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: P322720

Luminaire Tested: **GLEON-SA6B-830-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: | P322720 |
| | 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-SA6B-830-U-T4FT-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (6) 80 CRI, 3000K, 800mA 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: | 19288 lumens |
| Efficiency: | N/A |
| Efficacy: | 77.5 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B2 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 249 |
| 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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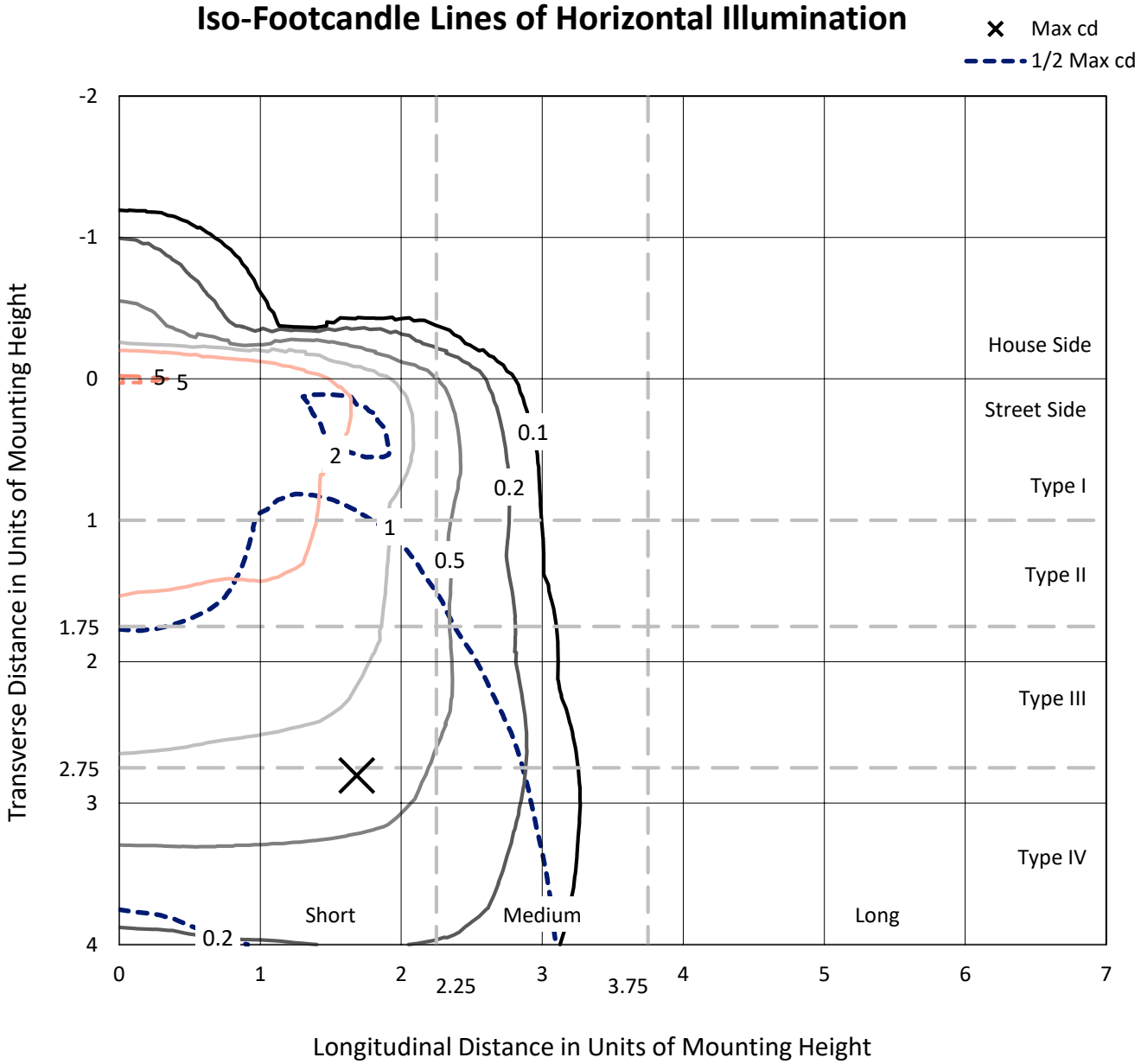
Scaled Data Report

REPORT NUMBER: P322720
CATALOG NUMBER: GLEON-SA6B-830-U-T4FT-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 5.3 fc
Type IV - Short - N/A

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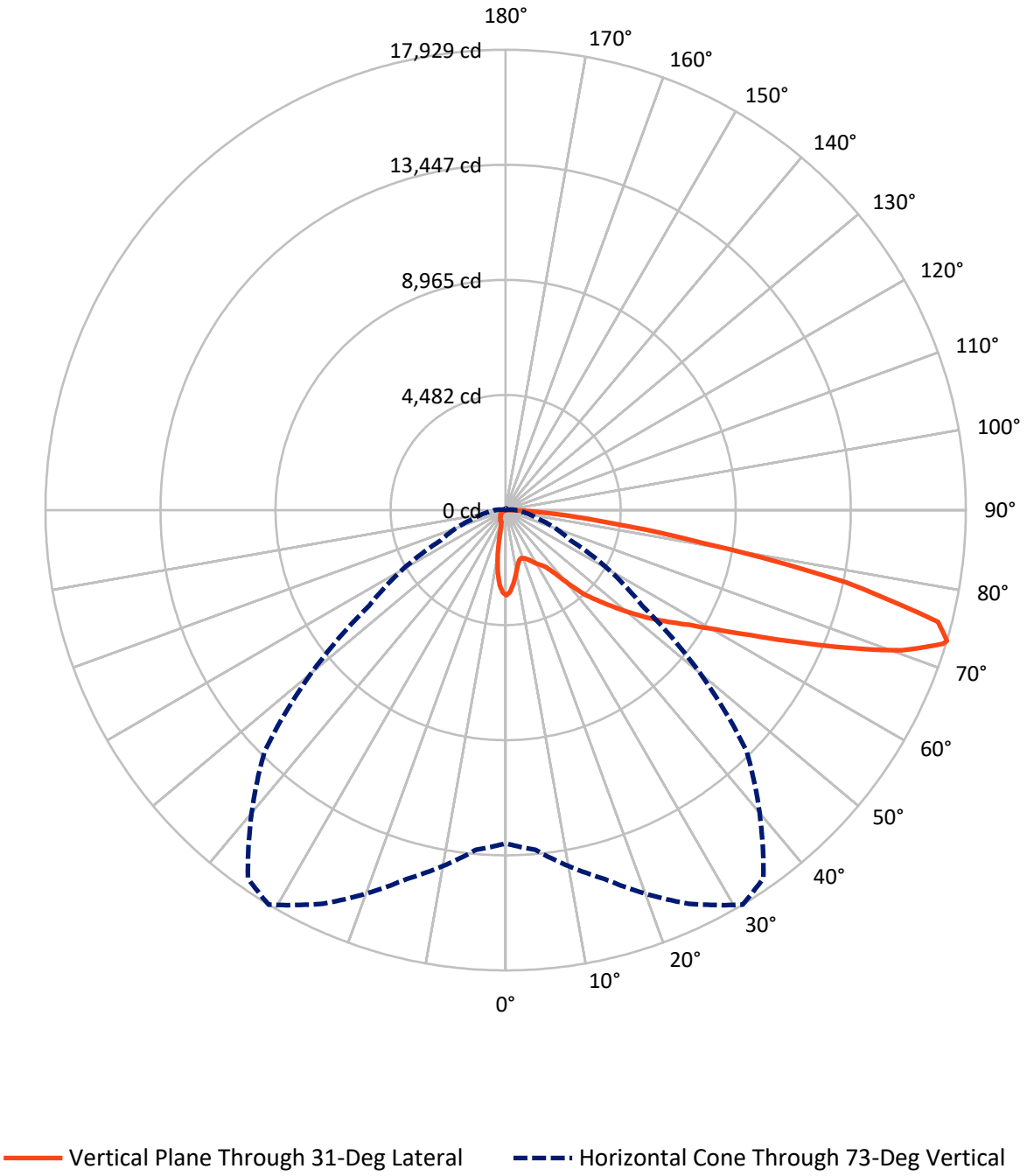
## Luminous Intensity Polar Plot



