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

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P637179

Luminaire Tested: GWS-SA4C-730-U-T3-W

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P637179 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-23) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA4C-730-U-T3-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS |
| Light Source: | (64) 3000K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 17688.6 lumens |
| Efficiency: | N/A |
| Efficacy: | 137.7 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B3 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 128.5 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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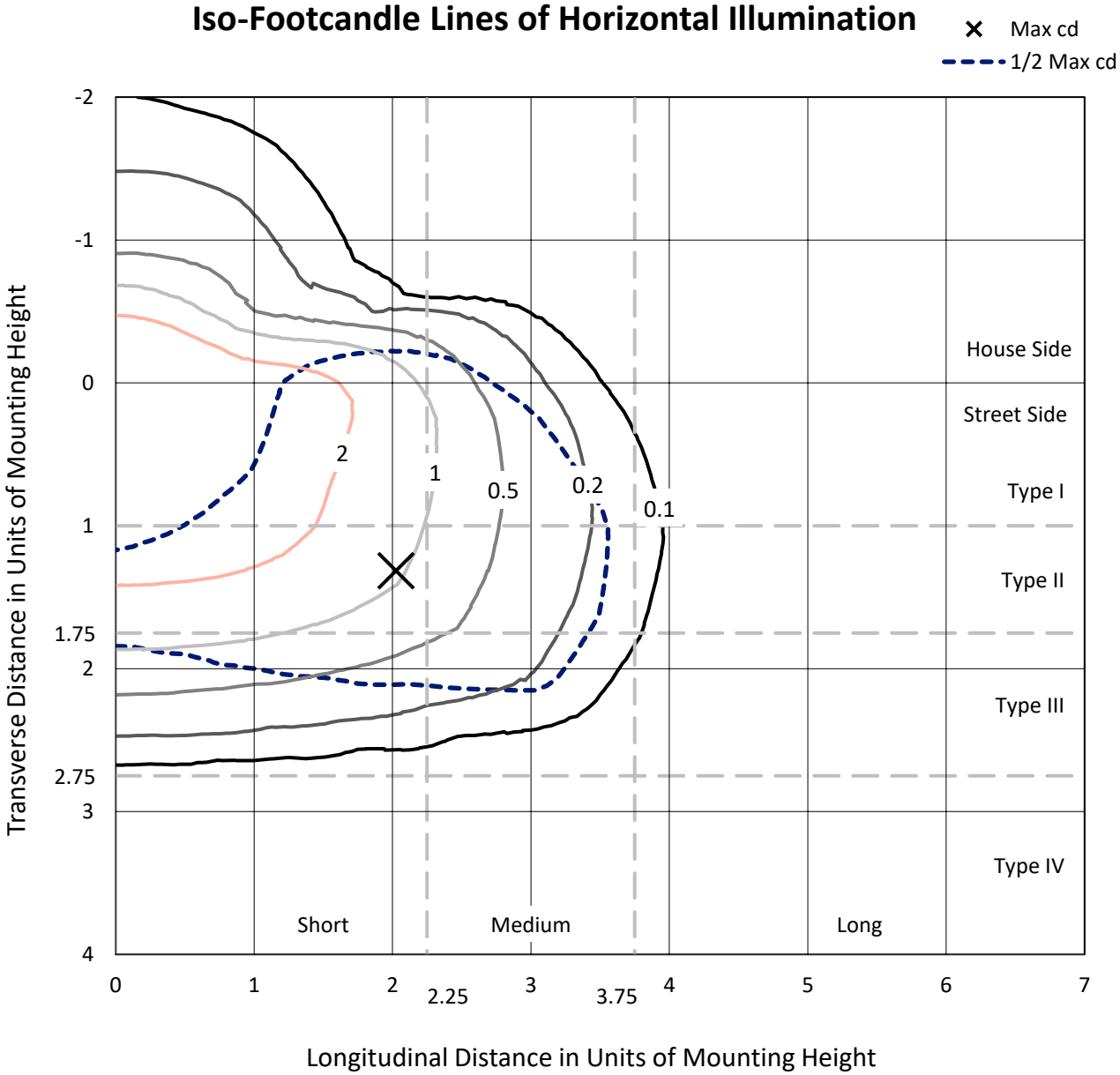
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P637179
CATALOG NUMBER: GWS-SA4C-730-U-T3-W

## Iso-Footcandle Lines of Horizontal Illumination




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

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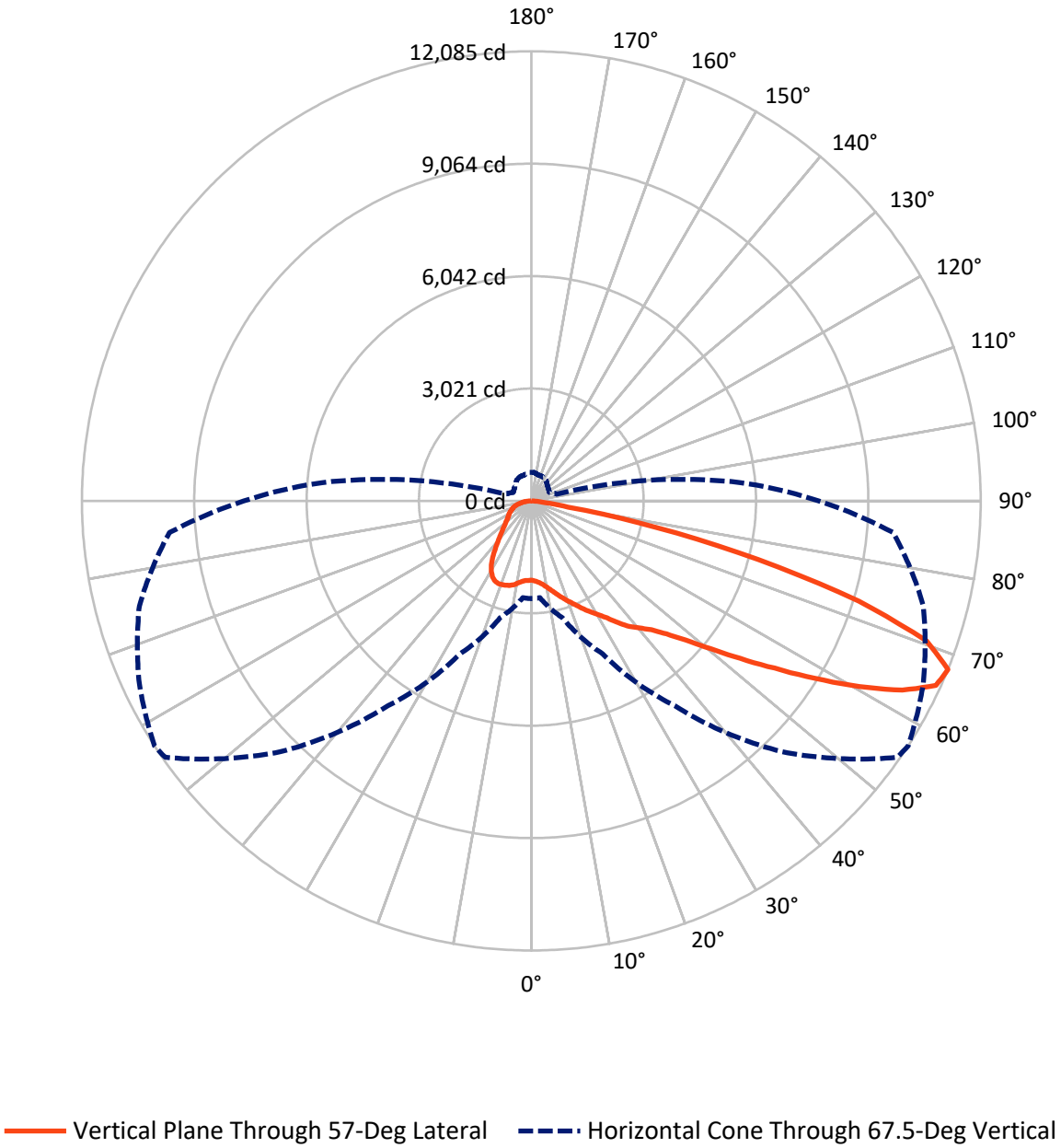
## Luminous Intensity Polar Plot



