

Signify Classified - Internal  
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: STREETWORKS

Report Number: P1064163

Luminaire Tested: **GLAN-SA1C-830-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1064163  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA1C-830-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 1xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (14) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5184.5 lumens  
Efficiency: N/A  
Efficacy: 103.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 50.2  
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

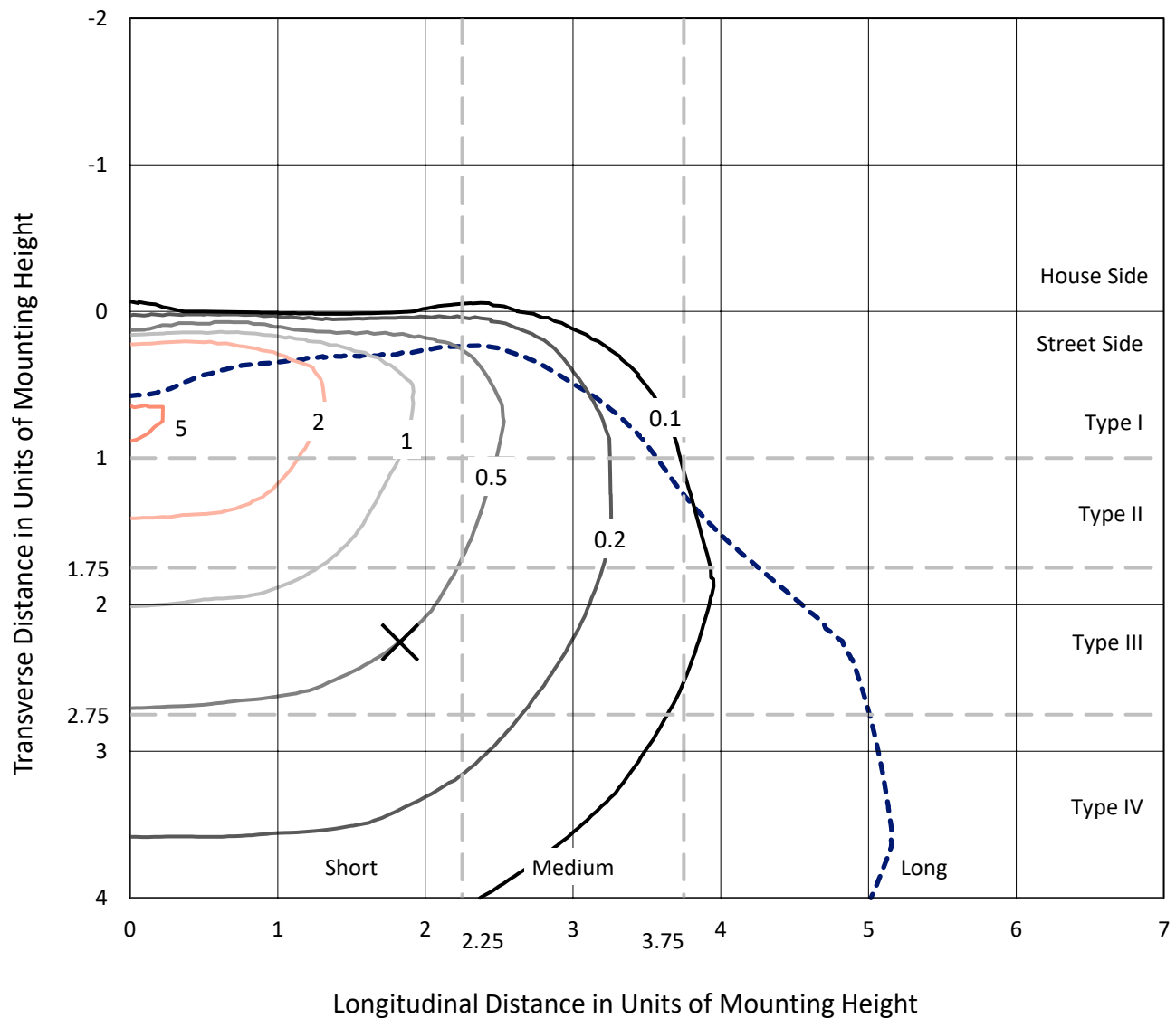


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 --- 1/2 Max cd

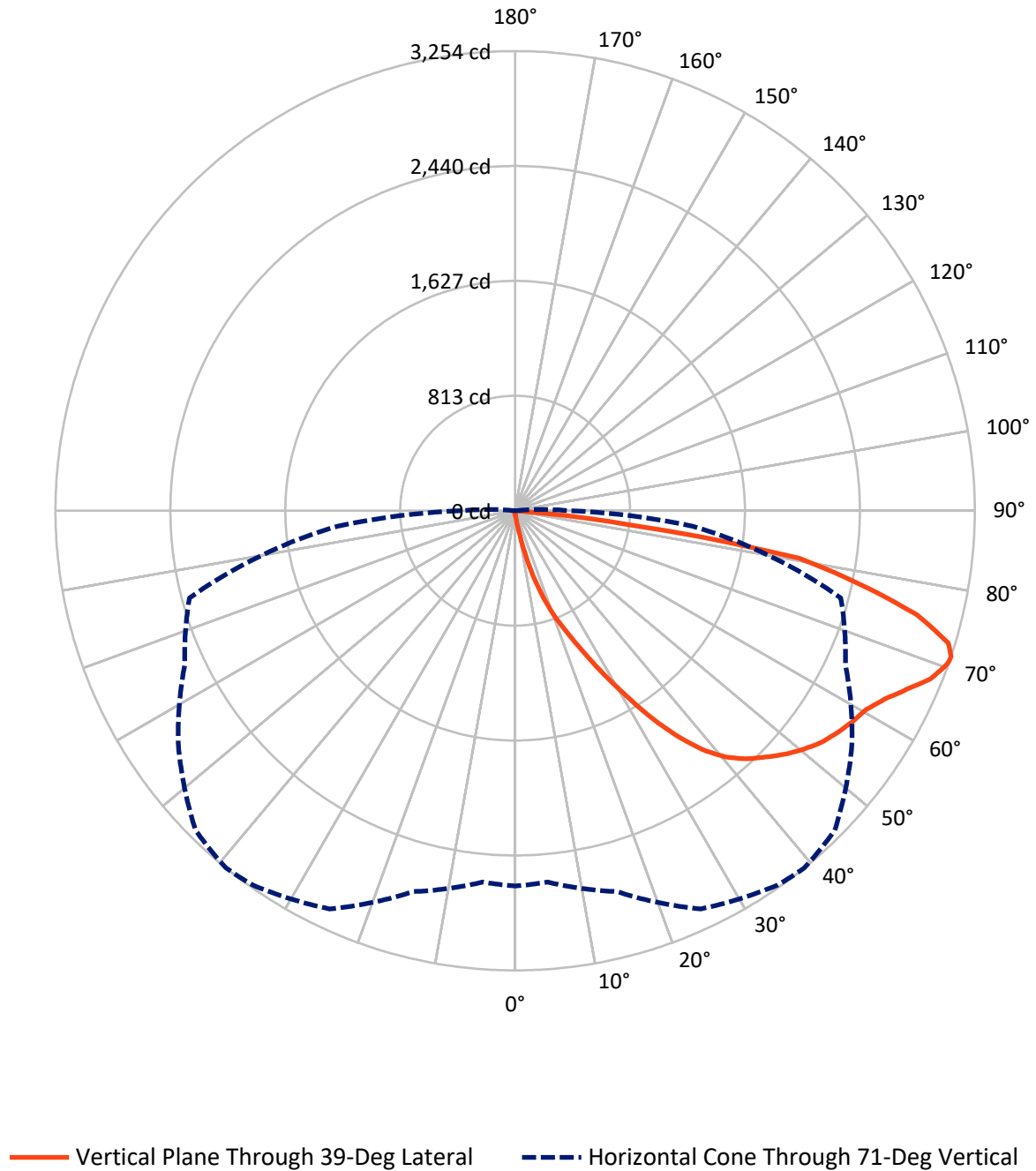


Based on 15 foot mounting height. Maximum calculated value = 5.3 fc  
 Type IV - Short - N/A

