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: McGRAW-EDISON

Report Number: P386735

Luminaire Tested: **GPC-SA2B-830-U-T3**

Issue Date: 3/3/2020

Report Generated By 670245982

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: | P386735 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GPC-SA2B-830-U-T3 |
| Description: | GALLEON PEDESTRIAN LUMINAIRE |
| | (2) 80 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 9479 lumens |
| Efficiency: | N/A |
| Efficacy: | 111.5 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 0.5' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B2 - U0 - G2 |

| | |
|---|---|
| Input Watts (W): | 85 |
| Input Voltage (V): | NR |
| 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: | 28.75 FT |

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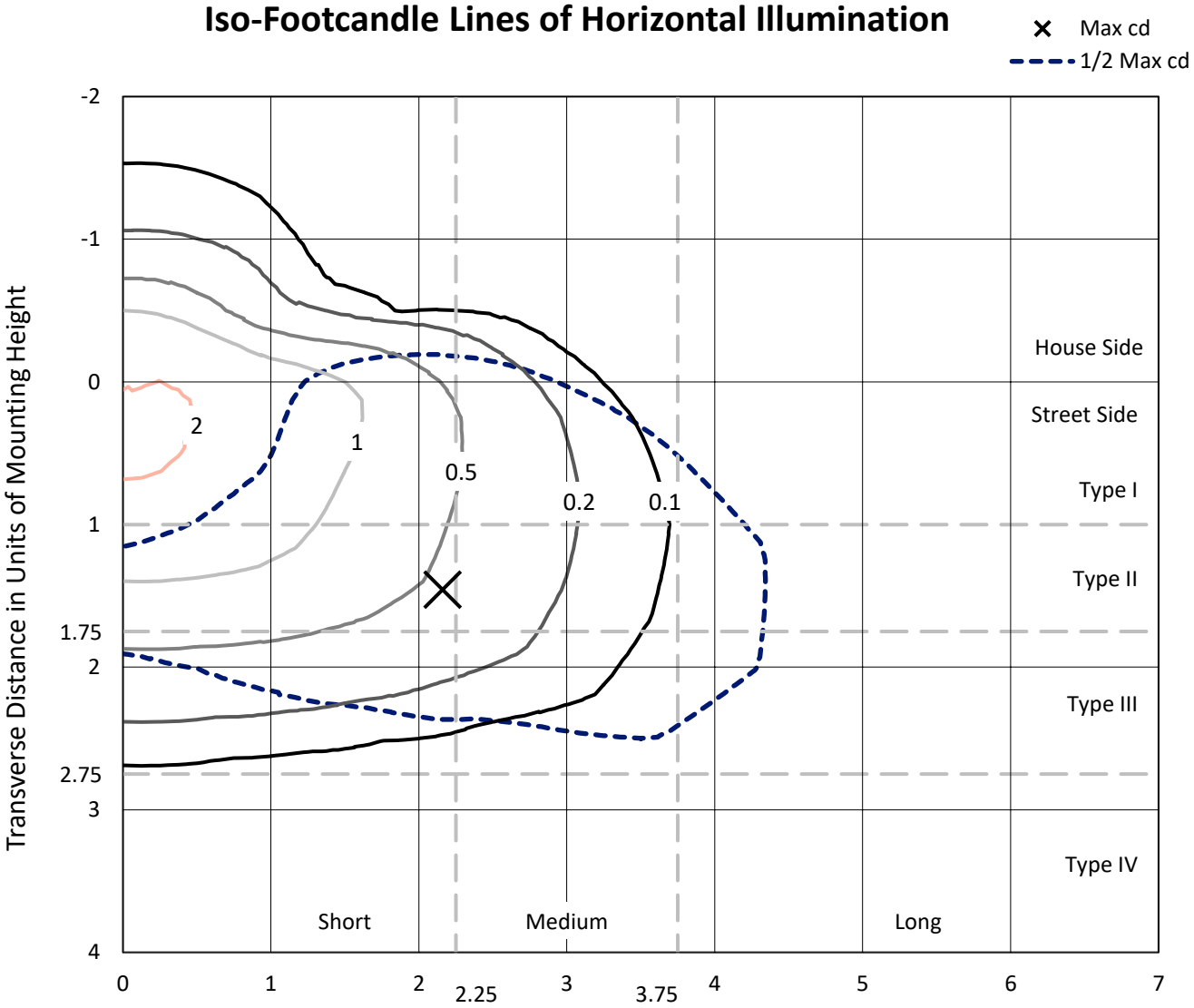
Scaled Data Report

REPORT NUMBER: P386735
CATALOG NUMBER: GPC-SA2B-830-U-T3

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 2.2 fc
Type III - Short - N/A

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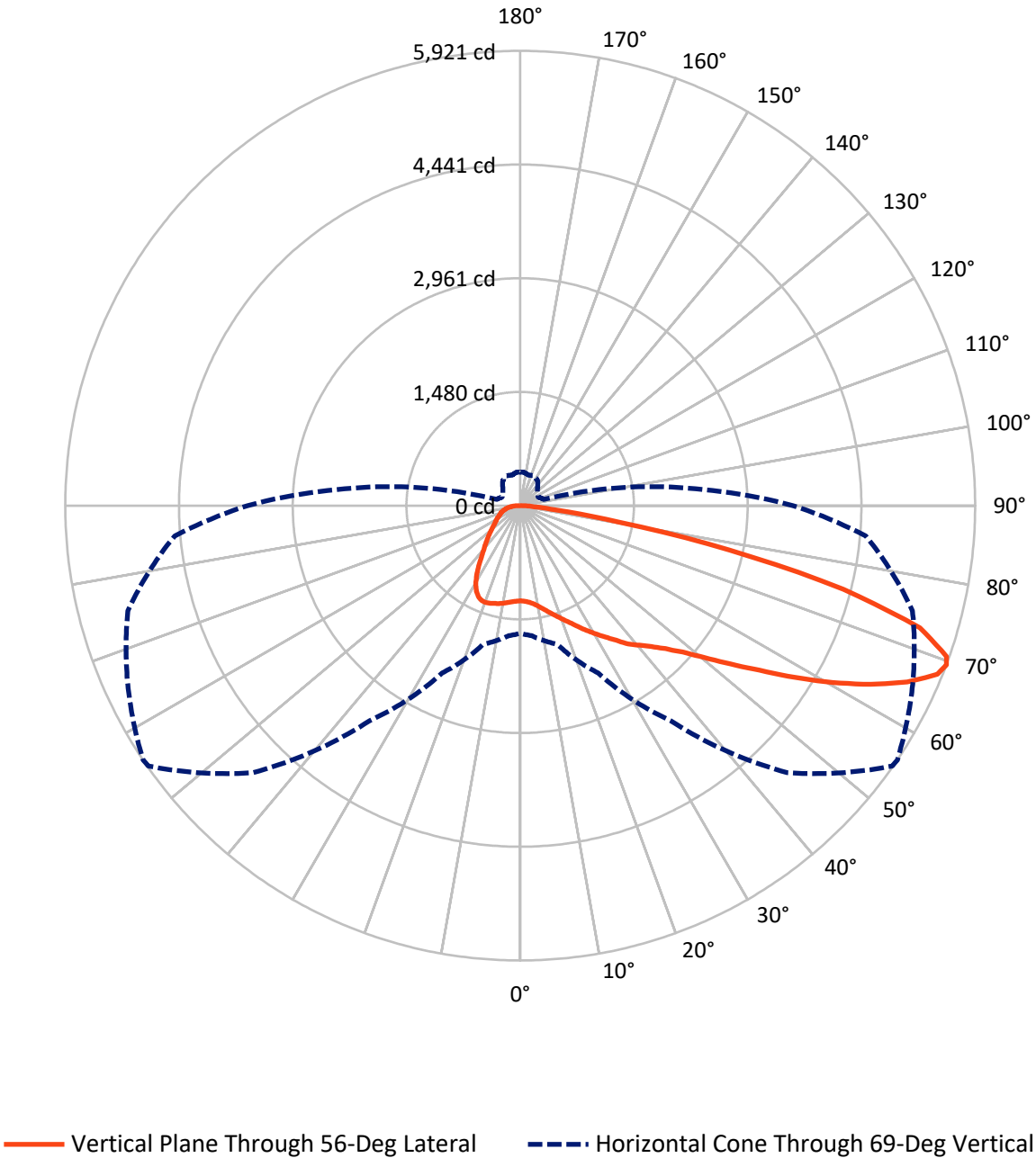
## Luminous Intensity Polar Plot



