

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: P386823

Luminaire Tested: **GWC-SA2C-730-U-T4FT**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386823  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-16)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GWC-SA2C-730-U-T4FT  
Description: GALLEON WALL LUMINAIRE  
(2) 70 CRI, 3000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
FORWARD THROW OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13523 lumens  
Efficiency: N/A  
Efficacy: 119.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B2 - U0 - G3

Input Watts (W): 113  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

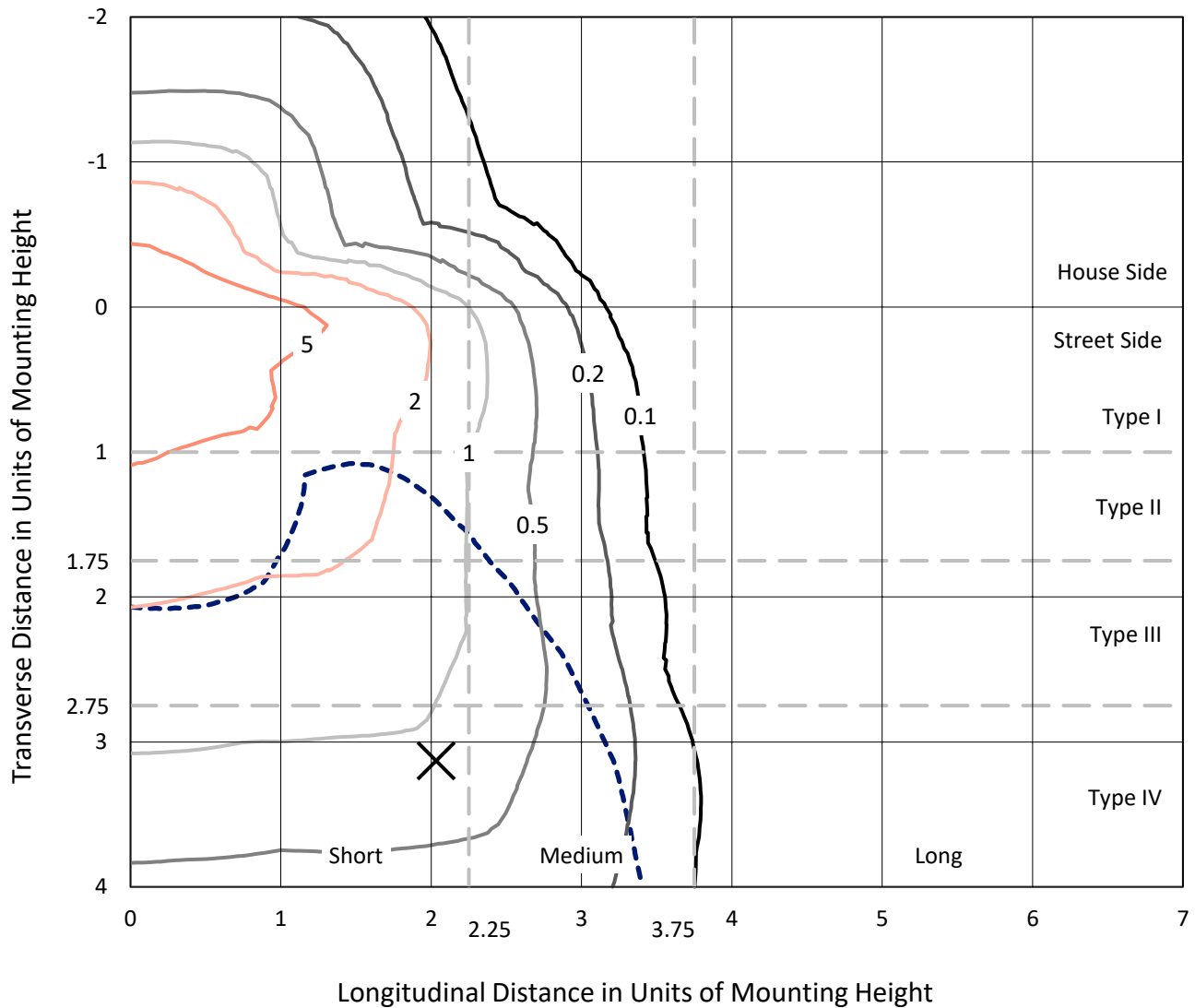


REPORT NUMBER: P386823

CATALOG NUMBER: GWC-SA2C-730-U-T4FT

## Iso-Footcandle Lines of Horizontal Illumination

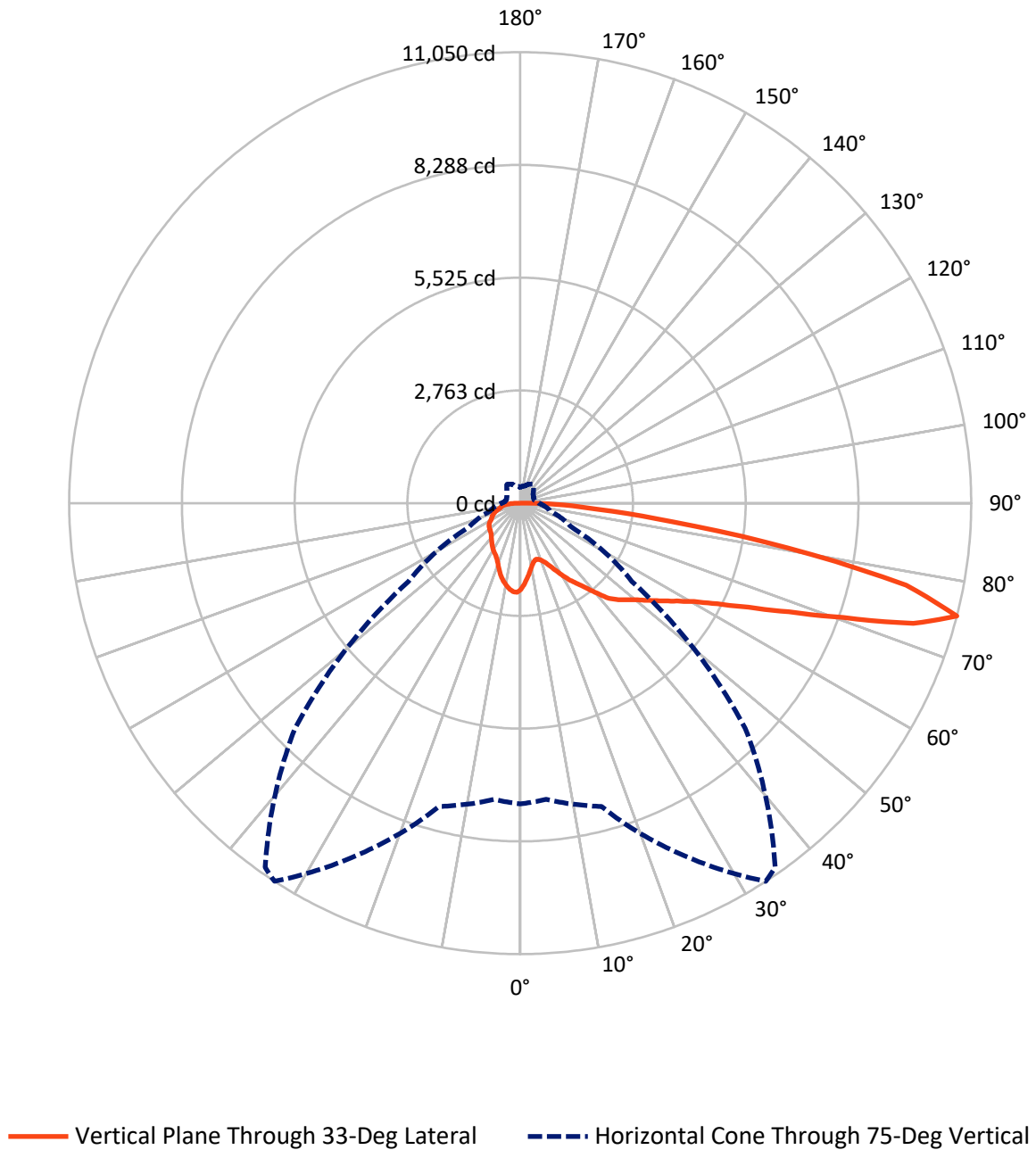
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 9.4 fc  
 Type IV - Short - N/A

