

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: McGRAW-EDISON

Report Number: P991178

Luminaire Tested: **GPC-SA1B-735-U-T4BC**

Issue Date: 07/03/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P991178  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 07/03/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GPC-SA1B-735-U-T4BC  
Description: GALLEON PEDESTRAIAN COMPANION 800mA 1xLight Square PACKAGE 70CRI  
3500K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (14) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4205.4 lumens  
Efficiency: N/A  
Efficacy: 110.4 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.67' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 38.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

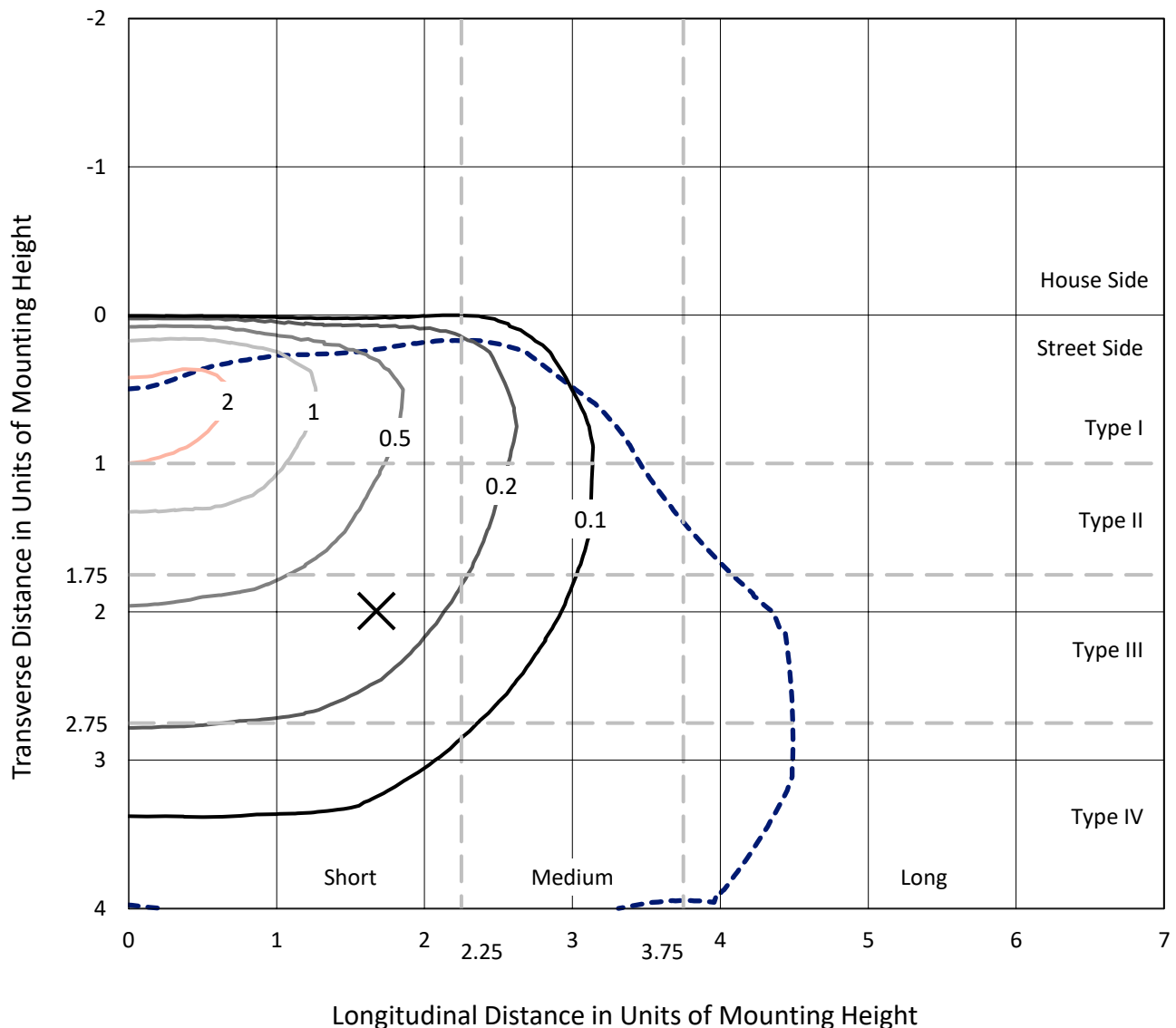


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CATALOG NUMBER: GPC-SA1B-735-U-T4BC

