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: P641972

Luminaire Tested: GWS-SA6B-830-U-T4W-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: | P641972 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-52) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA6B-830-U-T4W-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS |
| Light Source: | (96) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 16675.1 lumens |
| Efficiency: | N/A |
| Efficacy: | 120.1 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B3 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 138.9 |
| 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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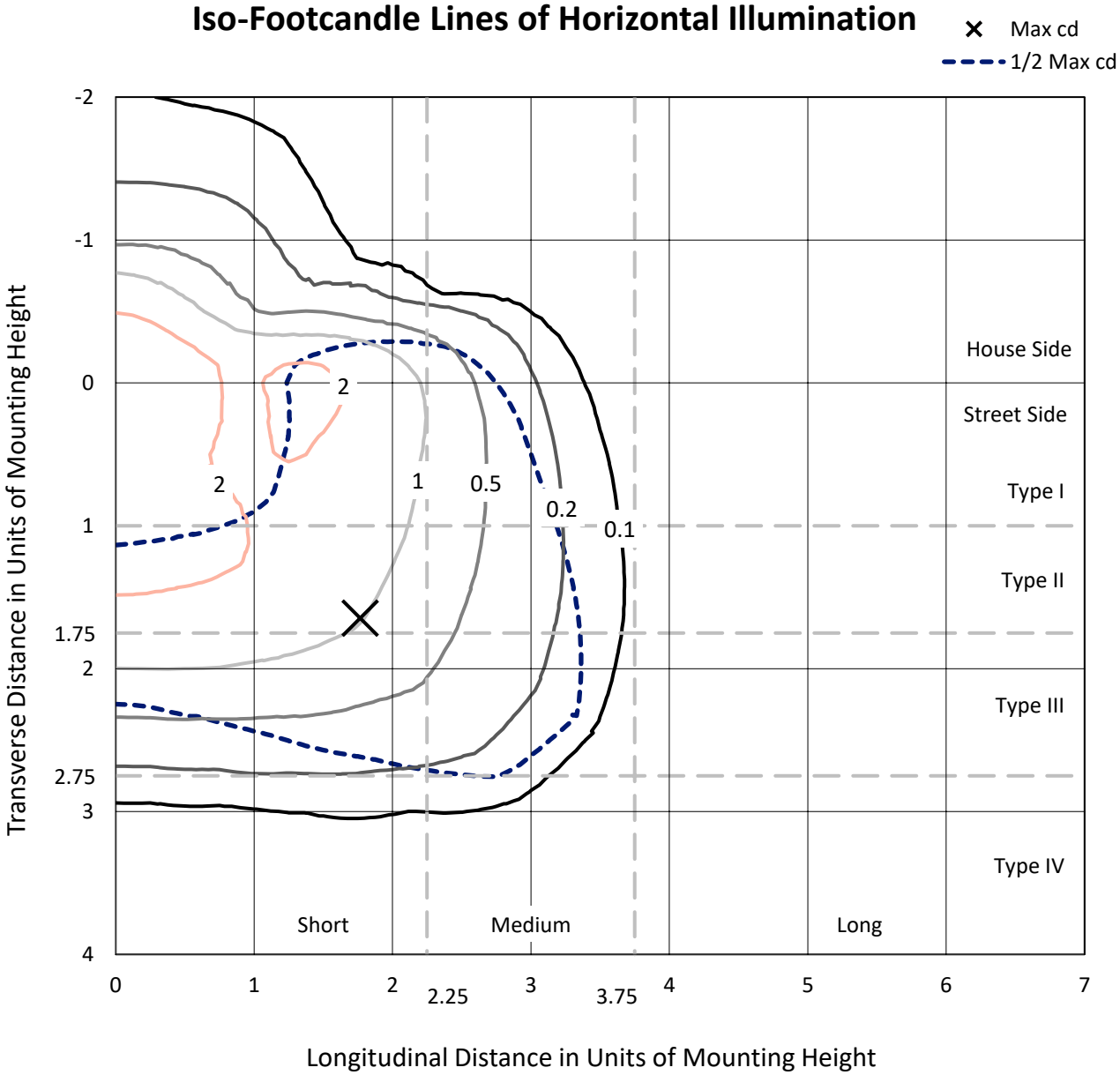
Scaled Data Report

REPORT NUMBER: P641972
CATALOG NUMBER: GWS-SA6B-830-U-T4W-W

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 3.3 fc
Type III - Short - N/A

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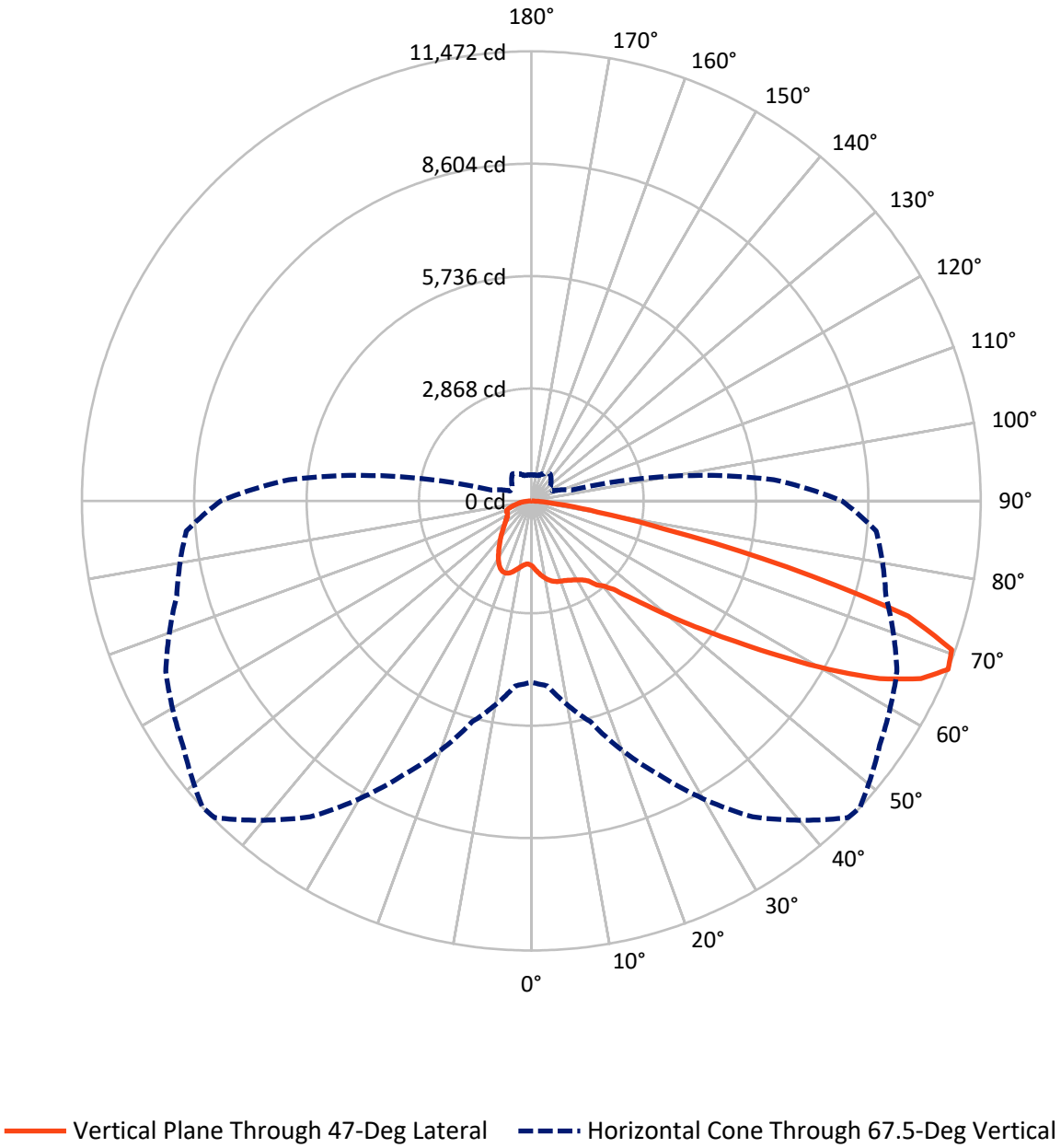
REPORT NUMBER: P641972
CATALOG NUMBER: GWS-SA6B-830-U-T4W-W

