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: STREETWORKS

Report Number: P867625

Luminaire Tested: **MEM2-HTN-SA-60-740-U-T3**

Issue Date: 08/21/2024

Report Generated By 670245763

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: | P867625 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 08/21/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | STREETWORKS |
| Catalog Number: | MEM2-HTN-SA-60-740-U-T3 |
| Description: | EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 60W 70CRI 4000K FIXTURE w/ TYPE III DISTRIBUTION OPTIC |
| Light Source: | (10) 4000K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 6276.5 lumens |
| Efficiency: | N/A |
| Efficacy: | 142.6 lumens/watt |
| Luminous Opening: | Rectangular (W 0.33' x L: 0.33' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 44 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.99 |
| Total Harmonic Distortion (THDi): | 6.91% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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Scaled Data Report

REPORT NUMBER: P867625
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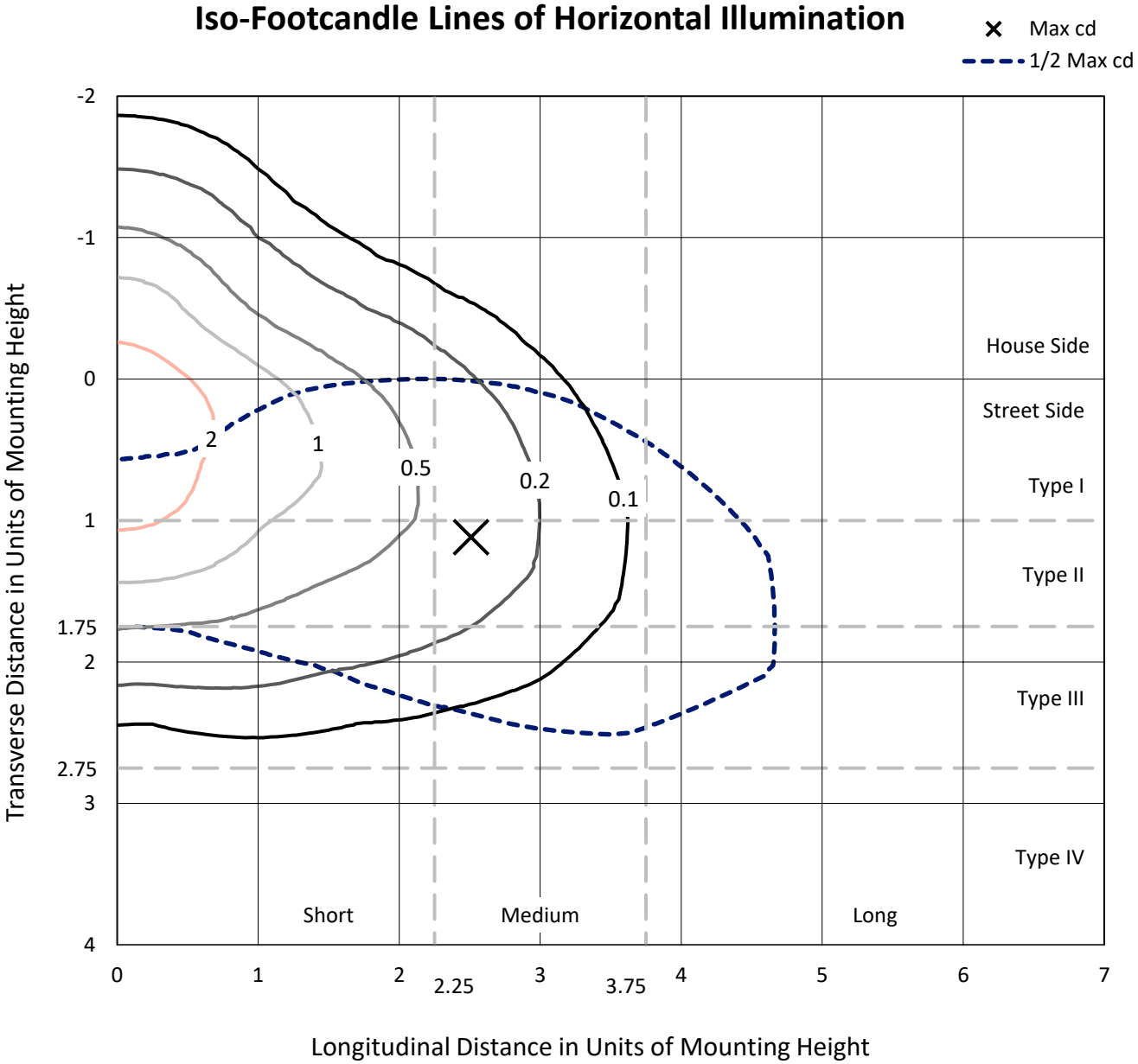
## Iso-Footcandle Lines of Horizontal Illumination




Based on 20 foot mounting height. Maximum calculated value = 2.9 fc
Type III - Medium - N/A

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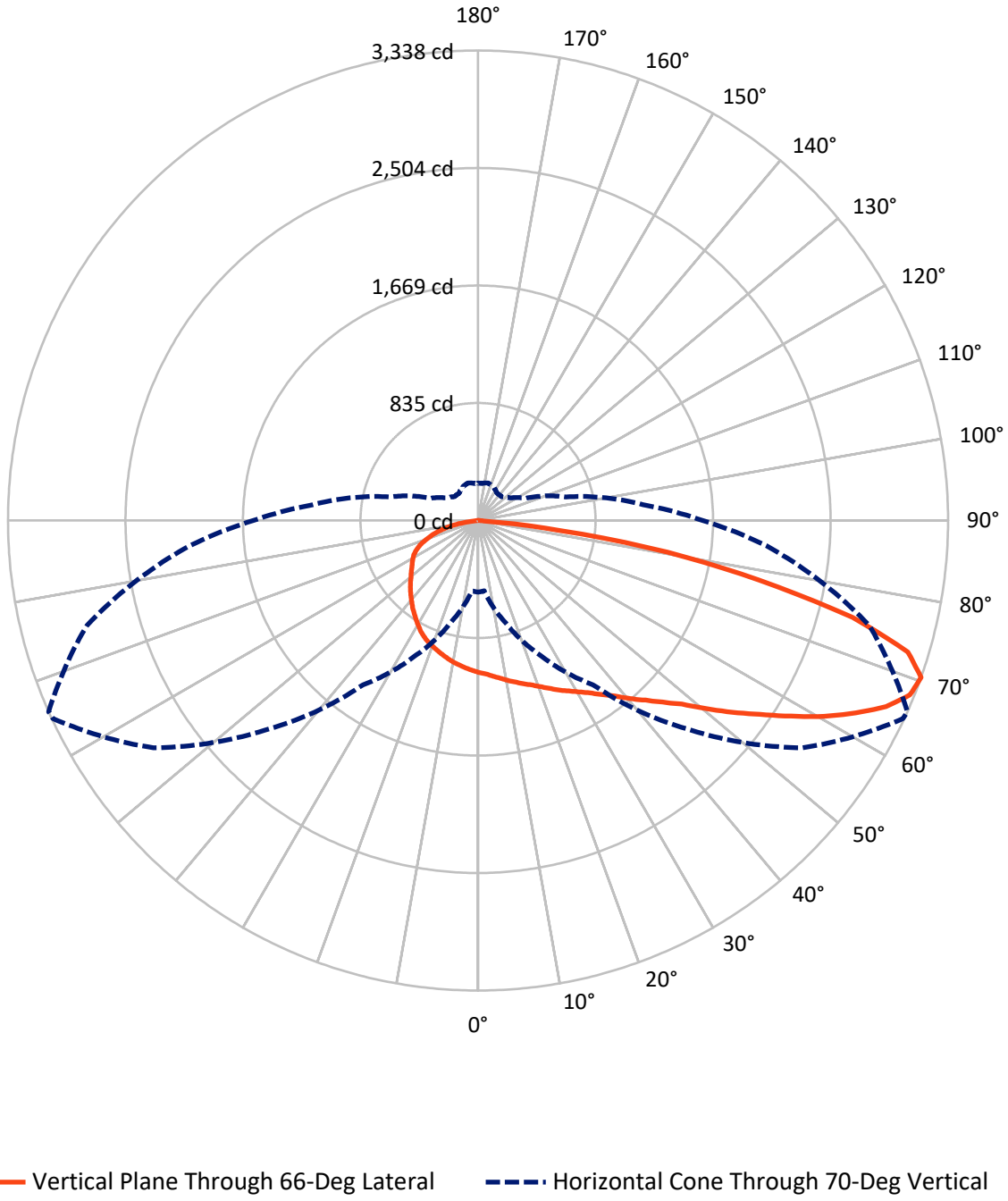
## Luminous Intensity Polar Plot