REPORT NUMBER: P386823  
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## Luminous Intensity Polar Plot



REPORT NUMBER: P386823

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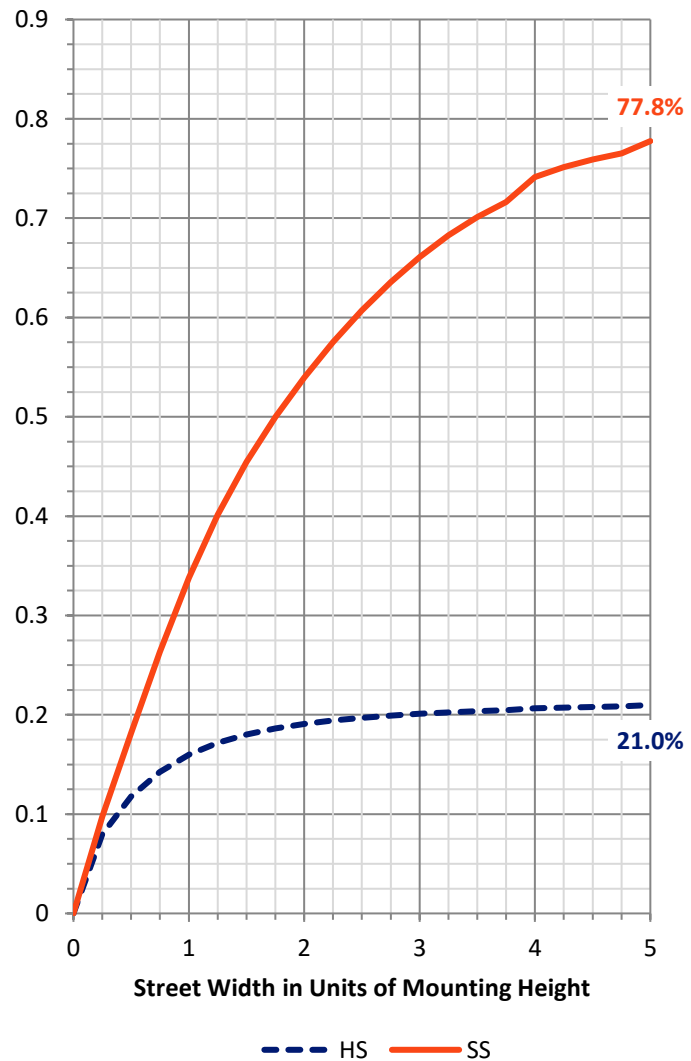
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2903.8   | 0.0    | 2903.8  |
|                    | % Fixture | 21.5     | 0.0    | 21.5    |
| <b>Street Side</b> | Lumens    | 10619.3  | 0.0    | 10619.3 |
|                    | % Fixture | 78.5     | 0.0    | 78.5    |
| <b>Total</b>       | Lumens    | 13523.0  | 0.0    | 13523.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 191.2   | 1.4       |
| 10°-20°   | 517.7   | 3.8       |
| 20°-30°   | 845.5   | 6.3       |
| 30°-40°   | 1259.2  | 9.3       |
| 40°-50°   | 1806.1  | 13.4      |
| 50°-60°   | 2479.4  | 18.3      |
| 60°-70°   | 3104.2  | 23.0      |
| 70°-80°   | 2808.2  | 20.8      |
| 80°-90°   | 511.5   | 3.8       |
| 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°    | 13523.0 | 100.0     |
| 0°-180°   | 13523.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P386823