## Luminous Intensity Polar Plot



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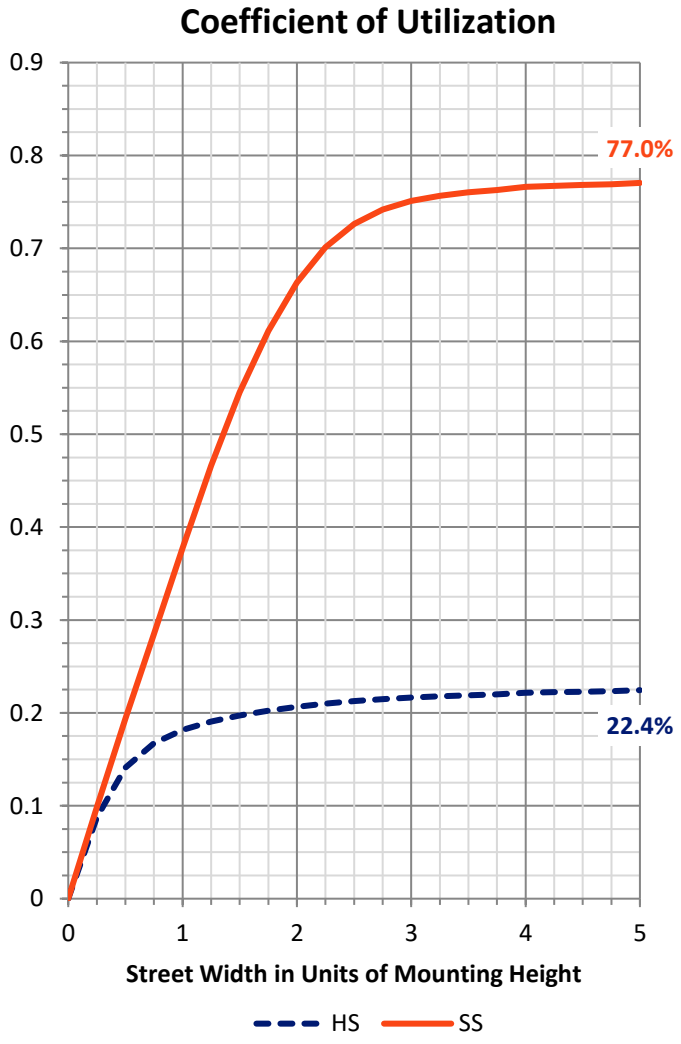
REPORT NUMBER: P641972
CATALOG NUMBER: GWS-SA6B-830-U-T4W-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 3800.4 | 0.0 | 3800.4 |
| | % Fixture | 22.8 | 0.0 | 22.8 |
| **Street Side** | Lumens | 12874.7 | 0.0 | 12874.7 |
| | % Fixture | 77.2 | 0.0 | 77.2 |
| **Total** | Lumens | 16675.1 | 0.0 | 16675.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 168.9 | 1.0 |
| 10°-20° | 562.8 | 3.4 |
| 20°-30° | 956.7 | 5.7 |
| 30°-40° | 1401.5 | 8.4 |
| 40°-50° | 2135.3 | 12.8 |
| 50°-60° | 3820.5 | 22.9 |
| 60°-70° | 5098.0 | 30.6 |
| 70°-80° | 2305.4 | 13.8 |
| 80°-90° | 225.9 | 1.4 |
| 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° | 16675.1 | 100.0 |
| 0°-180° | 16675.1 | 100.0 |



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REPORT NUMBER: P641972
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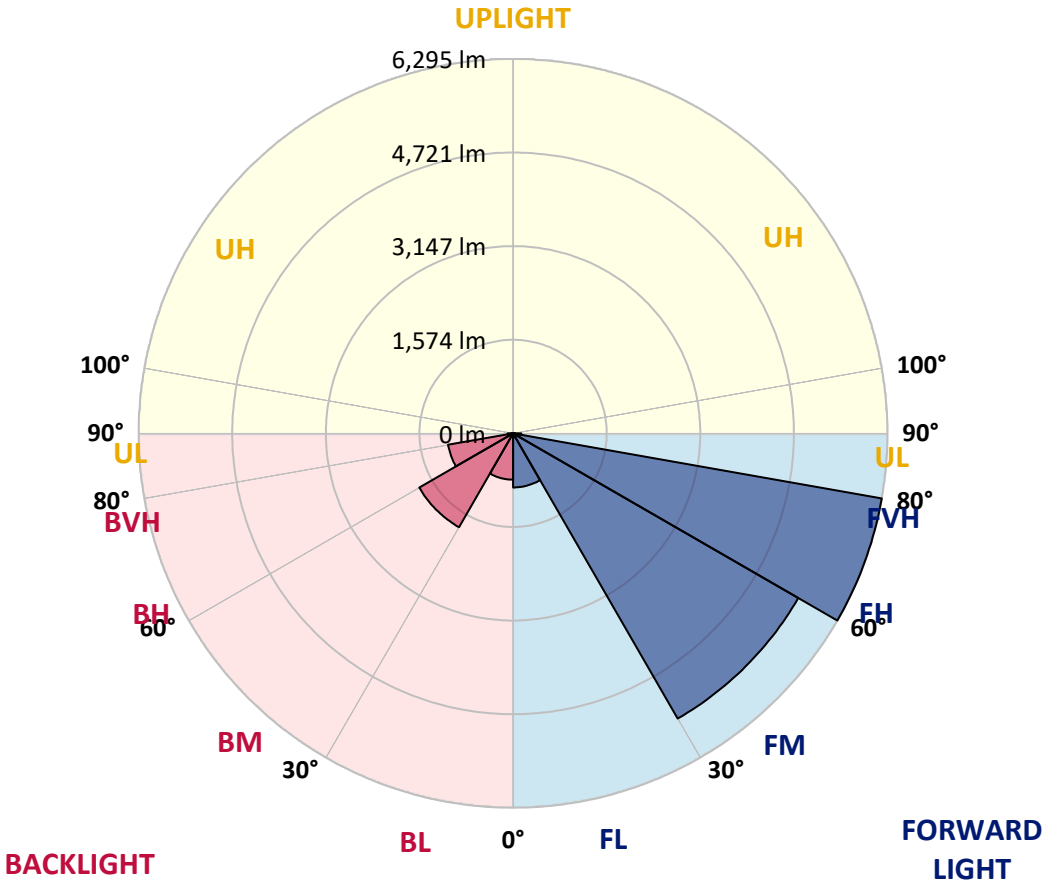
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 909.4 | 5.5 | | | |
| FM | (30°-60°) | 5536.3 | 33.2 | | | |
| FH | (60°-80°) | 6294.7 | 37.7 | | | G3/7500 |
| FVH | (80°-90°) | 134.4 | 0.8 | | | G2/225 |
| BL | (0°-30°) | 779.1 | 4.7 | B2/1000 | | |
| BM | (30°-60°) | 1820.9 | 10.9 | B2/2500 | | |
| BH | (60°-80°) | 1108.8 | 6.6 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 91.5 | 0.5 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G3**
Type III Short



