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: P318549

Luminaire Tested: **GLEON-SA5A-830-U-T3**

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: | P318549 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA5A-830-U-T3 |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (5) 80 CRI, 3000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 18512 lumens |
| Efficiency: | N/A |
| Efficacy: | 114.3 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B3 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 162 |
| 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 |

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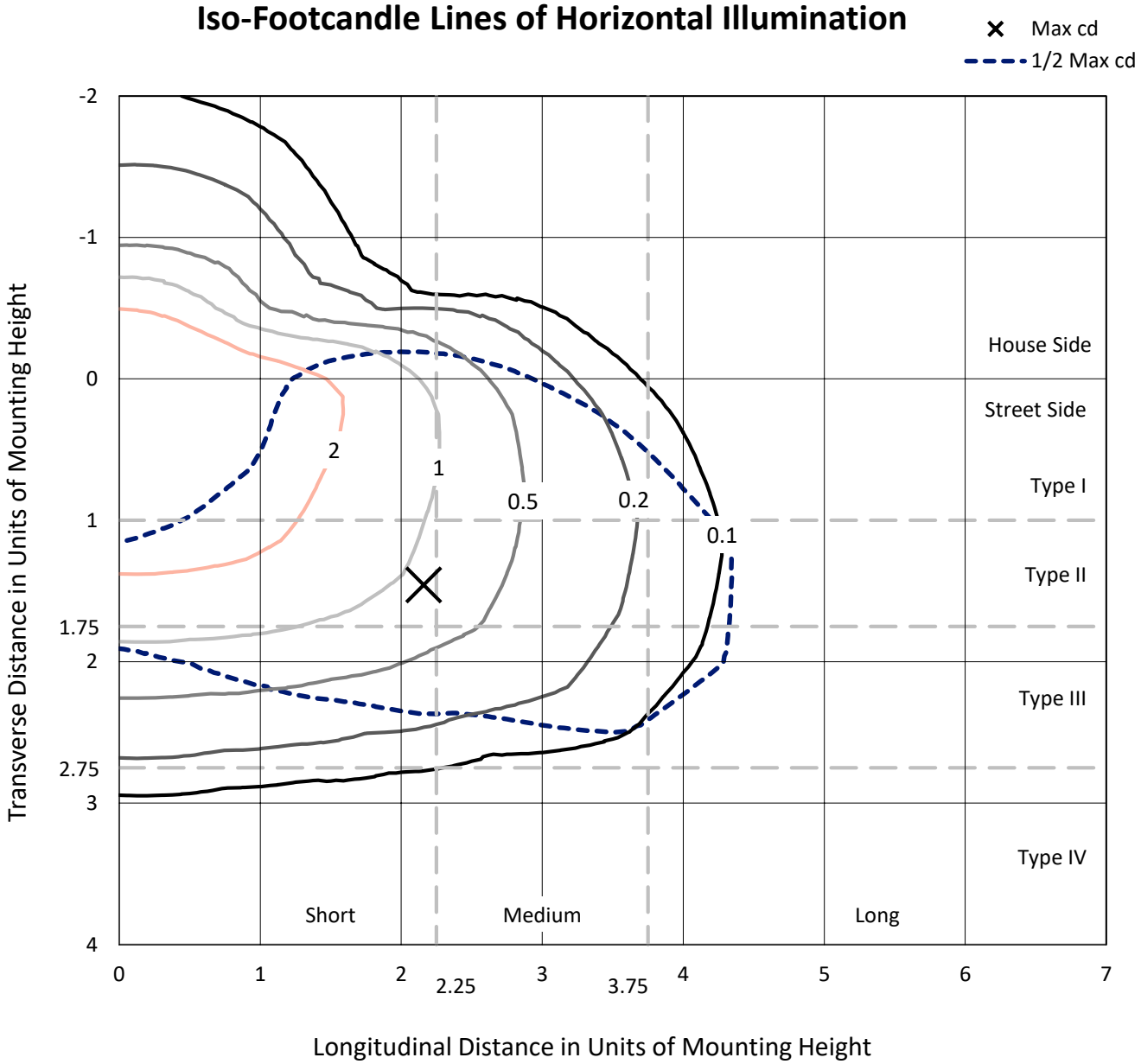
Scaled Data Report

REPORT NUMBER: P318549
CATALOG NUMBER: GLEON-SA5A-830-U-T3

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 4.2 fc
Type III - Short - N/A

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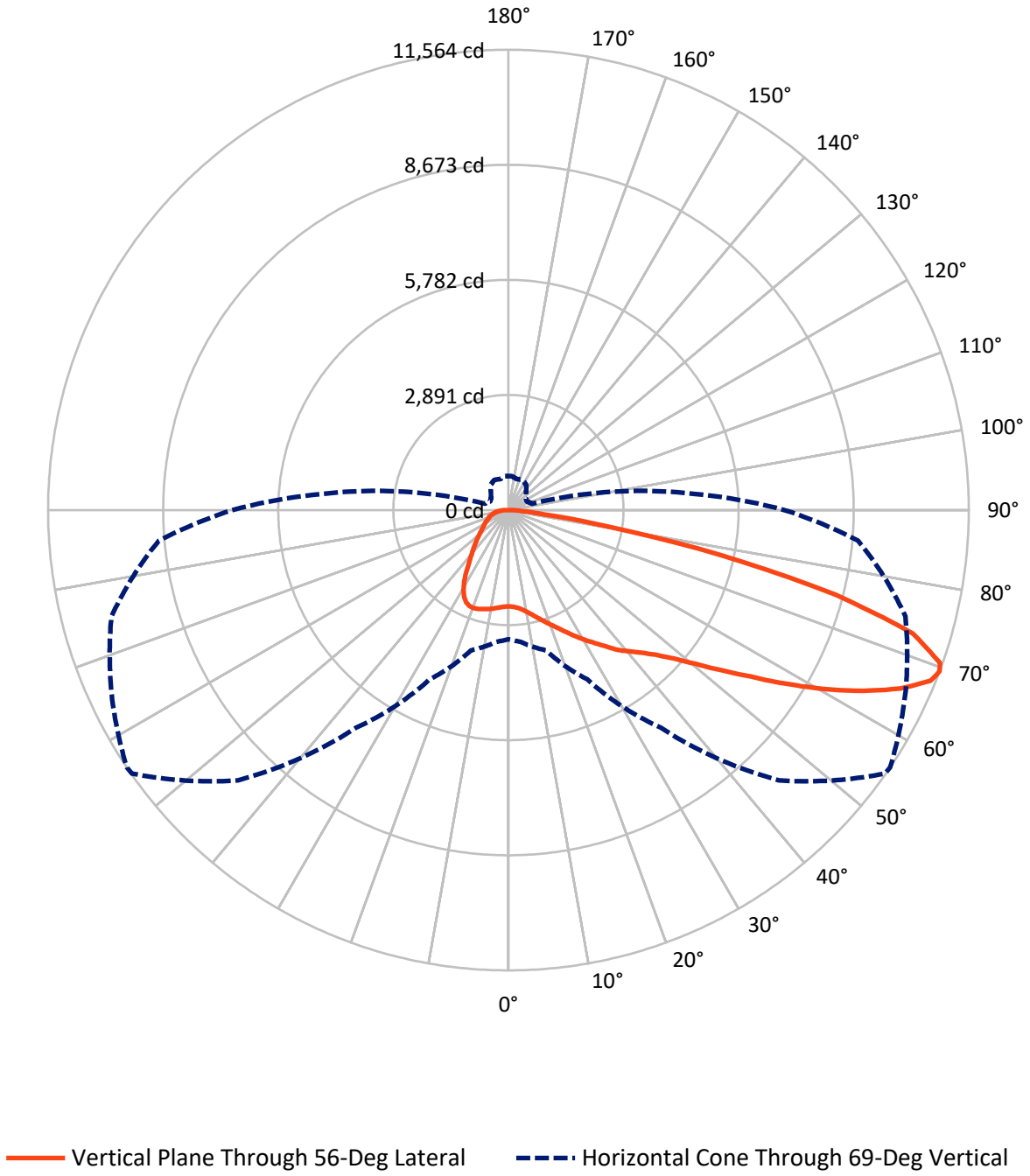
## Luminous Intensity Polar Plot