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REPORT NUMBER: P867625
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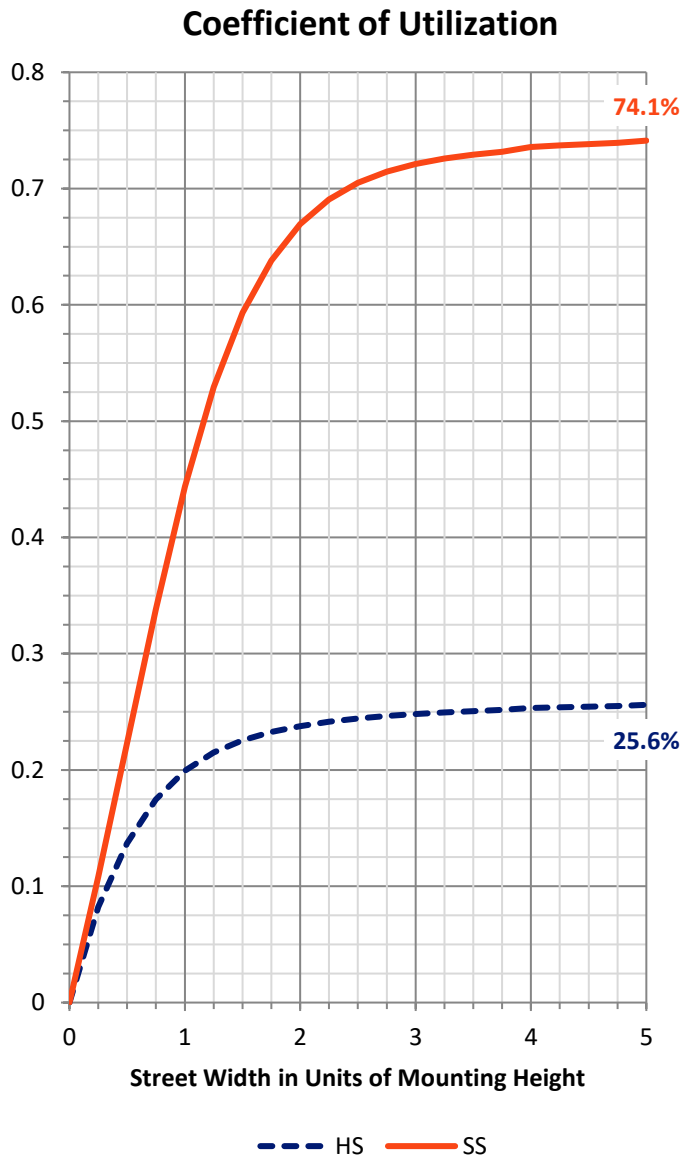
**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1617.5 | 0.0 | 1617.5 |
| | % Fixture | 25.8 | 0.0 | 25.8 |
| **Street Side** | Lumens | 4659.0 | 0.0 | 4659.0 |
| | % Fixture | 74.2 | 0.0 | 74.2 |
| **Total** | Lumens | 6276.5 | 0.0 | 6276.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 103.4 | 1.6 |
| 10°-20° | 307.8 | 4.9 |
| 20°-30° | 517.0 | 8.2 |
| 30°-40° | 779.0 | 12.4 |
| 40°-50° | 1057.6 | 16.8 |
| 50°-60° | 1256.7 | 20.0 |
| 60°-70° | 1282.5 | 20.4 |
| 70°-80° | 857.8 | 13.7 |
| 80°-90° | 114.8 | 1.8 |
| 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° | 6276.5 | 100.0 |
| 0°-180° | 6276.5 | 100.0 |



