

Signify Classified - Internal  
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: P543209

Luminaire Tested: **TT-D9-750-U-DL**

Issue Date: 6/22/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P543209  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2106-277-4)  
Test Lab: INNOVATION CENTER  
Issue Date: 6/22/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: TT-D9-750-U-DL  
Description: TOPTIER LED PARKING GARAGE LUMINAIRE  
5000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17933 lumens  
Efficiency: N/A  
Efficacy: 100.7 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

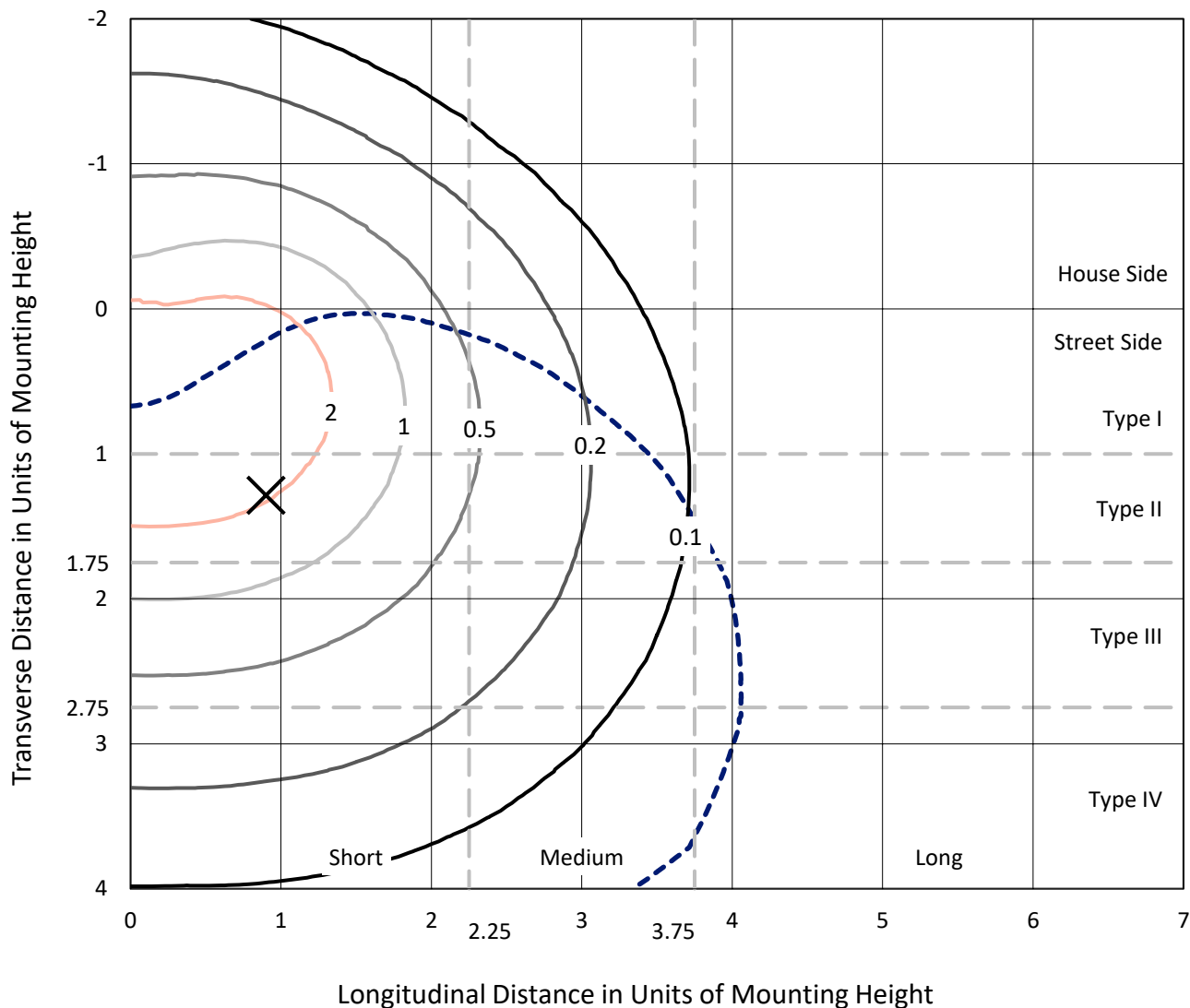
Input Watts (W): 178  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P543209  
 CATALOG NUMBER: TT-D9-750-U-DL

### Iso-Footcandle Lines of Horizontal Illumination

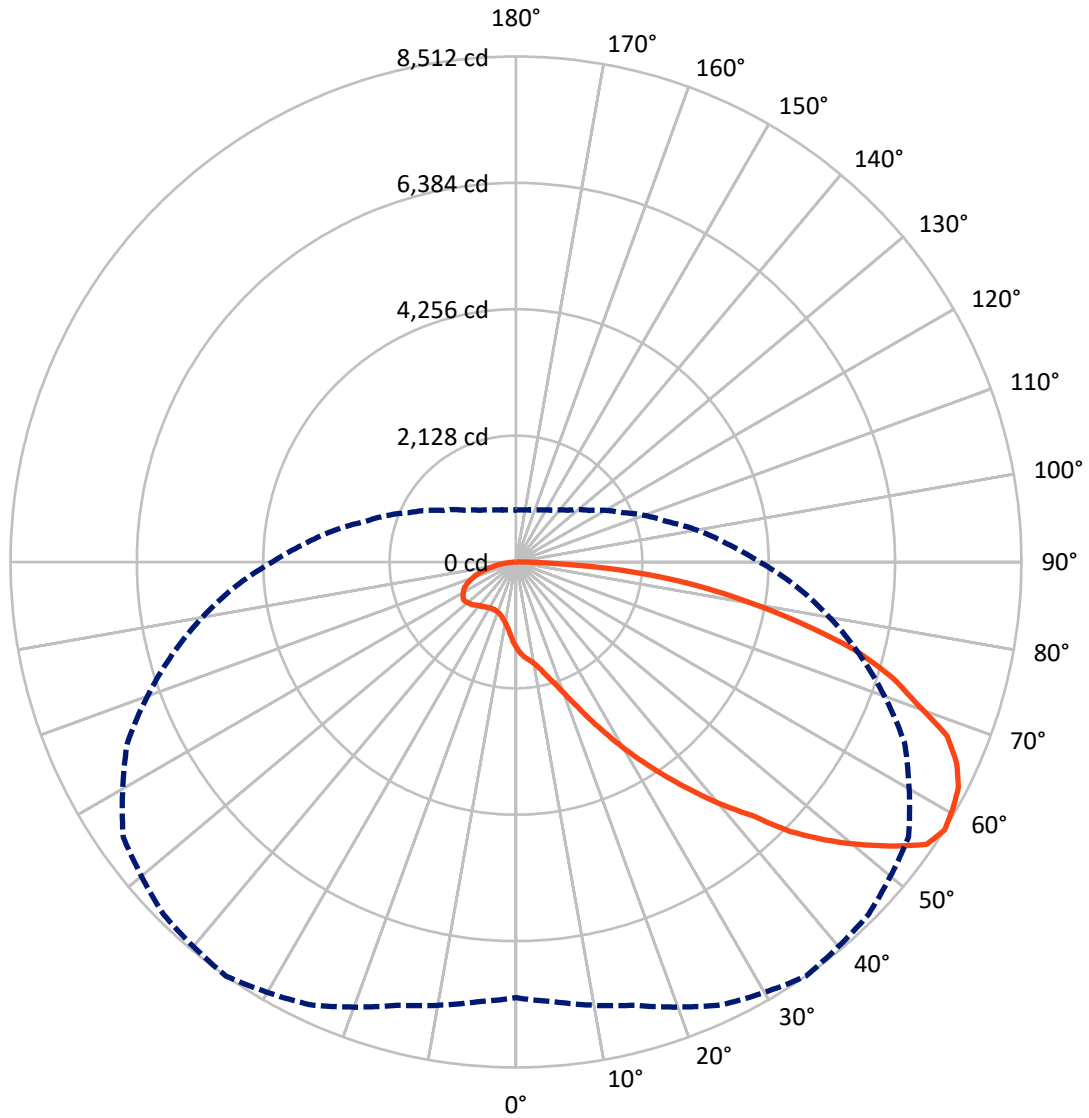
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4 fc  
 Type IV - Short - N/A