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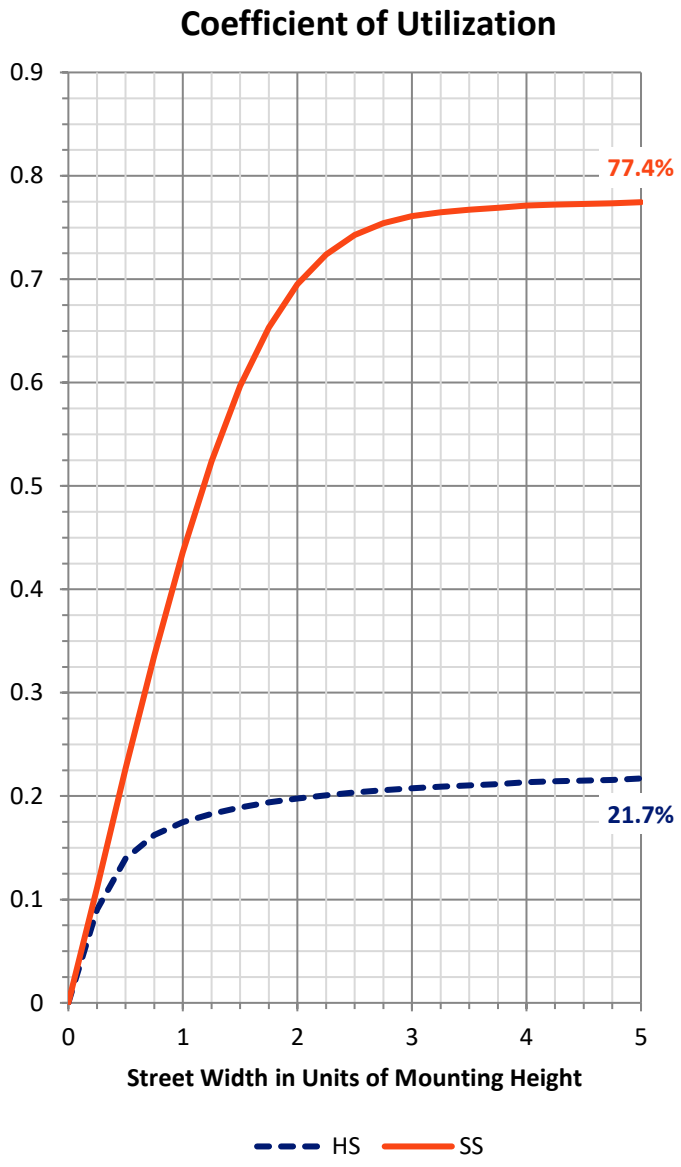
CATALOG NUMBER: GLEON-SA5A-830-U-T3

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 4122.6 | 0.0 | 4122.6 |
| | % Fixture | 22.3 | 0.0 | 22.3 |
| **Street Side** | Lumens | 14389.4 | 0.0 | 14389.4 |
| | % Fixture | 77.7 | 0.0 | 77.7 |
| **Total** | Lumens | 18512.0 | 0.0 | 18512.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 237.7 | 1.3 |
| 10°-20° | 764.3 | 4.1 |
| 20°-30° | 1334.2 | 7.2 |
| 30°-40° | 1916.6 | 10.4 |
| 40°-50° | 2652.5 | 14.3 |
| 50°-60° | 3886.2 | 21.0 |
| 60°-70° | 4738.1 | 25.6 |
| 70°-80° | 2619.5 | 14.2 |
| 80°-90° | 362.8 | 2.0 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 18512.0 | 100.0 |
| 0°-180° | 18512.0 | 100.0 |



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REPORT NUMBER: P318549
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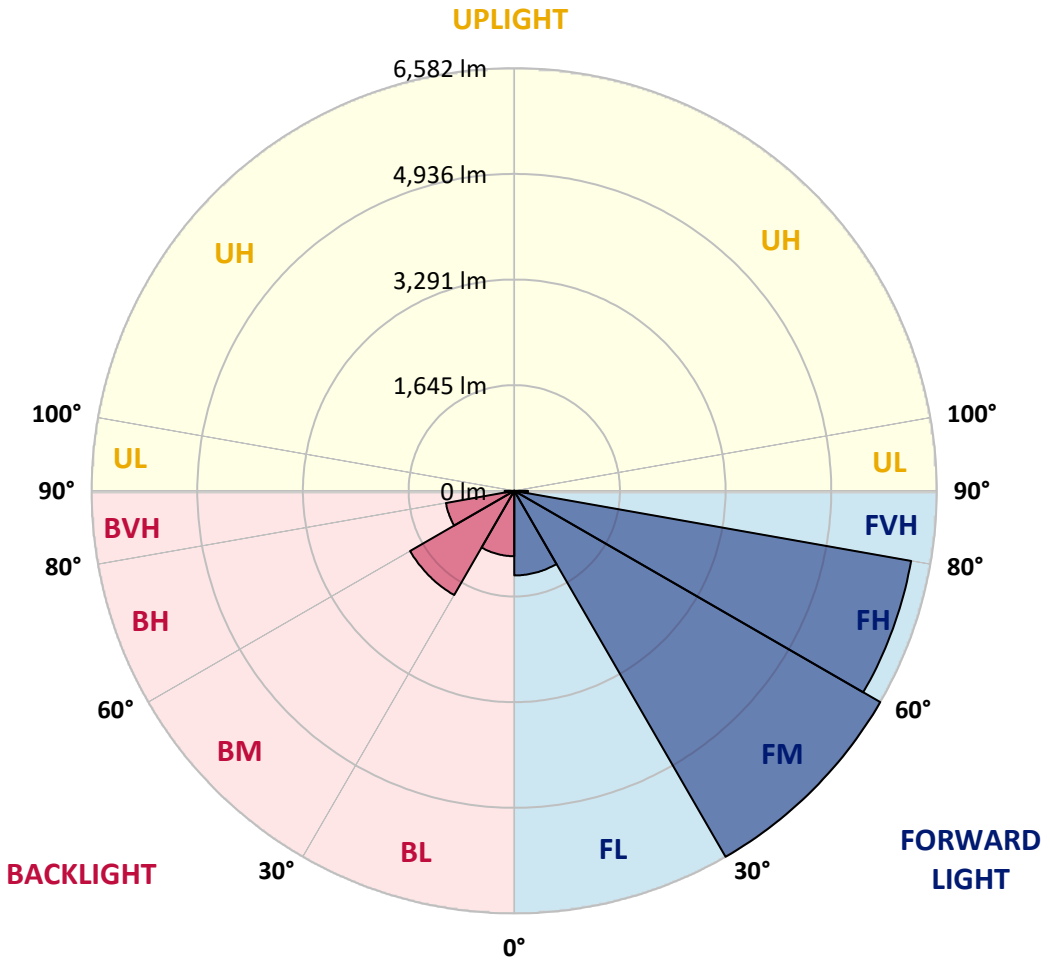
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1317.5 | 7.1 | | | |
| FM | (30°-60°) | 6581.7 | 35.6 | | | |
| FH | (60°-80°) | 6276.5 | 33.9 | | | G3/7500 |
| FVH | (80°-90°) | 213.7 | 1.2 | | | G2/225 |
| BL | (0°-30°) | 1018.8 | 5.5 | B3/2500 | | |
| BM | (30°-60°) | 1873.6 | 10.1 | B2/2500 | | |
| BH | (60°-80°) | 1081.1 | 5.8 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 149.1 | 0.8 | | | G2/225 |
| 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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Scaled Data Report