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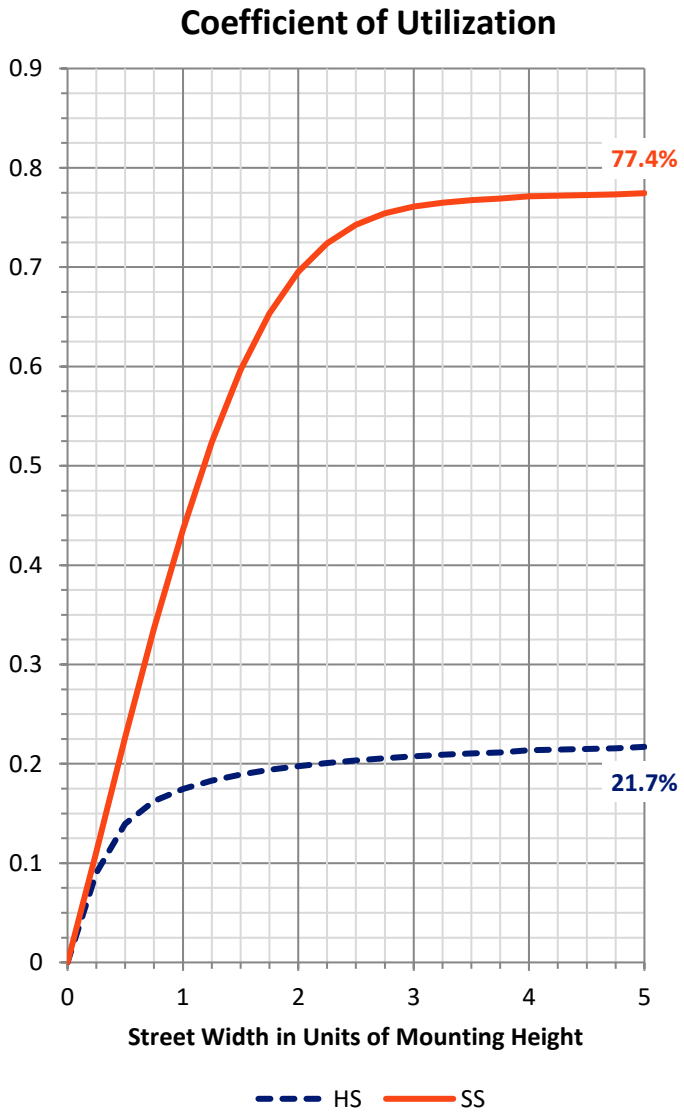
REPORT NUMBER: P386735
CATALOG NUMBER: GPC-SA2B-830-U-T3

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 2111.0 | 0.0 | 2111.0 |
| | % Fixture | 22.3 | 0.0 | 22.3 |
| **Street Side** | Lumens | 7368.0 | 0.0 | 7368.0 |
| | % Fixture | 77.7 | 0.0 | 77.7 |
| **Total** | Lumens | 9479.0 | 0.0 | 9479.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 121.7 | 1.3 |
| 10°-20° | 391.4 | 4.1 |
| 20°-30° | 683.2 | 7.2 |
| 30°-40° | 981.4 | 10.4 |
| 40°-50° | 1358.2 | 14.3 |
| 50°-60° | 1989.9 | 21.0 |
| 60°-70° | 2426.1 | 25.6 |
| 70°-80° | 1341.3 | 14.2 |
| 80°-90° | 185.8 | 2.0 |
| 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° | 9479.0 | 100.0 |
| 0°-180° | 9479.0 | 100.0 |



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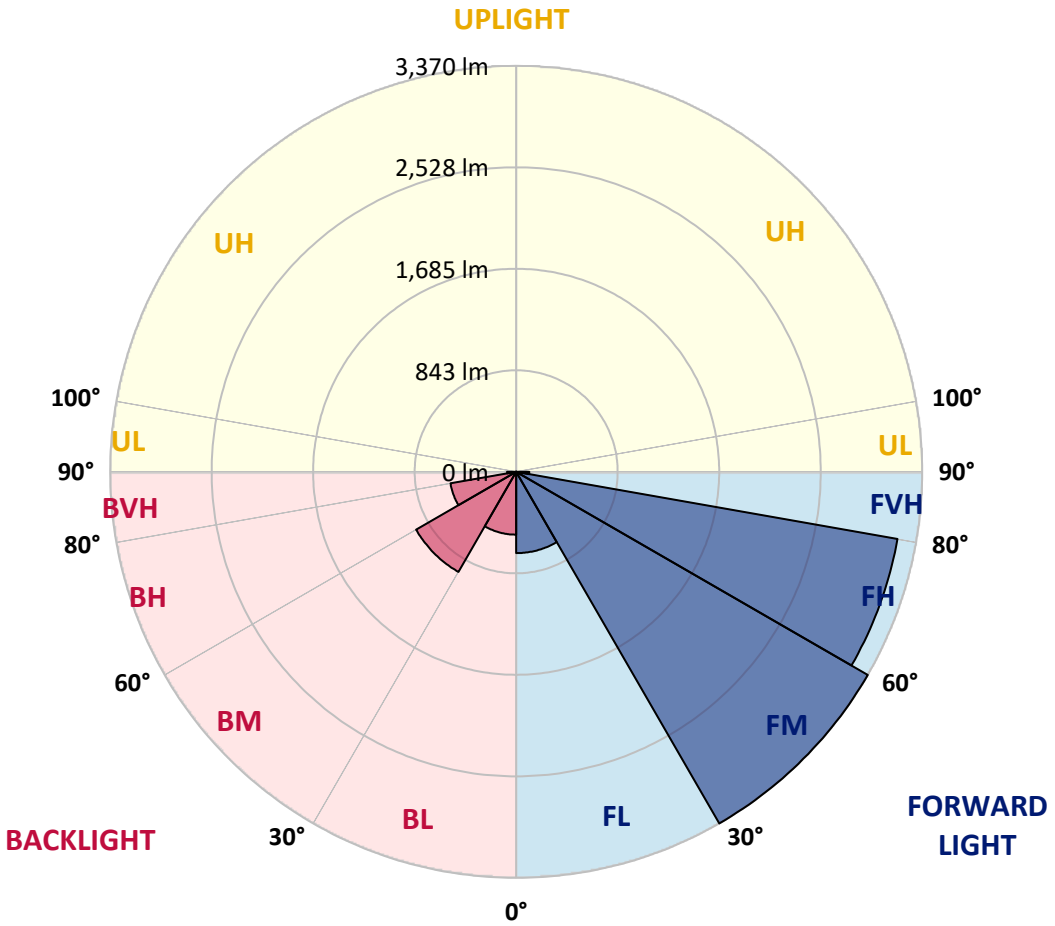
CATALOG NUMBER: GPC-SA2B-830-U-T3

