

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: P1064171

Luminaire Tested: **GLAN-SA3C-830-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1064171  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA3C-830-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 3xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (42) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15453.5 lumens  
Efficiency: N/A  
Efficacy: 110.1 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 140.4  
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

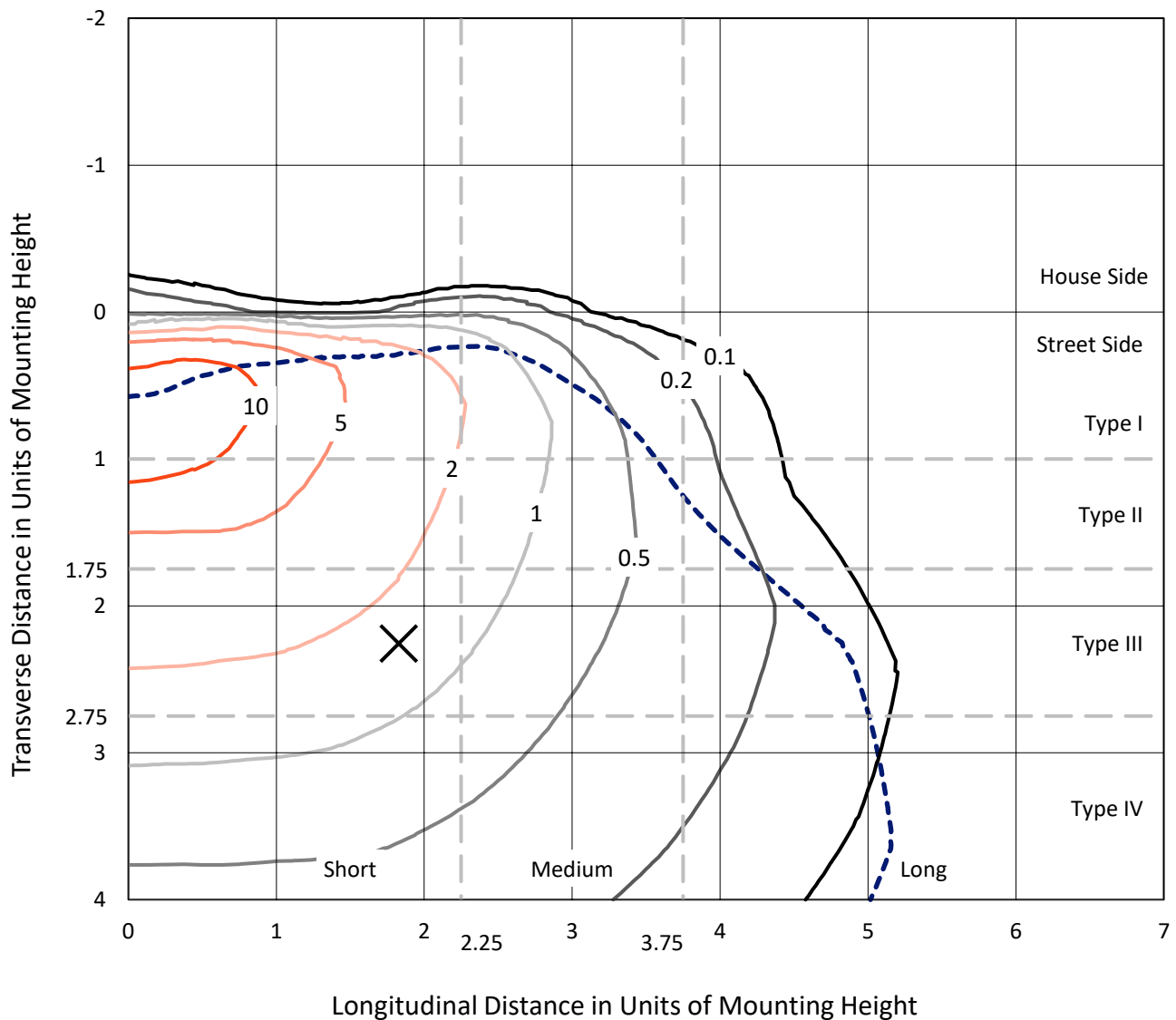


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

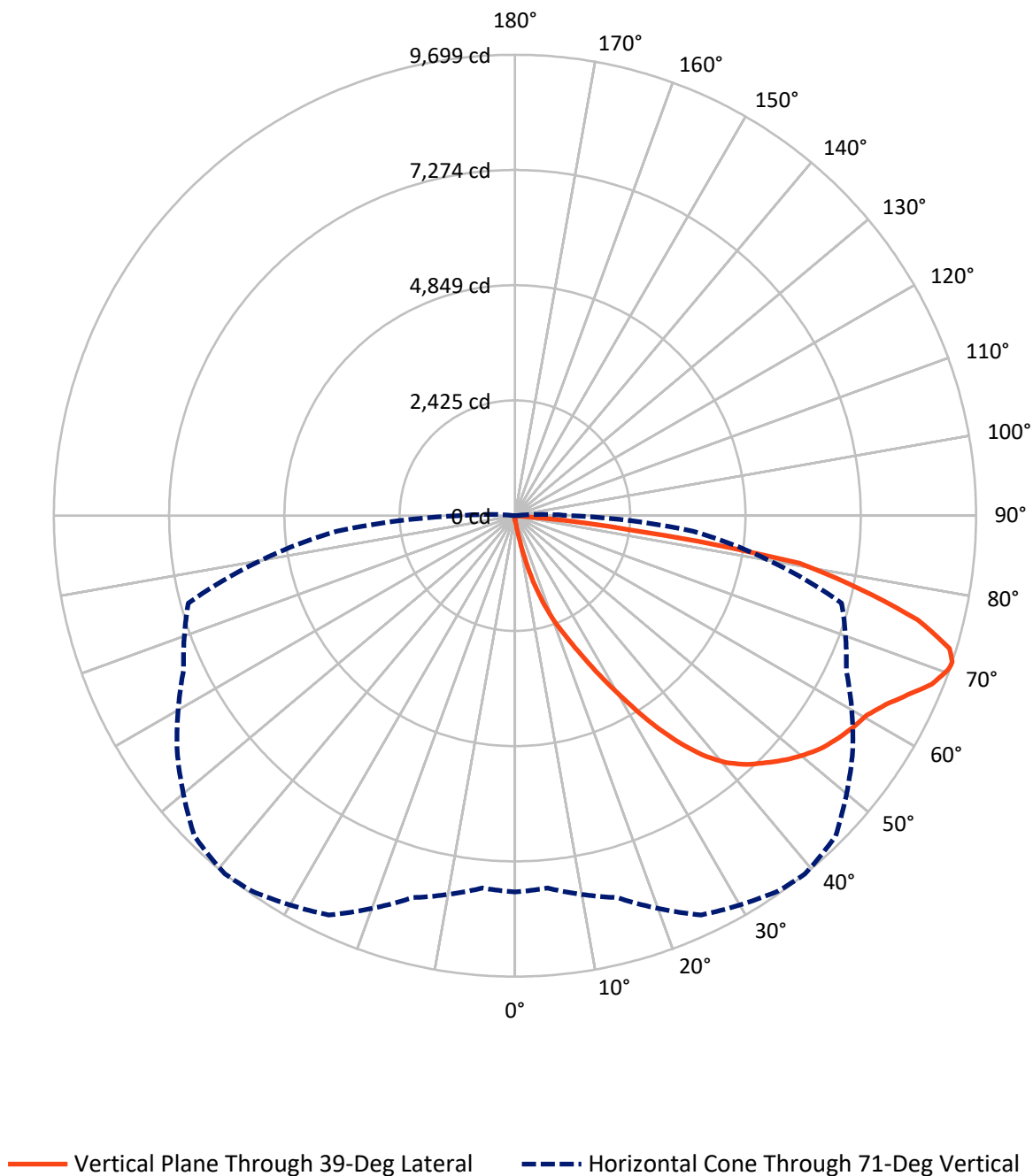


Based on 15 foot mounting height. Maximum calculated value = 15.9 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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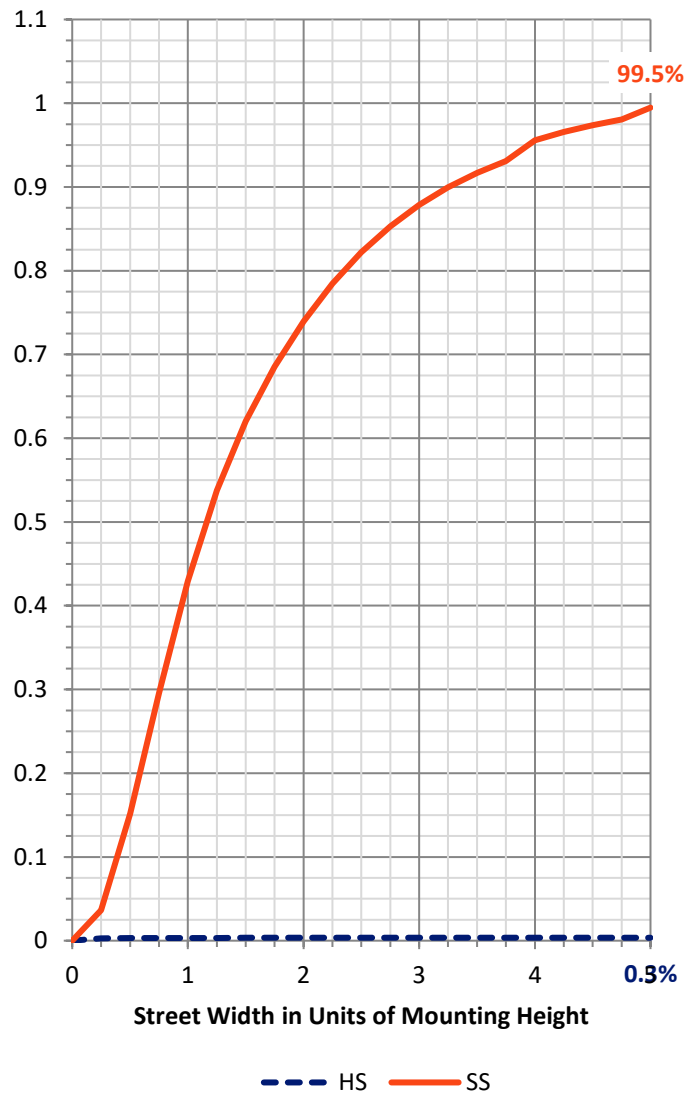
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 54.9     | 0.0    | 54.9    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 15398.6  | 0.0    | 15398.6 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 15453.5  | 0.0    | 15453.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 12.9    | 0.1       |