REPORT NUMBER: P318549
CATALOG NUMBER: GLEON-SA5A-830-U-T3

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 |
| 2.5° | 2435.5 | 2438.0 | 2436.1 | 2441.2 | 2435.5 | 2439.3 | 2436.1 | 2436.1 | 2434.2 | 2428.5 | 2422.1 |
| 5° | 2473.7 | 2478.8 | 2475.6 | 2480.7 | 2473.7 | 2475.0 | 2469.3 | 2469.3 | 2463.5 | 2451.4 | 2438.7 |
| 7.5° | 2533.7 | 2539.4 | 2536.9 | 2542.0 | 2532.4 | 2532.4 | 2524.8 | 2524.1 | 2512.6 | 2492.9 | 2478.2 |
| 10° | 2605.1 | 2612.8 | 2610.2 | 2617.9 | 2610.2 | 2612.8 | 2605.1 | 2605.1 | 2589.8 | 2561.7 | 2543.2 |
| 12.5° | 2709.1 | 2718.6 | 2711.6 | 2711.0 | 2707.8 | 2712.9 | 2706.5 | 2705.2 | 2691.2 | 2652.9 | 2627.4 |
| 15° | 2848.1 | 2858.3 | 2843.6 | 2842.3 | 2824.5 | 2822.6 | 2822.6 | 2820.7 | 2811.7 | 2765.8 | 2723.7 |
| 17.5° | 3008.1 | 3011.3 | 2998.6 | 2978.2 | 2955.2 | 2940.5 | 2938.6 | 2943.7 | 2943.7 | 2890.2 | 2823.2 |
| 20° | 3165.0 | 3170.8 | 3160.6 | 3137.6 | 3108.3 | 3086.6 | 3071.3 | 3081.5 | 3080.8 | 3017.1 | 2922.1 |
| 22.5° | 3335.9 | 3349.3 | 3334.0 | 3304.7 | 3270.3 | 3246.0 | 3219.2 | 3228.2 | 3228.8 | 3150.4 | 3019.0 |
| 25° | 3557.2 | 3545.1 | 3535.5 | 3494.1 | 3445.0 | 3420.1 | 3395.2 | 3404.2 | 3401.6 | 3293.8 | 3119.1 |
| 27.5° | 3753.0 | 3755.6 | 3742.8 | 3698.8 | 3642.0 | 3587.2 | 3585.9 | 3591.7 | 3582.1 | 3443.1 | 3213.5 |
| 30° | 3980.7 | 3982.0 | 3964.1 | 3924.6 | 3862.7 | 3791.9 | 3775.3 | 3784.9 | 3764.5 | 3584.7 | 3313.0 |
| 32.5° | 4207.1 | 4213.4 | 4193.7 | 4145.8 | 4096.1 | 4010.0 | 3976.9 | 3983.2 | 3932.2 | 3729.4 | 3415.7 |
| 35° | 4405.4 | 4414.3 | 4408.0 | 4376.1 | 4321.9 | 4247.9 | 4208.3 | 4204.5 | 4141.4 | 3906.7 | 3551.5 |
| 37.5° | 4607.6 | 4615.9 | 4608.8 | 4582.1 | 4560.4 | 4481.9 | 4460.9 | 4460.9 | 4351.2 | 4087.8 | 3724.3 |
| 40° | 4815.5 | 4828.2 | 4819.9 | 4782.9 | 4764.4 | 4728.7 | 4678.3 | 4666.2 | 4547.6 | 4305.3 | 4006.2 |
| 42.5° | 5008.7 | 5025.3 | 5058.4 | 5036.7 | 4999.1 | 5004.2 | 4902.8 | 4896.5 | 4809.7 | 4626.7 | 4360.1 |
| 45° | 5282.9 | 5307.1 | 5363.3 | 5346.7 | 5339.0 | 5311.0 | 5190.4 | 5184.7 | 5151.5 | 5059.1 | 4799.5 |
| 47.5° | 5582.0 | 5615.2 | 5716.6 | 5719.8 | 5802.0 | 5749.1 | 5585.2 | 5565.4 | 5573.1 | 5576.9 | 5335.8 |
| 50° | 5857.5 | 5893.9 | 6060.3 | 6138.7 | 6332.6 | 6344.1 | 6082.0 | 6064.1 | 6094.1 | 6182.1 | 5960.8 |
| 52.5° | 6077.5 | 6123.4 | 6331.3 | 6573.7 | 6905.9 | 7000.3 | 6693.6 | 6680.2 | 6702.5 | 6854.3 | 6667.4 |
| 55° | 6238.9 | 6288.6 | 6515.0 | 6956.3 | 7486.9 | 7653.3 | 7397.6 | 7384.9 | 7398.9 | 7592.1 | 7435.9 |
| 57.5° | 6276.5 | 6288.6 | 6617.0 | 7213.9 | 7977.3 | 8377.2 | 8259.2 | 8233.7 | 8164.8 | 8333.1 | 8284.0 |
| 60° | 6099.8 | 6148.3 | 6532.9 | 7304.5 | 8356.7 | 9090.8 | 9159.6 | 9127.8 | 8934.5 | 9072.3 | 9032.7 |
| 62.5° | 5741.4 | 5828.2 | 6218.5 | 7166.8 | 8505.3 | 9673.6 | 10042.9 | 10004.6 | 9671.7 | 9761.0 | 9571.0 |
| 65° | 5156.0 | 5193.0 | 5603.0 | 6691.6 | 8316.6 | 10046.7 | 10830.5 | 10811.3 | 10392.4 | 10252.7 | 9670.5 |
| 67.5° | 4108.9 | 4178.4 | 4526.6 | 5698.7 | 7544.3 | 10002.7 | 11439.5 | 11437.6 | 10863.0 | 10435.1 | 9317.8 |
| 69° | 3246.0 | 3318.1 | 3649.7 | 4694.3 | 6675.7 | 9600.3 | 11541.5 | 11563.9 | 10995.6 | 10324.1 | 8814.0 |
| 70° | 2587.9 | 2671.4 | 2899.1 | 3953.9 | 5904.7 | 9069.7 | 11456.7 | 11496.9 | 10970.1 | 10141.1 | 8349.1 |
| 72.5° | 1101.4 | 1168.9 | 1330.9 | 2038.2 | 3598.7 | 6772.6 | 10475.3 | 10627.0 | 10379.0 | 9281.4 | 6900.2 |
| 75° | 480.8 | 501.9 | 575.2 | 831.0 | 1597.5 | 3686.0 | 8206.2 | 8486.8 | 8874.6 | 7845.3 | 5140.1 |
| 77.5° | 352.0 | 361.0 | 401.1 | 487.9 | 716.8 | 1392.2 | 5277.2 | 5440.4 | 6400.2 | 5708.9 | 3152.9 |
| 80° | 272.3 | 278.7 | 309.9 | 358.4 | 468.1 | 563.1 | 2406.8 | 2547.1 | 3598.7 | 2932.3 | 1313.1 |
| 82.5° | 216.8 | 221.3 | 243.0 | 264.0 | 323.3 | 341.2 | 799.1 | 886.4 | 1328.4 | 809.9 | 347.6 |
| 85° | 201.5 | 206.6 | 214.3 | 192.6 | 207.3 | 200.2 | 345.6 | 361.6 | 401.1 | 318.2 | 145.4 |
| 87.5° | 91.2 | 107.8 | 212.4 | 149.9 | 110.3 | 88.0 | 141.6 | 148.0 | 166.4 | 167.1 | 64.4 |
| 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: P318549
CATALOG NUMBER: GLEON-SA5A-830-U-T3