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 674.6 | 7.1 | | | |
| FM | (30°-60°) | 3370.1 | 35.6 | | | |
| FH | (60°-80°) | 3213.9 | 33.9 | | | G2/5000 |
| FVH | (80°-90°) | 109.4 | 1.2 | | | G2/225 |
| BL | (0°-30°) | 521.7 | 5.5 | B2/1000 | | |
| BM | (30°-60°) | 959.4 | 10.1 | B1/1000 | | |
| BH | (60°-80°) | 553.6 | 5.8 | B2/1000 | | G2/1000 |
| BVH | (80°-90°) | 76.3 | 0.8 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B2-U0-G2**
Type III Short



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Scaled Data Report

REPORT NUMBER: P386735
CATALOG NUMBER: GPC-SA2B-830-U-T3

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | *1239.2* | 1239.2 | 1239.2 | 1239.2 |
| 2.5° | 1247.1 | 1248.4 | 1247.4 | 1250.0 | 1247.1 | 1249.0 | 1247.4 | *1247.4* | 1246.4 | 1243.5 | 1240.2 |
| 5° | 1266.7 | 1269.3 | 1267.6 | 1270.3 | 1266.7 | 1267.3 | 1264.4 | *1264.4* | 1261.4 | 1255.2 | 1248.7 |
| 7.5° | 1297.4 | 1300.3 | 1299.0 | 1301.6 | 1296.7 | 1296.7 | 1292.8 | *1292.5* | 1286.6 | 1276.5 | 1269.0 |
| 10° | 1333.9 | 1337.9 | 1336.5 | 1340.5 | 1336.5 | 1337.9 | 1333.9 | *1333.9* | 1326.1 | 1311.7 | 1302.3 |
| 12.5° | 1387.2 | 1392.1 | 1388.5 | 1388.1 | 1386.5 | 1389.1 | 1385.9 | *1385.2* | 1378.0 | 1358.4 | 1345.4 |
| 15° | 1458.3 | 1463.6 | 1456.1 | 1455.4 | 1446.3 | 1445.3 | 1445.3 | *1444.3* | 1439.7 | 1416.2 | 1394.7 |
| 17.5° | 1540.3 | 1541.9 | 1535.4 | 1525.0 | 1513.2 | 1505.7 | 1504.7 | *1507.3* | 1507.3 | 1479.9 | 1445.6 |
| 20° | 1620.6 | 1623.6 | 1618.4 | 1606.6 | 1591.6 | 1580.5 | 1572.6 | *1577.9* | 1577.5 | 1544.9 | 1496.2 |
| 22.5° | 1708.2 | 1715.0 | 1707.2 | 1692.2 | 1674.5 | 1662.1 | 1648.4 | *1653.0* | 1653.3 | 1613.1 | 1545.9 |
| 25° | 1821.5 | 1815.3 | 1810.4 | 1789.1 | 1764.0 | 1751.3 | 1738.5 | *1743.1* | 1741.8 | 1686.6 | 1597.1 |
| 27.5° | 1921.7 | 1923.0 | 1916.5 | 1894.0 | 1864.9 | 1836.8 | 1836.2 | *1839.1* | 1834.2 | 1763.0 | 1645.5 |
| 30° | 2038.3 | 2038.9 | 2029.8 | 2009.6 | 1977.9 | 1941.6 | 1933.1 | *1938.0* | 1927.6 | 1835.5 | 1696.4 |
| 32.5° | 2154.2 | 2157.5 | 2147.4 | 2122.9 | 2097.4 | 2053.3 | 2036.3 | *2039.6* | 2013.5 | 1909.6 | 1749.0 |
| 35° | 2255.8 | 2260.3 | 2257.1 | 2240.7 | 2213.0 | 2175.1 | 2154.9 | *2152.9* | 2120.6 | 2000.4 | 1818.5 |
| 37.5° | 2359.3 | 2363.5 | 2359.9 | 2346.2 | 2335.1 | 2295.0 | 2284.2 | *2284.2* | 2228.0 | 2093.2 | 1907.0 |
| 40° | 2465.7 | 2472.3 | 2468.0 | 2449.1 | 2439.6 | 2421.3 | 2395.5 | *2389.3* | 2328.6 | 2204.5 | 2051.4 |
| 42.5° | 2564.7 | 2573.2 | 2590.2 | 2579.0 | 2559.8 | 2562.4 | 2510.5 | *2507.2* | 2462.8 | 2369.1 | 2232.6 |
| 45° | 2705.1 | 2717.5 | 2746.2 | 2737.7 | 2733.8 | 2719.5 | 2657.7 | *2654.8* | 2637.8 | 2590.5 | 2457.6 |
| 47.5° | 2858.2 | 2875.2 | 2927.1 | 2928.8 | 2970.9 | 2943.8 | 2859.9 | *2849.8* | 2853.7 | 2855.6 | 2732.2 |
| 50° | 2999.3 | 3017.9 | 3103.2 | 3143.3 | 3242.6 | 3248.5 | 3114.3 | *3105.1* | 3120.5 | 3165.5 | 3052.2 |
| 52.5° | 3112.0 | 3135.5 | 3241.9 | 3366.0 | 3536.2 | 3584.5 | 3427.4 | *3420.6* | 3432.0 | 3509.7 | 3414.0 |
| 55° | 3194.6 | 3220.1 | 3336.0 | 3561.9 | 3833.6 | 3918.9 | 3787.9 | *3781.4* | 3788.6 | 3887.5 | 3807.5 |
| 57.5° | 3213.9 | 3220.1 | 3388.2 | 3693.9 | 4084.7 | 4289.5 | 4229.1 | *4216.0* | 4180.7 | 4267.0 | 4241.8 |
| 60° | 3123.4 | 3148.2 | 3345.1 | 3740.2 | 4279.0 | 4654.9 | 4690.2 | *4673.8* | 4574.9 | 4645.4 | 4625.2 |
| 62.5° | 2939.9 | 2984.3 | 3184.1 | 3669.7 | 4355.1 | 4953.4 | 5142.4 | *5122.8* | 4952.4 | 4998.1 | 4900.8 |
| 65° | 2640.1 | 2659.1 | 2869.0 | 3426.4 | 4258.5 | 5144.4 | 5545.7 | *5535.9* | 5321.4 | 5249.9 | 4951.7 |
| 67.5° | 2103.9 | 2139.5 | 2317.8 | 2918.0 | 3863.0 | 5121.9 | 5857.6 | *5856.6* | 5562.4 | 5343.2 | 4771.1 |
| 69° | *1662.1* | *1699.0* | *1868.8* | *2403.7* | *3418.3* | *4915.8* | *5909.8* | *5921.2* | *5630.3* | *5286.4* | *4513.2* |
| 70° | 1325.1 | 1367.9 | 1484.5 | 2024.6 | 3023.5 | 4644.1 | 5866.4 | *5886.9* | 5617.2 | 5192.7 | 4275.1 |
| 72.5° | 563.9 | 598.6 | 681.5 | 1043.6 | 1842.7 | 3467.9 | 5363.8 | *5441.5* | 5314.5 | 4752.5 | 3533.2 |
| 75° | 246.2 | 257.0 | 294.5 | 425.5 | 818.0 | 1887.4 | 4202.0 | *4345.7* | 4544.2 | 4017.2 | 2631.9 |
| 77.5° | 180.3 | 184.8 | 205.4 | 249.8 | 367.0 | 712.8 | 2702.2 | *2785.8* | 3277.2 | 2923.2 | 1614.4 |
| 80° | 139.4 | 142.7 | 158.7 | 183.5 | 239.7 | 288.3 | 1232.4 | *1304.2* | 1842.7 | 1501.5 | 672.4 |
| 82.5° | 111.0 | 113.3 | 124.4 | 135.2 | 165.6 | 174.7 | 409.2 | *453.9* | 680.2 | 414.7 | 178.0 |
| 85° | 103.2 | 105.8 | 109.7 | 98.6 | 106.1 | 102.5 | 177.0 | *185.2* | 205.4 | 162.9 | 74.5 |
| 87.5° | 46.7 | 55.2 | 108.7 | 76.7 | 56.5 | 45.1 | 72.5 | *75.8* | 85.2 | 85.6 | 33.0 |
| 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: P386735
CATALOG NUMBER: GPC-SA2B-830-U-T3