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CATALOG NUMBER: GLAN-SA1C-830-U-T4BC

## Luminous Intensity Polar Plot



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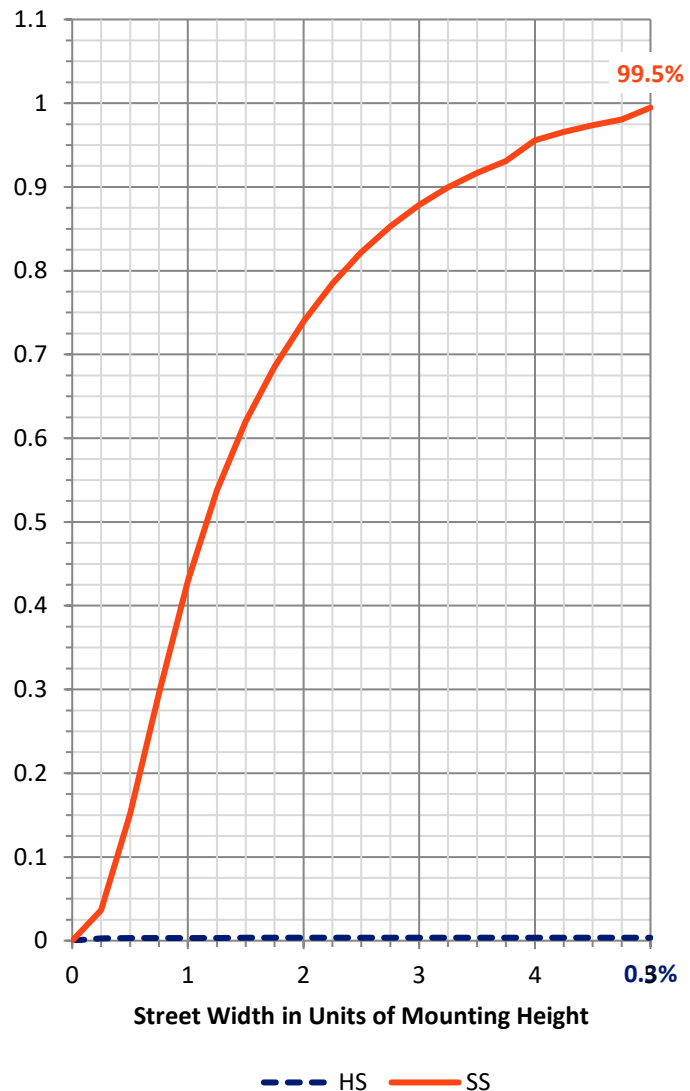
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 18.5     | 0.0    | 18.5   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 5166.1   | 0.0    | 5166.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 5184.5   | 0.0    | 5184.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 4.3    | 0.1       |
| 10°-20°   | 55.4   | 1.1       |
| 20°-30°   | 197.3  | 3.8       |
| 30°-40°   | 475.6  | 9.2       |
| 40°-50°   | 795.9  | 15.4      |
| 50°-60°   | 1022.3 | 19.7      |
| 60°-70°   | 1293.7 | 25.0      |
| 70°-80°   | 1153.4 | 22.2      |
| 80°-90°   | 186.5  | 3.6       |
| 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°    | 5184.5 | 100.0     |
| 0°-180°   | 5184.5 | 100.0     |