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 | 2420.2 |
| 2.5° | 2425.9 | 2424.0 | 2427.2 | 2419.5 | 2429.1 | 2428.5 | 2425.3 | 2426.5 | 2432.9 | 2432.3 | 2432.9 |
| 5° | 2440.6 | 2439.3 | 2443.1 | 2437.4 | 2448.9 | 2452.7 | 2453.3 | 2459.1 | 2466.1 | 2468.0 | 2468.0 |
| 7.5° | 2477.6 | 2477.6 | 2479.5 | 2471.8 | 2479.5 | 2478.8 | 2475.6 | 2481.4 | 2488.4 | 2489.0 | 2488.4 |
| 10° | 2541.3 | 2542.0 | 2538.8 | 2519.0 | 2512.6 | 2495.4 | 2479.5 | 2480.1 | 2489.0 | 2496.1 | 2498.0 |
| 12.5° | 2621.7 | 2619.1 | 2605.1 | 2568.8 | 2542.0 | 2506.9 | 2490.3 | 2489.7 | 2498.6 | 2504.3 | 2506.3 |
| 15° | 2713.5 | 2706.5 | 2670.2 | 2610.8 | 2563.7 | 2529.2 | 2502.4 | 2496.1 | 2491.0 | 2484.6 | 2485.2 |
| 17.5° | 2800.2 | 2784.3 | 2723.7 | 2641.5 | 2591.7 | 2545.8 | 2494.1 | 2452.7 | 2424.0 | 2407.4 | 2402.3 |
| 20° | 2888.3 | 2857.0 | 2769.6 | 2670.2 | 2607.0 | 2523.5 | 2424.0 | 2339.8 | 2287.5 | 2263.3 | 2258.8 |
| 22.5° | 2968.6 | 2918.2 | 2812.4 | 2700.1 | 2594.9 | 2448.2 | 2292.0 | 2169.5 | 2096.8 | 2064.3 | 2066.9 |
| 25° | 3047.0 | 2976.9 | 2857.0 | 2721.2 | 2533.7 | 2315.6 | 2108.3 | 1957.8 | 1873.6 | 1837.3 | 1836.0 |
| 27.5° | 3115.9 | 3036.2 | 2905.5 | 2704.0 | 2419.5 | 2126.8 | 1890.9 | 1744.2 | 1674.0 | 1642.8 | 1637.7 |
| 30° | 3195.0 | 3110.8 | 2969.9 | 2638.3 | 2252.4 | 1908.7 | 1678.5 | 1575.2 | 1525.4 | 1494.2 | 1488.4 |
| 32.5° | 3291.3 | 3212.2 | 3022.8 | 2519.0 | 2038.8 | 1681.0 | 1512.7 | 1440.6 | 1395.3 | 1360.3 | 1353.9 |
| 35° | 3431.6 | 3346.1 | 3036.2 | 2348.1 | 1804.1 | 1501.2 | 1390.9 | 1316.9 | 1255.7 | 1210.4 | 1205.9 |
| 37.5° | 3607.6 | 3513.9 | 3005.6 | 2126.8 | 1576.5 | 1384.5 | 1289.5 | 1198.3 | 1118.6 | 1054.8 | 1044.6 |
| 40° | 3861.4 | 3719.8 | 2920.8 | 1871.7 | 1408.7 | 1294.6 | 1190.6 | 1086.7 | 987.8 | 913.2 | 898.6 |
| 42.5° | 4166.3 | 3961.5 | 2790.7 | 1617.9 | 1285.7 | 1203.4 | 1092.4 | 963.6 | 869.2 | 816.3 | 808.6 |
| 45° | 4554.0 | 4212.8 | 2610.2 | 1396.0 | 1164.5 | 1112.2 | 986.6 | 867.9 | 809.3 | 770.4 | 764.0 |
| 47.5° | 4996.6 | 4494.7 | 2420.8 | 1215.5 | 1061.8 | 1026.7 | 901.7 | 825.2 | 778.7 | 748.1 | 742.3 |
| 50° | 5540.6 | 4812.9 | 2219.9 | 1067.6 | 958.5 | 924.1 | 861.6 | 801.6 | 764.6 | 741.0 | 735.3 |
| 52.5° | 6154.0 | 5171.9 | 2075.2 | 950.8 | 873.0 | 848.2 | 840.5 | 788.9 | 758.9 | 741.0 | 735.3 |
| 55° | 6814.7 | 5537.4 | 1918.9 | 852.6 | 799.1 | 806.1 | 826.5 | 790.1 | 769.7 | 748.1 | 739.8 |
| 57.5° | 7476.0 | 5914.9 | 1744.8 | 769.7 | 740.4 | 774.8 | 816.9 | 792.7 | 775.5 | 754.4 | 746.8 |
| 60° | 7999.0 | 6154.0 | 1475.1 | 700.2 | 693.8 | 740.4 | 794.0 | 773.6 | 751.2 | 751.9 | 750.6 |
| 62.5° | 8243.2 | 6141.3 | 1177.2 | 638.4 | 647.3 | 693.8 | 757.0 | 743.6 | 725.1 | 750.0 | 751.9 |
| 65° | 8106.1 | 5835.2 | 916.4 | 582.2 | 597.5 | 645.4 | 718.7 | 728.9 | 735.3 | 783.1 | 789.5 |
| 67.5° | 7530.9 | 5239.5 | 709.8 | 533.1 | 552.3 | 612.2 | 722.5 | 794.0 | 802.3 | 852.6 | 852.0 |
| 69° | *6935.9* | *4680.9* | *616.7* | *507.6* | *529.9* | *620.5* | *772.3* | *835.4* | *804.2* | *857.7* | *850.1* |
| 70° | 6437.2 | 4239.0 | 566.9 | 490.4 | 519.7 | 635.2 | 805.4 | 834.8 | 794.6 | 840.5 | 827.8 |
| 72.5° | 4957.7 | 3049.6 | 480.8 | 458.5 | 485.3 | 607.8 | 815.0 | 816.3 | 772.3 | 781.2 | 759.5 |
| 75° | 3400.3 | 1927.2 | 419.6 | 415.2 | 433.0 | 547.8 | 784.4 | 779.9 | 714.3 | 701.5 | 683.6 |
| 77.5° | 1874.9 | 978.9 | 356.5 | 373.7 | 385.8 | 485.3 | 713.0 | 706.6 | 652.4 | 625.6 | 619.2 |
| 80° | 723.2 | 428.6 | 301.0 | 332.3 | 339.9 | 420.3 | 625.0 | 619.2 | 574.0 | 539.5 | 529.9 |
| 82.5° | 272.9 | 224.5 | 248.7 | 287.6 | 285.1 | 346.9 | 529.3 | 526.1 | 482.1 | 431.7 | 416.4 |
| 85° | 126.3 | 134.6 | 197.1 | 237.2 | 218.7 | 257.0 | 423.4 | 429.2 | 375.6 | 315.7 | 315.7 |
| 87.5° | 53.6 | 75.3 | 139.7 | 179.2 | 147.3 | 173.5 | 310.6 | 296.5 | 272.3 | 188.8 | 177.3 |
| 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
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# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