REPORT NUMBER: P543209  
CATALOG NUMBER: TT-D9-750-U-DL

### Luminous Intensity Polar Plot



— Vertical Plane Through 35-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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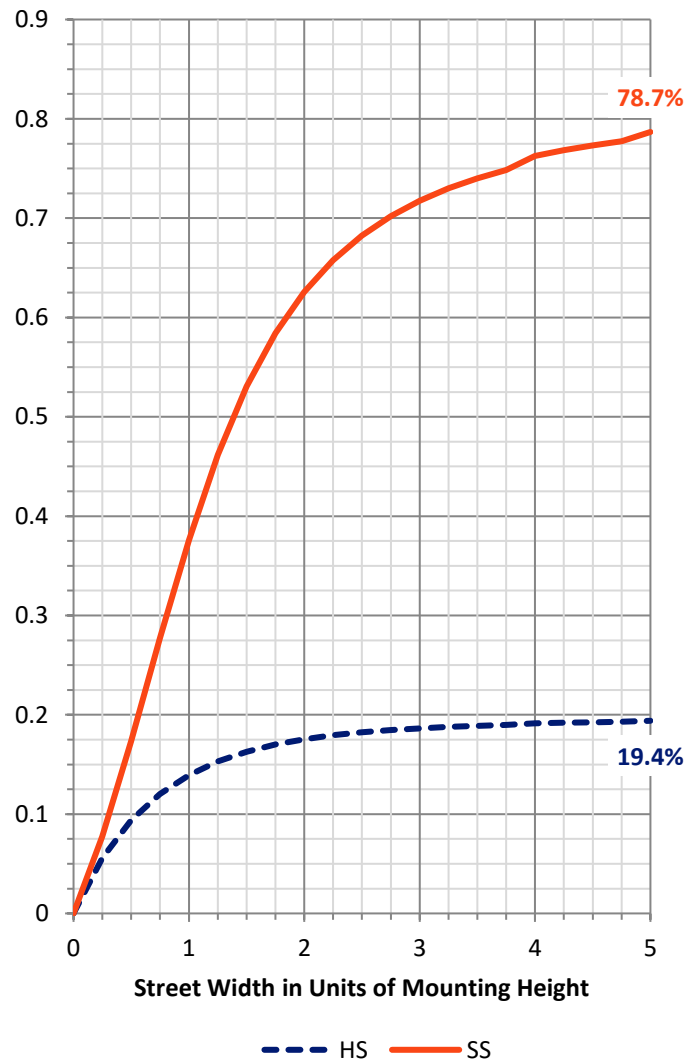
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3511.7   | 0.0    | 3511.7  |
|                    | % Fixture | 19.6     | 0.0    | 19.6    |
| <b>Street Side</b> | Lumens    | 14421.3  | 0.0    | 14421.3 |
|                    | % Fixture | 80.4     | 0.0    | 80.4    |
| <b>Total</b>       | Lumens    | 17933.0  | 0.0    | 17933.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 134.2   | 0.7       |
| 10°-20°   | 423.1   | 2.4       |
| 20°-30°   | 894.7   | 5.0       |
| 30°-40°   | 1676.3  | 9.3       |
| 40°-50°   | 2790.0  | 15.6      |
| 50°-60°   | 3937.7  | 22.0      |
| 60°-70°   | 4142.8  | 23.1      |
| 70°-80°   | 3034.9  | 16.9      |
| 80°-90°   | 899.3   | 5.0       |
| 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°    | 17933.0 | 100.0     |
| 0°-180°   | 17933.0 | 100.0     |