| 10°-20°   | 165.2   | 1.1       |
| 20°-30°   | 588.2   | 3.8       |
| 30°-40°   | 1417.6  | 9.2       |
| 40°-50°   | 2372.5  | 15.4      |
| 50°-60°   | 3047.2  | 19.7      |
| 60°-70°   | 3856.2  | 25.0      |
| 70°-80°   | 3438.0  | 22.2      |
| 80°-90°   | 555.7   | 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°    | 15453.5 | 100.0     |
| 0°-180°   | 15453.5 | 100.0     |



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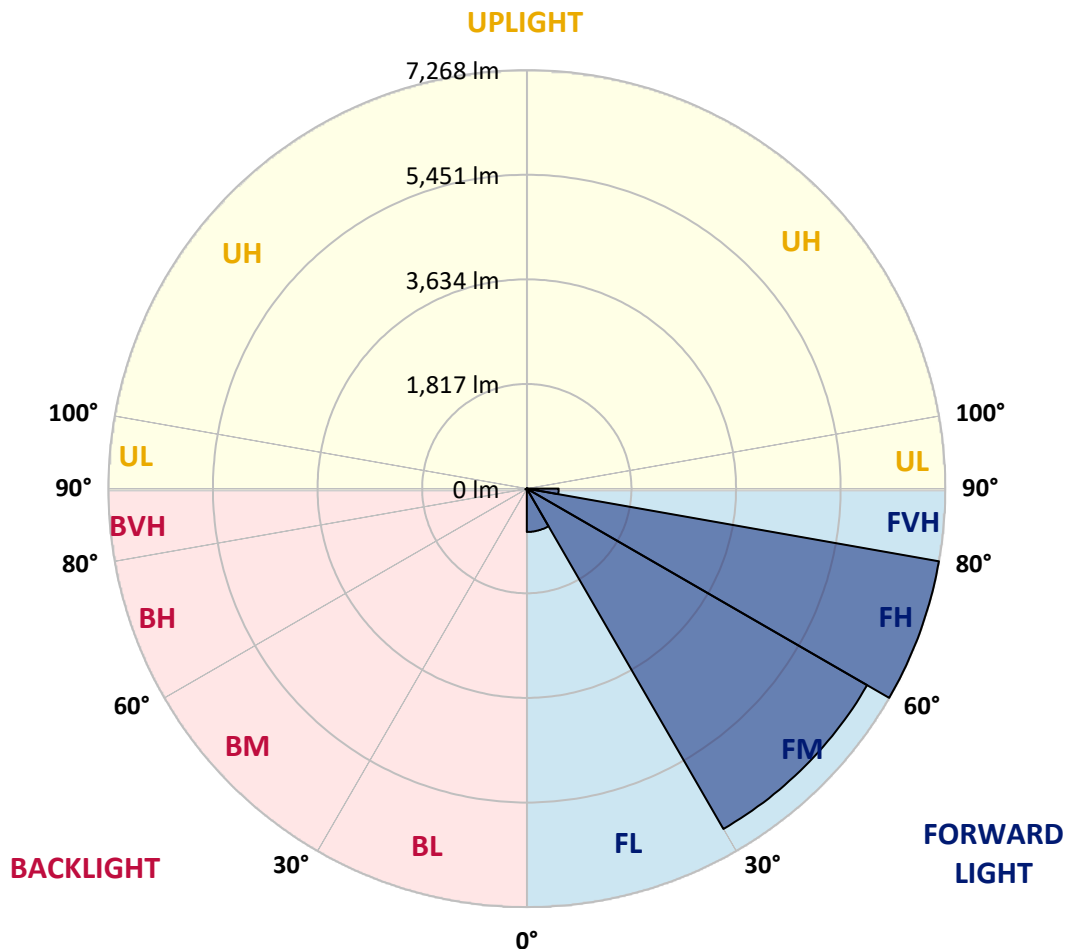
CATALOG NUMBER: GLAN-SA3C-830-U-T4BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 753.0  | 4.9       |                         |      |         |
| FM   | (30°-60°)   | 6824.6 | 44.2      |                         |      |         |
| FH   | (60°-80°)   | 7267.8 | 47.0      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 553.2  | 3.6       |                         |      | G4/750  |
| BL   | (0°-30°)    | 13.3   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 12.7   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 26.4   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.5    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G4**