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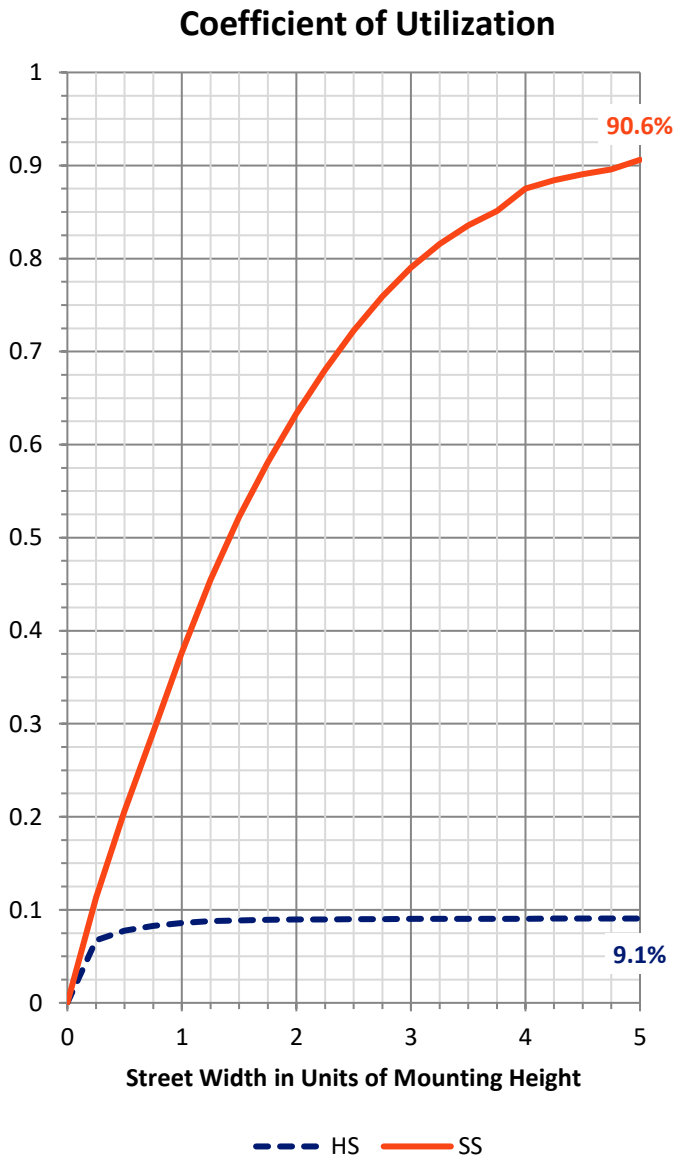
CATALOG NUMBER: GLEON-SA6B-830-U-T4FT-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1758.2 | 0.0 | 1758.2 |
| | % Fixture | 9.1 | 0.0 | 9.1 |
| **Street Side** | Lumens | 17529.8 | 0.0 | 17529.8 |
| | % Fixture | 90.9 | 0.0 | 90.9 |
| **Total** | Lumens | 19288.0 | 0.0 | 19288.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 275.2 | 1.4 |
| 10°-20° | 597.4 | 3.1 |
| 20°-30° | 895.1 | 4.6 |
| 30°-40° | 1424.2 | 7.4 |
| 40°-50° | 2543.2 | 13.2 |
| 50°-60° | 3946.3 | 20.5 |
| 60°-70° | 5246.0 | 27.2 |
| 70°-80° | 3946.1 | 20.5 |
| 80°-90° | 414.7 | 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° | 19288.0 | 100.0 |
| 0°-180° | 19288.0 | 100.0 |



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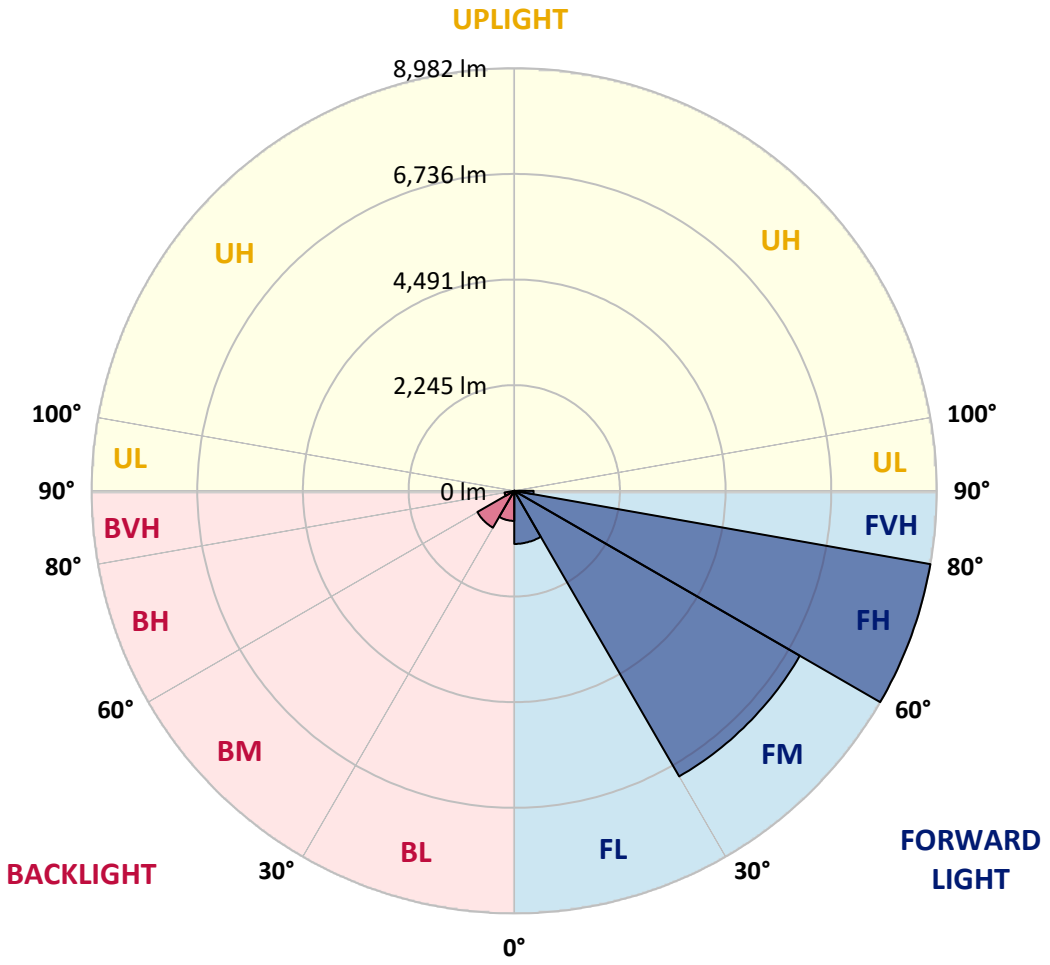
REPORT NUMBER: P322720
CATALOG NUMBER: GLEON-SA6B-830-U-T4FT-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1128.4 | 5.9 | | | |
| FM | (30°-60°) | 7008.6 | 36.3 | | | |
| FH | (60°-80°) | 8981.7 | 46.6 | | | G4/12000 |
| FVH | (80°-90°) | 411.2 | 2.1 | | | G3/500 |
| BL | (0°-30°) | 639.3 | 3.3 | B2/1000 | | |
| BM | (30°-60°) | 905.0 | 4.7 | B1/1000 | | |
| BH | (60°-80°) | 210.4 | 1.1 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 3.5 | 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-G4**
Type IV Short



