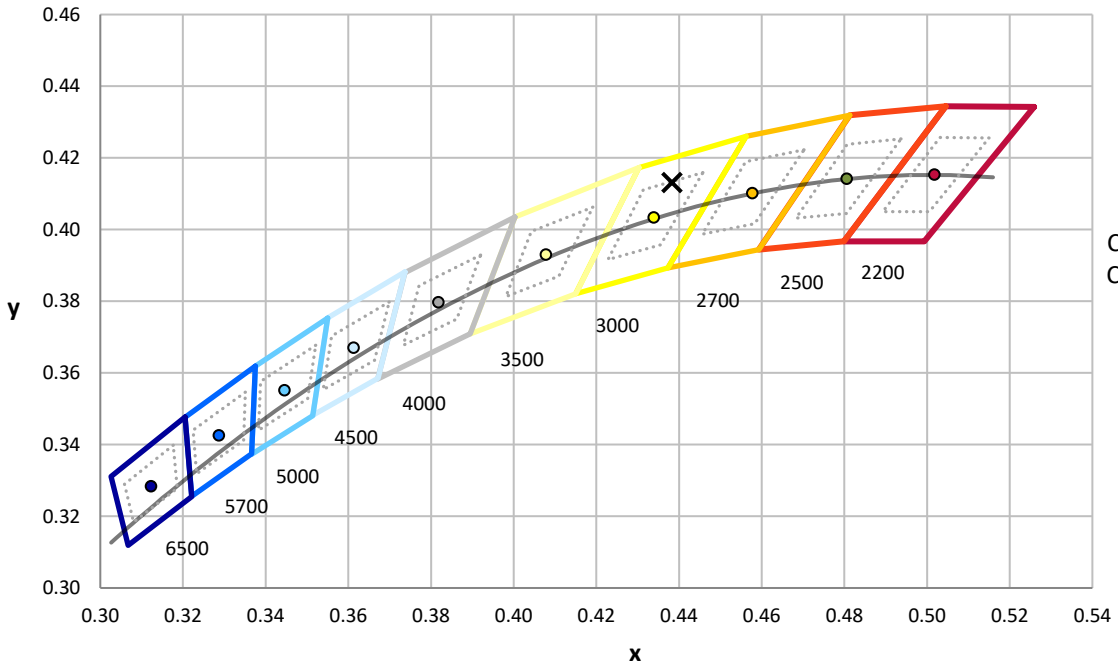
## CIE 1931 Chromaticity Diagram




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




CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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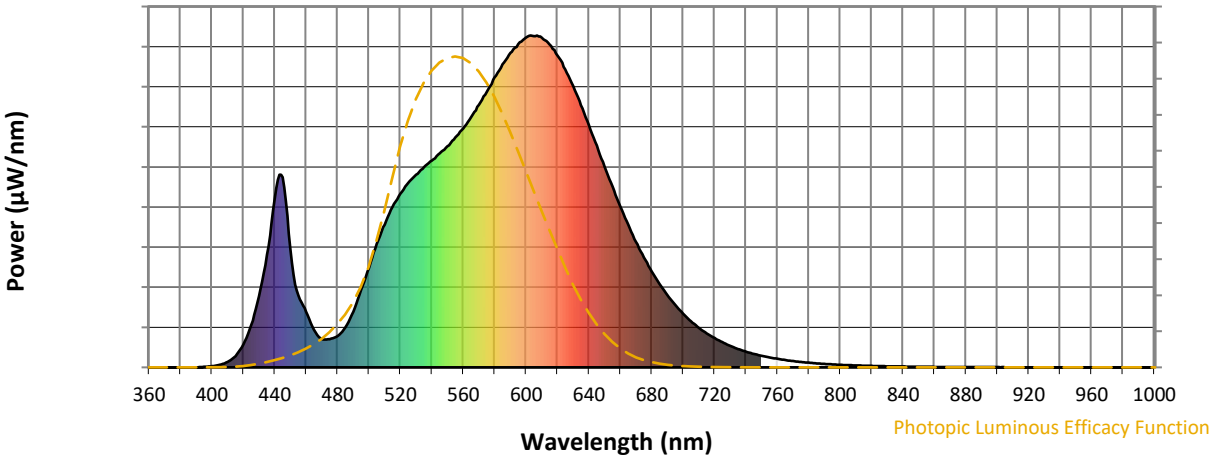
## Photopic Flux vs. Wavelength