## Iso-Footcandle Lines of Horizontal Illumination

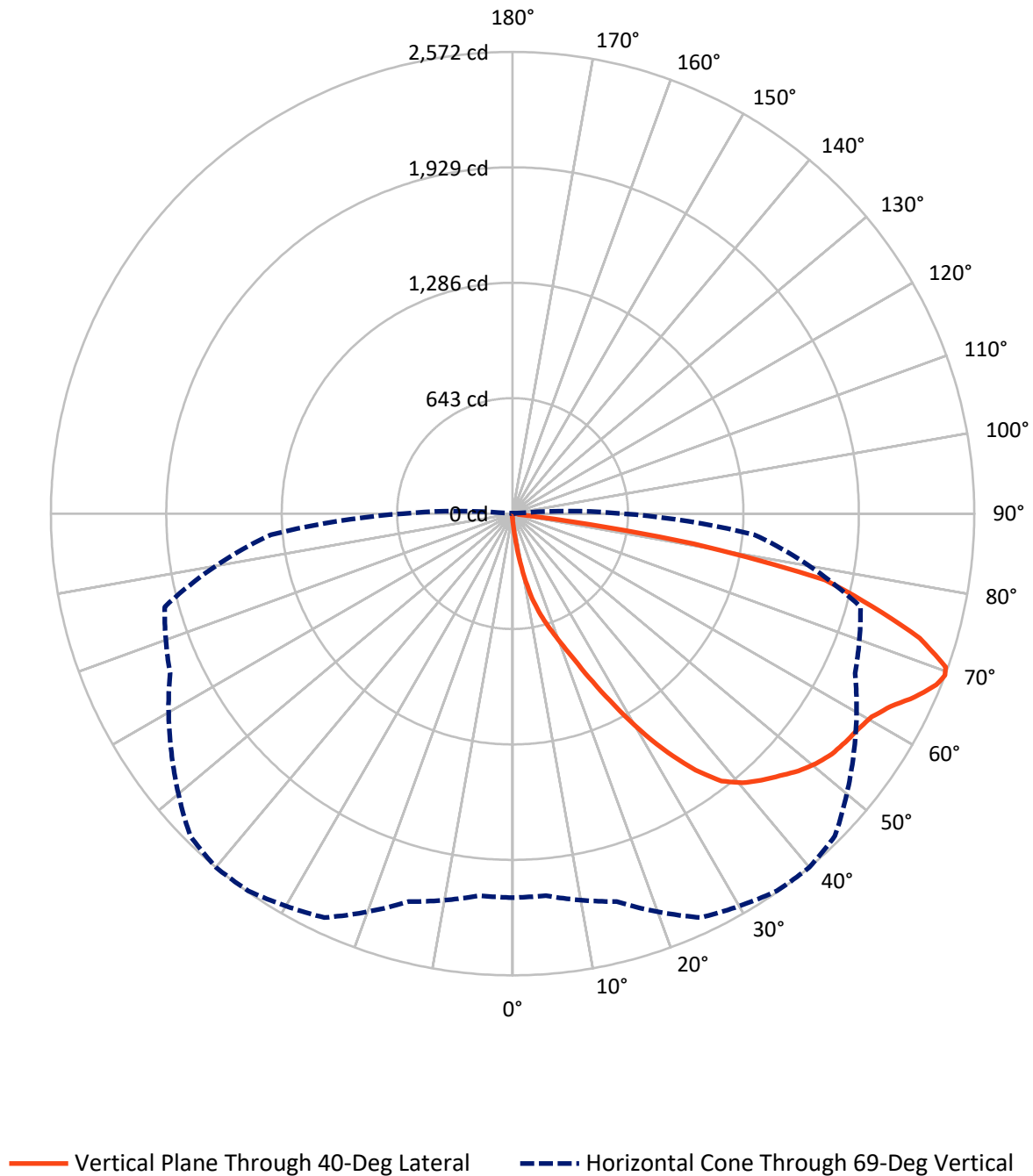
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.7 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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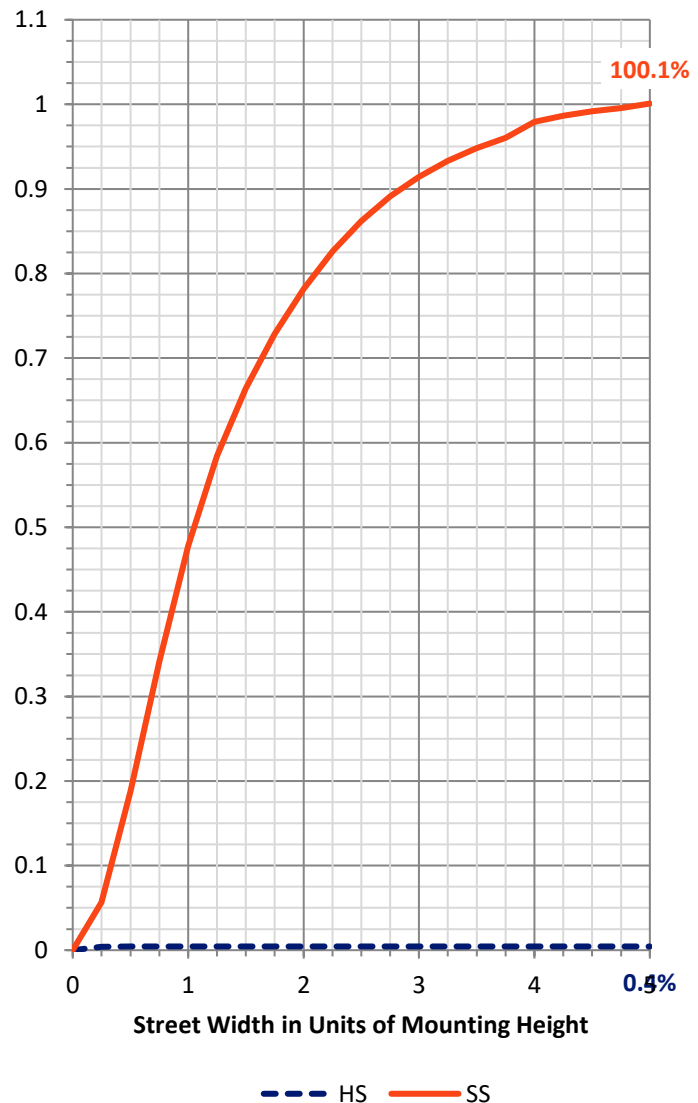
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 18.4     | 0.0    | 18.4   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 4186.9   | 0.0    | 4186.9 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 4205.4   | 0.0    | 4205.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 8.9    | 0.2       |
| 10°-20°   | 67.2   | 1.6       |
| 20°-30°   | 202.3  | 4.8       |
| 30°-40°   | 445.4  | 10.6      |
| 40°-50°   | 684.4  | 16.3      |
| 50°-60°   | 842.8  | 20.0      |
| 60°-70°   | 1064.0 | 25.3      |
| 70°-80°   | 818.4  | 19.5      |
| 80°-90°   | 71.9   | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4205.4 | 100.0     |
| 0°-180°   | 4205.4 | 100.0     |



