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

Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

Scaled data based on original data using

LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1456813

Luminaire Tested: GLAN-SB4C-930-U-T3LG

Issue Date: 05/20/2026

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2024 |
| Report Number: | P1456813 |
| Test Lab: | INNOVATION CENTER(G1) |
| Issue Date: | 5/22/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | STREETWORKS |
| Catalog Number: | GLAN-SB4C-930-U-T3LG |
| Description: | GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 615mA 4xLight Square PACKAGE 90CRI 3000K FIXTURE w/ TYPE III LOW GLARE |
| Light Source: | (104) 3000K CCT, 90 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 20380.5 lumens |
| Efficiency: | N/A |
| Efficacy: | 101.5 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): | 200.7 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.97 |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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Scaled Data Report

REPORT NUMBER: P1456813
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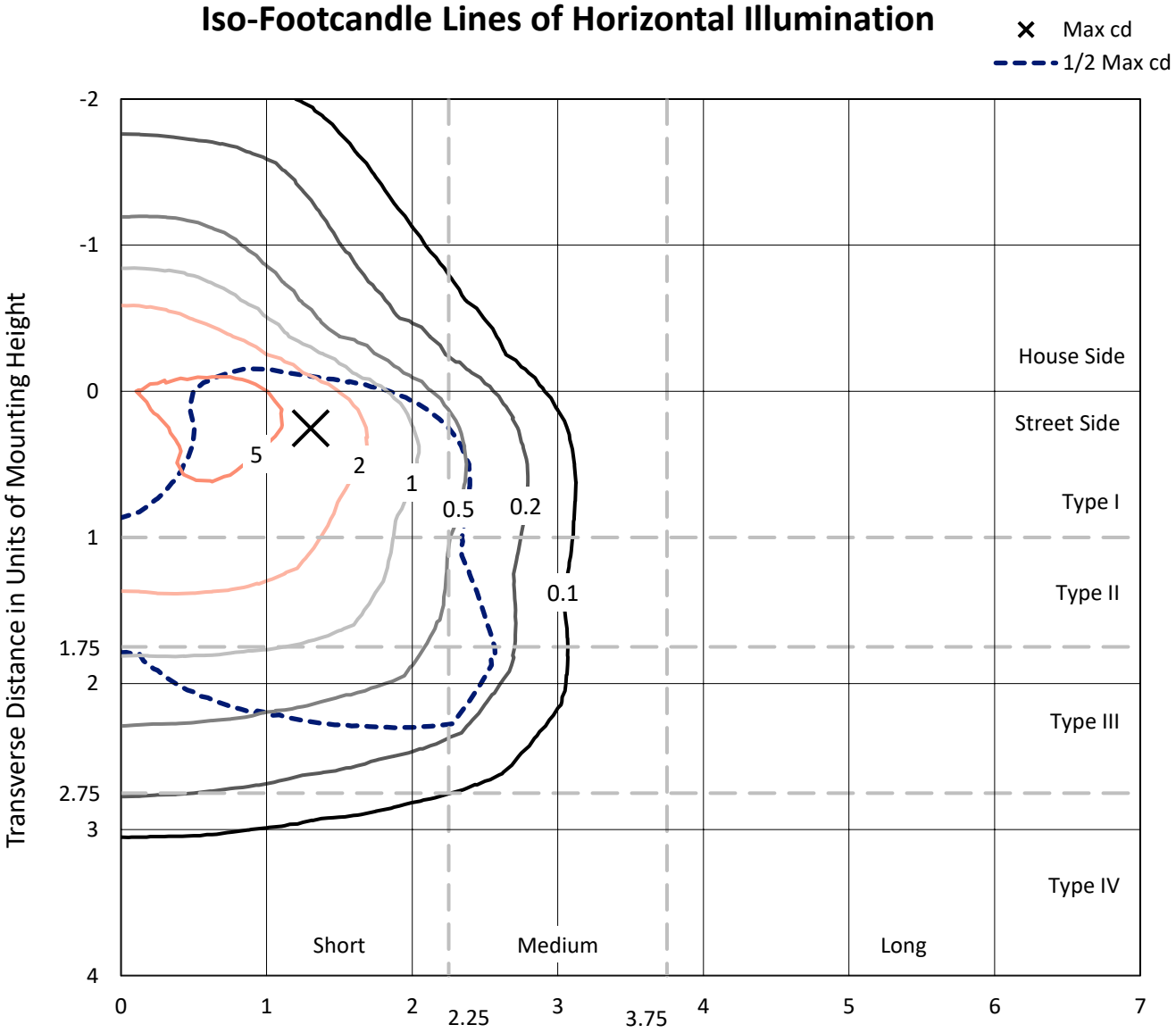
## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 7.5 fc
Type III - Short - N/A

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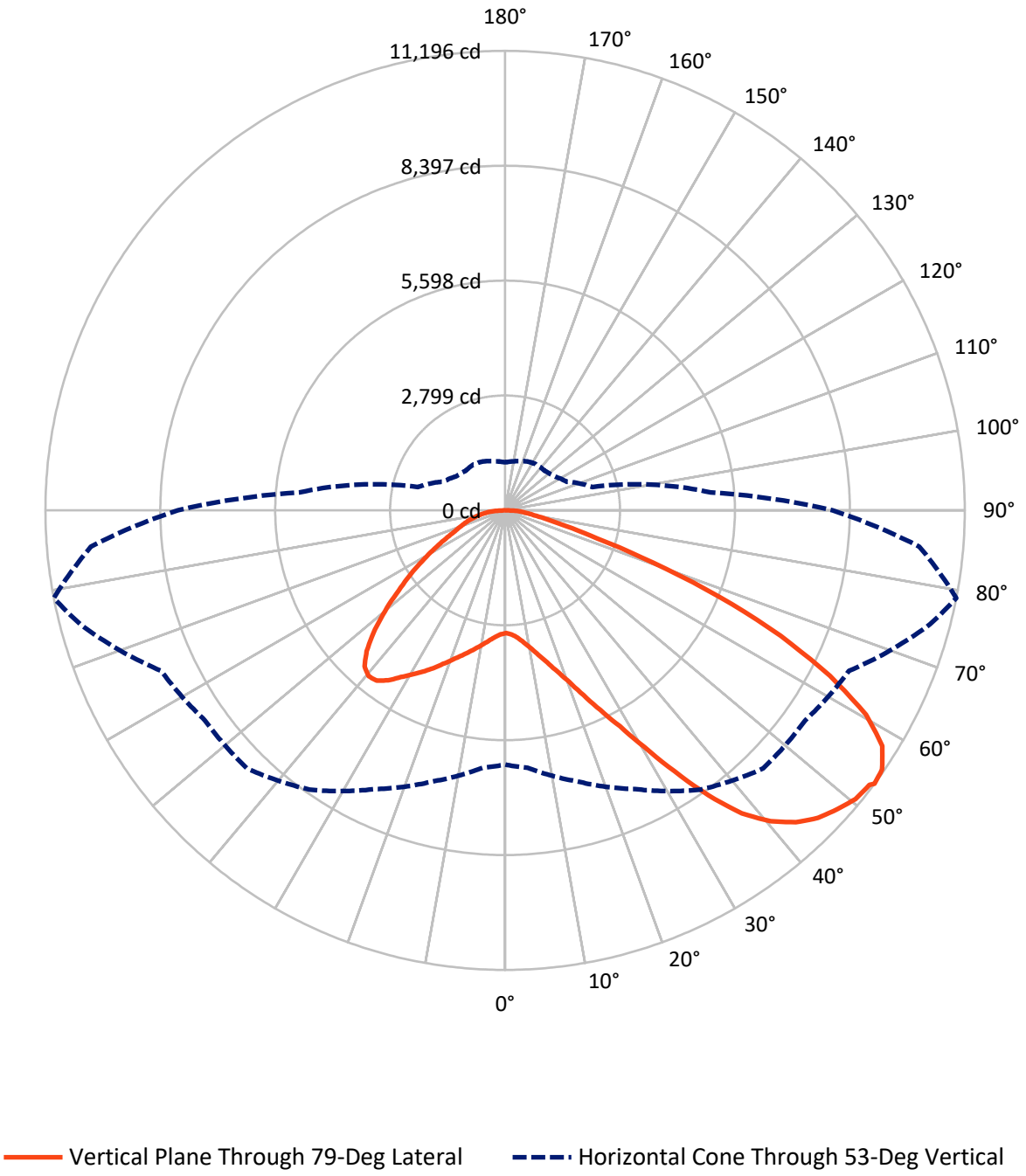
## Luminous Intensity Polar Plot