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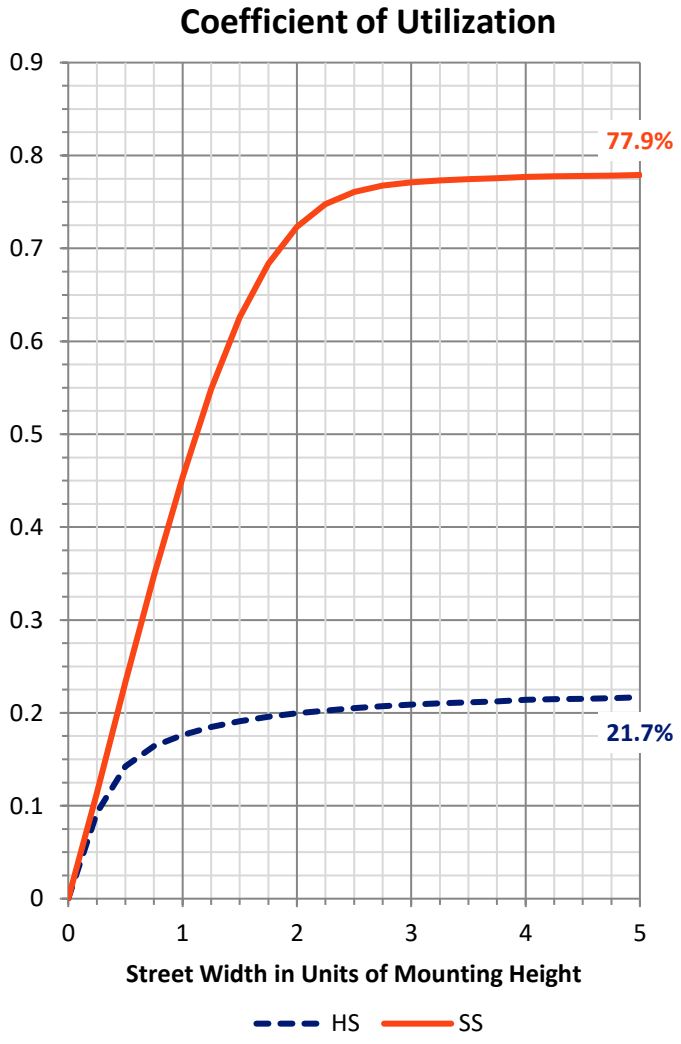
REPORT NUMBER: P637179
CATALOG NUMBER: GWS-SA4C-730-U-T3-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 3889.1 | 0.0 | 3889.1 |
| | % Fixture | 22.0 | 0.0 | 22.0 |
| **Street Side** | Lumens | 13799.5 | 0.0 | 13799.5 |
| | % Fixture | 78.0 | 0.0 | 78.0 |
| **Total** | Lumens | 17688.6 | 0.0 | 17688.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 211.4 | 1.2 |
| 10°-20° | 699.8 | 4.0 |
| 20°-30° | 1247.6 | 7.1 |
| 30°-40° | 1813.8 | 10.3 |
| 40°-50° | 2625.3 | 14.8 |
| 50°-60° | 4108.4 | 23.2 |
| 60°-70° | 4792.8 | 27.1 |
| 70°-80° | 2000.7 | 11.3 |
| 80°-90° | 188.8 | 1.1 |
| 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° | 17688.6 | 100.0 |
| 0°-180° | 17688.6 | 100.0 |



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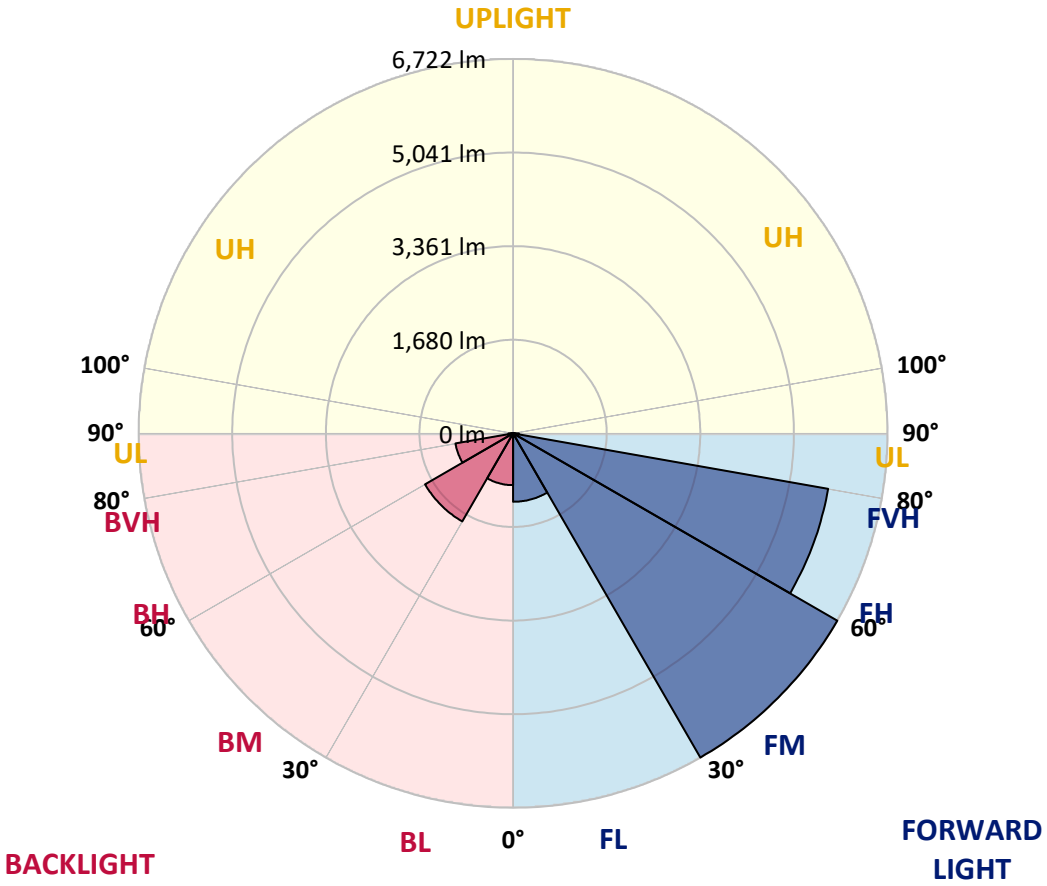
REPORT NUMBER: P637179
CATALOG NUMBER: GWS-SA4C-730-U-T3-W