## 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 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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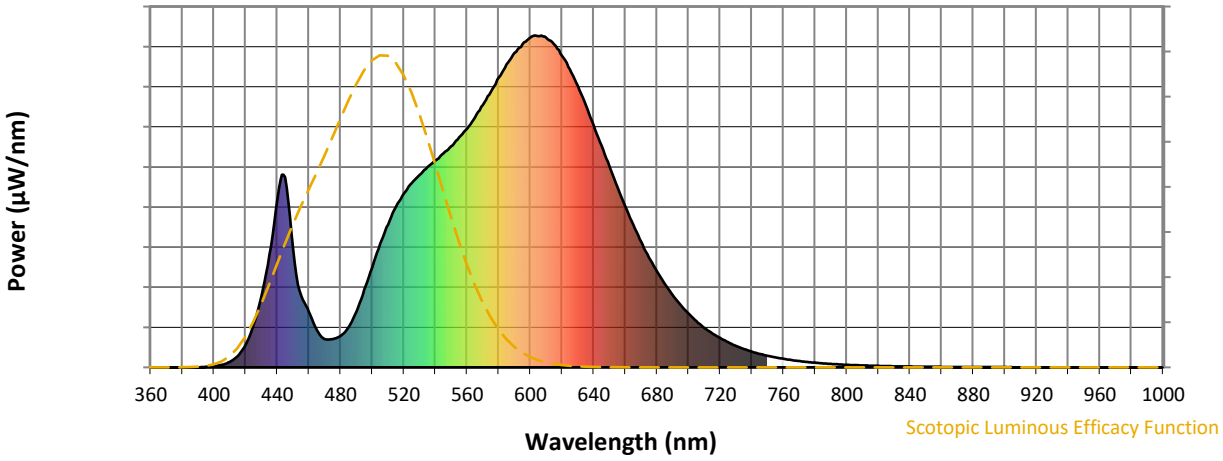
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.27**

| 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 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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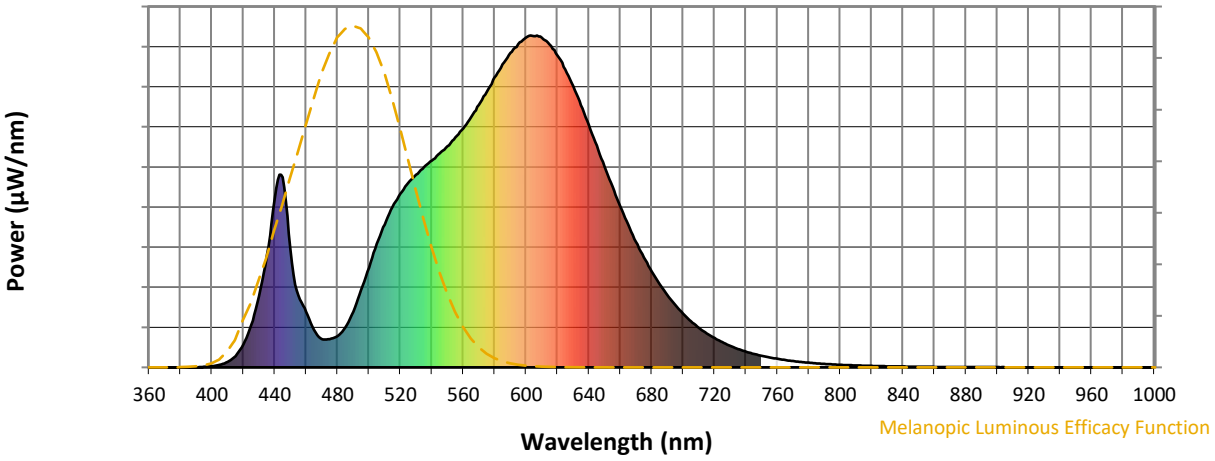
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| 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 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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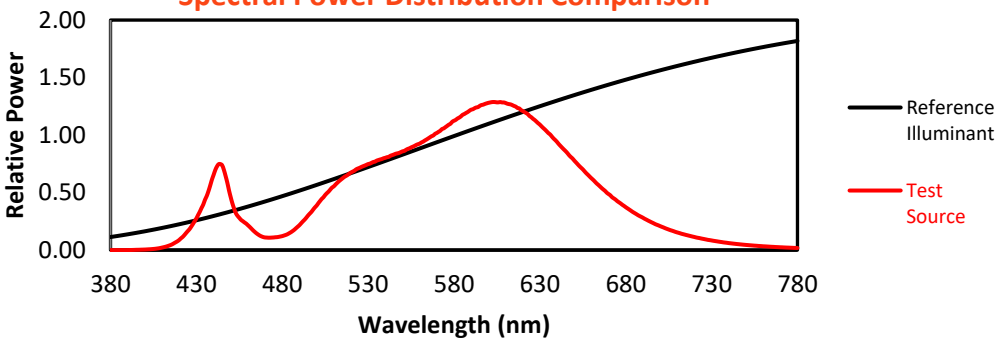
# TM-30-18

