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: P385826

Luminaire Tested: **GPC-SA1B-830-U-SL3-HSS**

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: | P385826 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-23) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GPC-SA1B-830-U-SL3-HSS |
| Description: | GALLEON PEDESTRIAN LUMINAIRE |
| | (1) 80 CRI, 3000K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE III SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4143 lumens |
| Efficiency: | N/A |
| Efficacy: | 94.2 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 44 |
| 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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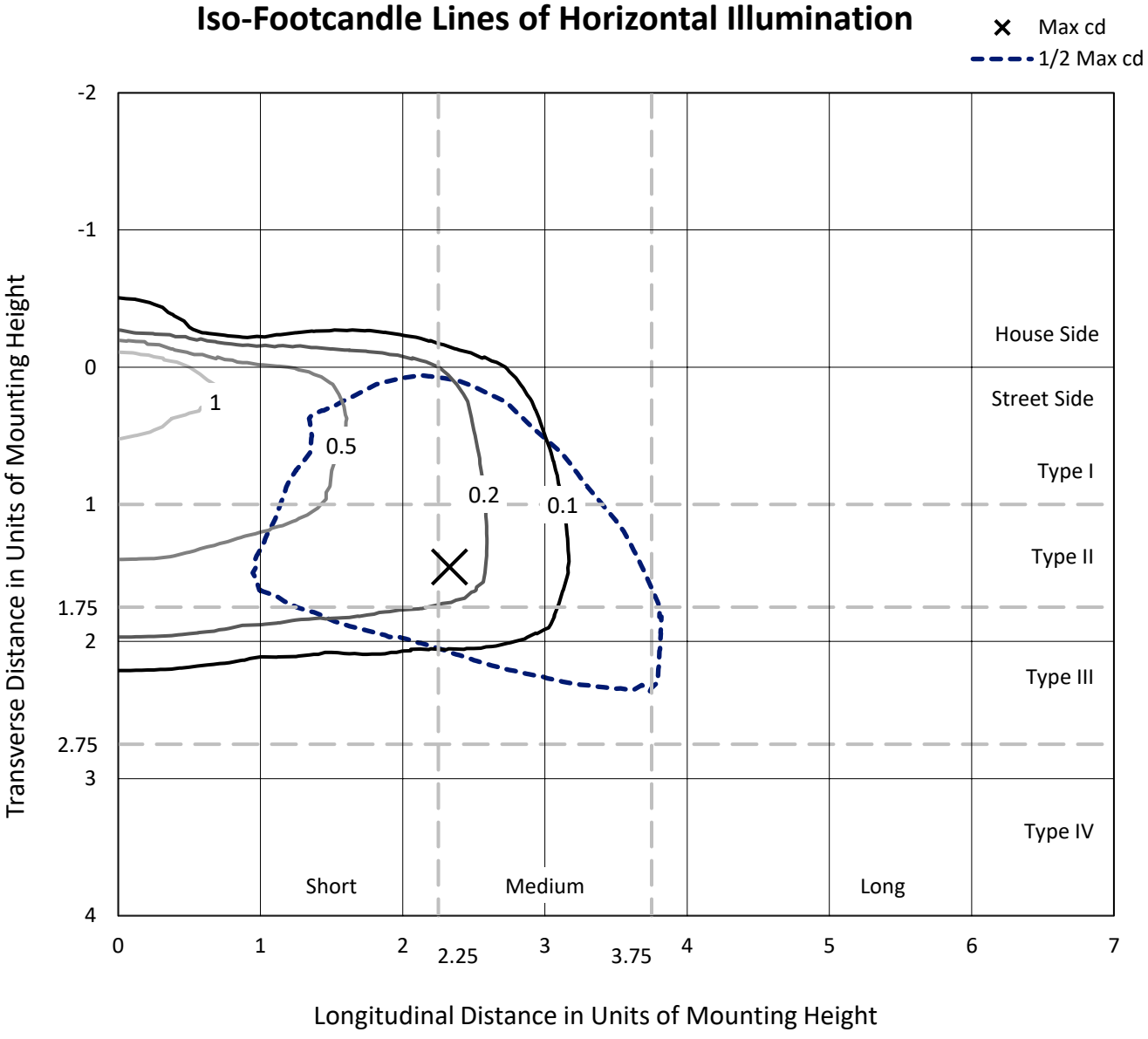
Scaled Data Report

REPORT NUMBER: P385826
CATALOG NUMBER: GPC-SA1B-830-U-SL3-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 2 fc
Type III - Medium - N/A

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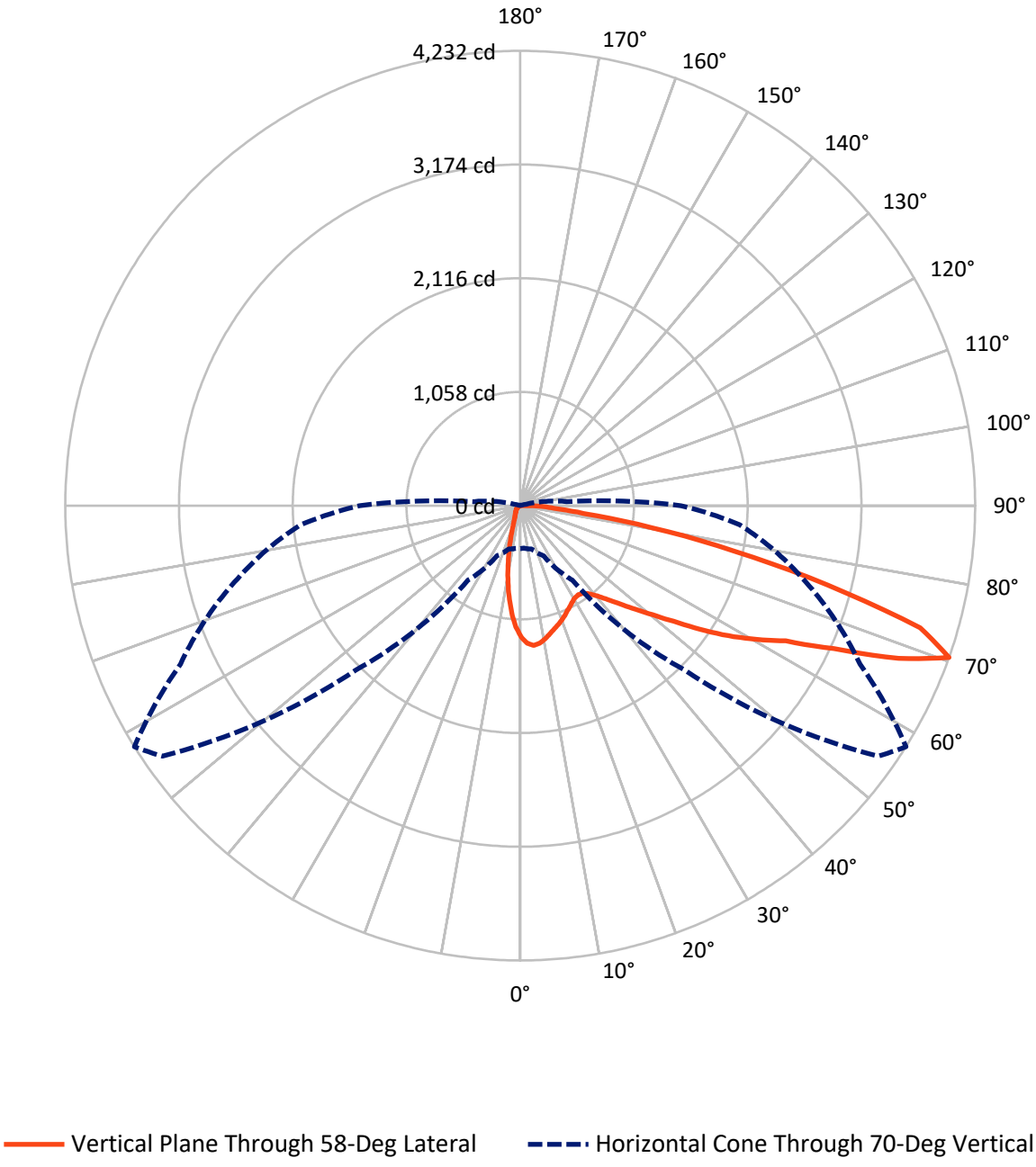
## Luminous Intensity Polar Plot