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 | 1239.2 |
| 2.5° | 1242.2 | 1241.2 | 1242.8 | 1238.9 | 1243.8 | 1243.5 | 1241.8 | 1242.5 | 1245.8 | 1245.4 | 1245.8 |
| 5° | 1249.7 | 1249.0 | 1251.0 | 1248.1 | 1253.9 | 1255.9 | 1256.2 | 1259.2 | 1262.7 | 1263.7 | 1263.7 |
| 7.5° | 1268.6 | 1268.6 | 1269.6 | 1265.7 | 1269.6 | 1269.3 | 1267.6 | 1270.6 | 1274.2 | 1274.5 | 1274.2 |
| 10° | 1301.3 | 1301.6 | 1300.0 | 1289.9 | 1286.6 | 1277.8 | 1269.6 | 1269.9 | 1274.5 | 1278.1 | 1279.1 |
| 12.5° | 1342.4 | 1341.1 | 1333.9 | 1315.3 | 1301.6 | 1283.6 | 1275.2 | 1274.8 | 1279.4 | 1282.3 | 1283.3 |
| 15° | 1389.4 | 1385.9 | 1367.2 | 1336.9 | 1312.7 | 1295.1 | 1281.4 | 1278.1 | 1275.5 | 1272.2 | 1272.5 |
| 17.5° | 1433.9 | 1425.7 | 1394.7 | 1352.5 | 1327.1 | 1303.6 | 1277.1 | 1255.9 | 1241.2 | 1232.7 | 1230.1 |
| 20° | 1478.9 | 1462.9 | 1418.2 | 1367.2 | 1334.9 | 1292.1 | 1241.2 | 1198.1 | 1171.3 | 1158.9 | 1156.6 |
| 22.5° | 1520.1 | 1494.3 | 1440.1 | 1382.6 | 1328.7 | 1253.6 | 1173.6 | 1110.9 | 1073.7 | 1057.0 | 1058.3 |
| 25° | 1560.2 | 1524.3 | 1462.9 | 1393.4 | 1297.4 | 1185.7 | 1079.6 | 1002.5 | 959.4 | 940.8 | 940.1 |
| 27.5° | 1595.5 | 1554.7 | 1487.7 | 1384.5 | 1238.9 | 1089.0 | 968.2 | 893.1 | 857.2 | 841.2 | 838.6 |
| 30° | 1636.0 | 1592.9 | 1520.7 | 1350.9 | 1153.4 | 977.3 | 859.5 | 806.6 | 781.1 | 765.1 | 762.2 |
| 32.5° | 1685.3 | 1644.8 | 1547.8 | 1289.9 | 1044.0 | 860.8 | 774.6 | 737.7 | 714.5 | 696.5 | 693.3 |
| 35° | 1757.1 | 1713.4 | 1554.7 | 1202.3 | 923.8 | 768.7 | 712.2 | 674.3 | 643.0 | 619.8 | 617.5 |
| 37.5° | 1847.3 | 1799.3 | 1539.0 | 1089.0 | 807.2 | 708.9 | 660.3 | 613.6 | 572.8 | 540.1 | 534.9 |
| 40° | 1977.2 | 1904.7 | 1495.6 | 958.4 | 721.3 | 662.9 | 609.7 | 556.4 | 505.8 | 467.6 | 460.1 |
| 42.5° | 2133.3 | 2028.5 | 1429.0 | 828.4 | 658.3 | 616.2 | 559.4 | 493.4 | 445.1 | 418.0 | 414.1 |
| 45° | 2331.9 | 2157.2 | 1336.5 | 714.8 | 596.3 | 569.5 | 505.2 | 444.4 | 414.4 | 394.5 | 391.2 |
| 47.5° | 2558.5 | 2301.5 | 1239.6 | 622.4 | 543.7 | 525.7 | 461.7 | 422.5 | 398.7 | 383.0 | 380.1 |
| 50° | 2837.0 | 2464.4 | 1136.7 | 546.6 | 490.8 | 473.2 | 441.2 | 410.5 | 391.5 | 379.4 | 376.5 |
| 52.5° | 3151.2 | 2648.3 | 1062.6 | 486.9 | 447.0 | 434.3 | 430.4 | 403.9 | 388.6 | 379.4 | 376.5 |
| 55° | 3489.5 | 2835.4 | 982.6 | 436.6 | 409.2 | 412.8 | 423.2 | 404.6 | 394.1 | 383.0 | 378.8 |
| 57.5° | 3828.1 | 3028.7 | 893.4 | 394.1 | 379.1 | 396.8 | 418.3 | 405.9 | 397.1 | 386.3 | 382.4 |
| 60° | 4095.8 | 3151.2 | 755.3 | 358.5 | 355.3 | 379.1 | 406.5 | 396.1 | 384.7 | 385.0 | 384.3 |
| 62.5° | 4220.9 | 3144.6 | 602.8 | 326.9 | 331.4 | 355.3 | 387.6 | 380.8 | 371.3 | 384.0 | 385.0 |
| 65° | 4150.7 | 2987.9 | 469.2 | 298.1 | 306.0 | 330.5 | 368.0 | 373.2 | 376.5 | 401.0 | 404.3 |
| 67.5° | 3856.2 | 2682.9 | 363.4 | 273.0 | 282.8 | 313.5 | 370.0 | 406.5 | 410.8 | 436.6 | 436.3 |
| 69° | *3551.5* | *2396.8* | *315.8* | *259.9* | *271.4* | *317.7* | *395.4* | *427.8* | *411.8* | *439.2* | *435.3* |
| 70° | 3296.1 | 2170.5 | 290.3 | 251.1 | 266.1 | 325.2 | 412.4 | 427.4 | 406.9 | 430.4 | 423.9 |
| 72.5° | 2538.6 | 1561.5 | 246.2 | 234.8 | 248.5 | 311.2 | 417.3 | 418.0 | 395.4 | 400.0 | 388.9 |
| 75° | 1741.1 | 986.8 | 214.9 | 212.6 | 221.7 | 280.5 | 401.6 | 399.4 | 365.7 | 359.2 | 350.1 |
| 77.5° | 960.0 | 501.2 | 182.5 | 191.4 | 197.6 | 248.5 | 365.1 | 361.8 | 334.1 | 320.3 | 317.1 |
| 80° | 370.3 | 219.4 | 154.1 | 170.1 | 174.0 | 215.2 | 320.0 | 317.1 | 293.9 | 276.3 | 271.4 |
| 82.5° | 139.8 | 114.9 | 127.4 | 147.3 | 146.0 | 177.6 | 271.0 | 269.4 | 246.9 | 221.1 | 213.2 |
| 85° | 64.7 | 68.9 | 100.9 | 121.5 | 112.0 | 131.6 | 216.8 | 219.8 | 192.3 | 161.6 | 161.6 |
| 87.5° | 27.4 | 38.5 | 71.5 | 91.8 | 75.4 | 88.8 | 159.0 | 151.8 | 139.4 | 96.7 | 90.8 |
| 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
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Peachtree City, GA 30269