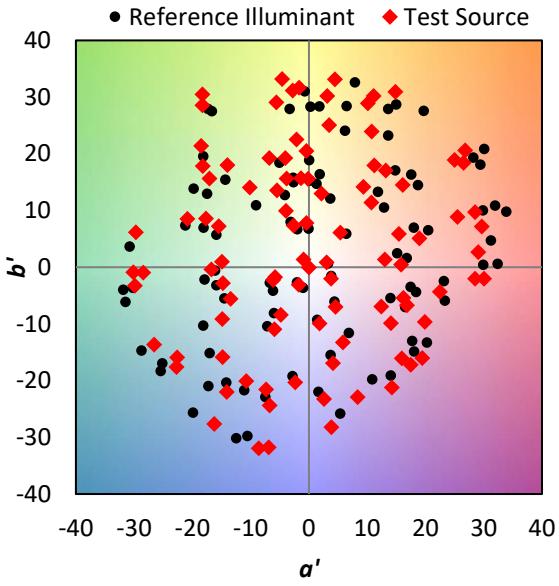
## Summary

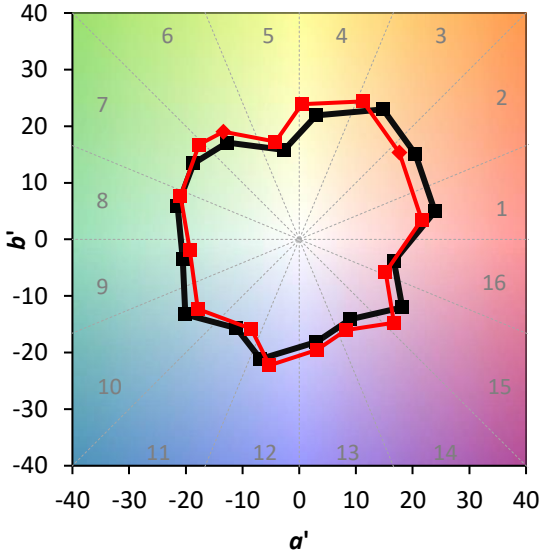
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

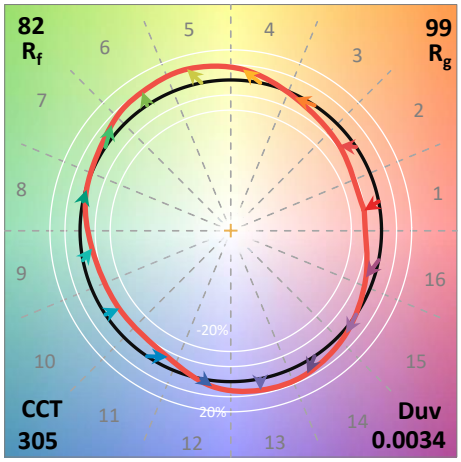
## Spectral Power Distribution Comparison