Type IV Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 39°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   | 84.7   |
| 2.5°  | 97.3   | 97.3   | 97.3   | 94.2   | 94.2   | 93.1   | 92.1   | 92.1   | 90.0   | 88.9   | 86.8   |
| 5°    | 147.5  | 144.4  | 137.0  | 132.9  | 124.5  | 119.3  | 114.0  | 106.7  | 99.4   | 94.2   | 87.9   |
| 7.5°  | 333.7  | 341.0  | 317.0  | 272.0  | 226.0  | 206.1  | 172.6  | 139.1  | 115.1  | 99.4   | 88.9   |
| 10°   | 850.5  | 846.3  | 764.7  | 674.7  | 521.0  | 459.2  | 359.9  | 227.0  | 148.5  | 108.8  | 90.0   |
| 12.5° | 1446.8 | 1442.6 | 1346.4 | 1224.0 | 1021.0 | 892.3  | 704.0  | 423.7  | 213.4  | 123.4  | 90.0   |
| 15°   | 1947.9 | 1931.1 | 1900.8 | 1779.5 | 1542.0 | 1434.2 | 1185.3 | 749.0  | 345.2  | 148.5  | 92.1   |
| 17.5° | 2279.5 | 2264.9 | 2236.6 | 2192.7 | 2042.0 | 1914.4 | 1714.6 | 1176.9 | 558.6  | 192.5  | 96.2   |
| 20°   | 2583.9 | 2573.5 | 2550.4 | 2542.1 | 2444.8 | 2376.8 | 2211.5 | 1668.6 | 870.4  | 261.5  | 102.5  |
| 22.5° | 3002.4 | 2980.4 | 2989.8 | 2939.6 | 2844.4 | 2762.8 | 2661.3 | 2183.3 | 1251.2 | 376.6  | 114.0  |
| 25°   | 3515.0 | 3504.5 | 3478.4 | 3442.8 | 3311.0 | 3239.8 | 3084.0 | 2668.7 | 1676.9 | 527.2  | 126.6  |
| 27.5° | 4134.3 | 4122.8 | 4116.5 | 4034.9 | 3883.2 | 3805.8 | 3588.2 | 3126.9 | 2156.1 | 738.6  | 143.3  |
| 30°   | 4847.7 | 4853.0 | 4812.2 | 4707.5 | 4530.8 | 4422.0 | 4198.1 | 3607.0 | 2646.7 | 986.5  | 161.1  |
| 32.5° | 5586.3 | 5575.8 | 5513.1 | 5389.6 | 5231.7 | 5130.2 | 4845.6 | 4133.2 | 3161.4 | 1313.9 | 182.0  |
| 35°   | 6382.4 | 6362.5 | 6197.2 | 6056.0 | 5921.0 | 5793.4 | 5534.0 | 4744.2 | 3676.1 | 1681.1 | 210.3  |
| 37.5° | 7185.8 | 7092.7 | 6761.1 | 6582.2 | 6489.1 | 6384.5 | 6142.8 | 5395.9 | 4187.6 | 2091.2 | 244.8  |
| 40°   | 7792.6 | 7720.4 | 7327.0 | 6997.5 | 6923.2 | 6834.3 | 6654.4 | 5958.7 | 4731.6 | 2531.6 | 286.6  |
| 42.5° | 8128.4 | 8088.6 | 7735.0 | 7409.7 | 7235.0 | 7156.5 | 7002.7 | 6450.4 | 5269.3 | 3018.1 | 347.3  |
| 45°   | 8271.7 | 8210.0 | 7973.5 | 7821.8 | 7543.6 | 7413.9 | 7230.8 | 6821.8 | 5831.1 | 3570.4 | 432.0  |
| 47.5° | 8227.7 | 8192.2 | 8022.7 | 8078.1 | 7876.2 | 7674.3 | 7405.5 | 7106.3 | 6311.2 | 4204.4 | 548.2  |
| 50°   | 7951.6 | 7921.2 | 7868.9 | 8169.2 | 8144.1 | 7905.5 | 7631.5 | 7331.2 | 6703.5 | 4858.2 | 728.1  |
| 52.5° | 7426.4 | 7413.9 | 7547.8 | 8098.0 | 8295.7 | 8109.5 | 7849.0 | 7530.0 | 7069.7 | 5541.3 | 985.4  |
| 55°   | 6749.6 | 6800.8 | 7183.7 | 7987.1 | 8373.2 | 8260.2 | 8041.5 | 7716.2 | 7363.6 | 6152.2 | 1365.2 |
| 57.5° | 6471.3 | 6484.9 | 6963.0 | 7908.7 | 8407.7 | 8393.0 | 8228.8 | 7894.0 | 7633.5 | 6640.8 | 1944.7 |
| 60°   | 6796.6 | 6775.7 | 7027.8 | 7968.3 | 8476.7 | 8512.3 | 8395.1 | 8059.3 | 7867.9 | 7060.3 | 2716.8 |
| 62.5° | 7384.6 | 7373.1 | 7453.6 | 8222.5 | 8678.6 | 8750.8 | 8626.3 | 8178.6 | 8075.0 | 7336.4 | 3597.6 |
| 65°   | 7909.7 | 7885.7 | 8035.3 | 8673.4 | 9033.3 | 9084.5 | 8975.7 | 8382.6 | 8166.0 | 7537.3 | 4425.1 |
| 67.5° | 8136.7 | 8131.5 | 8372.1 | 9102.3 | 9405.7 | 9461.1 | 9365.9 | 8664.0 | 8145.1 | 7601.1 | 4790.2 |
| 70°   | 8033.2 | 8013.3 | 8398.3 | 9284.3 | 9615.9 | 9678.7 | 9586.7 | 8768.6 | 7918.1 | 7399.2 | 4249.3 |
| 71°   | 7919.1 | 7865.8 | 8319.8 | 9271.8 | 9645.2 | 9698.6 | 9537.5 | 8673.4 | 7690.0 | 7112.6 | 3758.7 |
| 72.5° | 7565.5 | 7575.0 | 8104.3 | 9141.0 | 9575.1 | 9559.5 | 9259.2 | 8332.4 | 7414.9 | 6461.9 | 3019.1 |
| 75°   | 6695.2 | 6750.6 | 7406.5 | 8591.8 | 8949.6 | 8749.8 | 8290.5 | 7680.6 | 6862.6 | 4633.3 | 2096.4 |
| 77.5° | 5471.2 | 5553.9 | 6274.6 | 7535.2 | 7433.7 | 7413.9 | 7395.0 | 6767.4 | 5860.4 | 2488.7 | 1458.3 |
| 80°   | 2612.2 | 2791.1 | 3784.9 | 5379.2 | 5843.6 | 6068.5 | 5927.3 | 5453.4 | 4531.8 | 1185.3 | 871.4  |