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REPORT NUMBER: P641972
CATALOG NUMBER: GWS-SA6B-830-U-T4W-W

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 |
| 2.5° | 1762.7 | 1768.8 | 1767.6 | 1757.9 | 1751.9 | 1741.0 | 1742.3 | 1725.4 | 1700.1 | 1683.2 | 1663.9 |
| 5° | 1918.3 | 1927.9 | 1915.9 | 1900.2 | 1876.1 | 1841.1 | 1837.5 | 1798.9 | 1750.7 | 1716.9 | 1682.0 |
| 7.5° | 2053.3 | 2059.4 | 2044.9 | 2018.4 | 1983.4 | 1936.4 | 1927.9 | 1882.1 | 1821.8 | 1768.8 | 1718.1 |
| 10° | 2158.2 | 2165.5 | 2146.2 | 2111.2 | 2065.4 | 2018.4 | 2012.3 | 1965.3 | 1901.4 | 1838.7 | 1774.8 |
| 12.5° | 2247.4 | 2249.9 | 2229.4 | 2182.3 | 2132.9 | 2084.7 | 2078.6 | 2035.2 | 1976.2 | 1912.3 | 1842.3 |
| 15° | 2299.3 | 2300.5 | 2275.2 | 2223.3 | 2176.3 | 2134.1 | 2130.5 | 2093.1 | 2038.9 | 1978.6 | 1903.8 |
| 17.5° | 2295.7 | 2298.1 | 2280.0 | 2234.2 | 2193.2 | 2167.9 | 2164.3 | 2140.1 | 2097.9 | 2043.7 | 1968.9 |
| 20° | 2251.1 | 2253.5 | 2241.4 | 2211.3 | 2189.6 | 2182.3 | 2183.5 | 2176.3 | 2151.0 | 2106.4 | 2030.4 |
| 22.5° | 2216.1 | 2219.7 | 2208.9 | 2187.2 | 2184.7 | 2201.6 | 2205.2 | 2208.9 | 2196.8 | 2157.0 | 2083.5 |
| 25° | 2233.0 | 2239.0 | 2222.1 | 2192.0 | 2196.8 | 2234.2 | 2241.4 | 2253.5 | 2243.8 | 2210.1 | 2146.2 |
| 27.5° | 2349.9 | 2353.5 | 2310.1 | 2248.7 | 2234.2 | 2274.0 | 2284.8 | 2304.1 | 2296.9 | 2265.5 | 2216.1 |
| 30° | 2621.2 | 2618.8 | 2526.0 | 2375.3 | 2315.0 | 2330.6 | 2339.1 | 2366.8 | 2369.2 | 2348.7 | 2301.7 |
| 32.5° | 3003.4 | 2991.4 | 2847.9 | 2608.0 | 2433.1 | 2394.5 | 2404.2 | 2441.6 | 2469.3 | 2447.6 | 2383.7 |
| 35° | 3407.3 | 3396.5 | 3238.5 | 2957.6 | 2651.4 | 2517.5 | 2506.7 | 2535.6 | 2577.8 | 2517.5 | 2425.9 |
| 37.5° | 3792.0 | 3775.1 | 3613.5 | 3266.3 | 2920.2 | 2733.3 | 2717.7 | 2688.7 | 2663.4 | 2547.7 | 2477.7 |
| 40° | 4218.8 | 4199.5 | 4058.4 | 3665.4 | 3216.8 | 2898.5 | 2858.7 | 2744.2 | 2721.3 | 2647.7 | 2612.8 |
| 42.5° | 4674.5 | 4674.5 | 4557.6 | 4170.6 | 3574.9 | 3134.8 | 3083.0 | 2910.6 | 2934.7 | 2886.5 | 2845.5 |
| 45° | 5130.3 | 5143.6 | 5050.7 | 4679.4 | 4053.6 | 3581.0 | 3497.8 | 3253.0 | 3310.9 | 3289.2 | 3268.7 |
| 47.5° | 5518.5 | 5543.9 | 5525.8 | 5199.0 | 4639.6 | 4123.5 | 3996.9 | 3742.5 | 3866.7 | 3918.6 | 3976.4 |
| 50° | 5936.9 | 5964.7 | 5946.6 | 5817.6 | 5325.6 | 4780.6 | 4667.3 | 4404.5 | 4617.9 | 4773.4 | 4962.7 |
| 52.5° | 6557.9 | 6597.7 | 6446.9 | 6397.5 | 6158.8 | 5527.0 | 5425.7 | 5126.7 | 5513.7 | 5771.7 | 6193.7 |
| 55° | 7082.3 | 7081.1 | 7028.1 | 7141.4 | 7053.4 | 6439.7 | 6327.6 | 6056.3 | 6550.6 | 6824.3 | 7441.6 |
| 57.5° | 7325.9 | 7354.8 | 7536.9 | 7857.6 | 8033.7 | 7555.0 | 7447.7 | 7170.4 | 7663.5 | 7805.8 | 8472.5 |
| 60° | 7451.3 | 7487.5 | 7839.5 | 8473.7 | 8947.6 | 8772.8 | 8730.6 | 8377.3 | 8654.6 | 8637.7 | 9341.9 |
| 62.5° | 7275.3 | 7347.6 | 7913.1 | 8755.9 | 9599.9 | 9996.6 | 9983.3 | 9449.2 | 9497.4 | 9332.2 | 9880.8 |
| 65° | 6467.4 | 6545.8 | 7433.2 | 8614.8 | 9972.4 | 10927.4 | 10931.0 | 10419.8 | 10144.9 | 9669.8 | 9790.4 |
| 67.5° | 4625.1 | 4737.2 | 5834.4 | 7708.1 | 9841.0 | 11430.1 | 11472.3 | 10859.8 | 10296.8 | 9370.8 | 8840.3 |
| 70° | 2521.1 | 2603.1 | 3462.8 | 5602.9 | 8657.0 | 11309.6 | 11387.9 | 10647.6 | 9626.4 | 8106.0 | 6805.0 |
| 72.5° | 1145.4 | 1172.0 | 1610.8 | 3074.6 | 5914.0 | 9734.9 | 10062.9 | 9502.2 | 7905.8 | 5987.6 | 4327.3 |
| 75° | 524.5 | 536.5 | 701.7 | 1471.0 | 3090.2 | 6514.5 | 6744.7 | 7077.5 | 5501.7 | 3781.1 | 2255.9 |
| 77.5° | 329.2 | 332.8 | 399.1 | 672.8 | 1540.9 | 3251.8 | 3494.2 | 4214.0 | 3221.7 | 1871.3 | 942.9 |
| 80° | 194.1 | 197.7 | 248.4 | 364.1 | 723.4 | 1487.8 | 1718.1 | 1666.3 | 1514.4 | 807.8 | 429.2 |
| 82.5° | 97.7 | 101.3 | 143.5 | 207.4 | 394.3 | 592.0 | 696.9 | 700.5 | 564.3 | 437.7 | 242.3 |
| 85° | 35.0 | 36.2 | 47.0 | 82.0 | 167.6 | 195.3 | 218.2 | 266.5 | 276.1 | 254.4 | 117.0 |
| 87.5° | 0.0 | 0.0 | 1.2 | 2.4 | 4.8 | 19.3 | 20.5 | 38.6 | 80.8 | 90.4 | 47.0 |
| 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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Scaled Data Report

