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: P637347

Luminaire Tested: GWS-SA4C-750-U-T3R-W-HSS

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: | P637347 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-18) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA4C-750-U-T3R-W-HSS |
| Description: | GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | (64) 5000K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 15544.1 lumens |
| Efficiency: | N/A |
| Efficacy: | 121.0 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B2 - 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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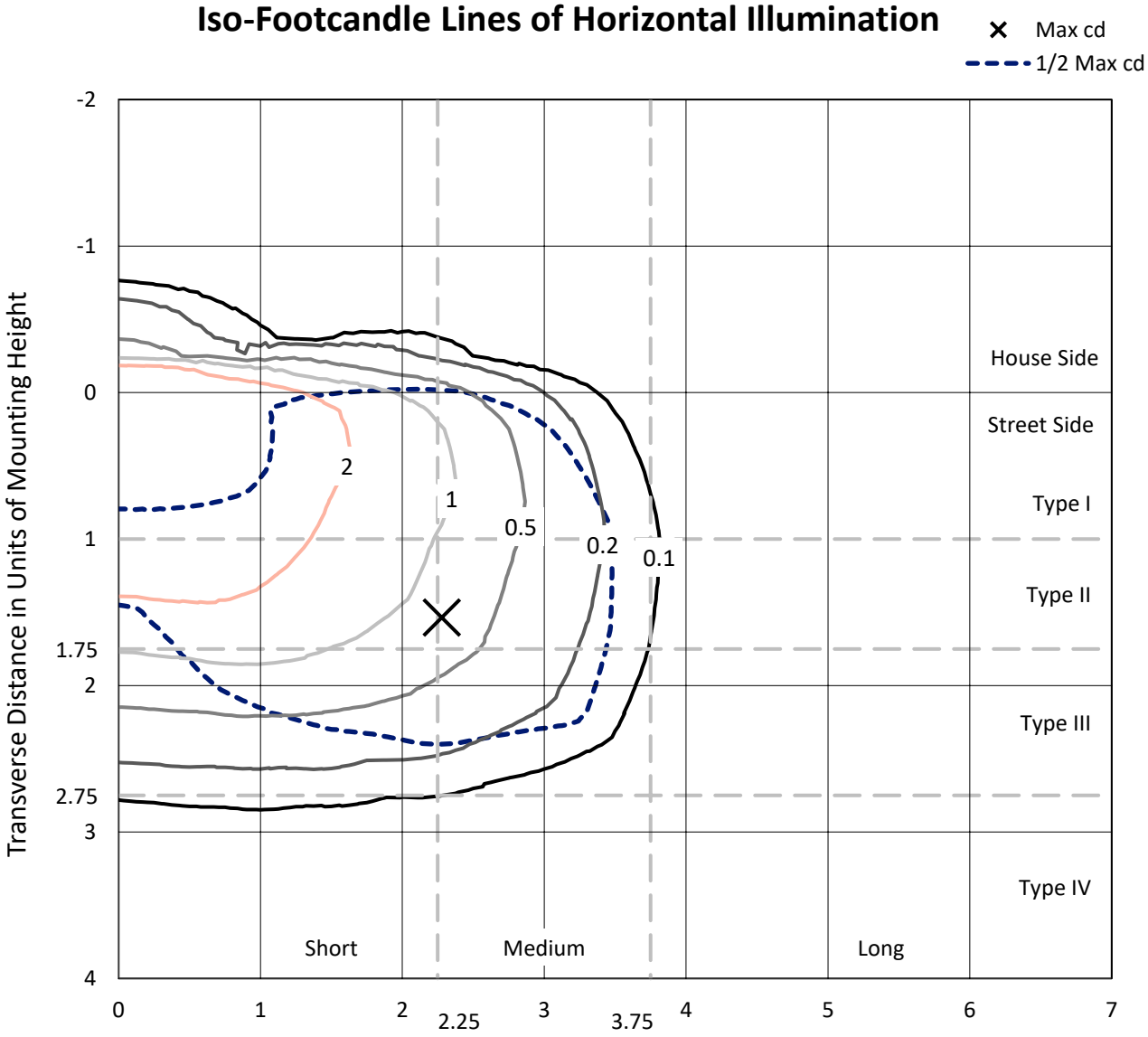
Scaled Data Report

REPORT NUMBER: P637347
CATALOG NUMBER: GWS-SA4C-750-U-T3R-W-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 4.7 fc
Type III - Medium - N/A

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REPORT NUMBER: P637347
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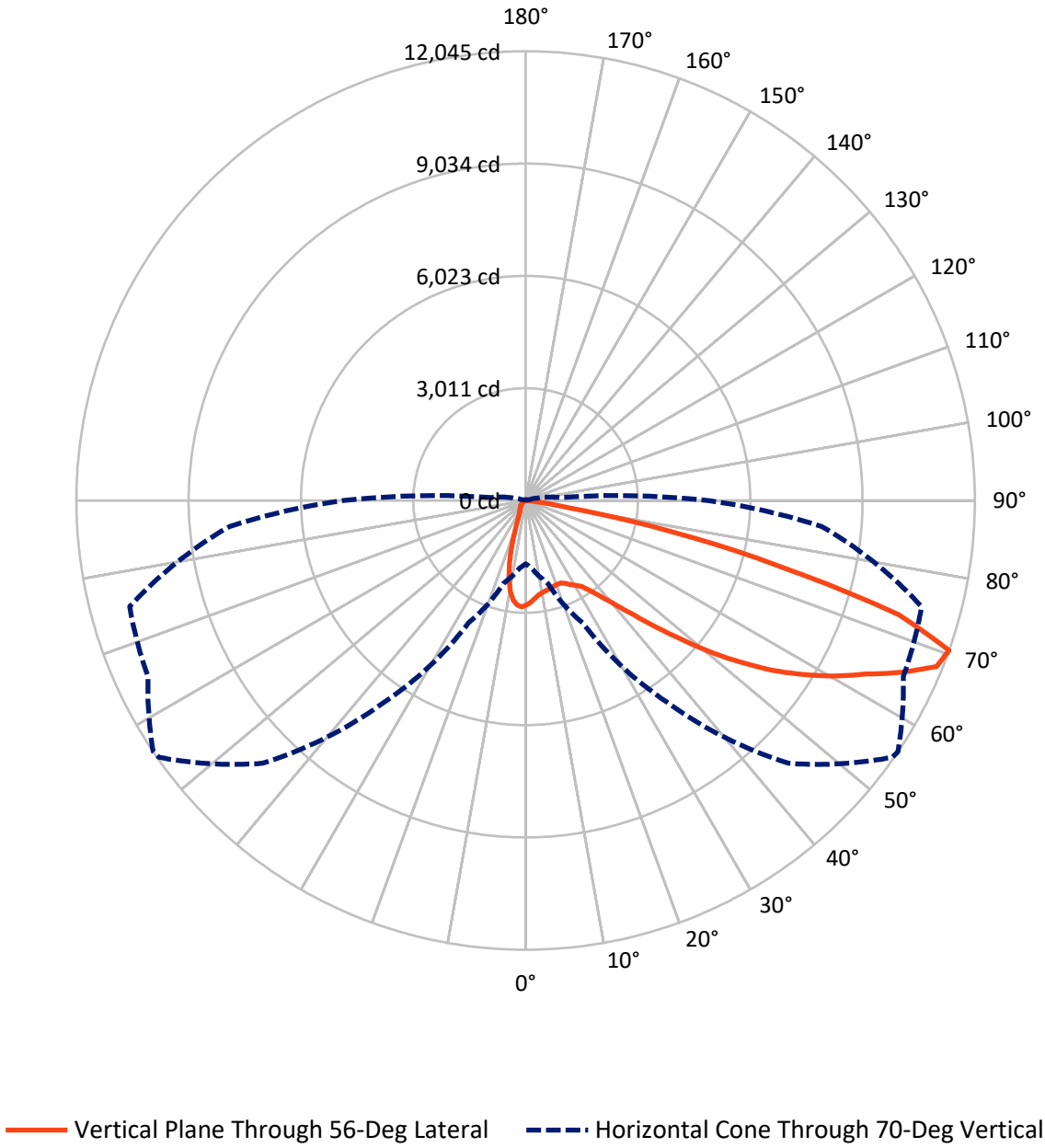
## Luminous Intensity Polar Plot



