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: P322466

Luminaire Tested: **GLEON-SA2A-727-U-T4FT-HSS**

Issue Date: 3/3/2020

Report Generated By E0585644

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: | P322466 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA2A-727-U-T4FT-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (2) 70 CRI, 2700K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 5663 lumens |
| Efficiency: | N/A |
| Efficacy: | 85.8 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 1' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B1 - U0 - G2 |

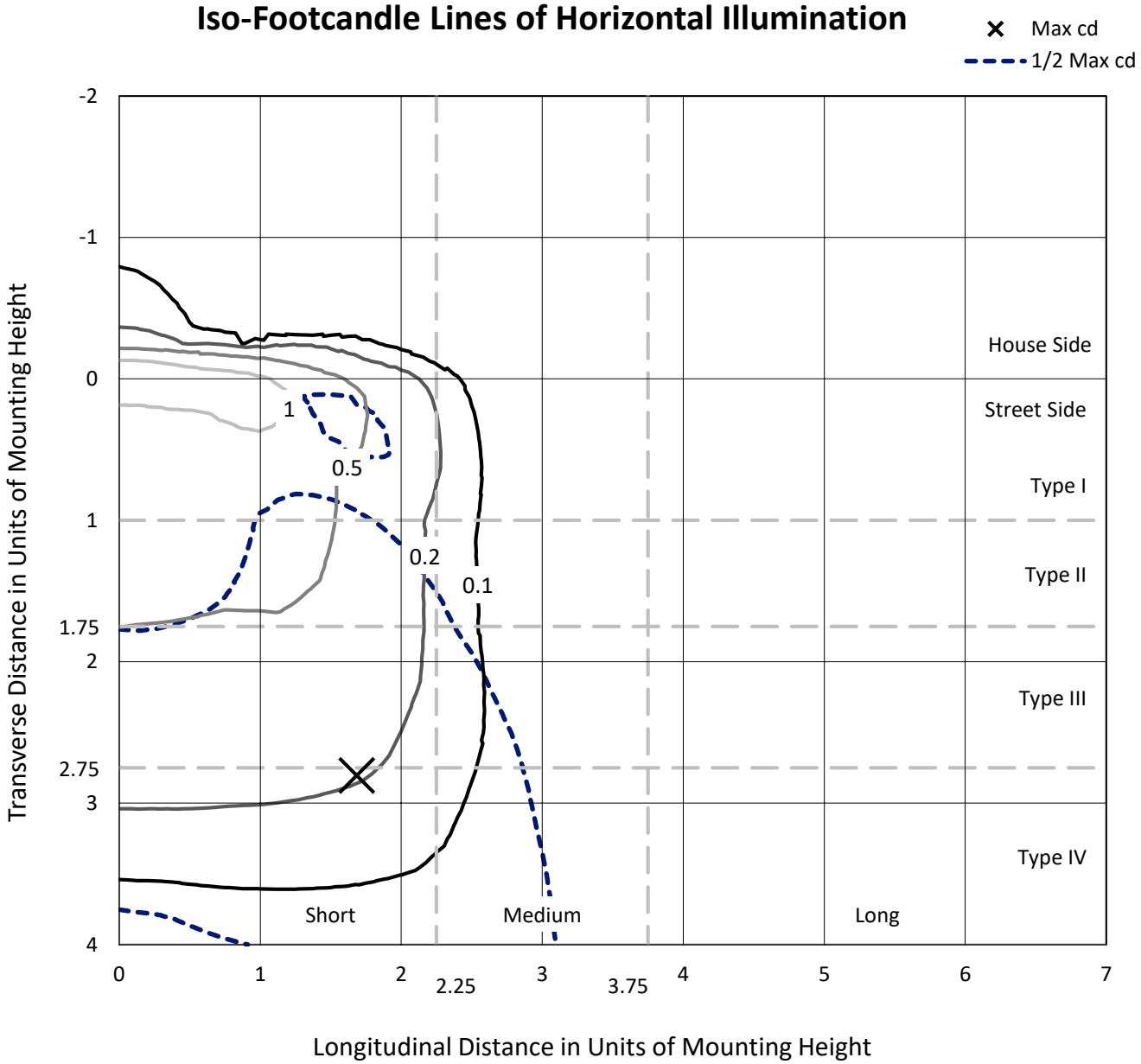
| | |
|---|---|
| Input Watts (W): | 66 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