# 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

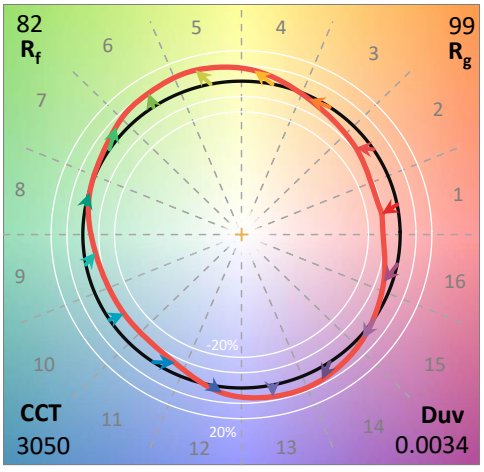
## Test Information

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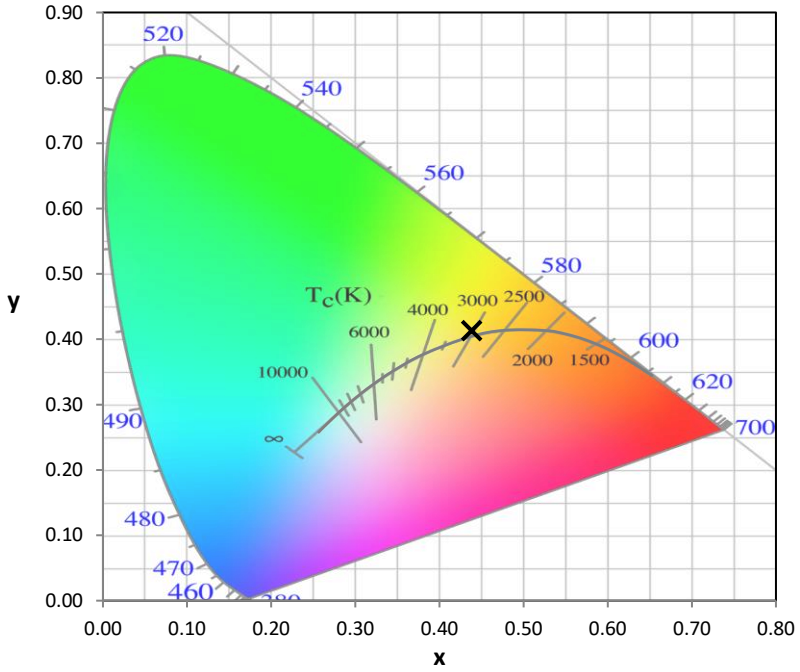
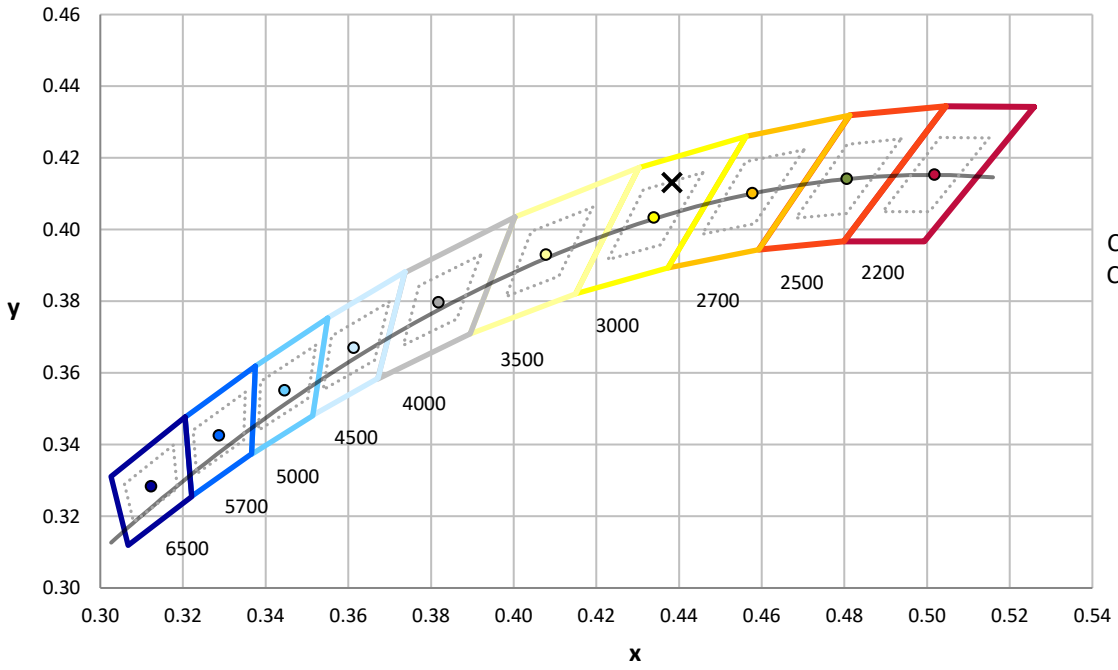
## CIE 1931 Chromaticity Diagram