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Scaled Data Report

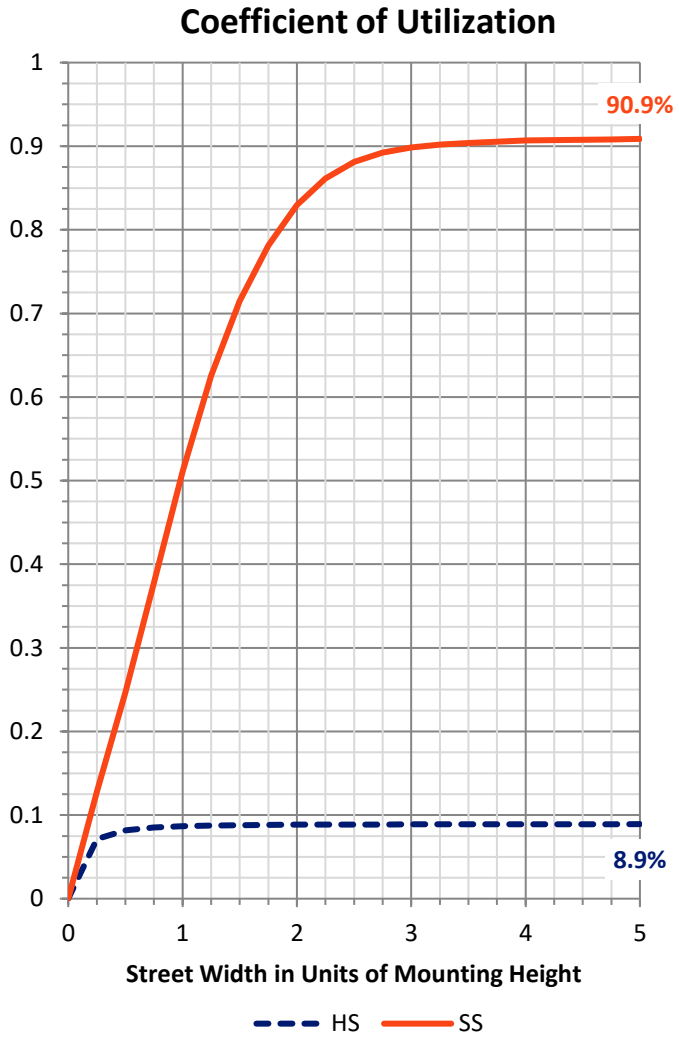
REPORT NUMBER: P637347
CATALOG NUMBER: GWS-SA4C-750-U-T3R-W-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1396.2 | 0.0 | 1396.2 |
| | % Fixture | 9.0 | 0.0 | 9.0 |
| **Street Side** | Lumens | 14147.9 | 0.0 | 14147.9 |
| | % Fixture | 91.0 | 0.0 | 91.0 |
| **Total** | Lumens | 15544.1 | 0.0 | 15544.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 240.6 | 1.5 |
| 10°-20° | 541.2 | 3.5 |
| 20°-30° | 857.3 | 5.5 |
| 30°-40° | 1478.4 | 9.5 |
| 40°-50° | 2496.6 | 16.1 |
| 50°-60° | 3668.3 | 23.6 |
| 60°-70° | 4348.9 | 28.0 |
| 70°-80° | 1854.5 | 11.9 |
| 80°-90° | 58.2 | 0.4 |
| 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° | 15544.1 | 100.0 |
| 0°-180° | 15544.1 | 100.0 |



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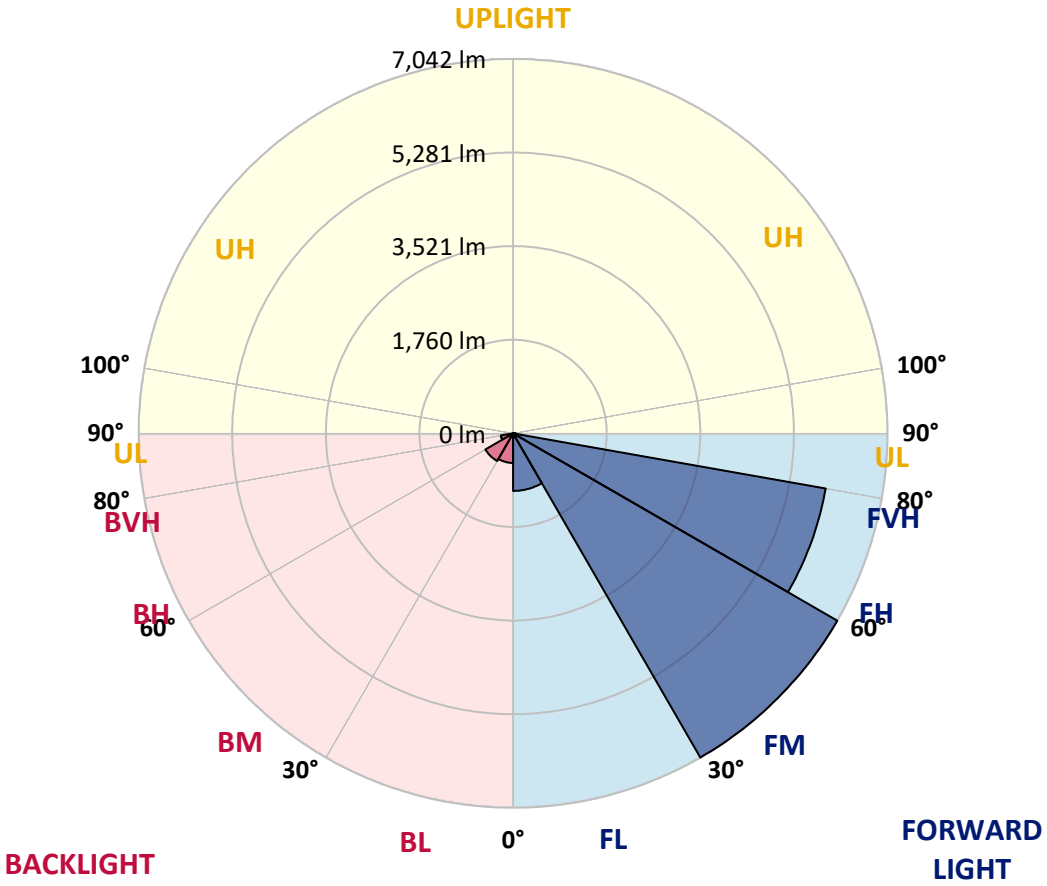
REPORT NUMBER: P637347
CATALOG NUMBER: GWS-SA4C-750-U-T3R-W-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1083.1 | 7.0 | | | |
| FM | (30°-60°) | 7041.9 | 45.3 | | | |
| FH | (60°-80°) | 5970.6 | 38.4 | | | G3/7500 |
| FVH | (80°-90°) | 52.3 | 0.3 | | | G1/100 |
| BL | (0°-30°) | 556.0 | 3.6 | B2/1000 | | |
| BM | (30°-60°) | 601.3 | 3.9 | B1/1000 | | |
| BH | (60°-80°) | 232.9 | 1.5 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 5.9 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B2-U0-G3**
Type III Medium