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1228.6 | 6.9 | | | |
| FM | (30°-60°) | 6721.9 | 38.0 | | | |
| FH | (60°-80°) | 5743.8 | 32.5 | | | G3/7500 |
| FVH | (80°-90°) | 105.2 | 0.6 | | | G2/225 |
| BL | (0°-30°) | 930.1 | 5.3 | B2/1000 | | |
| BM | (30°-60°) | 1825.6 | 10.3 | B2/2500 | | |
| BH | (60°-80°) | 1049.7 | 5.9 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 83.6 | 0.5 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G3**
Type III Short



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REPORT NUMBER: P637179
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 57° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 |
| 2.5° | 2161.8 | 2159.2 | 2158.0 | 2165.6 | 2163.0 | 2161.8 | 2161.8 | 2160.5 | 2158.0 | 2147.8 | 2133.9 |
| 5° | 2221.3 | 2216.3 | 2211.2 | 2217.5 | 2212.5 | 2207.4 | 2206.1 | 2203.6 | 2194.7 | 2179.5 | 2158.0 |
| 7.5° | 2283.4 | 2278.3 | 2279.6 | 2283.4 | 2279.6 | 2277.1 | 2273.3 | 2270.7 | 2256.8 | 2232.7 | 2203.6 |
| 10° | 2370.8 | 2370.8 | 2373.4 | 2377.2 | 2378.5 | 2374.6 | 2367.0 | 2363.2 | 2346.8 | 2316.4 | 2275.8 |
| 12.5° | 2497.6 | 2495.0 | 2495.0 | 2492.5 | 2496.3 | 2492.5 | 2484.9 | 2478.6 | 2458.3 | 2419.0 | 2360.7 |
| 15° | 2664.8 | 2654.7 | 2645.8 | 2629.3 | 2624.3 | 2610.3 | 2612.9 | 2609.1 | 2590.1 | 2536.8 | 2463.4 |
| 17.5° | 2843.5 | 2842.2 | 2828.3 | 2795.3 | 2762.4 | 2739.6 | 2744.7 | 2743.4 | 2733.3 | 2661.0 | 2567.3 |
| 20° | 3000.6 | 3007.0 | 2994.3 | 2968.9 | 2924.6 | 2881.5 | 2879.0 | 2885.3 | 2872.6 | 2800.4 | 2669.9 |
| 22.5° | 3176.8 | 3171.7 | 3159.0 | 3126.1 | 3093.1 | 3047.5 | 3032.3 | 3027.2 | 3022.2 | 2939.8 | 2775.1 |
| 25° | 3344.0 | 3359.2 | 3342.8 | 3312.3 | 3261.7 | 3212.2 | 3199.6 | 3204.6 | 3190.7 | 3081.7 | 2887.8 |
| 27.5° | 3555.6 | 3562.0 | 3551.8 | 3510.0 | 3466.9 | 3397.2 | 3373.2 | 3373.2 | 3368.1 | 3214.8 | 2976.5 |
| 30° | 3781.2 | 3798.9 | 3781.2 | 3747.0 | 3702.6 | 3602.5 | 3550.6 | 3545.5 | 3530.3 | 3351.6 | 3080.5 |
| 32.5° | 4008.0 | 4020.7 | 4008.0 | 3975.1 | 3924.4 | 3836.9 | 3762.2 | 3750.8 | 3730.5 | 3501.2 | 3186.9 |
| 35° | 4209.5 | 4220.9 | 4218.4 | 4226.0 | 4184.1 | 4073.9 | 4028.3 | 4023.2 | 3970.0 | 3696.3 | 3331.4 |
| 37.5° | 4430.0 | 4443.9 | 4424.9 | 4440.1 | 4423.6 | 4319.7 | 4305.8 | 4280.5 | 4204.4 | 3880.0 | 3483.4 |
| 40° | 4680.9 | 4693.5 | 4663.1 | 4669.5 | 4650.5 | 4592.2 | 4521.2 | 4487.0 | 4374.2 | 4079.0 | 3722.9 |
| 42.5° | 4949.5 | 4978.7 | 4992.6 | 4981.2 | 4936.8 | 4903.9 | 4779.7 | 4736.6 | 4642.9 | 4437.6 | 4117.0 |
| 45° | 5338.5 | 5381.6 | 5401.9 | 5372.7 | 5353.7 | 5306.8 | 5154.8 | 5102.8 | 5053.4 | 4943.2 | 4666.9 |
| 47.5° | 5758.0 | 5797.2 | 5861.9 | 5874.5 | 5889.7 | 5854.3 | 5640.1 | 5589.4 | 5598.3 | 5585.6 | 5343.6 |
| 50° | 6092.5 | 6125.4 | 6271.2 | 6427.0 | 6556.3 | 6566.4 | 6292.7 | 6238.2 | 6286.4 | 6326.9 | 6158.4 |
| 52.5° | 6335.8 | 6364.9 | 6557.5 | 6879.4 | 7172.1 | 7388.8 | 7093.5 | 7031.4 | 7070.7 | 7162.0 | 7084.7 |
| 55° | 6533.5 | 6574.0 | 6775.5 | 7269.7 | 7861.4 | 8203.6 | 8014.8 | 7936.2 | 7919.7 | 8032.5 | 8076.9 |
| 57.5° | 6637.4 | 6650.0 | 6932.6 | 7575.1 | 8367.0 | 9003.1 | 9085.5 | 8996.8 | 8839.7 | 8901.8 | 9132.4 |
| 60° | 6400.4 | 6421.9 | 6808.4 | 7653.6 | 8766.2 | 9796.4 | 10209.5 | 10136.0 | 9801.4 | 9835.7 | 10090.4 |
| 62.5° | 5745.3 | 5775.7 | 6240.7 | 7279.8 | 8799.1 | 10326.1 | 11247.3 | 11200.4 | 10751.8 | 10566.8 | 10642.8 |
| 65° | 4608.6 | 4618.8 | 5100.3 | 6354.8 | 8144.0 | 10391.9 | 11970.8 | 11959.4 | 11415.8 | 10982.4 | 10656.8 |
| 67.5° | 2628.1 | 2610.3 | 3254.1 | 4532.6 | 6721.0 | 9535.3 | 12017.7 | 12084.9 | 11631.2 | 10914.0 | 9769.8 |
| 70° | 1139.2 | 1141.7 | 1438.2 | 2236.5 | 4350.1 | 7706.8 | 11162.4 | 11277.7 | 11007.8 | 9774.8 | 7772.7 |
| 72.5° | 527.1 | 534.7 | 662.7 | 968.1 | 1857.7 | 4781.0 | 9102.0 | 9205.9 | 8974.0 | 7823.4 | 5655.3 |
| 75° | 372.5 | 378.9 | 442.2 | 555.0 | 854.1 | 1862.7 | 6088.7 | 6306.6 | 6419.4 | 5851.7 | 3726.7 |
| 77.5° | 282.6 | 291.4 | 323.1 | 385.2 | 527.1 | 660.2 | 2913.2 | 3432.7 | 4089.1 | 3640.5 | 1919.7 |
| 80° | 179.9 | 179.9 | 214.1 | 257.2 | 321.9 | 343.4 | 841.4 | 997.3 | 2000.8 | 1500.3 | 754.0 |
| 82.5° | 121.6 | 125.4 | 145.7 | 163.5 | 185.0 | 195.1 | 361.1 | 385.2 | 577.8 | 510.7 | 310.5 |
| 85° | 64.6 | 67.2 | 76.0 | 74.8 | 88.7 | 77.3 | 152.1 | 150.8 | 211.6 | 231.9 | 117.8 |
| 87.5° | 0.0 | 0.0 | 1.3 | 1.3 | 2.5 | 3.8 | 16.5 | 17.7 | 44.4 | 71.0 | 39.3 |
| 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: P637179
CATALOG NUMBER: GWS-SA4C-730-U-T3-W