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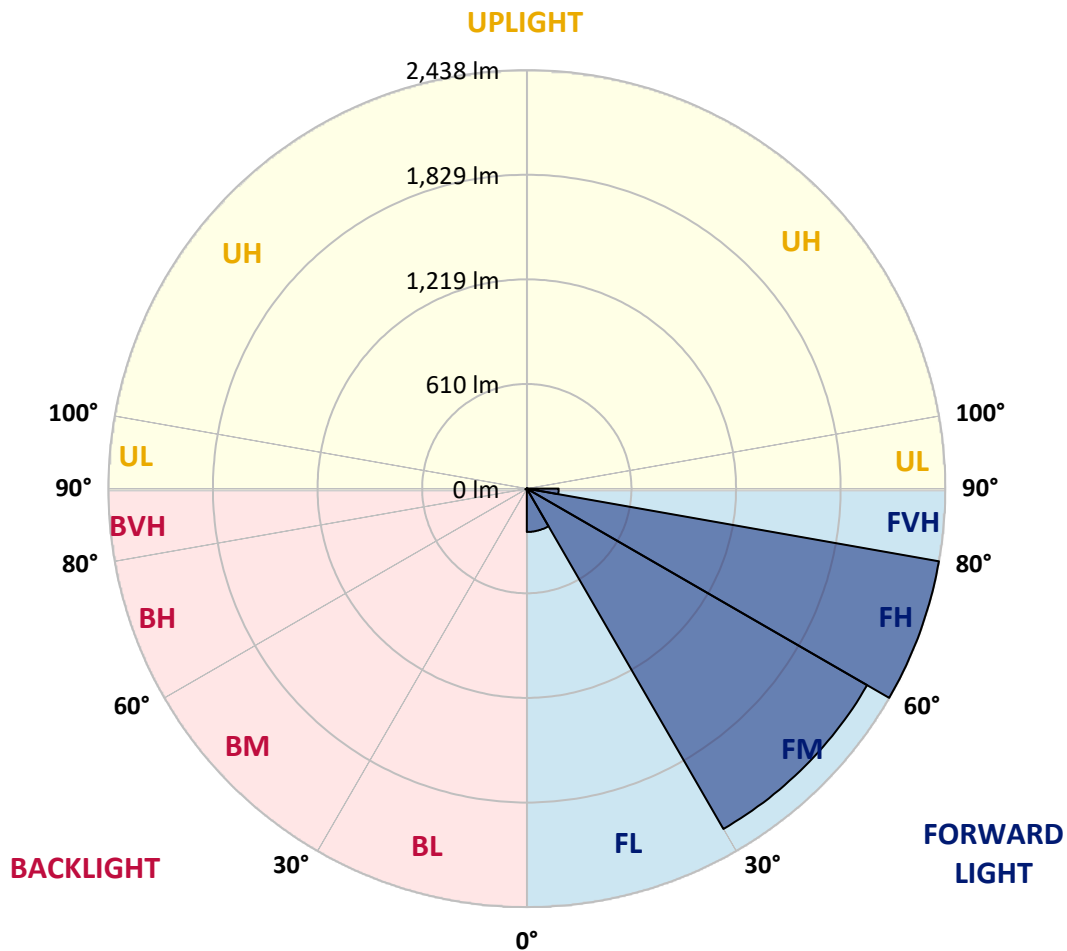
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 252.6  | 4.9       |                         |      |         |
| FM   | (30°-60°)   | 2289.6 | 44.2      |                         |      |         |
| FH   | (60°-80°)   | 2438.3 | 47.0      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 185.6  | 3.6       |                         |      | G2/225  |
| BL   | (0°-30°)    | 4.5    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 4.3    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 8.9    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.9    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G2**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 39°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   | 28.4   |
| 2.5°  | 32.6   | 32.6   | 32.6   | 31.6   | 31.6   | 31.2   | 30.9   | 30.9   | 30.2   | 29.8   | 29.1   |
| 5°    | 49.5   | 48.4   | 46.0   | 44.6   | 41.8   | 40.0   | 38.3   | 35.8   | 33.3   | 31.6   | 29.5   |
| 7.5°  | 112.0  | 114.4  | 106.3  | 91.3   | 75.8   | 69.1   | 57.9   | 46.7   | 38.6   | 33.3   | 29.8   |
| 10°   | 285.3  | 283.9  | 256.6  | 226.4  | 174.8  | 154.1  | 120.7  | 76.2   | 49.8   | 36.5   | 30.2   |
| 12.5° | 485.4  | 484.0  | 451.7  | 410.6  | 342.5  | 299.4  | 236.2  | 142.1  | 71.6   | 41.4   | 30.2   |
| 15°   | 653.5  | 647.9  | 637.7  | 597.0  | 517.3  | 481.2  | 397.6  | 251.3  | 115.8  | 49.8   | 30.9   |
| 17.5° | 764.7  | 759.8  | 750.4  | 735.6  | 685.1  | 642.3  | 575.2  | 394.8  | 187.4  | 64.6   | 32.3   |
| 20°   | 866.9  | 863.4  | 855.6  | 852.8  | 820.2  | 797.4  | 741.9  | 559.8  | 292.0  | 87.7   | 34.4   |
| 22.5° | 1007.3 | 999.9  | 1003.1 | 986.2  | 954.3  | 926.9  | 892.8  | 732.5  | 419.8  | 126.3  | 38.3   |
| 25°   | 1179.2 | 1175.7 | 1167.0 | 1155.0 | 1110.8 | 1086.9 | 1034.6 | 895.3  | 562.6  | 176.9  | 42.5   |
| 27.5° | 1387.0 | 1383.1 | 1381.0 | 1353.7 | 1302.8 | 1276.8 | 1203.8 | 1049.0 | 723.3  | 247.8  | 48.1   |
| 30°   | 1626.4 | 1628.1 | 1614.4 | 1579.3 | 1520.0 | 1483.5 | 1408.4 | 1210.1 | 887.9  | 331.0  | 54.0   |
| 32.5° | 1874.1 | 1870.6 | 1849.6 | 1808.2 | 1755.2 | 1721.1 | 1625.7 | 1386.7 | 1060.6 | 440.8  | 61.1   |
| 35°   | 2141.2 | 2134.6 | 2079.1 | 2031.7 | 1986.4 | 1943.6 | 1856.6 | 1591.6 | 1233.3 | 564.0  | 70.5   |
| 37.5° | 2410.8 | 2379.5 | 2268.3 | 2208.3 | 2177.0 | 2141.9 | 2060.9 | 1810.3 | 1404.9 | 701.6  | 82.1   |
| 40°   | 2614.3 | 2590.1 | 2458.1 | 2347.6 | 2322.7 | 2292.8 | 2232.5 | 1999.1 | 1587.4 | 849.3  | 96.2   |
| 42.5° | 2727.0 | 2713.6 | 2595.0 | 2485.9 | 2427.3 | 2400.9 | 2349.3 | 2164.0 | 1767.8 | 1012.5 | 116.5  |
| 45°   | 2775.1 | 2754.4 | 2675.0 | 2624.1 | 2530.8 | 2487.3 | 2425.9 | 2288.6 | 1956.3 | 1197.8 | 144.9  |
| 47.5° | 2760.3 | 2748.4 | 2691.5 | 2710.1 | 2642.4 | 2574.7 | 2484.5 | 2384.1 | 2117.4 | 1410.5 | 183.9  |
| 50°   | 2667.7 | 2657.5 | 2639.9 | 2740.7 | 2732.2 | 2652.2 | 2560.3 | 2459.5 | 2249.0 | 1629.9 | 244.3  |
| 52.5° | 2491.5 | 2487.3 | 2532.2 | 2716.8 | 2783.1 | 2720.7 | 2633.3 | 2526.2 | 2371.8 | 1859.0 | 330.6  |
| 55°   | 2264.4 | 2281.6 | 2410.1 | 2679.6 | 2809.1 | 2771.2 | 2697.8 | 2588.7 | 2470.4 | 2064.0 | 458.0  |
| 57.5° | 2171.1 | 2175.6 | 2336.0 | 2653.3 | 2820.7 | 2815.8 | 2760.7 | 2648.4 | 2561.0 | 2227.9 | 652.4  |
| 60°   | 2280.2 | 2273.2 | 2357.8 | 2673.3 | 2843.8 | 2855.8 | 2816.5 | 2703.8 | 2639.6 | 2368.6 | 911.4  |
| 62.5° | 2477.4 | 2473.6 | 2500.6 | 2758.6 | 2911.6 | 2935.8 | 2894.0 | 2743.8 | 2709.1 | 2461.3 | 1207.0 |
| 65°   | 2653.6 | 2645.6 | 2695.7 | 2909.8 | 3030.6 | 3047.8 | 3011.3 | 2812.3 | 2739.6 | 2528.7 | 1484.6 |
| 67.5° | 2729.8 | 2728.0 | 2808.8 | 3053.7 | 3155.5 | 3174.1 | 3142.2 | 2906.7 | 2732.6 | 2550.1 | 1607.1 |
| 70°   | 2695.0 | 2688.4 | 2817.5 | 3114.8 | 3226.0 | 3247.1 | 3216.2 | 2941.8 | 2656.4 | 2482.4 | 1425.6 |
| 71°   | 2656.8 | 2638.9 | 2791.2 | 3110.6 | 3235.9 | 3253.8 | 3199.7 | 2909.8 | 2579.9 | 2386.2 | 1261.0 |