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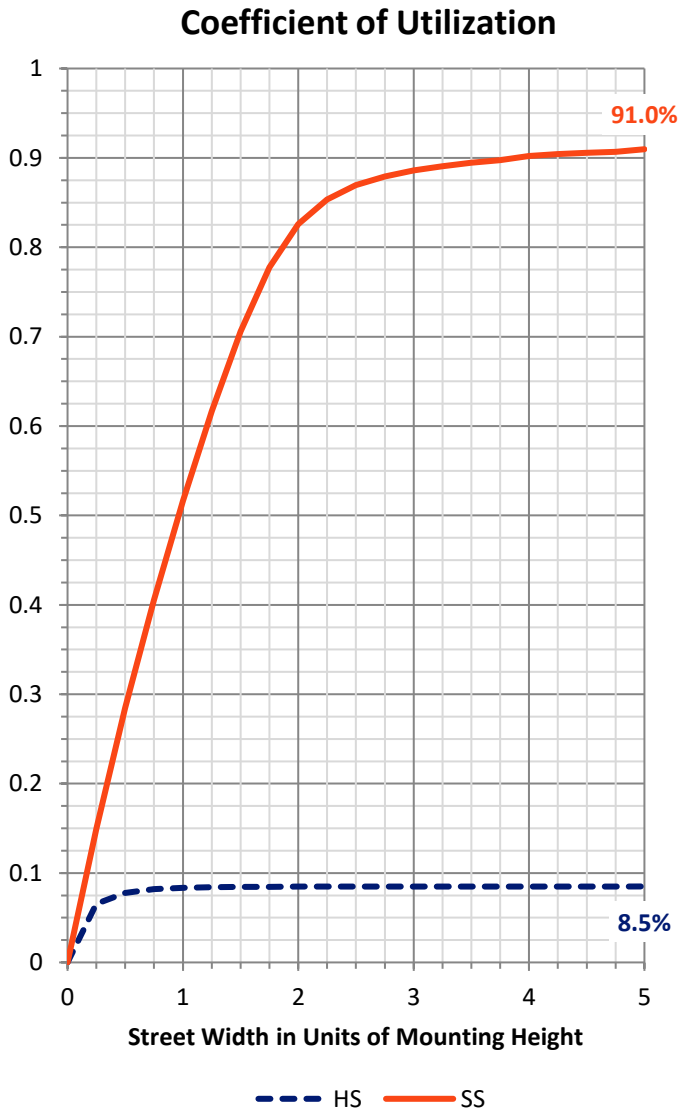
REPORT NUMBER: P385826
CATALOG NUMBER: GPC-SA1B-830-U-SL3-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 354.6 | 0.0 | 354.6 |
| | % Fixture | 8.6 | 0.0 | 8.6 |
| **Street Side** | Lumens | 3788.5 | 0.0 | 3788.5 |
| | % Fixture | 91.4 | 0.0 | 91.4 |
| **Total** | Lumens | 4143.0 | 0.0 | 4143.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 100.1 | 2.4 |
| 10°-20° | 210.0 | 5.1 |
| 20°-30° | 276.1 | 6.7 |
| 30°-40° | 365.7 | 8.8 |
| 40°-50° | 546.6 | 13.2 |
| 50°-60° | 875.6 | 21.1 |
| 60°-70° | 1103.8 | 26.6 |
| 70°-80° | 595.4 | 14.4 |
| 80°-90° | 69.7 | 1.7 |
| 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° | 4143.0 | 100.0 |
| 0°-180° | 4143.0 | 100.0 |



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REPORT NUMBER: P385826
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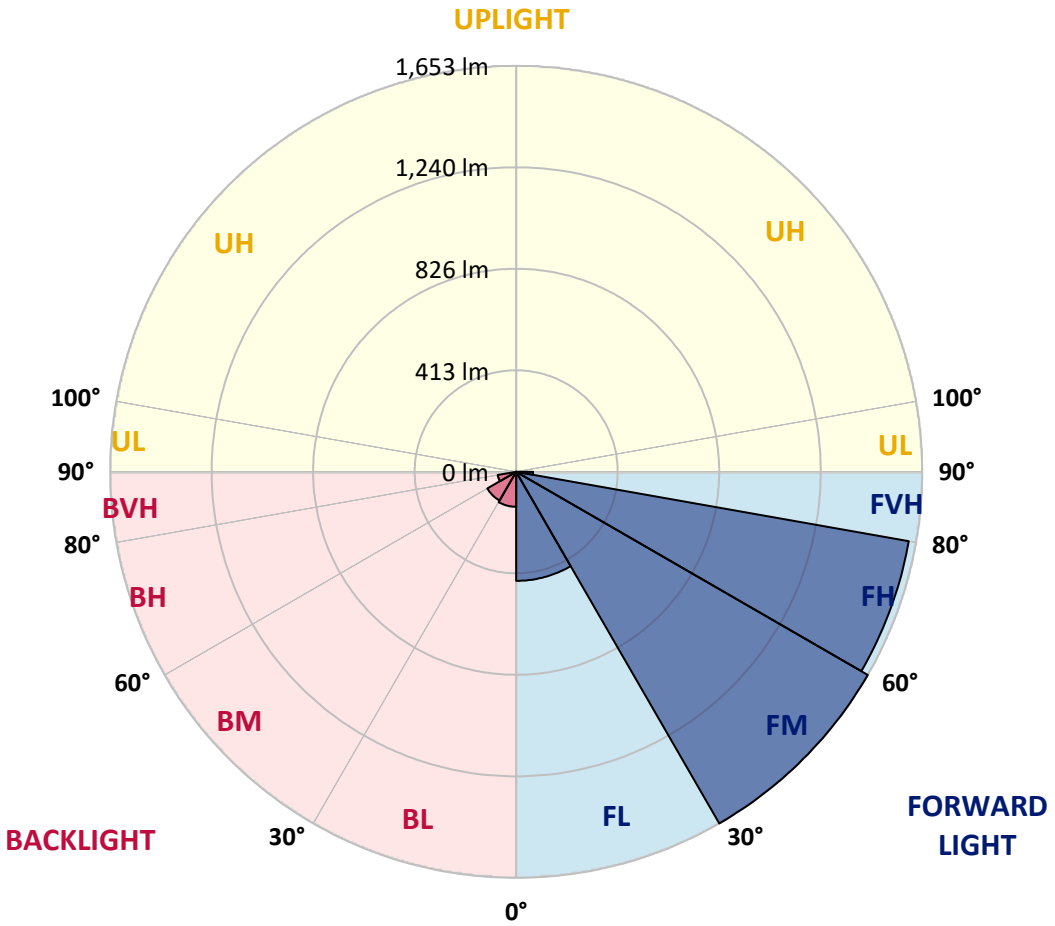
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 443.8 | 10.7 | | | |
| FM | (30°-60°) | 1652.7 | 39.9 | | | |
| FH | (60°-80°) | 1622.9 | 39.2 | | | G1/1800 |
| FVH | (80°-90°) | 69.1 | 1.7 | | | G1/100 |
| BL | (0°-30°) | 142.4 | 3.4 | B1/500 | | |
| BM | (30°-60°) | 135.2 | 3.3 | B0/220 | | |
| BH | (60°-80°) | 76.2 | 1.8 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 0.6 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G1**
Type III Medium