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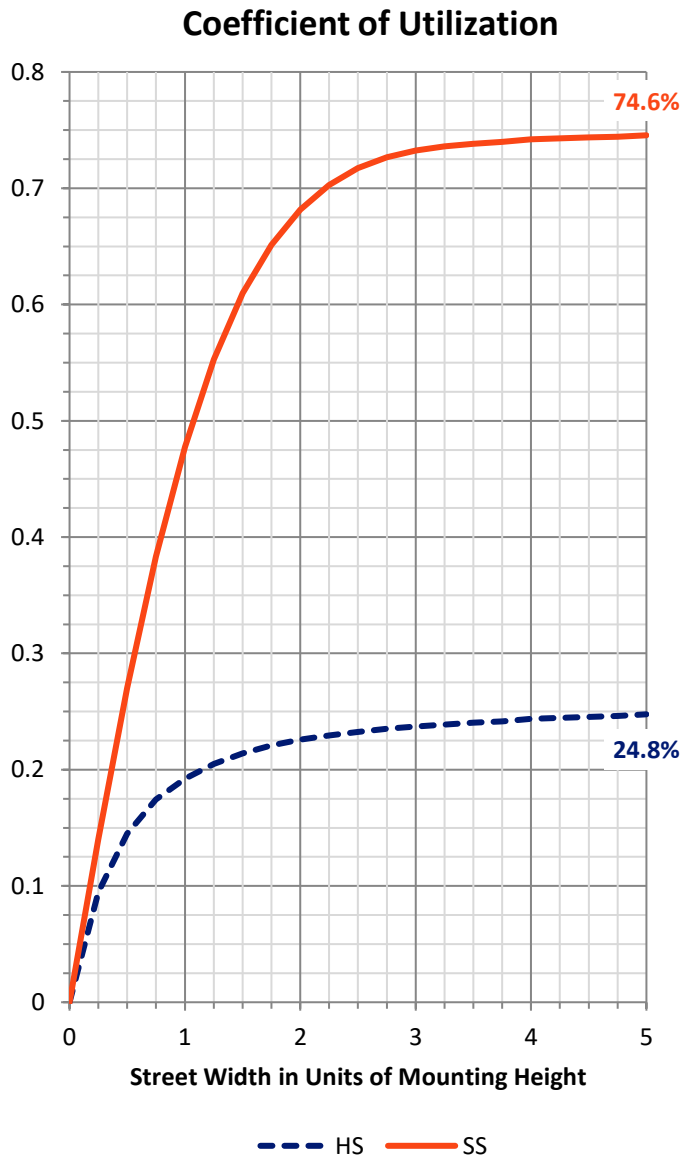
**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 5137.8 | 0.0 | 5137.8 |
| | % Fixture | 25.2 | 0.0 | 25.2 |
| **Street Side** | Lumens | 15242.7 | 0.0 | 15242.7 |
| | % Fixture | 74.8 | 0.0 | 74.8 |
| **Total** | Lumens | 20380.5 | 0.0 | 20380.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 285.1 | 1.4 |
| 10°-20° | 882.8 | 4.3 |
| 20°-30° | 1687.8 | 8.3 |
| 30°-40° | 2897.9 | 14.2 |
| 40°-50° | 4059.0 | 19.9 |
| 50°-60° | 4606.5 | 22.6 |
| 60°-70° | 4039.6 | 19.8 |
| 70°-80° | 1579.6 | 7.8 |
| 80°-90° | 342.2 | 1.7 |
| 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° | 20380.5 | 100.0 |
| 0°-180° | 20380.5 | 100.0 |