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 | 2131.4 |
| 2.5° | 2141.5 | 2126.3 | 2133.9 | 2131.4 | 2139.0 | 2139.0 | 2125.0 | 2121.2 | 2122.5 | 2107.3 | 2102.2 |
| 5° | 2160.5 | 2142.8 | 2146.6 | 2141.5 | 2149.1 | 2155.4 | 2149.1 | 2149.1 | 2156.7 | 2145.3 | 2139.0 |
| 7.5° | 2203.6 | 2183.3 | 2183.3 | 2177.0 | 2185.8 | 2190.9 | 2185.8 | 2193.4 | 2207.4 | 2196.0 | 2189.6 |
| 10° | 2272.0 | 2247.9 | 2249.2 | 2241.6 | 2245.4 | 2242.9 | 2222.6 | 2216.3 | 2220.1 | 2209.9 | 2204.9 |
| 12.5° | 2360.7 | 2327.8 | 2327.8 | 2312.6 | 2303.7 | 2277.1 | 2235.3 | 2220.1 | 2222.6 | 2213.7 | 2209.9 |
| 15° | 2445.6 | 2415.2 | 2408.9 | 2378.5 | 2337.9 | 2288.5 | 2250.5 | 2240.3 | 2242.9 | 2234.0 | 2227.7 |
| 17.5° | 2545.7 | 2506.4 | 2483.6 | 2427.9 | 2353.1 | 2302.4 | 2264.4 | 2240.3 | 2220.1 | 2199.8 | 2194.7 |
| 20° | 2638.2 | 2588.8 | 2547.0 | 2460.8 | 2369.6 | 2299.9 | 2228.9 | 2169.4 | 2120.0 | 2093.3 | 2087.0 |
| 22.5° | 2733.3 | 2669.9 | 2596.4 | 2483.6 | 2368.3 | 2254.3 | 2123.8 | 2033.8 | 1960.3 | 1921.0 | 1928.6 |
| 25° | 2823.2 | 2743.4 | 2643.3 | 2505.2 | 2327.8 | 2152.9 | 1975.5 | 1841.2 | 1757.5 | 1727.1 | 1718.3 |
| 27.5° | 2898.0 | 2799.1 | 2686.4 | 2495.0 | 2244.1 | 2007.2 | 1772.8 | 1623.2 | 1542.1 | 1507.9 | 1499.0 |
| 30° | 2981.6 | 2870.1 | 2748.5 | 2448.1 | 2112.3 | 1803.2 | 1543.4 | 1421.7 | 1363.5 | 1330.5 | 1331.8 |
| 32.5° | 3077.9 | 2961.3 | 2835.9 | 2358.2 | 1943.8 | 1582.7 | 1354.6 | 1271.0 | 1224.1 | 1191.1 | 1186.1 |
| 35° | 3207.2 | 3091.9 | 2894.2 | 2222.6 | 1729.7 | 1379.9 | 1225.3 | 1156.9 | 1098.6 | 1055.5 | 1046.7 |
| 37.5° | 3366.8 | 3288.3 | 2900.5 | 2041.4 | 1500.3 | 1240.5 | 1132.8 | 1059.3 | 988.4 | 931.4 | 925.0 |
| 40° | 3640.5 | 3550.6 | 2848.6 | 1814.6 | 1305.2 | 1150.6 | 1055.5 | 970.6 | 888.3 | 824.9 | 816.0 |
| 42.5° | 4030.8 | 3845.8 | 2737.1 | 1558.6 | 1158.2 | 1079.6 | 982.0 | 874.3 | 790.7 | 746.4 | 740.0 |
| 45° | 4527.5 | 4175.3 | 2569.8 | 1317.8 | 1049.2 | 1009.9 | 904.7 | 792.0 | 747.6 | 715.9 | 709.6 |
| 47.5° | 5135.8 | 4559.2 | 2377.2 | 1130.3 | 964.3 | 946.6 | 826.2 | 764.1 | 724.8 | 698.2 | 691.9 |
| 50° | 5863.1 | 5048.3 | 2218.8 | 983.3 | 888.3 | 873.1 | 800.8 | 747.6 | 715.9 | 694.4 | 689.3 |
| 52.5° | 6693.1 | 5592.0 | 2141.5 | 878.1 | 822.4 | 807.2 | 792.0 | 743.8 | 717.2 | 700.7 | 694.4 |
| 55° | 7554.8 | 6164.7 | 2069.3 | 797.0 | 766.6 | 775.5 | 793.2 | 756.5 | 736.2 | 714.7 | 708.3 |
| 57.5° | 8387.3 | 6702.0 | 1891.9 | 733.7 | 726.1 | 760.3 | 799.6 | 769.2 | 745.1 | 723.5 | 715.9 |
| 60° | 8961.3 | 6996.0 | 1591.5 | 683.0 | 695.7 | 741.3 | 783.1 | 750.2 | 719.7 | 710.9 | 707.1 |
| 62.5° | 9115.9 | 6960.5 | 1235.5 | 631.0 | 658.9 | 699.5 | 740.0 | 718.5 | 686.8 | 700.7 | 702.0 |
| 65° | 8754.8 | 6580.3 | 927.6 | 580.4 | 610.8 | 645.0 | 695.7 | 686.8 | 675.4 | 713.4 | 714.7 |
| 67.5° | *7732.2* | *5646.4* | *707.1* | *536.0* | *561.3* | *603.2* | *681.7* | *718.5* | *721.0* | *769.2* | *764.1* |
| 70° | 5850.5 | 4218.4 | 553.7 | 494.2 | 523.3 | 603.2 | 726.1 | 742.6 | 712.1 | 756.5 | 746.4 |
| 72.5° | 4044.8 | 2783.9 | 471.4 | 457.4 | 476.5 | 575.3 | 724.8 | 724.8 | 691.9 | 691.9 | 672.9 |
| 75° | 2512.8 | 1637.2 | 410.6 | 410.6 | 410.6 | 503.1 | 704.5 | 667.8 | 609.5 | 582.9 | 567.7 |
| 77.5° | 1240.5 | 795.8 | 344.7 | 357.3 | 343.4 | 420.7 | 575.3 | 546.1 | 510.7 | 482.8 | 472.6 |
| 80° | 529.7 | 397.9 | 278.8 | 292.7 | 276.2 | 316.8 | 456.2 | 449.8 | 415.6 | 378.9 | 367.5 |
| 82.5° | 243.3 | 205.3 | 223.0 | 229.4 | 201.5 | 238.2 | 333.3 | 333.3 | 314.3 | 263.6 | 244.6 |
| 85° | 103.9 | 109.0 | 154.6 | 154.6 | 126.7 | 134.3 | 178.7 | 169.8 | 152.1 | 124.2 | 114.0 |
| 87.5° | 35.5 | 53.2 | 78.6 | 68.4 | 26.6 | 11.4 | 6.3 | 2.5 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-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