| 72.5° | 2538.2 | 2541.3 | 2718.9 | 3066.7 | 3212.4 | 3207.1 | 3106.4 | 2795.4 | 2487.6 | 2167.9 | 1012.9 |
| 75°   | 2246.2 | 2264.8 | 2484.8 | 2882.5 | 3002.5 | 2935.5 | 2781.4 | 2576.8 | 2302.3 | 1554.4 | 703.3  |
| 77.5° | 1835.5 | 1863.3 | 2105.1 | 2528.0 | 2493.9 | 2487.3 | 2481.0 | 2270.4 | 1966.1 | 834.9  | 489.2  |
| 80°   | 876.4  | 936.4  | 1269.8 | 1804.6 | 1960.5 | 2035.9 | 1988.6 | 1829.6 | 1520.4 | 397.6  | 292.4  |
| 82.5° | 57.2   | 56.5   | 80.0   | 151.6  | 639.1  | 826.2  | 1312.6 | 1307.7 | 1059.9 | 193.7  | 119.3  |
| 85°   | 27.0   | 27.7   | 30.5   | 34.7   | 40.4   | 44.2   | 61.1   | 358.0  | 507.1  | 92.3   | 26.0   |
| 87.5° | 15.8   | 16.1   | 19.0   | 24.2   | 31.6   | 35.1   | 41.8   | 53.7   | 66.0   | 50.9   | 5.6    |
| 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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CATALOG NUMBER: GLAN-SA1C-830-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 28.4  | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 |
| 2.5°  | 28.8  | 28.4 | 27.4 | 26.3 | 25.3 | 24.6 | 24.2 | 24.6 | 24.6 | 24.9 | 24.9 |
| 5°    | 28.8  | 27.7 | 26.0 | 23.9 | 22.5 | 21.1 | 20.4 | 20.0 | 20.4 | 20.4 | 20.4 |
| 7.5°  | 28.4  | 26.7 | 24.2 | 21.8 | 20.0 | 18.3 | 17.5 | 17.2 | 17.2 | 17.5 | 17.5 |
| 10°   | 27.7  | 26.0 | 22.8 | 20.0 | 17.9 | 15.8 | 14.7 | 13.7 | 13.7 | 13.7 | 14.0 |
| 12.5° | 27.4  | 24.9 | 21.1 | 18.3 | 15.4 | 13.0 | 10.9 | 9.8  | 10.2 | 10.2 | 10.2 |
| 15°   | 26.7  | 23.9 | 20.0 | 16.5 | 13.0 | 9.8  | 8.1  | 7.0  | 7.4  | 7.7  | 7.4  |
| 17.5° | 26.7  | 23.5 | 18.6 | 14.4 | 10.2 | 7.4  | 6.0  | 5.3  | 5.3  | 5.6  | 5.6  |
| 20°   | 26.7  | 22.8 | 17.5 | 12.3 | 7.7  | 5.6  | 4.2  | 3.9  | 3.9  | 4.6  | 4.9  |
| 22.5° | 27.4  | 22.8 | 16.1 | 10.2 | 6.3  | 4.2  | 3.2  | 2.8  | 3.2  | 3.9  | 4.2  |
| 25°   | 28.4  | 22.5 | 14.7 | 9.1  | 5.3  | 3.2  | 2.5  | 1.8  | 2.1  | 2.8  | 3.2  |
| 27.5° | 29.5  | 22.1 | 13.3 | 8.1  | 4.2  | 2.5  | 1.8  | 1.4  | 1.1  | 1.4  | 1.4  |
| 30°   | 30.5  | 22.1 | 11.9 | 6.7  | 3.5  | 1.8  | 1.1  | 0.7  | 0.4  | 0.0  | 0.0  |
| 32.5° | 31.2  | 21.4 | 10.9 | 5.3  | 2.8  | 1.4  | 0.7  | 0.4  | 0.0  | 0.0  | 0.0  |
| 35°   | 31.9  | 20.7 | 9.5  | 4.2  | 2.1  | 1.1  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 32.6  | 19.7 | 8.1  | 3.5  | 1.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 33.3  | 18.3 | 6.7  | 3.2  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 34.0  | 17.2 | 5.6  | 2.5  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 35.8  | 16.5 | 4.6  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 39.0  | 15.8 | 4.2  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 43.5  | 15.1 | 3.9  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 49.8  | 14.7 | 3.5  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 61.1  | 14.4 | 3.2  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 80.4  | 14.0 | 3.2  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 123.2 | 13.3 | 3.2  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 220.1 | 13.0 | 2.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 383.6 | 13.3 | 2.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 550.0 | 14.0 | 2.5  | 1.1  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 470.6 | 12.3 | 2.5  | 1.4  | 0.7  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 71°   | 383.6 | 10.9 | 2.5  | 1.4  | 0.7  | 0.4  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 246.7 | 8.4  | 2.1  | 1.4  | 0.7  | 0.7  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 104.2 | 7.0  | 2.1  | 1.4  | 1.1  | 0.7  | 0.7  | 0.4  | 0.0  | 0.0  | 0.0  |
| 77.5° | 44.6  | 5.3  | 2.1  | 1.8  | 1.4  | 1.1  | 1.1  | 0.7  | 0.4  | 0.0  | 0.0  |
| 80°   | 16.8  | 4.2  | 2.5  | 2.1  | 1.8  | 1.8  | 1.4  | 0.7  | 0.4  | 0.0  | 0.0  |
| 82.5° | 7.7   | 3.5  | 2.5  | 2.1  | 2.1  | 1.8  | 1.4  | 1.1  | 0.7  | 0.0  | 0.0  |
| 85°   | 4.9   | 3.2  | 2.5  | 2.1  | 2.1  | 1.8  | 1.8  | 1.1  | 0.7  | 0.0  | 0.0  |
| 87.5° | 3.9   | 3.2  | 2.5  | 2.5  | 2.1  | 2.1  | 1.4  | 1.1  | 0.4  | 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  |