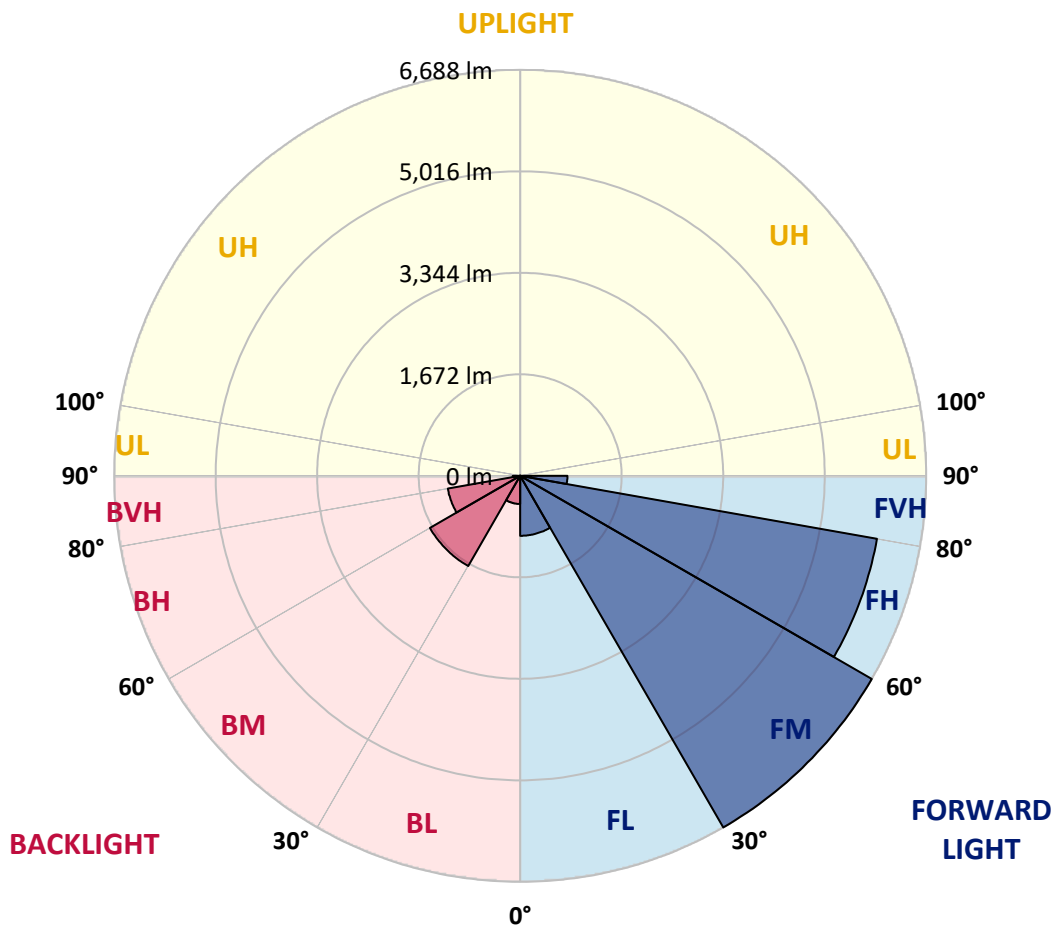


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 988.0  | 5.5       |                         |      |         |
| FM (30°-60°)   | 6688.0 | 37.3      |                         |      |         |
| FH (60°-80°)   | 5967.3 | 33.3      |                         |      | G3/7500 |
| FVH (80°-90°)  | 778.0  | 4.3       |                         |      | G5      |
| BL (0°-30°)    | 464.0  | 2.6       | B1/500                  |      |         |
| BM (30°-60°)   | 1716.0 | 9.6       | B2/2500                 |      |         |
| BH (60°-80°)   | 1210.4 | 6.7       | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 121.3  | 0.7       |                         |      | G2/225  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G5**  
 Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 |
| 2.5°  | 1575.7 | 1568.0 | 1561.3 | 1550.3 | 1542.5 | 1540.3 | 1525.9 | 1508.2 | 1483.8 | 1462.8 | 1451.7 |
| 5°    | 1658.8 | 1657.7 | 1654.4 | 1641.1 | 1616.7 | 1582.4 | 1550.3 | 1513.7 | 1473.9 | 1434.0 | 1415.2 |
| 7.5°  | 1737.4 | 1729.7 | 1725.2 | 1706.4 | 1671.0 | 1633.3 | 1584.6 | 1530.3 | 1472.8 | 1416.3 | 1387.5 |
| 10°   | 1836.0 | 1824.9 | 1817.1 | 1780.6 | 1744.1 | 1690.9 | 1626.7 | 1556.9 | 1488.3 | 1417.4 | 1383.1 |
| 12.5° | 1962.2 | 1953.3 | 1921.2 | 1903.5 | 1857.0 | 1796.1 | 1715.3 | 1631.1 | 1542.5 | 1451.7 | 1407.4 |
| 15°   | 2097.3 | 2099.5 | 2087.3 | 2041.9 | 2004.3 | 1931.2 | 1844.8 | 1739.6 | 1620.0 | 1510.4 | 1455.0 |
| 17.5° | 2277.8 | 2274.5 | 2251.2 | 2221.3 | 2163.7 | 2089.5 | 1983.2 | 1871.4 | 1731.9 | 1587.9 | 1524.8 |
| 20°   | 2490.4 | 2479.3 | 2458.3 | 2417.3 | 2383.0 | 2295.5 | 2174.8 | 2035.3 | 1869.2 | 1698.7 | 1613.4 |
| 22.5° | 2760.6 | 2736.2 | 2722.9 | 2686.4 | 2644.3 | 2562.4 | 2433.9 | 2249.0 | 2054.1 | 1842.6 | 1733.0 |
| 25°   | 3025.2 | 3038.5 | 3031.9 | 3010.8 | 2957.7 | 2856.9 | 2720.7 | 2517.0 | 2250.1 | 2003.2 | 1879.1 |
| 27.5° | 3357.4 | 3363.0 | 3365.2 | 3356.3 | 3304.3 | 3212.4 | 3074.0 | 2804.9 | 2507.0 | 2200.3 | 2036.4 |
| 30°   | 3702.9 | 3690.7 | 3706.2 | 3710.7 | 3685.2 | 3578.9 | 3409.5 | 3114.9 | 2758.4 | 2391.8 | 2208.0 |
| 32.5° | 4046.2 | 4059.5 | 4091.6 | 4071.7 | 4076.1 | 3955.4 | 3770.5 | 3423.9 | 3026.3 | 2594.5 | 2400.7 |
| 35°   | 4416.1 | 4433.8 | 4455.9 | 4493.6 | 4491.3 | 4395.0 | 4128.1 | 3780.4 | 3316.5 | 2828.1 | 2576.8 |
| 37.5° | 4794.8 | 4790.3 | 4823.5 | 4909.9 | 4926.5 | 4834.6 | 4555.6 | 4154.7 | 3621.0 | 3064.0 | 2783.8 |
| 40°   | 5153.5 | 5194.5 | 5258.7 | 5317.4 | 5388.3 | 5257.6 | 4986.3 | 4532.3 | 3952.1 | 3308.7 | 2978.7 |
| 42.5° | 5572.1 | 5588.7 | 5683.9 | 5815.7 | 5834.5 | 5733.8 | 5438.1 | 4967.5 | 4281.0 | 3541.3 | 3191.3 |
| 45°   | 6016.1 | 6038.3 | 6128.0 | 6318.5 | 6472.4 | 6407.0 | 6006.2 | 5447.0 | 4688.5 | 3858.0 | 3426.1 |
| 47.5° | 6399.3 | 6464.6 | 6608.6 | 6828.9 | 6992.8 | 6958.5 | 6574.2 | 5917.6 | 5078.2 | 4123.7 | 3653.1 |
| 50°   | 6740.3 | 6819.0 | 7015.0 | 7332.8 | 7478.9 | 7433.5 | 7059.3 | 6382.7 | 5362.8 | 4354.0 | 3818.1 |
| 52.5° | 7085.8 | 7195.5 | 7374.8 | 7722.6 | 7950.7 | 7968.4 | 7550.9 | 6738.1 | 5692.8 | 4595.4 | 3998.6 |
| 55°   | 7273.0 | 7352.7 | 7652.8 | 8074.7 | 8396.9 | 8405.8 | 7934.1 | 7071.4 | 5920.9 | 4701.7 | 4083.8 |
| 57.5° | 7338.3 | 7434.6 | 7727.0 | 8226.4 | 8512.1 | 8393.6 | 8072.5 | 7222.0 | 5985.1 | 4740.5 | 4101.6 |
| 60°   | 7247.5 | 7343.8 | 7677.2 | 8209.8 | 8451.2 | 8508.8 | 8011.6 | 7220.9 | 5953.0 | 4690.7 | 4047.3 |
| 62.5° | 7117.9 | 7240.9 | 7564.2 | 8083.5 | 8362.6 | 8394.7 | 7932.9 | 7139.0 | 5905.4 | 4605.4 | 3967.6 |
| 65°   | 6789.1 | 6863.3 | 7336.1 | 7723.7 | 8154.4 | 8115.7 | 7752.4 | 6853.3 | 5737.1 | 4385.0 | 3772.7 |
| 67.5° | 6461.3 | 6538.8 | 6886.5 | 7418.0 | 7835.5 | 7793.4 | 7435.8 | 6576.5 | 5413.8 | 4180.2 | 3568.9 |
| 70°   | 5908.7 | 5958.6 | 6438.0 | 6851.1 | 7163.3 | 7318.4 | 6856.6 | 6114.7 | 5074.9 | 3836.9 | 3258.9 |
| 72.5° | 5324.1 | 5402.7 | 5746.0 | 6264.2 | 6617.4 | 6567.6 | 6336.2 | 5546.6 | 4522.4 | 3438.3 | 2937.8 |
| 75°   | 4576.6 | 4651.9 | 5031.7 | 5532.2 | 5875.5 | 5835.7 | 5572.1 | 4871.2 | 4019.6 | 2975.4 | 2543.5 |
| 77.5° | 3870.1 | 3846.9 | 4182.4 | 4562.2 | 4874.5 | 4966.4 | 4669.6 | 4119.3 | 3315.4 | 2445.0 | 2070.7 |
| 80°   | 2973.2 | 3061.8 | 3272.2 | 3625.4 | 3861.3 | 3913.3 | 3684.1 | 3260.0 | 2648.7 | 1913.5 | 1587.9 |
| 82.5° | 2094.0 | 2140.5 | 2397.4 | 2620.0 | 2915.6 | 2896.8 | 2738.4 | 2367.5 | 1923.4 | 1343.2 | 1094.0 |
| 85°   | 1142.8 | 1152.7 | 1385.3 | 1541.4 | 1769.5 | 1797.2 | 1685.4 | 1431.8 | 1100.7 | 764.1  | 563.6  |
| 87.5° | 200.4  | 197.1  | 285.7  | 418.6  | 531.5  | 571.4  | 475.0  | 372.1  | 150.6  | 89.7   | 46.5   |
| 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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 CATALOG NUMBER: TT-D9-750-U-DL

**CANDELA DISTRIBUTION (continued):**

|       | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 | 1447.3 |
| 2.5°  | 1439.5 | 1417.4 | 1396.3 | 1376.4 | 1357.6 | 1342.1 | 1335.4 | 1329.9 | 1328.8 | 1318.8 |
| 5°    | 1391.9 | 1356.5 | 1317.7 | 1282.3 | 1250.2 | 1215.9 | 1188.2 | 1179.3 | 1178.2 | 1183.7 |
| 7.5°  | 1360.9 | 1306.7 | 1253.5 | 1211.4 | 1163.8 | 1118.4 | 1077.4 | 1052.0 | 1045.3 | 1043.1 |
| 10°   | 1349.8 | 1283.4 | 1219.2 | 1154.9 | 1101.8 | 1046.4 | 996.6  | 965.6  | 947.9  | 943.4  |
| 12.5° | 1364.2 | 1280.1 | 1200.4 | 1125.1 | 1053.1 | 992.2  | 935.7  | 896.9  | 877.0  | 870.4  |
| 15°   | 1403.0 | 1294.5 | 1193.7 | 1102.9 | 1024.3 | 947.9  | 892.5  | 842.7  | 819.4  | 816.1  |
| 17.5° | 1453.9 | 1326.6 | 1198.1 | 1091.8 | 998.8  | 918.0  | 853.8  | 801.7  | 772.9  | 768.5  |
| 20°   | 1527.0 | 1367.6 | 1219.2 | 1092.9 | 987.7  | 896.9  | 825.0  | 769.6  | 738.6  | 735.3  |
| 22.5° | 1630.0 | 1432.9 | 1253.5 | 1107.3 | 987.7  | 884.8  | 807.2  | 749.7  | 717.6  | 714.2  |
| 25°   | 1747.4 | 1508.2 | 1300.0 | 1127.3 | 991.1  | 882.5  | 797.3  | 736.4  | 704.3  | 700.9  |
| 27.5° | 1882.5 | 1600.1 | 1349.8 | 1152.7 | 1003.2 | 884.8  | 794.0  | 733.1  | 702.1  | 697.6  |
| 30°   | 2034.2 | 1690.9 | 1404.1 | 1180.4 | 1018.7 | 889.2  | 795.1  | 731.9  | 702.1  | 697.6  |
| 32.5° | 2185.9 | 1790.6 | 1465.0 | 1217.0 | 1036.5 | 901.4  | 801.7  | 739.7  | 708.7  | 705.4  |
| 35°   | 2345.3 | 1900.2 | 1532.6 | 1254.6 | 1061.9 | 918.0  | 812.8  | 748.6  | 717.6  | 714.2  |
| 37.5° | 2510.3 | 2010.9 | 1602.3 | 1301.1 | 1088.5 | 934.6  | 828.3  | 764.1  | 734.2  | 730.8  |
| 40°   | 2682.0 | 2125.0 | 1676.5 | 1348.7 | 1114.0 | 956.7  | 847.1  | 784.0  | 753.0  | 749.7  |
| 42.5° | 2830.3 | 2228.0 | 1745.2 | 1389.7 | 1147.2 | 977.8  | 871.5  | 805.0  | 776.2  | 772.9  |
| 45°   | 3039.6 | 2345.3 | 1816.0 | 1440.6 | 1187.1 | 1015.4 | 900.3  | 838.3  | 811.7  | 805.0  |
| 47.5° | 3214.6 | 2464.9 | 1888.0 | 1489.4 | 1220.3 | 1040.9 | 927.9  | 864.8  | 837.1  | 832.7  |
| 50°   | 3357.4 | 2540.2 | 1944.5 | 1514.8 | 1238.0 | 1057.5 | 950.1  | 885.9  | 861.5  | 853.8  |
| 52.5° | 3508.0 | 2625.5 | 1974.4 | 1544.7 | 1266.8 | 1080.8 | 965.6  | 910.2  | 883.7  | 875.9  |
| 55°   | 3556.8 | 2629.9 | 1996.5 | 1550.3 | 1262.4 | 1086.3 | 975.6  | 911.3  | 890.3  | 882.5  |
| 57.5° | 3560.1 | 2628.8 | 1966.6 | 1512.6 | 1231.4 | 1061.9 | 965.6  | 904.7  | 880.3  | 873.7  |
| 60°   | 3498.1 | 2563.5 | 1906.8 | 1467.2 | 1198.1 | 1027.6 | 937.9  | 879.2  | 860.4  | 853.8  |
| 62.5° | 3420.6 | 2503.7 | 1832.6 | 1405.2 | 1150.5 | 993.3  | 905.8  | 860.4  | 834.9  | 827.2  |
| 65°   | 3224.6 | 2346.4 | 1719.7 | 1321.1 | 1081.9 | 941.2  | 854.9  | 810.6  | 790.6  | 785.1  |
| 67.5° | 3050.7 | 2178.1 | 1606.7 | 1233.6 | 1004.4 | 877.0  | 798.4  | 759.6  | 744.1  | 740.8  |
| 70°   | 2768.3 | 1995.4 | 1431.8 | 1097.4 | 904.7  | 781.8  | 723.1  | 694.3  | 675.5  | 668.8  |
| 72.5° | 2481.5 | 1751.8 | 1262.4 | 966.7  | 784.0  | 703.2  | 644.5  | 613.5  | 603.5  | 598.0  |
| 75°   | 2107.3 | 1472.8 | 1064.1 | 819.4  | 673.3  | 588.0  | 547.0  | 523.8  | 511.6  | 510.5  |
| 77.5° | 1724.1 | 1179.3 | 857.1  | 648.9  | 532.6  | 473.9  | 445.1  | 423.0  | 420.8  | 425.2  |
| 80°   | 1321.1 | 890.3  | 636.7  | 486.1  | 394.2  | 357.7  | 342.2  | 327.8  | 325.6  | 322.2  |
| 82.5° | 878.1  | 590.2  | 403.1  | 307.8  | 264.7  | 243.6  | 239.2  | 229.2  | 227.0  | 224.8  |
| 85°   | 428.5  | 283.5  | 194.9  | 152.8  | 140.6  | 130.7  | 129.6  | 134.0  | 132.9  | 129.6  |
| 87.5° | 44.3   | 36.5   | 35.4   | 27.7   | 25.5   | 23.3   | 23.3   | 21.0   | 25.5   | 18.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2006-844-1