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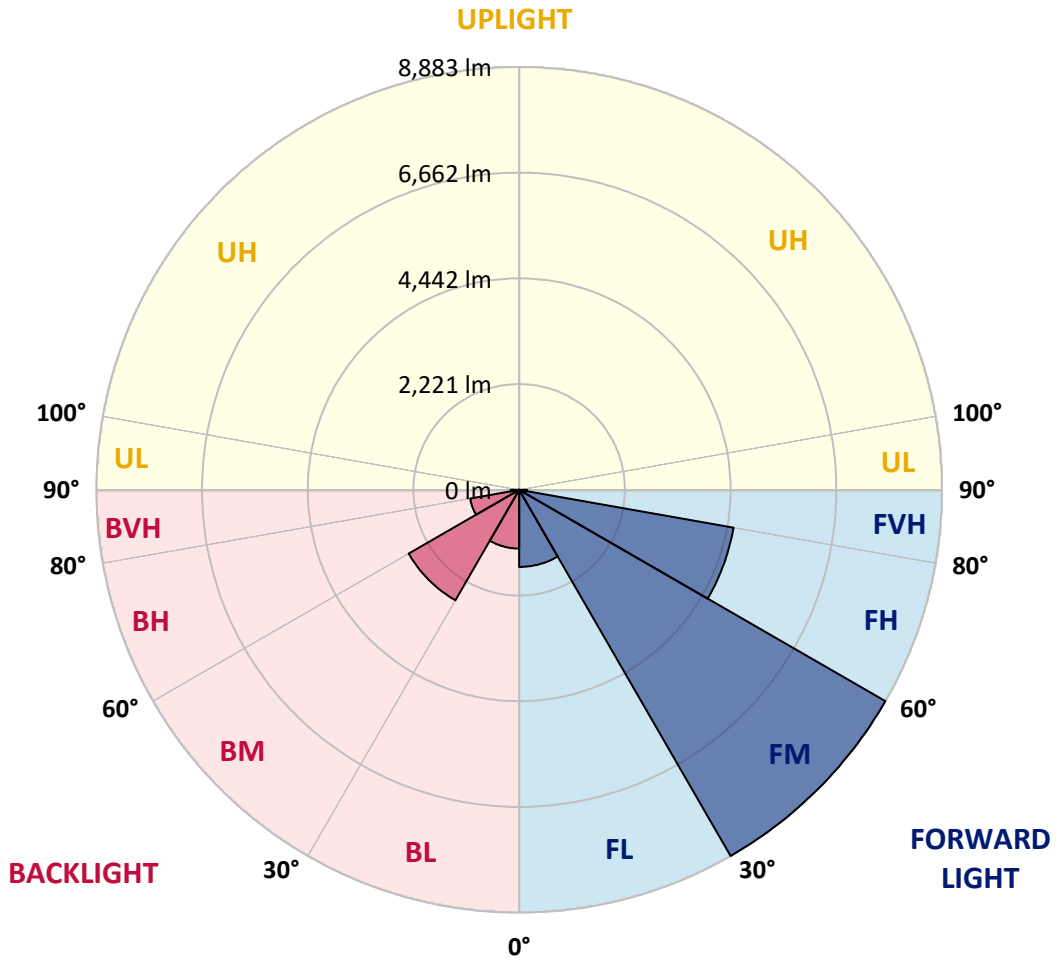
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1620.1 | 7.9 | | | |
| FM | (30°-60°) | 8883.1 | 43.6 | | | |
| FH | (60°-80°) | 4573.5 | 22.4 | | | G2/5000 |
| FVH | (80°-90°) | 166.0 | 0.8 | | | G2/225 |
| BL | (0°-30°) | 1235.7 | 6.1 | B3/2500 | | |
| BM | (30°-60°) | 2680.3 | 13.2 | B3/5000 | | |
| BH | (60°-80°) | 1045.6 | 5.1 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 176.2 | 0.9 | | | 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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REPORT NUMBER: P1456813
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | *2991.9* | 2991.9 |
| 2.5° | 2996.5 | 2996.5 | 2978.3 | 2996.5 | 2987.4 | 3001.0 | 3010.1 | 3010.1 | 3028.2 | *3023.7* | 3023.7 |
| 5° | 2946.5 | 2937.4 | 2932.9 | 2964.7 | 2982.8 | 3019.2 | 3060.0 | 3078.2 | 3110.0 | *3110.0* | 3114.5 |
| 7.5° | 2814.9 | 2810.3 | 2833.0 | 2896.6 | 2955.6 | 3046.4 | 3132.7 | 3182.6 | 3232.5 | *3241.6* | 3241.6 |
| 10° | 2733.1 | 2728.6 | 2755.8 | 2833.0 | 2928.4 | 3060.0 | 3196.2 | 3300.6 | 3382.4 | *3405.1* | 3405.1 |
| 12.5° | 2733.1 | 2733.1 | 2755.8 | 2833.0 | 2932.9 | 3091.8 | 3277.9 | 3455.0 | 3582.1 | *3609.4* | 3600.3 |
| 15° | 2810.3 | 2805.8 | 2833.0 | 2914.7 | 3010.1 | 3159.9 | 3386.9 | 3623.0 | 3795.5 | *3845.5* | 3850.0 |
| 17.5° | 2892.0 | 2887.5 | 2928.4 | 3032.8 | 3146.3 | 3296.1 | 3527.6 | 3818.2 | 4063.4 | *4126.9* | 4140.6 |
| 20° | 3019.2 | 3014.6 | 3064.6 | 3164.4 | 3305.2 | 3477.7 | 3718.3 | 4049.8 | 4390.3 | *4458.4* | 4476.5 |
| 22.5° | 3164.4 | 3169.0 | 3223.5 | 3346.0 | 3486.8 | 3713.8 | 4008.9 | 4376.6 | 4785.2 | *4889.7* | 4907.8 |
| 25° | 3468.6 | 3455.0 | 3500.4 | 3586.7 | 3736.5 | 4008.9 | 4372.1 | 4771.6 | 5257.4 | *5384.5* | 5407.2 |
| 27.5° | 3872.7 | 3850.0 | 3899.9 | 3986.2 | 4095.2 | 4349.4 | 4767.1 | 5212.0 | 5797.7 | *5956.6* | 5961.1 |
| 30° | 4235.9 | 4222.3 | 4290.4 | 4467.4 | 4580.9 | 4776.2 | 5221.1 | 5729.6 | 6465.1 | *6696.6* | 6705.7 |
| 32.5° | 4549.2 | 4544.6 | 4671.7 | 4898.8 | 5157.5 | 5366.4 | 5797.7 | 6383.4 | 7309.5 | *7577.4* | 7518.4 |
| 35° | 4848.8 | 4862.4 | 5021.3 | 5257.4 | 5602.5 | 6020.2 | 6456.0 | 7123.4 | 8199.4 | *8521.7* | 8426.4 |
| 37.5° | 5153.0 | 5162.1 | 5370.9 | 5675.1 | 6038.3 | 6583.1 | 7168.8 | 7927.0 | 8971.2 | *9370.7* | 9161.9 |
| 40° | 5434.5 | 5461.7 | 5743.2 | 6070.1 | 6542.3 | 7096.2 | 7749.9 | 8485.4 | 9566.0 | *9960.9* | 9733.9 |
| 42.5° | 5716.0 | 5756.8 | 6061.0 | 6510.5 | 7014.4 | 7591.0 | 8154.0 | 8825.9 | 9947.3 | *10387.7* | 10038.1 |
| 45° | 6006.5 | 6033.8 | 6410.6 | 6878.2 | 7450.3 | 7981.5 | 8385.5 | 9043.8 | 10210.7 | *10687.4* | 10210.7 |
| 47.5° | 6201.8 | 6256.2 | 6669.4 | 7209.7 | 7781.7 | 8281.1 | 8571.7 | 9134.7 | 10378.6 | *10882.6* | 10274.2 |
| 50° | 6278.9 | 6356.1 | 6801.0 | 7400.3 | 8054.1 | 8562.6 | 8717.0 | 9184.6 | 10564.8 | *11055.1* | 10260.6 |
| 52.5° | 6265.3 | 6338.0 | 6823.7 | 7486.6 | 8272.0 | 8821.4 | 8857.7 | 9239.1 | 10696.4 | *11114.1* | 10142.6 |
| 53° | *6192.7* | *6292.6* | *6837.4* | *7491.1* | *8303.8* | *8889.5* | *8921.3* | *9243.6* | *10714.6* | *11195.8* | *10124.4* |
| 55° | 5943.0 | 5997.5 | 6696.6 | 7486.6 | 8453.6 | 9143.7 | 9098.3 | 9379.8 | 10764.5 | *11141.4* | 9924.6 |
| 57.5° | 5716.0 | 5770.4 | 6378.8 | 7400.3 | 8576.2 | 9502.4 | 9384.4 | 9357.1 | 10492.1 | *10832.6* | 9420.7 |
| 60° | 5570.7 | 5588.8 | 6101.9 | 7127.9 | 8526.3 | 9752.1 | 9570.5 | 9089.3 | 9820.2 | *10101.7* | 8535.4 |
| 62.5° | 5448.1 | 5443.6 | 5897.6 | 6737.5 | 8335.6 | 9788.4 | 9606.8 | 8426.4 | 8835.0 | *8880.4* | 7354.9 |
| 65° | 5171.2 | 5139.4 | 5579.8 | 6297.1 | 7940.6 | 9625.0 | 9161.9 | 7423.0 | 7527.5 | *7377.6* | 5906.7 |
| 67.5° | 4621.8 | 4553.7 | 4944.2 | 5625.2 | 7137.0 | 9161.9 | 8312.9 | 6256.2 | 5933.9 | *5634.2* | 4449.3 |
| 70° | 3309.7 | 3309.7 | 3623.0 | 4304.0 | 5729.6 | 7917.9 | 7137.0 | 4735.3 | 4086.1 | *3818.2* | 2973.8 |
| 72.5° | 1620.8 | 1661.7 | 1988.6 | 2542.4 | 3840.9 | 5747.7 | 5466.3 | 3069.1 | 2478.9 | *2347.2* | 1906.8 |
| 75° | 690.1 | 694.6 | 849.0 | 1125.9 | 1947.7 | 3400.5 | 3423.2 | 1770.6 | 1589.0 | *1525.5* | 1262.1 |
| 77.5° | 481.2 | 490.3 | 558.4 | 662.9 | 926.2 | 1561.8 | 1779.7 | 1071.5 | 1066.9 | *1021.5* | 898.9 |
| 80° | 367.7 | 376.8 | 422.2 | 494.9 | 622.0 | 799.1 | 921.6 | 726.4 | 762.7 | *717.3* | 649.2 |
| 82.5° | 276.9 | 286.0 | 317.8 | 372.3 | 444.9 | 535.7 | 517.6 | 535.7 | 563.0 | *535.7* | 467.6 |
| 85° | 186.1 | 190.7 | 213.4 | 258.8 | 286.0 | 322.3 | 322.3 | 390.4 | 408.6 | *399.5* | 367.7 |
| 87.5° | 95.3 | 95.3 | 113.5 | 136.2 | 145.3 | 149.8 | 131.7 | 172.5 | 195.2 | *213.4* | 172.5 |
| 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: P1456813
CATALOG NUMBER: GLAN-SB4C-930-U-T3LG