| 82.5° | 170.5  | 168.4  | 238.5  | 451.9  | 1905.0 | 2462.6 | 3912.5 | 3897.8 | 3159.3 | 577.5  | 355.7  |
| 85°   | 80.6   | 82.6   | 91.0   | 103.6  | 120.3  | 131.8  | 182.0  | 1067.0 | 1511.6 | 275.1  | 77.4   |
| 87.5° | 47.1   | 48.1   | 56.5   | 72.2   | 94.2   | 104.6  | 124.5  | 160.1  | 196.7  | 151.7  | 16.7   |
| 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-SA3C-830-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 84.7   | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 | 84.7 |
| 2.5°  | 85.8   | 84.7 | 81.6 | 78.5 | 75.3 | 73.2 | 72.2 | 73.2 | 73.2 | 74.3 | 74.3 |
| 5°    | 85.8   | 82.6 | 77.4 | 71.1 | 67.0 | 62.8 | 60.7 | 59.6 | 60.7 | 60.7 | 60.7 |
| 7.5°  | 84.7   | 79.5 | 72.2 | 64.9 | 59.6 | 54.4 | 52.3 | 51.3 | 51.3 | 52.3 | 52.3 |
| 10°   | 82.6   | 77.4 | 68.0 | 59.6 | 53.4 | 47.1 | 43.9 | 40.8 | 40.8 | 40.8 | 41.8 |
| 12.5° | 81.6   | 74.3 | 62.8 | 54.4 | 46.0 | 38.7 | 32.4 | 29.3 | 30.3 | 30.3 | 30.3 |
| 15°   | 79.5   | 71.1 | 59.6 | 49.2 | 38.7 | 29.3 | 24.1 | 20.9 | 22.0 | 23.0 | 22.0 |
| 17.5° | 79.5   | 70.1 | 55.4 | 42.9 | 30.3 | 22.0 | 17.8 | 15.7 | 15.7 | 16.7 | 16.7 |
| 20°   | 79.5   | 68.0 | 52.3 | 36.6 | 23.0 | 16.7 | 12.6 | 11.5 | 11.5 | 13.6 | 14.6 |
| 22.5° | 81.6   | 68.0 | 48.1 | 30.3 | 18.8 | 12.6 | 9.4  | 8.4  | 9.4  | 11.5 | 12.6 |
| 25°   | 84.7   | 67.0 | 43.9 | 27.2 | 15.7 | 9.4  | 7.3  | 5.2  | 6.3  | 8.4  | 9.4  |
| 27.5° | 87.9   | 65.9 | 39.8 | 24.1 | 12.6 | 7.3  | 5.2  | 4.2  | 3.1  | 4.2  | 4.2  |
| 30°   | 91.0   | 65.9 | 35.6 | 19.9 | 10.5 | 5.2  | 3.1  | 2.1  | 1.0  | 0.0  | 0.0  |
| 32.5° | 93.1   | 63.8 | 32.4 | 15.7 | 8.4  | 4.2  | 2.1  | 1.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 95.2   | 61.7 | 28.2 | 12.6 | 6.3  | 3.1  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 97.3   | 58.6 | 24.1 | 10.5 | 5.2  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 99.4   | 54.4 | 19.9 | 9.4  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 101.5  | 51.3 | 16.7 | 7.3  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 106.7  | 49.2 | 13.6 | 6.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 116.1  | 47.1 | 12.6 | 4.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 129.7  | 45.0 | 11.5 | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 148.5  | 43.9 | 10.5 | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 182.0  | 42.9 | 9.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 239.6  | 41.8 | 9.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 367.2  | 39.8 | 9.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 655.9  | 38.7 | 8.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 1143.4 | 39.8 | 8.4  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 1639.3 | 41.8 | 7.3  | 3.1  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1402.8 | 36.6 | 7.3  | 4.2  | 2.1  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 71°   | 1143.4 | 32.4 | 7.3  | 4.2  | 2.1  | 1.0  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 735.4  | 25.1 | 6.3  | 4.2  | 2.1  | 2.1  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 310.7  | 20.9 | 6.3  | 4.2  | 3.1  | 2.1  | 2.1  | 1.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 132.9  | 15.7 | 6.3  | 5.2  | 4.2  | 3.1  | 3.1  | 2.1  | 1.0  | 0.0  | 0.0  |
| 80°   | 50.2   | 12.6 | 7.3  | 6.3  | 5.2  | 5.2  | 4.2  | 2.1  | 1.0  | 0.0  | 0.0  |
| 82.5° | 23.0   | 10.5 | 7.3  | 6.3  | 6.3  | 5.2  | 4.2  | 3.1  | 2.1  | 0.0  | 0.0  |
| 85°   | 14.6   | 9.4  | 7.3  | 6.3  | 6.3  | 5.2  | 4.2  | 3.1  | 2.1  | 0.0  | 0.0  |
| 87.5° | 11.5   | 9.4  | 7.3  | 7.3  | 6.3  | 6.3  | 4.2  | 3.1  | 1.0  | 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  |