Luminaire Tested: TT-D4-750-U-WQ

Test Date: 11/06/2020

Data applicable to product families TT-x-750 and TTN-x-750

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2006-844-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 11/06/2020  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **TT-D4-750-U-WQ**  
 Description: MCGRAW EDISON

DISTRIBUTION

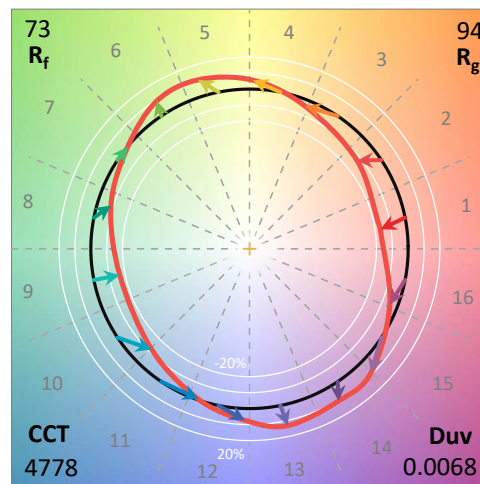
**Spectral Parameters**

CCT (K): 4778  
 CIE u': 0.2092  
 CIE v': 0.4955  
 Duv: 0.0068  
 CIE x: 0.3535  
 CIE y: 0.3721  
 CIE z: 0.2744  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 570  
 Purity: 17.8  
 Rf: 73.3  
 Rg: 94.5

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.0 |      |       |
| R1:       | 67.7 | R9:  | -28.7 |
| R2:       | 75.2 | R10: | 41.2  |
| R3:       | 80.8 | R11: | 67.2  |
| R4:       | 71.5 | R12: | 35.9  |
| R5:       | 67.8 | R13: | 68.5  |
| R6:       | 65.6 | R14: | 89.2  |
| R7:       | 82.2 |      |       |
| R8:       | 57.2 |      |       |

**Test Conditions**

Stabilization Time: 62M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/45%  
 Sphere Temperature (°C): 24.7

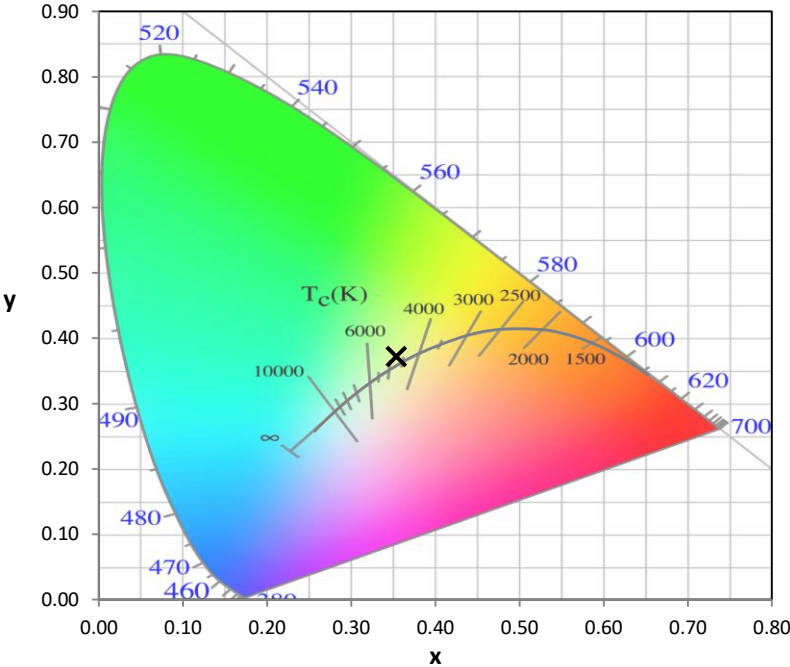


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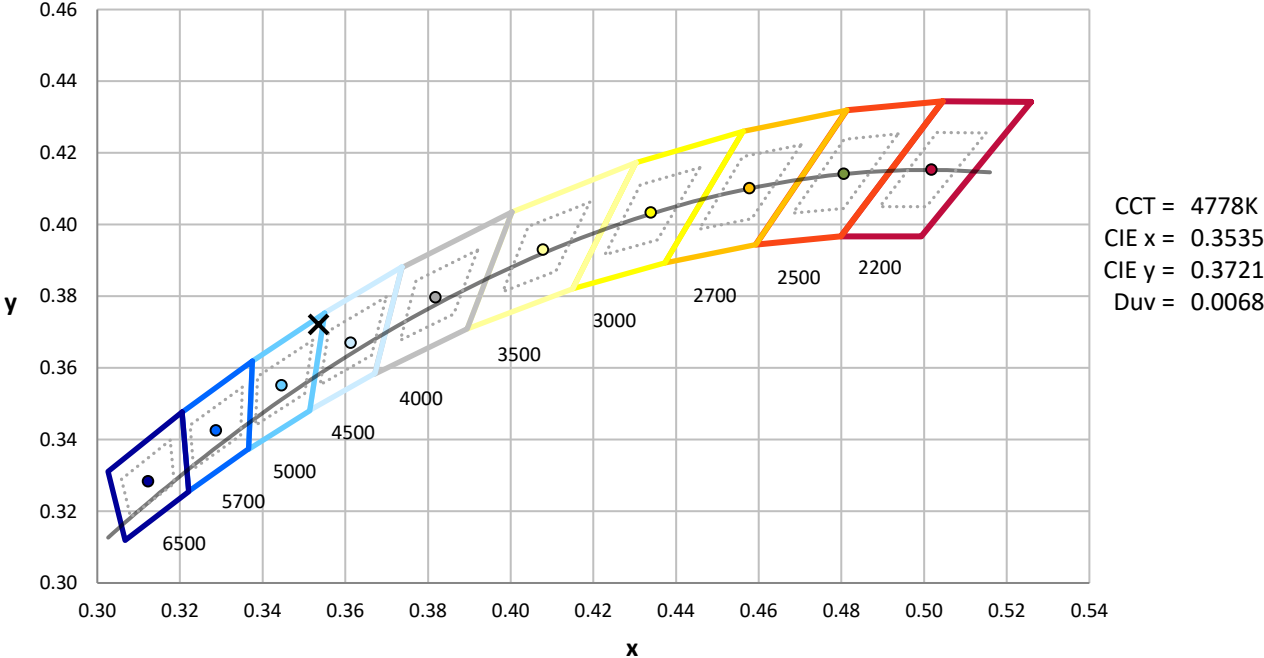
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 7/29/2020        | 1/29/2021            |
| Power Meter                    | IN0071                | 12/3/2019        | 12/3/2020            |
| AC Power Source                | IN0063                | 12/3/2019        | 12/3/2020            |
| DC Power Source                | IN0208                | 12/3/2019        | 12/3/2020            |
| Sphere Thermometer             | IN0085                | 12/3/2019        | 12/3/2020            |
| Room Thermometer               | IN0046                | 12/3/2019        | 12/3/2020            |

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**CIE 1931 Chromaticity Diagram**



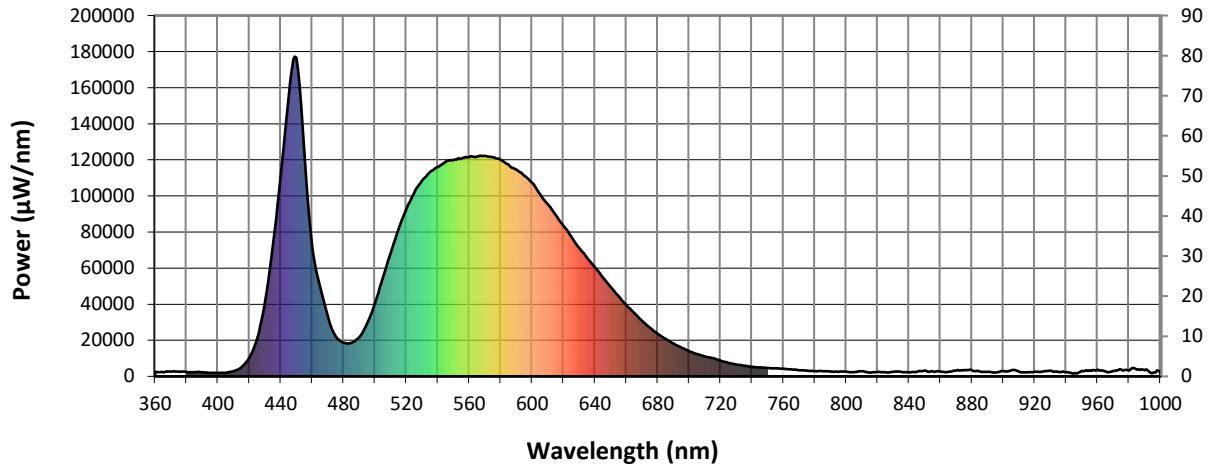
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2006-844-1