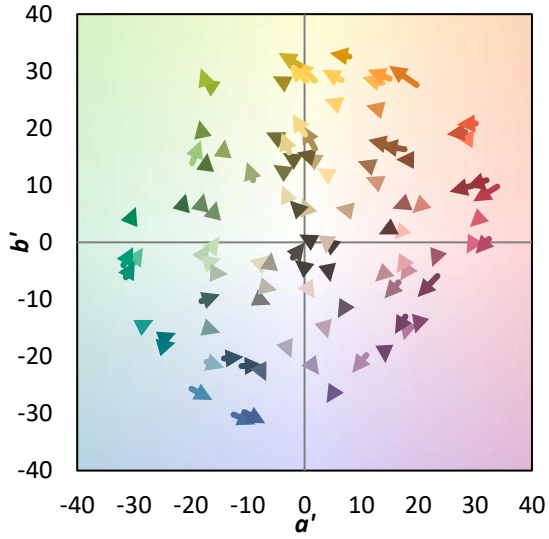



## Color Vector Graphics



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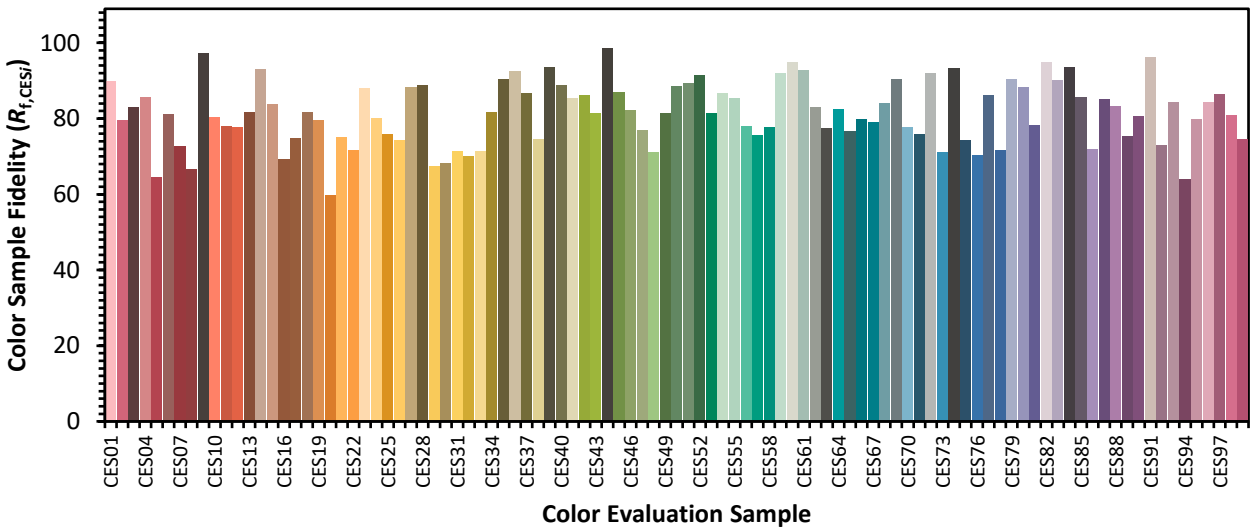
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