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REPORT NUMBER: P637347
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 |
| 2.5° | 2609.2 | 2604.9 | 2607.7 | 2629.1 | 2669.0 | 2687.5 | 2718.8 | 2724.5 | 2750.1 | 2782.8 | 2795.6 |
| 5° | 2439.8 | 2425.5 | 2432.7 | 2462.6 | 2508.1 | 2559.3 | 2617.7 | 2633.4 | 2697.4 | 2770.0 | 2824.1 |
| 7.5° | 2284.6 | 2269.0 | 2286.0 | 2333.0 | 2397.1 | 2452.6 | 2539.4 | 2549.4 | 2651.9 | 2780.0 | 2878.2 |
| 10° | 2041.2 | 2045.5 | 2079.6 | 2162.2 | 2260.4 | 2375.7 | 2492.4 | 2506.7 | 2633.4 | 2812.7 | 2965.0 |
| 12.5° | 1854.7 | 1844.8 | 1881.8 | 1975.7 | 2113.8 | 2281.8 | 2456.9 | 2475.4 | 2634.8 | 2862.5 | 3076.1 |
| 15° | 1767.9 | 1765.1 | 1780.7 | 1849.1 | 1982.9 | 2180.7 | 2424.1 | 2448.3 | 2653.3 | 2908.1 | 3181.4 |
| 17.5° | 1770.8 | 1766.5 | 1765.1 | 1804.9 | 1904.6 | 2105.3 | 2388.5 | 2419.9 | 2669.0 | 2957.9 | 3292.4 |
| 20° | 1894.6 | 1874.7 | 1839.1 | 1820.6 | 1880.4 | 2056.9 | 2364.3 | 2399.9 | 2691.7 | 3010.6 | 3410.6 |
| 22.5° | 2153.7 | 2160.8 | 2065.4 | 1965.8 | 1937.3 | 2062.6 | 2361.5 | 2402.8 | 2741.5 | 3093.1 | 3555.8 |
| 25° | 2671.8 | 2660.4 | 2483.9 | 2260.4 | 2105.3 | 2128.0 | 2411.3 | 2461.1 | 2839.8 | 3211.3 | 3692.4 |
| 27.5° | 3320.9 | 3330.9 | 3088.9 | 2733.0 | 2408.5 | 2263.3 | 2502.4 | 2552.2 | 2953.6 | 3285.3 | 3783.5 |
| 30° | 4028.3 | 4018.4 | 3759.3 | 3365.0 | 2838.3 | 2488.2 | 2593.5 | 2637.6 | 3010.6 | 3325.2 | 3877.5 |
| 32.5° | 4697.4 | 4674.6 | 4418.4 | 4005.6 | 3386.4 | 2842.6 | 2718.8 | 2744.4 | 3086.0 | 3412.0 | 4004.1 |
| 35° | 5268.2 | 5266.7 | 5043.3 | 4603.4 | 3950.1 | 3286.7 | 2933.7 | 2955.1 | 3226.9 | 3550.1 | 4190.6 |
| 37.5° | 5857.5 | 5837.5 | 5587.0 | 5185.6 | 4529.4 | 3773.5 | 3262.5 | 3254.0 | 3449.0 | 3753.6 | 4419.8 |
| 40° | 6341.4 | 6328.6 | 6136.5 | 5750.7 | 5131.5 | 4311.6 | 3661.1 | 3635.5 | 3712.3 | 4035.5 | 4738.6 |
| 42.5° | 6700.1 | 6701.6 | 6641.8 | 6406.9 | 5769.2 | 4933.7 | 4162.1 | 4122.3 | 4120.9 | 4461.1 | 5160.0 |
| 45° | 6972.0 | 6990.5 | 7080.2 | 7044.6 | 6522.2 | 5658.2 | 4804.1 | 4762.8 | 4693.1 | 5013.4 | 5642.5 |
| 47.5° | 7098.7 | 7122.9 | 7393.4 | 7535.7 | 7181.3 | 6377.0 | 5568.5 | 5481.7 | 5345.0 | 5747.9 | 6182.0 |
| 50° | 7085.9 | 7128.6 | 7505.8 | 7938.5 | 7779.1 | 7105.8 | 6401.2 | 6359.9 | 6136.5 | 6525.1 | 6715.8 |
| 52.5° | 6795.5 | 6886.6 | 7512.9 | 8183.4 | 8238.9 | 7777.7 | 7262.4 | 7185.5 | 7077.4 | 7336.4 | 7216.9 |
| 55° | 6006.9 | 6118.0 | 7212.6 | 8261.7 | 8597.6 | 8364.1 | 8105.1 | 8042.4 | 7863.1 | 8102.2 | 7653.8 |
| 57.5° | 5578.5 | 5673.8 | 6580.6 | 8223.2 | 8902.2 | 8906.5 | 8855.2 | 8804.0 | 8656.0 | 8859.5 | 8166.3 |
| 60° | 5320.8 | 5416.2 | 6243.2 | 8082.3 | 9178.4 | 9478.7 | 9559.8 | 9554.1 | 9340.6 | 9720.7 | 8767.0 |
| 62.5° | 4943.6 | 5074.6 | 5891.6 | 7716.5 | 9374.8 | 10042.4 | 10287.2 | 10248.8 | 10011.1 | 10617.5 | 9362.0 |
| 65° | 4182.1 | 4295.9 | 5171.4 | 7112.9 | 9259.5 | 10509.3 | 11075.8 | 11095.7 | 10821.0 | 11461.6 | 9831.7 |
| 67.5° | 2932.3 | 3016.3 | 3886.0 | 5846.1 | 8476.6 | 10663.0 | 11882.9 | 11881.5 | 11413.2 | 11894.3 | 9623.9 |
| 70° | 1699.6 | 1814.9 | 2296.0 | 3614.1 | 6594.8 | 9964.1 | 12003.9 | 12045.2 | 11172.6 | 10990.4 | 7964.2 |
| 72.5° | 657.6 | 753.0 | 1301.0 | 1920.2 | 3439.0 | 7632.5 | 10325.6 | 10446.6 | 9350.6 | 8478.0 | 5542.9 |
| 75° | 196.4 | 219.2 | 612.1 | 1022.0 | 1380.7 | 3686.7 | 6990.5 | 7024.7 | 6414.0 | 5288.1 | 2841.2 |
| 77.5° | 146.6 | 162.3 | 267.6 | 516.7 | 484.0 | 1117.4 | 3617.0 | 3950.1 | 3404.9 | 1888.9 | 782.9 |
| 80° | 99.6 | 118.1 | 190.7 | 251.9 | 179.4 | 297.5 | 1016.3 | 1116.0 | 1039.1 | 424.2 | 196.4 |
| 82.5° | 44.1 | 56.9 | 135.2 | 126.7 | 65.5 | 85.4 | 313.2 | 333.1 | 214.9 | 128.1 | 68.3 |
| 85° | 4.3 | 5.7 | 51.2 | 55.5 | 24.2 | 19.9 | 65.5 | 65.5 | 47.0 | 44.1 | 28.5 |