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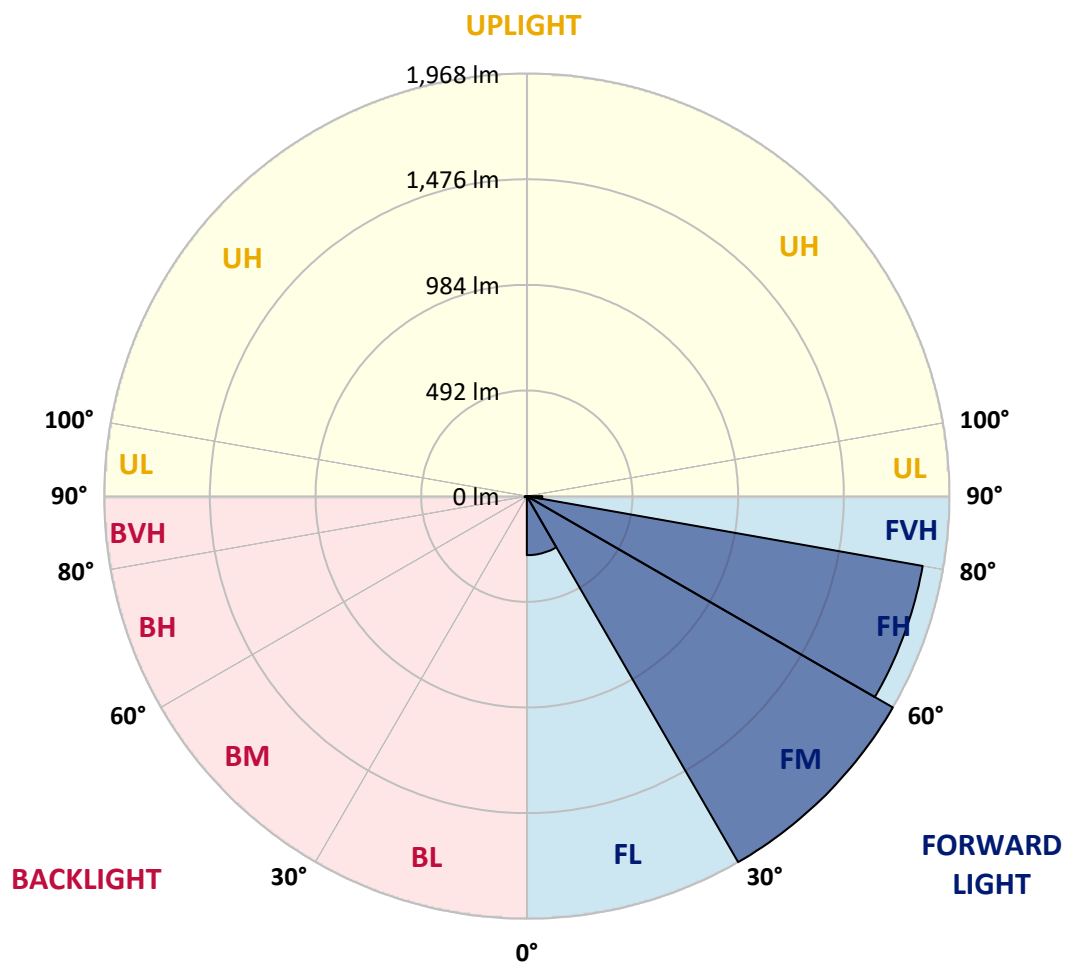
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 275.2  | 6.5       |                         |      |         |
| FM   | (30°-60°)   | 1968.1 | 46.8      |                         |      |         |
| FH   | (60°-80°)   | 1871.9 | 44.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 71.7   | 1.7       |                         |      | G1/100  |
| BL   | (0°-30°)    | 3.1    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 4.5    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 10.6   | 0.3       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.2    | 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°    | 40°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   | 30.8   |
| 2.5°  | 68.6   | 67.8   | 64.7   | 60.7   | 57.6   | 55.2   | 52.1   | 47.3   | 42.6   | 37.1   | 33.1   |
| 5°    | 179.8  | 179.1  | 166.4  | 150.7  | 129.4  | 115.2  | 101.0  | 78.1   | 59.2   | 45.8   | 34.7   |
| 7.5°  | 332.9  | 330.5  | 318.7  | 294.2  | 249.3  | 224.8  | 198.8  | 139.6  | 90.7   | 56.8   | 37.1   |
| 10°   | 484.3  | 482.7  | 467.8  | 432.3  | 383.4  | 358.9  | 324.2  | 238.2  | 142.8  | 74.1   | 40.2   |
| 12.5° | 573.5  | 577.4  | 566.4  | 549.8  | 508.0  | 485.1  | 445.7  | 346.3  | 219.3  | 101.8  | 44.2   |
| 15°   | 646.8  | 648.4  | 638.1  | 627.9  | 605.0  | 586.1  | 552.9  | 461.4  | 310.8  | 138.8  | 48.9   |
| 17.5° | 737.5  | 735.2  | 724.1  | 712.3  | 687.0  | 672.8  | 651.5  | 567.9  | 408.6  | 191.7  | 55.2   |
| 20°   | 852.7  | 846.4  | 833.8  | 813.3  | 785.6  | 768.3  | 746.2  | 676.8  | 506.4  | 250.0  | 63.1   |
| 22.5° | 1000.2 | 992.3  | 978.9  | 960.0  | 911.1  | 884.2  | 855.8  | 769.9  | 614.5  | 324.2  | 73.4   |
| 25°   | 1170.6 | 1166.6 | 1152.4 | 1125.6 | 1073.6 | 1038.1 | 992.3  | 878.7  | 721.8  | 403.1  | 86.0   |
| 27.5° | 1370.9 | 1363.8 | 1344.9 | 1313.3 | 1257.3 | 1210.8 | 1154.0 | 998.6  | 824.3  | 486.7  | 101.8  |
| 30°   | 1595.0 | 1579.2 | 1540.5 | 1512.9 | 1447.4 | 1401.7 | 1335.4 | 1158.0 | 930.0  | 574.2  | 118.3  |
| 32.5° | 1803.2 | 1782.7 | 1726.7 | 1688.8 | 1628.1 | 1587.1 | 1526.3 | 1318.9 | 1049.1 | 665.7  | 139.6  |
| 35°   | 1991.7 | 1969.6 | 1878.9 | 1821.3 | 1790.6 | 1755.9 | 1694.3 | 1502.7 | 1177.7 | 763.6  | 164.1  |
| 37.5° | 2151.1 | 2129.0 | 2012.2 | 1921.5 | 1902.6 | 1890.8 | 1841.1 | 1658.1 | 1323.6 | 874.0  | 192.5  |
| 40°   | 2240.2 | 2226.0 | 2125.0 | 2022.5 | 1986.2 | 1972.0 | 1935.7 | 1788.2 | 1486.1 | 984.4  | 225.6  |
| 42.5° | 2267.8 | 2259.1 | 2177.1 | 2126.6 | 2060.3 | 2031.9 | 1988.6 | 1887.6 | 1625.7 | 1108.3 | 263.5  |
| 45°   | 2252.8 | 2243.3 | 2183.4 | 2195.2 | 2140.0 | 2084.8 | 2025.6 | 1955.4 | 1743.2 | 1254.2 | 310.8  |
| 47.5° | 2188.9 | 2185.8 | 2144.7 | 2211.8 | 2205.5 | 2142.4 | 2069.0 | 2000.4 | 1844.2 | 1395.4 | 369.9  |
| 50°   | 2032.7 | 2031.2 | 2050.1 | 2188.9 | 2248.9 | 2189.7 | 2116.3 | 2040.6 | 1924.7 | 1536.6 | 445.7  |
| 52.5° | 1822.1 | 1833.2 | 1928.6 | 2146.3 | 2261.5 | 2226.8 | 2163.7 | 2086.4 | 1990.9 | 1677.8 | 547.4  |
| 55°   | 1710.9 | 1720.4 | 1845.8 | 2099.8 | 2259.1 | 2248.9 | 2211.8 | 2130.5 | 2051.7 | 1793.7 | 683.1  |
| 57.5° | 1795.3 | 1785.1 | 1842.6 | 2093.5 | 2248.9 | 2267.8 | 2246.5 | 2165.3 | 2106.9 | 1896.3 | 870.8  |
| 60°   | 1955.4 | 1952.3 | 1959.4 | 2138.4 | 2270.2 | 2298.6 | 2283.6 | 2188.9 | 2161.3 | 1974.4 | 1077.5 |
| 62.5° | 2117.1 | 2108.5 | 2115.6 | 2262.3 | 2344.3 | 2364.0 | 2345.9 | 2227.6 | 2203.9 | 2031.2 | 1301.5 |
| 65°   | 2197.6 | 2191.3 | 2224.4 | 2386.9 | 2450.0 | 2463.4 | 2439.8 | 2289.9 | 2211.0 | 2060.3 | 1442.7 |
| 67.5° | 2187.3 | 2185.8 | 2263.1 | 2474.5 | 2538.4 | 2546.2 | 2526.5 | 2352.2 | 2181.0 | 2059.6 | 1457.7 |
| 69°   | 2139.2 | 2136.1 | 2237.8 | 2483.1 | 2566.8 | 2572.3 | 2539.9 | 2320.6 | 2105.3 | 2006.7 | 1351.2 |
| 70°   | 2082.4 | 2085.6 | 2200.7 | 2467.4 | 2567.5 | 2559.7 | 2484.7 | 2275.7 | 2047.7 | 1946.0 | 1215.5 |
| 72.5° | 1871.0 | 1890.8 | 2048.5 | 2364.0 | 2459.5 | 2371.1 | 2273.3 | 2128.2 | 1938.1 | 1658.8 | 848.7  |
| 75°   | 1565.0 | 1592.6 | 1796.1 | 2149.5 | 2114.8 | 2070.6 | 2058.8 | 1948.3 | 1755.9 | 1102.0 | 603.4  |
| 77.5° | 765.1  | 856.6  | 1274.7 | 1651.0 | 1735.4 | 1780.3 | 1763.8 | 1610.7 | 1411.2 | 541.1  | 393.6  |
| 80°   | 40.2   | 41.8   | 67.0   | 157.8  | 803.8  | 1022.3 | 1257.3 | 1229.7 | 1068.0 | 246.9  | 207.5  |
| 82.5° | 21.3   | 21.3   | 23.7   | 27.6   | 32.3   | 38.7   | 102.5  | 704.4  | 635.0  | 127.0  | 77.3   |
| 85°   | 11.8   | 11.8   | 14.2   | 18.9   | 24.5   | 28.4   | 32.3   | 42.6   | 136.5  | 45.8   | 12.6   |
| 87.5° | 5.5    | 7.1    | 9.5    | 13.4   | 17.4   | 22.1   | 25.2   | 31.6   | 40.2   | 38.7   | 2.4    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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CATALOG NUMBER: GPC-SA1B-735-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 30.8  | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 |
| 2.5°  | 30.8  | 29.2 | 26.8 | 25.2 | 24.5 | 22.9 | 21.3 | 20.5 | 19.7 | 18.9 | 19.7 |
| 5°    | 30.8  | 28.4 | 24.5 | 22.1 | 20.5 | 18.1 | 16.6 | 15.8 | 15.0 | 14.2 | 14.2 |
| 7.5°  | 30.8  | 26.8 | 22.1 | 18.9 | 16.6 | 15.0 | 12.6 | 11.8 | 11.0 | 10.3 | 10.3 |
| 10°   | 31.6  | 25.2 | 19.7 | 16.6 | 14.2 | 11.8 | 10.3 | 8.7  | 7.9  | 7.9  | 7.9  |
| 12.5° | 31.6  | 23.7 | 17.4 | 14.2 | 11.8 | 9.5  | 7.1  | 5.5  | 4.7  | 4.7  | 4.7  |
| 15°   | 31.6  | 22.1 | 15.8 | 11.8 | 9.5  | 7.1  | 3.9  | 2.4  | 1.6  | 1.6  | 0.8  |
| 17.5° | 32.3  | 21.3 | 14.2 | 10.3 | 7.1  | 3.9  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 20°   | 33.9  | 20.5 | 12.6 | 8.7  | 4.7  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 22.5° | 35.5  | 19.7 | 11.0 | 6.3  | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 25°   | 38.7  | 19.7 | 10.3 | 5.5  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 27.5° | 41.8  | 19.7 | 7.9  | 3.2  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 44.2  | 19.7 | 7.1  | 2.4  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 47.3  | 19.7 | 6.3  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 49.7  | 18.9 | 4.7  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 52.1  | 18.1 | 3.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 55.2  | 17.4 | 3.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 58.4  | 15.8 | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 62.3  | 15.0 | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 67.8  | 14.2 | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 75.7  | 14.2 | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 89.1  | 14.2 | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 111.2 | 14.2 | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 149.9 | 14.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 225.6 | 14.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 348.6 | 15.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 533.2 | 18.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 676.0 | 22.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 69°   | 610.5 | 21.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 517.5 | 16.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 287.9 | 8.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 149.9 | 3.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 63.9  | 2.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 18.9  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 6.3   | 1.6  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 2.4   | 1.6  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 1.6   | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 90°   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |



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



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-5

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-735-U-5WQ

Data in this report applies to families of products including GSS-SB1A-735-U-5WQ

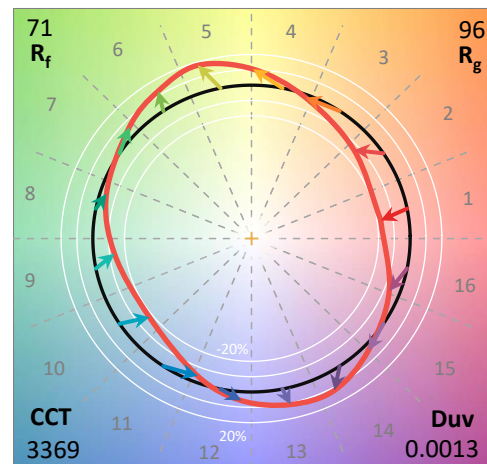
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-5  
 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-735-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3500K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3369  
 CIE  $u'$ : 0.2386  
 CIE  $v'$ : 0.5156  
 Duv: 0.0013  
 CIE x: 0.4143  
 CIE y: 0.3980  
 CIE z: 0.1877  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 43.80166  
 R<sub>f</sub>: 71.4  
 R<sub>g</sub>: 96

CRI (Ra): 70.1  
 R1: 66.6  
 R2: 77.6  
 R3: 88.5  
 R4: 69.5  
 R5: 66.4  
 R6: 69.6  
 R7: 77.5  
 R8: 44.9  
 R9: -40.2  
 R10: 49.1  
 R11: 66.3  
 R12: 45.7  
 R13: 68.0  
 R14: 93.4  
 R15: 57.6



### Test Conditions

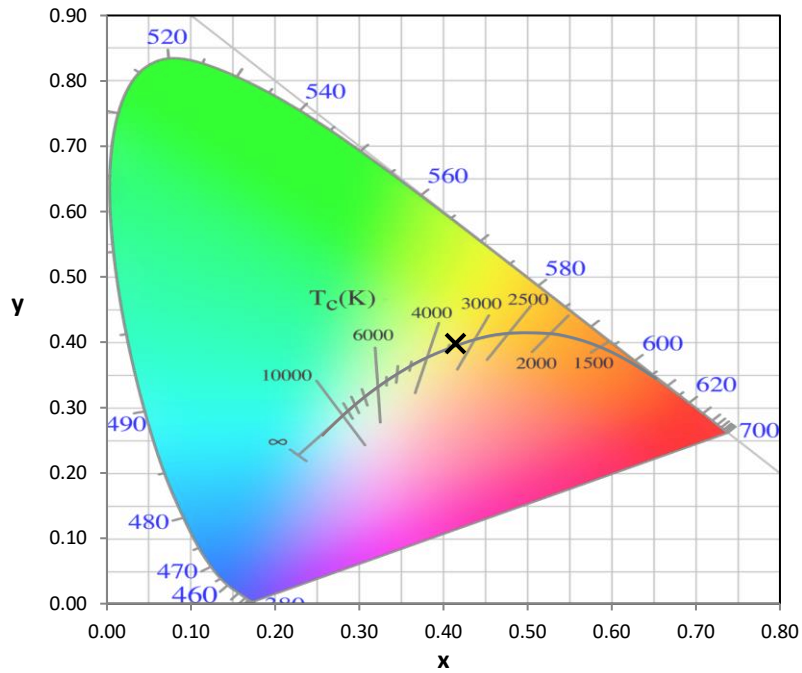
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-5

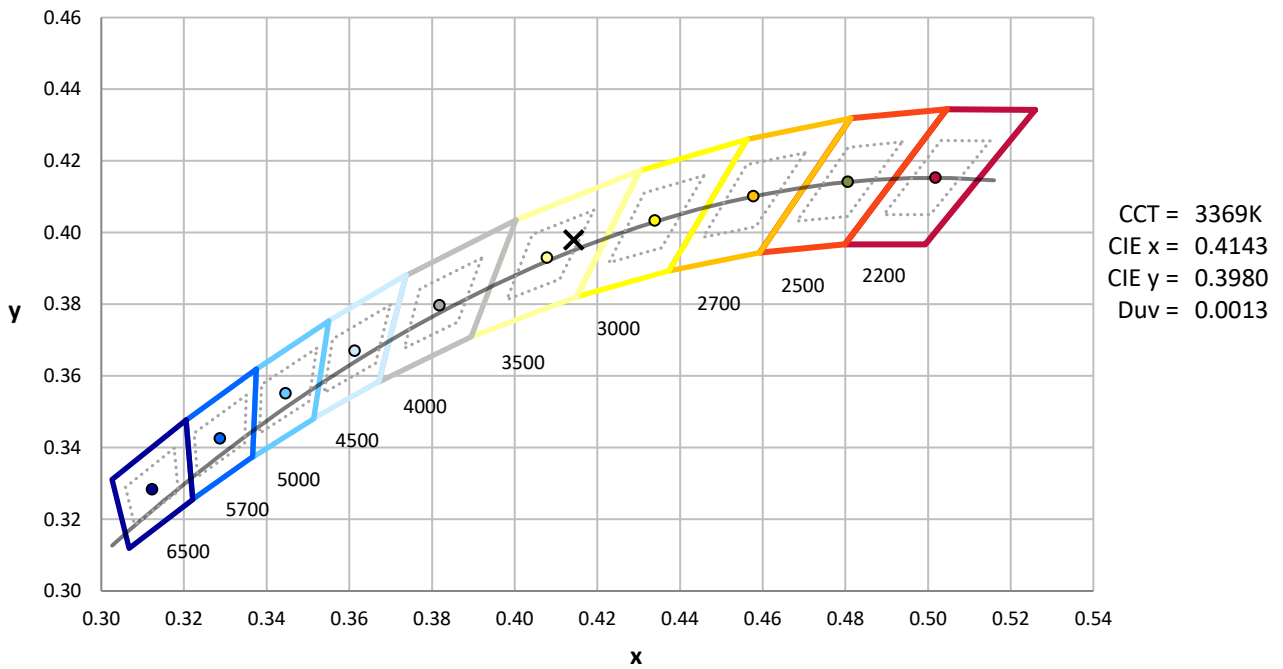
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