**Photopic Flux vs. Wavelength**

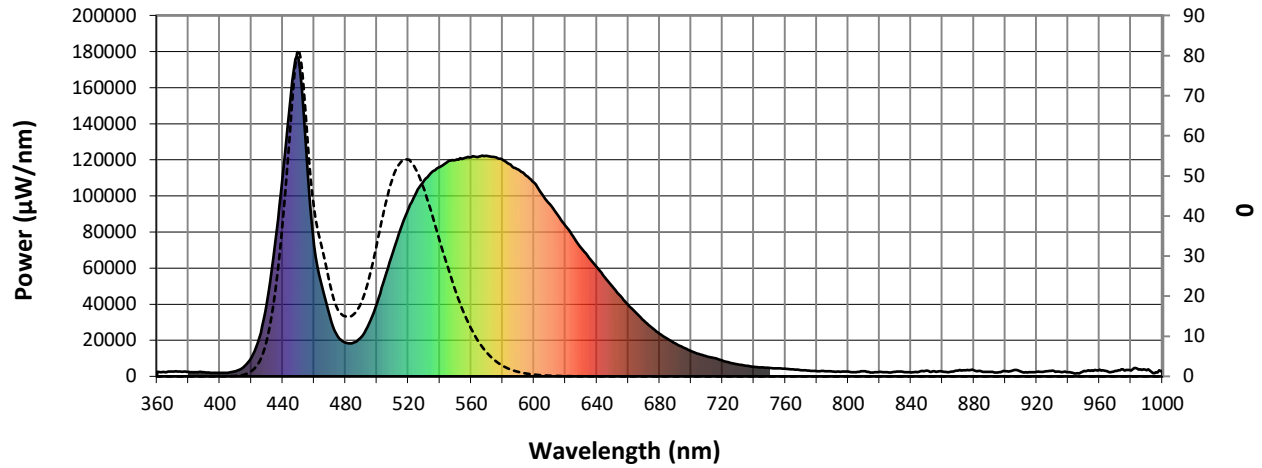


#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2529          | 0.0           | 490    | 21819         | 3.1           | 620    | 83437         | 21.7          | 750    | 4608          | 0.0           | 880    | 3335          | 0.0           |
| 365    | 2361          | 0.0           | 495    | 29270         | 5.3           | 625    | 77569         | 17.1          | 755    | 4412          | 0.0           | 885    | 2653          | 0.0           |
| 370    | 2648          | 0.0           | 500    | 40589         | 9.0           | 630    | 71183         | 12.9          | 760    | 4227          | 0.0           | 890    | 2411          | 0.0           |
| 375    | 2655          | 0.0           | 505    | 54498         | 15.2          | 635    | 65734         | 9.9           | 765    | 3922          | 0.0           | 895    | 2118          | 0.0           |
| 380    | 2428          | 0.0           | 510    | 68399         | 23.5          | 640    | 60418         | 7.2           | 770    | 3461          | 0.0           | 900    | 2873          | 0.0           |
| 385    | 2334          | 0.0           | 515    | 81428         | 33.7          | 645    | 54736         | 5.3           | 775    | 3226          | 0.0           | 905    | 3367          | 0.0           |
| 390    | 2269          | 0.0           | 520    | 92826         | 45.0          | 650    | 49620         | 3.6           | 780    | 2883          | 0.0           | 910    | 2749          | 0.0           |
| 395    | 2020          | 0.0           | 525    | 101684        | 54.6          | 655    | 44517         | 2.6           | 785    | 2864          | 0.0           | 915    | 2283          | 0.0           |
| 400    | 1873          | 0.0           | 530    | 108580        | 63.9          | 660    | 39493         | 1.6           | 790    | 2715          | 0.0           | 920    | 2425          | 0.0           |
| 405    | 2015          | 0.0           | 535    | 113290        | 70.3          | 665    | 35066         | 1.1           | 795    | 2547          | 0.0           | 925    | 2705          | 0.0           |
| 410    | 2831          | 0.0           | 540    | 116042        | 75.6          | 670    | 30825         | 0.7           | 800    | 2585          | 0.0           | 930    | 3144          | 0.0           |
| 415    | 5121          | 0.0           | 545    | 118948        | 79.2          | 675    | 27031         | 0.5           | 805    | 2308          | 0.0           | 935    | 2539          | 0.0           |
| 420    | 10348         | 0.0           | 550    | 119916        | 81.5          | 680    | 23555         | 0.3           | 810    | 2796          | 0.0           | 940    | 2288          | 0.0           |
| 425    | 21288         | 0.1           | 555    | 120734        | 82.5          | 685    | 20841         | 0.2           | 815    | 2196          | 0.0           | 945    | 1604          | 0.0           |
| 430    | 41173         | 0.3           | 560    | 121523        | 82.6          | 690    | 18232         | 0.1           | 820    | 2415          | 0.0           | 950    | 3031          | 0.0           |
| 435    | 73003         | 0.9           | 565    | 121859        | 81.0          | 695    | 16035         | 0.1           | 825    | 2281          | 0.0           | 955    | 3356          | 0.0           |
| 440    | 111013        | 1.7           | 570    | 122246        | 79.5          | 700    | 14010         | 0.0           | 830    | 2524          | 0.0           | 960    | 3704          | 0.0           |
| 445    | 154787        | 3.2           | 575    | 121449        | 75.6          | 705    | 12408         | 0.0           | 835    | 2461          | 0.0           | 965    | 2847          | 0.0           |
| 450    | 176733        | 4.6           | 580    | 120111        | 71.4          | 710    | 11063         | 0.0           | 840    | 2195          | 0.0           | 970    | 2985          | 0.0           |
| 455    | 124334        | 4.2           | 585    | 117354        | 65.2          | 715    | 10136         | 0.0           | 845    | 2487          | 0.0           | 975    | 3963          | 0.0           |
| 460    | 72664         | 3.0           | 590    | 114565        | 59.2          | 720    | 8693          | 0.0           | 850    | 3144          | 0.0           | 980    | 3221          | 0.0           |
| 465    | 49806         | 2.6           | 595    | 111127        | 52.7          | 725    | 7522          | 0.0           | 855    | 2809          | 0.0           | 985    | 3794          | 0.0           |
| 470    | 32995         | 2.1           | 600    | 107253        | 46.2          | 730    | 6612          | 0.0           | 860    | 2621          | 0.0           | 990    | 3296          | 0.0           |
| 475    | 22184         | 1.7           | 605    | 101156        | 39.2          | 735    | 5947          | 0.0           | 865    | 2410          | 0.0           | 995    | 1779          | 0.0           |
| 480    | 18691         | 1.8           | 610    | 95370         | 32.8          | 740    | 5253          | 0.0           | 870    | 3143          | 0.0           | 1000   | 2977          | 0.0           |
| 485    | 18593         | 2.2           | 615    | 89556         | 27.0          | 745    | 5032          | 0.0           | 875    | 3421          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2006-844-1