| 87.5° | 0.0 | 0.0 | 1.4 | 2.8 | 2.8 | 4.3 | 5.7 | 7.1 | 8.5 | 11.4 | 14.2 |
| 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: P637347
CATALOG NUMBER: GWS-SA4C-750-U-T3R-W-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 | 2802.8 |
| 2.5° | 2828.4 | 2811.3 | 2832.6 | 2849.7 | 2854.0 | 2822.7 | 2804.2 | 2777.1 | 2771.4 | 2772.9 | 2765.7 |
| 5° | 2866.8 | 2858.3 | 2873.9 | 2855.4 | 2807.0 | 2715.9 | 2637.6 | 2550.8 | 2503.8 | 2476.8 | 2473.9 |
| 7.5° | 2938.0 | 2933.7 | 2916.6 | 2832.6 | 2681.8 | 2479.6 | 2284.6 | 2093.9 | 1975.7 | 1933.0 | 1925.9 |
| 10° | 3043.3 | 3034.8 | 2965.0 | 2765.7 | 2444.1 | 2055.5 | 1728.1 | 1454.8 | 1288.2 | 1239.8 | 1180.0 |
| 12.5° | 3164.3 | 3147.2 | 2994.9 | 2622.0 | 2085.3 | 1547.3 | 1138.8 | 832.7 | 688.9 | 646.2 | 646.2 |
| 15° | 3281.0 | 3244.0 | 2977.8 | 2384.3 | 1644.1 | 1006.4 | 636.3 | 481.1 | 437.0 | 425.6 | 425.6 |
| 17.5° | 3400.6 | 3329.4 | 2910.9 | 2059.7 | 1135.9 | 595.0 | 424.2 | 394.3 | 388.6 | 390.0 | 391.4 |
| 20° | 3513.1 | 3402.0 | 2792.8 | 1669.7 | 724.5 | 415.6 | 380.1 | 372.9 | 370.1 | 372.9 | 371.5 |
| 22.5° | 3635.5 | 3468.9 | 2613.4 | 1244.1 | 471.2 | 374.4 | 361.6 | 355.9 | 353.0 | 357.3 | 357.3 |
| 25° | 3756.5 | 3517.3 | 2375.7 | 837.0 | 374.4 | 348.7 | 341.6 | 335.9 | 333.1 | 334.5 | 334.5 |
| 27.5° | 3819.1 | 3498.8 | 2064.0 | 533.8 | 335.9 | 323.1 | 316.0 | 308.9 | 304.6 | 303.2 | 304.6 |
| 30° | 3861.8 | 3441.9 | 1682.5 | 380.1 | 304.6 | 289.0 | 281.8 | 276.1 | 264.8 | 257.6 | 260.5 |
| 32.5° | 3928.7 | 3384.9 | 1268.3 | 318.9 | 279.0 | 254.8 | 243.4 | 229.2 | 213.5 | 206.4 | 206.4 |
| 35° | 4008.4 | 3306.7 | 889.7 | 287.5 | 251.9 | 226.3 | 205.0 | 180.8 | 162.3 | 156.6 | 156.6 |
| 37.5° | 4113.7 | 3232.6 | 592.2 | 266.2 | 229.2 | 202.1 | 172.2 | 143.8 | 123.8 | 121.0 | 119.6 |
| 40° | 4271.7 | 3170.0 | 417.1 | 250.5 | 209.2 | 176.5 | 140.9 | 111.0 | 96.8 | 92.5 | 92.5 |
| 42.5° | 4476.7 | 3106.0 | 330.2 | 234.9 | 192.2 | 152.3 | 112.5 | 88.3 | 76.9 | 74.0 | 72.6 |
| 45° | 4730.1 | 3030.5 | 287.5 | 220.6 | 175.1 | 126.7 | 89.7 | 74.0 | 65.5 | 62.6 | 62.6 |
| 47.5° | 5004.8 | 2928.0 | 267.6 | 202.1 | 155.2 | 102.5 | 75.4 | 64.1 | 59.8 | 58.4 | 56.9 |
| 50° | 5275.3 | 2789.9 | 250.5 | 185.0 | 132.4 | 84.0 | 65.5 | 58.4 | 55.5 | 54.1 | 54.1 |
| 52.5° | 5511.6 | 2629.1 | 229.2 | 165.1 | 108.2 | 72.6 | 58.4 | 54.1 | 51.2 | 48.4 | 47.0 |
| 55° | 5713.7 | 2454.0 | 202.1 | 142.3 | 88.3 | 64.1 | 54.1 | 49.8 | 47.0 | 44.1 | 42.7 |
| 57.5° | 5974.2 | 2354.4 | 162.3 | 115.3 | 72.6 | 56.9 | 49.8 | 45.6 | 42.7 | 38.4 | 38.4 |
| 60° | 6263.1 | 2281.8 | 121.0 | 91.1 | 62.6 | 52.7 | 45.6 | 41.3 | 38.4 | 34.2 | 34.2 |
| 62.5° | 6495.2 | 2173.6 | 95.4 | 74.0 | 54.1 | 47.0 | 41.3 | 37.0 | 34.2 | 29.9 | 29.9 |
| 65° | 6583.4 | 1950.1 | 78.3 | 58.4 | 44.1 | 41.3 | 37.0 | 34.2 | 29.9 | 25.6 | 25.6 |
| 67.5° | 6184.9 | 1503.2 | 65.5 | 47.0 | 37.0 | 35.6 | 32.7 | 31.3 | 25.6 | 22.8 | 21.4 |
| 70° | *4898.1* | *916.7* | *54.1* | *38.4* | *31.3* | *29.9* | *29.9* | *27.0* | *22.8* | *21.4* | *19.9* |
| 72.5° | 3356.5 | 472.6 | 44.1 | 31.3 | 27.0 | 27.0 | 25.6 | 24.2 | 21.4 | 19.9 | 19.9 |
| 75° | 1743.7 | 158.0 | 34.2 | 24.2 | 21.4 | 22.8 | 22.8 | 21.4 | 19.9 | 19.9 | 18.5 |
| 77.5° | 499.6 | 71.2 | 25.6 | 18.5 | 17.1 | 17.1 | 18.5 | 18.5 | 18.5 | 17.1 | 17.1 |
| 80° | 129.5 | 41.3 | 18.5 | 14.2 | 14.2 | 14.2 | 14.2 | 15.7 | 17.1 | 15.7 | 15.7 |
| 82.5° | 52.7 | 22.8 | 12.8 | 11.4 | 11.4 | 11.4 | 11.4 | 12.8 | 14.2 | 14.2 | 14.2 |
| 85° | 32.7 | 11.4 | 10.0 | 10.0 | 10.0 | 8.5 | 8.5 | 10.0 | 10.0 | 11.4 | 11.4 |
| 87.5° | 19.9 | 8.5 | 8.5 | 8.5 | 8.5 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 |
| 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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