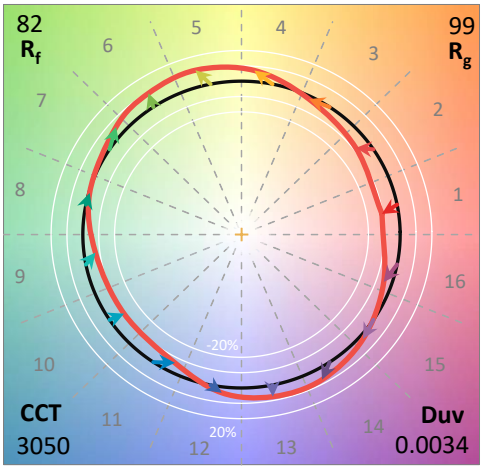
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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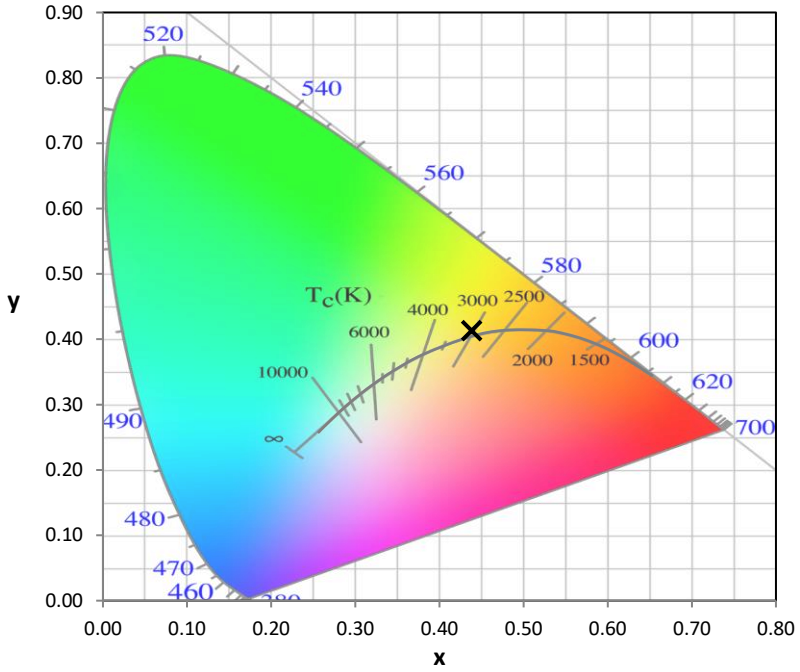
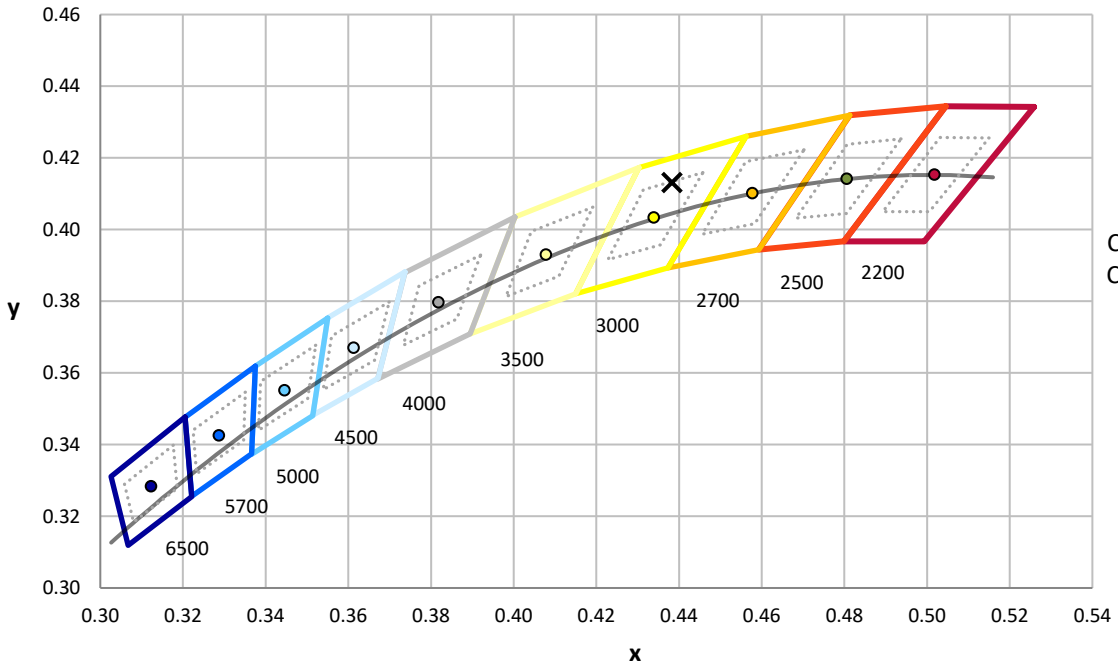
## CIE 1931 Chromaticity Diagram