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CATALOG NUMBER: GLEON-SA6B-830-U-T4FT-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 31° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 |
| 2.5° | 3144.9 | 3158.1 | 3172.2 | 3175.1 | 3198.7 | 3199.6 | 3233.6 | 3259.1 | 3284.6 | 3309.1 | 3317.6 |
| 5° | 2822.1 | 2843.8 | 2869.3 | 2894.8 | 2944.8 | 2964.6 | 3047.7 | 3132.6 | 3213.8 | 3291.2 | 3328.9 |
| 7.5° | 2477.6 | 2502.1 | 2538.0 | 2601.2 | 2656.9 | 2695.6 | 2826.8 | 2977.8 | 3128.8 | 3271.3 | 3353.5 |
| 10° | 2163.3 | 2185.9 | 2223.7 | 2290.7 | 2376.6 | 2429.4 | 2605.9 | 2815.5 | 3037.3 | 3253.4 | 3390.3 |
| 12.5° | 1963.2 | 1975.5 | 1996.2 | 2068.0 | 2145.3 | 2204.8 | 2412.5 | 2672.0 | 2961.8 | 3252.5 | 3449.7 |
| 15° | 1926.4 | 1930.2 | 1913.2 | 1945.3 | 2005.7 | 2063.2 | 2273.7 | 2555.9 | 2904.2 | 3267.6 | 3527.1 |
| 17.5° | 1984.9 | 1983.0 | 1926.4 | 1922.6 | 1970.7 | 2017.9 | 2205.8 | 2475.7 | 2863.6 | 3302.5 | 3627.2 |
| 20° | 2073.6 | 2067.0 | 1968.8 | 1950.9 | 2001.9 | 2046.2 | 2201.0 | 2445.5 | 2848.5 | 3361.0 | 3748.9 |
| 22.5° | 2191.6 | 2180.3 | 2026.4 | 2007.5 | 2062.3 | 2108.5 | 2259.6 | 2474.7 | 2861.7 | 3439.4 | 3890.5 |
| 25° | 2337.9 | 2320.9 | 2125.5 | 2104.8 | 2160.4 | 2206.7 | 2364.3 | 2558.7 | 2901.4 | 3534.7 | 4069.8 |
| 27.5° | 2503.1 | 2478.5 | 2284.1 | 2230.3 | 2293.5 | 2341.7 | 2504.0 | 2687.1 | 2963.7 | 3635.7 | 4289.8 |
| 30° | 2658.8 | 2626.7 | 2451.2 | 2362.4 | 2439.8 | 2493.6 | 2655.0 | 2840.0 | 3063.7 | 3791.4 | 4590.8 |
| 32.5° | 2815.5 | 2779.6 | 2600.3 | 2494.6 | 2564.4 | 2622.9 | 2810.8 | 3050.5 | 3251.5 | 4029.3 | 4991.0 |
| 35° | 3176.0 | 3138.3 | 2918.4 | 2743.7 | 2742.8 | 2775.8 | 3028.8 | 3338.4 | 3499.8 | 4360.5 | 5468.6 |
| 37.5° | 3782.9 | 3761.2 | 3551.7 | 3220.4 | 3131.7 | 3094.8 | 3326.1 | 3681.9 | 3856.5 | 4816.4 | 6007.5 |
| 40° | 4447.4 | 4428.5 | 4193.5 | 3893.3 | 3758.4 | 3667.8 | 3752.7 | 4160.4 | 4360.5 | 5373.3 | 6557.8 |
| 42.5° | 5197.7 | 5108.1 | 4689.0 | 4599.3 | 4478.5 | 4409.6 | 4333.2 | 4750.3 | 4979.7 | 5979.2 | 7103.3 |
| 45° | 5879.2 | 5728.2 | 5184.5 | 5048.6 | 5021.2 | 5038.2 | 5080.7 | 5543.2 | 5676.3 | 6699.4 | 7647.0 |
| 47.5° | 6285.0 | 6166.1 | 5748.9 | 5618.7 | 5611.1 | 5723.4 | 6044.3 | 6438.9 | 6370.0 | 7327.0 | 8125.5 |
| 50° | 6671.1 | 6563.5 | 6217.1 | 6249.2 | 6284.1 | 6437.0 | 7138.3 | 7360.1 | 7003.3 | 7896.2 | 8564.4 |
| 52.5° | 6983.5 | 6819.2 | 6638.0 | 6818.3 | 6990.1 | 7236.4 | 8267.1 | 8186.9 | 7452.6 | 8349.2 | 8940.0 |
| 55° | 7163.7 | 7089.2 | 7177.0 | 7358.2 | 7681.0 | 8081.2 | 9332.7 | 8874.9 | 7781.0 | 8762.6 | 9190.2 |
| 57.5° | 7824.4 | 7678.1 | 7852.7 | 8009.4 | 8430.4 | 8990.1 | 10245.4 | 9387.4 | 8017.9 | 9018.4 | 9247.7 |
| 60° | 8623.9 | 8505.9 | 8608.8 | 8869.3 | 9437.5 | 10095.3 | 11098.6 | 9805.5 | 8141.6 | 9182.6 | 9098.6 |
| 62.5° | 9896.2 | 9740.4 | 9676.2 | 9967.9 | 10721.1 | 11439.3 | 11746.1 | 10095.3 | 8114.2 | 9109.9 | 8587.1 |
| 65° | 11600.7 | 11439.3 | 11152.4 | 11416.7 | 12374.7 | 12881.5 | 12470.0 | 10156.7 | 7925.4 | 8521.9 | 7294.0 |
| 67.5° | 13346.8 | 13229.8 | 12984.4 | 13429.9 | 14294.5 | 14457.7 | 13235.5 | 10007.5 | 7317.6 | 6909.8 | 5153.4 |
| 70° | 14500.2 | 14450.2 | 14609.7 | 15595.1 | 16366.2 | 16319.0 | 13937.7 | 9206.2 | 5703.6 | 4249.2 | 2549.3 |
| 72.5° | 13668.7 | 13908.4 | 15086.3 | 16873.0 | 17815.0 | 17429.9 | 13577.1 | 7069.4 | 3260.0 | 1634.7 | 737.1 |
| 73° | 12979.7 | 13286.4 | 14872.1 | 16921.2 | 17929.2 | 17507.3 | 13274.2 | 6488.9 | 2778.7 | 1290.2 | 558.8 |
| 75° | 9029.7 | 9406.3 | 12312.4 | 15759.3 | 17395.0 | 16680.5 | 11064.6 | 3971.7 | 1287.4 | 572.0 | 225.6 |
| 77.5° | 4384.1 | 4662.6 | 6779.6 | 11386.5 | 13528.1 | 13032.5 | 6888.1 | 1479.9 | 581.4 | 357.7 | 103.8 |
| 80° | 1636.6 | 1819.7 | 2942.9 | 5795.2 | 7817.8 | 8022.6 | 3029.7 | 559.7 | 387.0 | 287.9 | 52.9 |
| 82.5° | 428.5 | 477.6 | 1085.4 | 2584.2 | 4006.6 | 4193.5 | 955.2 | 282.2 | 283.2 | 236.9 | 32.1 |