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Peachtree City, GA 30269

## Test Information

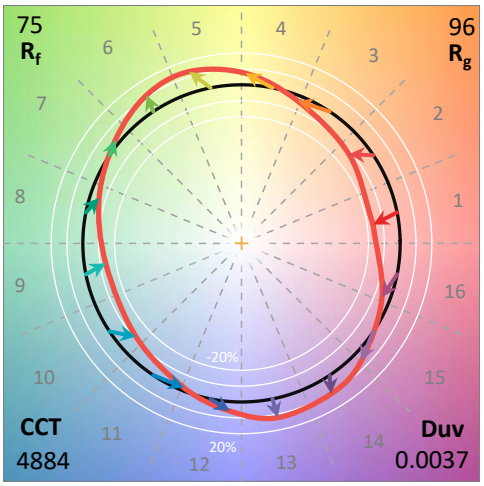
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-4-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-750-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.***TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 4884 | CRI (Ra): | 73.5 | | |
| CIE u': | 0.2101 | R1: | 70.5 | R9: | -28.4 |
| CIE v': | 0.4904 | R2: | 77.7 | R10: | 48.6 |
| Duv: | 0.0037 | R3: | 84.6 | R11: | 73.2 |
| CIE x: | 0.3493 | R4: | 74.7 | R12: | 50.7 |
| CIE y: | 0.3624 | R5: | 71.9 | R13: | 71.2 |
| CIE z: | 0.2884 | R6: | 70.7 | R14: | 91.4 |
| Peak Wavelength (nm): | 444 | R7: | 81.2 | | |
| Dominant Wavelength (nm): | 571 | R8: | 56.9 | | |
| Purity: | 13.7 | | | | |

| | |
|---|---|
| Rf: | 74.9 |
| Rg: | 96.3 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 240M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.0./44% |
| Sphere Temperature (°C): | 25.7 |

Cooper Lighting Solutions Photometric Lab
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REPORT NUMBER: SP1-1908-441-4-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 |

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1121 Highway 74 South
Peachtree City, GA 30269

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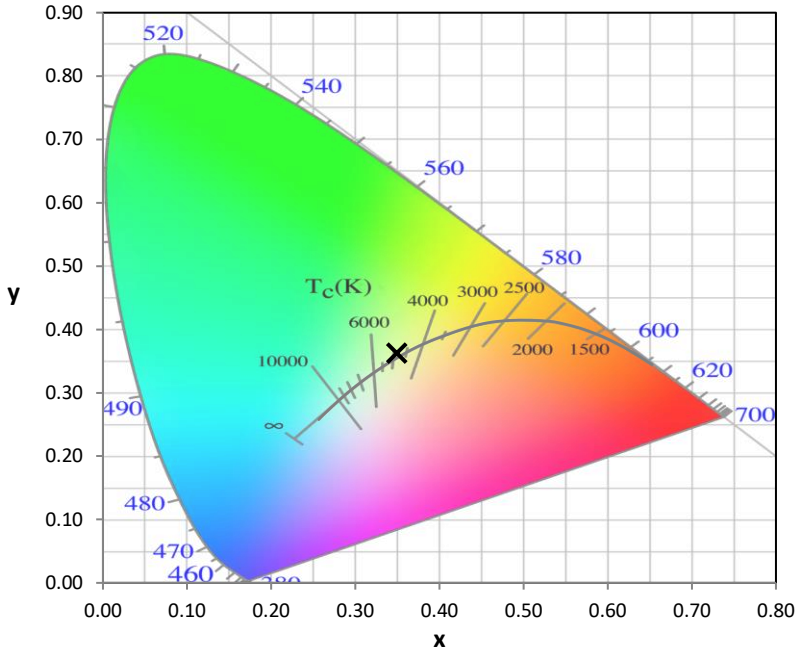
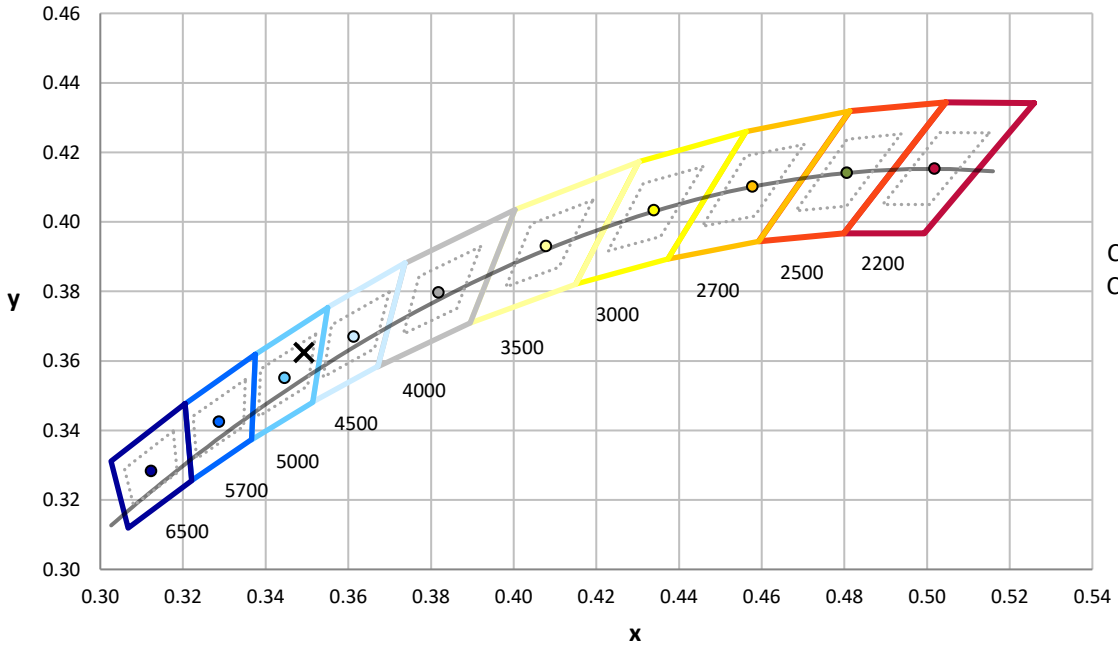
## CIE 1931 Chromaticity Diagram