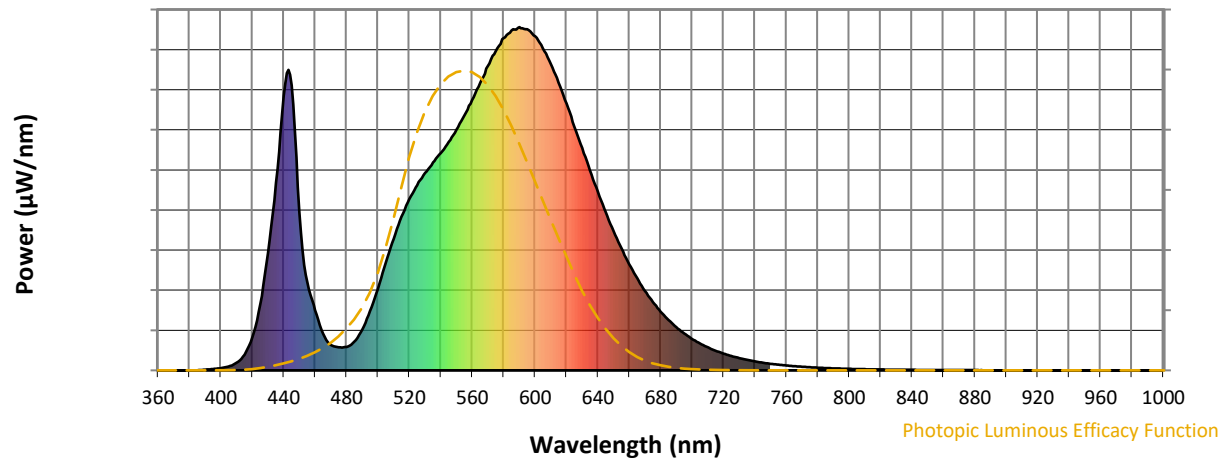
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength

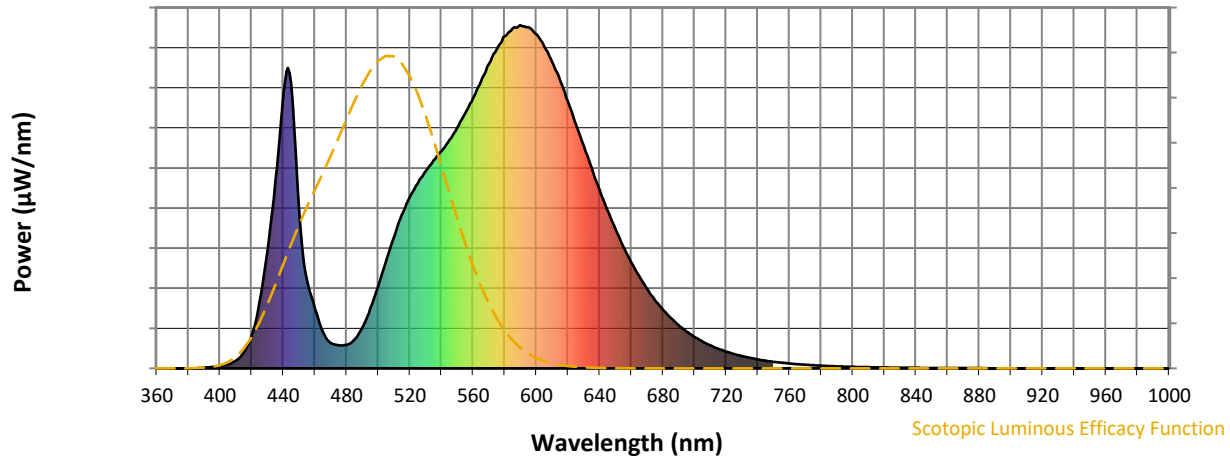


### Photopic Lumens: NR

| $\lambda$<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               | 119                                    | NR                             | 620               | 778                                    | NR                             | 750               | 19                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 173                                    | NR                             | 625               | 711                                    | NR                             | 755               | 16                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 239                                    | NR                             | 630               | 648                                    | NR                             | 760               | 14                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 313                                    | NR                             | 635               | 582                                    | NR                             | 765               | 12                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 383                                    | NR                             | 640               | 520                                    | NR                             | 770               | 11                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 448                                    | NR                             | 645               | 460                                    | NR                             | 775               | 9                                      | NR                             | 905               | 0                                      | NR                             |
| 390               | 2                                      | NR                             | 520               | 500                                    | NR                             | 650               | 406                                    | NR                             | 780               | 8                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 4                                      | NR                             | 525               | 539                                    | NR                             | 655               | 355                                    | NR                             | 785               | 7                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 6                                      | NR                             | 530               | 575                                    | NR                             | 660               | 309                                    | NR                             | 790               | 6                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 11                                     | NR                             | 535               | 606                                    | NR                             | 665               | 269                                    | NR                             | 795               | 5                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 22                                     | NR                             | 540               | 633                                    | NR                             | 670               | 231                                    | NR                             | 800               | 4                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 45                                     | NR                             | 545               | 666                                    | NR                             | 675               | 199                                    | NR                             | 805               | 4                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 96                                     | NR                             | 550               | 701                                    | NR                             | 680               | 171                                    | NR                             | 810               | 3                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 193                                    | NR                             | 555               | 743                                    | NR                             | 685               | 147                                    | NR                             | 815               | 3                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 341                                    | NR                             | 560               | 788                                    | NR                             | 690               | 126                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 547                                    | NR                             | 565               | 837                                    | NR                             | 695               | 107                                    | NR                             | 825               | 2                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 799                                    | NR                             | 570               | 887                                    | NR                             | 700               | 92                                     | NR                             | 830               | 2                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 831                                    | NR                             | 575               | 931                                    | NR                             | 705               | 78                                     | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 461                                    | NR                             | 580               | 967                                    | NR                             | 710               | 67                                     | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 256                                    | NR                             | 585               | 990                                    | NR                             | 715               | 57                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 176                                    | NR                             | 590               | 1000                                   | NR                             | 720               | 49                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 107                                    | NR                             | 595               | 994                                    | NR                             | 725               | 42                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 74                                     | NR                             | 600               | 973                                    | NR                             | 730               | 36                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 67                                     | NR                             | 605               | 938                                    | NR                             | 735               | 31                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 68                                     | NR                             | 610               | 892                                    | NR                             | 740               | 26                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 84                                     | NR                             | 615               | 838                                    | NR                             | 745               | 22                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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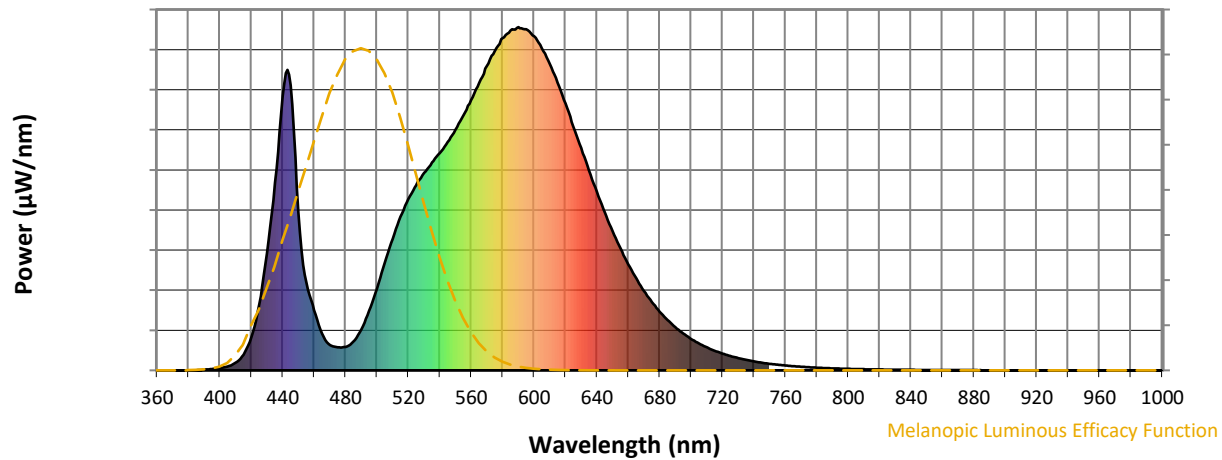
### Scotopic Flux vs. Wavelength