## 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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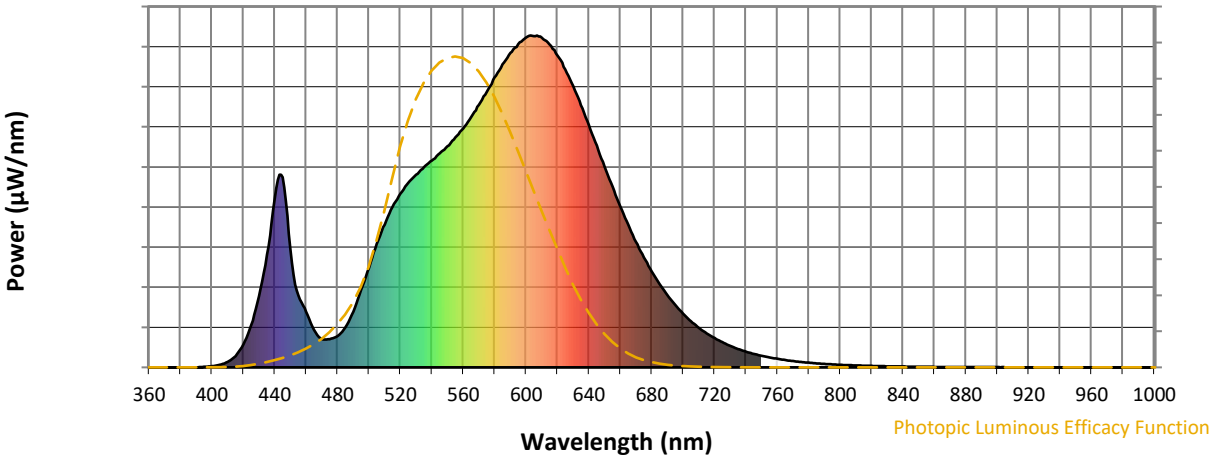
## Photopic Flux vs. Wavelength




## 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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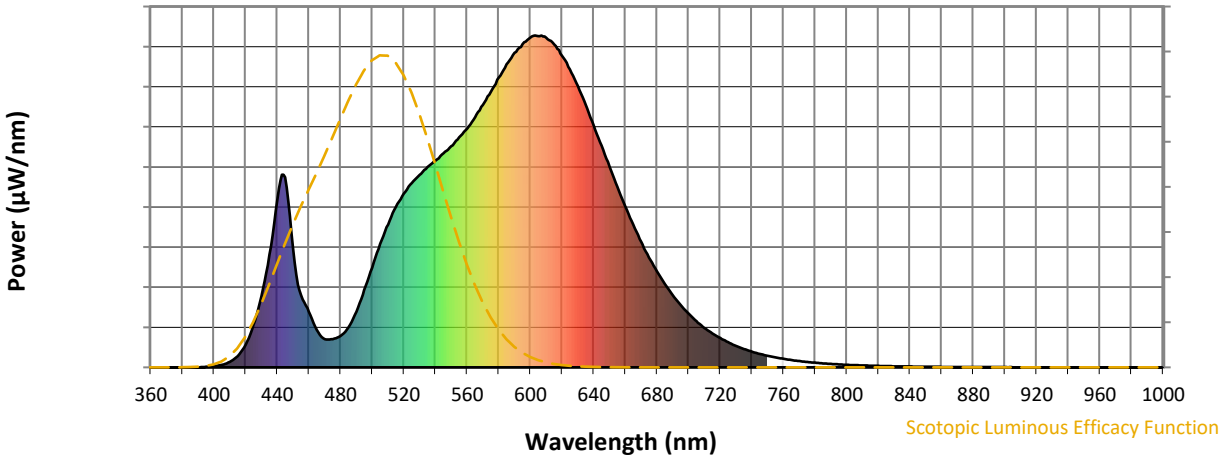
## Scotopic Flux vs. Wavelength




**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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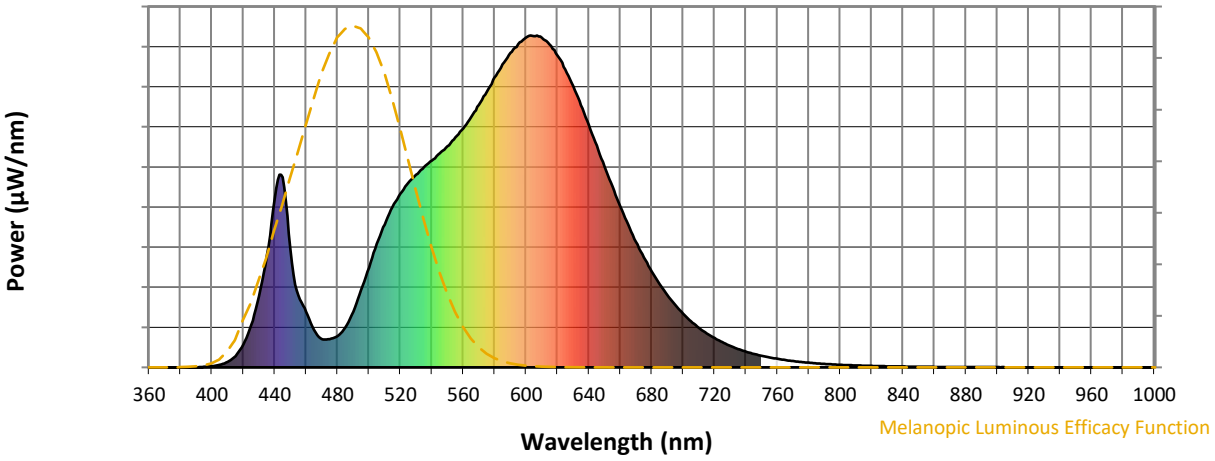
## Melanopic Flux vs. Wavelength




**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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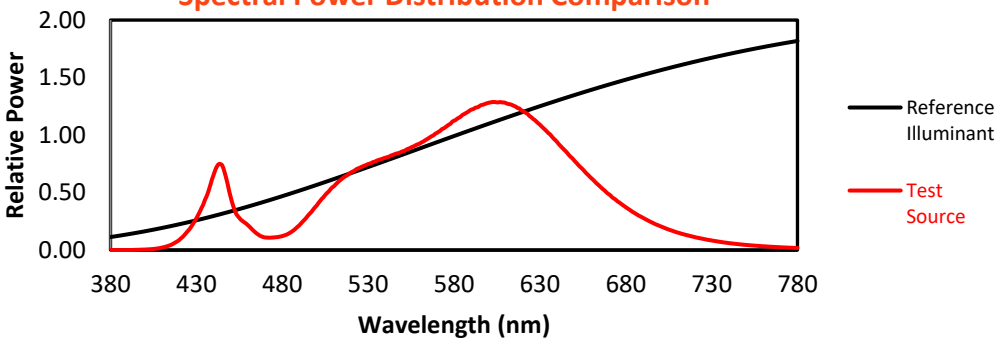
# TM-30-18