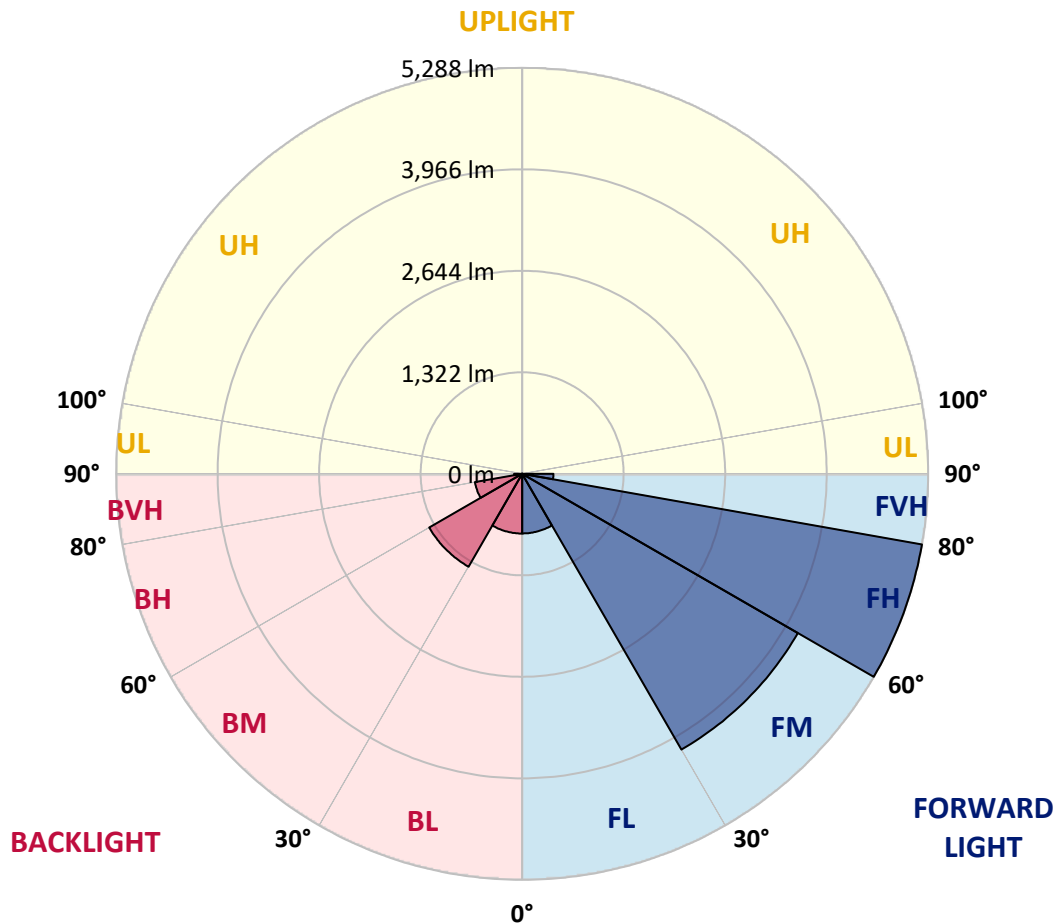
CATALOG NUMBER: GWC-SA2C-730-U-T4FT

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 776.7  | 5.7       |                         |      |         |
| FM   | (30°-60°)   | 4147.2 | 30.7      |                         |      |         |
| FH   | (60°-80°)   | 5288.0 | 39.1      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 407.4  | 3.0       |                         |      | G3/500  |
| BL   | (0°-30°)    | 777.8  | 5.8       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1397.5 | 10.3      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 624.4  | 4.6       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 104.1  | 0.8       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**