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




CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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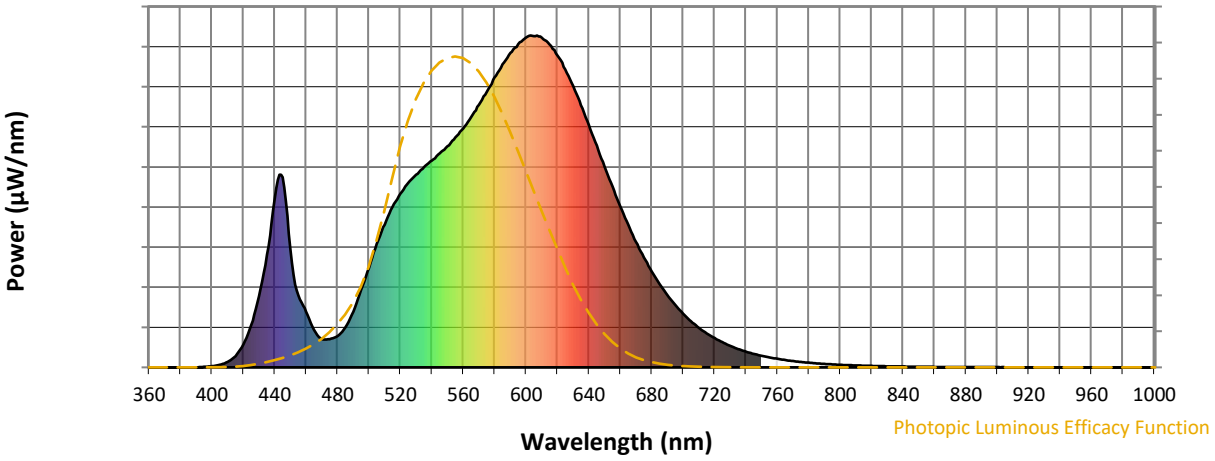
## Photopic Flux vs. Wavelength




## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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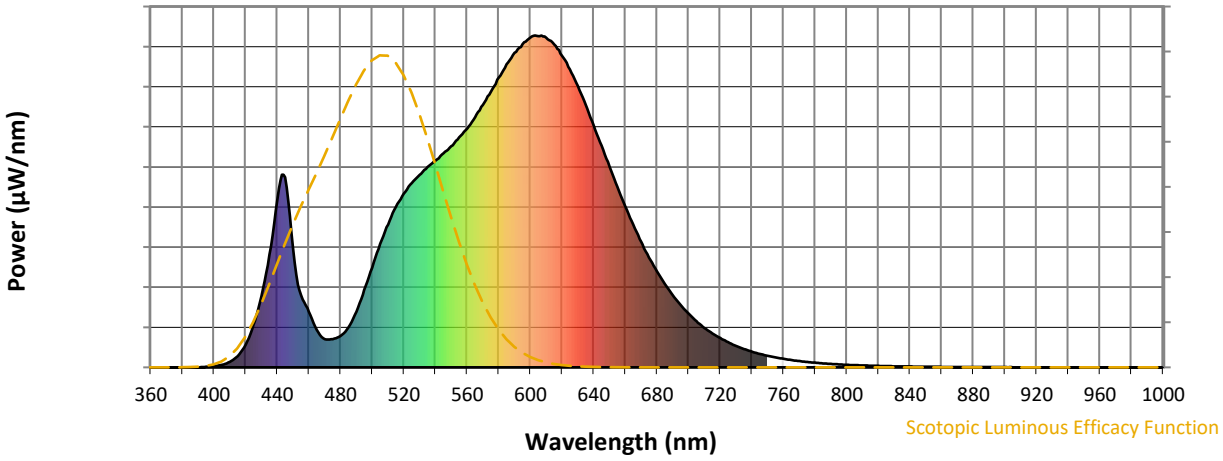
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.27**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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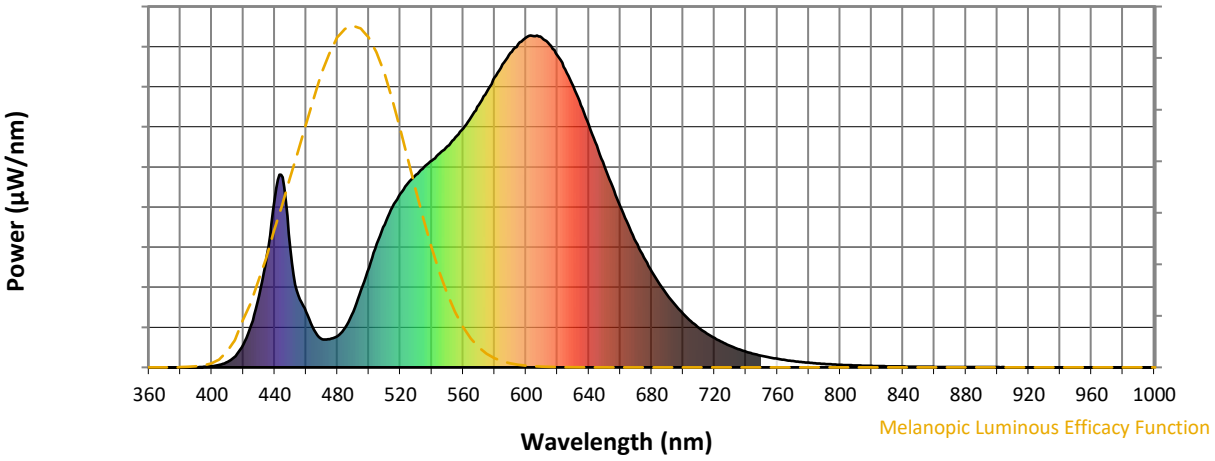
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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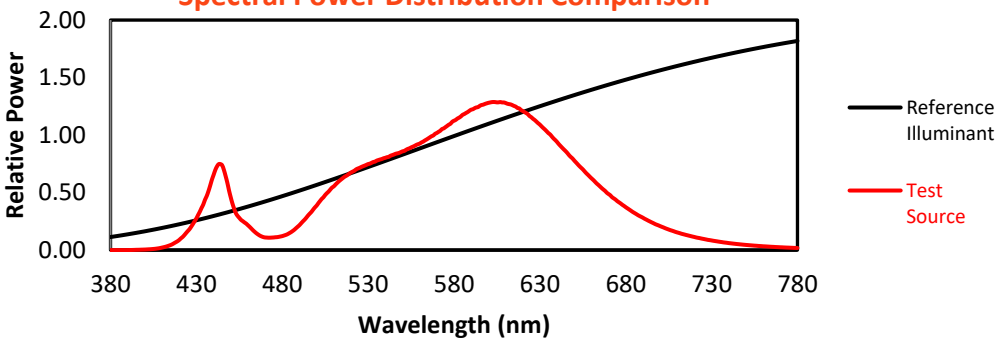
# TM-30-18