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REPORT NUMBER: P385826
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 58° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | *1223.8* | 1223.8 | 1223.8 | 1223.8 |
| 2.5° | 1325.3 | 1322.0 | 1320.8 | 1318.7 | 1310.8 | 1303.1 | 1287.7 | *1283.4* | 1273.8 | 1250.9 | 1226.6 |
| 5° | 1326.3 | 1326.2 | 1329.8 | 1328.9 | 1326.2 | 1322.5 | 1311.5 | *1305.8* | 1289.5 | 1256.7 | 1212.3 |
| 7.5° | 1262.4 | 1265.7 | 1273.8 | 1280.3 | 1287.9 | 1297.7 | 1299.1 | *1293.6* | 1280.2 | 1244.8 | 1185.9 |
| 10° | 1176.6 | 1181.8 | 1193.2 | 1206.1 | 1225.9 | 1245.5 | 1263.1 | *1262.4* | 1257.8 | 1223.0 | 1154.2 |
| 12.5° | 1090.7 | 1096.7 | 1109.8 | 1128.9 | 1157.0 | 1189.0 | 1220.4 | *1224.7* | 1232.4 | 1203.3 | 1124.9 |
| 15° | 1015.4 | 1020.5 | 1033.5 | 1056.9 | 1091.7 | 1134.8 | 1180.8 | *1188.7* | 1208.7 | 1188.0 | 1100.5 |
| 17.5° | 951.5 | 954.7 | 964.2 | 990.2 | 1030.5 | 1082.7 | 1142.5 | *1158.0* | 1187.8 | 1175.9 | 1079.3 |
| 20° | 906.8 | 907.4 | 913.6 | 931.8 | 972.1 | 1030.5 | 1102.9 | *1125.1* | 1165.8 | 1165.6 | 1057.4 |
| 22.5° | 884.8 | 883.1 | 884.3 | 894.8 | 924.4 | 980.7 | 1063.3 | *1089.6* | 1146.0 | 1156.8 | 1035.2 |
| 25° | 880.7 | 879.3 | 875.8 | 877.2 | 895.1 | 937.2 | 1023.3 | *1053.8* | 1128.6 | 1151.5 | 1015.9 |
| 27.5° | 893.6 | 895.0 | 889.1 | 882.9 | 884.3 | 908.9 | 987.8 | *1023.1* | 1114.4 | 1151.5 | 1002.3 |
| 30° | 919.6 | 920.3 | 916.0 | 907.9 | 897.0 | 901.0 | 963.2 | *998.5* | 1107.4 | 1159.4 | 993.7 |
| 32.5° | 948.4 | 952.1 | 951.6 | 945.1 | 929.6 | 913.6 | 957.3 | *989.5* | 1106.8 | 1177.0 | 992.8 |
| 35° | 984.0 | 988.3 | 995.6 | 994.2 | 978.0 | 951.6 | 977.3 | *1002.6* | 1117.0 | 1205.9 | 1002.1 |
| 37.5° | 1021.9 | 1028.5 | 1044.0 | 1051.4 | 1040.9 | 1011.1 | 1022.1 | *1040.2* | 1144.2 | 1252.8 | 1025.7 |
| 40° | 1058.6 | 1066.0 | 1094.3 | 1123.4 | 1115.5 | 1084.8 | 1090.0 | *1104.4* | 1192.6 | 1320.1 | 1070.5 |
| 42.5° | 1094.6 | 1105.6 | 1147.2 | 1195.1 | 1204.5 | 1180.1 | 1182.8 | *1194.4* | 1264.5 | 1412.8 | 1143.7 |
| 45° | 1137.7 | 1150.1 | 1211.6 | 1270.7 | 1296.0 | 1285.3 | 1297.0 | *1304.6* | 1358.4 | 1535.3 | 1242.4 |
| 47.5° | 1200.9 | 1215.2 | 1290.7 | 1358.0 | 1402.5 | 1409.4 | 1433.0 | *1438.0* | 1477.1 | 1677.9 | 1371.1 |
| 50° | 1324.3 | 1328.2 | 1396.4 | 1457.6 | 1521.7 | 1563.0 | 1589.9 | *1593.7* | 1620.7 | 1833.8 | 1531.8 |
| 52.5° | 1479.5 | 1482.1 | 1520.6 | 1561.6 | 1634.5 | 1718.9 | 1781.8 | *1787.2* | 1792.8 | 1985.8 | 1690.5 |
| 55° | 1633.7 | 1633.3 | 1658.8 | 1682.9 | 1766.3 | 1889.0 | 2025.4 | *2028.7* | 1987.9 | 2130.0 | 1811.8 |
| 57.5° | 1730.0 | 1739.3 | 1778.0 | 1809.0 | 1925.5 | 2082.8 | 2272.1 | *2284.2* | 2192.7 | 2236.8 | 1931.7 |
| 60° | 1699.3 | 1703.8 | 1789.7 | 1904.5 | 2123.8 | 2358.2 | 2521.7 | *2524.8* | 2346.7 | 2343.4 | 2083.3 |
| 62.5° | 1447.8 | 1450.2 | 1585.2 | 1821.8 | 2224.2 | 2715.5 | 2822.9 | *2772.4* | 2523.8 | 2491.4 | 2264.7 |
| 65° | 992.3 | 1008.0 | 1120.8 | 1413.1 | 2039.7 | 2939.7 | 3289.0 | *3205.5* | 2793.7 | 2704.7 | 2428.7 |
| 67.5° | 584.3 | 581.1 | 636.9 | 852.2 | 1498.1 | 2790.8 | 3878.7 | *3795.7* | 3161.9 | 2847.5 | 2380.6 |
| 70° | *399.2* | *396.9* | *418.3* | *516.0* | *845.7* | *2164.9* | *4064.2* | *4231.9* | *3487.0* | *2751.4* | *2048.8* |
| 72.5° | 284.9 | 286.1 | 317.7 | 400.9 | 530.9 | 1261.4 | 3495.1 | *3891.8* | 3385.2 | 2398.5 | 1557.3 |
| 75° | 193.5 | 196.7 | 241.9 | 328.9 | 465.5 | 641.7 | 2480.2 | *2958.4* | 2756.5 | 1743.2 | 895.1 |
| 77.5° | 104.1 | 107.7 | 160.9 | 265.0 | 420.9 | 445.8 | 1595.4 | *2036.1* | 1731.5 | 783.7 | 259.4 |
| 80° | 43.4 | 45.5 | 75.3 | 192.6 | 363.7 | 391.6 | 938.7 | *1234.7* | 737.8 | 154.5 | 57.9 |