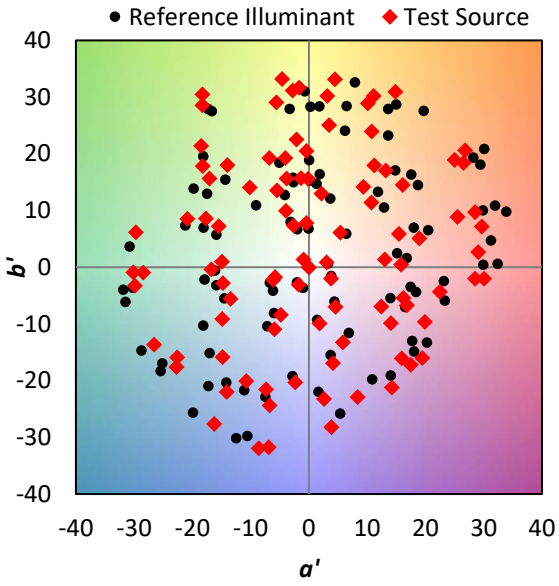
## Summary

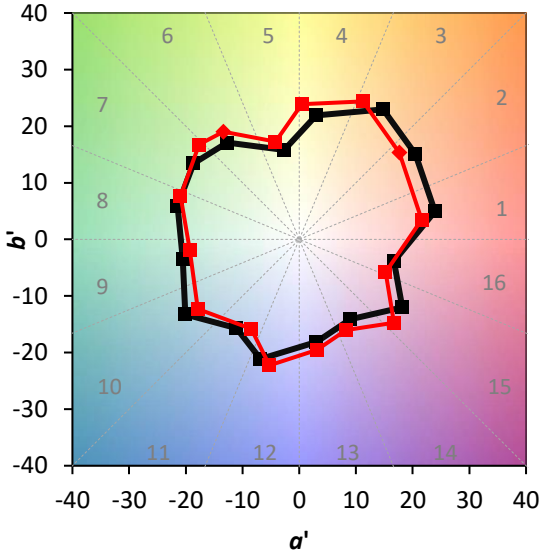
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

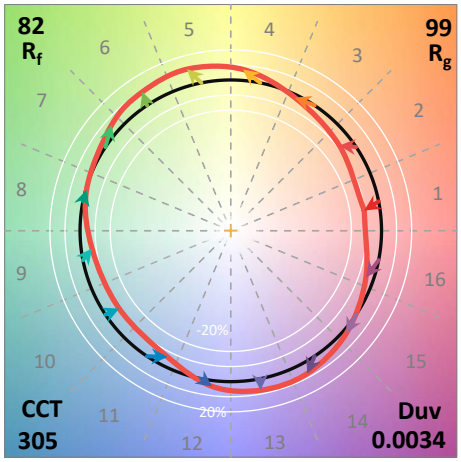
## Spectral Power Distribution Comparison

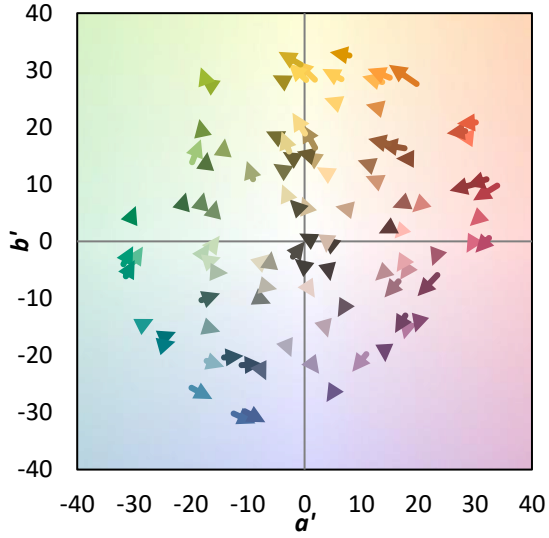



## Color Vector Graphics



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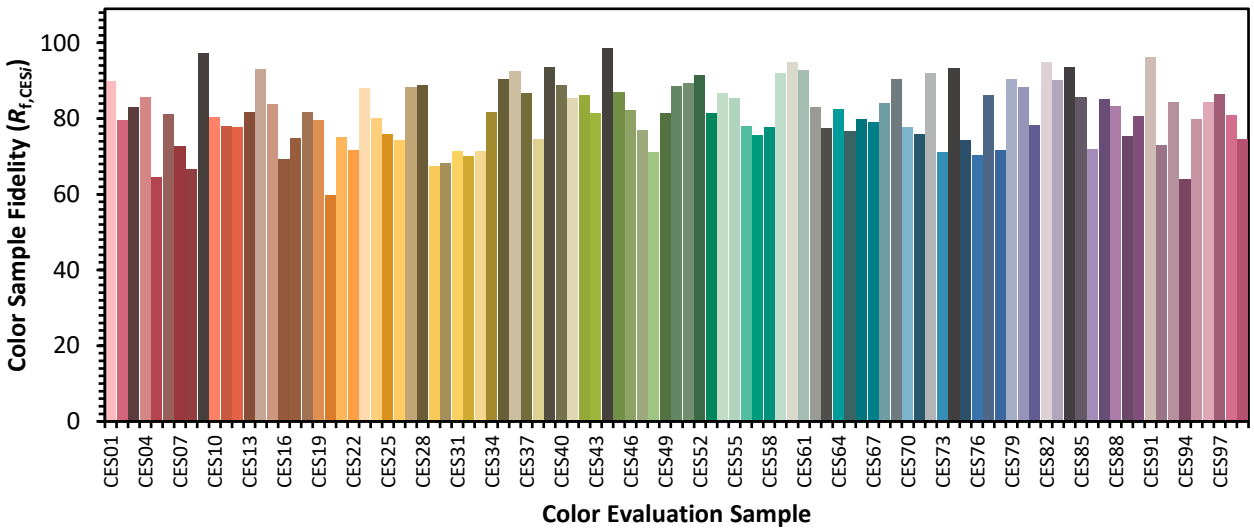
# TM-30-18