**Scotopic Flux vs. Wavelength**



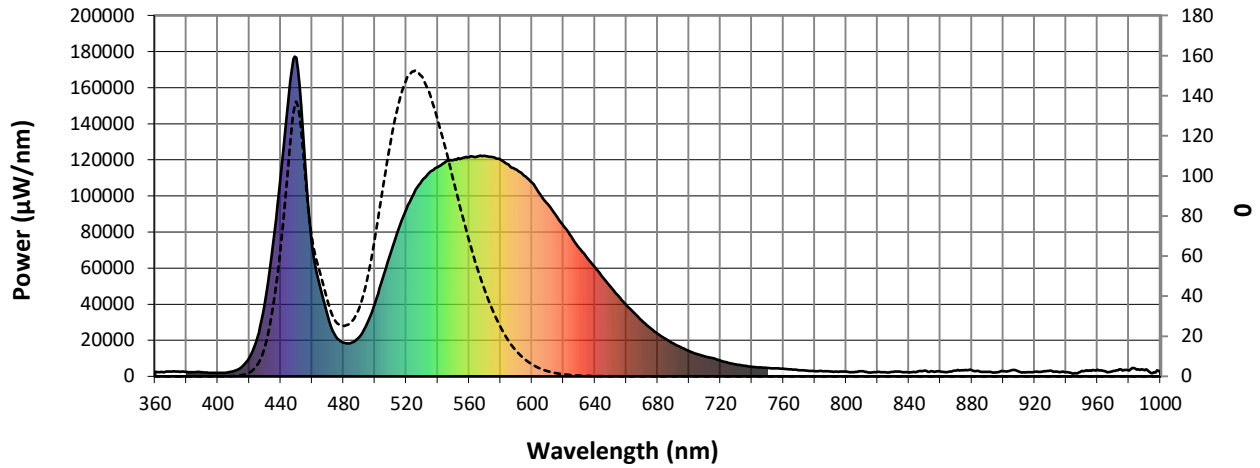
**Scotopic Lumens: 4867.6**

**S/P: 0.66**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2529          | 0.0           | 490    | 21819         | 33.6          | 620    | 83437         | 1.0           | 750    | 4608          | 0.0           | 880    | 3335          | 0.0           |
| 365    | 2361          | 0.0           | 495    | 29270         | 47.3          | 625    | 77569         | 0.7           | 755    | 4412          | 0.0           | 885    | 2653          | 0.0           |
| 370    | 2648          | 0.0           | 500    | 40589         | 67.9          | 630    | 71183         | 0.4           | 760    | 4227          | 0.0           | 890    | 2411          | 0.0           |
| 375    | 2655          | 0.0           | 505    | 54498         | 92.6          | 635    | 65734         | 0.2           | 765    | 3922          | 0.0           | 895    | 2118          | 0.0           |
| 380    | 2428          | 0.0           | 510    | 68399         | 115.9         | 640    | 60418         | 0.2           | 770    | 3461          | 0.0           | 900    | 2873          | 0.0           |
| 385    | 2334          | 0.0           | 515    | 81428         | 135.0         | 645    | 54736         | 0.1           | 775    | 3226          | 0.0           | 905    | 3367          | 0.0           |
| 390    | 2269          | 0.0           | 520    | 92826         | 147.5         | 650    | 49620         | 0.1           | 780    | 2883          | 0.0           | 910    | 2749          | 0.0           |
| 395    | 2020          | 0.0           | 525    | 101684        | 152.1         | 655    | 44517         | 0.0           | 785    | 2864          | 0.0           | 915    | 2283          | 0.0           |
| 400    | 1873          | 0.0           | 530    | 108580        | 149.7         | 660    | 39493         | 0.0           | 790    | 2715          | 0.0           | 920    | 2425          | 0.0           |
| 405    | 2015          | 0.1           | 535    | 113290        | 141.2         | 665    | 35066         | 0.0           | 795    | 2547          | 0.0           | 925    | 2705          | 0.0           |
| 410    | 2831          | 0.2           | 540    | 116042        | 128.2         | 670    | 30825         | 0.0           | 800    | 2585          | 0.0           | 930    | 3144          | 0.0           |
| 415    | 5121          | 0.5           | 545    | 118948        | 114.0         | 675    | 27031         | 0.0           | 805    | 2308          | 0.0           | 935    | 2539          | 0.0           |
| 420    | 10348         | 1.7           | 550    | 119916        | 98.1          | 680    | 23555         | 0.0           | 810    | 2796          | 0.0           | 940    | 2288          | 0.0           |
| 425    | 21288         | 5.2           | 555    | 120734        | 82.5          | 685    | 20841         | 0.0           | 815    | 2196          | 0.0           | 945    | 1604          | 0.0           |
| 430    | 41173         | 14.0          | 560    | 121523        | 67.9          | 690    | 18232         | 0.0           | 820    | 2415          | 0.0           | 950    | 3031          | 0.0           |
| 435    | 73003         | 32.6          | 565    | 121859        | 54.7          | 695    | 16035         | 0.0           | 825    | 2281          | 0.0           | 955    | 3356          | 0.0           |
| 440    | 111013        | 62.0          | 570    | 122246        | 43.1          | 700    | 14010         | 0.0           | 830    | 2524          | 0.0           | 960    | 3704          | 0.0           |
| 445    | 154787        | 103.6         | 575    | 121449        | 33.1          | 705    | 12408         | 0.0           | 835    | 2461          | 0.0           | 965    | 2847          | 0.0           |
| 450    | 176733        | 137.0         | 580    | 120111        | 24.7          | 710    | 11063         | 0.0           | 840    | 2195          | 0.0           | 970    | 2985          | 0.0           |
| 455    | 124334        | 108.6         | 585    | 117354        | 17.9          | 715    | 10136         | 0.0           | 845    | 2487          | 0.0           | 975    | 3963          | 0.0           |
| 460    | 72664         | 70.2          | 590    | 114565        | 12.8          | 720    | 8693          | 0.0           | 850    | 3144          | 0.0           | 980    | 3221          | 0.0           |
| 465    | 49806         | 52.6          | 595    | 111127        | 8.9           | 725    | 7522          | 0.0           | 855    | 2809          | 0.0           | 985    | 3794          | 0.0           |
| 470    | 32995         | 38.0          | 600    | 107253        | 6.0           | 730    | 6612          | 0.0           | 860    | 2621          | 0.0           | 990    | 3296          | 0.0           |
| 475    | 22184         | 27.7          | 605    | 101156        | 4.0           | 735    | 5947          | 0.0           | 865    | 2410          | 0.0           | 995    | 1779          | 0.0           |
| 480    | 18691         | 25.2          | 610    | 95370         | 2.6           | 740    | 5253          | 0.0           | 870    | 3143          | 0.0           | 1000   | 2977          | 0.0           |
| 485    | 18593         | 27.0          | 615    | 89556         | 1.7           | 745    | 5032          | 0.0           | 875    | 3421          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2006-844-1