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-9

Test Date: 10/10/2024

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

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

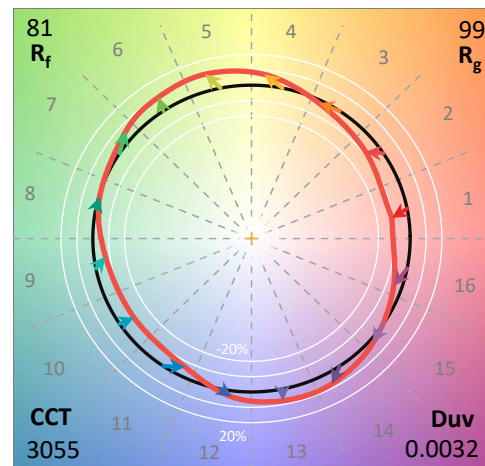
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-830-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3055  
 CIE  $u'$ : 0.2475  
 CIE  $v'$ : 0.5247  
 Duv: 0.0032  
 CIE x: 0.4377  
 CIE y: 0.4124  
 CIE z: 0.1499  
 Peak Wavelength (nm): 604  
 Dominant Wavelength (nm): 581  
 Purity: 55.16339  
 R<sub>f</sub>: 81.5  
 R<sub>g</sub>: 99.2

CRI (Ra): 80.9  
 R1: 79.5  
 R2: 85.6  
 R3: 92.1  
 R4: 82.4  
 R5: 78.9  
 R6: 81.7  
 R7: 85.1  
 R8: 61.9  
 R9: 6.8  
 R10: 67.1  
 R11: 82.5  
 R12: 63.4  
 R13: 80.2  
 R14: 95.1  
 R15: 71.7



### Test Conditions

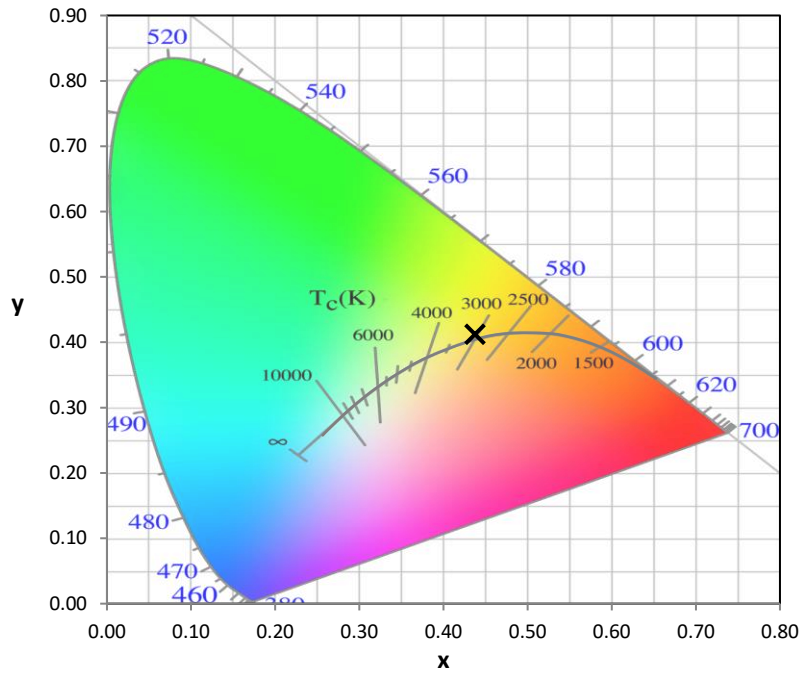
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