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




CCT = 4884K
CIE x = 0.3493
CIE y = 0.3624
Duv = 0.0037

Point lies inside the ANSI 5000K 4-step quadrangle

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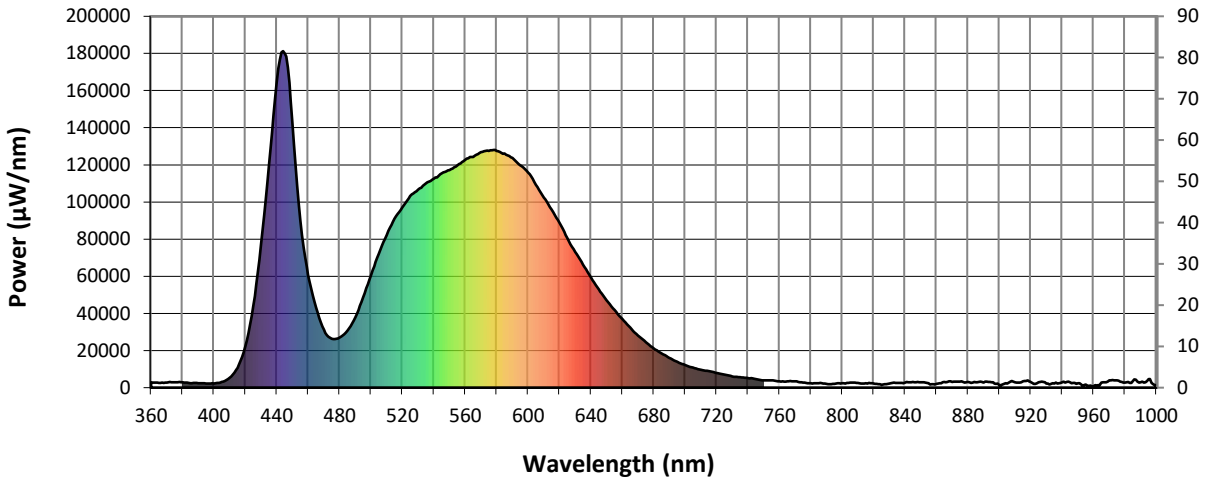
## Photopic Flux vs. Wavelength




######

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

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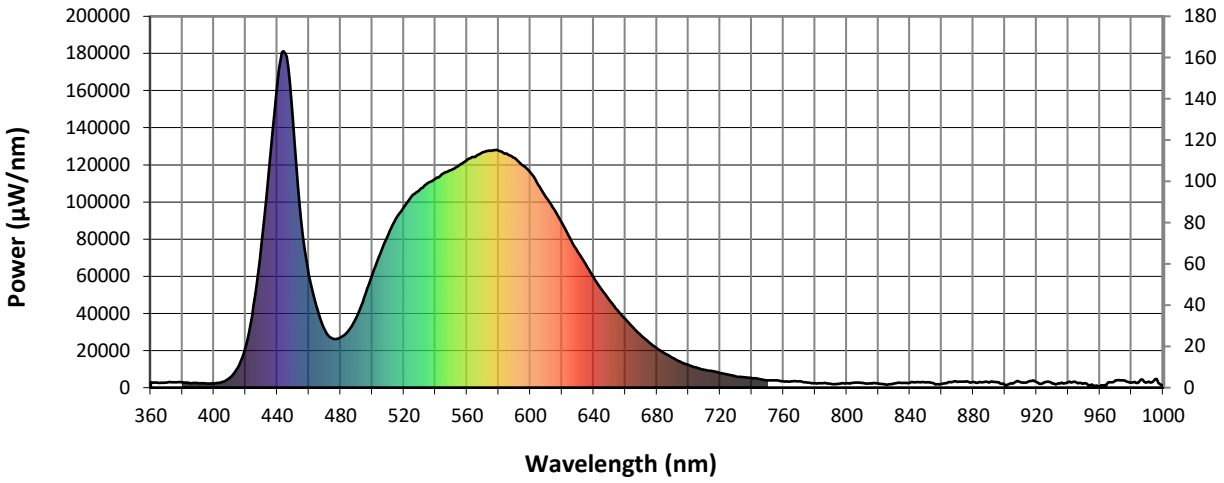
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 13493.5** **S/P: 1.77**

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

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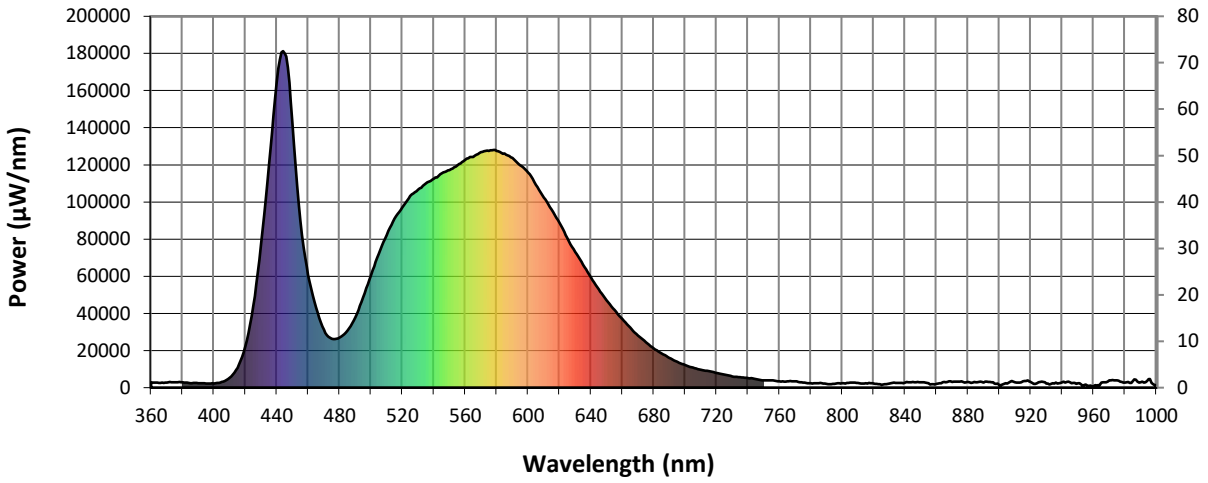
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 5378.9 M/P: 0.71**

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

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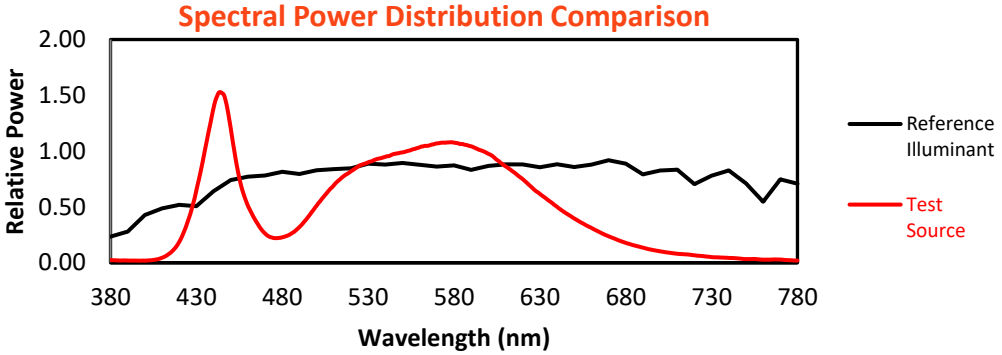
# TM-30-18