## Iso-Footcandle Lines of Horizontal Illumination



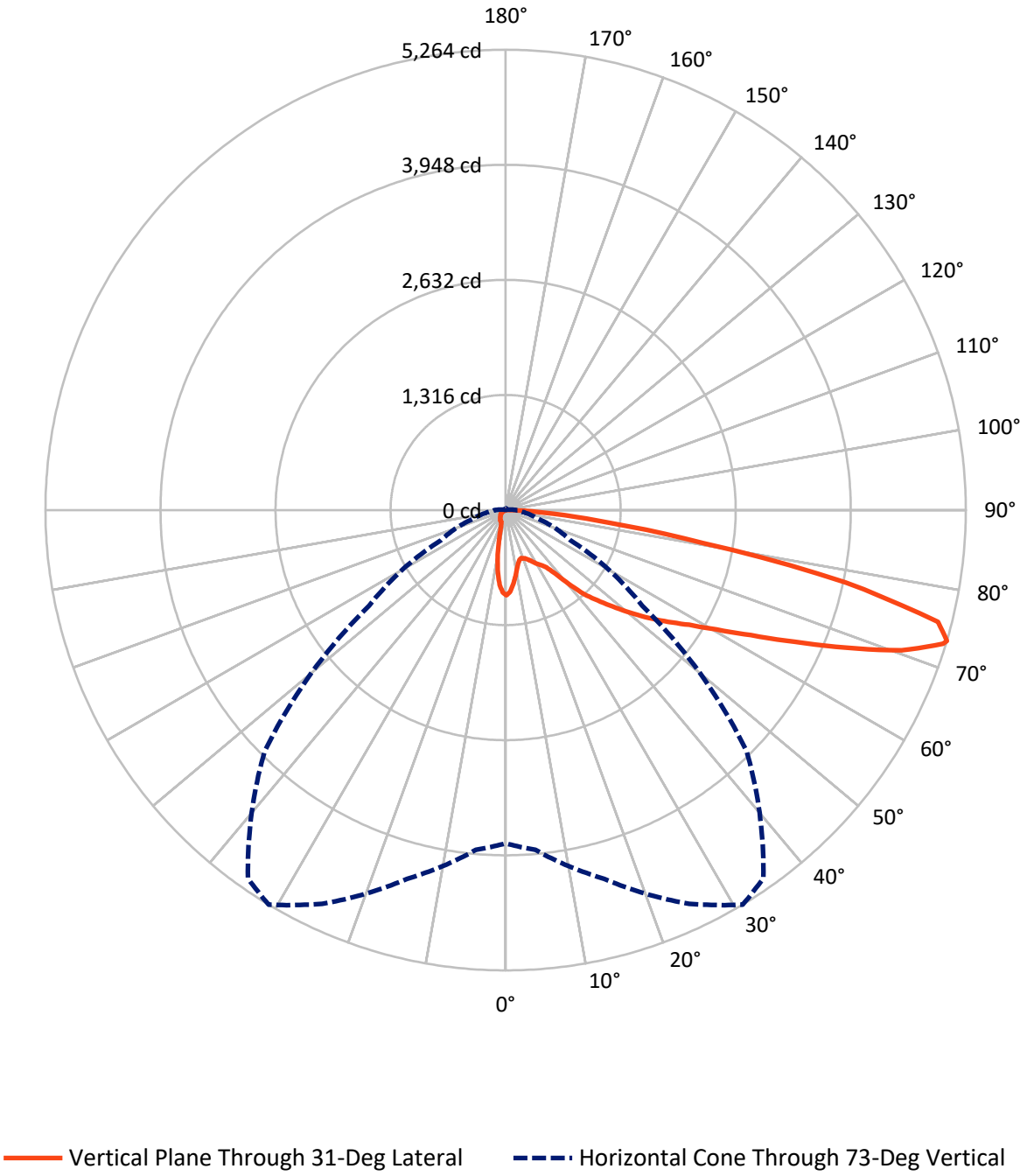

Based on 25 foot mounting height. Maximum calculated value = 1.6 fc
Type IV - Short - N/A

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

## Luminous Intensity Polar Plot



Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

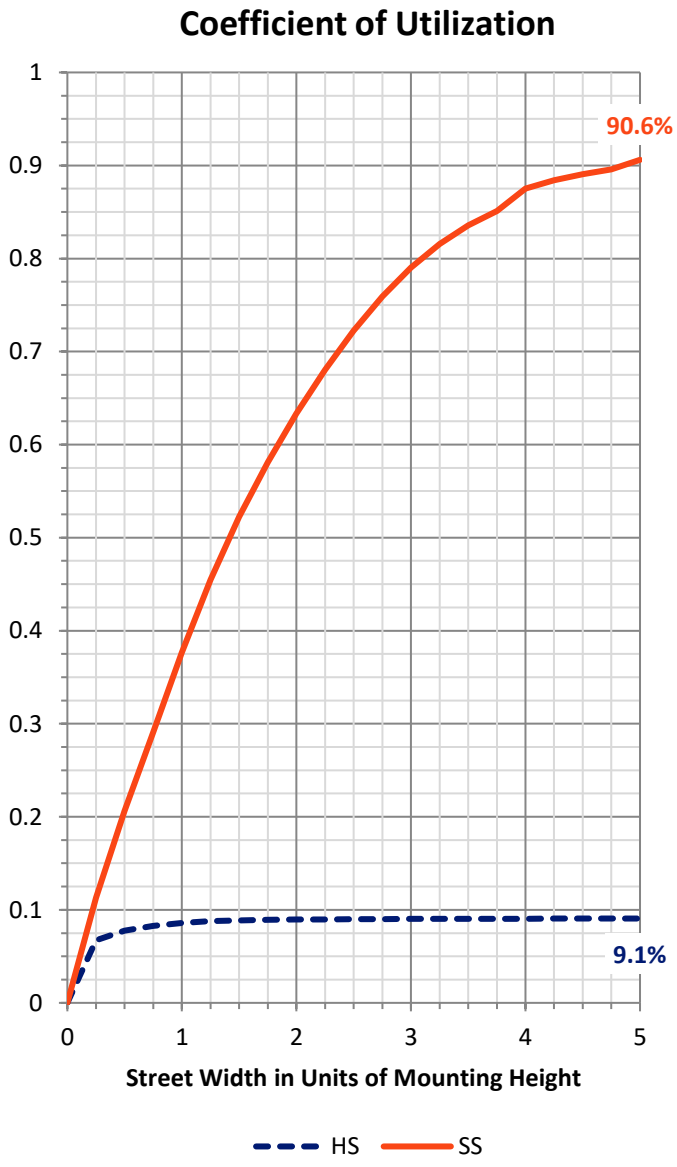
REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 516.2 | 0.0 | 516.2 |
| | % Fixture | 9.1 | 0.0 | 9.1 |
| **Street Side** | Lumens | 5146.8 | 0.0 | 5146.8 |
| | % Fixture | 90.9 | 0.0 | 90.9 |
| **Total** | Lumens | 5663.0 | 0.0 | 5663.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 80.8 | 1.4 |
| 10°-20° | 175.4 | 3.1 |
| 20°-30° | 262.8 | 4.6 |
| 30°-40° | 418.1 | 7.4 |
| 40°-50° | 746.7 | 13.2 |
| 50°-60° | 1158.6 | 20.5 |
| 60°-70° | 1540.2 | 27.2 |
| 70°-80° | 1158.6 | 20.5 |
| 80°-90° | 121.7 | 2.1 |
| 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° | 5663.0 | 100.0 |
| 0°-180° | 5663.0 | 100.0 |



Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

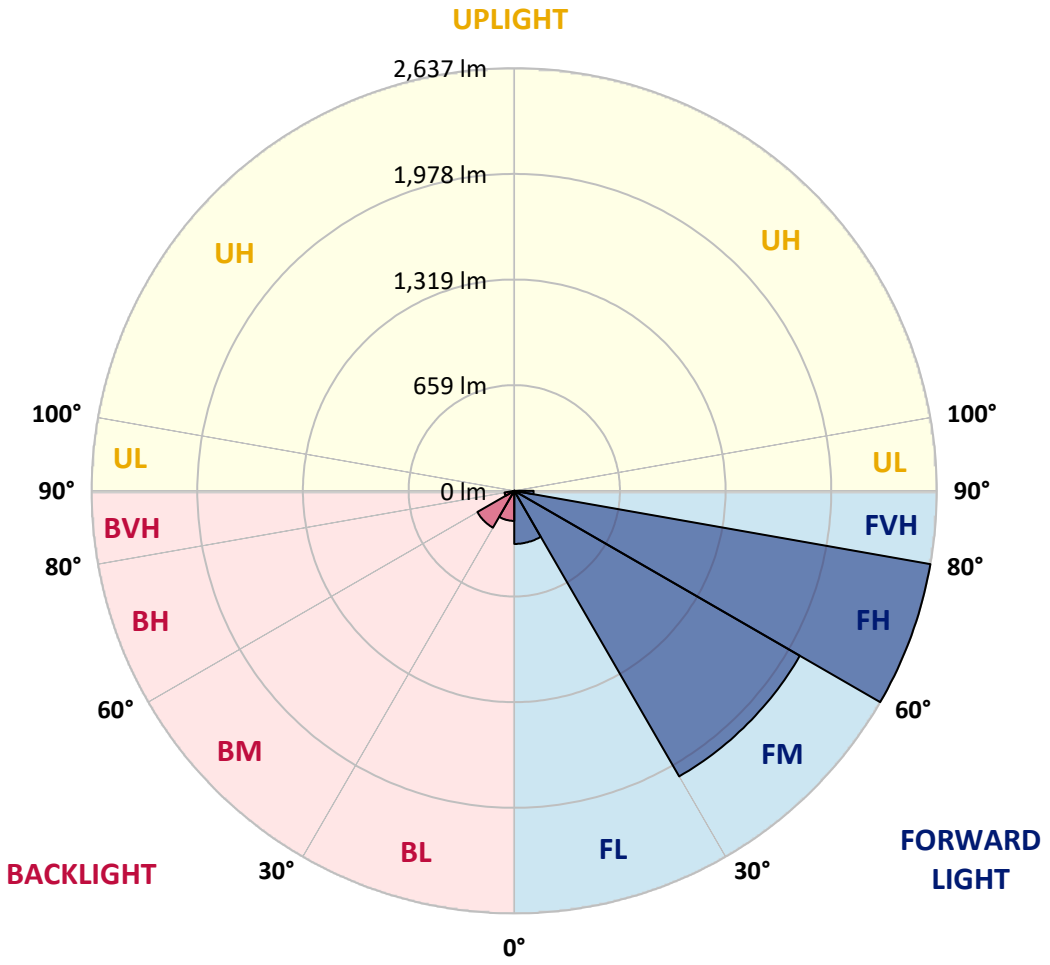
Scaled Data Report

REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 331.3 | 5.9 | | | |
| FM | (30°-60°) | 2057.7 | 36.3 | | | |
| FH | (60°-80°) | 2637.0 | 46.6 | | | G2/5000 |
| FVH | (80°-90°) | 120.7 | 2.1 | | | G2/225 |
| BL | (0°-30°) | 187.7 | 3.3 | B1/500 | | |
| BM | (30°-60°) | 265.7 | 4.7 | B1/1000 | | |
| BH | (60°-80°) | 61.8 | 1.1 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 1.0 | 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-G2**
Type IV Short



Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 31° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 974.3 | 974.3 | 974.3 | 974.3 | *974.3* | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 |
| 2.5° | 923.3 | 927.2 | 931.4 | 932.2 | *939.1* | 939.4 | 949.4 | 956.9 | 964.4 | 971.6 | 974.1 |
| 5° | 828.6 | 834.9 | 842.4 | 849.9 | *864.6* | 870.4 | 894.8 | 919.7 | 943.6 | 966.3 | 977.4 |
| 7.5° | 727.4 | 734.6 | 745.2 | 763.7 | *780.1* | 791.4 | 830.0 | 874.3 | 918.6 | 960.5 | 984.6 |
| 10° | 635.1 | 641.8 | 652.9 | 672.6 | *697.8* | 713.3 | 765.1 | 826.6 | 891.8 | 955.2 | 995.4 |
| 12.5° | 576.4 | 580.0 | 586.1 | 607.2 | *629.9* | 647.3 | 708.3 | 784.5 | 869.6 | 954.9 | 1012.8 |
| 15° | 565.6 | 566.7 | 561.7 | 571.1 | *588.9* | 605.8 | 667.6 | 750.4 | 852.7 | 959.4 | 1035.6 |
| 17.5° | 582.8 | 582.2 | 565.6 | 564.5 | *578.6* | 592.5 | 647.6 | 726.9 | 840.8 | 969.6 | 1064.9 |
| 20° | 608.8 | 606.9 | 578.1 | 572.8 | *587.8* | 600.8 | 646.2 | 718.0 | 836.3 | 986.8 | 1100.7 |
| 22.5° | 643.5 | 640.1 | 595.0 | 589.4 | *605.5* | 619.1 | 663.4 | 726.6 | 840.2 | 1009.8 | 1142.3 |
| 25° | 686.4 | 681.4 | 624.1 | 618.0 | *634.3* | 647.9 | 694.2 | 751.3 | 851.8 | 1037.8 | 1194.9 |
| 27.5° | 734.9 | 727.7 | 670.6 | 654.8 | *673.4* | 687.5 | 735.2 | 788.9 | 870.1 | 1067.4 | 1259.5 |
| 30° | 780.6 | 771.2 | 719.7 | 693.6 | *716.3* | 732.1 | 779.5 | 833.8 | 899.5 | 1113.2 | 1347.9 |
| 32.5° | 826.6 | 816.1 | 763.4 | 732.4 | *752.9* | 770.1 | 825.2 | 895.6 | 954.7 | 1183.0 | 1465.4 |
| 35° | 932.5 | 921.4 | 856.8 | 805.6 | *805.3* | 815.0 | 889.3 | 980.2 | 1027.5 | 1280.3 | 1605.6 |
| 37.5° | 1110.7 | 1104.3 | 1042.8 | 945.5 | *919.5* | 908.7 | 976.5 | 1081.0 | 1132.3 | 1414.1 | 1763.8 |
| 40° | 1305.8 | 1300.2 | 1231.2 | 1143.1 | *1103.5* | 1076.9 | 1101.8 | 1221.5 | 1280.3 | 1577.6 | 1925.4 |
| 42.5° | 1526.1 | 1499.7 | 1376.7 | 1350.4 | *1314.9* | 1294.7 | 1272.2 | 1394.7 | 1462.1 | 1755.5 | 2085.6 |
| 45° | 1726.1 | 1681.8 | 1522.2 | 1482.3 | *1474.2* | 1479.2 | 1491.7 | 1627.5 | 1666.6 | 1967.0 | 2245.2 |
| 47.5° | 1845.3 | 1810.4 | 1687.9 | 1649.7 | *1647.4* | 1680.4 | 1774.6 | 1890.5 | 1870.2 | 2151.2 | 2385.7 |
| 50° | 1958.6 | 1927.0 | 1825.3 | 1834.8 | *1845.0* | 1889.9 | 2095.8 | 2160.9 | 2056.2 | 2318.3 | 2514.5 |
| 52.5° | 2050.4 | 2002.1 | 1948.9 | 2001.9 | *2052.3* | 2124.6 | 2427.2 | 2403.7 | 2188.1 | 2451.3 | 2624.8 |
| 55° | 2103.3 | 2081.4 | 2107.2 | 2160.4 | *2255.1* | 2372.6 | 2740.1 | 2605.7 | 2284.5 | 2572.7 | 2698.3 |
| 57.5° | 2297.3 | 2254.3 | 2305.6 | 2351.6 | *2475.2* | 2639.5 | 3008.1 | 2756.2 | 2354.1 | 2647.8 | 2715.2 |
| 60° | 2532.0 | 2497.3 | 2527.6 | 2604.0 | *2770.9* | 2964.0 | 3258.6 | 2878.9 | 2390.4 | 2696.0 | 2671.4 |
| 62.5° | 2905.5 | 2859.8 | 2841.0 | 2926.6 | *3147.7* | 3358.6 | 3448.7 | 2964.0 | 2382.3 | 2674.7 | 2521.2 |
| 65° | 3406.0 | 3358.6 | 3274.4 | 3352.0 | *3633.2* | 3782.0 | 3661.2 | 2982.0 | 2326.9 | 2502.1 | 2141.5 |
| 67.5° | 3918.7 | 3884.3 | 3812.2 | 3943.0 | *4196.9* | 4244.8 | 3886.0 | 2938.2 | 2148.5 | 2028.7 | 1513.0 |
| 70° | 4257.3 | 4242.6 | 4289.4 | 4578.7 | *4805.1* | 4791.3 | 4092.1 | 2703.0 | 1674.6 | 1247.6 | 748.5 |
| 72.5° | 4013.2 | 4083.5 | 4429.4 | 4954.0 | *5230.5* | 5117.5 | 3986.3 | 2075.6 | 957.1 | 480.0 | 216.4 |
| 73° | *3810.9* | *3900.9* | *4366.5* | *4968.1* | *5264.0* | *5140.2* | *3897.3* | *1905.2* | *815.8* | *378.8* | *164.1* |
| 75° | 2651.1 | 2761.7 | 3614.9 | 4627.0 | *5107.2* | 4897.4 | 3248.6 | 1166.1 | 378.0 | 167.9 | 66.2 |
| 77.5° | 1287.2 | 1368.9 | 1990.5 | 3343.1 | *3971.9* | 3826.4 | 2022.4 | 434.5 | 170.7 | 105.0 | 30.5 |
| 80° | 480.5 | 534.3 | 864.0 | 1701.5 | *2295.3* | 2355.5 | 889.5 | 164.3 | 113.6 | 84.5 | 15.5 |
| 82.5° | 125.8 | 140.2 | 318.7 | 758.7 | *1176.3* | 1231.2 | 280.4 | 82.9 | 83.1 | 69.6 | 9.4 |
| 85° | 40.2 | 46.0 | 99.5 | 340.6 | *554.2* | 486.6 | 73.2 | 40.2 | 60.4 | 51.8 | 5.3 |
| 87.5° | 5.0 | 6.4 | 31.6 | 80.1 | *122.2* | 67.9 | 11.4 | 11.9 | 25.8 | 28.8 | 3.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P322466
CATALOG NUMBER: GLEON-SA2A-727-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 | 974.3 |
| 2.5° | 976.5 | 975.2 | 975.4 | 968.2 | 963.5 | 954.1 | 944.4 | 940.0 | 935.3 | 933.3 | 935.3 |
| 5° | 981.5 | 979.0 | 971.8 | 949.7 | 926.1 | 895.6 | 867.1 | 845.5 | 818.3 | 810.8 | 818.6 |
| 7.5° | 989.3 | 984.3 | 963.2 | 918.1 | 865.7 | 807.5 | 742.1 | 694.4 | 655.4 | 630.2 | 639.3 |
| 10° | 1000.7 | 991.2 | 948.8 | 872.1 | 778.4 | 675.3 | 582.5 | 510.2 | 458.9 | 437.8 | 437.0 |
| 12.5° | 1019.8 | 1002.0 | 931.1 | 812.2 | 671.7 | 534.3 | 412.6 | 334.2 | 292.6 | 265.8 | 265.2 |
| 15° | 1040.8 | 1014.8 | 908.7 | 740.4 | 547.6 | 382.7 | 265.8 | 206.2 | 179.3 | 170.7 | 169.6 |
| 17.5° | 1066.6 | 1029.5 | 879.6 | 652.0 | 417.6 | 253.6 | 173.5 | 156.3 | 155.2 | 154.4 | 154.4 |
| 20° | 1099.0 | 1046.9 | 842.1 | 550.9 | 296.2 | 169.3 | 147.4 | 148.5 | 149.1 | 148.0 | 148.3 |
| 22.5° | 1136.7 | 1064.7 | 797.5 | 442.3 | 200.4 | 141.6 | 141.1 | 142.4 | 143.0 | 142.4 | 142.7 |
| 25° | 1180.5 | 1085.2 | 743.2 | 328.4 | 144.7 | 134.4 | 135.8 | 137.7 | 139.1 | 139.1 | 139.1 |
| 27.5° | 1234.8 | 1110.1 | 677.8 | 229.2 | 125.0 | 126.9 | 130.8 | 134.4 | 136.3 | 136.9 | 136.9 |
| 30° | 1305.5 | 1141.2 | 599.4 | 157.1 | 113.6 | 116.9 | 124.1 | 131.1 | 134.7 | 135.2 | 135.5 |
| 32.5° | 1394.7 | 1176.1 | 508.5 | 116.1 | 103.9 | 106.4 | 114.2 | 125.8 | 132.7 | 133.8 | 133.8 |
| 35° | 1497.0 | 1216.5 | 410.7 | 101.1 | 97.0 | 97.8 | 103.9 | 117.2 | 129.4 | 132.5 | 132.7 |
| 37.5° | 1608.9 | 1256.4 | 312.3 | 94.5 | 91.2 | 91.2 | 95.6 | 107.0 | 121.4 | 130.8 | 131.9 |
| 40° | 1713.4 | 1280.5 | 218.9 | 89.2 | 85.9 | 85.9 | 89.8 | 98.1 | 111.7 | 125.8 | 128.9 |
| 42.5° | 1809.8 | 1288.9 | 152.4 | 84.2 | 80.9 | 81.7 | 85.1 | 91.7 | 102.0 | 116.1 | 118.9 |
| 45° | 1909.0 | 1287.5 | 111.1 | 78.4 | 75.9 | 78.4 | 80.9 | 85.9 | 93.4 | 101.4 | 102.0 |
| 47.5° | 1983.9 | 1275.8 | 88.1 | 72.9 | 71.2 | 74.5 | 76.8 | 80.1 | 84.2 | 83.7 | 83.7 |
| 50° | 2054.0 | 1247.6 | 70.9 | 65.4 | 66.5 | 70.4 | 71.5 | 72.6 | 72.9 | 67.6 | 67.1 |
| 52.5° | 2107.2 | 1203.5 | 56.8 | 57.4 | 61.8 | 65.7 | 64.6 | 62.9 | 60.1 | 53.8 | 52.7 |
| 55° | 2124.9 | 1118.7 | 44.6 | 47.4 | 54.9 | 59.9 | 55.7 | 52.1 | 46.8 | 41.6 | 40.5 |
| 57.5° | 2092.8 | 1009.2 | 36.3 | 36.9 | 46.3 | 50.4 | 45.7 | 41.6 | 35.7 | 31.3 | 30.5 |
| 60° | 2024.6 | 887.6 | 29.9 | 27.7 | 35.7 | 39.4 | 36.3 | 32.1 | 26.9 | 23.6 | 23.3 |
| 62.5° | 1889.4 | 757.9 | 24.7 | 21.6 | 27.2 | 30.2 | 28.3 | 25.2 | 20.8 | 18.6 | 18.3 |
| 65° | 1605.0 | 606.3 | 20.0 | 17.5 | 21.1 | 23.6 | 21.9 | 19.7 | 16.3 | 14.7 | 14.4 |
| 67.5° | 1120.4 | 409.9 | 16.3 | 14.4 | 16.6 | 18.6 | 17.2 | 16.1 | 13.0 | 12.7 | 13.0 |
| 70° | 540.4 | 197.6 | 13.6 | 11.6 | 13.0 | 14.4 | 13.9 | 13.0 | 12.5 | 14.4 | 16.6 |
| 72.5° | 154.9 | 66.2 | 10.8 | 9.7 | 10.5 | 11.4 | 11.9 | 11.6 | 13.6 | 17.5 | 20.2 |
| 73° | *119.2* | *53.5* | *10.3* | *9.1* | *10.0* | *11.1* | *11.6* | *11.4* | *13.9* | *17.7* | *20.2* |
| 75° | 51.0 | 25.8 | 7.8 | 7.5 | 8.3 | 9.7 | 10.3 | 10.3 | 13.9 | 18.0 | 19.4 |
| 77.5° | 23.0 | 13.9 | 5.0 | 5.8 | 7.2 | 7.8 | 8.6 | 8.6 | 11.1 | 13.9 | 13.9 |
| 80° | 13.0 | 7.5 | 3.9 | 4.4 | 5.3 | 5.3 | 5.3 | 4.7 | 5.0 | 5.5 | 6.1 |
| 82.5° | 8.3 | 5.0 | 3.0 | 3.6 | 3.3 | 2.8 | 2.2 | 2.2 | 1.9 | 2.2 | 2.8 |
| 85° | 4.7 | 2.8 | 2.8 | 2.2 | 1.4 | 1.1 | 1.4 | 1.1 | 0.3 | 0.0 | 0.3 |
| 87.5° | 2.8 | 1.7 | 0.8 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

# LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

## Test Information

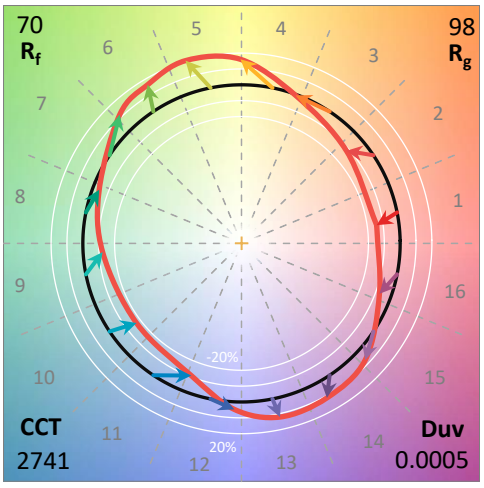
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-1-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-727-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.***TESTED IN SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2741 | CRI (Ra): | 71.5 | | |
| CIE u': | 0.2605 | R1: | 69.2 | R9: | -16.1 |
| CIE v': | 0.5272 | R2: | 79.4 | R10: | 51.4 |
| Duv: | 0.0005 | R3: | 87.8 | R11: | 63.1 |
| CIE x: | 0.4573 | R4: | 69.4 | R12: | 42.0 |
| CIE y: | 0.4113 | R5: | 66.4 | R13: | 70.2 |
| CIE z: | 0.1313 | R6: | 69.8 | R14: | 92.4 |
| Peak Wavelength (nm): | 602 | R7: | 79.8 | | |
| Dominant Wavelength (nm): | 583 | R8: | 50.1 | | |
| Purity: | 61.2 | | | | |

| | |
|---|---|
| Rf: | 69.9 |
| Rg: | 98.3 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 56M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.3./42% |
| Sphere Temperature (°C): | 25.7 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

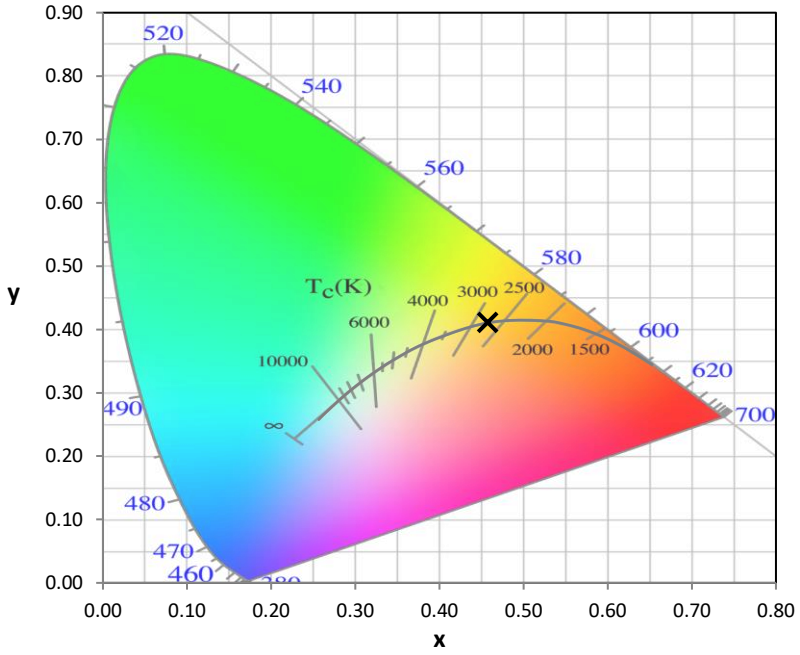
REPORT NUMBER: SP1-1908-441-1-R4

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

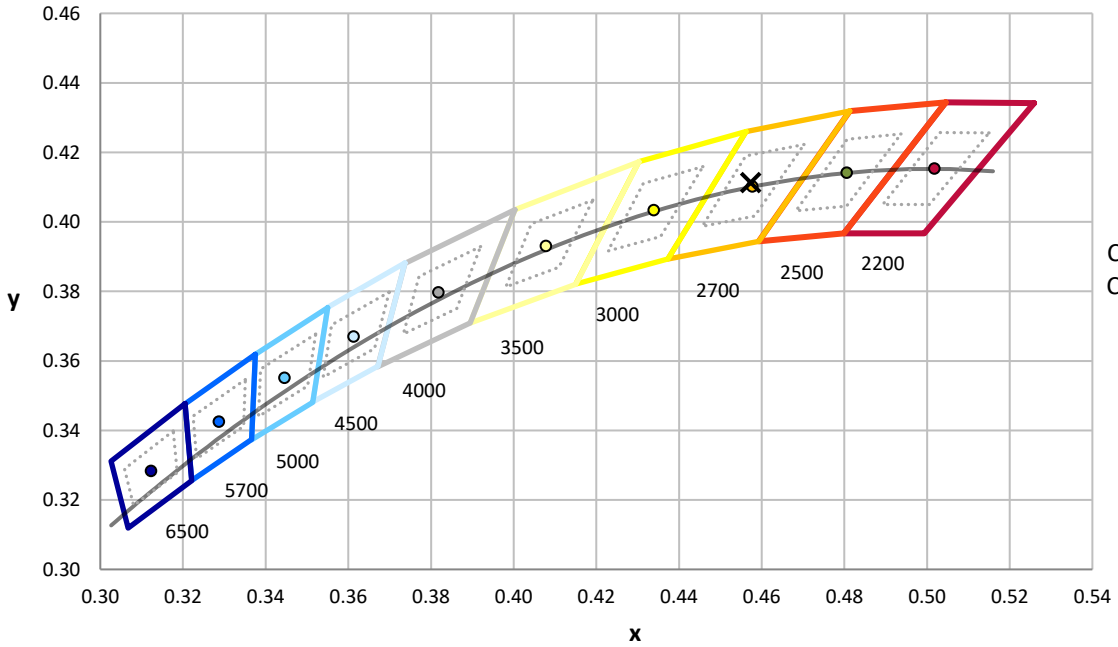
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## CIE 1931 Chromaticity Diagram