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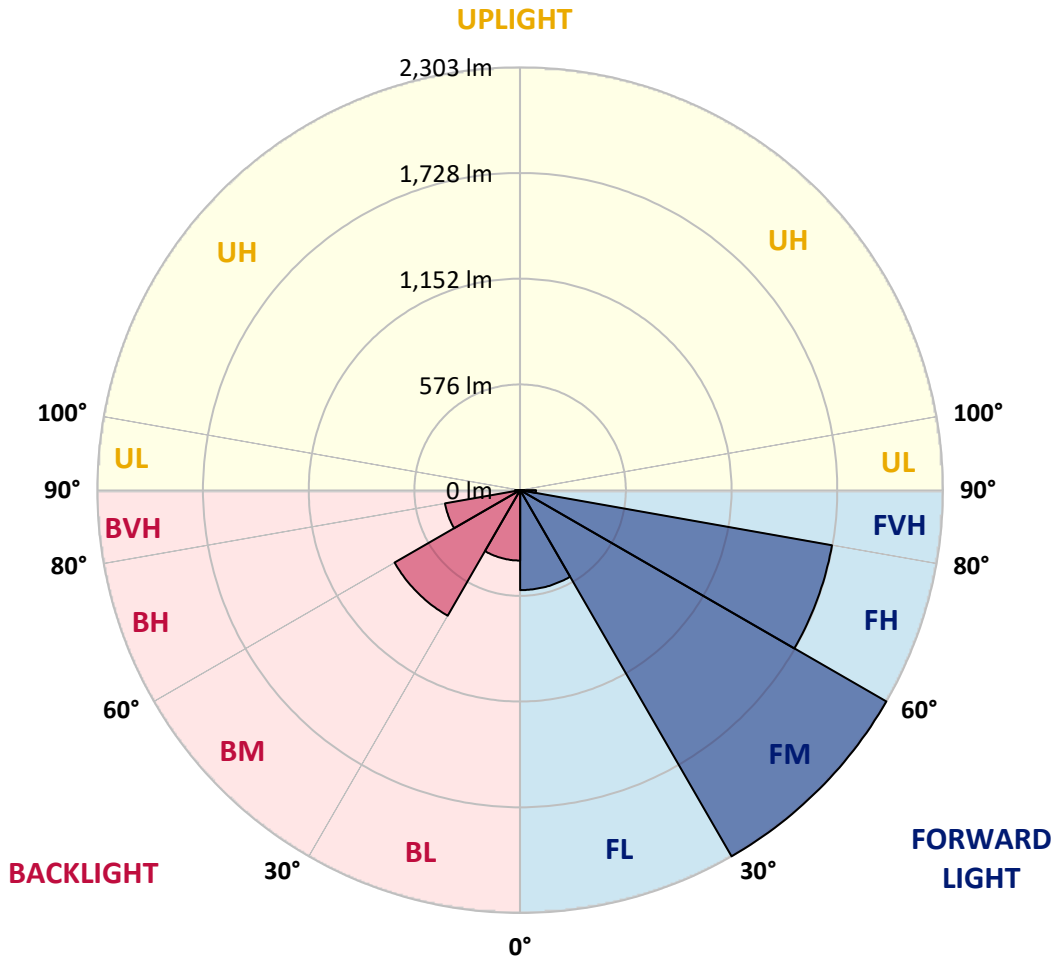
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 544.7 | 8.7 | | | |
| FM | (30°-60°) | 2303.4 | 36.7 | | | |
| FH | (60°-80°) | 1725.0 | 27.5 | | | G1/1800 |
| FVH | (80°-90°) | 86.0 | 1.4 | | | G1/100 |
| BL | (0°-30°) | 383.5 | 6.1 | B1/500 | | |
| BM | (30°-60°) | 789.8 | 12.6 | B1/1000 | | |
| BH | (60°-80°) | 415.3 | 6.6 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 28.8 | 0.5 | | | G1/100 |
| 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: P867625
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | *1079.9* | 1079.9 | 1079.9 |
| 2.5° | 1118.6 | 1113.6 | 1109.8 | 1112.3 | 1104.9 | 1107.3 | 1098.6 | 1092.4 | *1091.1* | 1088.6 | 1086.1 |
| 5° | 1153.5 | 1153.5 | 1147.3 | 1147.3 | 1138.5 | 1137.3 | 1124.8 | 1111.1 | *1111.1* | 1102.4 | 1092.4 |
| 7.5° | 1190.9 | 1188.4 | 1180.9 | 1179.7 | 1169.7 | 1167.2 | 1153.5 | 1132.3 | *1131.0* | 1114.8 | 1099.9 |
| 10° | 1217.1 | 1218.3 | 1213.3 | 1213.3 | 1205.9 | 1199.6 | 1179.7 | 1157.2 | *1154.7* | 1133.5 | 1109.8 |
| 12.5° | 1237.0 | 1239.5 | 1238.3 | 1238.3 | 1232.0 | 1232.0 | 1209.6 | 1179.7 | *1177.2* | 1149.7 | 1116.1 |
| 15° | 1258.2 | 1257.0 | 1260.7 | 1262.0 | 1259.5 | 1255.7 | 1239.5 | 1204.6 | *1203.4* | 1167.2 | 1124.8 |
| 17.5° | 1276.9 | 1275.7 | 1276.9 | 1283.2 | 1284.4 | 1284.4 | 1268.2 | 1232.0 | *1227.1* | 1188.4 | 1132.3 |
| 20° | 1288.2 | 1290.7 | 1295.6 | 1303.1 | 1306.9 | 1316.8 | 1303.1 | 1264.5 | *1259.5* | 1210.8 | 1148.5 |
| 22.5° | 1330.6 | 1323.1 | 1326.8 | 1331.8 | 1336.8 | 1350.5 | 1338.0 | 1298.1 | *1294.4* | 1244.5 | 1167.2 |
| 25° | 1402.9 | 1402.9 | 1394.2 | 1385.4 | 1379.2 | 1385.4 | 1375.5 | 1336.8 | *1334.3* | 1274.4 | 1188.4 |
| 27.5° | 1528.8 | 1528.8 | 1510.1 | 1477.7 | 1436.6 | 1425.3 | 1417.9 | 1377.9 | *1370.5* | 1306.9 | 1202.1 |
| 30° | 1688.5 | 1693.4 | 1659.8 | 1604.9 | 1528.8 | 1479.0 | 1460.3 | 1416.6 | *1412.9* | 1339.3 | 1223.3 |
| 32.5° | 1859.3 | 1869.3 | 1844.3 | 1764.5 | 1639.8 | 1542.6 | 1512.6 | 1467.7 | *1459.0* | 1377.9 | 1250.8 |
| 35° | 2012.7 | 2022.7 | 1989.0 | 1914.2 | 1754.5 | 1634.8 | 1575.0 | 1523.8 | *1518.9* | 1427.8 | 1291.9 |
| 37.5° | 2137.4 | 2139.9 | 2118.7 | 2027.6 | 1850.6 | 1712.1 | 1652.3 | 1591.2 | *1581.2* | 1487.7 | 1335.6 |
| 40° | 2269.6 | 2279.5 | 2258.3 | 2146.1 | 1937.9 | 1795.7 | 1729.6 | 1672.2 | *1663.5* | 1550.0 | 1376.7 |
| 42.5° | 2408.0 | 2406.7 | 2406.7 | 2248.4 | 2025.1 | 1865.5 | 1813.2 | 1749.6 | *1744.6* | 1613.6 | 1421.6 |
| 45° | 2492.8 | 2497.8 | 2484.0 | 2309.5 | 2153.6 | 1937.9 | 1894.2 | 1848.1 | *1839.3* | 1702.2 | 1480.2 |
| 47.5° | 2514.0 | 2502.8 | 2440.4 | 2356.9 | 2298.2 | 2012.7 | 1996.5 | 1969.0 | *1949.1* | 1799.4 | 1552.5 |
| 50° | 2485.3 | 2467.8 | 2431.7 | 2378.1 | 2351.9 | 2102.5 | 2100.0 | 2113.7 | *2100.0* | 1917.9 | 1636.1 |
| 52.5° | 2378.1 | 2375.6 | 2369.3 | 2381.8 | 2339.4 | 2173.5 | 2217.2 | 2264.6 | *2262.1* | 2038.9 | 1723.4 |
| 55° | 2152.3 | 2168.6 | 2243.4 | 2321.9 | 2292.0 | 2222.2 | 2348.1 | 2439.2 | *2429.2* | 2181.0 | 1813.2 |
| 57.5° | 1921.6 | 1937.9 | 2033.9 | 2220.9 | 2245.9 | 2274.6 | 2495.3 | 2637.4 | *2621.2* | 2335.7 | 1895.5 |
| 60° | 1720.9 | 1703.4 | 1799.4 | 2068.8 | 2181.0 | 2321.9 | 2641.2 | 2838.2 | *2824.5* | 2490.3 | 1980.3 |
| 62.5° | 1402.9 | 1420.3 | 1573.7 | 1846.8 | 2090.0 | 2351.9 | 2760.9 | 3020.3 | *3011.5* | 2632.4 | 2048.8 |
| 65° | 1109.8 | 1086.1 | 1316.8 | 1613.6 | 1932.9 | 2341.9 | 2864.4 | 3191.1 | *3184.9* | 2772.1 | 2101.2 |
| 67.5° | 754.4 | 738.2 | 1042.5 | 1381.7 | 1719.6 | 2262.1 | 2888.1 | 3305.8 | *3308.3* | 2854.4 | 2114.9 |
| 70° | *508.8* | *501.3* | *749.5* | *1062.5* | *1424.1* | *2090.0* | *2814.5* | *3329.5* | *3338.3* | *2875.6* | *2053.8* |
| 72.5° | 375.4 | 374.1 | 548.7 | 758.2 | 1060.0 | 1764.5 | 2613.7 | 3174.9 | *3191.1* | 2726.0 | 1874.3 |
| 75° | 295.5 | 299.3 | 391.6 | 538.7 | 707.1 | 1305.6 | 2198.5 | 2722.2 | *2747.2* | 2354.4 | 1556.3 |
| 77.5° | 241.9 | 241.9 | 274.3 | 386.6 | 472.6 | 810.6 | 1581.2 | 1992.7 | *2042.6* | 1816.9 | 1198.4 |
| 80° | 195.8 | 199.5 | 203.3 | 269.4 | 313.0 | 462.6 | 920.3 | 1329.3 | *1365.5* | 1265.7 | 865.4 |
| 82.5° | 107.2 | 114.7 | 111.0 | 139.7 | 157.1 | 214.5 | 365.4 | 537.5 | *592.3* | 527.5 | 392.8 |
| 85° | 7.5 | 5.0 | 8.7 | 11.2 | 13.7 | 21.2 | 28.7 | 39.9 | *37.4* | 53.6 | 27.4 |
| 87.5° | 1.2 | 1.2 | 1.2 | 2.5 | 2.5 | 3.7 | 5.0 | 5.0 | *5.0* | 5.0 | 5.0 |
| 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: P867625
CATALOG NUMBER: MEM2-HTN-SA-60-740-U-T3