| 85° | 136.9 | 156.7 | 338.8 | 1160.0 | 1887.7 | 1657.4 | 249.2 | 136.9 | 205.8 | 176.5 | 17.9 |
| 87.5° | 17.0 | 21.7 | 107.6 | 272.8 | 416.2 | 231.2 | 38.7 | 40.6 | 87.8 | 98.2 | 10.4 |
| 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: P322720
CATALOG NUMBER: GLEON-SA6B-830-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 | 3318.5 |
| 2.5° | 3326.1 | 3321.4 | 3322.3 | 3297.8 | 3281.7 | 3249.6 | 3216.6 | 3201.5 | 3185.5 | 3178.9 | 3185.5 |
| 5° | 3343.1 | 3334.6 | 3310.0 | 3234.5 | 3154.3 | 3050.5 | 2953.3 | 2879.7 | 2787.2 | 2761.7 | 2788.1 |
| 7.5° | 3369.5 | 3352.5 | 3280.8 | 3126.9 | 2948.6 | 2750.3 | 2527.6 | 2365.3 | 2232.2 | 2146.3 | 2177.4 |
| 10° | 3408.2 | 3376.1 | 3231.7 | 2970.3 | 2651.2 | 2300.1 | 1984.0 | 1737.6 | 1563.0 | 1491.3 | 1488.4 |
| 12.5° | 3473.3 | 3412.9 | 3171.3 | 2766.4 | 2287.9 | 1819.7 | 1405.4 | 1138.3 | 996.7 | 905.1 | 903.3 |
| 15° | 3545.1 | 3456.3 | 3094.8 | 2521.9 | 1865.0 | 1303.4 | 905.1 | 702.2 | 610.7 | 581.4 | 577.6 |
| 17.5° | 3632.8 | 3506.4 | 2995.7 | 2220.9 | 1422.4 | 863.6 | 590.8 | 532.3 | 528.6 | 525.7 | 525.7 |
| 20° | 3743.3 | 3565.8 | 2868.3 | 1876.4 | 1009.0 | 576.7 | 502.1 | 505.9 | 507.8 | 504.0 | 505.0 |
| 22.5° | 3871.6 | 3626.2 | 2716.4 | 1506.4 | 682.4 | 482.3 | 480.4 | 485.1 | 487.0 | 485.1 | 486.1 |
| 25° | 4020.8 | 3696.1 | 2531.4 | 1118.4 | 492.7 | 457.8 | 462.5 | 469.1 | 473.8 | 473.8 | 473.8 |
| 27.5° | 4205.7 | 3781.0 | 2308.6 | 780.6 | 425.7 | 432.3 | 445.5 | 457.8 | 464.4 | 466.3 | 466.3 |
| 30° | 4446.4 | 3886.7 | 2041.5 | 535.2 | 387.0 | 398.3 | 422.8 | 446.4 | 458.7 | 460.6 | 461.5 |
| 32.5° | 4750.3 | 4005.7 | 1731.9 | 395.5 | 353.9 | 362.4 | 388.9 | 428.5 | 452.1 | 455.9 | 455.9 |
| 35° | 5098.6 | 4143.5 | 1398.8 | 344.5 | 330.3 | 333.2 | 353.9 | 399.2 | 440.8 | 451.2 | 452.1 |
| 37.5° | 5479.9 | 4279.4 | 1063.7 | 321.8 | 310.5 | 310.5 | 325.6 | 364.3 | 413.4 | 445.5 | 449.3 |
| 40° | 5835.8 | 4361.5 | 745.6 | 303.9 | 292.6 | 292.6 | 305.8 | 334.1 | 380.4 | 428.5 | 438.9 |
| 42.5° | 6164.2 | 4389.8 | 519.1 | 286.9 | 275.6 | 278.4 | 289.8 | 312.4 | 347.3 | 395.5 | 404.9 |
| 45° | 6502.1 | 4385.1 | 378.5 | 267.1 | 258.6 | 267.1 | 275.6 | 292.6 | 318.1 | 345.4 | 347.3 |
| 47.5° | 6756.9 | 4345.4 | 300.1 | 248.2 | 242.6 | 253.9 | 261.4 | 272.8 | 286.9 | 285.0 | 285.0 |
| 50° | 6995.7 | 4249.2 | 241.6 | 222.7 | 226.5 | 239.7 | 243.5 | 247.3 | 248.2 | 230.3 | 228.4 |
| 52.5° | 7177.0 | 4099.1 | 193.5 | 195.4 | 210.5 | 223.7 | 219.9 | 214.3 | 204.8 | 183.1 | 179.3 |
| 55° | 7237.4 | 3810.3 | 152.0 | 161.4 | 186.9 | 203.9 | 189.7 | 177.4 | 159.5 | 141.6 | 137.8 |
| 57.5° | 7127.9 | 3437.5 | 123.6 | 125.5 | 157.6 | 171.8 | 155.7 | 141.6 | 121.8 | 106.7 | 103.8 |
| 60° | 6895.7 | 3023.1 | 101.9 | 94.4 | 121.8 | 134.0 | 123.6 | 109.5 | 91.6 | 80.2 | 79.3 |
| 62.5° | 6435.1 | 2581.4 | 84.0 | 73.6 | 92.5 | 102.9 | 96.3 | 85.9 | 70.8 | 63.2 | 62.3 |
| 65° | 5466.7 | 2065.1 | 68.0 | 59.5 | 71.7 | 80.2 | 74.6 | 67.0 | 55.7 | 50.0 | 49.1 |
| 67.5° | 3815.9 | 1395.9 | 55.7 | 49.1 | 56.6 | 63.2 | 58.5 | 54.7 | 44.4 | 43.4 | 44.4 |
| 70° | 1840.5 | 673.0 | 46.2 | 39.6 | 44.4 | 49.1 | 47.2 | 44.4 | 42.5 | 49.1 | 56.6 |
| 72.5° | 527.6 | 225.6 | 36.8 | 33.0 | 35.9 | 38.7 | 40.6 | 39.6 | 46.2 | 59.5 | 68.9 |
| 73° | *405.9* | *182.2* | *34.9* | *31.1* | *34.0* | *37.8* | *39.6* | *38.7* | *47.2* | *60.4* | *68.9* |
| 75° | 173.7 | 87.8 | 26.4 | 25.5 | 28.3 | 33.0 | 34.9 | 34.9 | 47.2 | 61.3 | 66.1 |
| 77.5° | 78.3 | 47.2 | 17.0 | 19.8 | 24.5 | 26.4 | 29.3 | 29.3 | 37.8 | 47.2 | 47.2 |
| 80° | 44.4 | 25.5 | 13.2 | 15.1 | 17.9 | 17.9 | 17.9 | 16.0 | 17.0 | 18.9 | 20.8 |
| 82.5° | 28.3 | 17.0 | 10.4 | 12.3 | 11.3 | 9.4 | 7.6 | 7.6 | 6.6 | 7.6 | 9.4 |
| 85° | 16.0 | 9.4 | 9.4 | 7.6 | 4.7 | 3.8 | 4.7 | 3.8 | 0.9 | 0.0 | 0.9 |
| 87.5° | 9.4 | 5.7 | 2.8 | 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 |