REPORT NUMBER: P641972
CATALOG NUMBER: GWS-SA6B-830-U-T4W-W

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 | 1653.0 |
| 2.5° | 1657.9 | 1639.8 | 1633.7 | 1627.7 | 1618.1 | 1614.4 | 1607.2 | 1600.0 | 1600.0 | 1592.7 | 1589.1 |
| 5° | 1666.3 | 1642.2 | 1626.5 | 1619.3 | 1613.2 | 1616.9 | 1616.9 | 1619.3 | 1627.7 | 1622.9 | 1625.3 |
| 7.5° | 1696.4 | 1668.7 | 1647.0 | 1641.0 | 1641.0 | 1655.4 | 1665.1 | 1677.1 | 1692.8 | 1695.2 | 1695.2 |
| 10° | 1749.5 | 1716.9 | 1694.0 | 1690.4 | 1696.4 | 1716.9 | 1731.4 | 1745.9 | 1765.2 | 1766.4 | 1768.8 |
| 12.5° | 1807.4 | 1774.8 | 1751.9 | 1756.7 | 1762.7 | 1789.3 | 1804.9 | 1817.0 | 1836.3 | 1836.3 | 1835.1 |
| 15° | 1867.6 | 1831.5 | 1812.2 | 1821.8 | 1839.9 | 1870.1 | 1872.5 | 1873.7 | 1883.3 | 1880.9 | 1879.7 |
| 17.5° | 1930.3 | 1891.8 | 1877.3 | 1891.8 | 1911.1 | 1925.5 | 1913.5 | 1896.6 | 1893.0 | 1888.1 | 1885.7 |
| 20° | 1991.8 | 1952.0 | 1946.0 | 1956.9 | 1962.9 | 1950.8 | 1913.5 | 1882.1 | 1867.6 | 1860.4 | 1858.0 |
| 22.5° | 2044.9 | 2011.1 | 2007.5 | 2007.5 | 1977.4 | 1935.2 | 1879.7 | 1837.5 | 1818.2 | 1808.6 | 1806.2 |
| 25° | 2107.6 | 2076.2 | 2070.2 | 2037.7 | 1960.5 | 1883.3 | 1808.6 | 1770.0 | 1754.3 | 1749.5 | 1750.7 |
| 27.5° | 2181.1 | 2159.4 | 2140.1 | 2047.3 | 1912.3 | 1791.7 | 1707.3 | 1690.4 | 1684.4 | 1690.4 | 1694.0 |
| 30° | 2271.6 | 2249.9 | 2206.5 | 2035.2 | 1835.1 | 1672.3 | 1591.5 | 1590.3 | 1608.4 | 1624.1 | 1626.5 |
| 32.5° | 2345.1 | 2335.5 | 2264.3 | 1996.7 | 1726.6 | 1540.9 | 1472.2 | 1477.0 | 1509.6 | 1531.3 | 1534.9 |
| 35° | 2403.0 | 2418.7 | 2312.6 | 1932.8 | 1597.6 | 1416.7 | 1362.5 | 1364.9 | 1383.0 | 1413.1 | 1414.3 |
| 37.5° | 2485.0 | 2538.0 | 2356.0 | 1835.1 | 1449.3 | 1309.4 | 1260.0 | 1241.9 | 1239.5 | 1247.9 | 1250.3 |
| 40° | 2650.2 | 2729.7 | 2387.3 | 1692.8 | 1305.8 | 1212.9 | 1157.5 | 1122.5 | 1092.4 | 1069.5 | 1062.2 |
| 42.5° | 2899.7 | 2991.4 | 2405.4 | 1520.4 | 1178.0 | 1117.7 | 1055.0 | 1010.4 | 957.3 | 909.1 | 892.2 |
| 45° | 3357.9 | 3388.0 | 2405.4 | 1337.1 | 1064.6 | 1028.5 | 965.8 | 912.7 | 845.2 | 788.5 | 776.5 |
| 47.5° | 4091.0 | 3994.5 | 2407.8 | 1159.9 | 964.6 | 950.1 | 895.8 | 835.6 | 760.8 | 713.8 | 706.5 |
| 50° | 5195.4 | 4856.6 | 2457.2 | 1012.8 | 881.4 | 883.8 | 844.0 | 777.7 | 710.2 | 675.2 | 669.2 |
| 52.5° | 6446.9 | 5918.8 | 2589.9 | 904.3 | 811.4 | 829.5 | 807.8 | 743.9 | 683.6 | 653.5 | 647.5 |
| 55° | 7623.7 | 6895.5 | 2703.2 | 827.1 | 752.4 | 783.7 | 782.5 | 723.4 | 669.2 | 639.0 | 635.4 |
| 57.5° | 8624.5 | 7564.6 | 2686.3 | 764.4 | 701.7 | 741.5 | 759.6 | 710.2 | 659.5 | 634.2 | 630.6 |
| 60° | 9246.6 | 7919.1 | 2446.4 | 706.5 | 663.1 | 711.4 | 746.3 | 706.5 | 664.3 | 658.3 | 659.5 |
| 62.5° | 9516.7 | 7854.0 | 1985.8 | 663.1 | 637.8 | 696.9 | 760.8 | 731.9 | 709.0 | 723.4 | 731.9 |
| 65° | 9097.1 | 7294.6 | 1461.3 | 630.6 | 613.7 | 700.5 | 794.6 | 771.7 | 709.0 | 718.6 | 722.2 |
| 67.5° | *7932.4* | *6209.4* | *1056.2* | *598.0* | *583.6* | *711.4* | *842.8* | *765.6* | *668.0* | *668.0* | *660.7* |
| 70° | 5716.3 | 4466.0 | 766.8 | 565.5 | 553.4 | 695.7 | 845.2 | 724.6 | 620.9 | 617.3 | 599.2 |
| 72.5° | 3439.9 | 2634.5 | 598.0 | 529.3 | 507.6 | 617.3 | 792.2 | 676.4 | 575.1 | 545.0 | 523.3 |
| 75° | 1786.9 | 1320.3 | 501.6 | 489.5 | 435.3 | 523.3 | 724.6 | 601.6 | 491.9 | 465.4 | 453.3 |
| 77.5° | 765.6 | 617.3 | 430.4 | 436.5 | 361.7 | 440.1 | 584.8 | 520.9 | 436.5 | 402.7 | 391.9 |
| 80° | 377.4 | 350.9 | 340.0 | 349.7 | 289.4 | 340.0 | 504.0 | 455.8 | 370.2 | 331.6 | 315.9 |
| 82.5° | 215.8 | 205.0 | 244.8 | 248.4 | 206.2 | 284.5 | 425.6 | 385.8 | 306.3 | 264.1 | 238.7 |
| 85° | 100.1 | 107.3 | 148.3 | 149.5 | 127.8 | 195.3 | 278.5 | 217.0 | 162.8 | 135.0 | 129.0 |
| 87.5° | 39.8 | 47.0 | 65.1 | 63.9 | 37.4 | 36.2 | 24.1 | 13.3 | 10.9 | 9.6 | 8.4 |
| 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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# 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