**Scotopic Lumens: NR**
**S/P: 1.29**

| 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       | 119                         | NR               | 620       | 778                         | NR               | 750       | 19                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 173                         | NR               | 625       | 711                         | NR               | 755       | 16                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 239                         | NR               | 630       | 648                         | NR               | 760       | 14                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 313                         | NR               | 635       | 582                         | NR               | 765       | 12                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 383                         | NR               | 640       | 520                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 448                         | NR               | 645       | 460                         | NR               | 775       | 9                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 500                         | NR               | 650       | 406                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 539                         | NR               | 655       | 355                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 575                         | NR               | 660       | 309                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 606                         | NR               | 665       | 269                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 22                          | NR               | 540       | 633                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 45                          | NR               | 545       | 666                         | NR               | 675       | 199                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 96                          | NR               | 550       | 701                         | NR               | 680       | 171                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 193                         | NR               | 555       | 743                         | NR               | 685       | 147                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 341                         | NR               | 560       | 788                         | NR               | 690       | 126                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 547                         | NR               | 565       | 837                         | NR               | 695       | 107                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 799                         | NR               | 570       | 887                         | NR               | 700       | 92                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 831                         | NR               | 575       | 931                         | NR               | 705       | 78                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 461                         | NR               | 580       | 967                         | NR               | 710       | 67                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 256                         | NR               | 585       | 990                         | NR               | 715       | 57                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 176                         | NR               | 590       | 1000                        | NR               | 720       | 49                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 994                         | NR               | 725       | 42                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 74                          | NR               | 600       | 973                         | NR               | 730       | 36                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 67                          | NR               | 605       | 938                         | NR               | 735       | 31                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 68                          | NR               | 610       | 892                         | NR               | 740       | 26                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 84                          | NR               | 615       | 838                         | NR               | 745       | 22                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.36

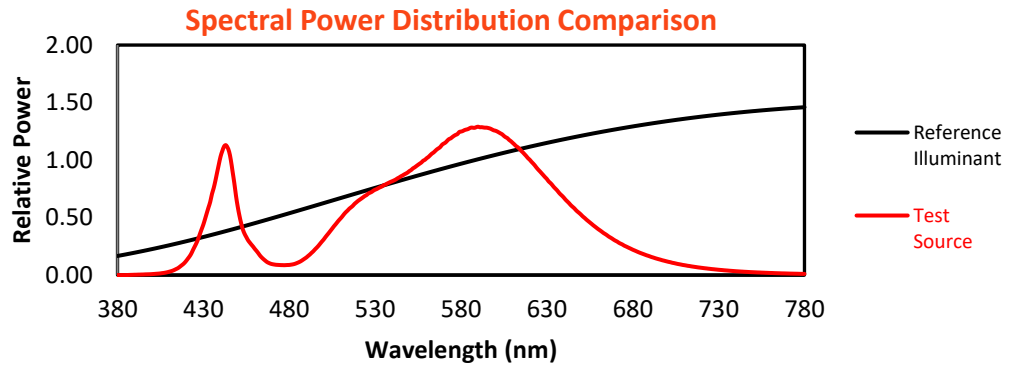
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 119                         | NR               | 620       | 778                         | NR               | 750       | 19                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 173                         | NR               | 625       | 711                         | NR               | 755       | 16                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 239                         | NR               | 630       | 648                         | NR               | 760       | 14                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 313                         | NR               | 635       | 582                         | NR               | 765       | 12                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 383                         | NR               | 640       | 520                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 448                         | NR               | 645       | 460                         | NR               | 775       | 9                           | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 500                         | NR               | 650       | 406                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 539                         | NR               | 655       | 355                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 575                         | NR               | 660       | 309                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 606                         | NR               | 665       | 269                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 22                          | NR               | 540       | 633                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 45                          | NR               | 545       | 666                         | NR               | 675       | 199                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 96                          | NR               | 550       | 701                         | NR               | 680       | 171                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 193                         | NR               | 555       | 743                         | NR               | 685       | 147                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 341                         | NR               | 560       | 788                         | NR               | 690       | 126                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 547                         | NR               | 565       | 837                         | NR               | 695       | 107                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 799                         | NR               | 570       | 887                         | NR               | 700       | 92                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 831                         | NR               | 575       | 931                         | NR               | 705       | 78                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 461                         | NR               | 580       | 967                         | NR               | 710       | 67                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 256                         | NR               | 585       | 990                         | NR               | 715       | 57                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 176                         | NR               | 590       | 1000                        | NR               | 720       | 49                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 107                         | NR               | 595       | 994                         | NR               | 725       | 42                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 74                          | NR               | 600       | 973                         | NR               | 730       | 36                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 67                          | NR               | 605       | 938                         | NR               | 735       | 31                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 68                          | NR               | 610       | 892                         | NR               | 740       | 26                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 84                          | NR               | 615       | 838                         | NR               | 745       | 22                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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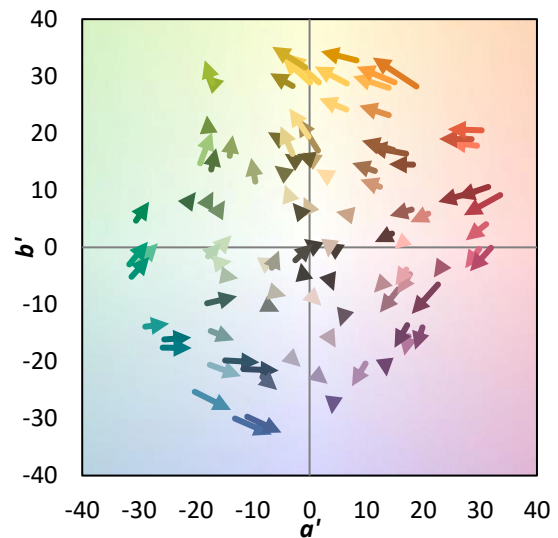
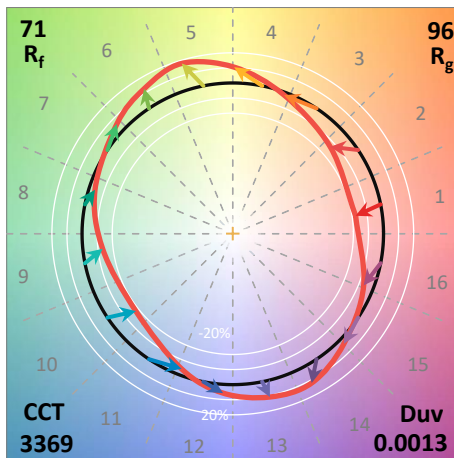
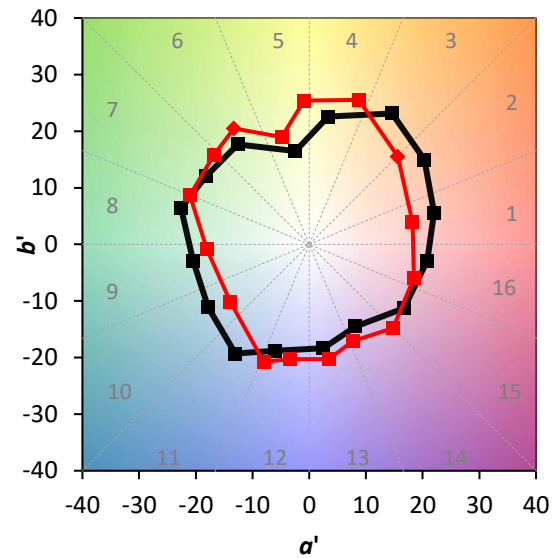
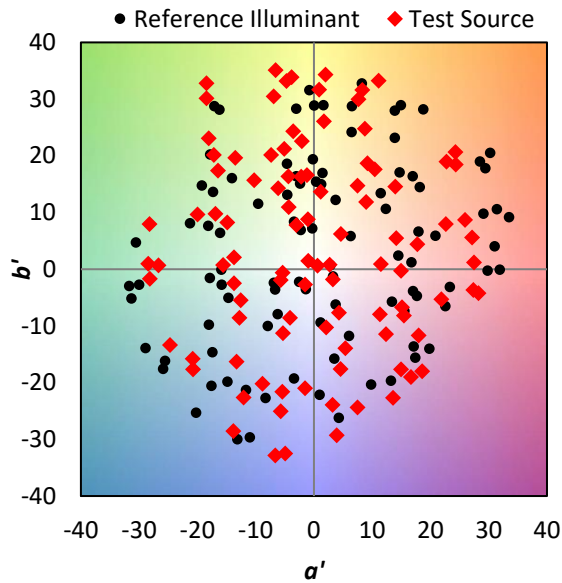
TM-30-18