Type IV Short



REPORT NUMBER: P386823

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 33°     | 35°     | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|---------|---------|--------|--------|--------|--------|--------|
| 0°    | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7  | 2113.7  | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 |
| 2.5°  | 1962.8 | 1955.4 | 1969.4 | 1971.2 | 1983.4  | 1988.1  | 2004.9 | 2031.0 | 2052.5 | 2077.3 | 2099.7 |
| 5°    | 1784.9 | 1779.7 | 1799.3 | 1813.4 | 1840.0  | 1851.2  | 1890.9 | 1946.5 | 1996.0 | 2052.1 | 2103.0 |
| 7.5°  | 1615.8 | 1613.0 | 1634.9 | 1666.7 | 1697.5  | 1712.9  | 1781.6 | 1862.4 | 1945.1 | 2035.7 | 2113.7 |
| 10°   | 1473.3 | 1472.4 | 1493.4 | 1524.7 | 1570.0  | 1587.3  | 1676.0 | 1782.5 | 1898.4 | 2023.1 | 2131.9 |
| 12.5° | 1393.4 | 1396.7 | 1406.5 | 1432.7 | 1474.7  | 1492.0  | 1590.5 | 1715.7 | 1859.1 | 2018.9 | 2158.6 |
| 15°   | 1413.0 | 1418.2 | 1401.4 | 1400.4 | 1430.3  | 1443.9  | 1536.4 | 1668.1 | 1831.1 | 2025.9 | 2197.3 |
| 17.5° | 1496.7 | 1497.6 | 1453.2 | 1425.2 | 1443.4  | 1450.4  | 1519.5 | 1641.0 | 1814.8 | 2041.8 | 2245.9 |
| 20°   | 1614.4 | 1612.0 | 1533.6 | 1486.8 | 1496.7  | 1498.5  | 1543.4 | 1641.5 | 1813.4 | 2069.3 | 2309.0 |
| 22.5° | 1770.4 | 1753.1 | 1647.5 | 1584.0 | 1581.7  | 1578.9  | 1604.6 | 1676.0 | 1833.9 | 2114.2 | 2384.2 |
| 25°   | 1974.1 | 1957.7 | 1812.4 | 1725.5 | 1706.9  | 1699.9  | 1703.6 | 1749.8 | 1874.6 | 2162.3 | 2468.3 |
| 27.5° | 2200.6 | 2172.1 | 2032.0 | 1909.1 | 1870.4  | 1860.5  | 1838.1 | 1854.0 | 1918.9 | 2208.5 | 2568.2 |
| 30°   | 2390.3 | 2374.8 | 2252.5 | 2106.7 | 2060.9  | 2046.9  | 1988.1 | 1970.8 | 1982.9 | 2271.6 | 2694.4 |
| 32.5° | 2496.3 | 2486.0 | 2411.7 | 2294.0 | 2251.5  | 2231.9  | 2148.8 | 2114.2 | 2085.7 | 2371.1 | 2865.3 |
| 35°   | 2624.8 | 2618.2 | 2573.4 | 2487.9 | 2424.8  | 2404.3  | 2339.8 | 2303.8 | 2230.5 | 2508.0 | 3086.3 |
| 37.5° | 2788.2 | 2781.2 | 2782.2 | 2713.0 | 2637.8  | 2618.7  | 2576.2 | 2538.3 | 2418.3 | 2687.8 | 3326.4 |
| 40°   | 2973.2 | 2959.7 | 2954.5 | 2951.3 | 2903.6  | 2892.9  | 2870.5 | 2819.1 | 2653.7 | 2902.7 | 3563.2 |
| 42.5° | 3251.6 | 3203.5 | 3100.7 | 3139.5 | 3186.7  | 3181.1  | 3199.3 | 3125.5 | 2915.3 | 3156.8 | 3794.4 |
| 45°   | 3520.2 | 3441.3 | 3263.8 | 3272.2 | 3375.4  | 3406.7  | 3543.1 | 3490.8 | 3198.8 | 3435.2 | 4033.6 |
| 47.5° | 3642.6 | 3582.8 | 3431.9 | 3432.4 | 3534.7  | 3599.6  | 3898.6 | 3861.2 | 3496.9 | 3751.4 | 4325.5 |