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

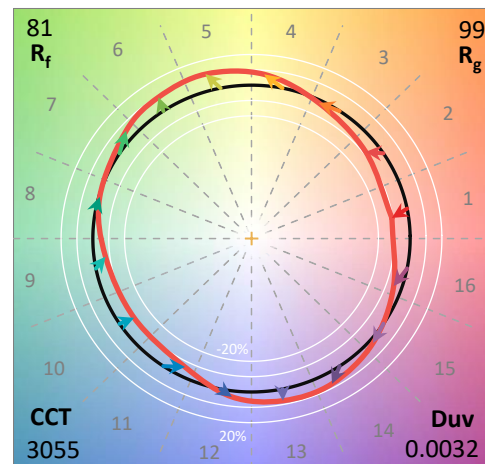
### Test Information

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

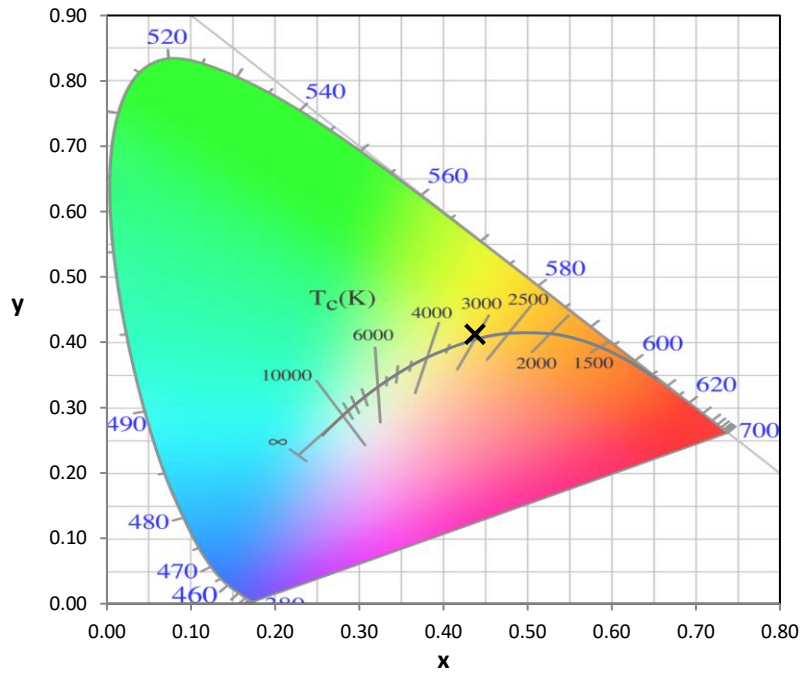
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

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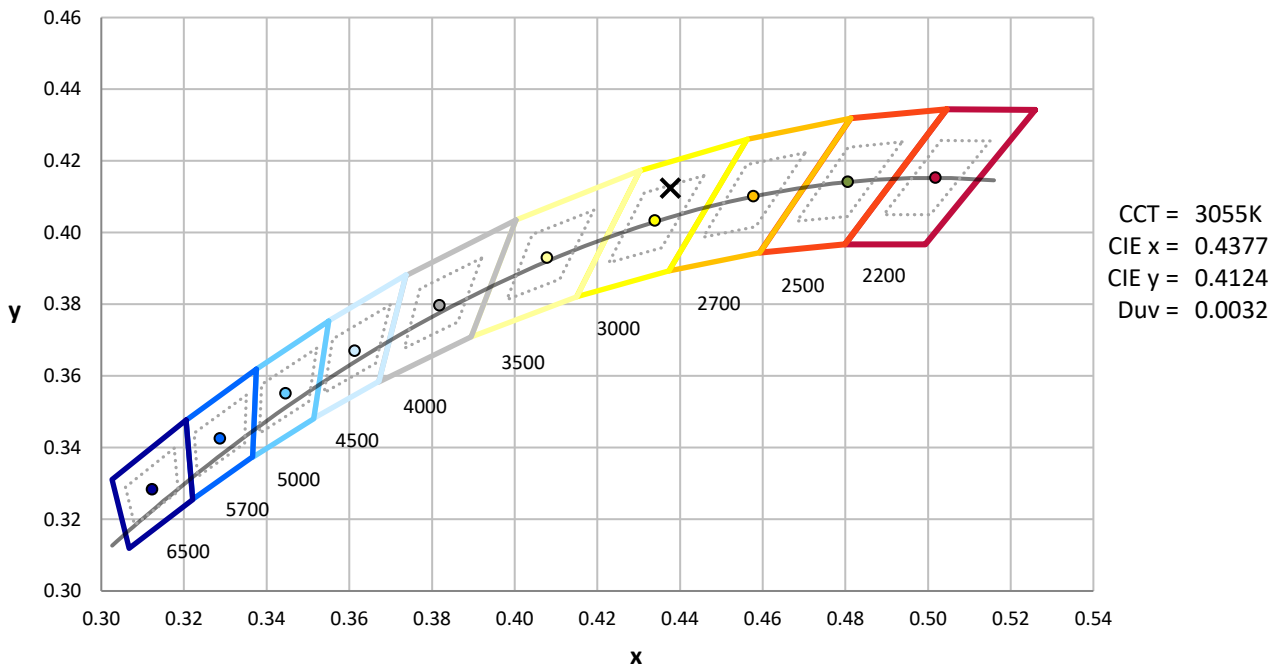
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2407-184-9

**CIE 1931 Chromaticity Diagram**



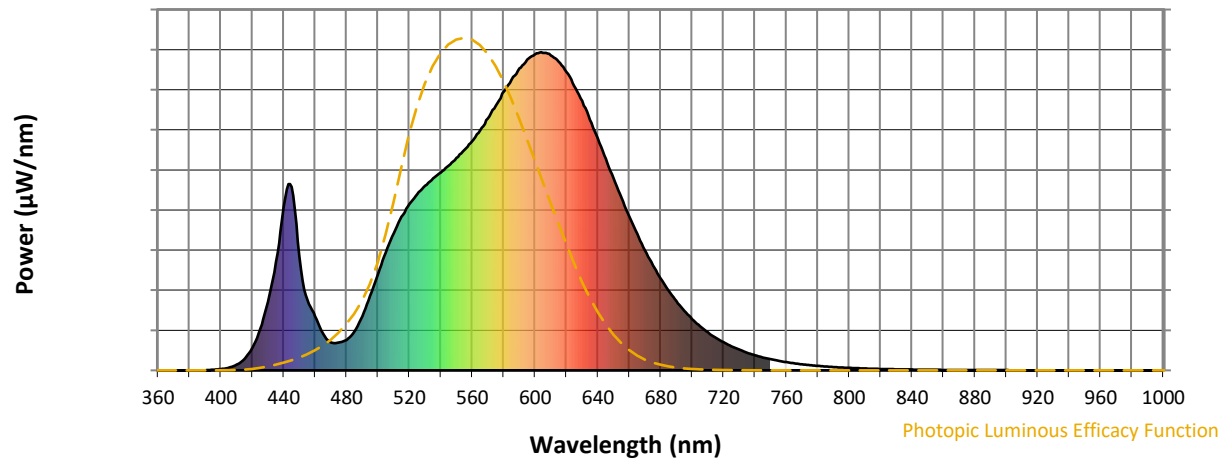
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