### Summary

$R_f = 71.4$   
 $R_g = 96$   
 CIE  $R_a = 70.1$   
 $R_g = -40.2$



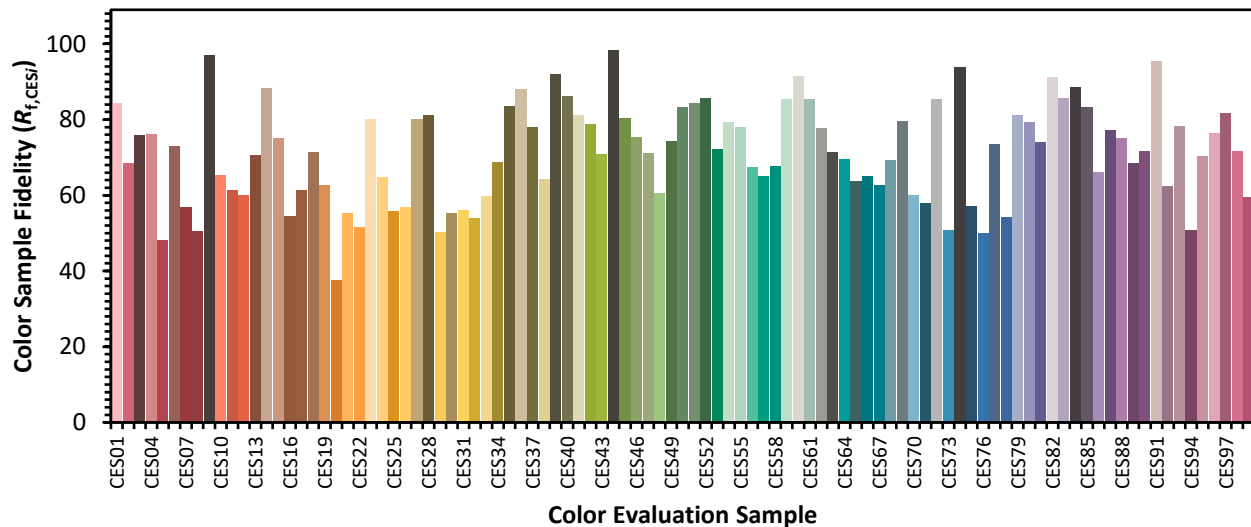
### Color Vector Graphics



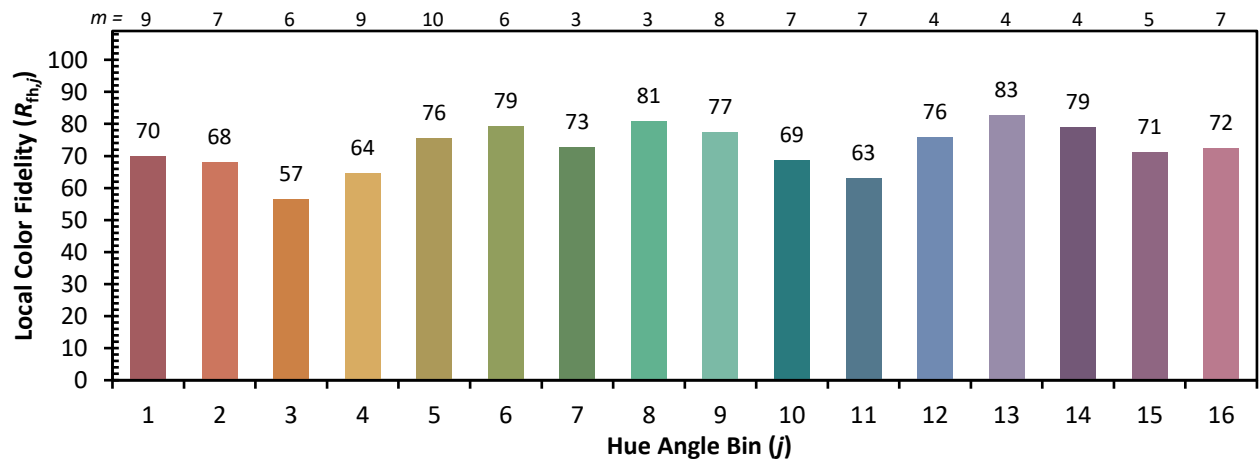
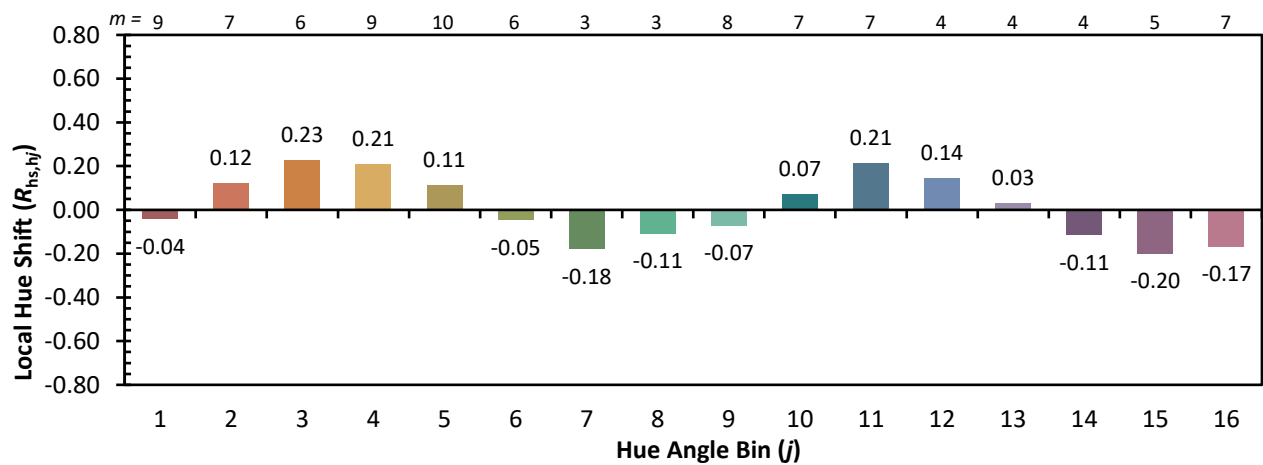
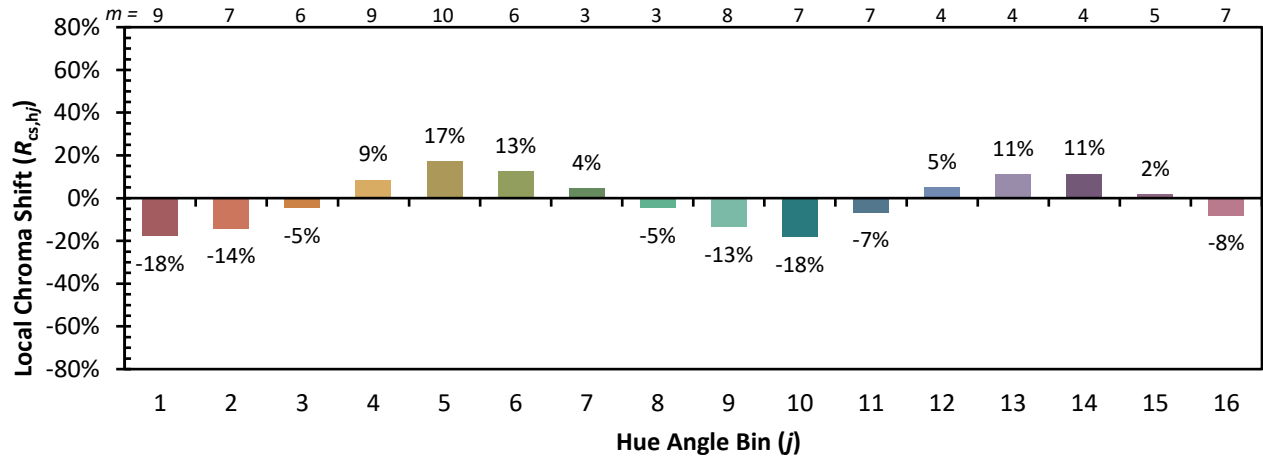