**Melanopic Flux vs. Wavelength**

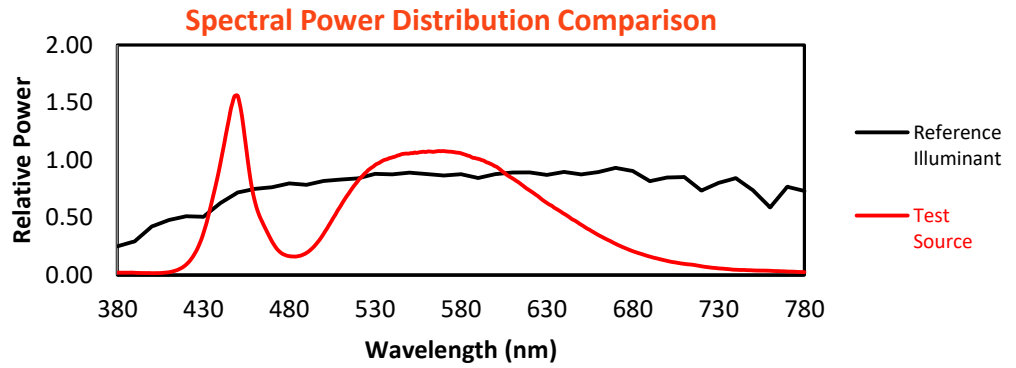


**Melanopic Lumens: 12457.9 S/P: 1.7**

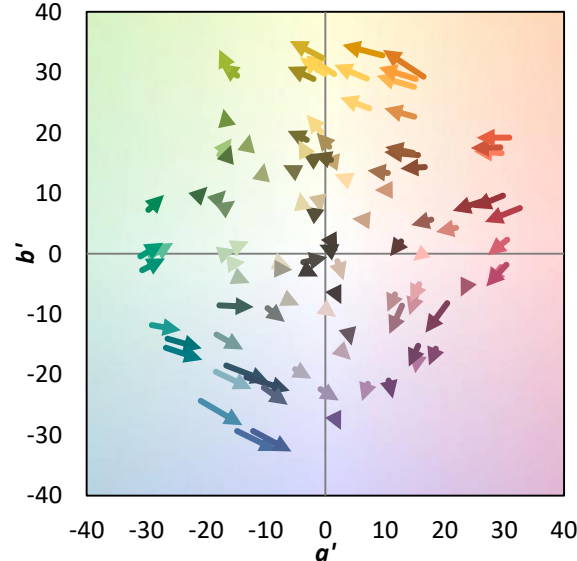
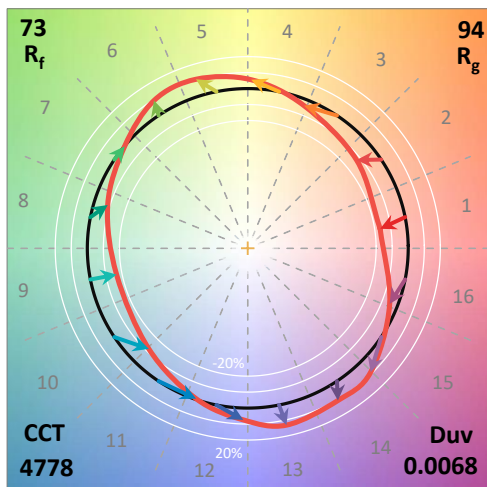
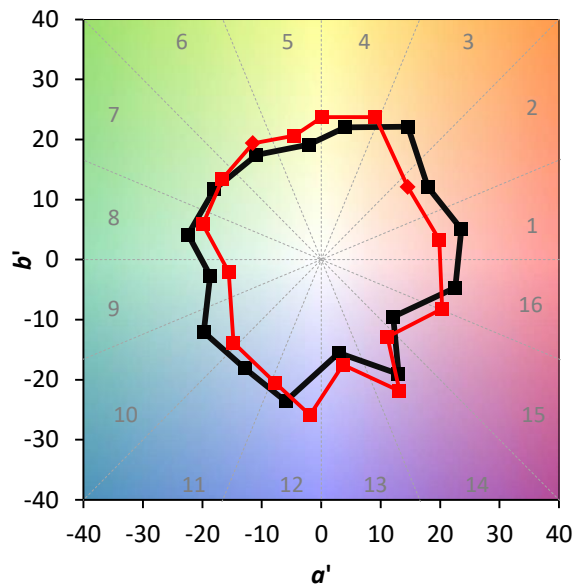
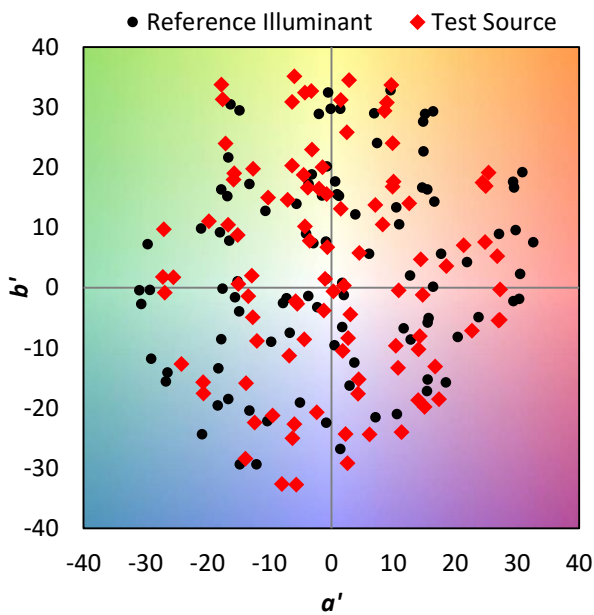
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2529          | 0.0           | 490    | 21819         | 18.2          | 620    | 83437         | 0.1           | 750    | 4608          | 0.0           | 880    | 3335          | 0.0           |
| 365    | 2361          | 0.0           | 495    | 29270         | 24.2          | 625    | 77569         | 0.0           | 755    | 4412          | 0.0           | 885    | 2653          | 0.0           |
| 370    | 2648          | 0.0           | 500    | 40589         | 32.6          | 630    | 71183         | 0.0           | 760    | 4227          | 0.0           | 890    | 2411          | 0.0           |
| 375    | 2655          | 0.0           | 505    | 54498         | 41.8          | 635    | 65734         | 0.0           | 765    | 3922          | 0.0           | 895    | 2118          | 0.0           |
| 380    | 2428          | 0.0           | 510    | 68399         | 49.1          | 640    | 60418         | 0.0           | 770    | 3461          | 0.0           | 900    | 2873          | 0.0           |
| 385    | 2334          | 0.0           | 515    | 81428         | 53.2          | 645    | 54736         | 0.0           | 775    | 3226          | 0.0           | 905    | 3367          | 0.0           |
| 390    | 2269          | 0.0           | 520    | 92826         | 54.0          | 650    | 49620         | 0.0           | 780    | 2883          | 0.0           | 910    | 2749          | 0.0           |
| 395    | 2020          | 0.0           | 525    | 101684        | 51.6          | 655    | 44517         | 0.0           | 785    | 2864          | 0.0           | 915    | 2283          | 0.0           |
| 400    | 1873          | 0.0           | 530    | 108580        | 46.9          | 660    | 39493         | 0.0           | 790    | 2715          | 0.0           | 920    | 2425          | 0.0           |
| 405    | 2015          | 0.0           | 535    | 113290        | 40.8          | 665    | 35066         | 0.0           | 795    | 2547          | 0.0           | 925    | 2705          | 0.0           |
| 410    | 2831          | 0.1           | 540    | 116042        | 34.0          | 670    | 30825         | 0.0           | 800    | 2585          | 0.0           | 930    | 3144          | 0.0           |
| 415    | 5121          | 0.3           | 545    | 118948        | 27.6          | 675    | 27031         | 0.0           | 805    | 2308          | 0.0           | 935    | 2539          | 0.0           |
| 420    | 10348         | 1.2           | 550    | 119916        | 21.5          | 680    | 23555         | 0.0           | 810    | 2796          | 0.0           | 940    | 2288          | 0.0           |
| 425    | 21288         | 3.3           | 555    | 120734        | 16.3          | 685    | 20841         | 0.0           | 815    | 2196          | 0.0           | 945    | 1604          | 0.0           |
| 430    | 41173         | 8.7           | 560    | 121523        | 12.0          | 690    | 18232         | 0.0           | 820    | 2415          | 0.0           | 950    | 3031          | 0.0           |
| 435    | 73003         | 19.5          | 565    | 121859        | 8.6           | 695    | 16035         | 0.0           | 825    | 2281          | 0.0           | 955    | 3356          | 0.0           |
| 440    | 111013        | 37.1          | 570    | 122246        | 6.0           | 700    | 14010         | 0.0           | 830    | 2524          | 0.0           | 960    | 3704          | 0.0           |
| 445    | 154787        | 61.1          | 575    | 121449        | 4.0           | 705    | 12408         | 0.0           | 835    | 2461          | 0.0           | 965    | 2847          | 0.0           |
| 450    | 176733        | 81.4          | 580    | 120111        | 2.7           | 710    | 11063         | 0.0           | 840    | 2195          | 0.0           | 970    | 2985          | 0.0           |
| 455    | 124334        | 65.1          | 585    | 117354        | 1.7           | 715    | 10136         | 0.0           | 845    | 2487          | 0.0           | 975    | 3963          | 0.0           |
| 460    | 72664         | 42.8          | 590    | 114565        | 1.1           | 720    | 8693          | 0.0           | 850    | 3144          | 0.0           | 980    | 3221          | 0.0           |
| 465    | 49806         | 32.5          | 595    | 111127        | 0.7           | 725    | 7522          | 0.0           | 855    | 2809          | 0.0           | 985    | 3794          | 0.0           |
| 470    | 32995         | 23.6          | 600    | 107253        | 0.5           | 730    | 6612          | 0.0           | 860    | 2621          | 0.0           | 990    | 3296          | 0.0           |
| 475    | 22184         | 16.9          | 605    | 101156        | 0.3           | 735    | 5947          | 0.0           | 865    | 2410          | 0.0           | 995    | 1779          | 0.0           |
| 480    | 18691         | 15.0          | 610    | 95370         | 0.2           | 740    | 5253          | 0.0           | 870    | 3143          | 0.0           | 1000   | 2977          | 0.0           |
| 485    | 18593         | 15.3          | 615    | 89556         | 0.1           | 745    | 5032          | 0.0           | 875    | 3421          | 0.0           |        |               |               |