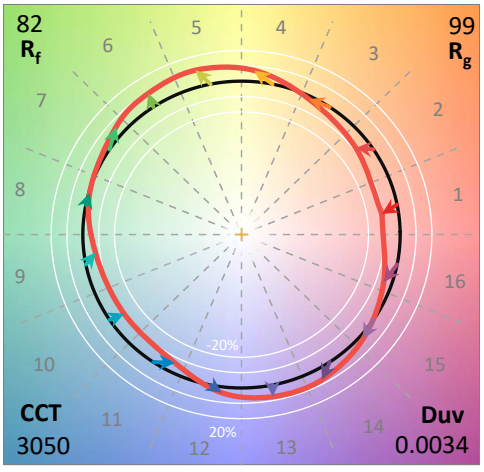
## Test Information

| | |
|---|---|
| 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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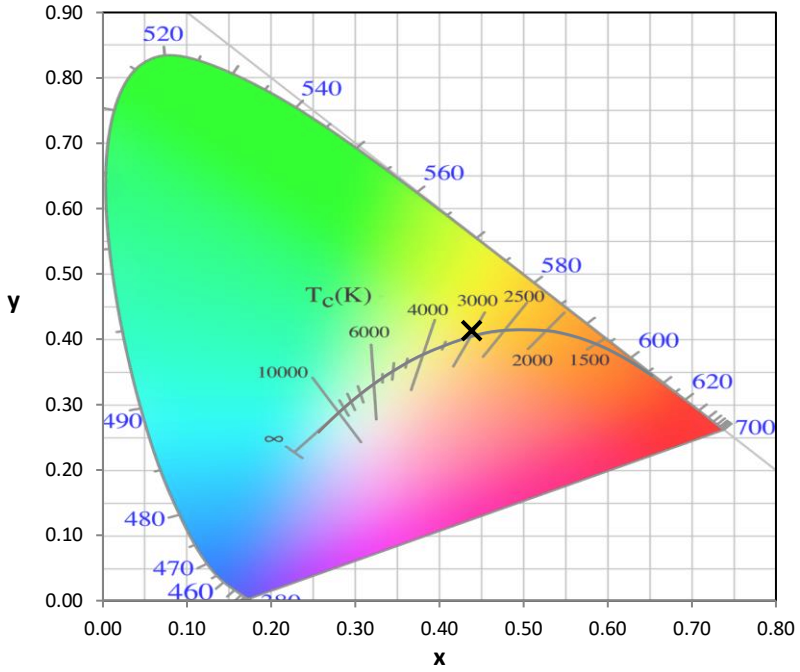
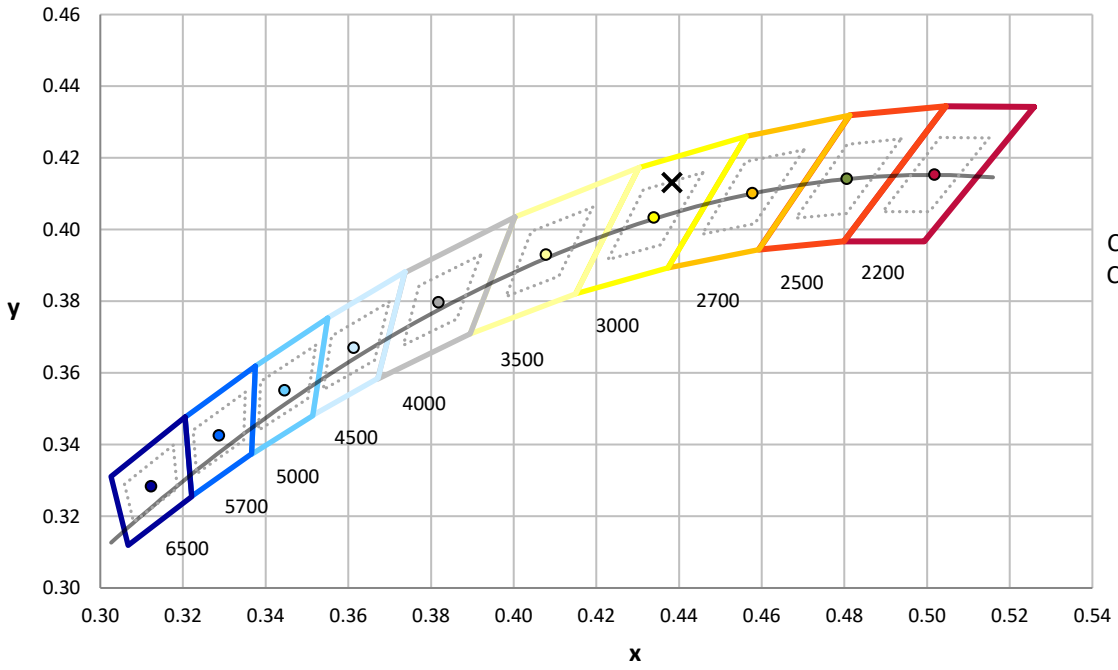
## CIE 1931 Chromaticity Diagram