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 | 2991.9 |
| 2.5° | 3023.7 | 3028.2 | 3014.6 | 3010.1 | 3005.5 | 2982.8 | 2982.8 | 2960.1 | 2955.6 | 2960.1 | 2946.5 |
| 5° | 3123.6 | 3114.5 | 3078.2 | 3050.9 | 3019.2 | 2955.6 | 2919.3 | 2869.3 | 2855.7 | 2842.1 | 2828.5 |
| 7.5° | 3246.2 | 3232.5 | 3169.0 | 3096.3 | 3010.1 | 2887.5 | 2819.4 | 2737.7 | 2710.4 | 2687.7 | 2678.7 |
| 10° | 3400.5 | 3373.3 | 3273.4 | 3119.0 | 2960.1 | 2810.3 | 2715.0 | 2615.1 | 2569.7 | 2560.6 | 2537.9 |
| 12.5° | 3600.3 | 3550.3 | 3364.2 | 3123.6 | 2914.7 | 2719.5 | 2615.1 | 2537.9 | 2519.7 | 2515.2 | 2492.5 |
| 15° | 3822.8 | 3750.1 | 3450.5 | 3128.1 | 2855.7 | 2642.3 | 2578.8 | 2537.9 | 2537.9 | 2533.4 | 2519.7 |
| 17.5° | 4095.2 | 3977.1 | 3532.2 | 3110.0 | 2783.1 | 2619.6 | 2587.8 | 2551.5 | 2542.4 | 2547.0 | 2528.8 |
| 20° | 4422.0 | 4226.8 | 3618.4 | 3087.3 | 2751.3 | 2624.2 | 2587.8 | 2537.9 | 2515.2 | 2510.7 | 2497.0 |
| 22.5° | 4798.9 | 4512.8 | 3713.8 | 3050.9 | 2751.3 | 2619.6 | 2560.6 | 2492.5 | 2447.1 | 2428.9 | 2410.8 |
| 25° | 5230.2 | 4844.3 | 3813.7 | 3037.3 | 2760.4 | 2601.5 | 2506.1 | 2397.2 | 2324.5 | 2297.3 | 2283.7 |
| 27.5° | 5752.3 | 5193.9 | 3886.3 | 3050.9 | 2755.8 | 2560.6 | 2410.8 | 2270.0 | 2188.3 | 2142.9 | 2133.8 |
| 30° | 6328.9 | 5570.7 | 3936.3 | 3073.6 | 2728.6 | 2483.4 | 2297.3 | 2138.4 | 2024.9 | 1970.4 | 1956.8 |
| 32.5° | 7009.9 | 5992.9 | 3986.2 | 3073.6 | 2660.5 | 2374.5 | 2165.6 | 1993.1 | 1875.1 | 1811.5 | 1802.4 |
| 35° | 7763.5 | 6510.5 | 4031.6 | 3069.1 | 2578.8 | 2256.4 | 2034.0 | 1856.9 | 1734.3 | 1670.8 | 1666.2 |
| 37.5° | 8403.7 | 6900.9 | 4054.3 | 3023.7 | 2465.3 | 2120.2 | 1911.4 | 1734.3 | 1607.2 | 1539.1 | 1534.5 |
| 40° | 8798.7 | 7064.4 | 4008.9 | 2932.9 | 2329.1 | 1979.5 | 1775.2 | 1611.7 | 1484.6 | 1402.9 | 1384.7 |
| 42.5° | 8948.5 | 6987.2 | 3863.6 | 2783.1 | 2165.6 | 1838.7 | 1661.7 | 1489.1 | 1321.2 | 1253.1 | 1239.4 |
| 45° | 8898.6 | 6687.5 | 3554.9 | 2569.7 | 1984.0 | 1711.6 | 1561.8 | 1366.6 | 1257.6 | 1198.6 | 1194.0 |
| 47.5° | 8730.6 | 6224.5 | 3169.0 | 2301.8 | 1793.3 | 1598.1 | 1430.1 | 1334.8 | 1234.9 | 1171.3 | 1166.8 |
| 50° | 8435.5 | 5729.6 | 2705.9 | 1997.6 | 1620.8 | 1480.1 | 1398.3 | 1321.2 | 1239.4 | 1189.5 | 1180.4 |
| 52.5° | 8058.7 | 5171.2 | 2279.1 | 1702.5 | 1471.0 | 1375.6 | 1366.6 | 1312.1 | 1248.5 | 1194.0 | 1171.3 |
| 53° | *7972.4* | *5025.9* | *2197.4* | *1652.6* | *1448.3* | *1362.0* | *1357.5* | *1312.1* | *1239.4* | *1189.5* | *1171.3* |
| 55° | 7559.2 | 4576.4 | 1938.6 | 1475.5 | 1334.8 | 1316.6 | 1357.5 | 1307.5 | 1216.7 | 1175.9 | 1162.3 |
| 57.5° | 6896.4 | 3986.2 | 1688.9 | 1312.1 | 1216.7 | 1262.1 | 1343.9 | 1289.4 | 1189.5 | 1116.9 | 1094.2 |
| 60° | 6097.3 | 3309.7 | 1498.2 | 1203.1 | 1130.5 | 1194.0 | 1289.4 | 1225.8 | 1089.6 | 1053.3 | 1048.8 |
| 62.5° | 5143.9 | 2678.7 | 1352.9 | 1112.3 | 1057.8 | 1121.4 | 1207.7 | 1098.7 | 998.8 | 971.6 | 962.5 |
| 65° | 4018.0 | 2129.3 | 1239.4 | 1044.2 | 985.2 | 1035.1 | 1094.2 | 1026.1 | 962.5 | 939.8 | 935.3 |
| 67.5° | 2987.4 | 1670.8 | 1148.6 | 985.2 | 912.6 | 944.3 | 1012.4 | 994.3 | 939.8 | 926.2 | 921.6 |
| 70° | 2061.2 | 1357.5 | 1066.9 | 930.7 | 821.8 | 858.1 | 962.5 | 976.1 | 921.6 | 912.6 | 908.0 |
| 72.5° | 1443.7 | 1148.6 | 980.7 | 871.7 | 749.1 | 785.4 | 939.8 | 939.8 | 880.8 | 894.4 | 885.3 |
| 75° | 1085.1 | 967.0 | 880.8 | 799.1 | 658.3 | 712.8 | 908.0 | 898.9 | 839.9 | 898.9 | 876.2 |
| 77.5° | 817.2 | 780.9 | 762.7 | 708.3 | 576.6 | 631.1 | 844.5 | 826.3 | 749.1 | 753.7 | 712.8 |
| 80° | 594.8 | 603.8 | 653.8 | 603.8 | 481.2 | 522.1 | 712.8 | 703.7 | 608.4 | 626.5 | 576.6 |
| 82.5° | 426.8 | 449.5 | 558.4 | 485.8 | 349.6 | 372.3 | 490.3 | 531.2 | 476.7 | 449.5 | 458.5 |
| 85° | 322.3 | 336.0 | 449.5 | 358.7 | 217.9 | 245.2 | 336.0 | 381.4 | 372.3 | 345.0 | 349.6 |
| 87.5° | 136.2 | 154.4 | 208.8 | 168.0 | 127.1 | 127.1 | 208.8 | 267.9 | 240.6 | 204.3 | 213.4 |
| 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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# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-14