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 | 1079.9 |
| 2.5° | 1084.9 | 1078.7 | 1068.7 | 1066.2 | 1062.5 | 1057.5 | 1052.5 | 1045.0 | 1042.5 | 1045.0 | 1047.5 |
| 5° | 1086.1 | 1077.4 | 1061.2 | 1051.2 | 1041.3 | 1032.5 | 1022.6 | 1012.6 | 1006.3 | 1007.6 | 1012.6 |
| 7.5° | 1089.9 | 1077.4 | 1052.5 | 1036.3 | 1020.1 | 1006.3 | 990.1 | 978.9 | 971.4 | 972.7 | 976.4 |
| 10° | 1094.9 | 1077.4 | 1047.5 | 1020.1 | 997.6 | 977.7 | 961.4 | 947.7 | 940.2 | 939.0 | 940.2 |
| 12.5° | 1096.1 | 1076.2 | 1036.3 | 1002.6 | 975.2 | 949.0 | 931.5 | 919.0 | 911.6 | 907.8 | 910.3 |
| 15° | 1099.9 | 1072.4 | 1025.0 | 983.9 | 950.2 | 922.8 | 901.6 | 886.6 | 881.6 | 879.1 | 877.9 |
| 17.5° | 1104.9 | 1071.2 | 1015.1 | 965.2 | 925.3 | 894.1 | 875.4 | 860.4 | 854.2 | 851.7 | 854.2 |
| 20° | 1112.3 | 1072.4 | 1003.8 | 946.5 | 902.8 | 871.7 | 850.5 | 835.5 | 830.5 | 829.3 | 828.0 |
| 22.5° | 1122.3 | 1074.9 | 995.1 | 929.0 | 877.9 | 846.7 | 825.5 | 815.5 | 811.8 | 813.1 | 813.1 |
| 25° | 1132.3 | 1077.4 | 982.6 | 905.3 | 851.7 | 819.3 | 804.3 | 796.8 | 799.3 | 804.3 | 804.3 |
| 27.5° | 1141.0 | 1076.2 | 965.2 | 880.4 | 820.5 | 790.6 | 779.4 | 780.6 | 786.9 | 795.6 | 796.8 |
| 30° | 1152.2 | 1076.2 | 946.5 | 849.2 | 785.6 | 756.9 | 754.4 | 764.4 | 774.4 | 783.1 | 783.1 |
| 32.5° | 1169.7 | 1083.7 | 931.5 | 818.0 | 749.5 | 727.0 | 738.2 | 751.9 | 763.2 | 771.9 | 774.4 |
| 35° | 1199.6 | 1099.9 | 921.5 | 786.9 | 714.5 | 698.3 | 719.5 | 742.0 | 749.5 | 755.7 | 756.9 |
| 37.5° | 1228.3 | 1114.8 | 909.1 | 756.9 | 678.4 | 672.1 | 700.8 | 724.5 | 725.8 | 729.5 | 729.5 |
| 40° | 1255.7 | 1126.1 | 892.9 | 724.5 | 643.5 | 643.5 | 677.1 | 697.1 | 694.6 | 690.8 | 692.1 |
| 42.5° | 1285.7 | 1132.3 | 874.2 | 694.6 | 614.8 | 614.8 | 642.2 | 659.7 | 658.4 | 663.4 | 667.2 |
| 45° | 1321.8 | 1144.8 | 849.2 | 667.2 | 584.8 | 579.9 | 602.3 | 617.3 | 636.0 | 658.4 | 664.7 |
| 47.5° | 1371.7 | 1162.2 | 829.3 | 637.2 | 559.9 | 542.5 | 551.2 | 582.4 | 603.6 | 622.3 | 624.8 |
| 50° | 1424.1 | 1187.2 | 811.8 | 606.0 | 530.0 | 498.8 | 506.3 | 541.2 | 553.7 | 561.2 | 564.9 |
| 52.5° | 1480.2 | 1207.1 | 796.8 | 579.9 | 498.8 | 453.9 | 463.9 | 497.6 | 506.3 | 512.5 | 513.8 |
| 55° | 1528.8 | 1223.3 | 778.1 | 554.9 | 465.1 | 411.5 | 424.0 | 456.4 | 465.1 | 472.6 | 472.6 |
| 57.5° | 1580.0 | 1238.3 | 765.7 | 533.7 | 429.0 | 376.6 | 385.3 | 417.7 | 430.2 | 432.7 | 436.5 |
| 60° | 1622.4 | 1252.0 | 754.4 | 513.8 | 395.3 | 345.4 | 351.7 | 380.3 | 395.3 | 396.6 | 399.0 |
| 62.5° | 1652.3 | 1260.7 | 748.2 | 488.8 | 361.6 | 314.2 | 319.2 | 347.9 | 365.4 | 369.1 | 370.4 |
| 65° | 1671.0 | 1265.7 | 737.0 | 456.4 | 333.0 | 288.1 | 288.1 | 316.7 | 334.2 | 342.9 | 345.4 |
| 67.5° | 1662.3 | 1257.0 | 707.1 | 419.0 | 306.8 | 261.9 | 260.6 | 289.3 | 304.3 | 309.3 | 310.5 |
| 70° | *1594.9* | *1205.9* | *646.0* | *372.9* | *279.3* | *238.2* | *235.7* | *261.9* | *275.6* | *264.4* | *265.6* |
| 72.5° | 1457.8 | 1089.9 | 562.4 | 326.7 | 250.6 | 215.7 | 213.2 | 235.7 | 236.9 | 236.9 | 235.7 |
| 75° | 1228.3 | 890.4 | 448.9 | 278.1 | 220.7 | 192.0 | 193.3 | 210.7 | 212.0 | 218.2 | 214.5 |
| 77.5° | 941.5 | 659.7 | 350.4 | 222.0 | 187.1 | 170.8 | 177.1 | 183.3 | 192.0 | 200.8 | 192.0 |
| 80° | 684.6 | 455.2 | 243.2 | 165.9 | 144.7 | 144.7 | 147.1 | 153.4 | 165.9 | 174.6 | 165.9 |
| 82.5° | 293.0 | 200.8 | 112.2 | 82.3 | 71.1 | 69.8 | 71.1 | 71.1 | 87.3 | 89.8 | 78.6 |
| 85° | 22.4 | 18.7 | 13.7 | 13.7 | 11.2 | 6.2 | 6.2 | 5.0 | 3.7 | 3.7 | 3.7 |
| 87.5° | 5.0 | 3.7 | 3.7 | 3.7 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 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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Peachtree City, GA 30269