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



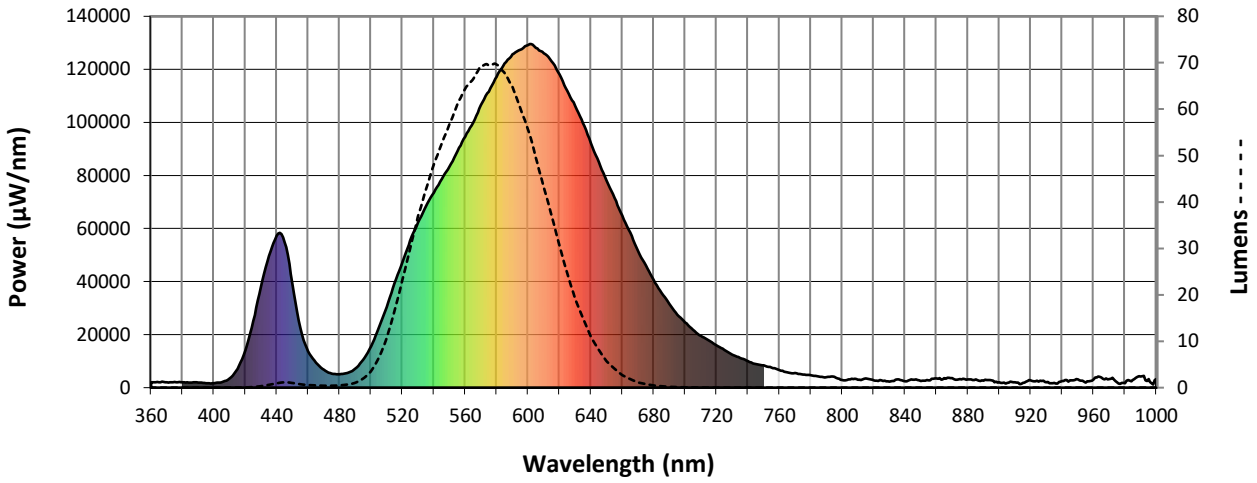

CCT = 2741K
CIE x = 0.4573
CIE y = 0.4113
Duv = 0.0005

Point lies inside the ANSI 2700K 4-step quadrangle

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## Photopic Flux vs. Wavelength



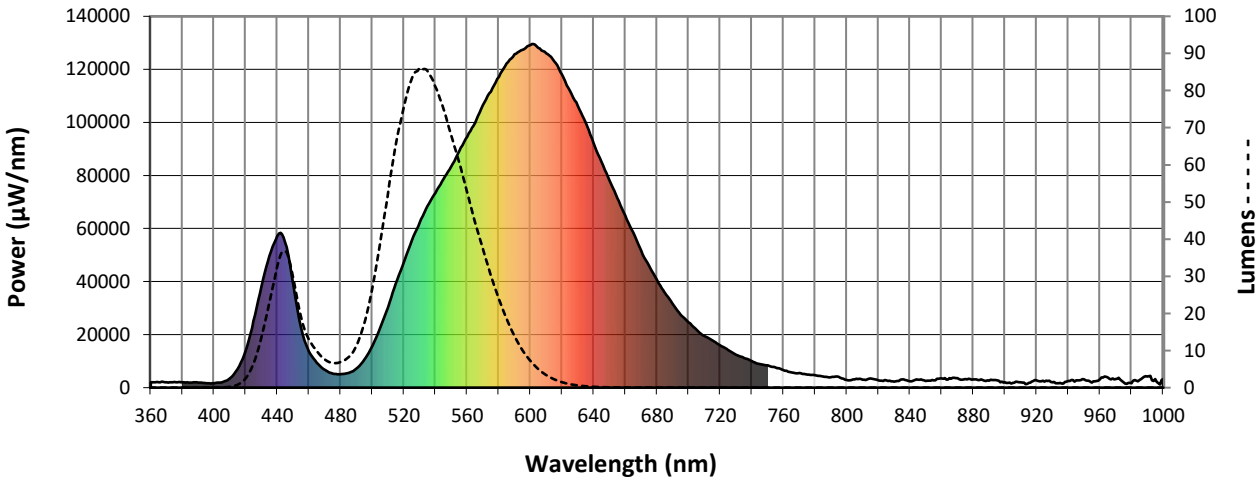

**Photopic Lumens: 6211.7**

| 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 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## Scotopic Flux vs. Wavelength



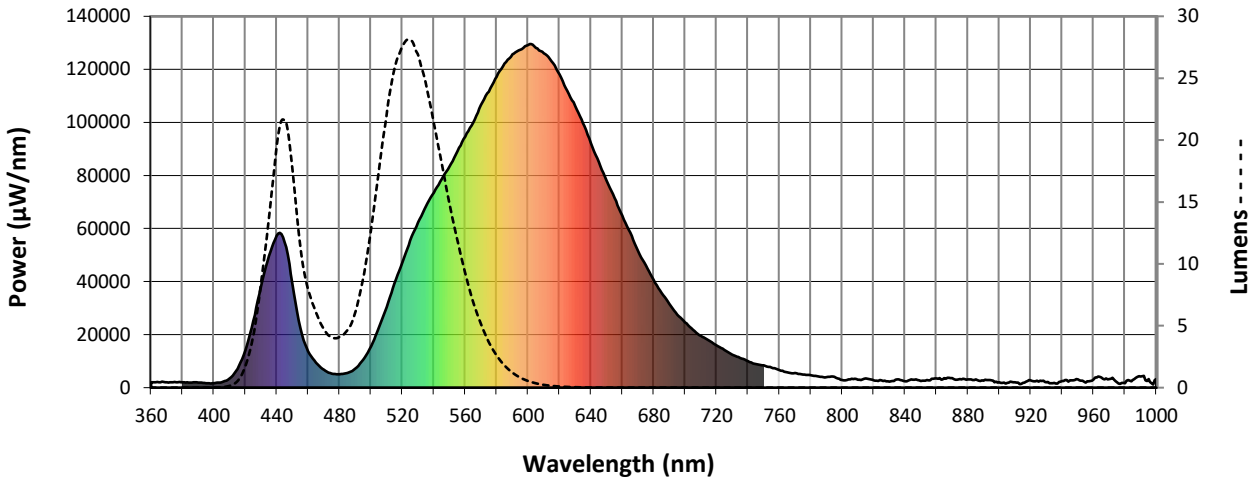

**Scotopic Lumens: 6474.3** **S/P: 1.04**

| 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 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 2145.7** **M/P: 0.35**

| 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 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