**Summary**

$R_f = 73.3$   
 $R_g = 94.5$   
 CIE  $R_a = 71.0$   
 $R_g = -28.7$



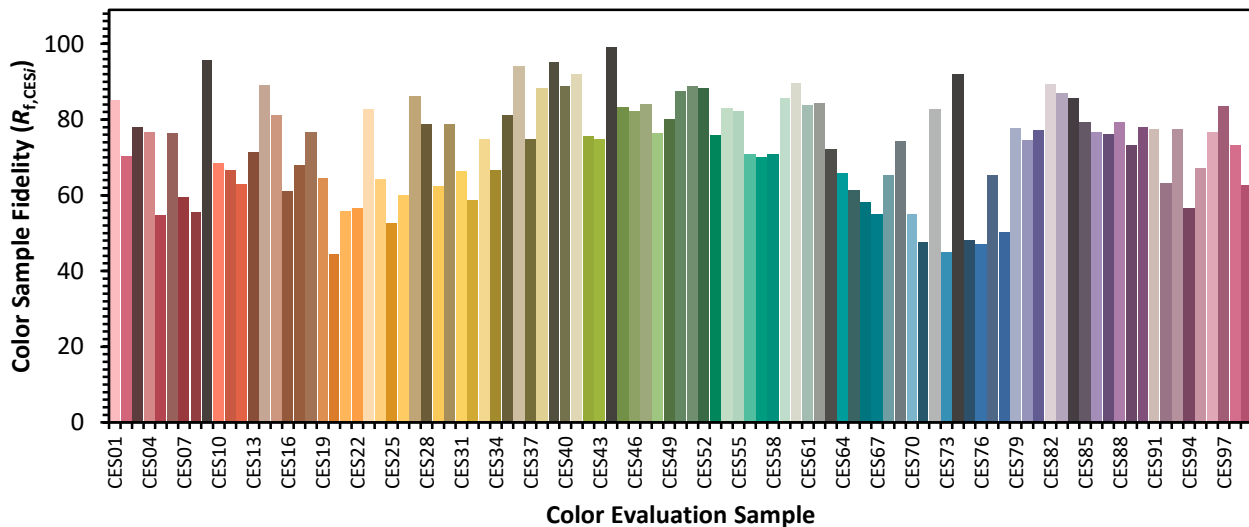
**Color Vector Graphics**



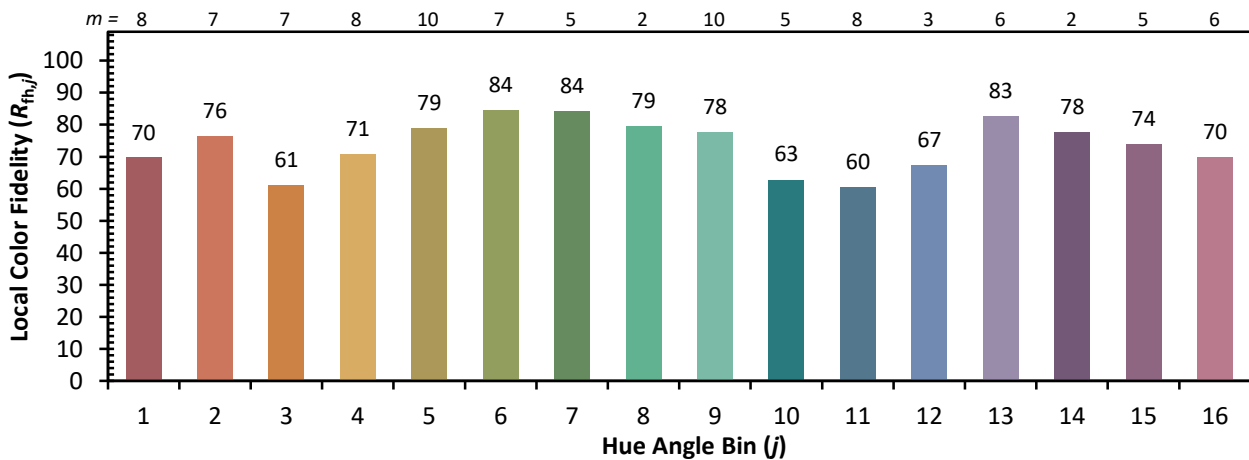
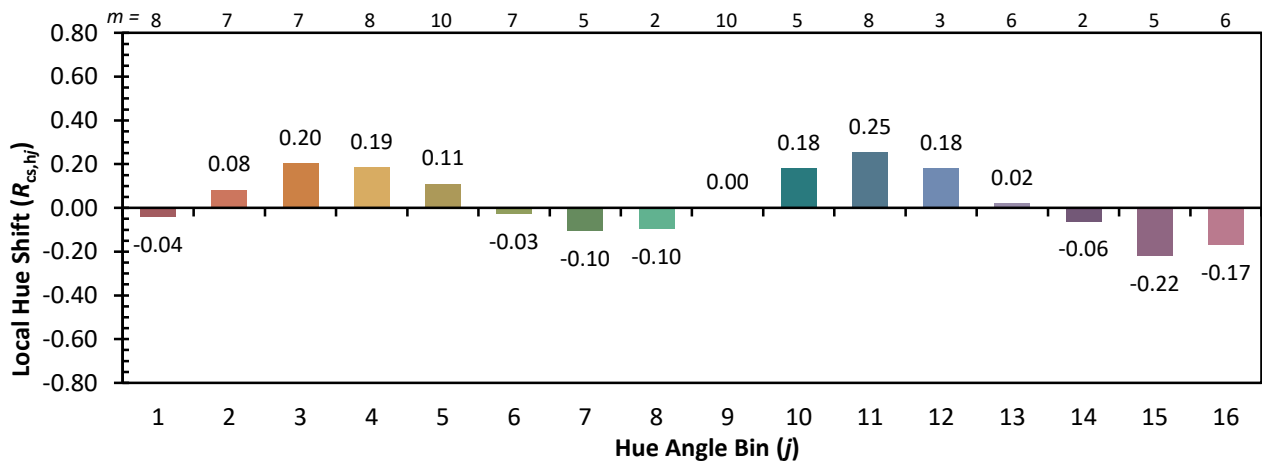
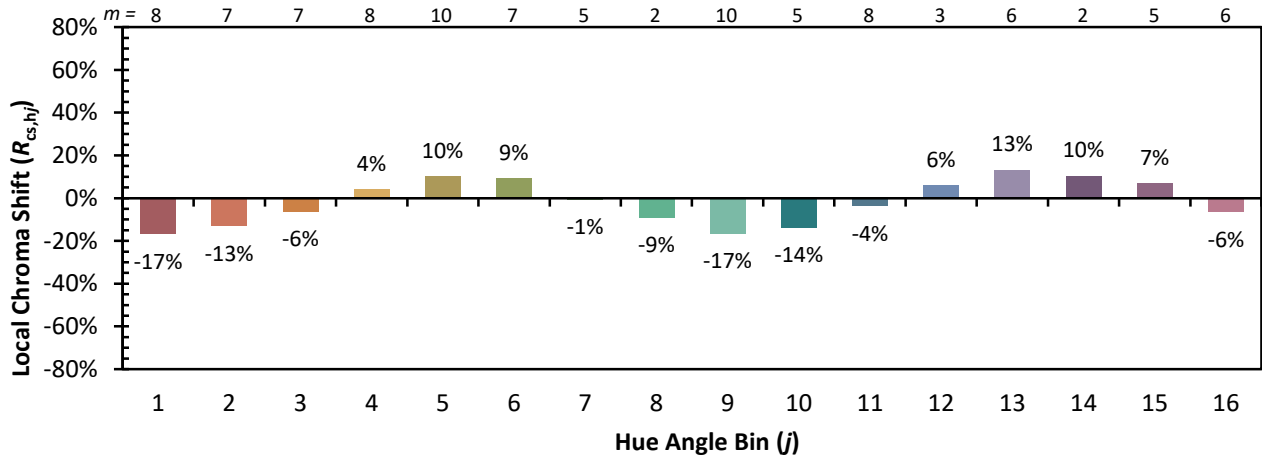


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

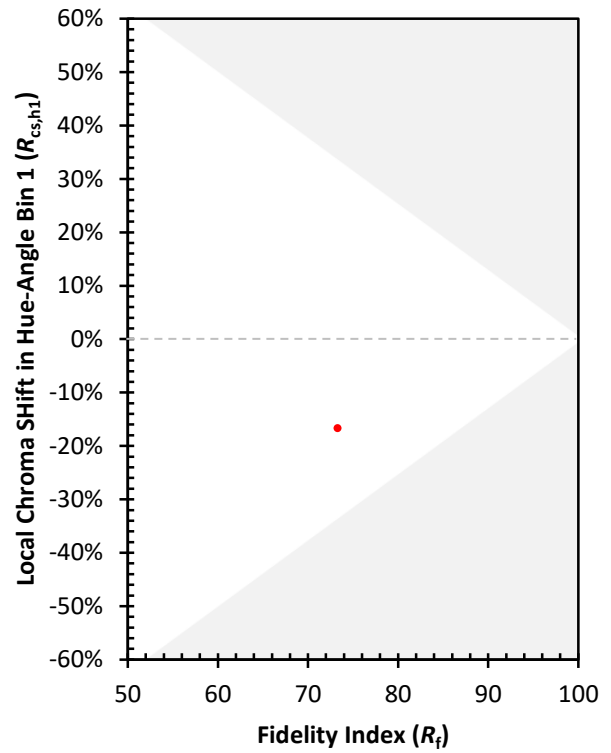
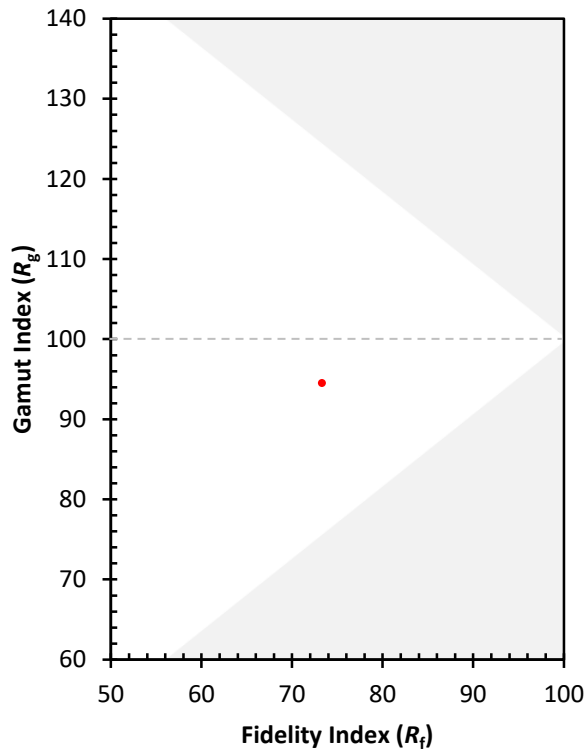
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 60 | CES51 = 89 | CES76 = 47 |
| CES02 = 59 | CES27 = 86 | CES52 = 88 | CES77 = 65 |
| CES03 = 30 | CES28 = 79 | CES53 = 76 | CES78 = 50 |
| CES04 = 69 | CES29 = 62 | CES54 = 83 | CES79 = 78 |
| CES05 = 46 | CES30 = 79 | CES55 = 82 | CES80 = 74 |
| CES06 = 50 | CES31 = 66 | CES56 = 71 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 70 | CES82 = 89 |
| CES08 = 38 | CES33 = 75 | CES58 = 71 | CES83 = 87 |
| CES09 = 29 | CES34 = 67 | CES59 = 86 | CES84 = 86 |
| CES10 = 72 | CES35 = 81 | CES60 = 90 | CES85 = 79 |
| CES11 = 56 | CES36 = 94 | CES61 = 84 | CES86 = 77 |
| CES12 = 61 | CES37 = 75 | CES62 = 84 | CES87 = 76 |
| CES13 = 41 | CES38 = 88 | CES63 = 72 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 66 | CES89 = 73 |
| CES15 = 70 | CES40 = 89 | CES65 = 61 | CES90 = 78 |
| CES16 = 46 | CES41 = 92 | CES66 = 58 | CES91 = 77 |
| CES17 = 49 | CES42 = 75 | CES67 = 55 | CES92 = 63 |
| CES18 = 55 | CES43 = 75 | CES68 = 65 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 74 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 55 | CES95 = 67 |
| CES21 = 85 | CES46 = 82 | CES71 = 48 | CES96 = 77 |
| CES22 = 77 | CES47 = 84 | CES72 = 83 | CES97 = 84 |
| CES23 = 91 | CES48 = 76 | CES73 = 45 | CES98 = 73 |
| CES24 = 90 | CES49 = 80 | CES74 = 92 | CES99 = 63 |
| CES25 = 71 | CES50 = 88 | CES75 = 48 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)