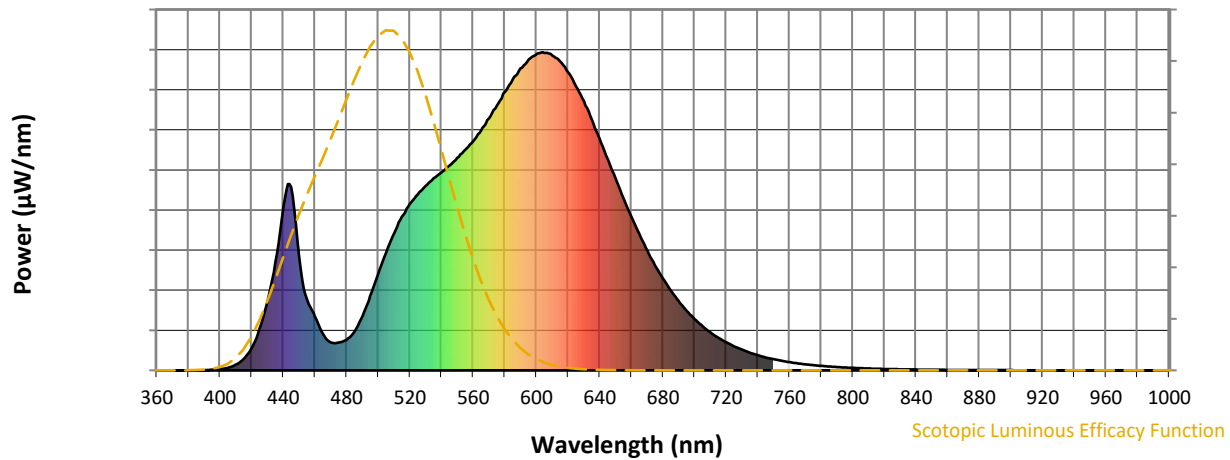


### Photopic Lumens: NR

| 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



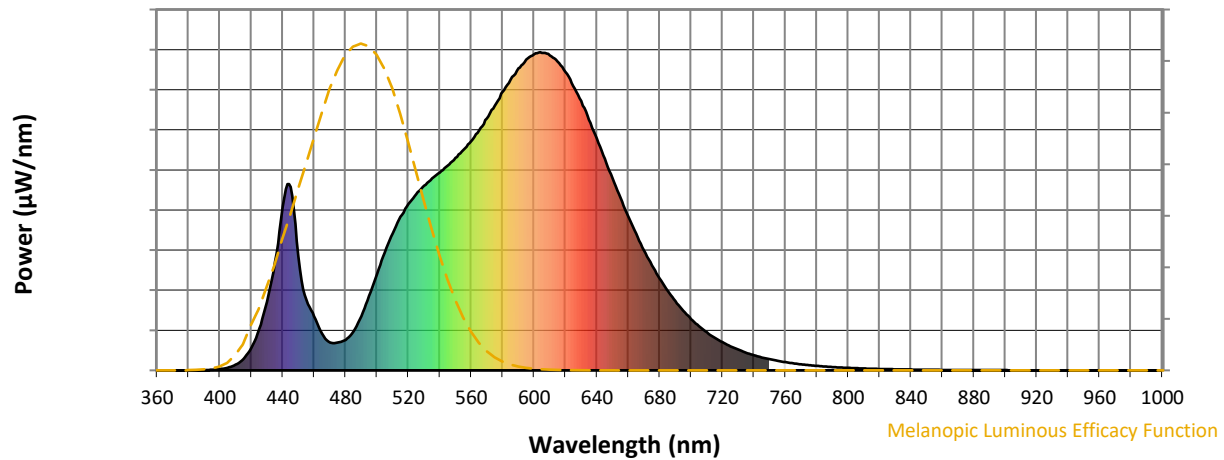
Scotopic Lumens: NR

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

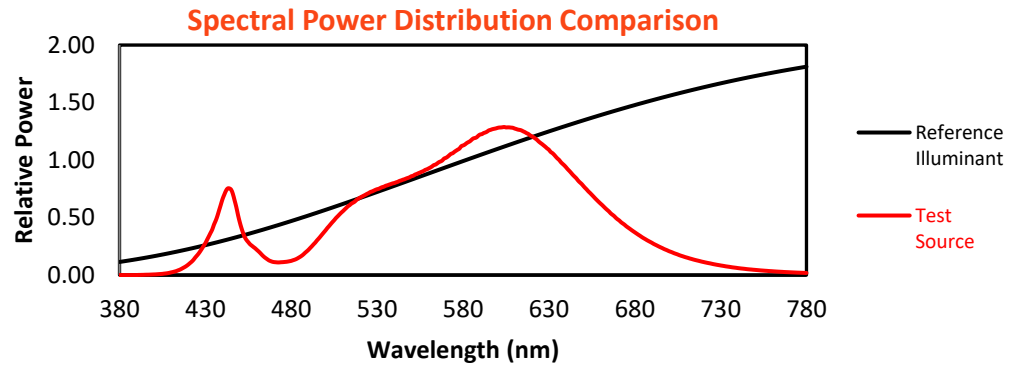
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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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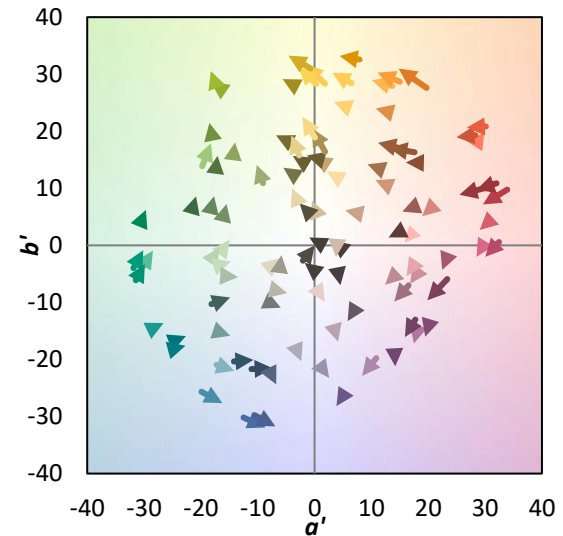
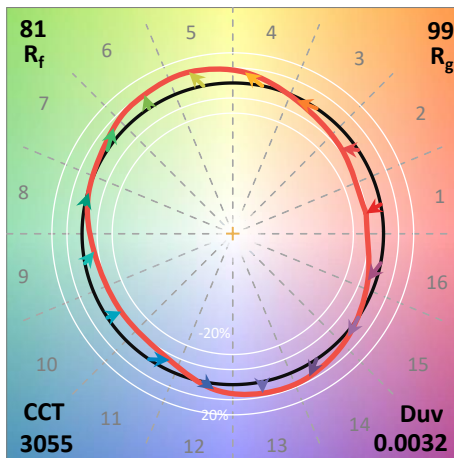
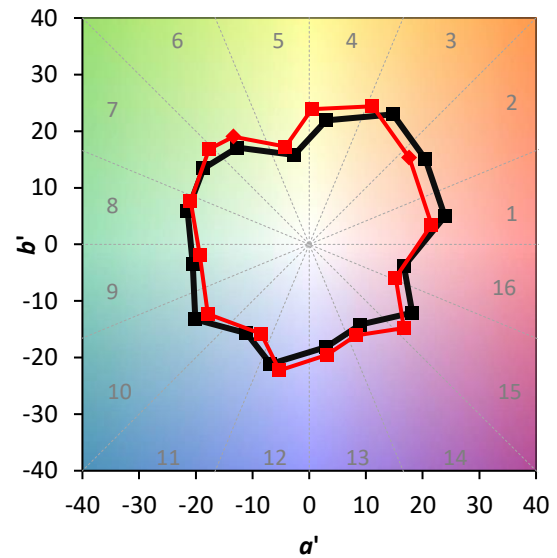
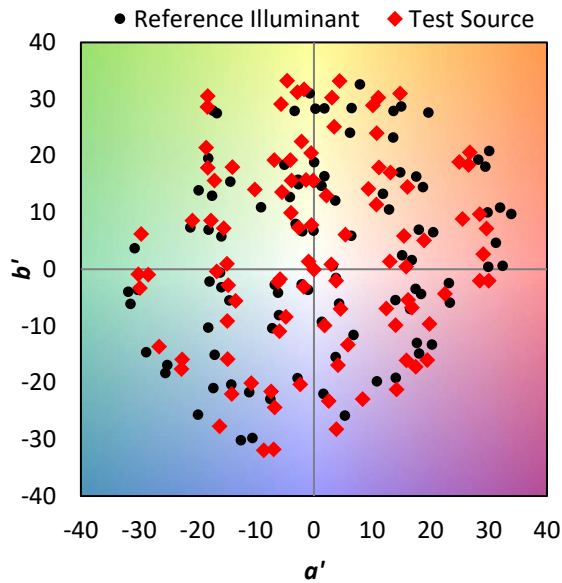
TM-30-18