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

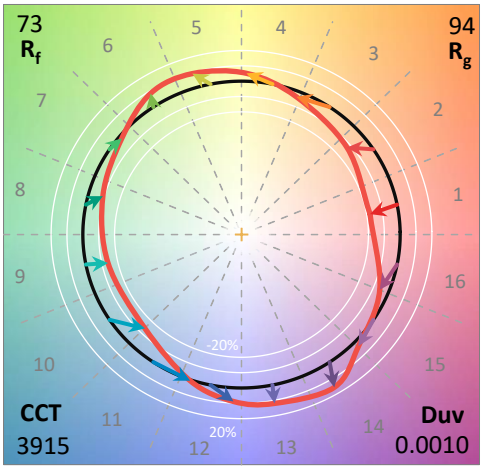
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-157-5 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/20/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Streetworks |
| Catalog Number: | **MEM2-HTN-SA-40-740-U-5WQ-2** |
| Description: | Epic Modern Light Square 40W 5WQ Optic and Flare Trim |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3915 |
| CIE u': | 0.2262 |
| CIE v': | 0.5044 |
| Duv: | 0.0010 |
| CIE x: | 0.3850 |
| CIE y: | 0.3816 |
| CIE z: | 0.2334 |
| Peak Wavelength (nm): | 449 |
| Dominant Wavelength (nm): | 578 |
| Purity: | 30.05482 |
| Rf: | 73.2 |
| Rg: | 93.9 |

| | |
|---|---|
| CRI (Ra): | 71.0 |
| R1: | 67.6 |
| R2: | 78.3 |
| R3: | 87.1 |
| R4: | 69.7 |
| R5: | 67.4 |
| R6: | 69.3 |
| R7: | 79.7 |
| R8: | 48.7 |
| R9: | -38.4 |
| R10: | 48.9 |
| R11: | 65.3 |
| R12: | 40.4 |
| R13: | 69.3 |
| R14: | 92.6 |
| R15: | 59.9 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 21M |
| Operation Time: | 1H 21M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2407-157-5

| 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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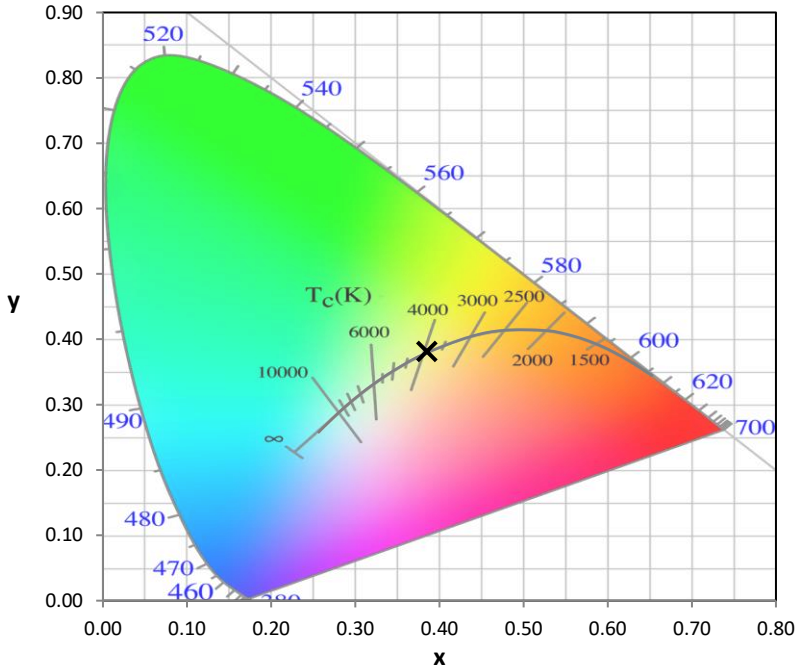
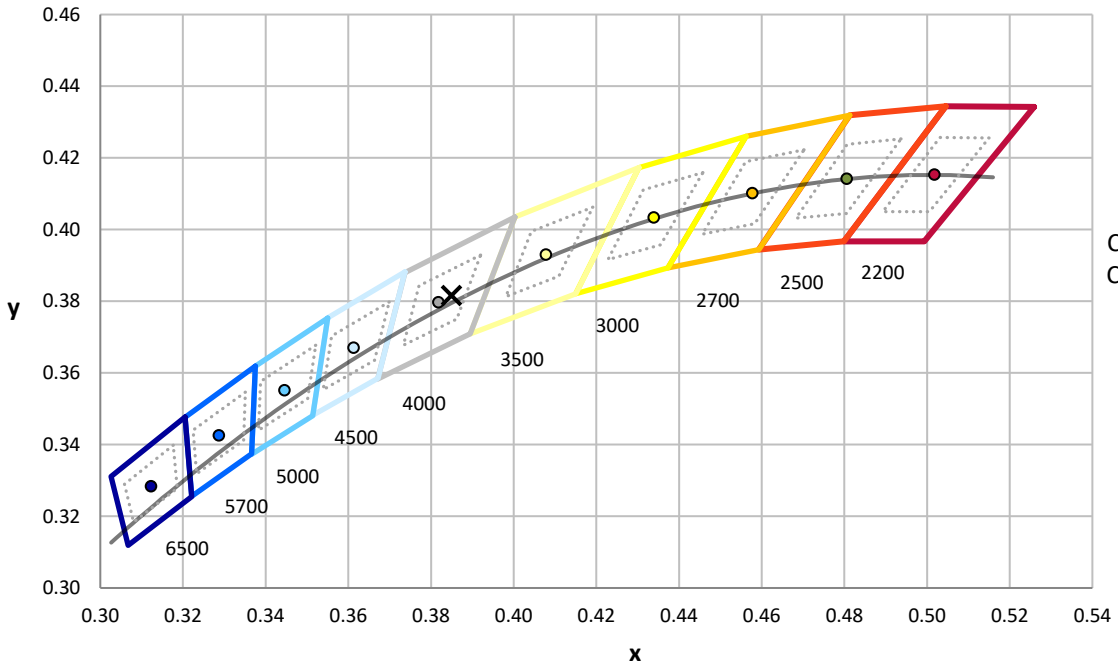
## CIE 1931 Chromaticity Diagram




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




CCT = 3915K
CIE x = 0.3850
CIE y = 0.3816
Duv = 0.0010

Point lies inside the ANSI 4000K 4-step quadrangle

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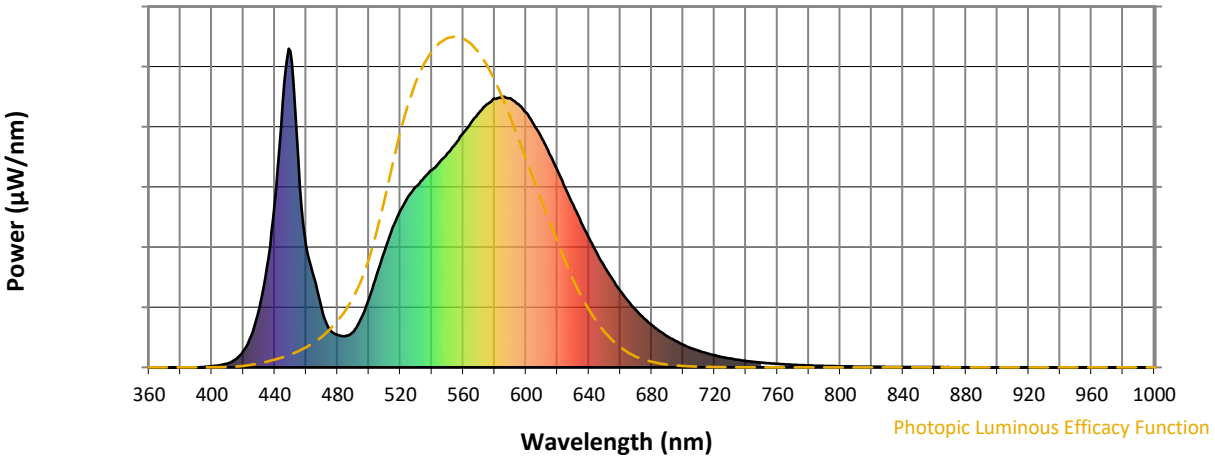
## Photopic Flux vs. Wavelength