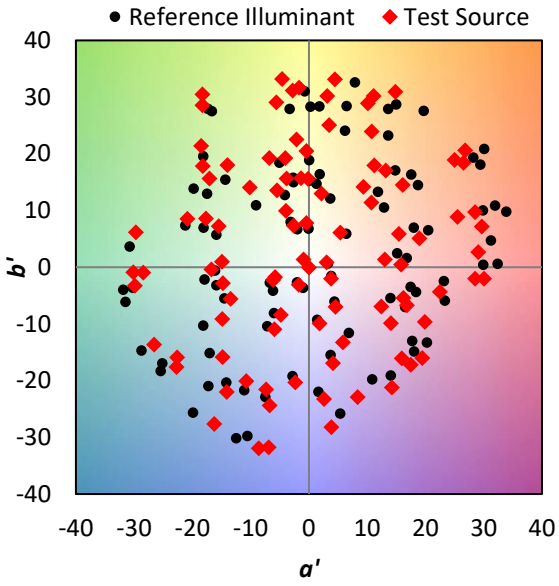
## Summary

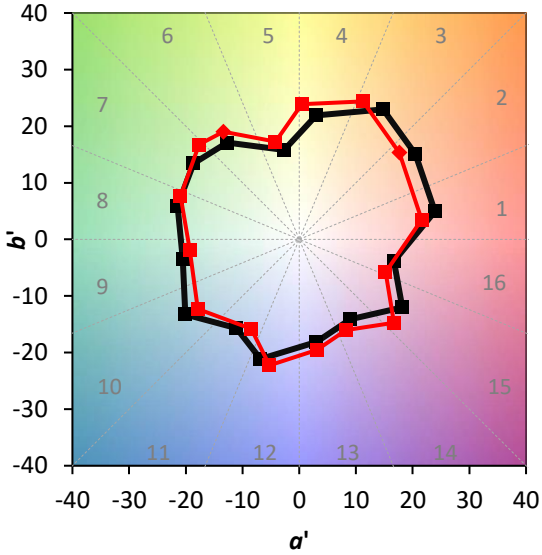
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

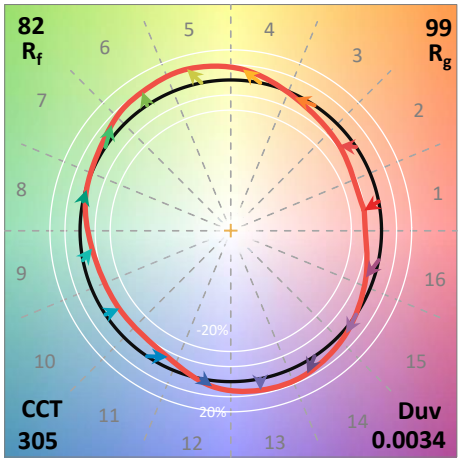
## Spectral Power Distribution Comparison

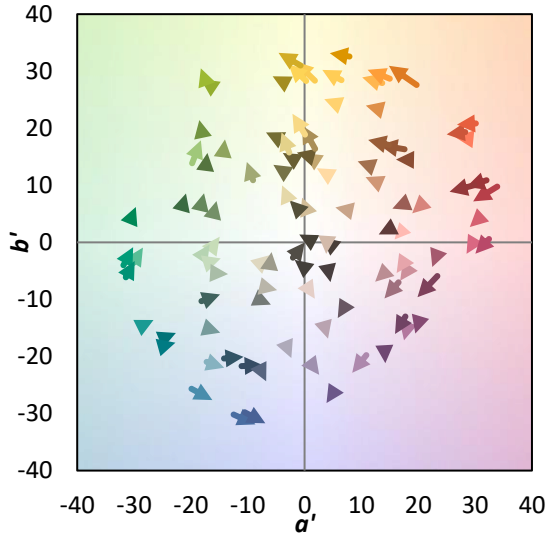



## Color Vector Graphics



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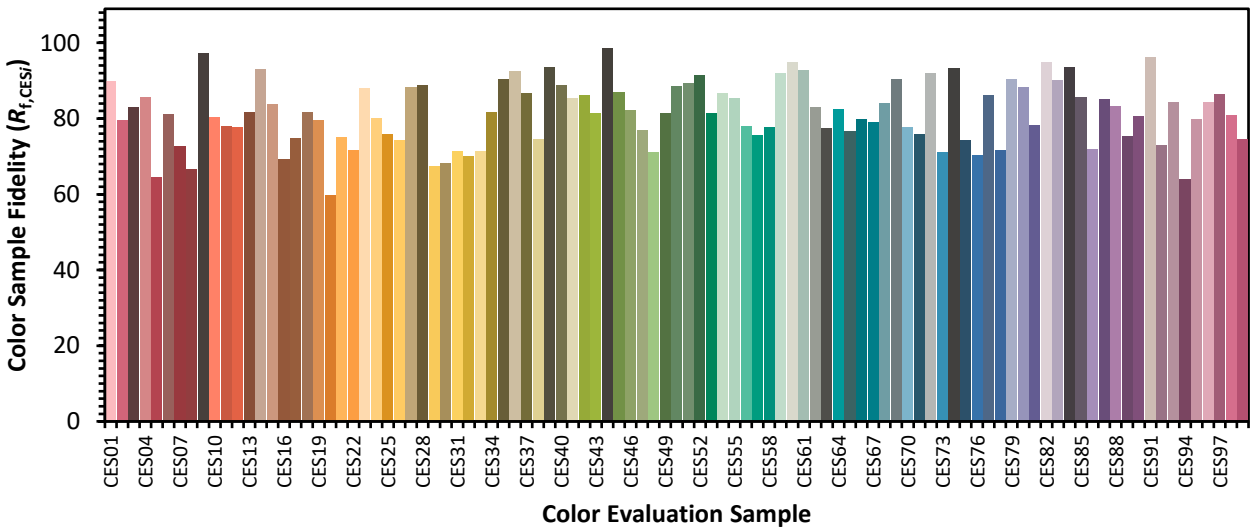
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