## 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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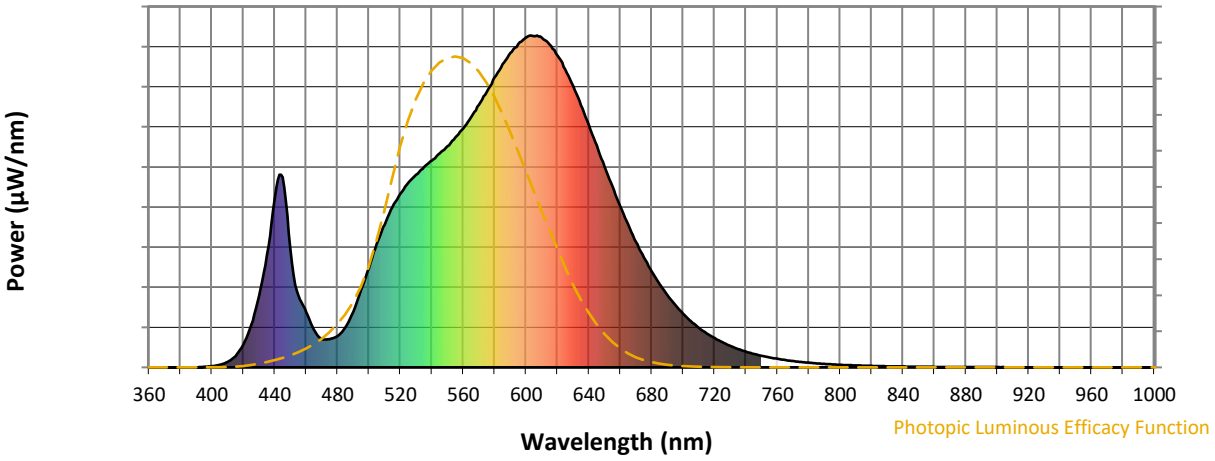
## Photopic Flux vs. Wavelength




## 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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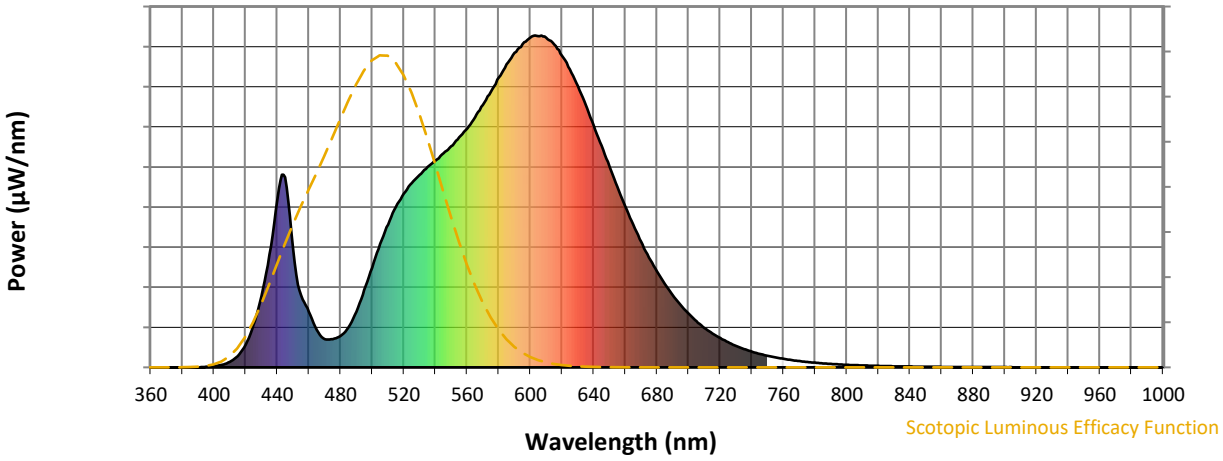
## Scotopic Flux vs. Wavelength




**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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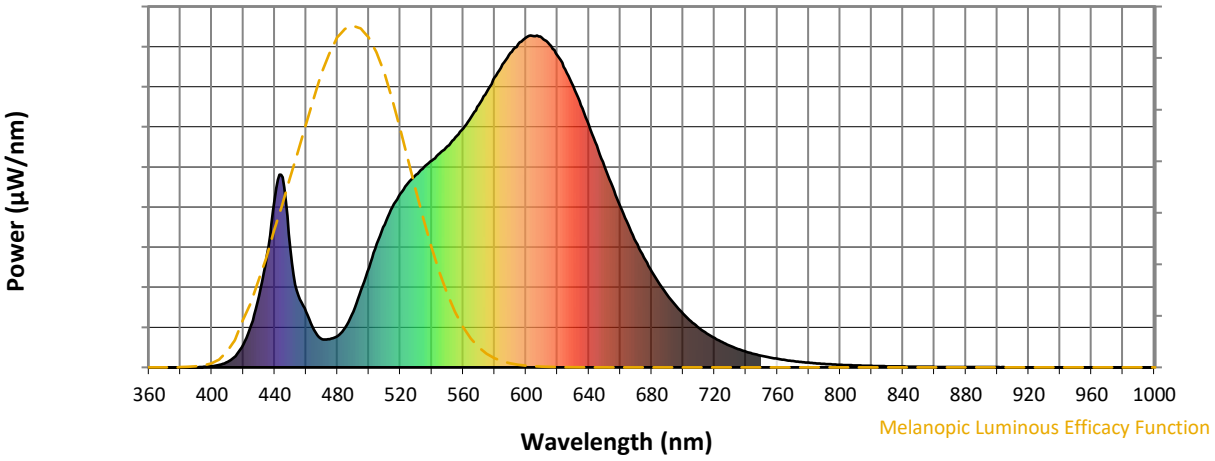
## Melanopic Flux vs. Wavelength




**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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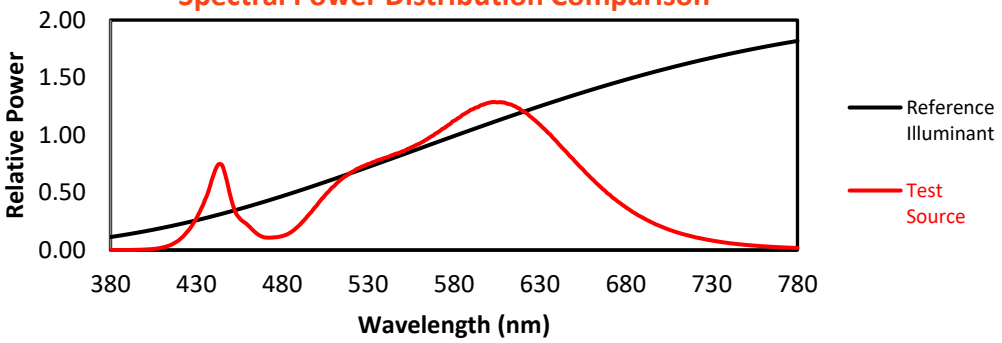
# TM-30-18