## 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

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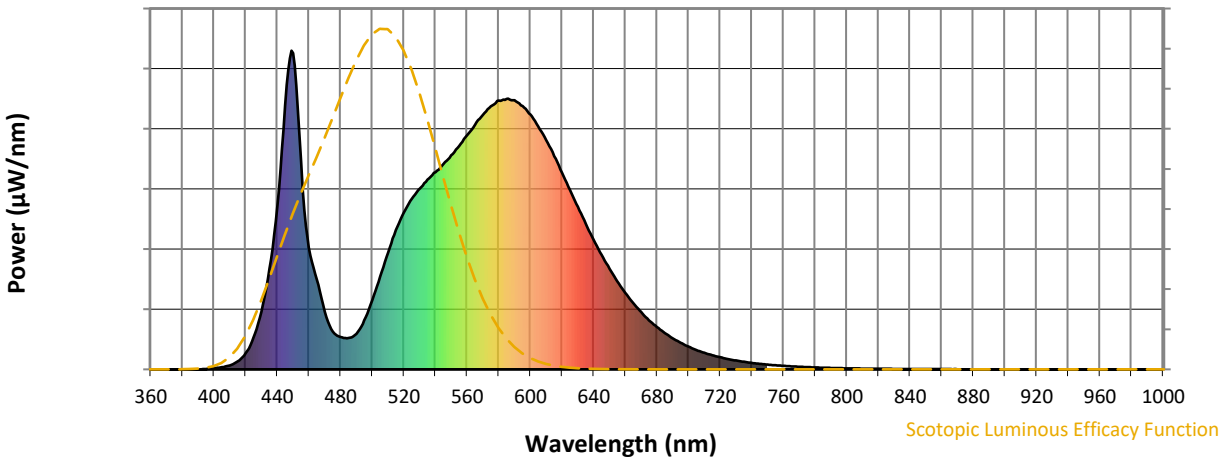
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.49**

| 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

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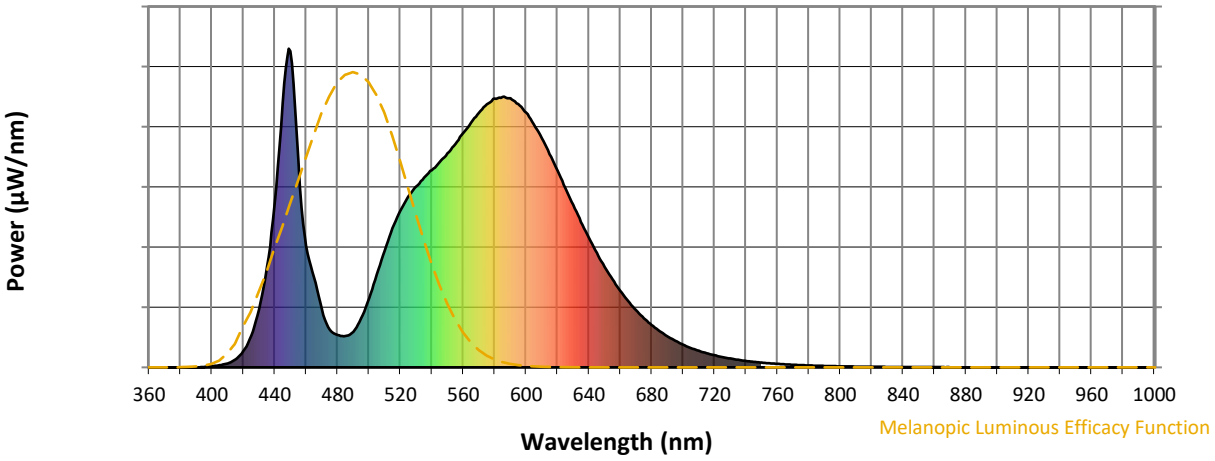
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.88**

| 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

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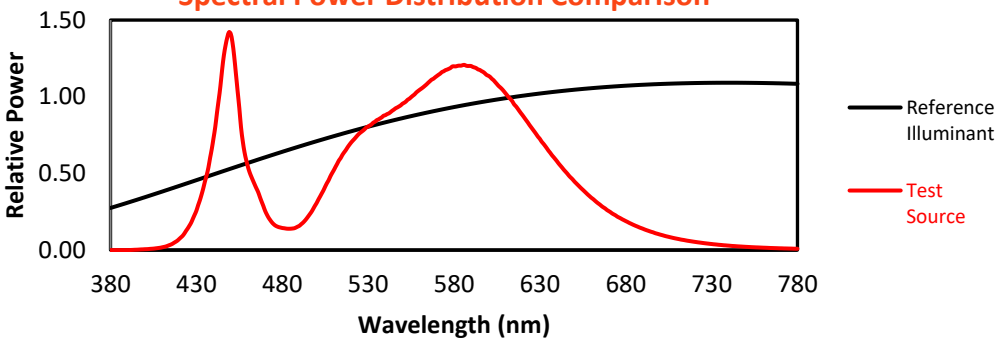
# TM-30-18

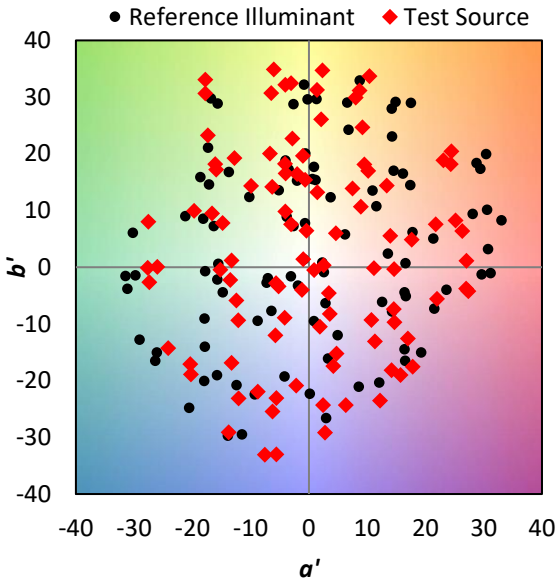
## Summary

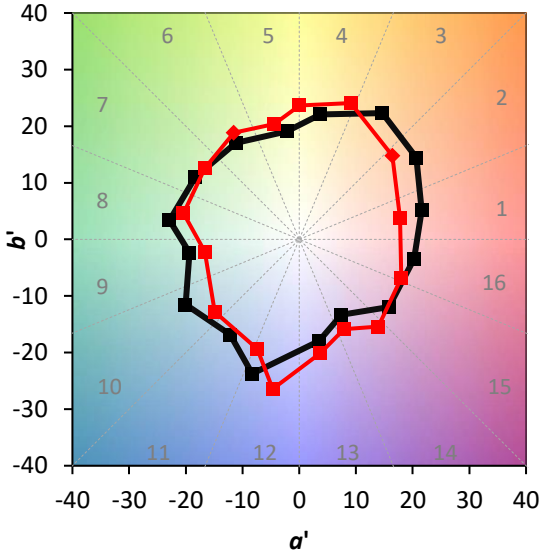
$R_f$ = 73.2
$R_g$ = 93.9
CIE $R_a$ = 71.0
$R_9$ = -38.4