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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

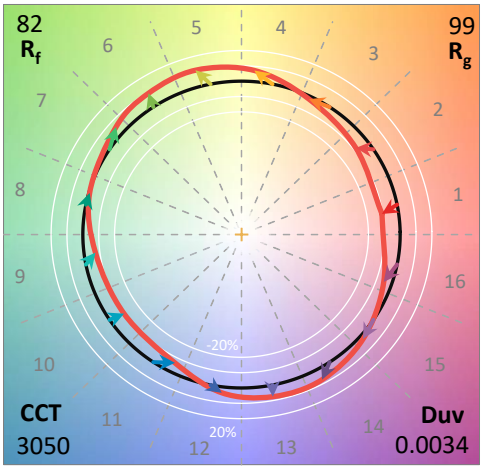
## Test Information

| | |
|---|---|
| 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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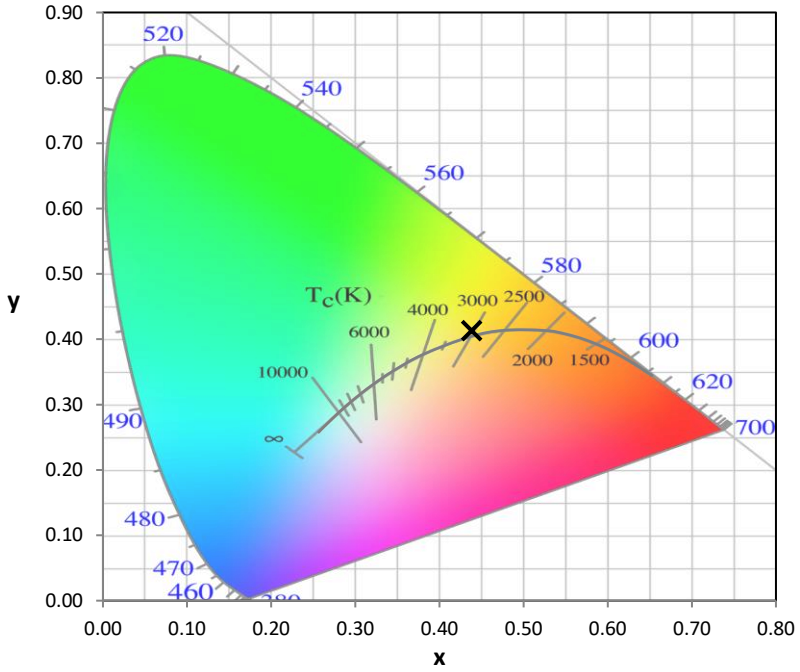
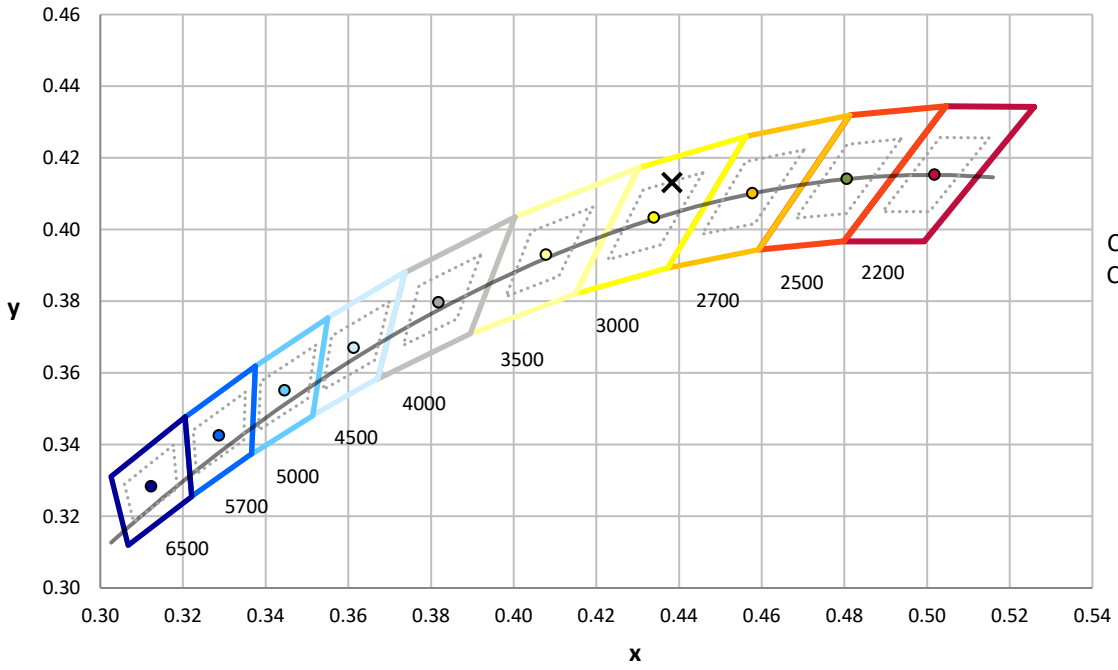
## CIE 1931 Chromaticity Diagram