### Summary

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



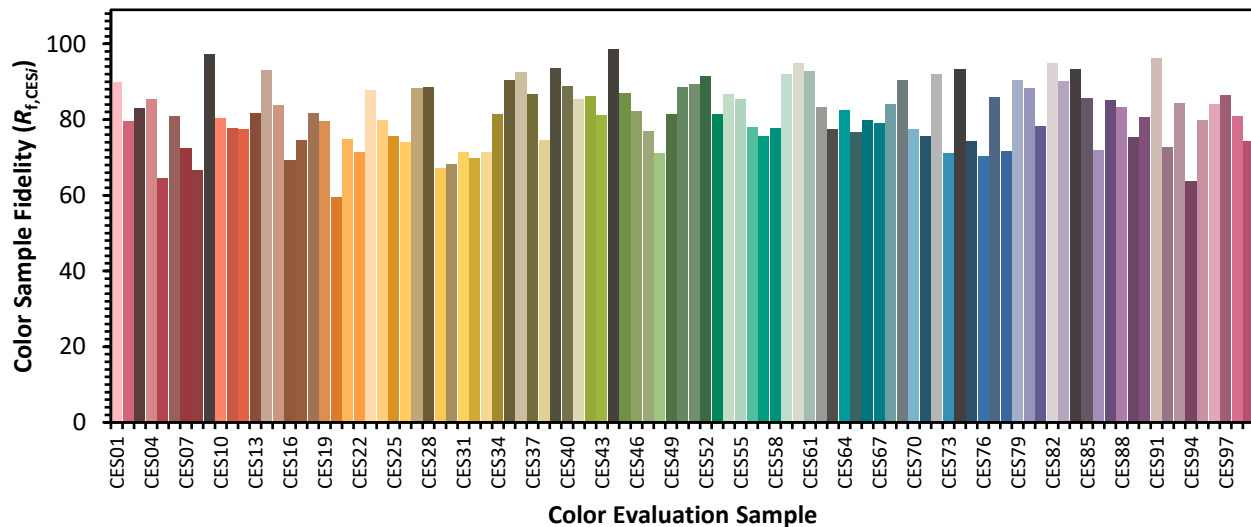
### Color Vector Graphics



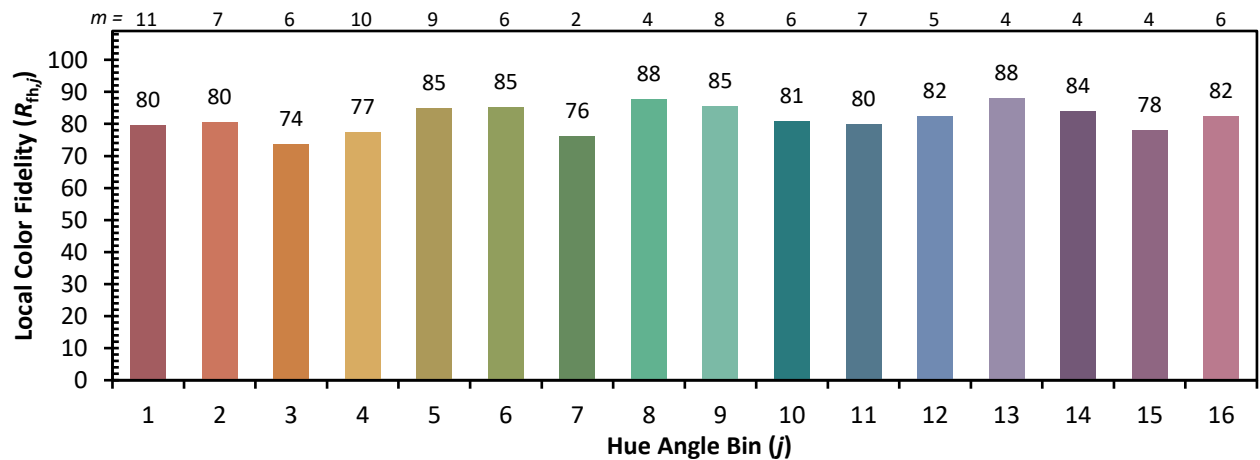
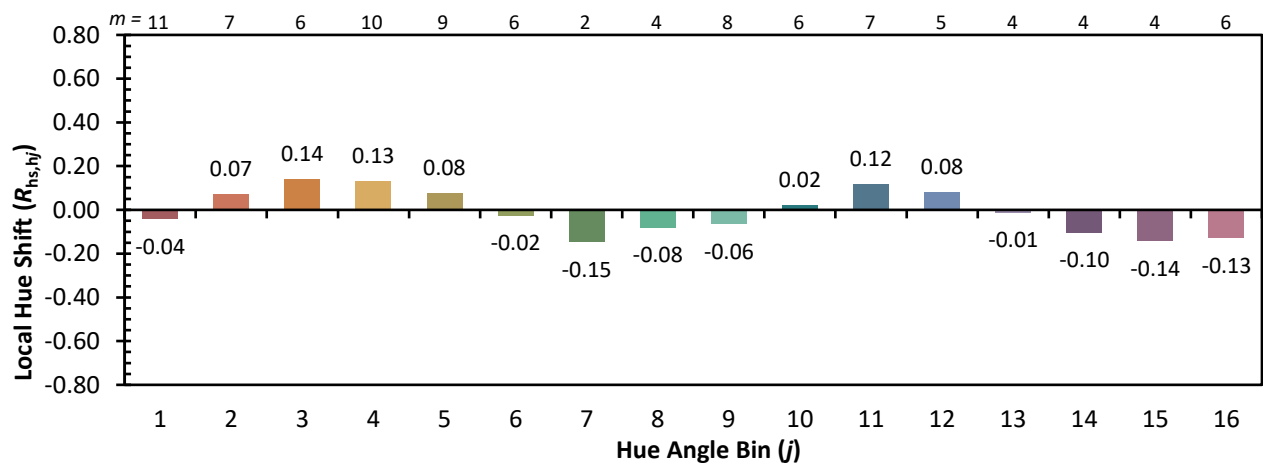
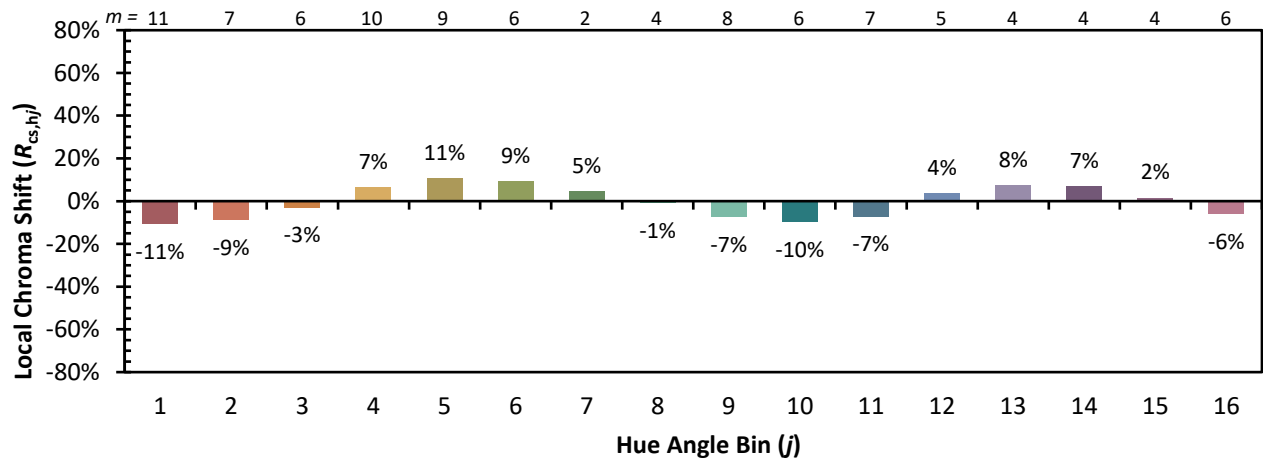