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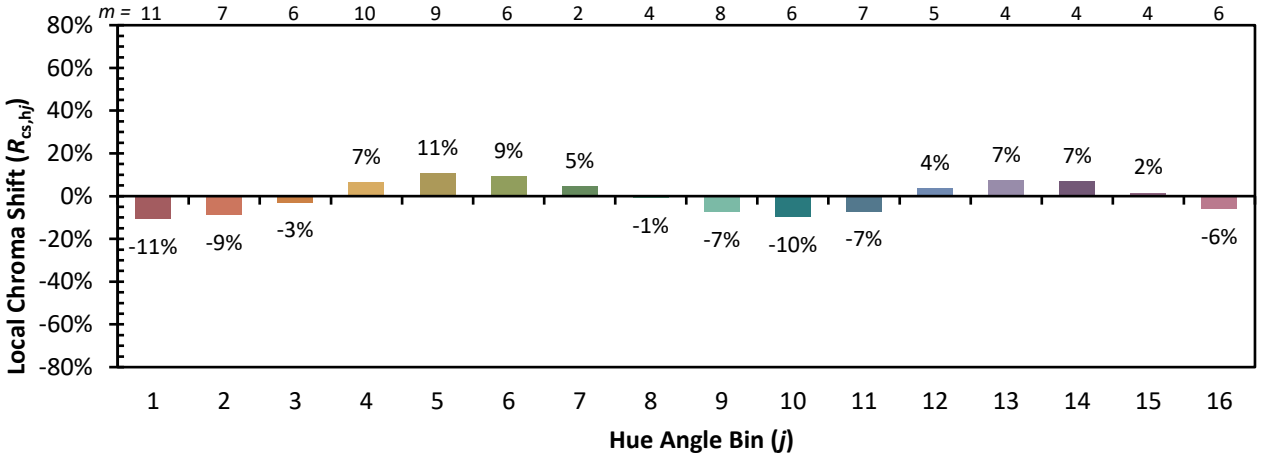
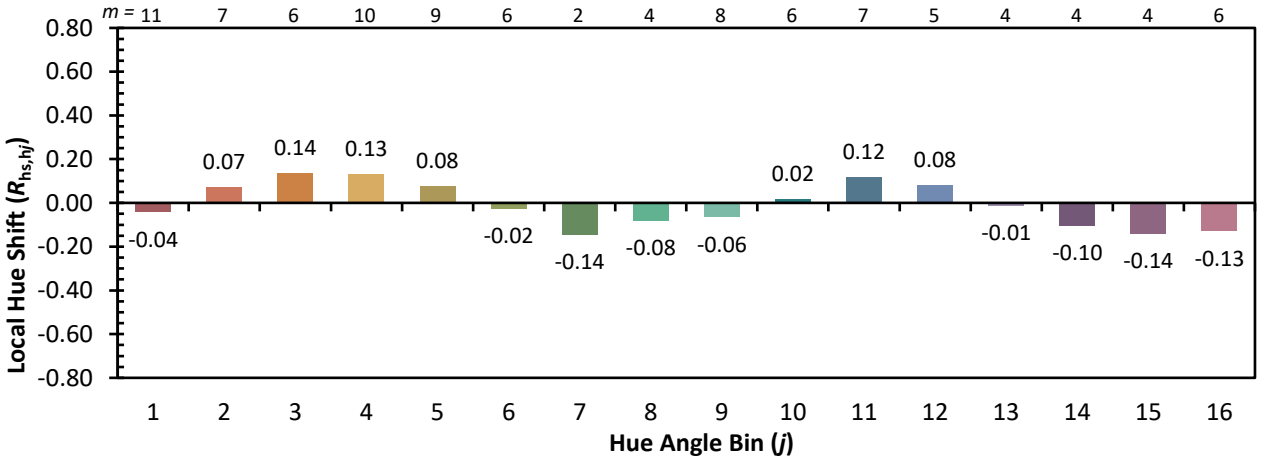
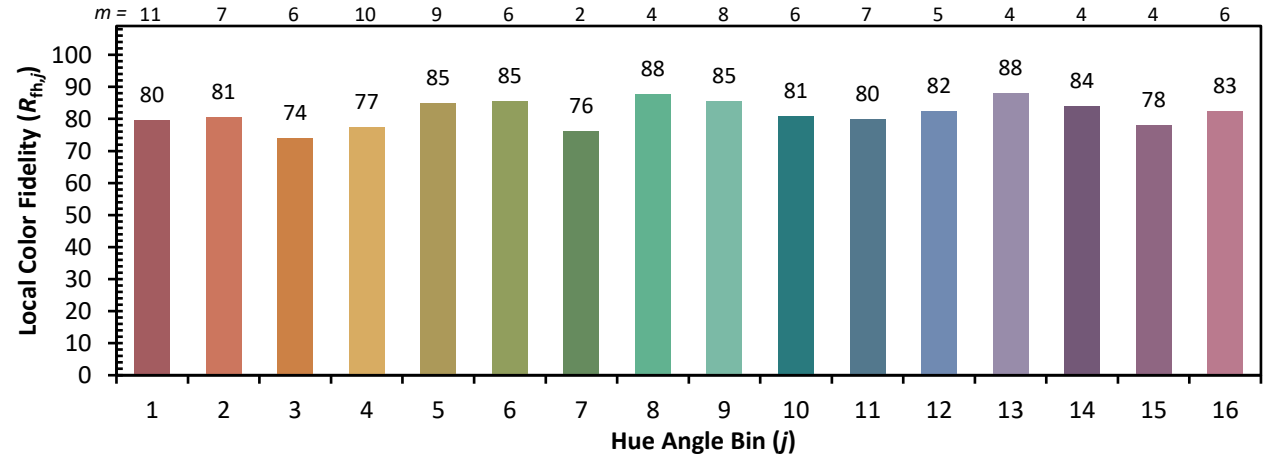
## Color Rendition by Hue-Angle Bin