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-930-U-5WQ

Data in this report applies to families of products including GSS-SB1A-930-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

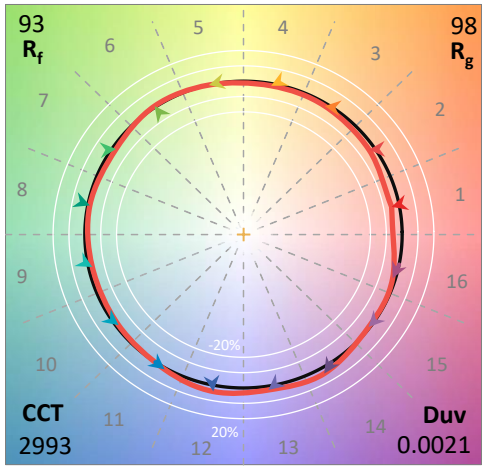
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-184-14 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/15/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGraw-Edison |
| Catalog Number: | **GSS-SB1A-930-U-5WQ** |
| Description: | GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 3000K CCT 26 LEDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 2993 |
| CIE u': | 0.2501 |
| CIE v': | 0.5245 |
| Duv: | 0.0021 |
| CIE x: | 0.4406 |
| CIE y: | 0.4107 |
| CIE z: | 0.1487 |
| Peak Wavelength (nm): | 621 |
| Dominant Wavelength (nm): | 582 |
| Purity: | 55.53327 |
| Rf: | 92.6 |
| Rg: | 98.5 |

| | |
|---|---|
| CRI (Ra): | 92.4 |
| R1: | 92.2 |
| R2: | 95.2 |
| R3: | 97.0 |
| R4: | 93.1 |
| R5: | 91.7 |
| R6: | 94.2 |
| R7: | 93.3 |
| R8: | 82.3 |
| R9: | 58.2 |
| R10: | 87.7 |
| R11: | 93.5 |
| R12: | 81.7 |
| R13: | 92.9 |
| R14: | 97.6 |
| R15: | 88.1 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.2 |

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| 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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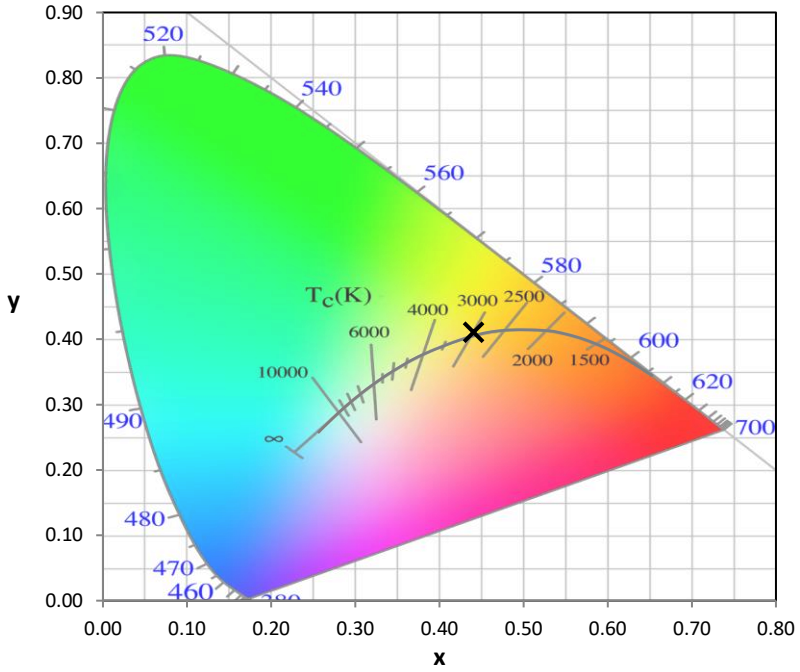
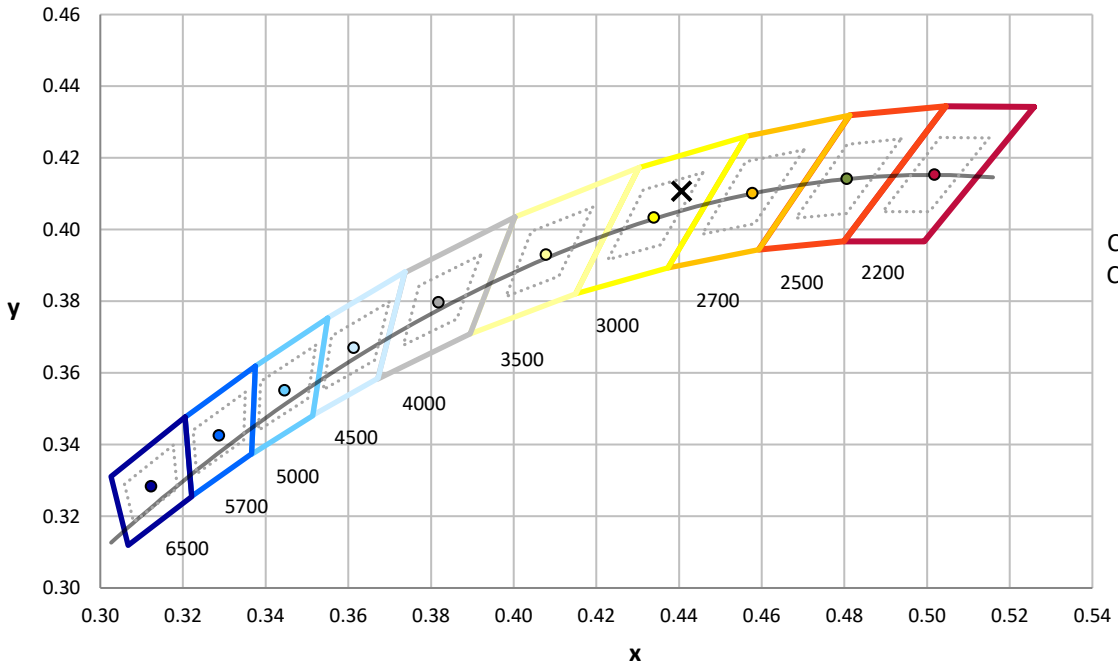
## CIE 1931 Chromaticity Diagram