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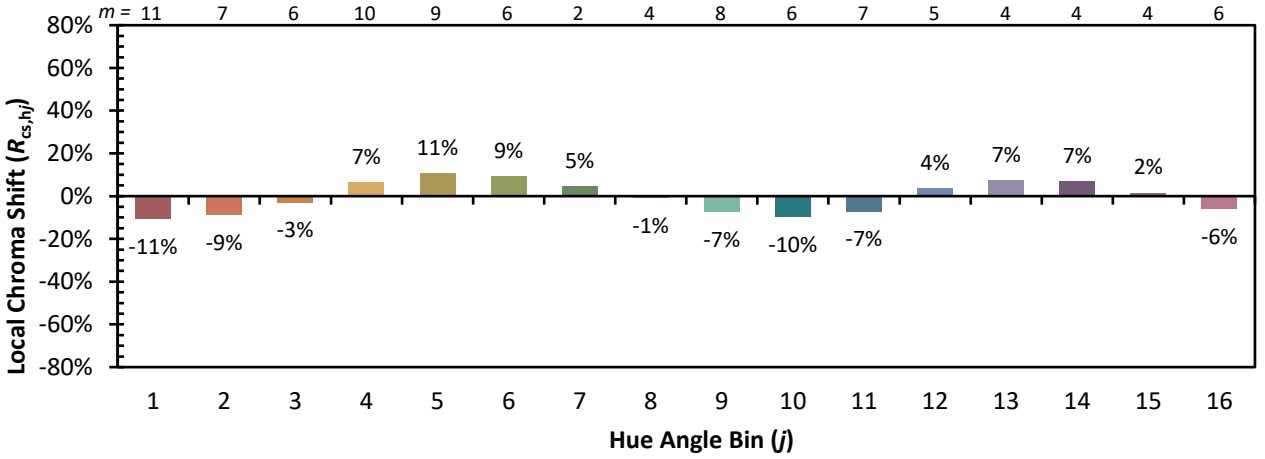
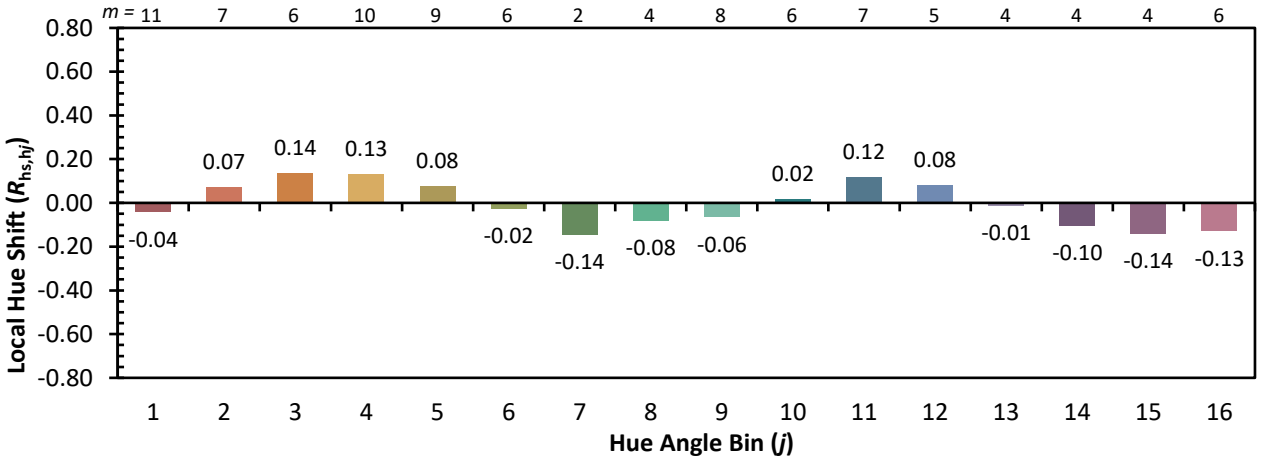
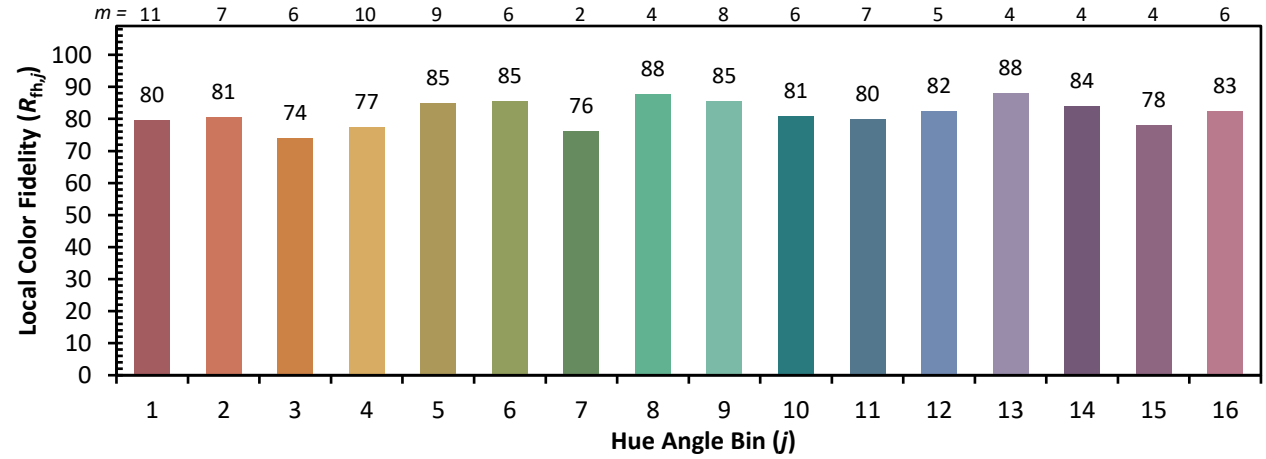
## Color Rendition by Hue-Angle Bin



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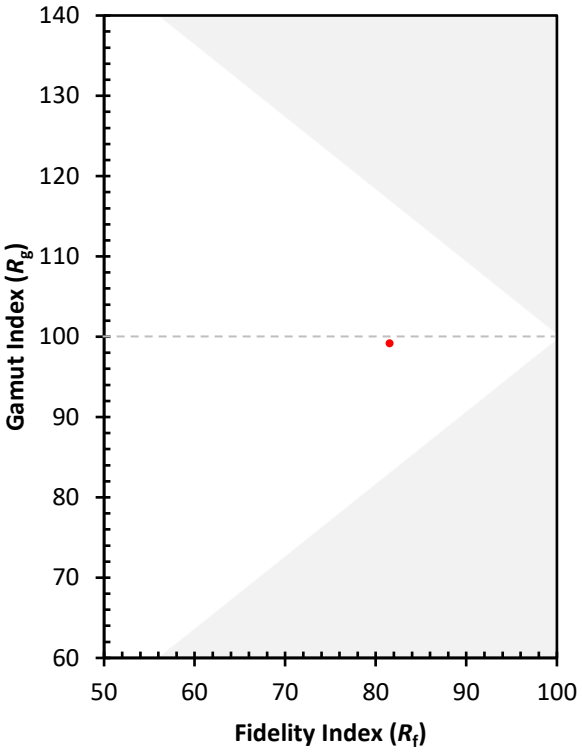
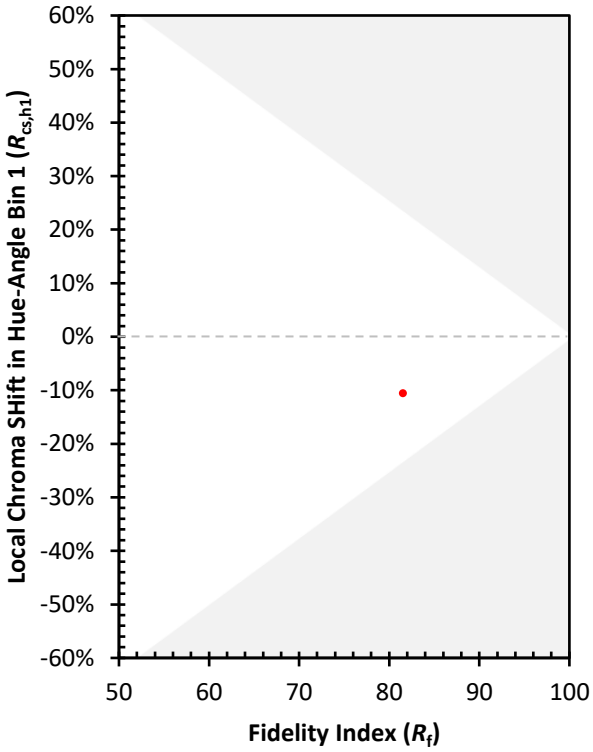
## Measure Comparisons




(END OF REPORT)