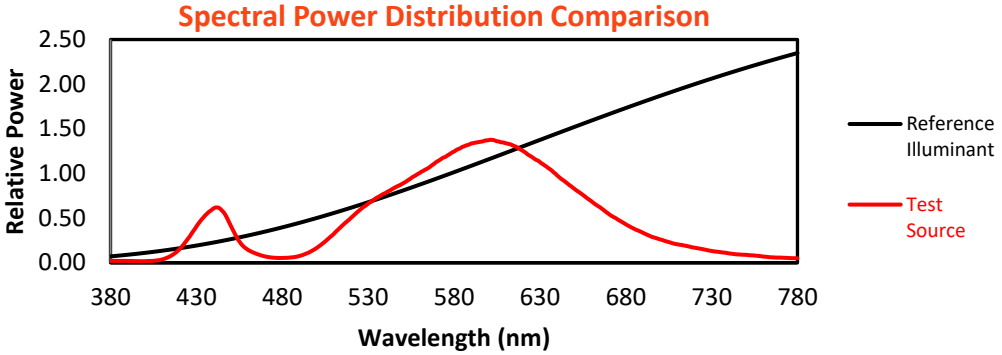
REPORT NUMBER: SP1-1908-441-1-R4

# TM-30-18

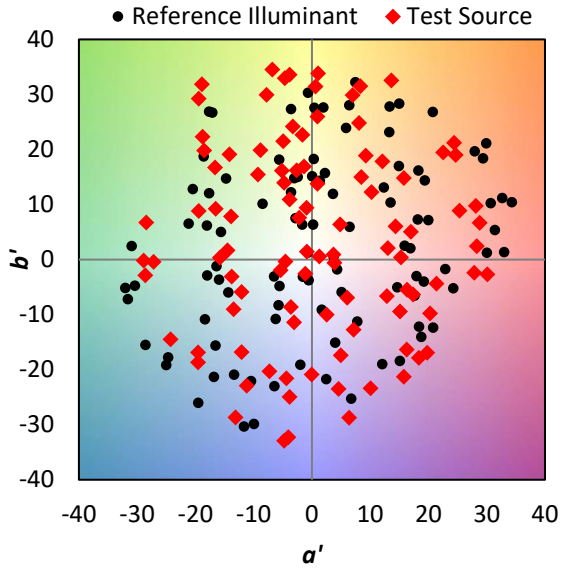
## Summary

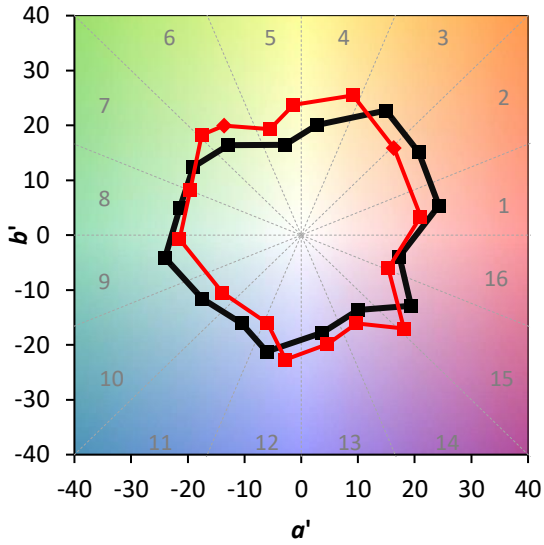
$R_f$ = 69.9
$R_g$ = 98.3
CIE $R_a$ = 71.5
$R_9$ = -16.1

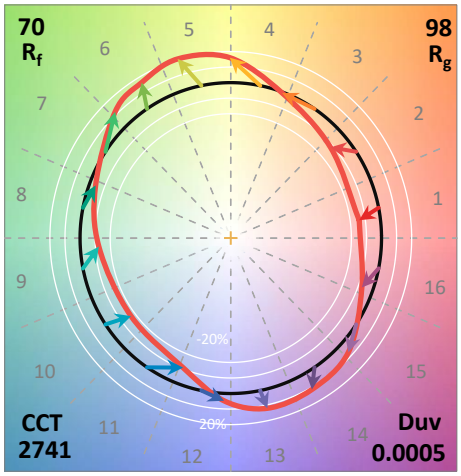
## Spectral Power Distribution Comparison

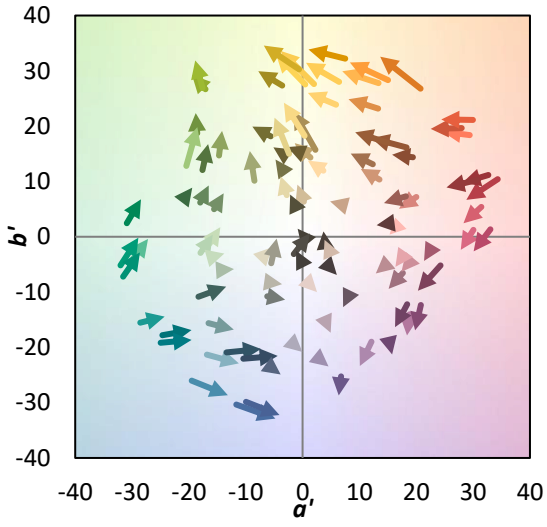



## Color Vector Graphics



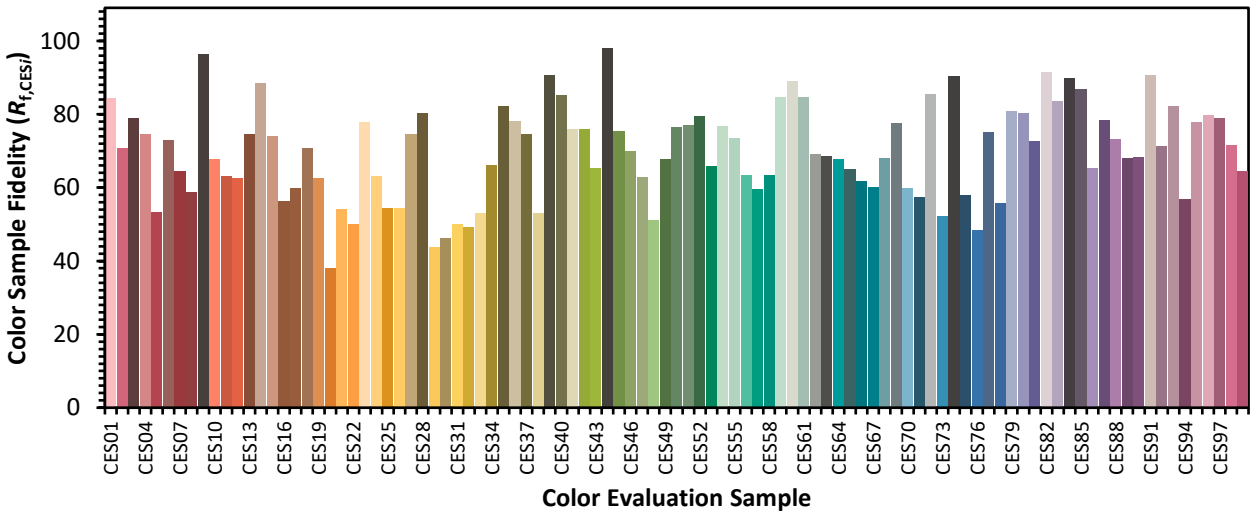
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |