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

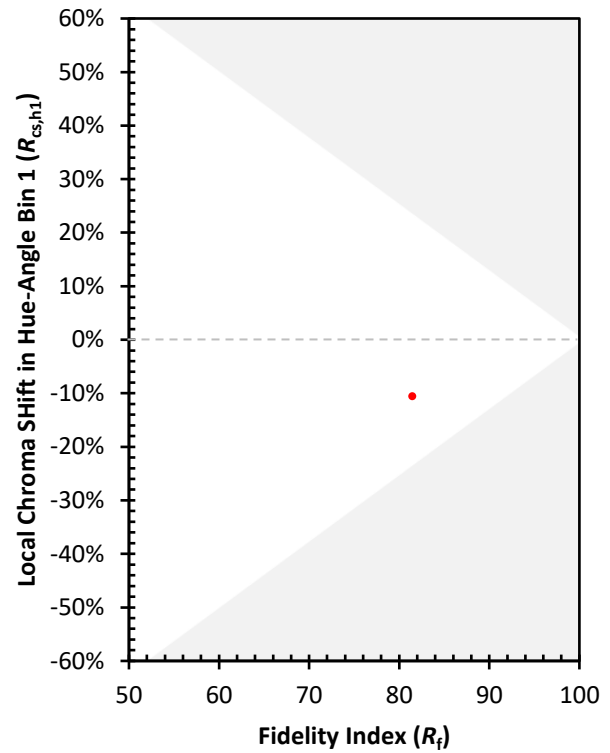
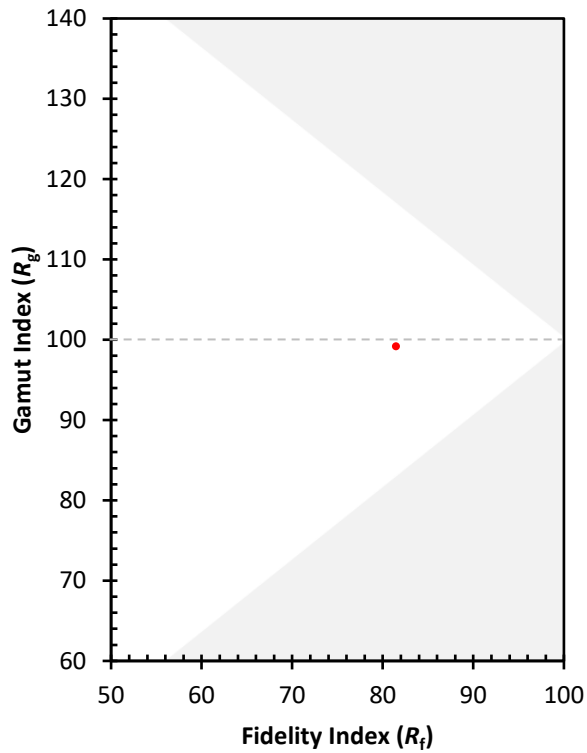
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 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)