| 82.5° | 18.8 | 19.8 | 31.4 | 114.9 | 271.8 | 330.6 | 497.0 | *594.0* | 223.6 | 33.9 | 29.1 |
| 85° | 3.6 | 3.8 | 12.9 | 60.8 | 173.5 | 186.6 | 322.1 | *315.8* | 100.4 | 14.6 | 21.2 |
| 87.5° | 0.0 | 0.0 | 3.1 | 19.1 | 51.0 | 101.6 | 196.6 | *194.2* | 34.1 | 7.1 | 7.9 |
| 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: P385826
CATALOG NUMBER: GPC-SA1B-830-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 | 1223.8 |
| 2.5° | 1214.2 | 1202.3 | 1177.3 | 1146.5 | 1122.9 | 1096.9 | 1076.2 | 1050.0 | 1038.6 | 1039.1 | 1032.9 |
| 5° | 1187.0 | 1162.5 | 1107.2 | 1037.4 | 983.7 | 928.2 | 880.5 | 832.9 | 804.9 | 795.7 | 787.1 |
| 7.5° | 1148.0 | 1109.3 | 1021.1 | 913.6 | 822.6 | 733.7 | 656.4 | 588.3 | 545.2 | 524.2 | 516.5 |
| 10° | 1104.1 | 1049.7 | 922.0 | 780.4 | 650.5 | 530.3 | 430.0 | 342.8 | 308.0 | 284.4 | 278.4 |
| 12.5° | 1065.5 | 991.8 | 825.2 | 643.8 | 489.6 | 344.5 | 248.9 | 194.7 | 171.1 | 161.8 | 160.2 |
| 15° | 1029.2 | 937.7 | 732.0 | 520.1 | 339.0 | 212.1 | 158.3 | 139.9 | 134.4 | 132.8 | 132.8 |
| 17.5° | 994.9 | 886.2 | 640.9 | 398.3 | 224.3 | 148.7 | 131.1 | 127.0 | 125.2 | 125.1 | 125.2 |
| 20° | 959.0 | 834.7 | 551.3 | 291.8 | 156.6 | 125.9 | 121.1 | 118.9 | 118.4 | 118.4 | 118.4 |
| 22.5° | 924.8 | 783.1 | 464.1 | 208.4 | 125.6 | 114.9 | 112.5 | 110.9 | 110.4 | 110.3 | 109.9 |
| 25° | 891.9 | 734.2 | 379.0 | 147.3 | 110.3 | 105.3 | 103.2 | 101.1 | 99.6 | 98.7 | 98.2 |
| 27.5° | 864.8 | 690.6 | 299.8 | 118.2 | 99.6 | 95.3 | 92.7 | 89.6 | 85.8 | 84.1 | 83.4 |
| 30° | 843.3 | 650.8 | 231.0 | 99.7 | 89.6 | 85.3 | 81.3 | 76.0 | 70.5 | 67.5 | 67.4 |
| 32.5° | 826.4 | 611.7 | 175.4 | 88.2 | 80.6 | 75.3 | 69.6 | 62.9 | 56.5 | 53.2 | 53.1 |
| 35° | 818.1 | 577.3 | 134.0 | 79.8 | 72.7 | 66.0 | 58.9 | 51.5 | 45.3 | 42.2 | 41.9 |
| 37.5° | 823.6 | 548.2 | 104.6 | 72.7 | 66.0 | 58.2 | 50.0 | 42.2 | 36.7 | 33.9 | 33.8 |
| 40° | 843.8 | 529.6 | 84.9 | 66.7 | 60.3 | 50.8 | 41.9 | 34.6 | 30.0 | 27.7 | 27.6 |
| 42.5° | 886.7 | 522.7 | 72.5 | 61.7 | 54.8 | 43.9 | 34.8 | 28.6 | 24.3 | 22.7 | 22.4 |
| 45° | 958.4 | 532.8 | 64.1 | 56.8 | 49.1 | 37.4 | 28.8 | 23.4 | 19.6 | 18.4 | 18.3 |
| 47.5° | 1053.8 | 559.5 | 58.1 | 52.2 | 43.9 | 31.5 | 23.9 | 18.9 | 16.0 | 14.8 | 14.6 |
| 50° | 1176.8 | 601.9 | 53.1 | 47.5 | 39.1 | 26.7 | 19.8 | 15.0 | 12.4 | 11.5 | 11.5 |
| 52.5° | 1310.6 | 652.4 | 48.6 | 43.2 | 34.3 | 22.2 | 16.0 | 11.5 | 9.8 | 8.8 | 8.8 |
| 55° | 1421.2 | 696.5 | 43.8 | 40.0 | 28.4 | 18.4 | 12.2 | 8.8 | 7.2 | 6.7 | 6.7 |
| 57.5° | 1531.7 | 743.5 | 38.2 | 34.3 | 22.7 | 15.0 | 9.3 | 6.5 | 5.3 | 5.0 | 5.0 |
| 60° | 1674.8 | 801.1 | 32.9 | 27.9 | 17.9 | 11.4 | 6.9 | 4.7 | 4.0 | 3.8 | 3.8 |
| 62.5° | 1832.3 | 834.8 | 28.1 | 22.4 | 14.0 | 8.4 | 5.0 | 3.1 | 2.9 | 2.9 | 2.8 |
| 65° | 1928.6 | 787.1 | 23.6 | 17.9 | 10.9 | 6.4 | 3.3 | 2.2 | 2.6 | 2.4 | 2.1 |
| 67.5° | 1805.8 | 616.2 | 19.3 | 14.0 | 8.4 | 4.8 | 2.1 | 1.6 | 2.8 | 2.2 | 1.7 |
| 70° | *1495.2* | *431.4* | *15.0* | *9.8* | *6.7* | *4.1* | *1.4* | *1.0* | *2.9* | *2.2* | *1.4* |
| 72.5° | 1118.9 | 288.7 | 11.9 | 6.5 | 5.0 | 3.6 | 1.2 | 0.5 | 2.6 | 1.9 | 1.2 |
| 75° | 611.4 | 116.3 | 9.5 | 4.1 | 3.1 | 2.6 | 0.9 | 0.3 | 1.7 | 1.4 | 0.9 |
| 77.5° | 160.9 | 30.7 | 6.9 | 2.8 | 1.7 | 1.0 | 0.5 | 0.2 | 0.9 | 0.7 | 0.3 |
| 80° | 41.0 | 11.9 | 4.5 | 1.9 | 1.2 | 0.5 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| 82.5° | 21.9 | 5.0 | 2.8 | 1.4 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 16.5 | 3.3 | 1.6 | 0.9 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 6.4 | 1.0 | 0.5 | 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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# 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