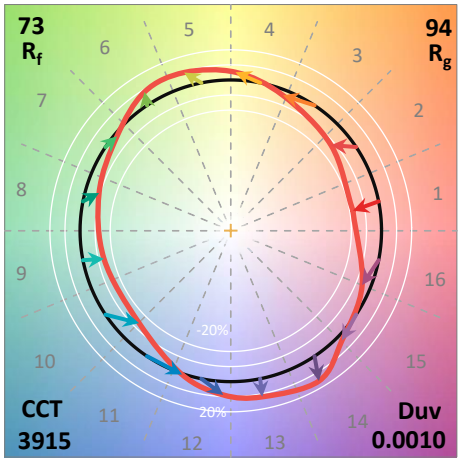
## Spectral Power Distribution Comparison

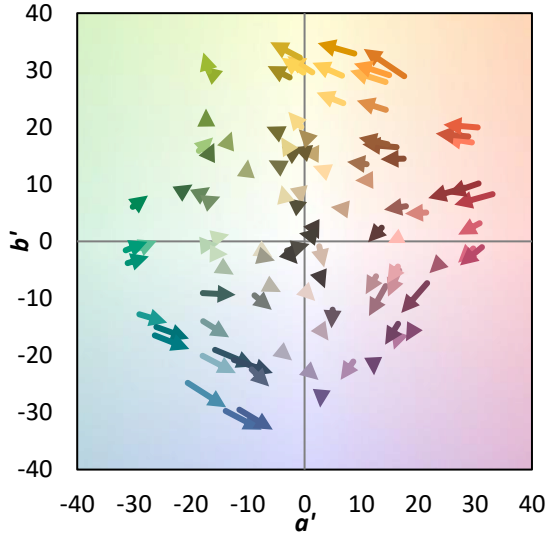



## Color Vector Graphics



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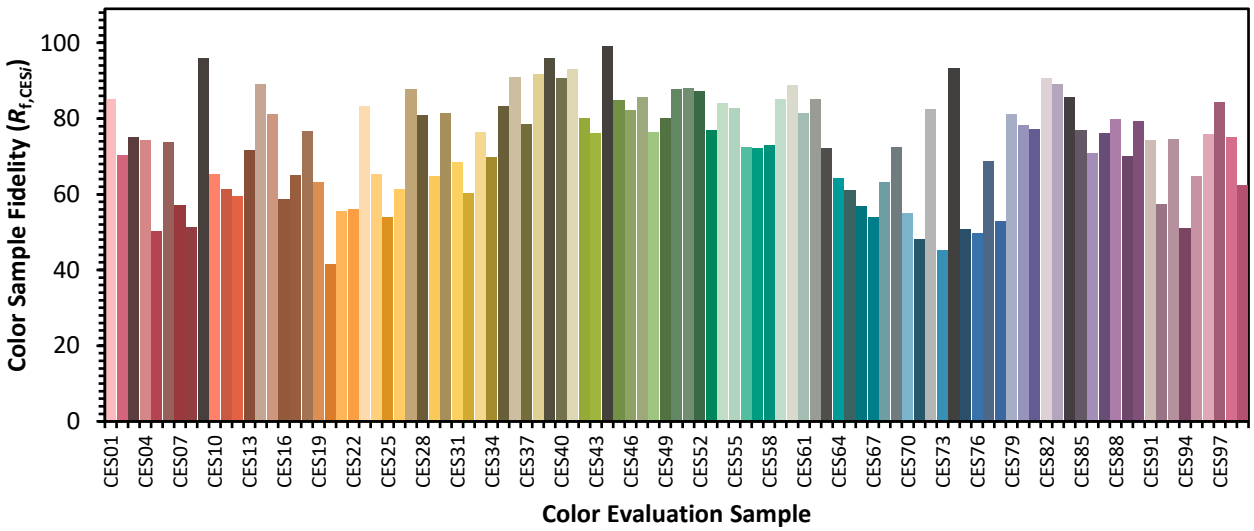
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 61 | CES51 = 88 | CES76 = 50 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 69 |
| CES03 = 30 | CES28 = 81 | CES53 = 77 | CES78 = 53 |
| CES04 = 70 | CES29 = 65 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 81 | CES55 = 83 | CES80 = 78 |
| CES06 = 50 | CES31 = 69 | CES56 = 73 | CES81 = 77 |
| CES07 = 40 | CES32 = 60 | CES57 = 72 | CES82 = 91 |
| CES08 = 39 | CES33 = 76 | CES58 = 73 | CES83 = 89 |
| CES09 = 29 | CES34 = 70 | CES59 = 85 | CES84 = 86 |
| CES10 = 74 | CES35 = 83 | CES60 = 89 | CES85 = 77 |
| CES11 = 57 | CES36 = 91 | CES61 = 81 | CES86 = 71 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 76 |
| CES13 = 42 | CES38 = 92 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 64 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 61 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 57 | CES91 = 74 |
| CES17 = 49 | CES42 = 80 | CES67 = 54 | CES92 = 57 |
| CES18 = 56 | CES43 = 76 | CES68 = 63 | CES93 = 74 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 51 |
| CES20 = 65 | CES45 = 85 | CES70 = 55 | CES95 = 65 |
| CES21 = 86 | CES46 = 82 | CES71 = 48 | CES96 = 76 |
| CES22 = 78 | CES47 = 86 | CES72 = 83 | CES97 = 84 |
| CES23 = 92 | CES48 = 77 | CES73 = 45 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 62 |
| CES25 = 72 | CES50 = 88 | CES75 = 51 | |