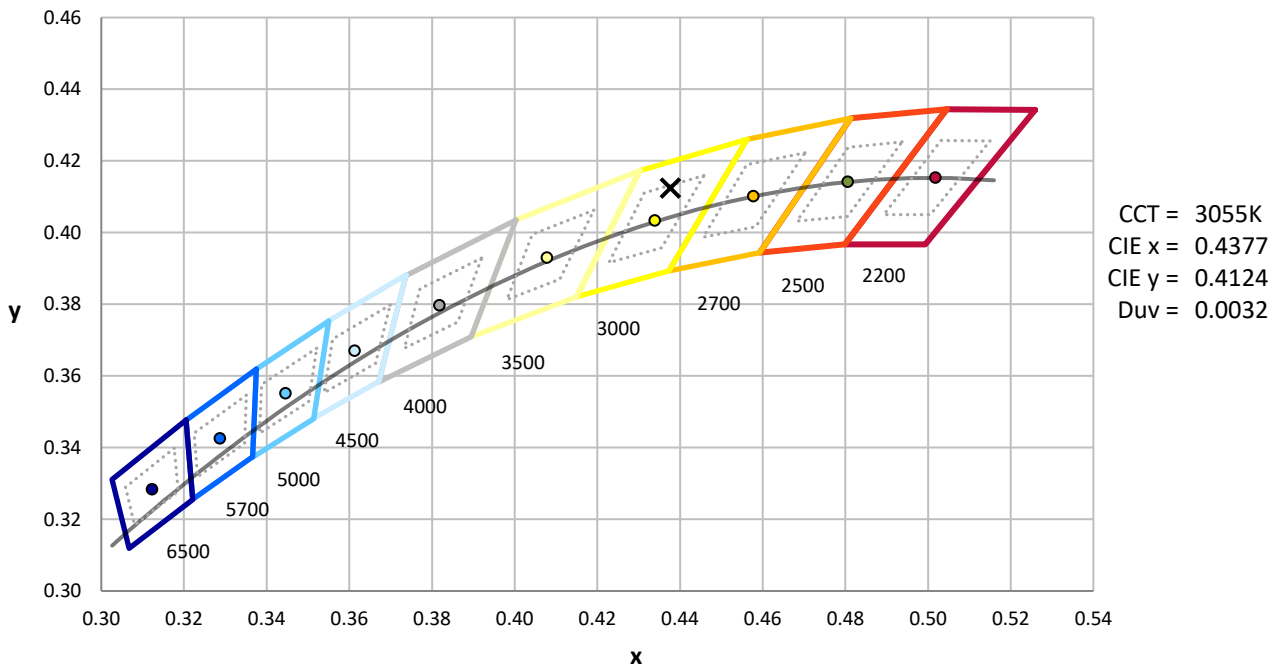
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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**



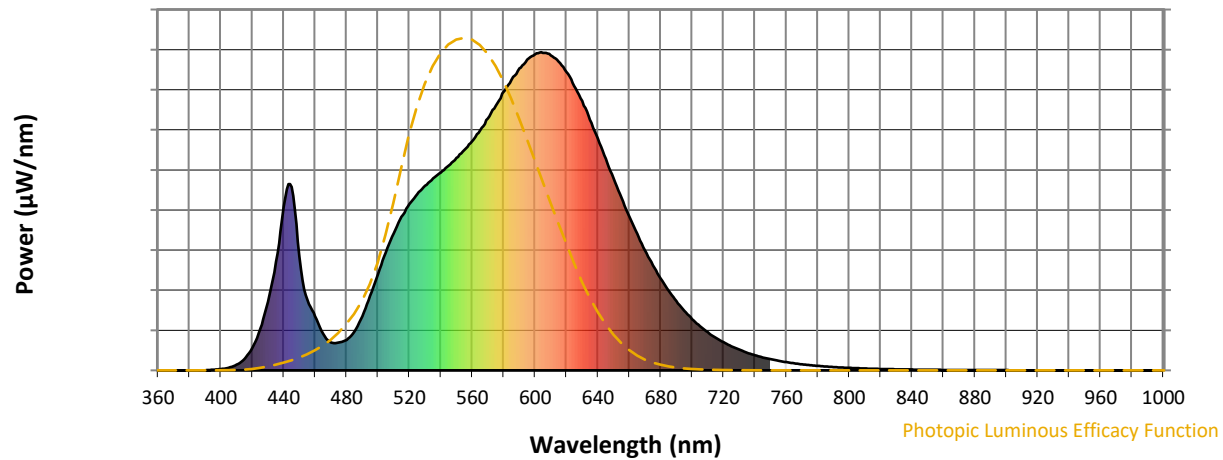
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