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

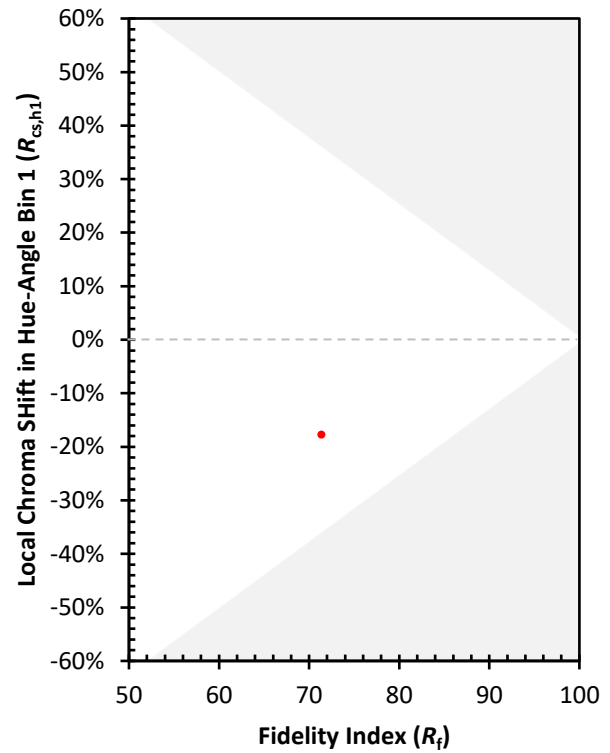
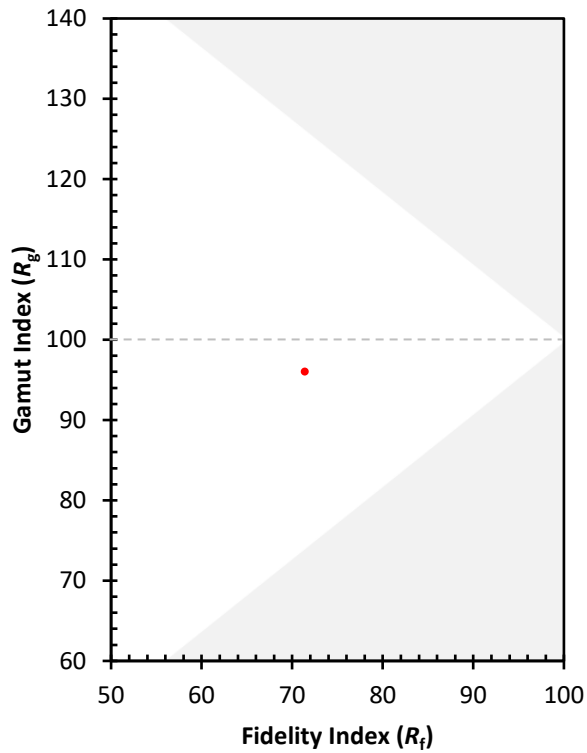
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 57 | CES51 = 84 | CES76 = 50 |
| CES02 = 62 | CES27 = 80 | CES52 = 86 | CES77 = 74 |
| CES03 = 31 | CES28 = 81 | CES53 = 72 | CES78 = 54 |
| CES04 = 70 | CES29 = 50 | CES54 = 79 | CES79 = 81 |
| CES05 = 48 | CES30 = 55 | CES55 = 78 | CES80 = 79 |
| CES06 = 51 | CES31 = 56 | CES56 = 67 | CES81 = 74 |
| CES07 = 40 | CES32 = 54 | CES57 = 65 | CES82 = 91 |
| CES08 = 39 | CES33 = 60 | CES58 = 68 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 85 | CES84 = 89 |
| CES10 = 75 | CES35 = 83 | CES60 = 91 | CES85 = 83 |
| CES11 = 58 | CES36 = 88 | CES61 = 85 | CES86 = 66 |
| CES12 = 64 | CES37 = 78 | CES62 = 78 | CES87 = 77 |
| CES13 = 43 | CES38 = 64 | CES63 = 71 | CES88 = 75 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 68 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 72 |
| CES16 = 47 | CES41 = 81 | CES66 = 65 | CES91 = 95 |
| CES17 = 50 | CES42 = 79 | CES67 = 63 | CES92 = 62 |
| CES18 = 56 | CES43 = 71 | CES68 = 69 | CES93 = 78 |
| CES19 = 72 | CES44 = 98 | CES69 = 80 | CES94 = 51 |
| CES20 = 65 | CES45 = 80 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 75 | CES71 = 58 | CES96 = 76 |
| CES22 = 79 | CES47 = 71 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 61 | CES73 = 51 | CES98 = 72 |
| CES24 = 91 | CES49 = 74 | CES74 = 94 | CES99 = 60 |
| CES25 = 72 | CES50 = 83 | CES75 = 57 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)