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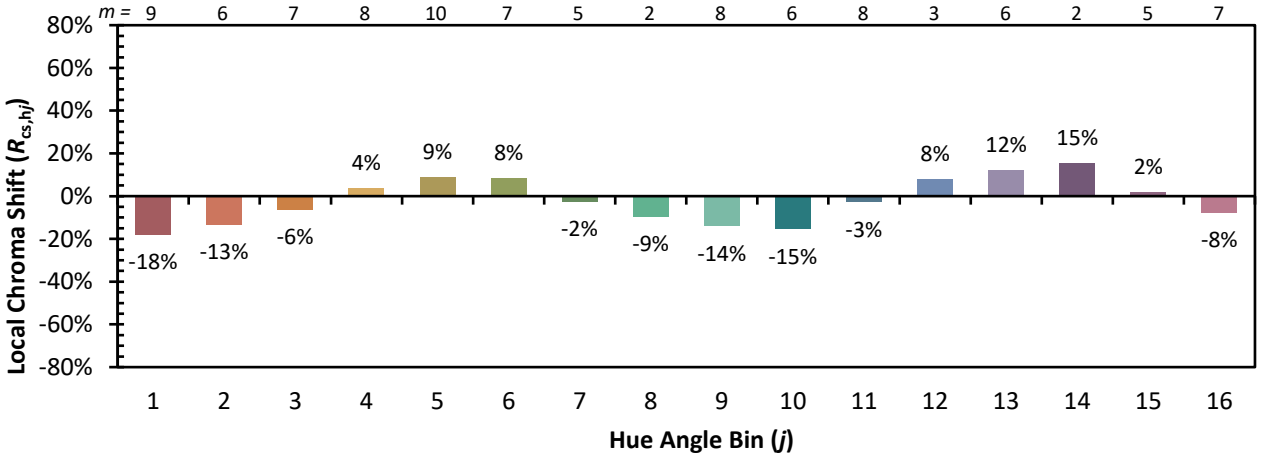
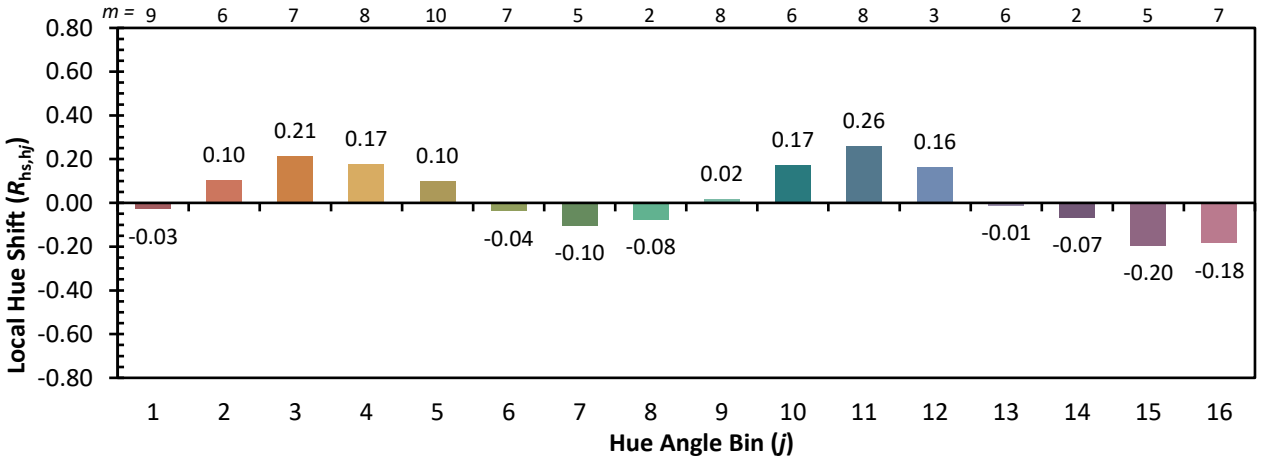
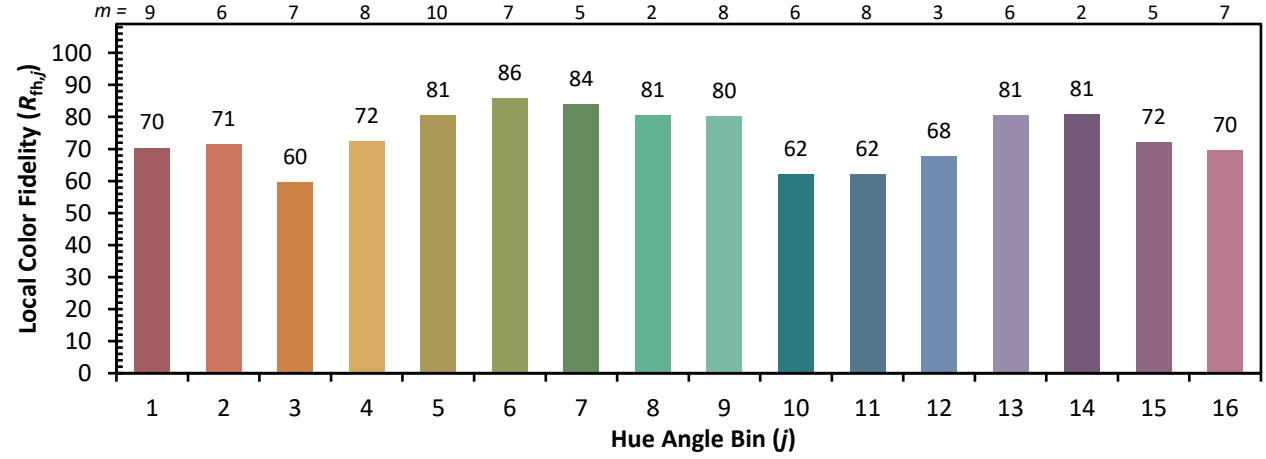
## Color Rendition by Hue-Angle Bin



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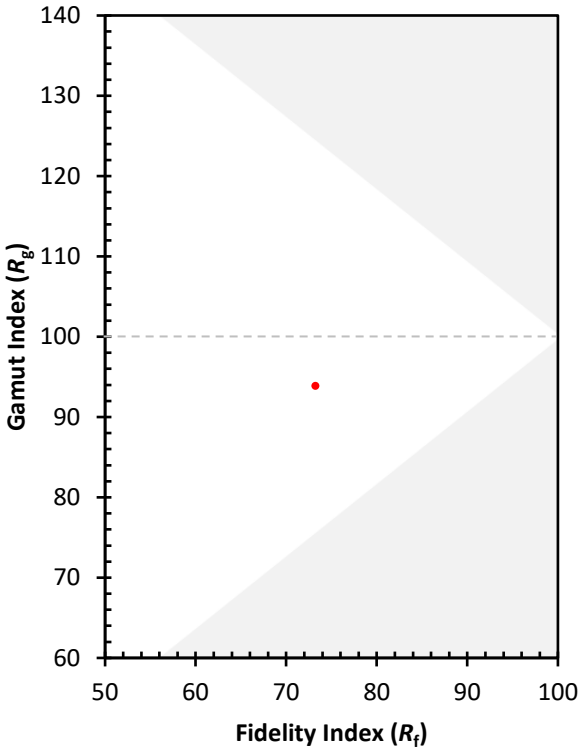
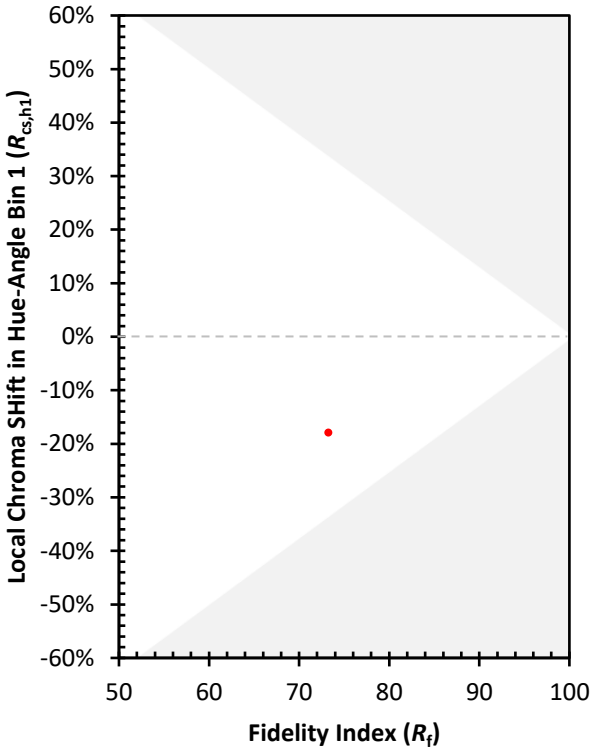
## Measure Comparisons




(END OF REPORT)