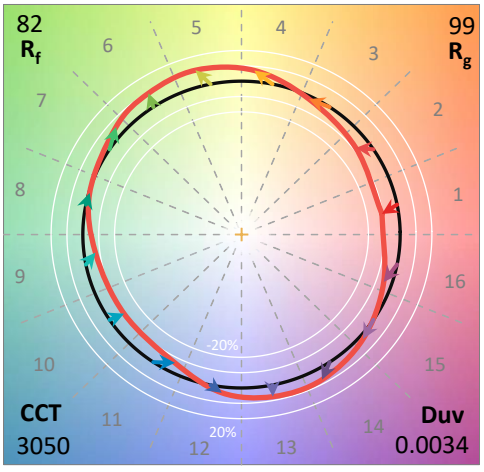
## Test Information

| | |
|---|---|
| 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

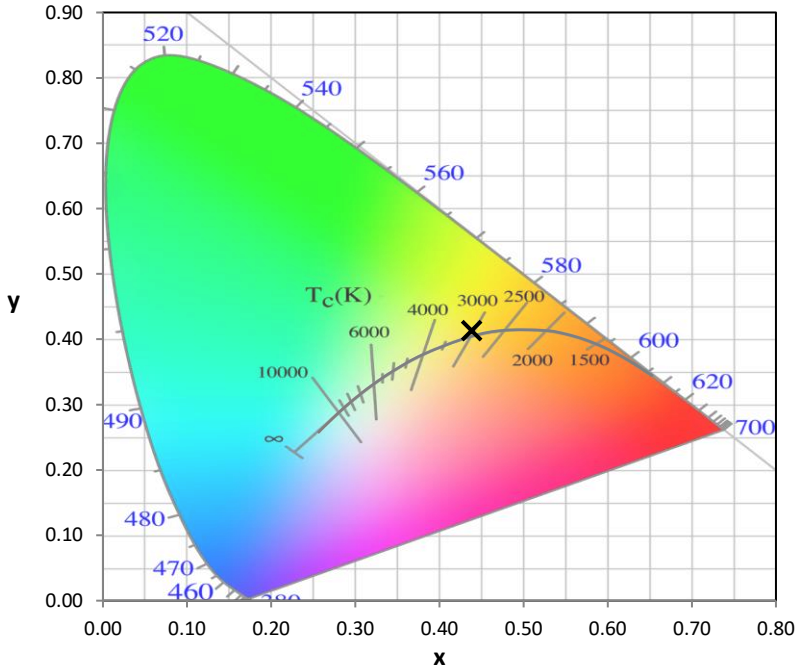
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

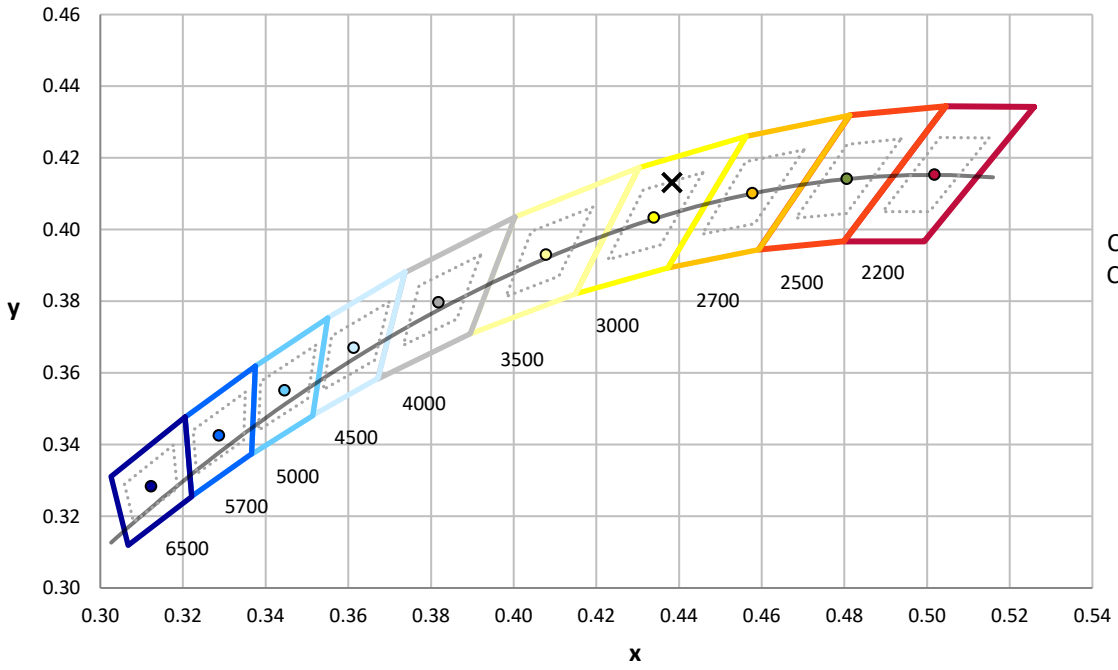
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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 |