## 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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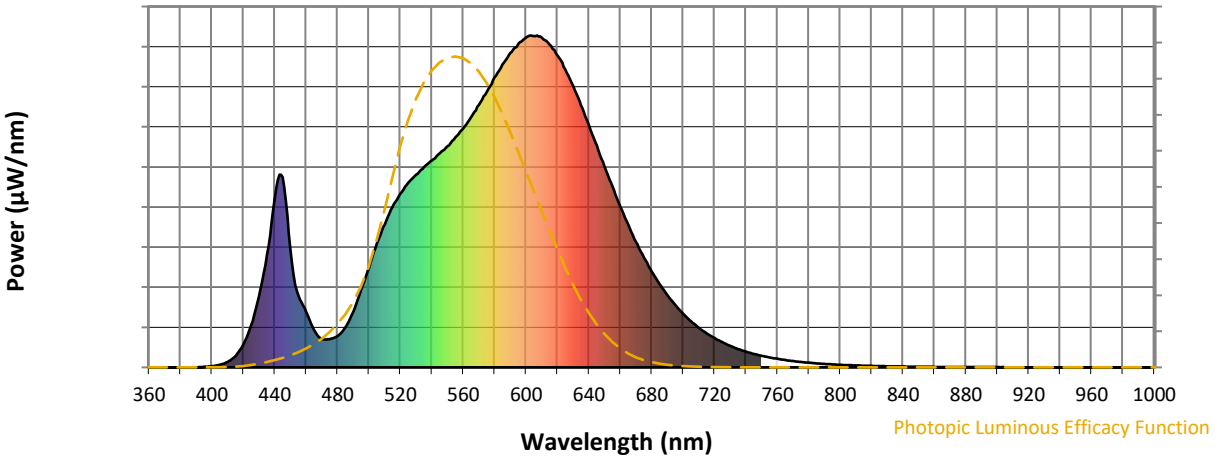
## Photopic Flux vs. Wavelength




## 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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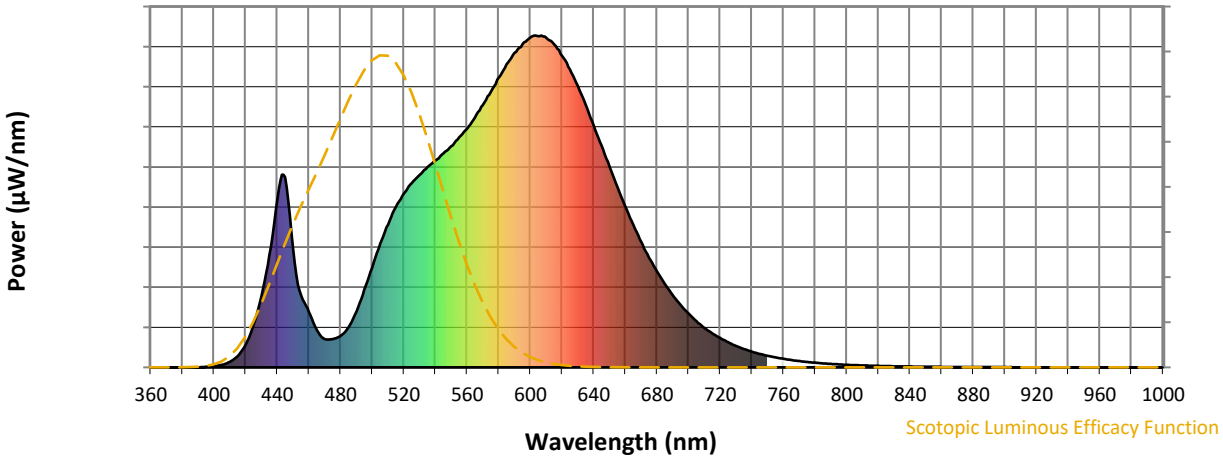
## Scotopic Flux vs. Wavelength




**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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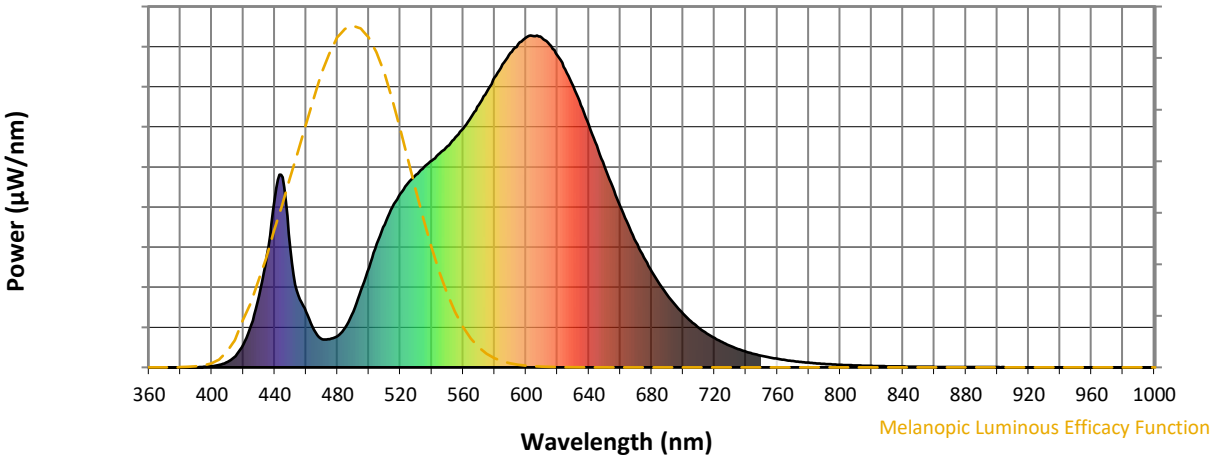
## Melanopic Flux vs. Wavelength




**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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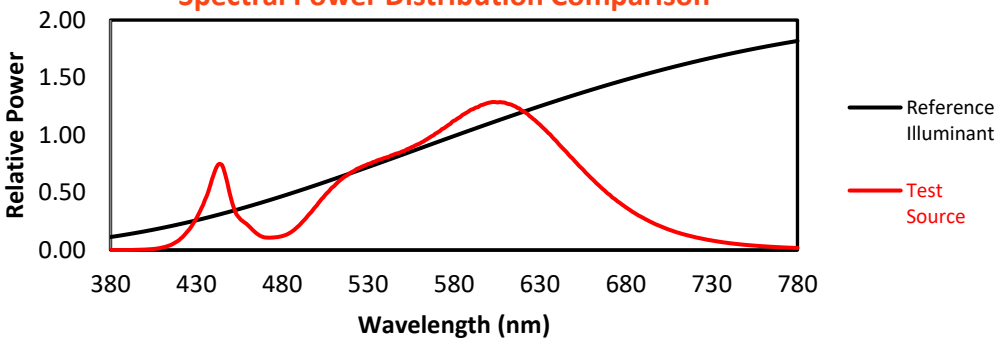
# TM-30-18