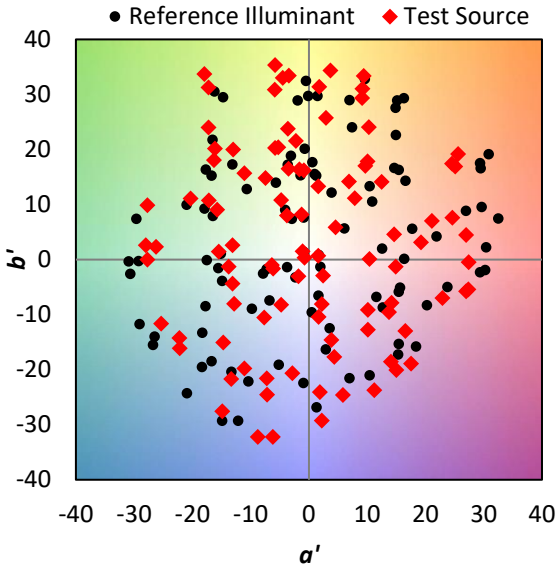
## Summary

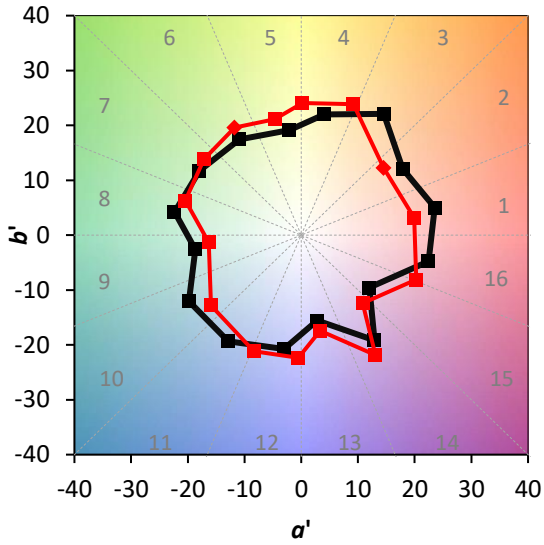
$R_f$ = 74.9
$R_g$ = 96.3
CIE $R_a$ = 73.5
$R_9$ = -28.4

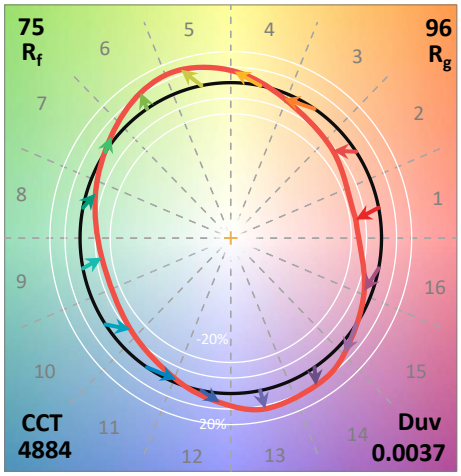
## Spectral Power Distribution Comparison

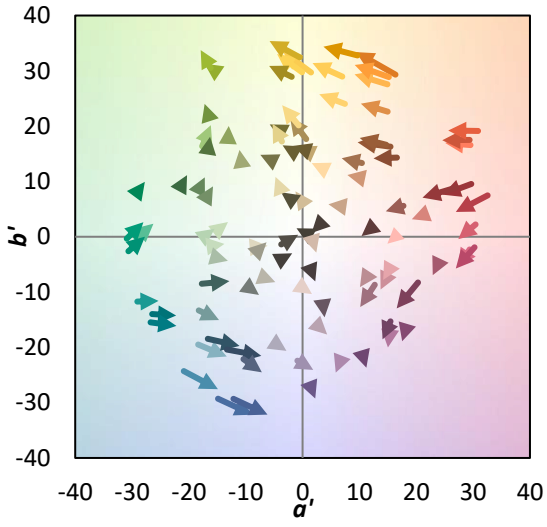



## Color Vector Graphics



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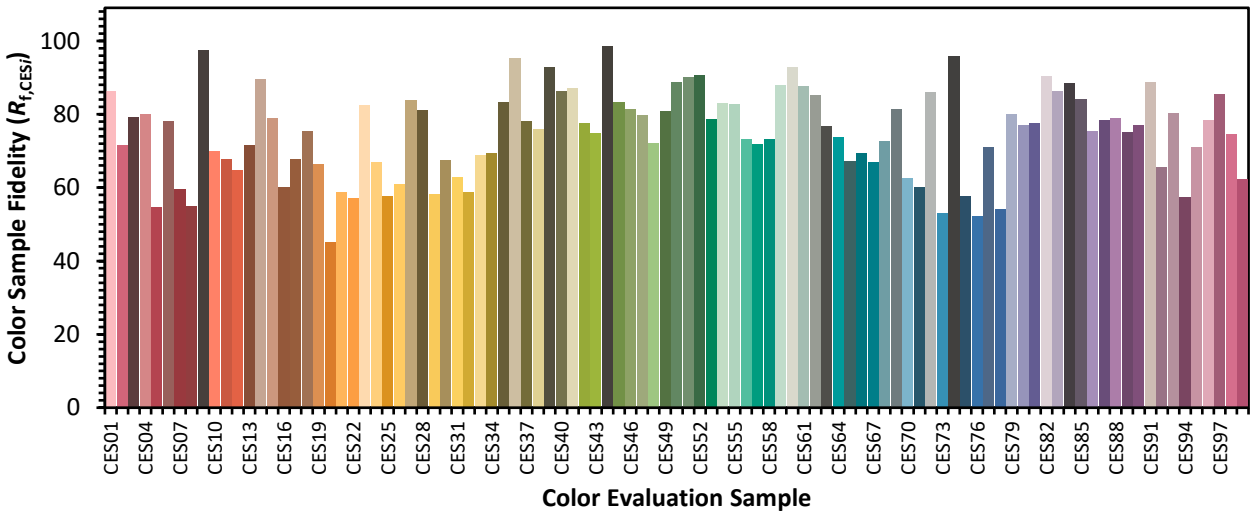
## TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 | |