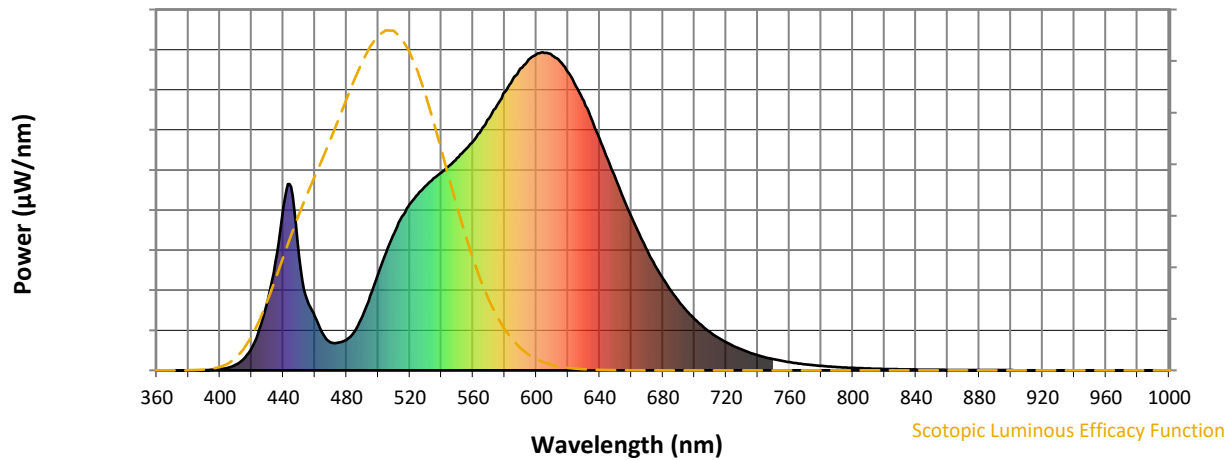


### Photopic Lumens: NR

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength



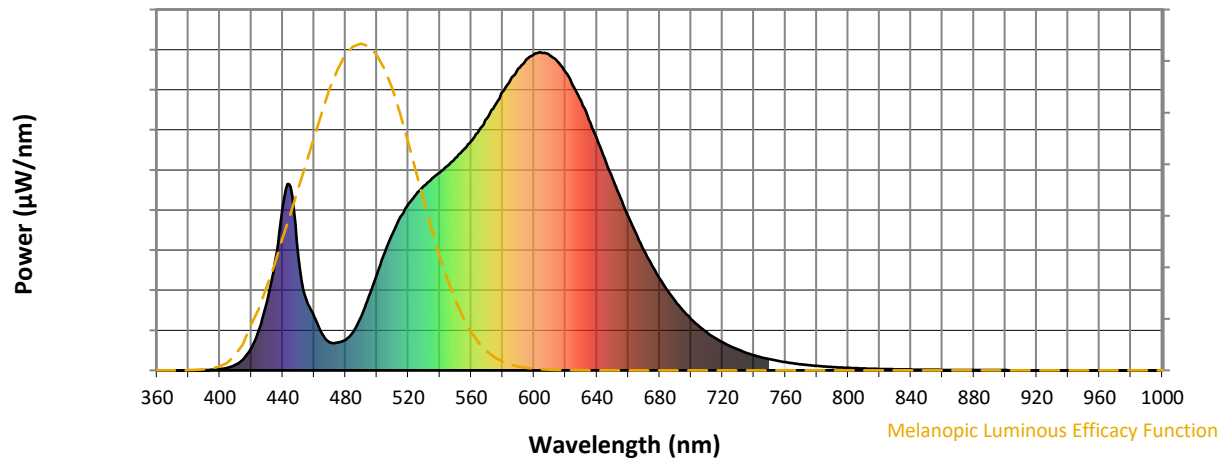
Scotopic Lumens: NR

S/P: 1.28

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 170                         | NR               | 620       | 938                         | NR               | 750       | 35                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 234                         | NR               | 625       | 894                         | NR               | 755       | 30                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 302                         | NR               | 630       | 847                         | NR               | 760       | 26                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 371                         | NR               | 635       | 788                         | NR               | 765       | 22                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 431                         | NR               | 640       | 728                         | NR               | 770       | 19                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 482                         | NR               | 645       | 665                         | NR               | 775       | 16                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 523                         | NR               | 650       | 603                         | NR               | 780       | 14                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 553                         | NR               | 655       | 542                         | NR               | 785       | 12                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 580                         | NR               | 660       | 484                         | NR               | 790       | 11                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 603                         | NR               | 665       | 430                         | NR               | 795       | 9                           | NR               | 925       | 0                           | NR               |
| 410       | 18                          | NR               | 540       | 622                         | NR               | 670       | 377                         | NR               | 800       | 8                           | NR               | 930       | 0                           | NR               |
| 415       | 36                          | NR               | 545       | 644                         | NR               | 675       | 330                         | NR               | 805       | 7                           | NR               | 935       | 0                           | NR               |
| 420       | 71                          | NR               | 550       | 668                         | NR               | 680       | 289                         | NR               | 810       | 6                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 693                         | NR               | 685       | 250                         | NR               | 815       | 5                           | NR               | 945       | 0                           | NR               |
| 430       | 215                         | NR               | 560       | 720                         | NR               | 690       | 218                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 341                         | NR               | 565       | 754                         | NR               | 695       | 188                         | NR               | 825       | 4                           | NR               | 955       | 0                           | NR               |
| 440       | 514                         | NR               | 570       | 792                         | NR               | 700       | 161                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 576                         | NR               | 575       | 832                         | NR               | 705       | 139                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 358                         | NR               | 580       | 875                         | NR               | 710       | 119                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 222                         | NR               | 585       | 913                         | NR               | 715       | 102                         | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 170                         | NR               | 590       | 950                         | NR               | 720       | 88                          | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 115                         | NR               | 595       | 977                         | NR               | 725       | 76                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 88                          | NR               | 600       | 994                         | NR               | 730       | 65                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 87                          | NR               | 605       | 997                         | NR               | 735       | 56                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 96                          | NR               | 610       | 990                         | NR               | 740       | 47                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 122                         | NR               | 615       | 971                         | NR               | 745       | 41                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.33

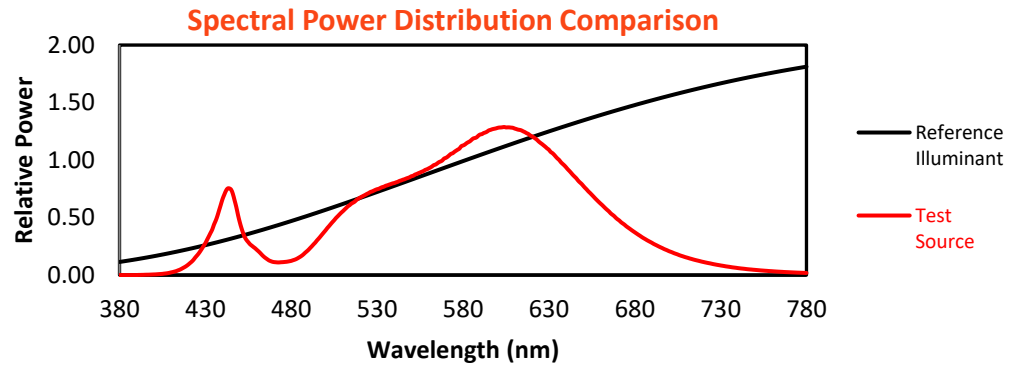
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 170                                    | NR                             | 620               | 938                                    | NR                             | 750               | 35                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 234                                    | NR                             | 625               | 894                                    | NR                             | 755               | 30                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 302                                    | NR                             | 630               | 847                                    | NR                             | 760               | 26                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 371                                    | NR                             | 635               | 788                                    | NR                             | 765               | 22                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 431                                    | NR                             | 640               | 728                                    | NR                             | 770               | 19                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 482                                    | NR                             | 645               | 665                                    | NR                             | 775               | 16                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 523                                    | NR                             | 650               | 603                                    | NR                             | 780               | 14                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 2                                      | NR                             | 525               | 553                                    | NR                             | 655               | 542                                    | NR                             | 785               | 12                                     | NR                             | 915               | 0                                      | NR                             |
| 400               | 4                                      | NR                             | 530               | 580                                    | NR                             | 660               | 484                                    | NR                             | 790               | 11                                     | NR                             | 920               | 0                                      | NR                             |
| 405               | 8                                      | NR                             | 535               | 603                                    | NR                             | 665               | 430                                    | NR                             | 795               | 9                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 18                                     | NR                             | 540               | 622                                    | NR                             | 670               | 377                                    | NR                             | 800               | 8                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 36                                     | NR                             | 545               | 644                                    | NR                             | 675               | 330                                    | NR                             | 805               | 7                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 71                                     | NR                             | 550               | 668                                    | NR                             | 680               | 289                                    | NR                             | 810               | 6                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 131                                    | NR                             | 555               | 693                                    | NR                             | 685               | 250                                    | NR                             | 815               | 5                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 215                                    | NR                             | 560               | 720                                    | NR                             | 690               | 218                                    | NR                             | 820               | 4                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 341                                    | NR                             | 565               | 754                                    | NR                             | 695               | 188                                    | NR                             | 825               | 4                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 514                                    | NR                             | 570               | 792                                    | NR                             | 700               | 161                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 576                                    | NR                             | 575               | 832                                    | NR                             | 705               | 139                                    | NR                             | 835               | 3                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 358                                    | NR                             | 580               | 875                                    | NR                             | 710               | 119                                    | NR                             | 840               | 3                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 222                                    | NR                             | 585               | 913                                    | NR                             | 715               | 102                                    | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 170                                    | NR                             | 590               | 950                                    | NR                             | 720               | 88                                     | NR                             | 850               | 2                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 115                                    | NR                             | 595               | 977                                    | NR                             | 725               | 76                                     | NR                             | 855               | 2                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 88                                     | NR                             | 600               | 994                                    | NR                             | 730               | 65                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 87                                     | NR                             | 605               | 997                                    | NR                             | 735               | 56                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 96                                     | NR                             | 610               | 990                                    | NR                             | 740               | 47                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 122                                    | NR                             | 615               | 971                                    | NR                             | 745               | 41                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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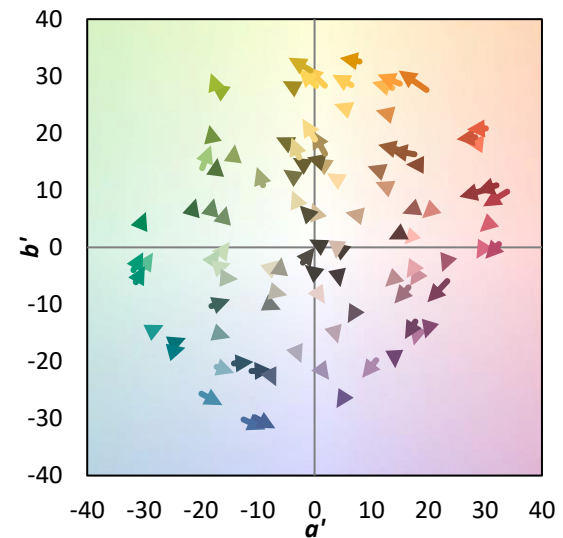
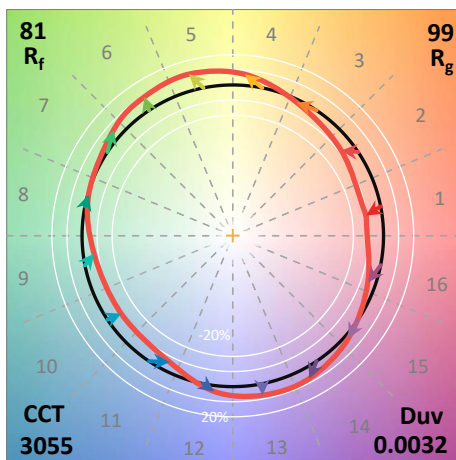
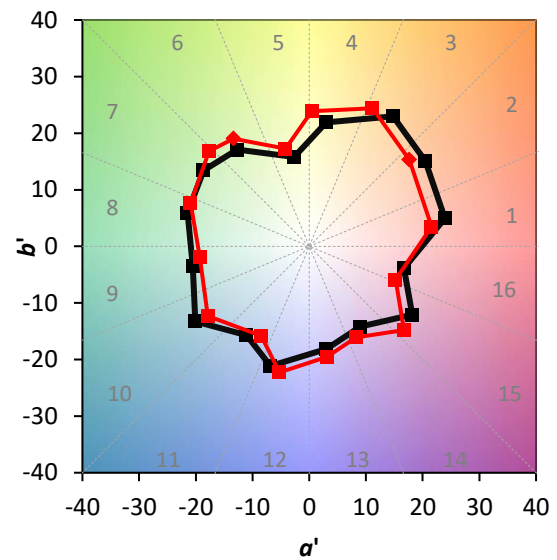
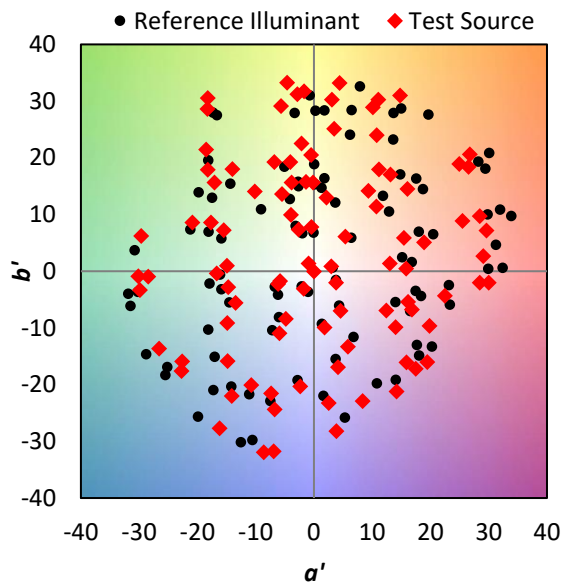
TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_9 = 6.8$