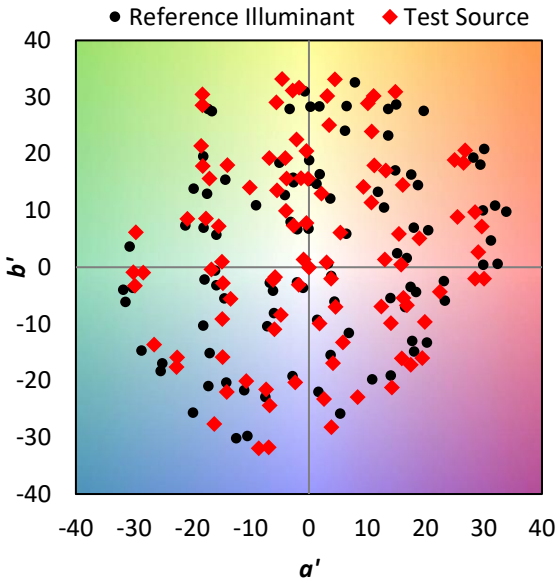
## Summary

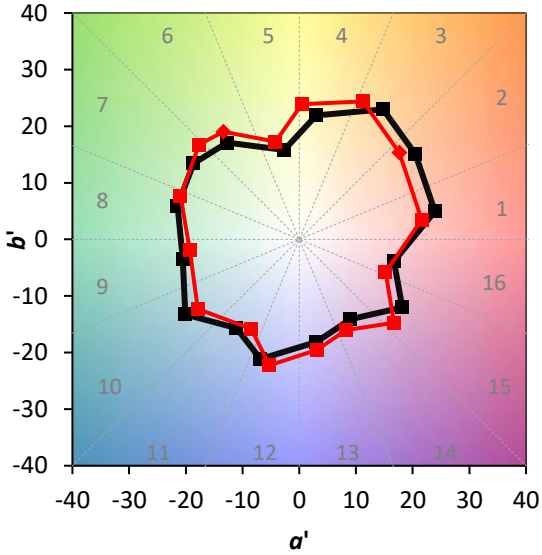
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

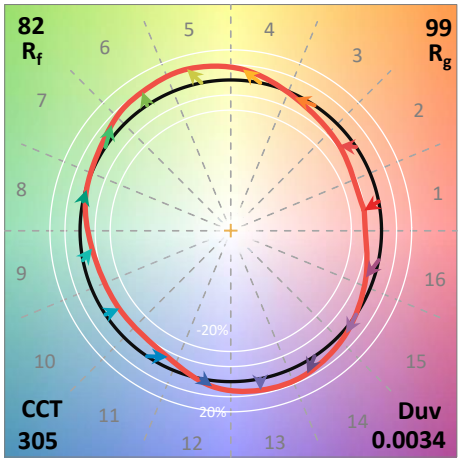
## Spectral Power Distribution Comparison