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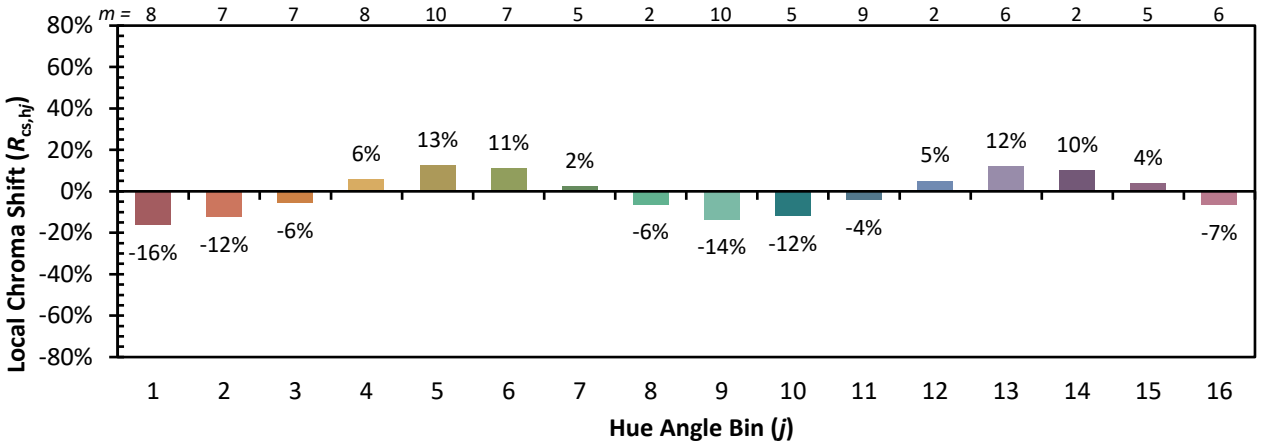
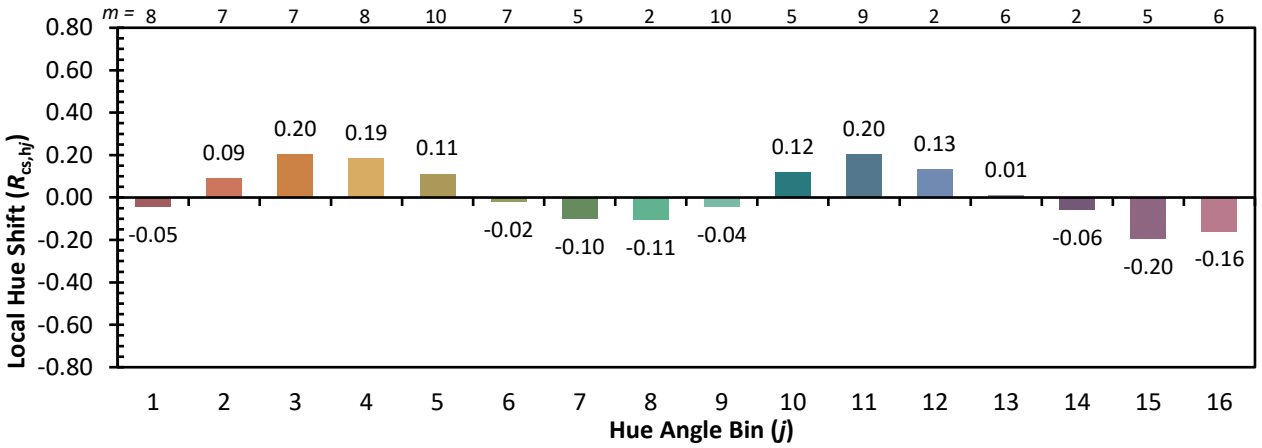
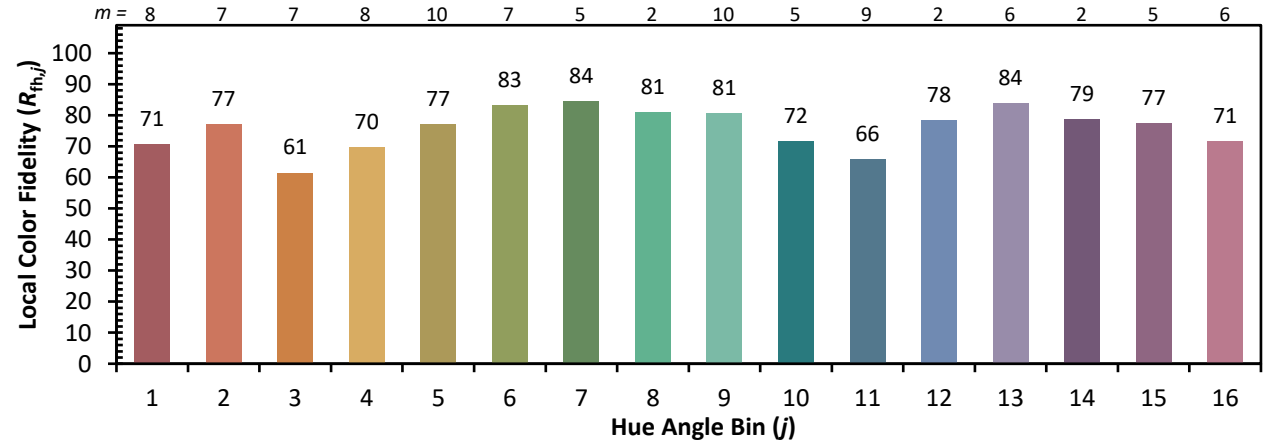
## Color Rendition by Hue-Angle Bin



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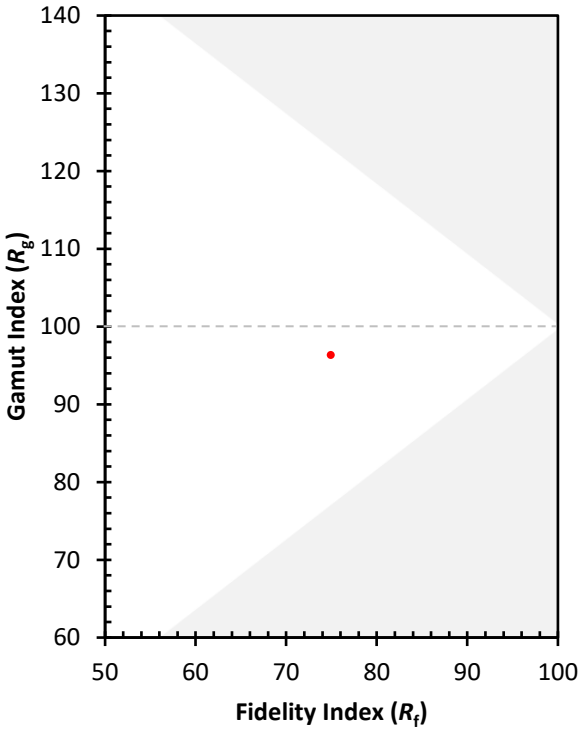
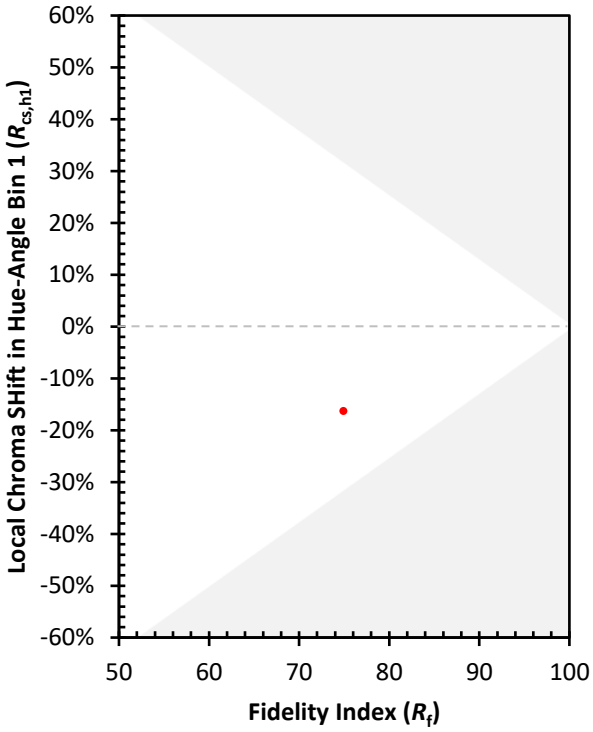
## TM-30-18

### Measure Comparisons




(END OF REPORT)