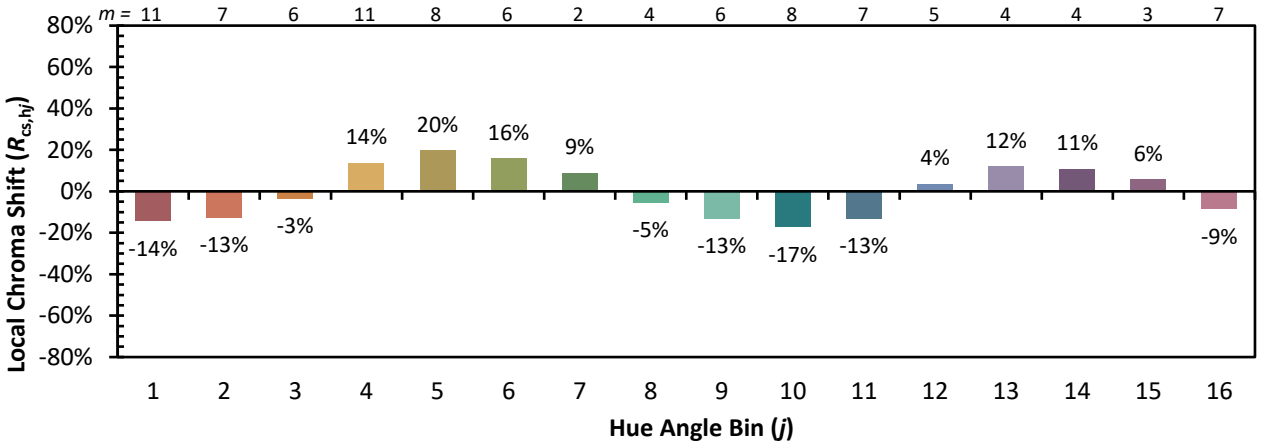


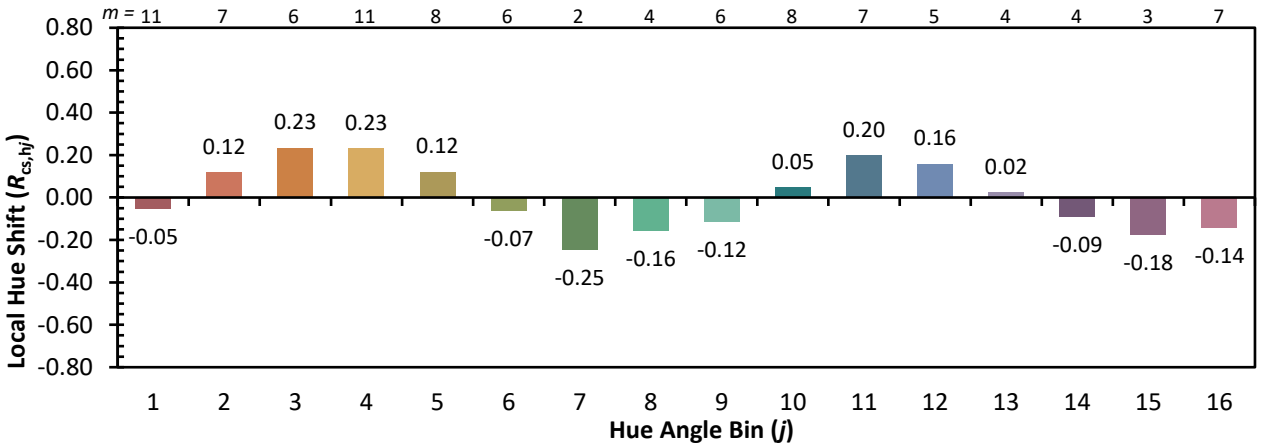
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

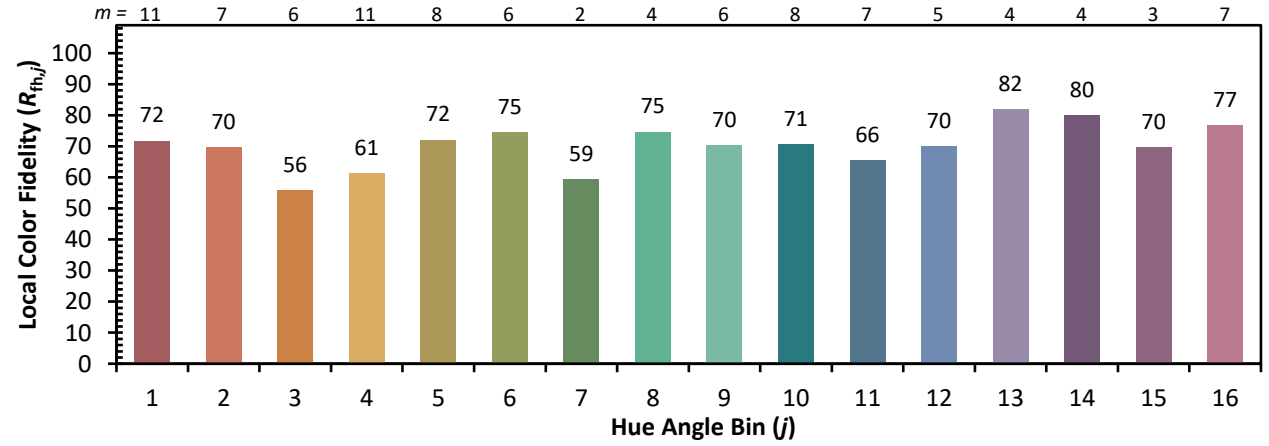
REPORT NUMBER: SP1-1908-441-1-R4

## TM-30-18

### Color Rendition by Hue-Angle Bin



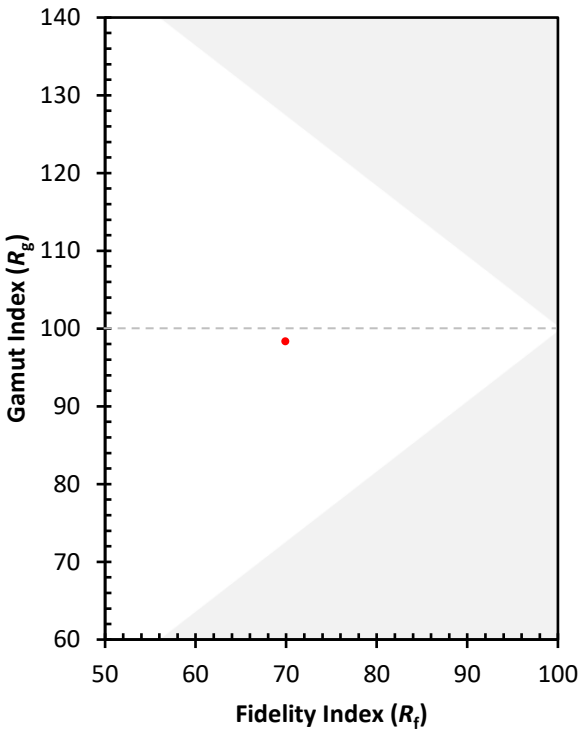



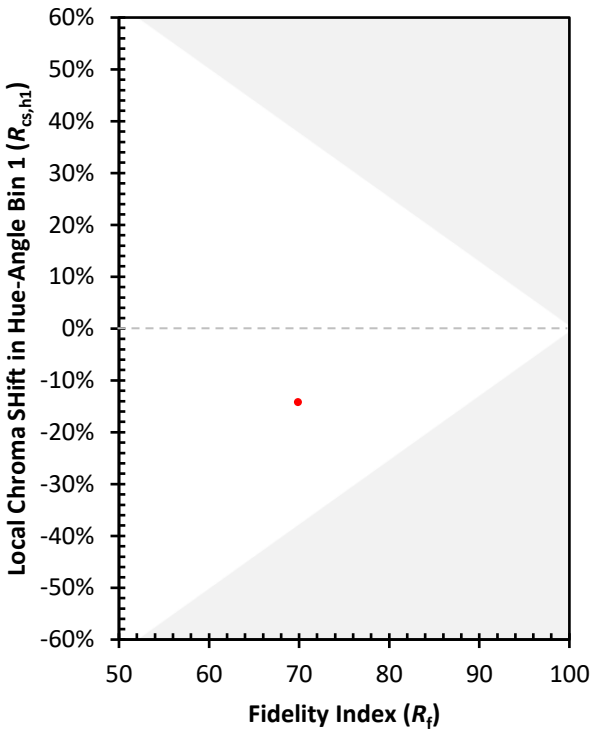
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

**TM-30-18**

## Measure Comparisons




(END OF REPORT)