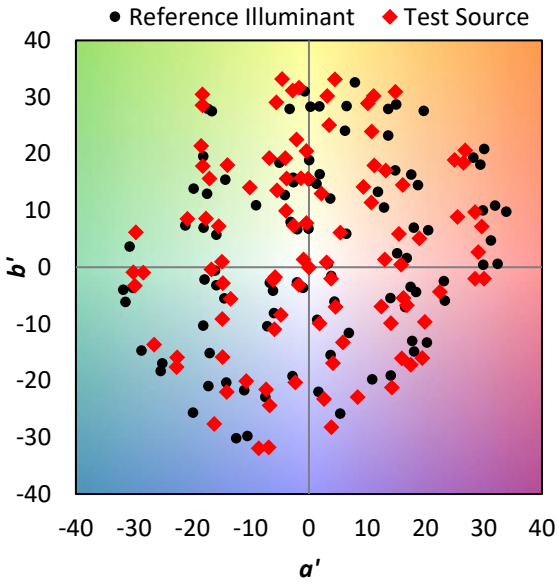
## Summary

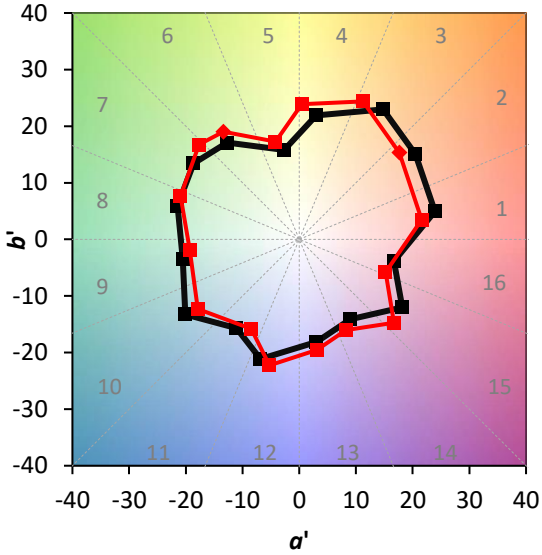
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

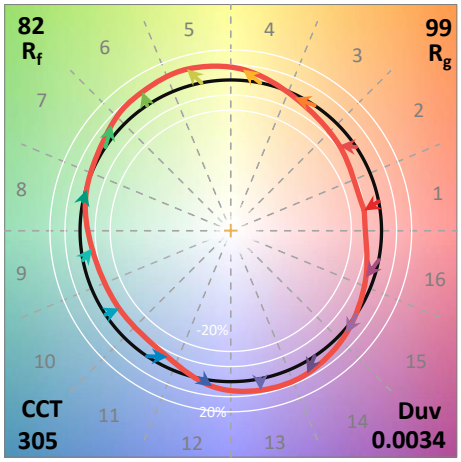
## Spectral Power Distribution Comparison

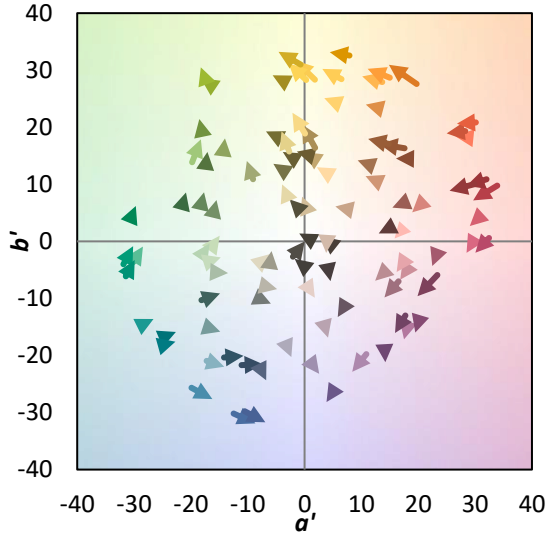



## Color Vector Graphics



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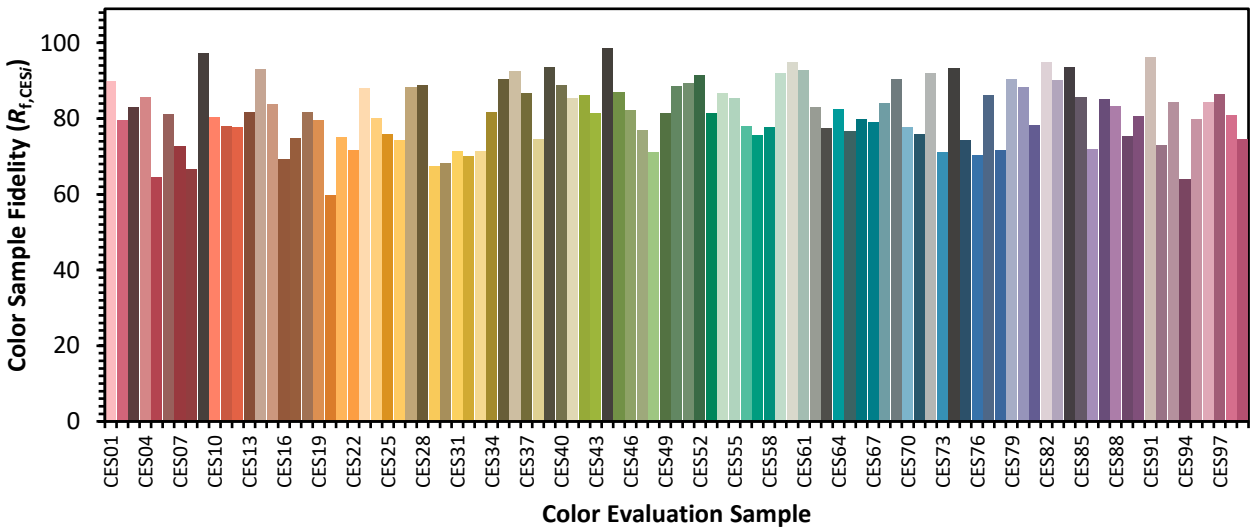
# TM-30-18