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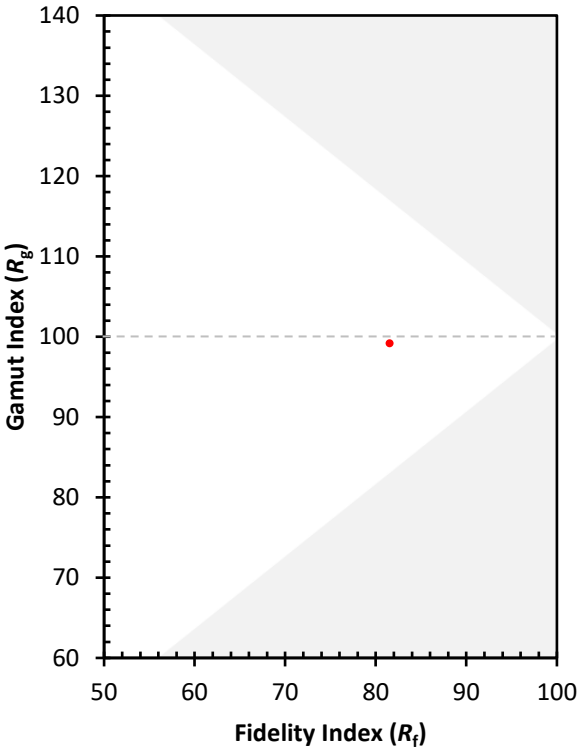
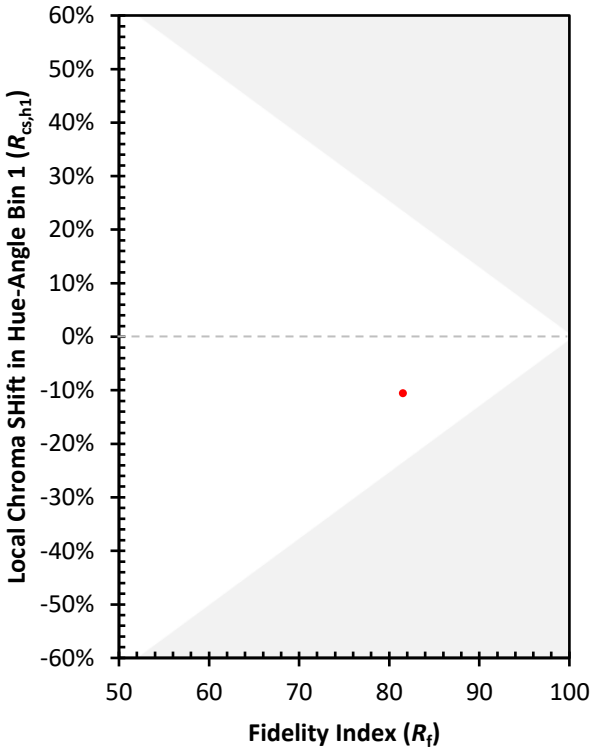
## Measure Comparisons




(END OF REPORT)