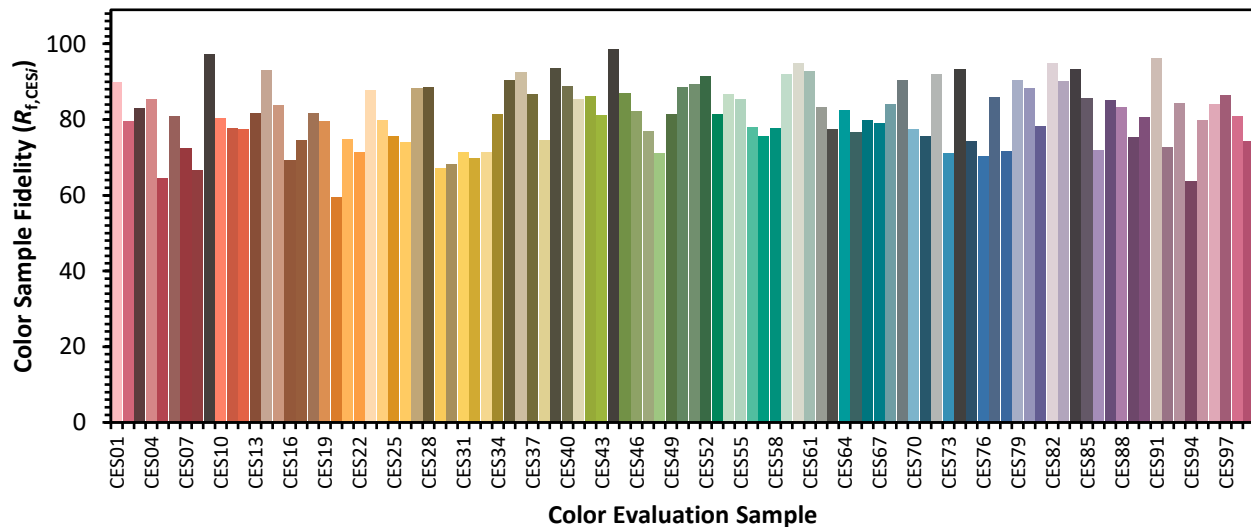
### Color Vector Graphics



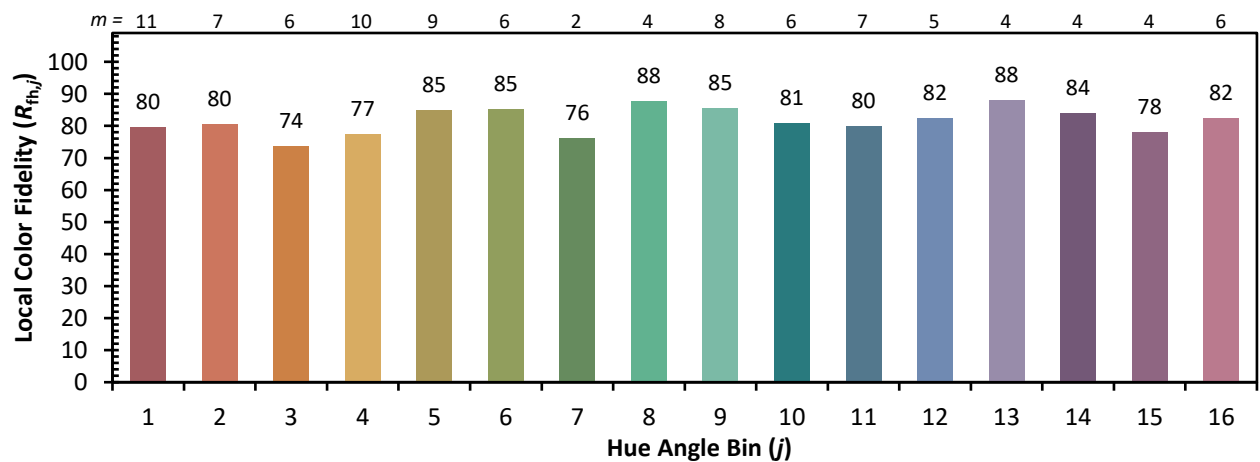
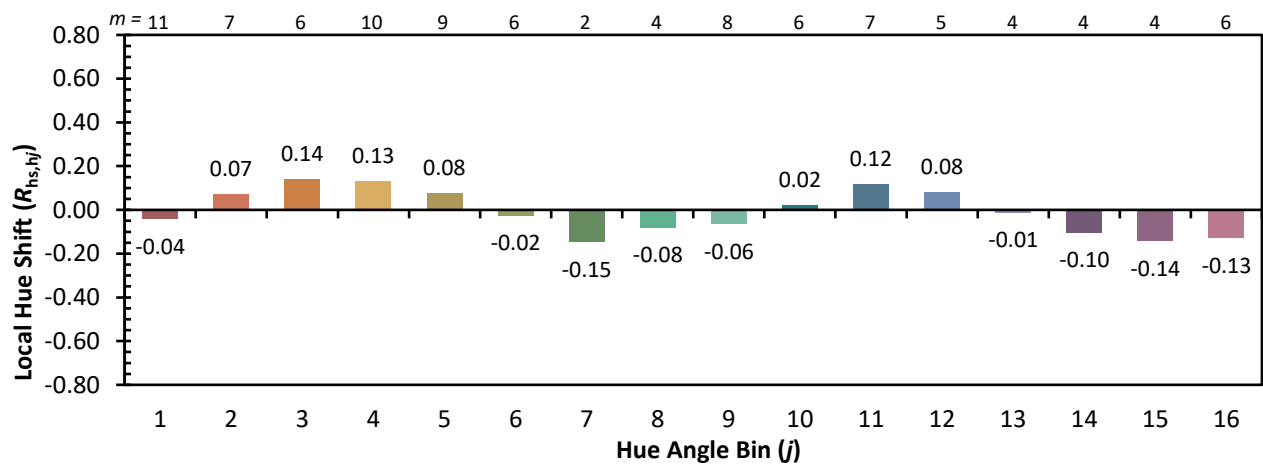
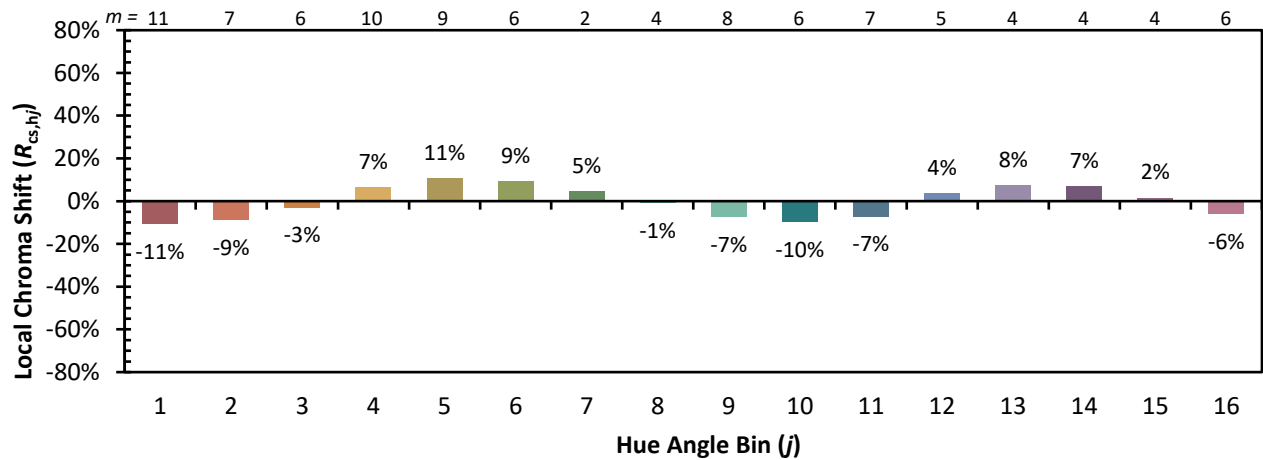


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

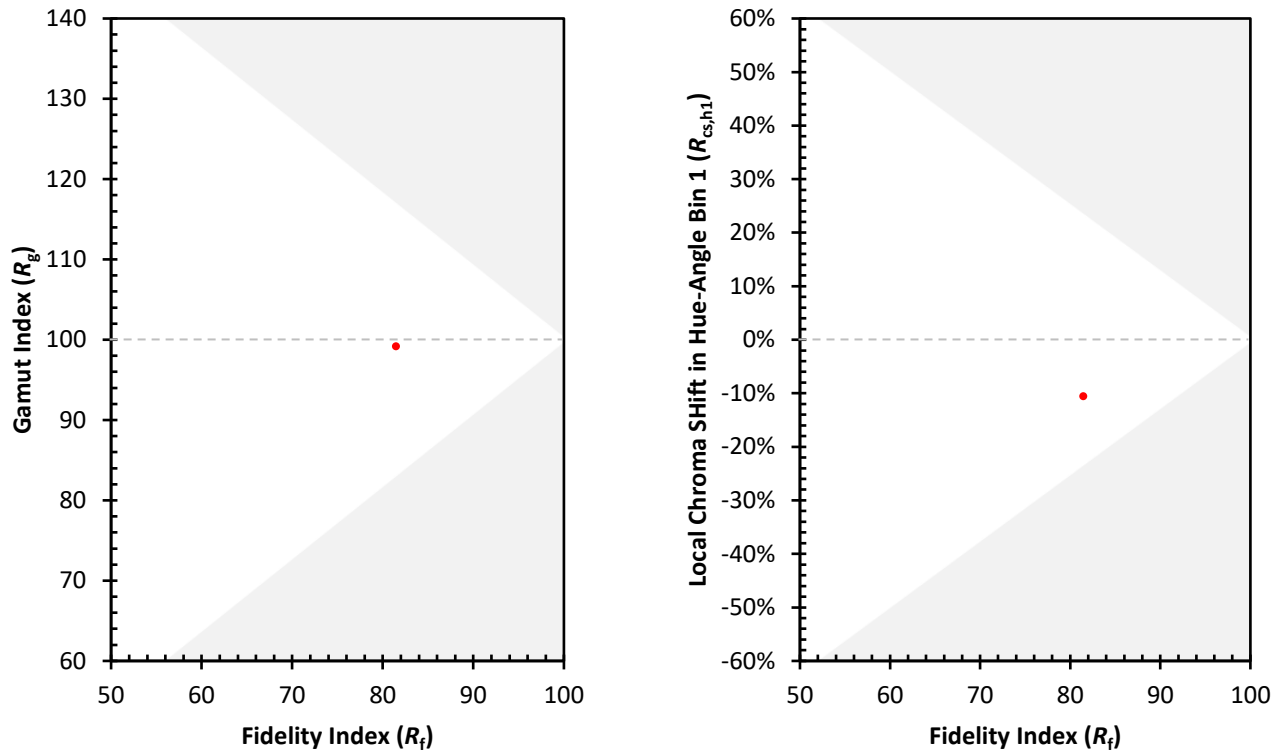
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 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 = 93 |
| 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 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | 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 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)