**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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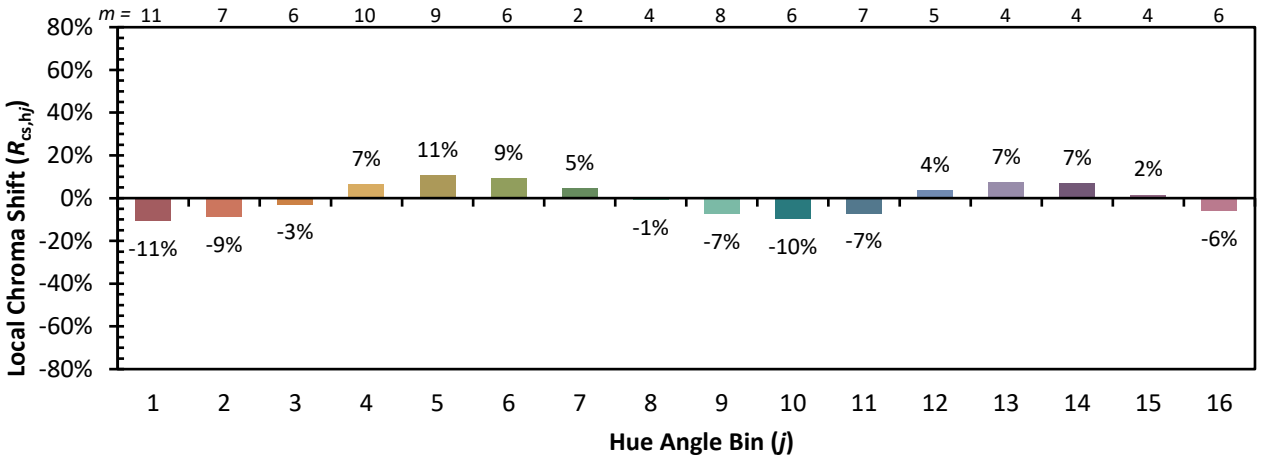
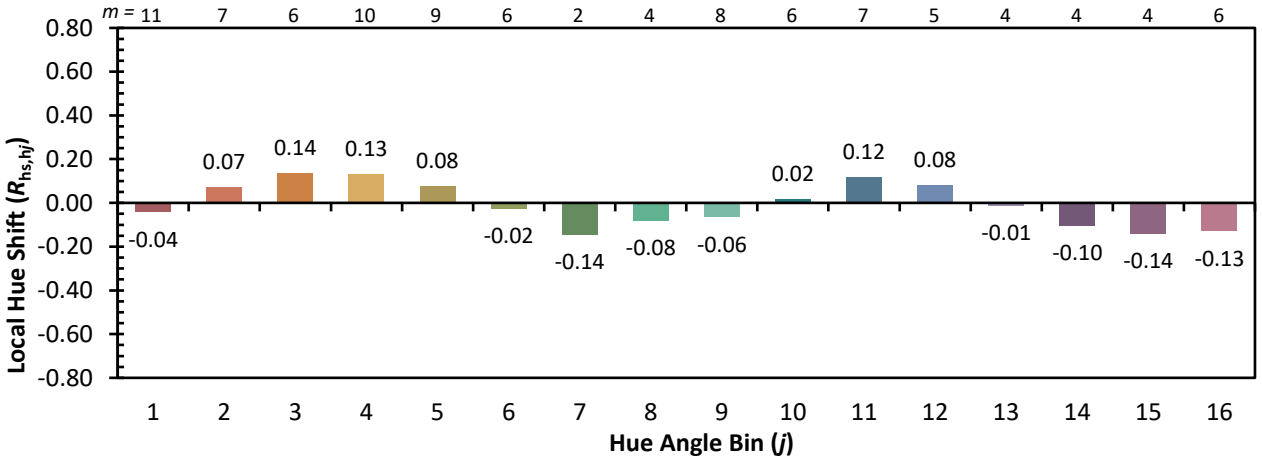
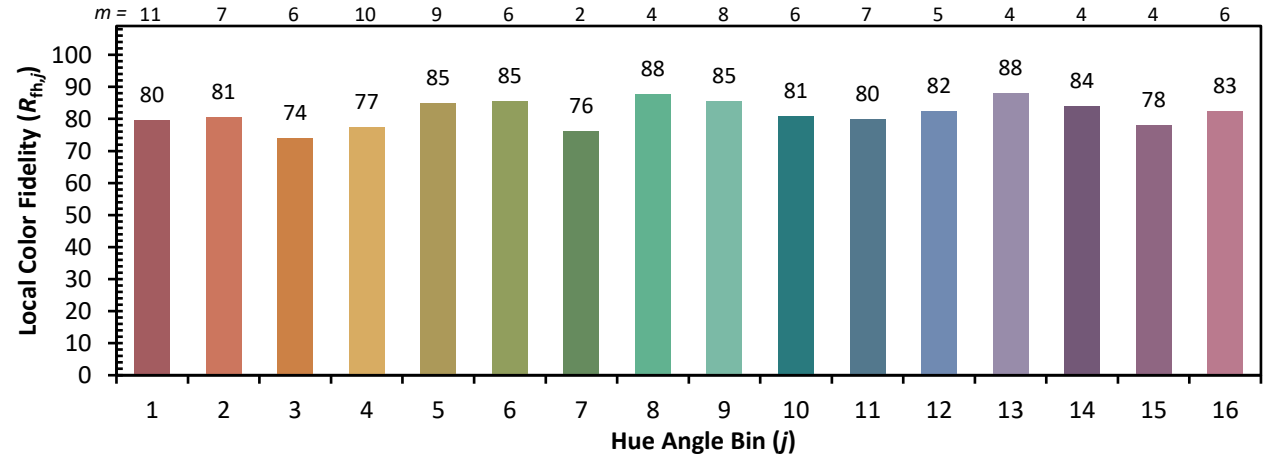
## Color Rendition by Hue-Angle Bin



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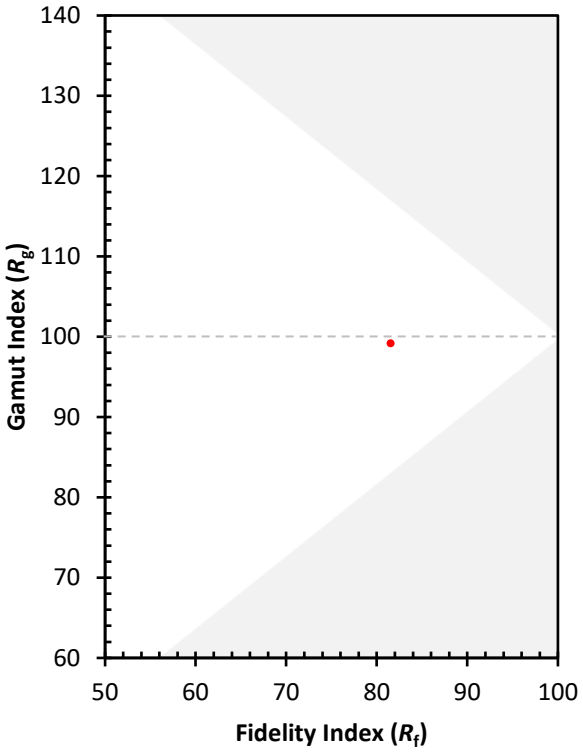
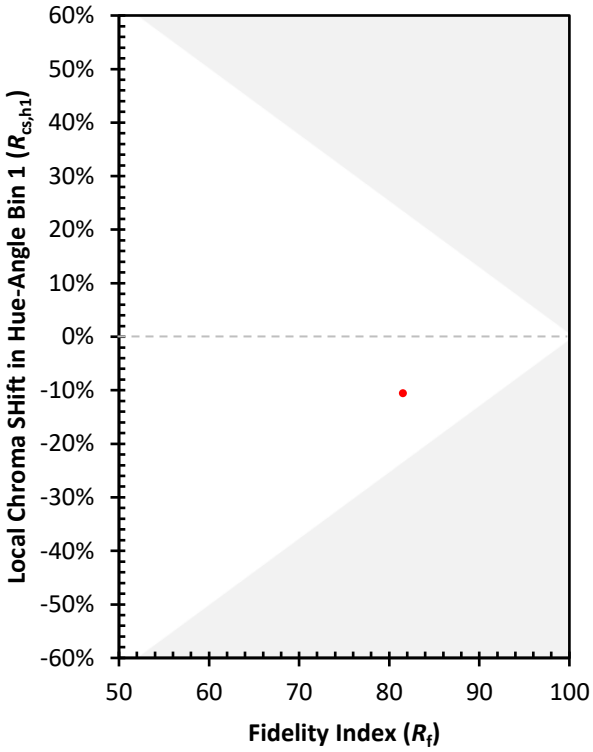
### Measure Comparisons




(END OF REPORT)