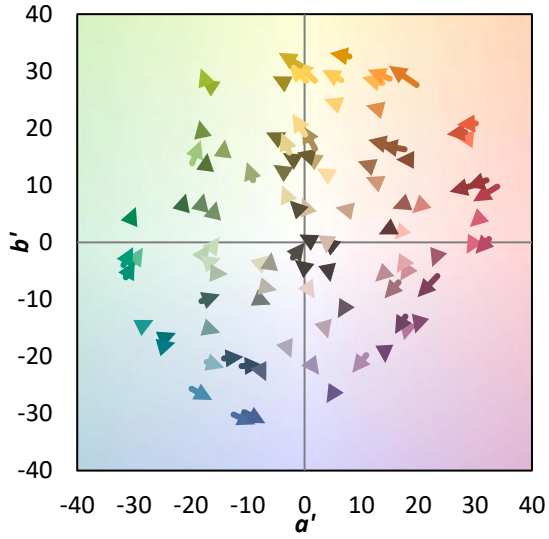



## Color Vector Graphics



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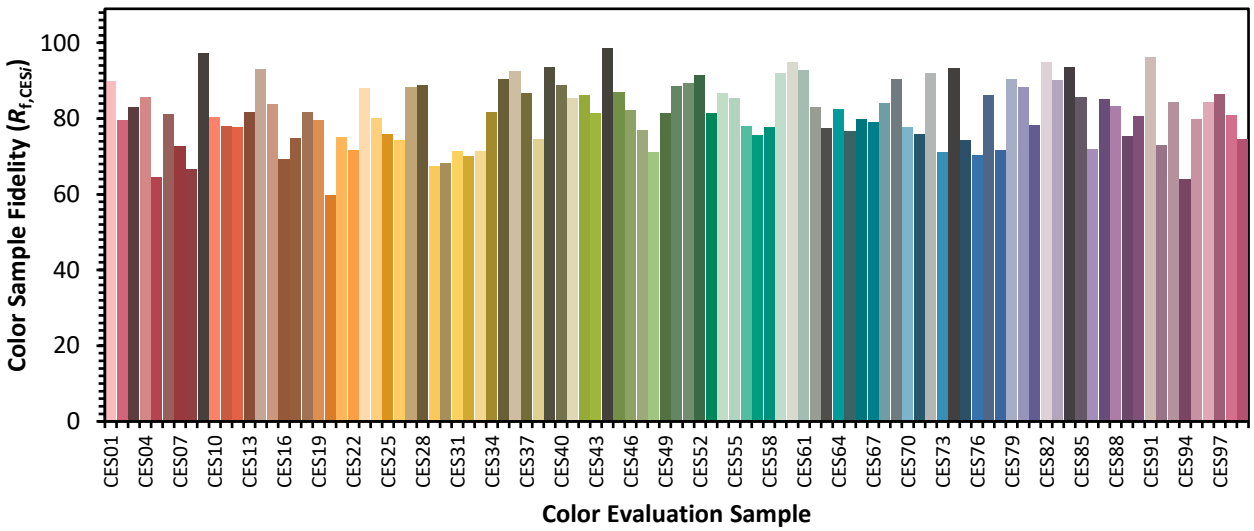
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| 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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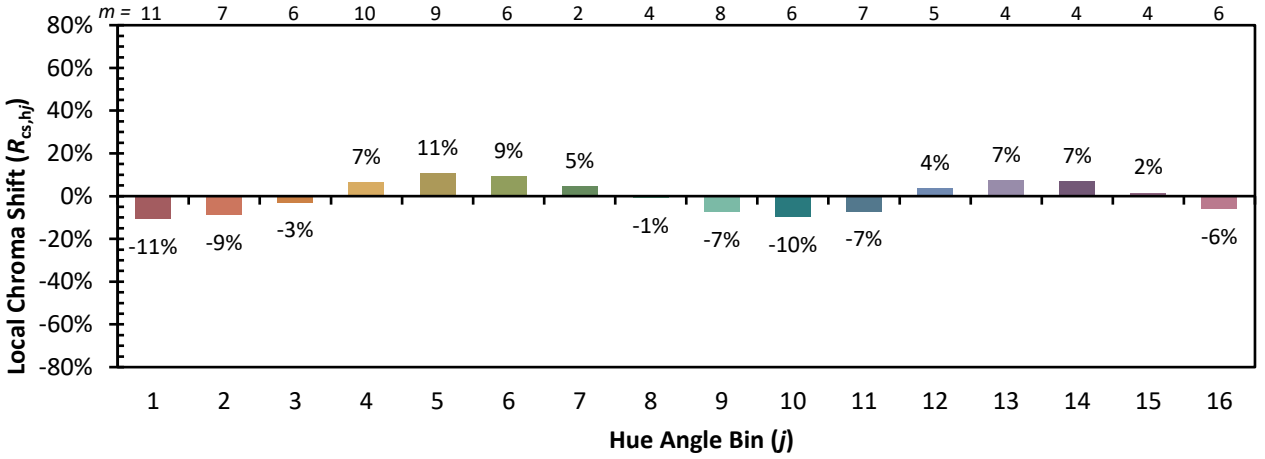
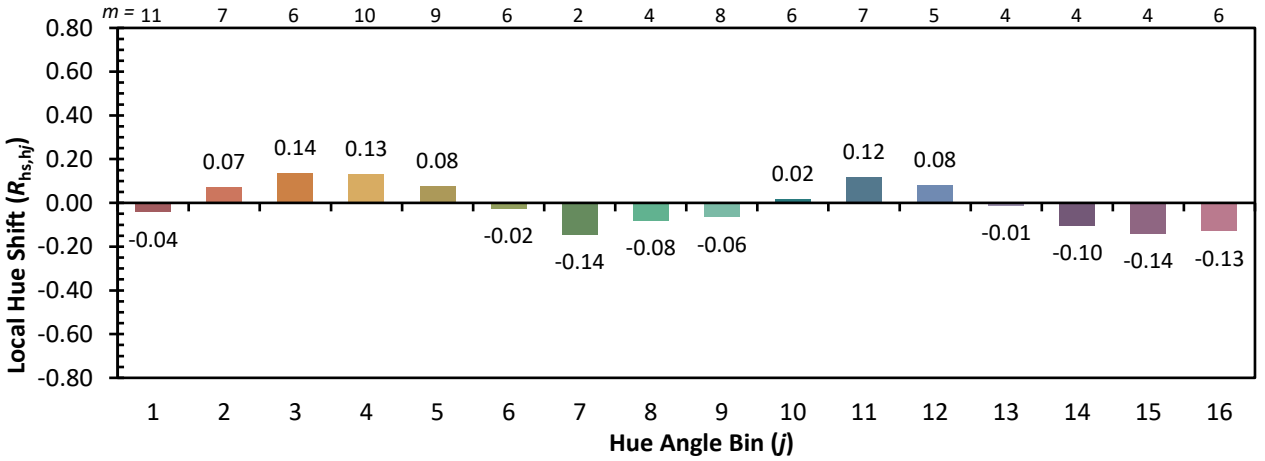
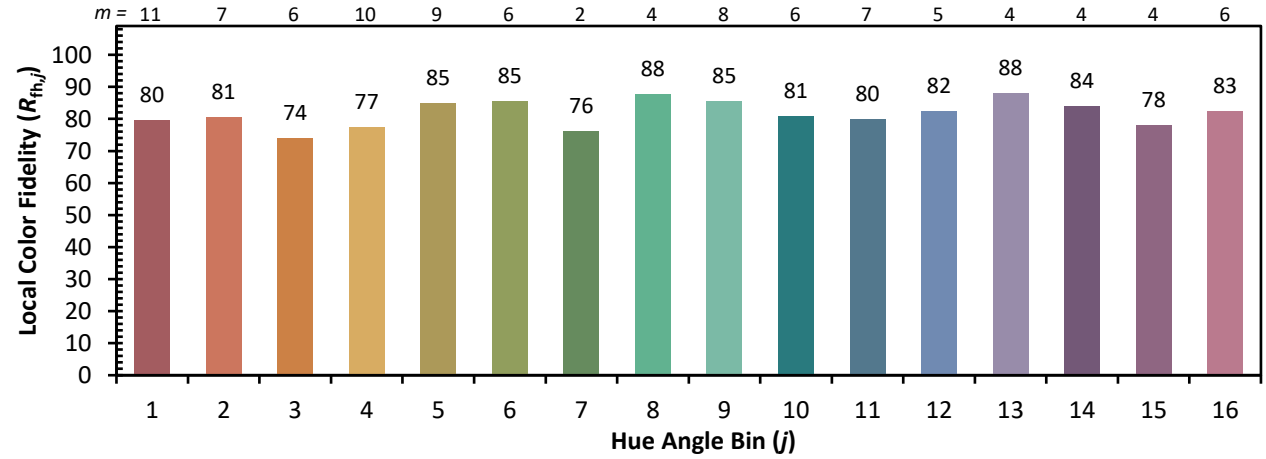
## Color Rendition by Hue-Angle Bin



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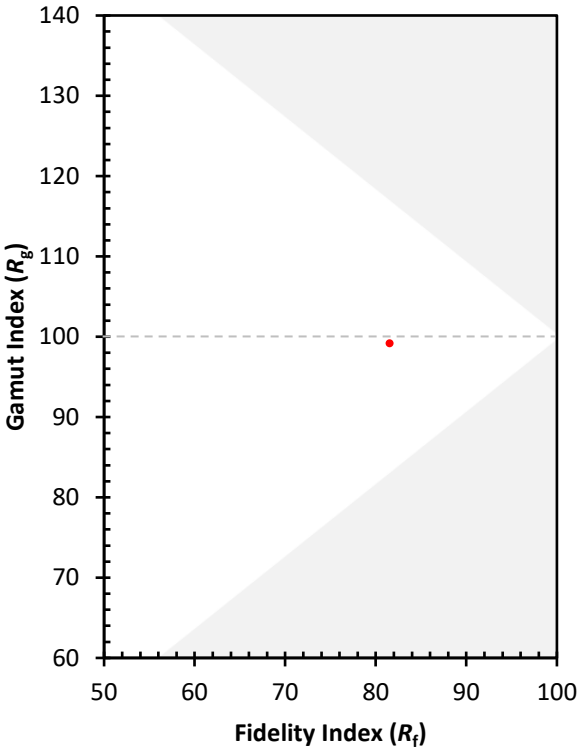
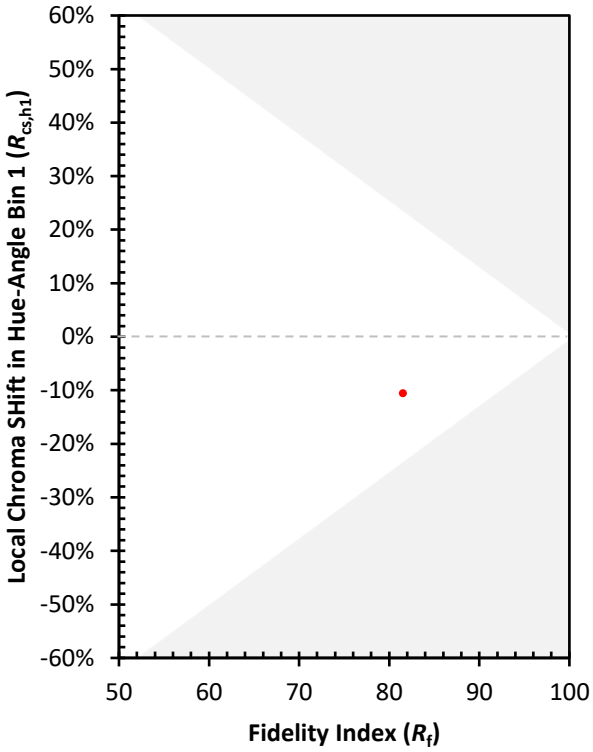
## Measure Comparisons




(END OF REPORT)