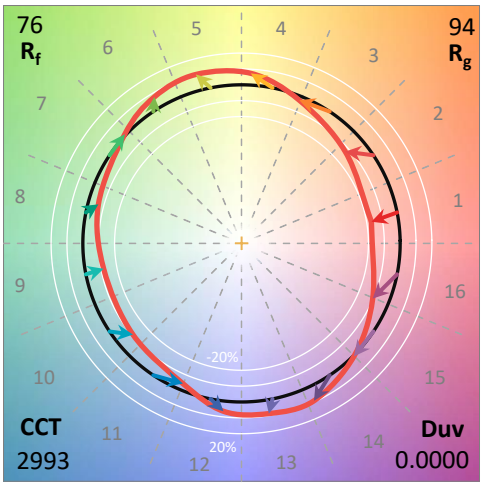
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-2-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-730-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.***TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2993 | CRI (Ra): | 71.8 | | |
| CIE u': | 0.2508 | R1: | 67.5 | R9: | -38.3 |
| CIE v': | 0.5215 | R2: | 82.9 | R10: | 62.5 |
| Duv: | 0.0000 | R3: | 94.7 | R11: | 63.7 |
| CIE x: | 0.4374 | R4: | 67.7 | R12: | 57.8 |
| CIE y: | 0.4043 | R5: | 67.9 | R13: | 70.4 |
| CIE z: | 0.1583 | R6: | 77.6 | R14: | 97.3 |
| Peak Wavelength (nm): | 593 | R7: | 76.0 | | |
| Dominant Wavelength (nm): | 582 | R8: | 40.5 | | |
| Purity: | 53 | | | | |

| | |
|---|---|
| Rf: | 75.7 |
| Rg: | 93.9 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 53M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.0./44% |
| Sphere Temperature (°C): | 25.7 |

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

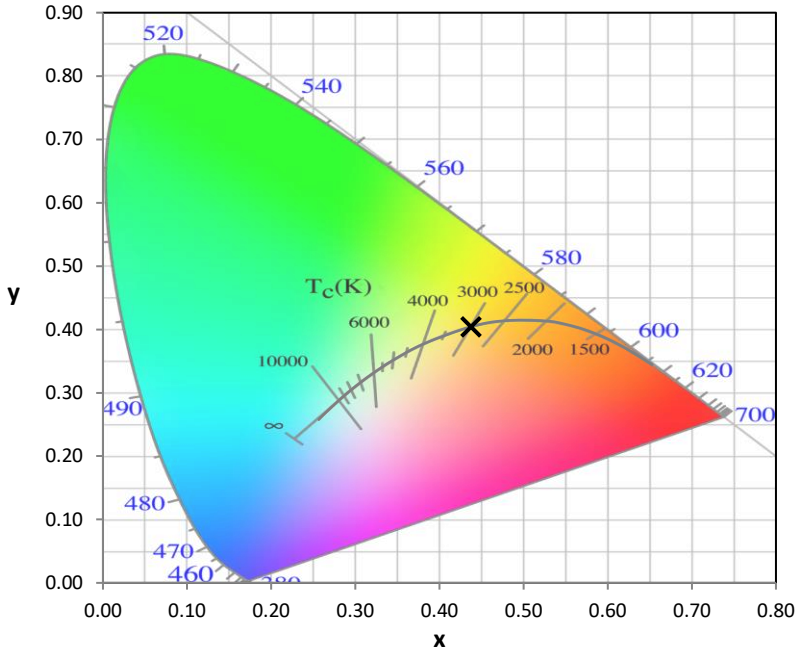
REPORT NUMBER: SP1-1908-441-2-R4

| 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 |

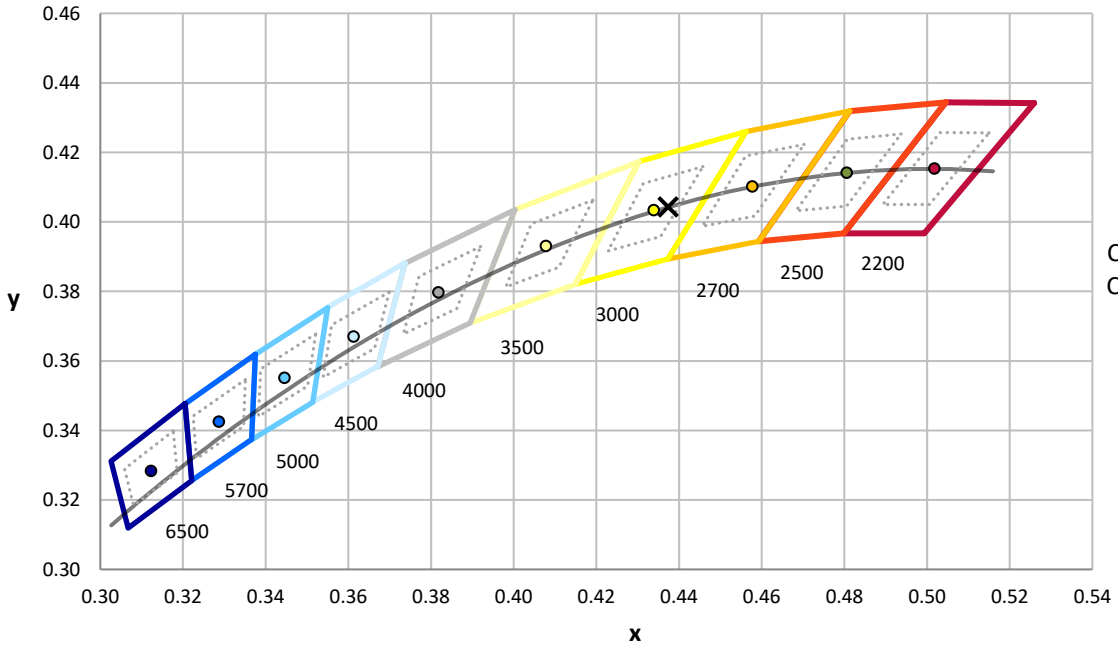
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-2-R4