REPORT NUMBER: SP1-2408-195-9

## 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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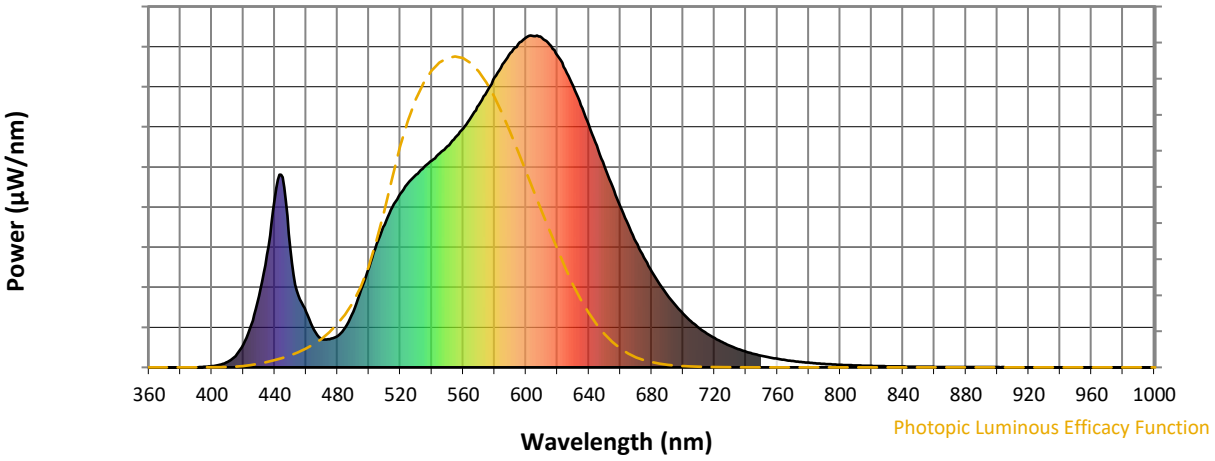
## Photopic Flux vs. Wavelength




## 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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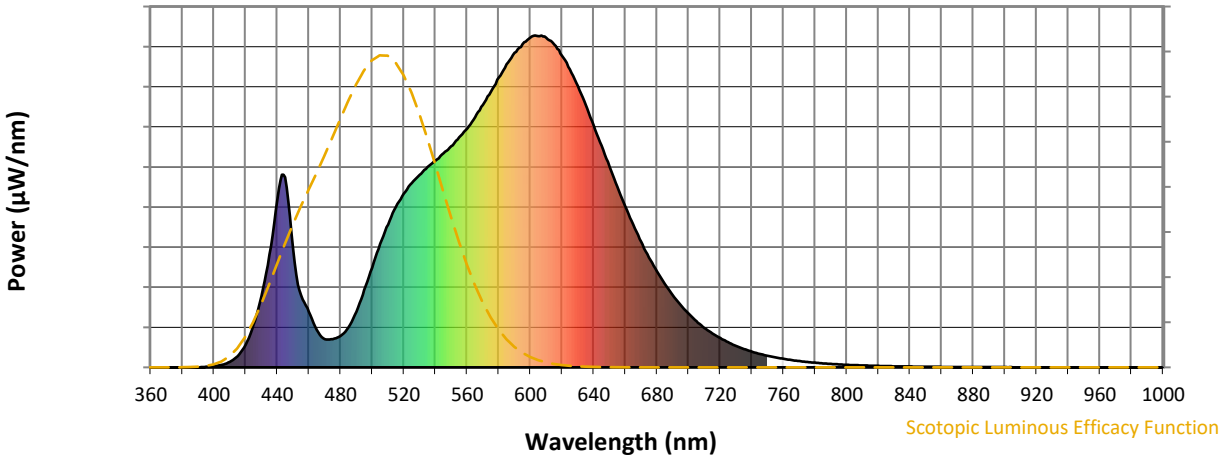
## Scotopic Flux vs. Wavelength




**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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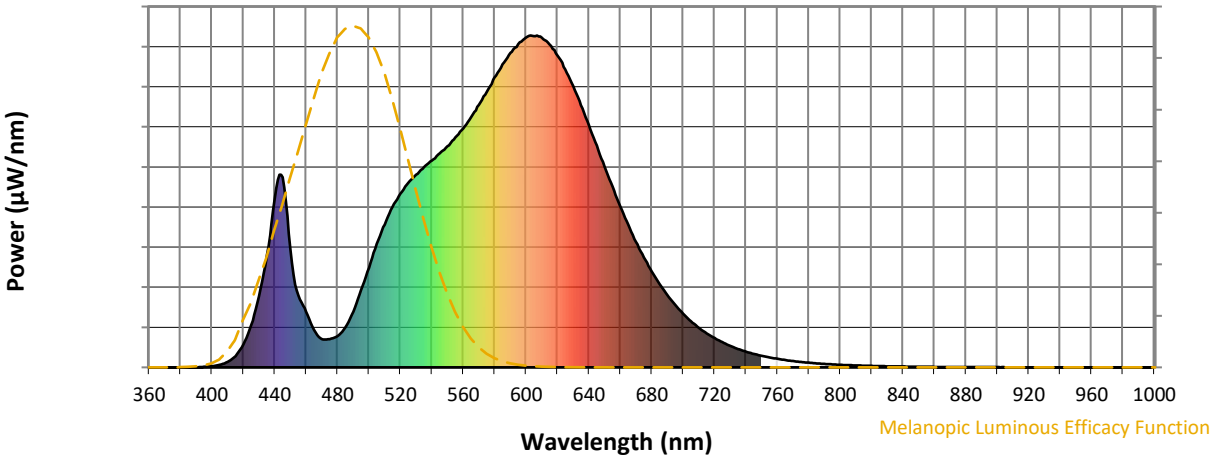
## Melanopic Flux vs. Wavelength




**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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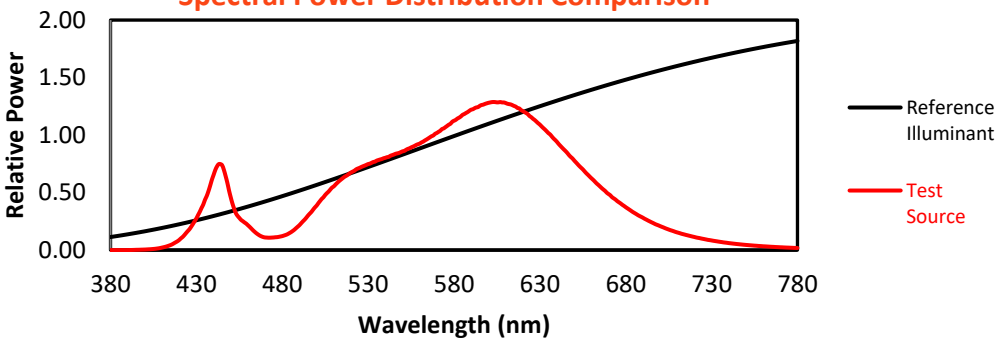
# TM-30-18