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




CCT = 2993K
CIE x = 0.4406
CIE y = 0.4107
Duv = 0.0021

Point lies inside the ANSI 3000K 4-step quadrangle

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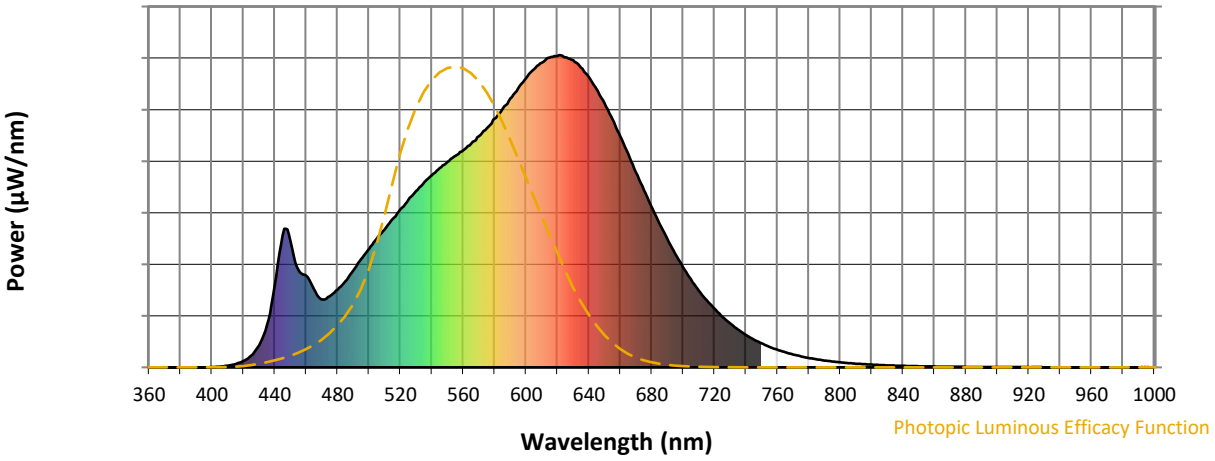
## Photopic Flux vs. Wavelength




## 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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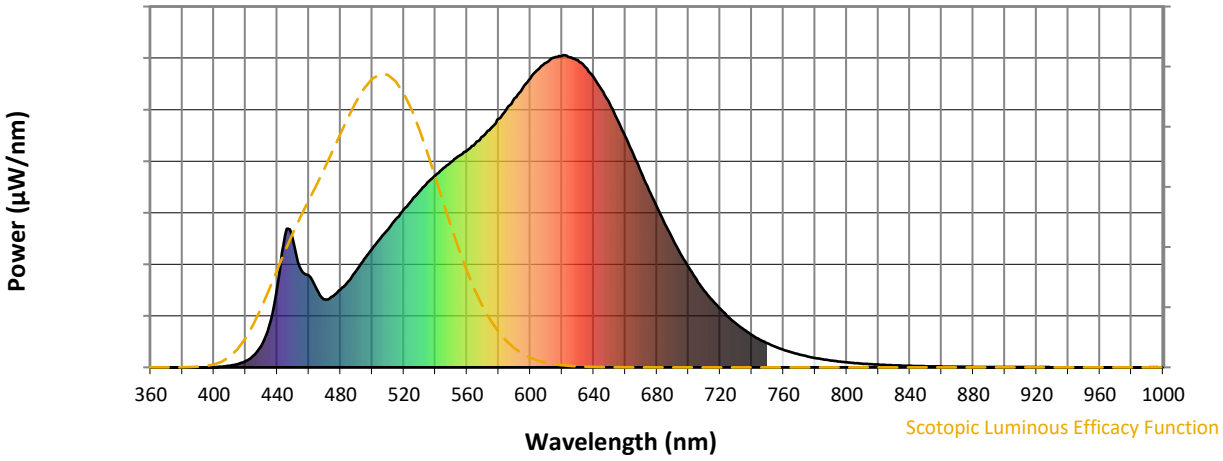
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.39**

| 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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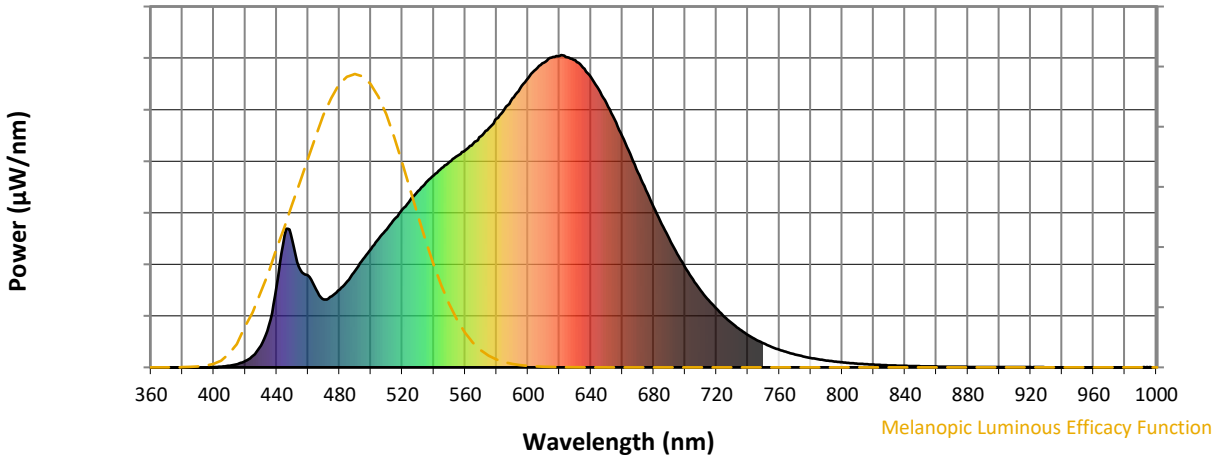
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.69**

| 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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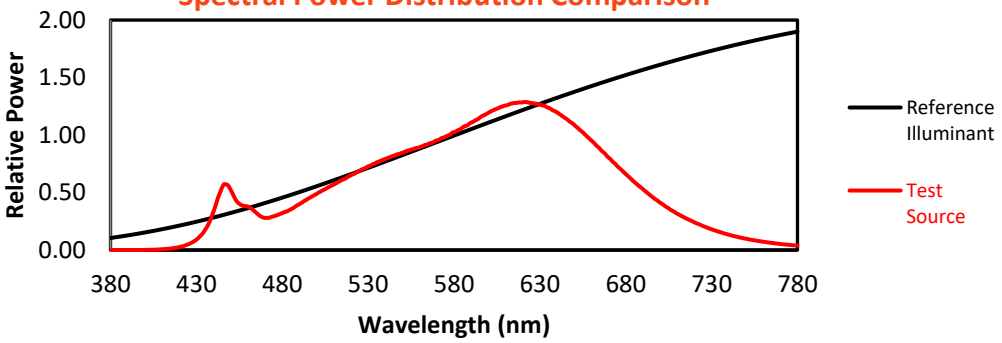
# TM-30-18