**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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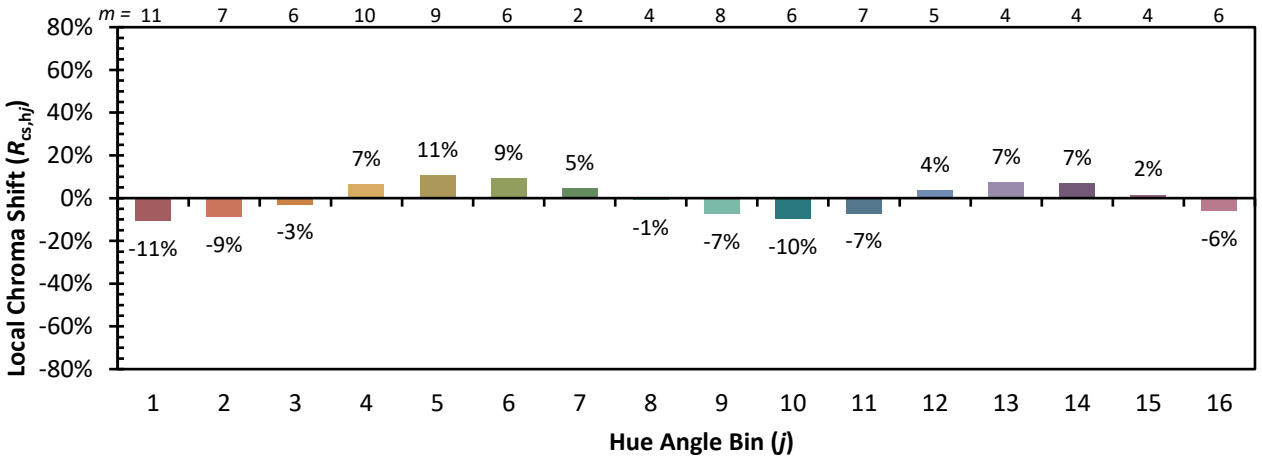
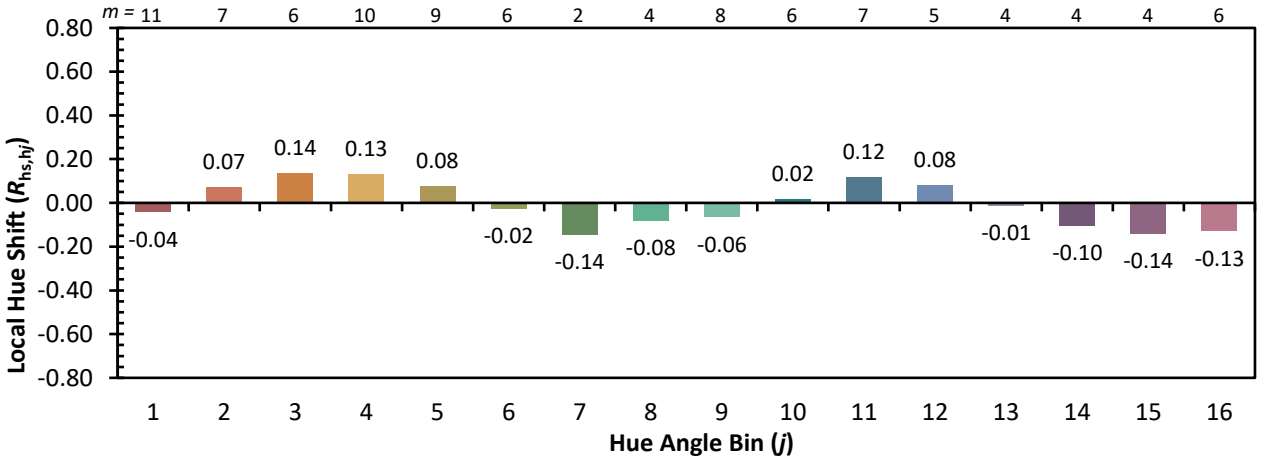
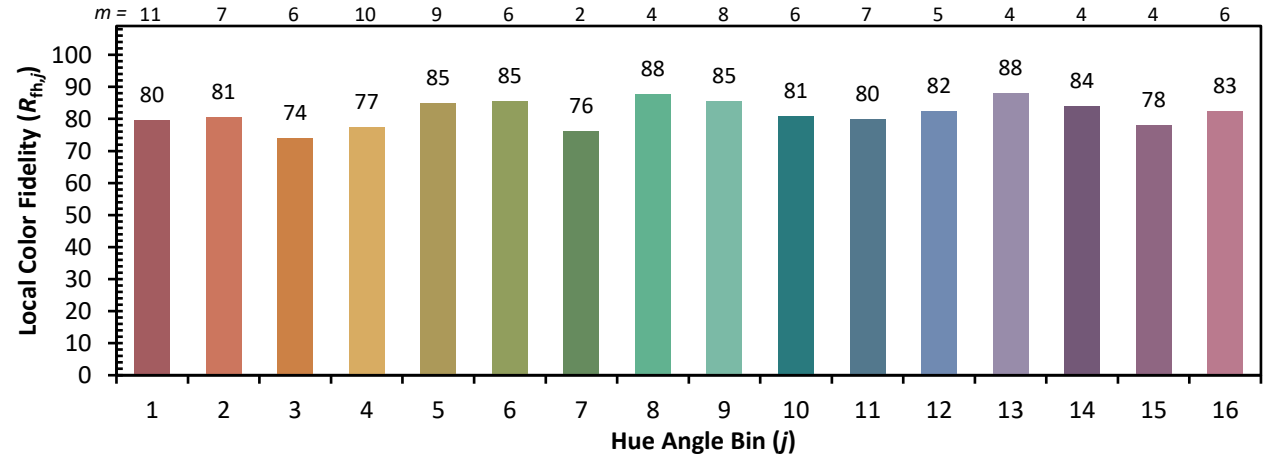
# TM-30-18

## Color Rendition by Hue-Angle Bin



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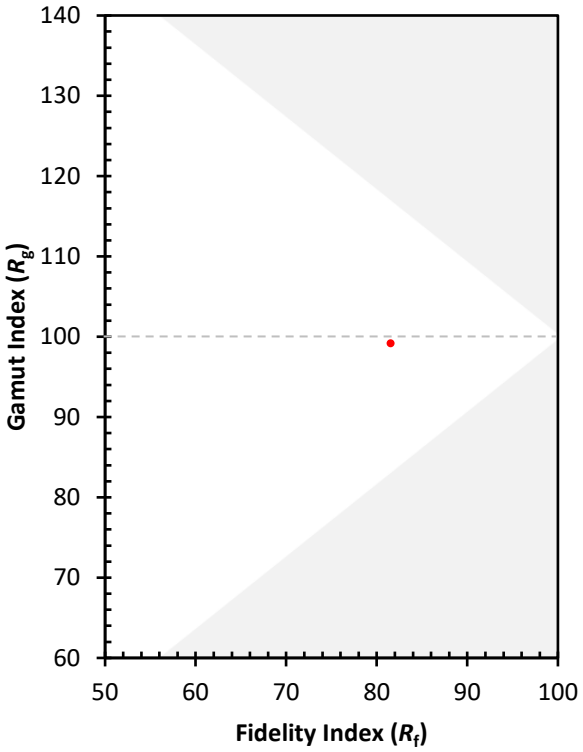
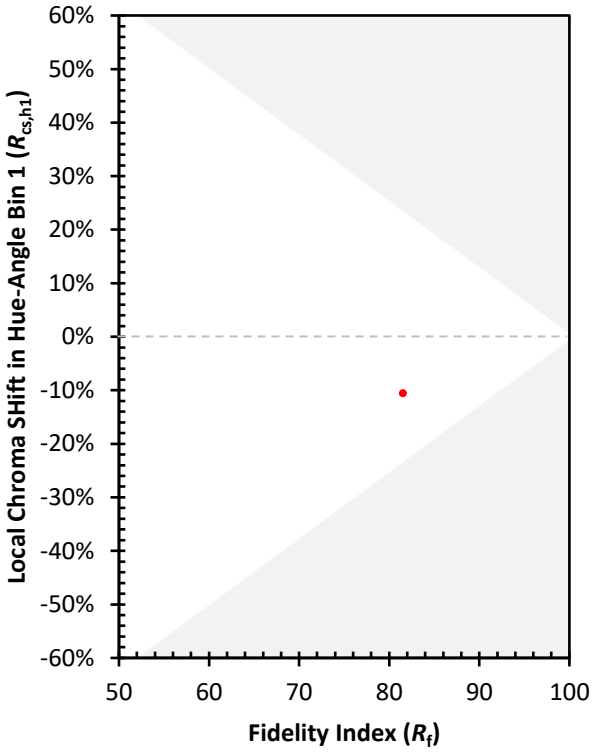
## TM-30-18

### Measure Comparisons




(END OF REPORT)