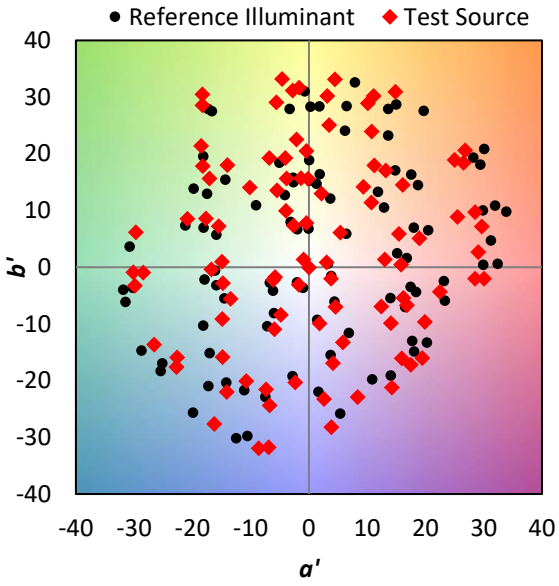
## Summary

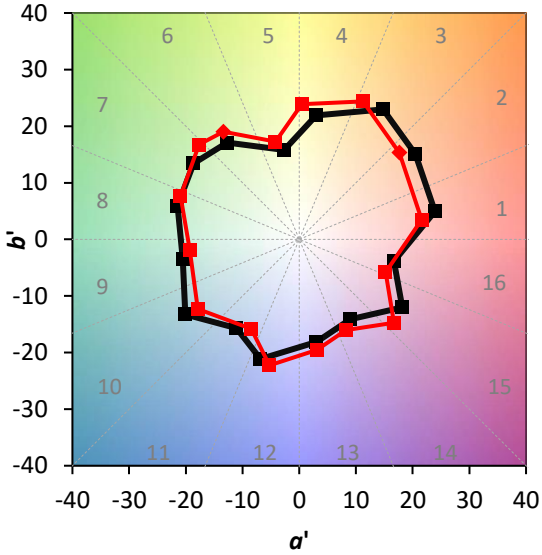
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

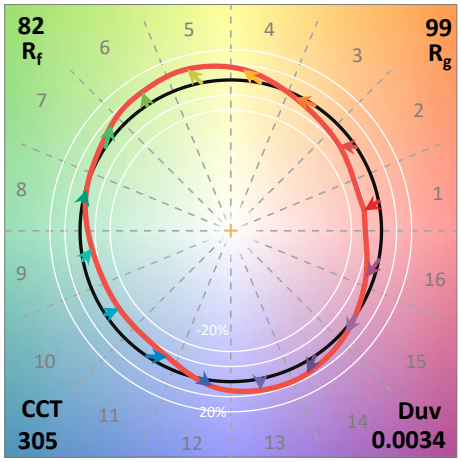
## Spectral Power Distribution Comparison

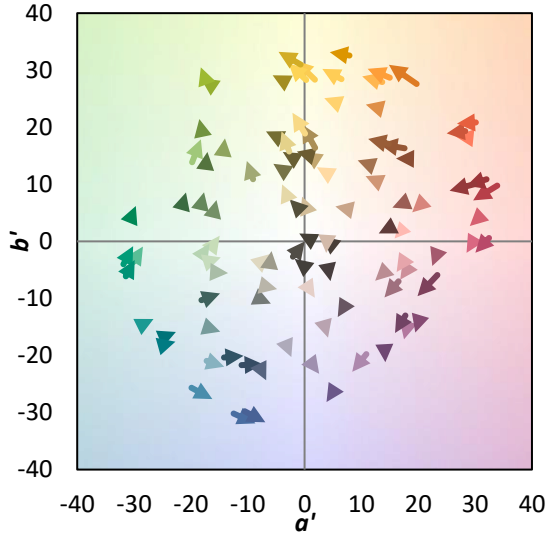



## Color Vector Graphics



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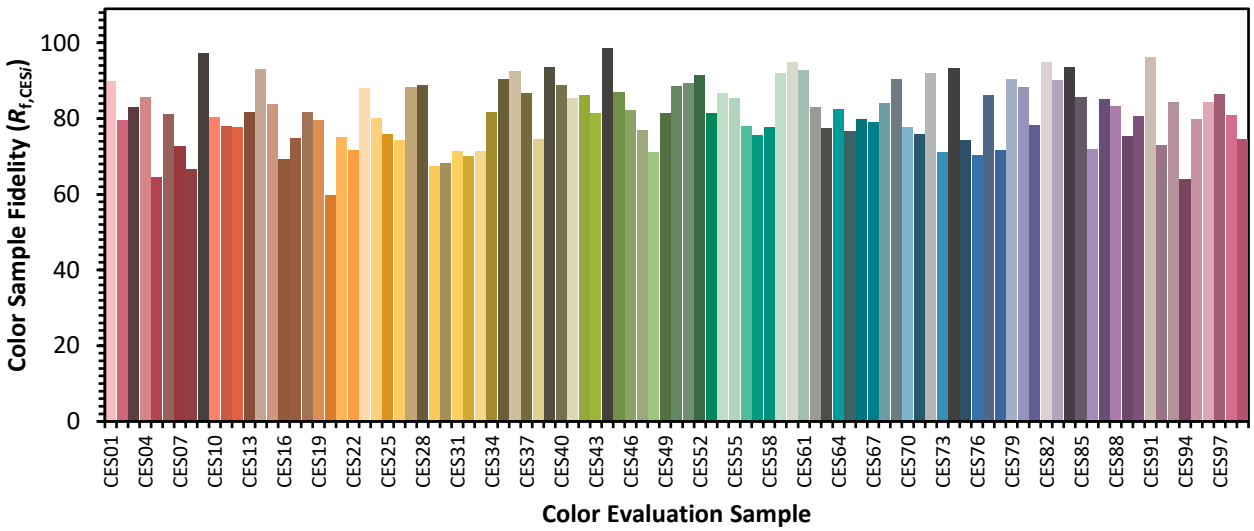
# TM-30-18