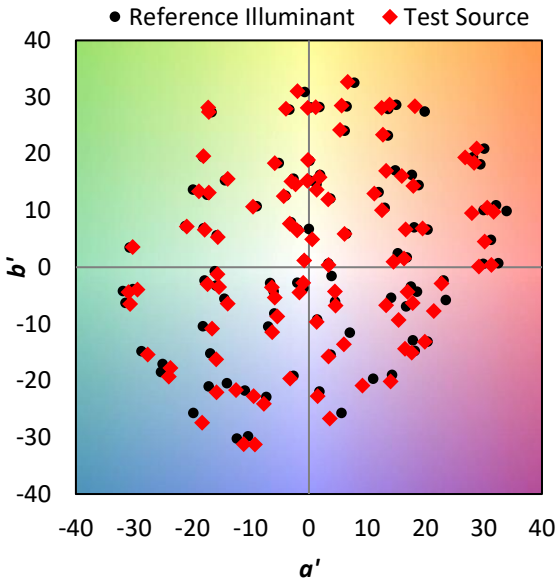
## Summary

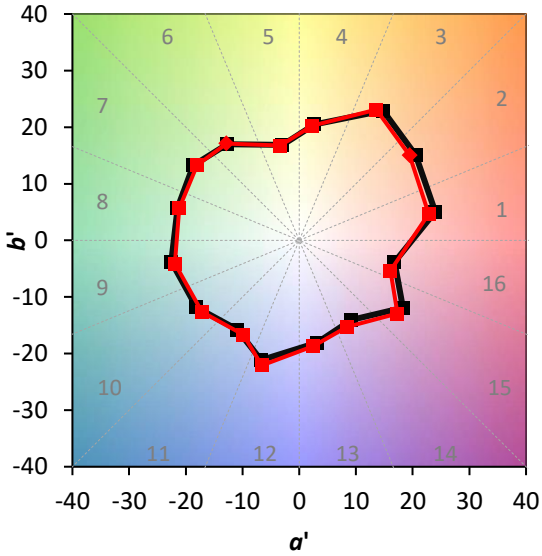
$R_f$ = 92.6
$R_g$ = 98.5
CIE $R_a$ = 92.4
$R_9$ = 58.2

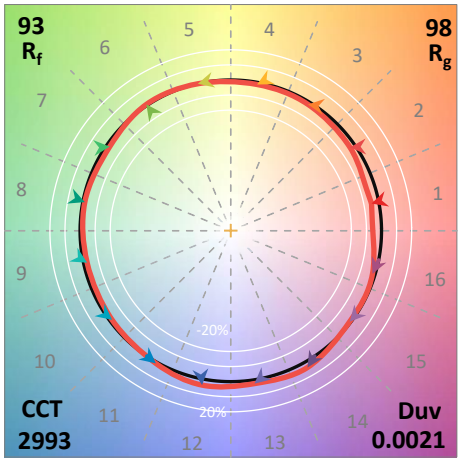
## Spectral Power Distribution Comparison

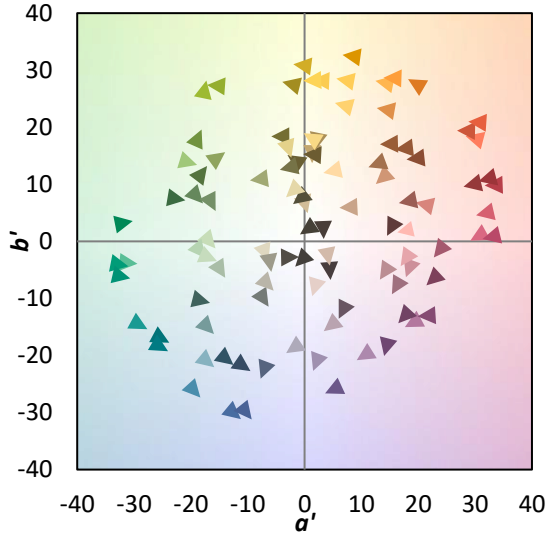



## Color Vector Graphics



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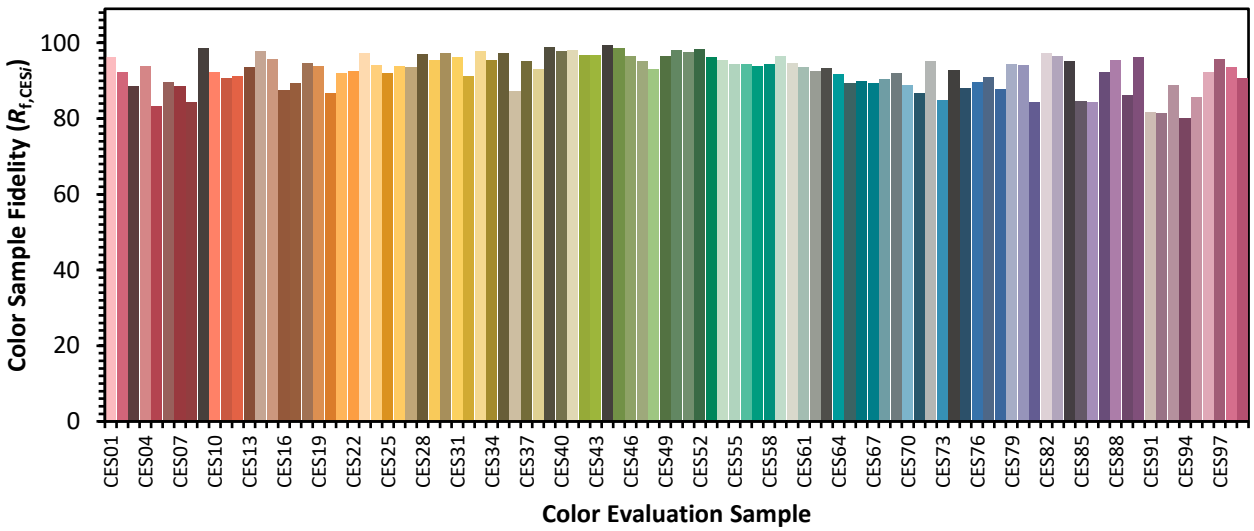
# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 63 | CES27 = 94 | CES52 = 98 | CES77 = 91 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 88 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 94 |
| CES05 = 51 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 84 |
| CES07 = 43 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 42 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 96 | CES59 = 97 | CES84 = 95 |
| CES10 = 76 | CES35 = 97 | CES60 = 95 | CES85 = 85 |
| CES11 = 59 | CES36 = 87 | CES61 = 94 | CES86 = 84 |
| CES12 = 65 | CES37 = 95 | CES62 = 92 | CES87 = 92 |
| CES13 = 44 | CES38 = 93 | CES63 = 93 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 86 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 90 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 89 | CES92 = 81 |
| CES18 = 57 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 92 | CES94 = 80 |
| CES20 = 67 | CES45 = 99 | CES70 = 89 | CES95 = 86 |
| CES21 = 86 | CES46 = 96 | CES71 = 87 | CES96 = 92 |
| CES22 = 79 | CES47 = 95 | CES72 = 95 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 85 | CES98 = 94 |
| CES24 = 91 | CES49 = 97 | CES74 = 93 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 88 | |