## CIE 1931 Chromaticity Diagram




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



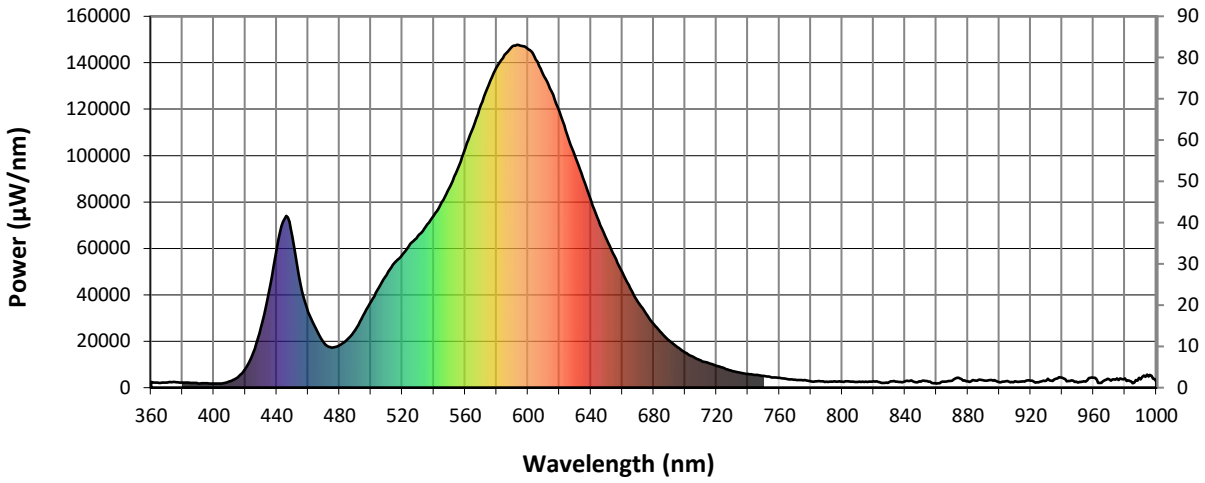

CCT = 2993K
CIE x = 0.4374
CIE y = 0.4043
Duv = 0.0000

Point lies inside the ANSI 3000K 4-step quadrangle

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

REPORT NUMBER: SP1-1908-441-2-R4

## Photopic Flux vs. Wavelength



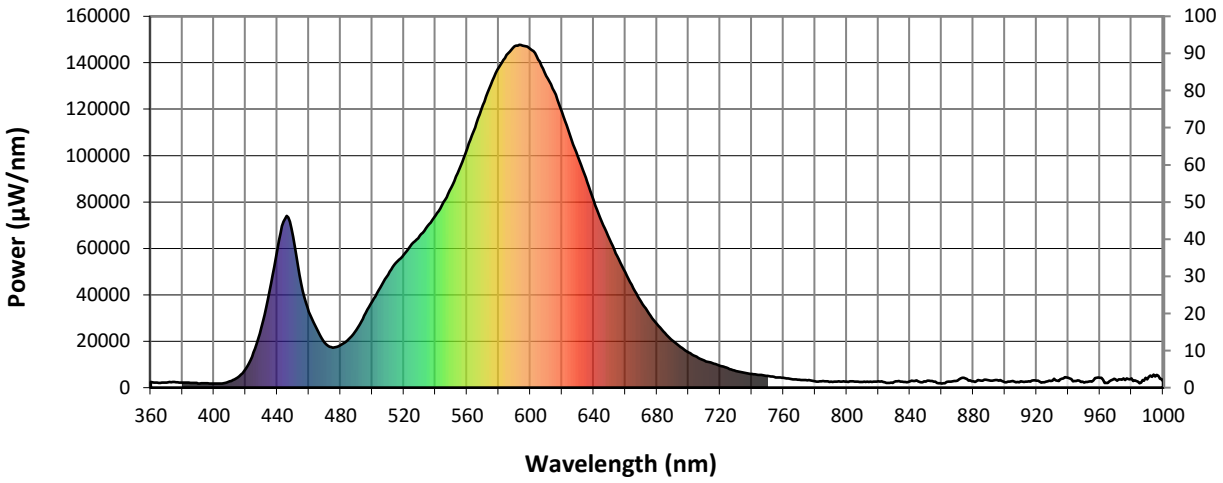

######

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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

REPORT NUMBER: SP1-1908-441-2-R4

## Scotopic Flux vs. Wavelength



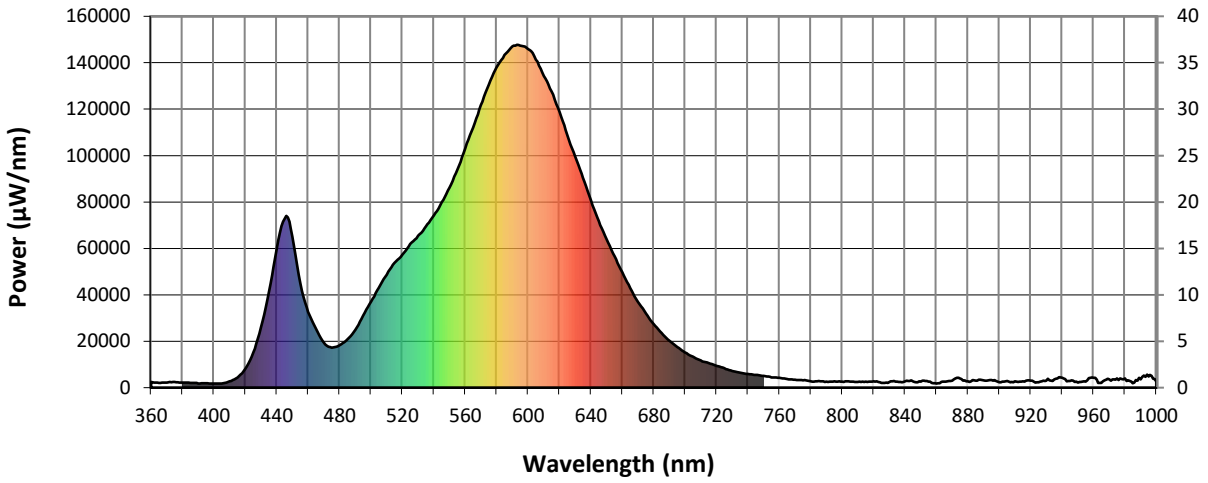

**Scotopic Lumens: 8494.8** **S/P: 1.23**

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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

REPORT NUMBER: SP1-1908-441-2-R4

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 3101.5** **M/P: 0.45**

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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