**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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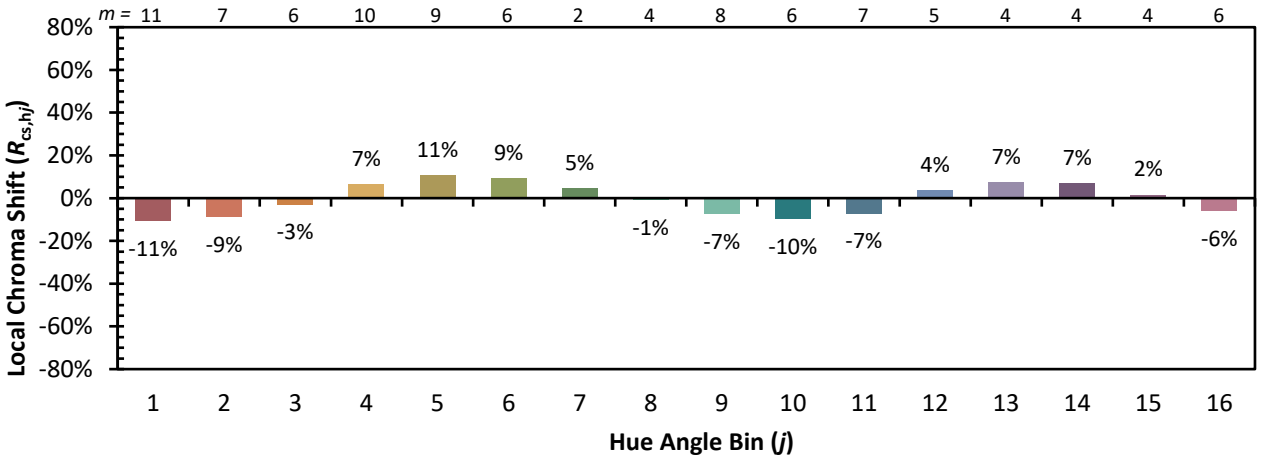
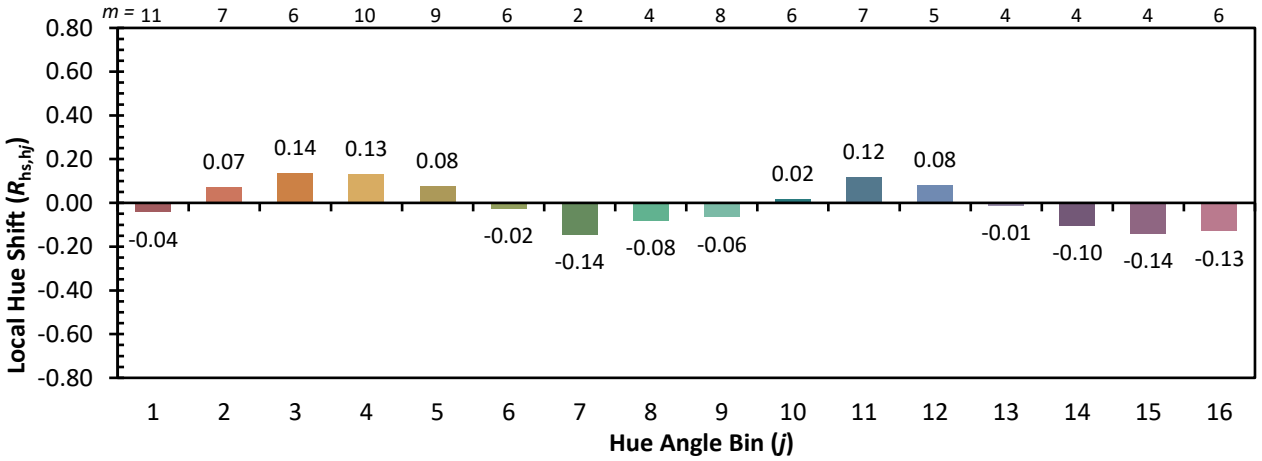
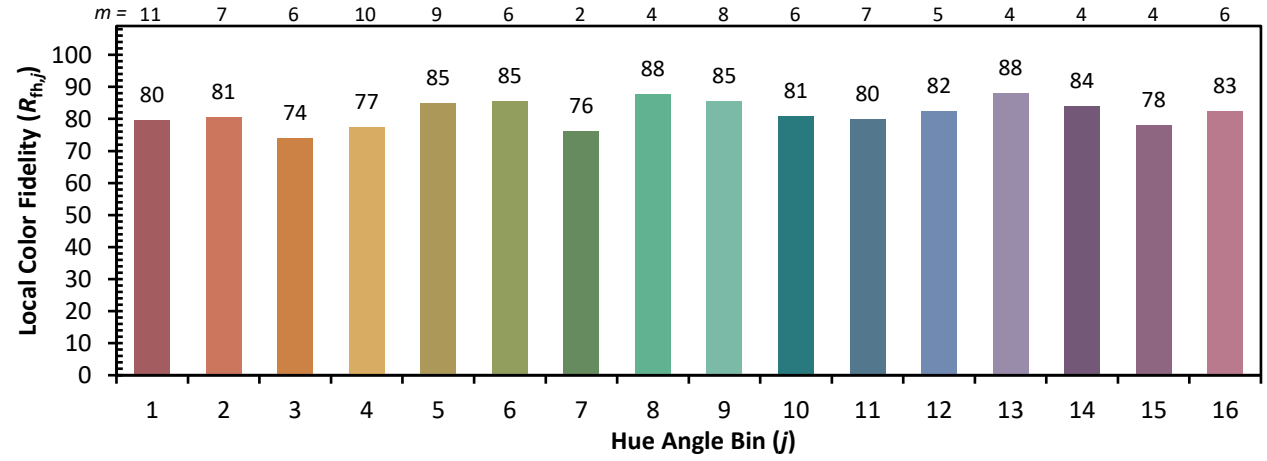
# TM-30-18

## Color Rendition by Hue-Angle Bin



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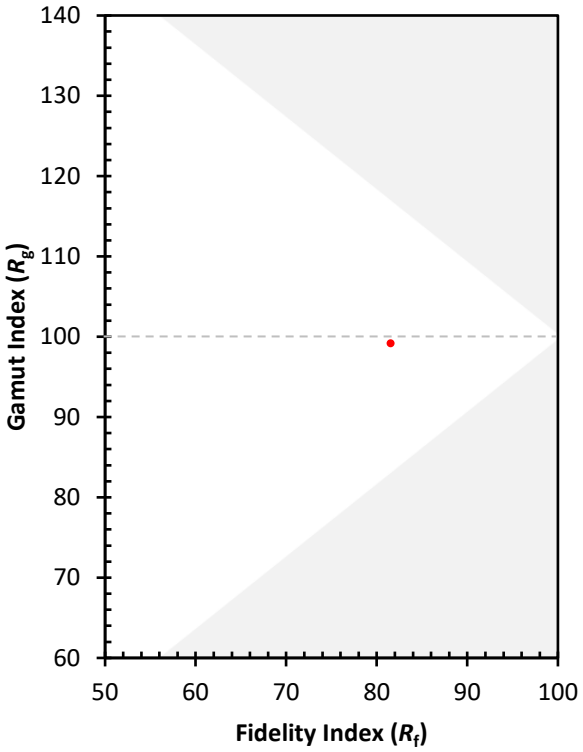
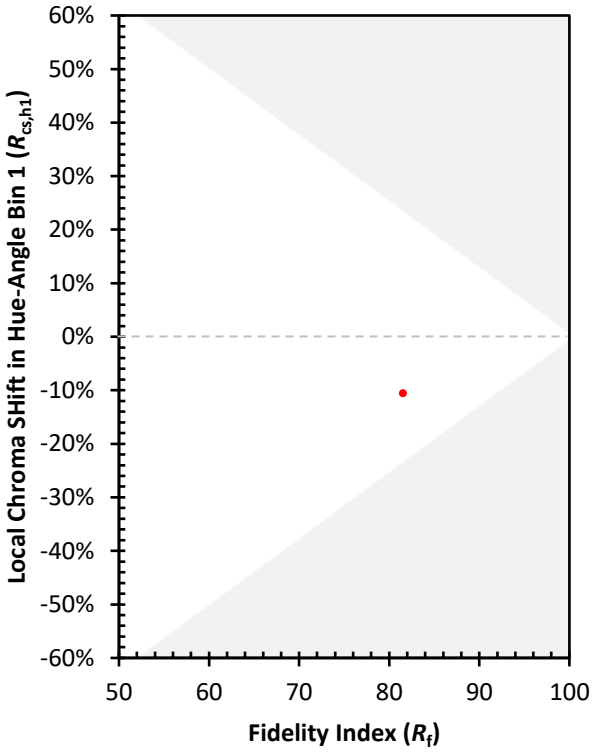
## TM-30-18

### Measure Comparisons

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