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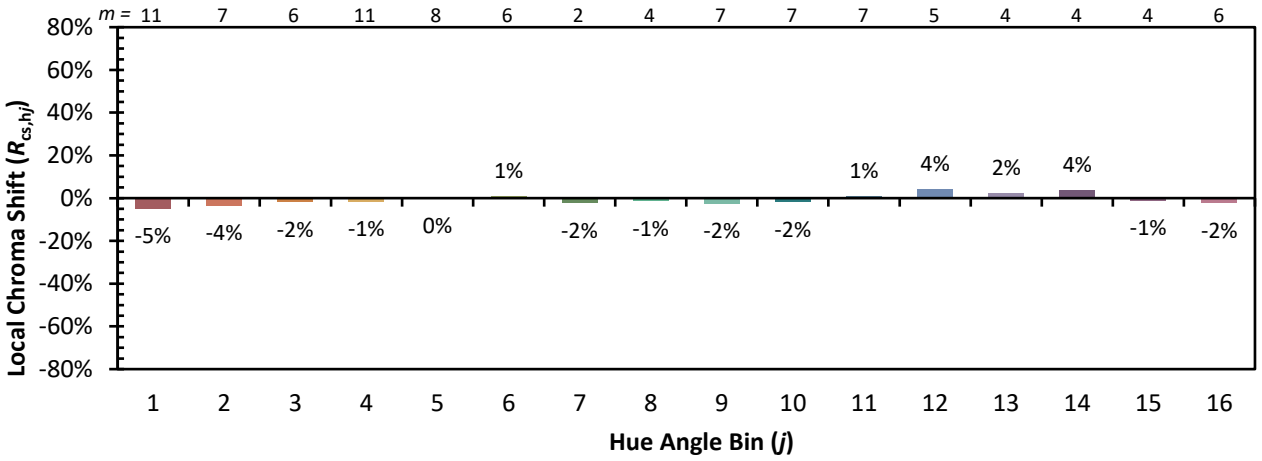
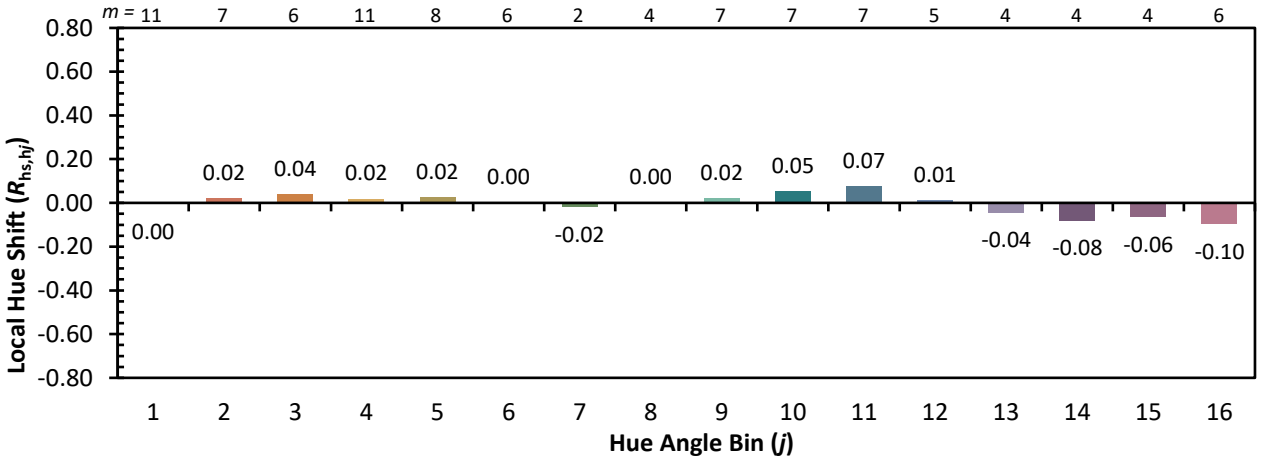
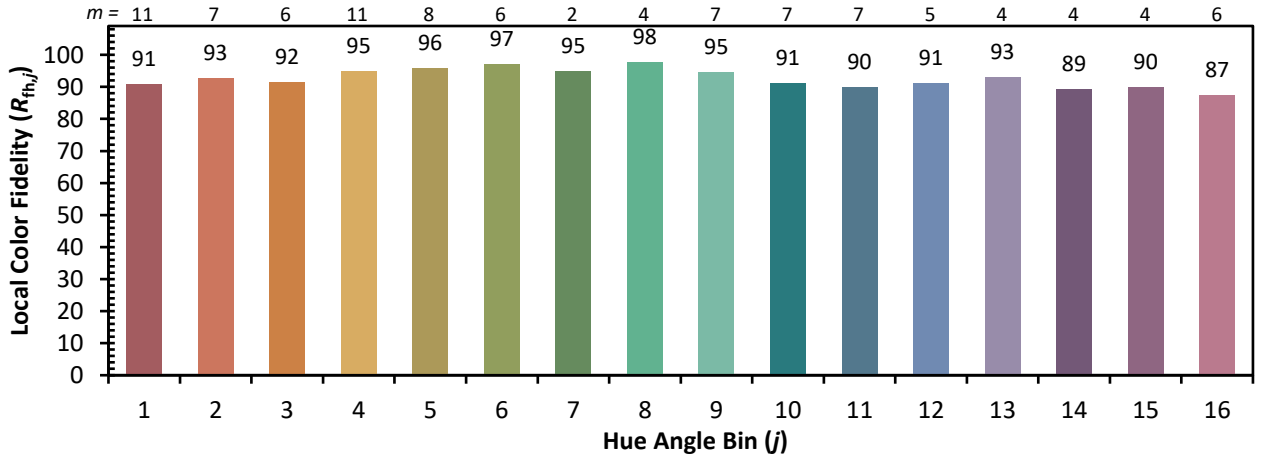
# TM-30-18

## Color Rendition by Hue-Angle Bin



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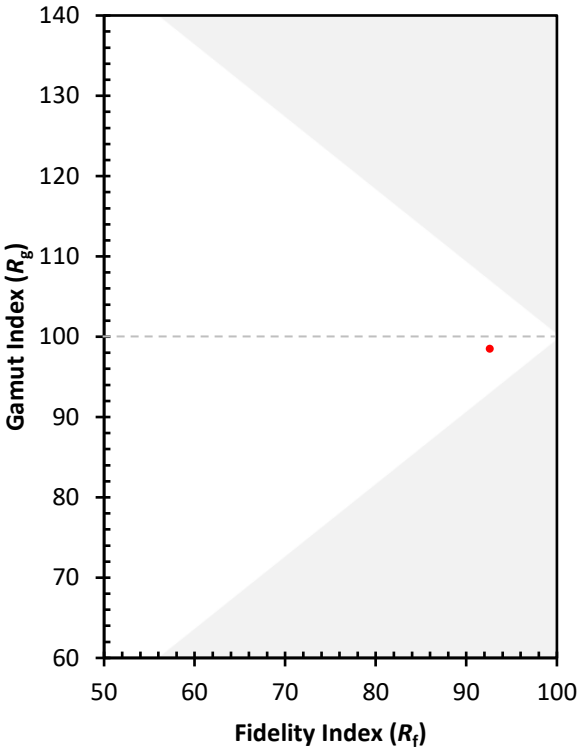
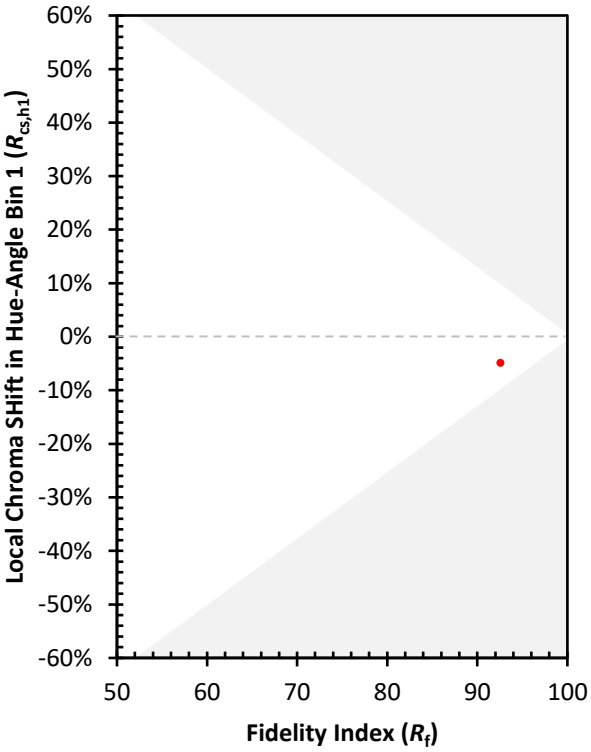
## Measure Comparisons




(END OF REPORT)