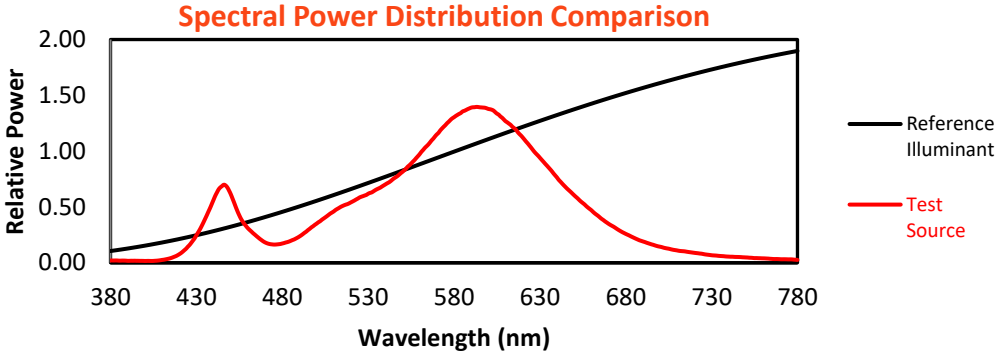
REPORT NUMBER: SP1-1908-441-2-R4

# TM-30-18

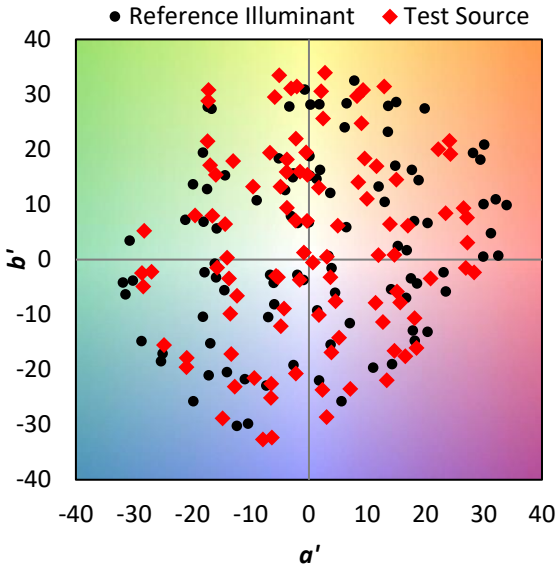
## Summary

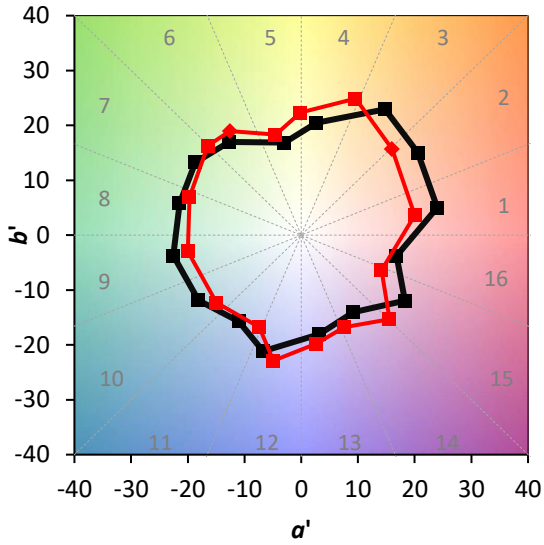
$R_f$ = 75.7
$R_g$ = 93.9
CIE $R_a$ = 71.8
$R_9$ = -38.3

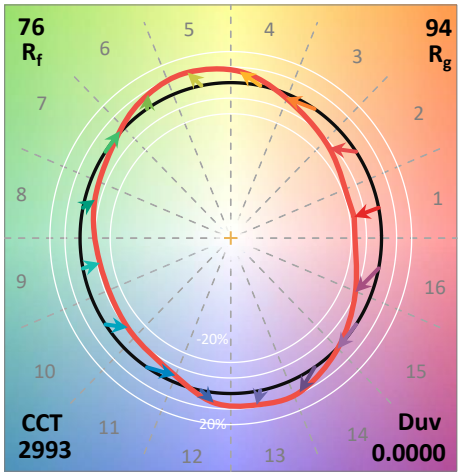
## Spectral Power Distribution Comparison

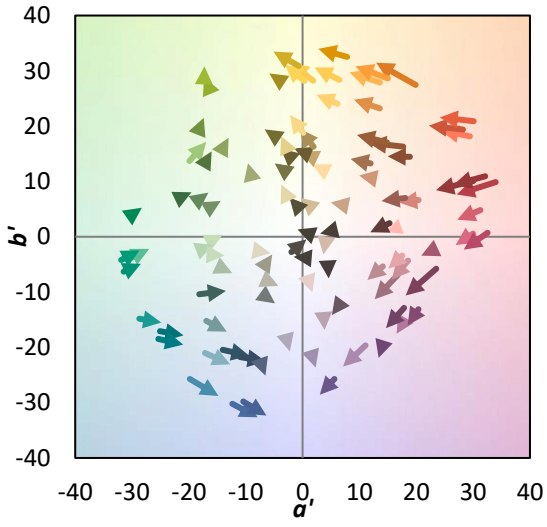



## Color Vector Graphics



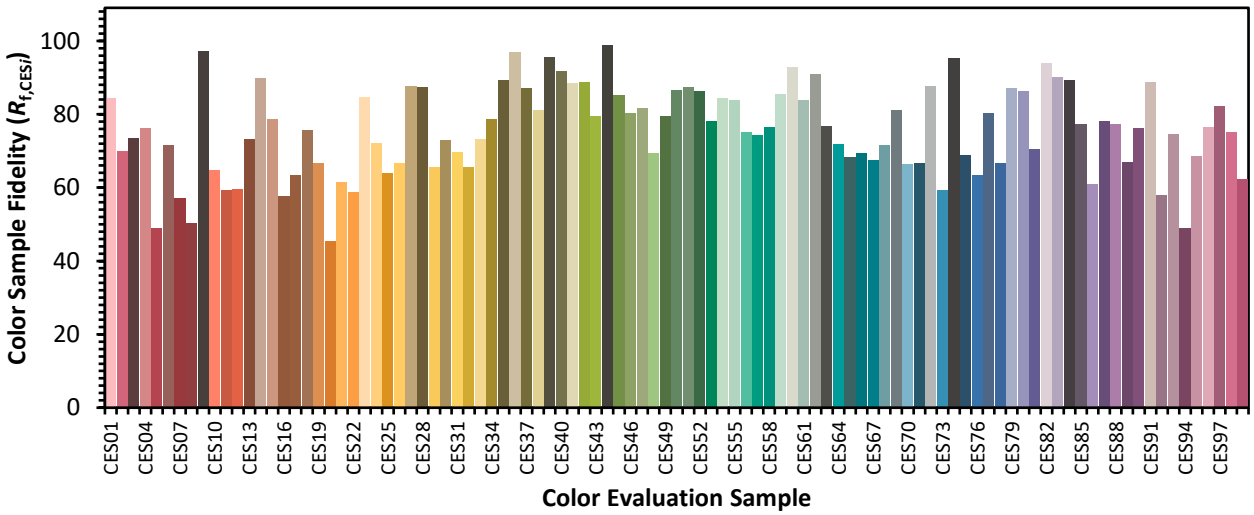
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-2-R4

# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |

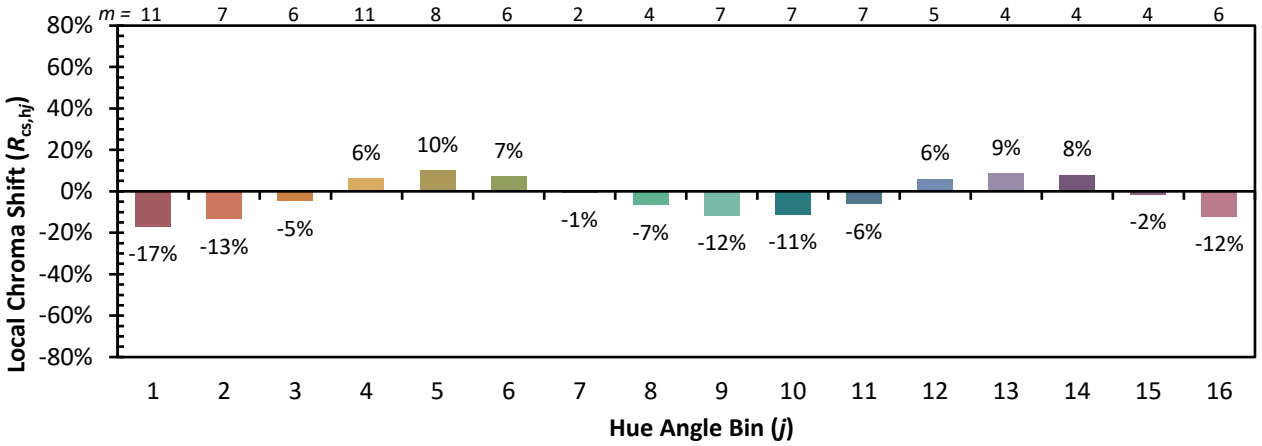


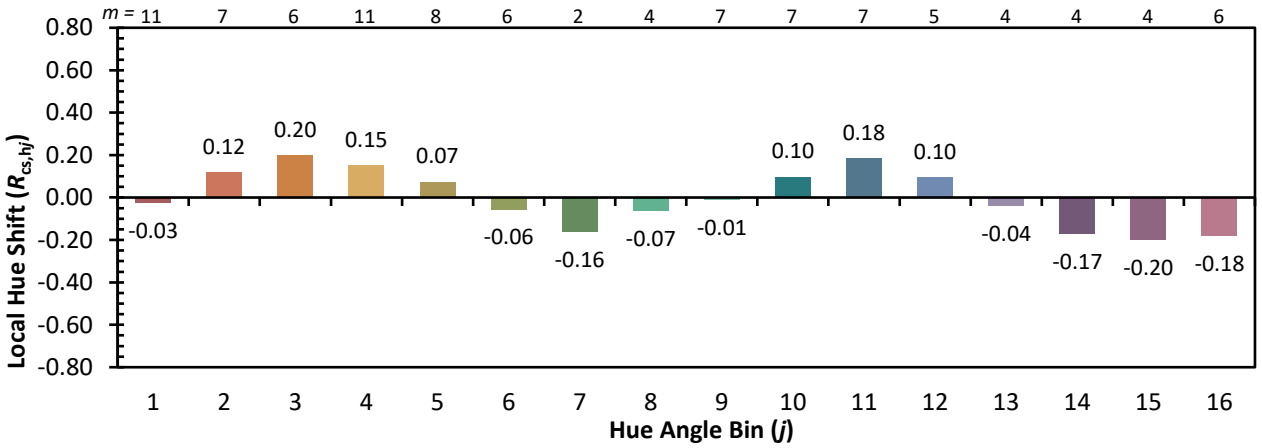
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

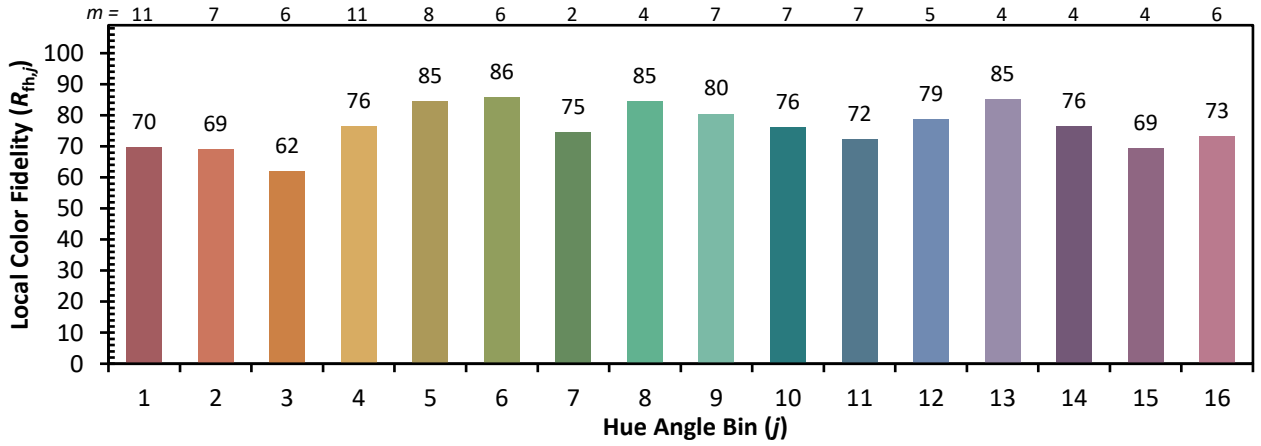
REPORT NUMBER: SP1-1908-441-2-R4

## TM-30-18

### Color Rendition by Hue-Angle Bin



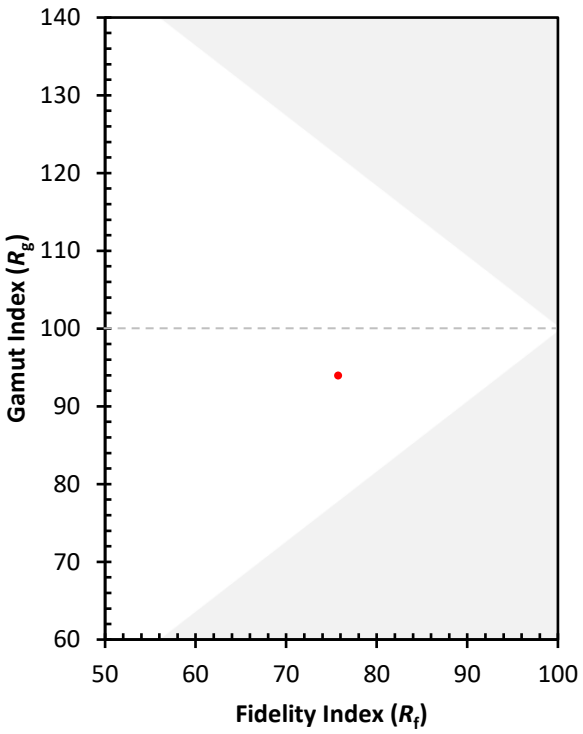



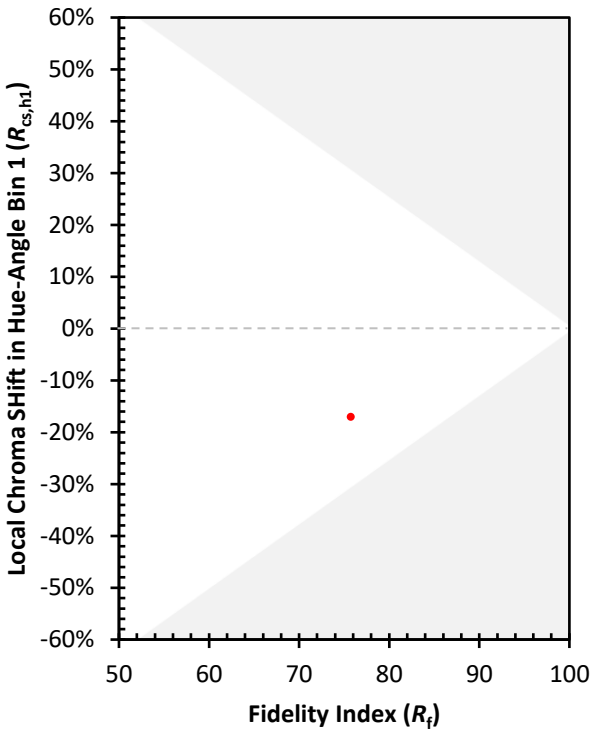
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-2-R4

## TM-30-18

### Measure Comparisons




(END OF REPORT)