| 50°   | 3779.5 | 3719.7 | 3584.2 | 3635.1 | 3724.4  | 3793.5  | 4241.9 | 4222.8 | 3780.4 | 4097.6 | 4675.4 |
| 52.5° | 3929.0 | 3827.6 | 3741.6 | 3832.7 | 3957.9  | 4038.3  | 4585.7 | 4533.4 | 4040.6 | 4446.1 | 5077.6 |
| 55°   | 3930.8 | 3903.3 | 3968.7 | 4035.5 | 4222.8  | 4321.3  | 4945.9 | 4807.6 | 4252.7 | 4788.5 | 5405.1 |
| 57.5° | 4154.6 | 4109.7 | 4248.5 | 4279.3 | 4524.1  | 4635.2  | 5304.2 | 5046.3 | 4468.5 | 5051.0 | 5581.6 |
| 60°   | 4450.7 | 4412.4 | 4525.9 | 4607.2 | 4896.8  | 5045.4  | 5686.7 | 5291.5 | 4638.0 | 5249.0 | 5573.2 |
| 62.5° | 4962.2 | 4918.8 | 4917.4 | 5031.4 | 5421.4  | 5594.2  | 6116.0 | 5532.1 | 4705.3 | 5288.3 | 5335.5 |
| 65°   | 5711.0 | 5641.9 | 5511.6 | 5565.7 | 6145.9  | 6318.3  | 6595.7 | 5706.3 | 4616.6 | 5078.1 | 4723.1 |
| 67.5° | 6439.7 | 6437.4 | 6277.2 | 6388.3 | 7102.6  | 7240.8  | 7142.3 | 5723.6 | 4339.6 | 4346.1 | 3636.5 |
| 70°   | 7166.1 | 7175.4 | 7148.3 | 7535.1 | 8395.1  | 8539.0  | 7724.3 | 5491.5 | 3716.9 | 3138.6 | 2178.7 |
| 72.5° | 7741.6 | 7739.3 | 7875.7 | 8873.0 | 10072.5 | 10040.3 | 8214.8 | 4788.0 | 2668.7 | 1694.2 | 1041.2 |
| 75°   | 7368.8 | 7287.5 | 7693.9 | 9535.3 | 11050.2 | 10892.8 | 7797.6 | 3339.9 | 1385.0 | 771.2  | 560.5  |
| 77.5° | 4806.2 | 4883.3 | 5479.8 | 7877.1 | 9665.7  | 9474.1  | 5720.8 | 1558.3 | 652.6  | 505.9  | 406.4  |
| 80°   | 1740.5 | 1821.8 | 2565.9 | 4461.9 | 6659.3  | 6628.0  | 2817.2 | 640.4  | 441.4  | 382.1  | 296.2  |
| 82.5° | 598.8  | 628.7  | 1012.3 | 1981.5 | 3759.9  | 3900.0  | 1059.9 | 363.9  | 320.9  | 270.9  | 202.7  |
| 85°   | 235.0  | 269.1  | 462.9  | 953.4  | 1896.5  | 1910.5  | 429.3  | 217.7  | 223.3  | 177.5  | 111.2  |
| 87.5° | 89.2   | 108.4  | 221.4  | 442.8  | 866.0   | 795.5   | 153.7  | 103.7  | 127.1  | 105.6  | 52.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P386823

CATALOG NUMBER: GWC-SA2C-730-U-T4FT

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 | 2113.7 |
| 2.5°  | 2117.0 | 2126.8 | 2147.4 | 2161.4 | 2176.3 | 2180.5 | 2182.4 | 2186.1 | 2189.9 | 2188.5 | 2188.9 |
| 5°    | 2130.1 | 2149.2 | 2182.4 | 2196.4 | 2202.9 | 2195.5 | 2181.0 | 2169.3 | 2160.9 | 2156.2 | 2154.8 |
| 7.5°  | 2151.6 | 2178.7 | 2214.2 | 2211.8 | 2196.9 | 2163.7 | 2126.3 | 2098.3 | 2074.9 | 2066.5 | 2061.9 |
| 10°   | 2180.1 | 2211.8 | 2236.6 | 2209.9 | 2166.5 | 2109.0 | 2053.0 | 2009.6 | 1974.5 | 1961.0 | 1958.6 |
| 12.5° | 2216.5 | 2248.7 | 2253.4 | 2196.9 | 2124.9 | 2046.5 | 1970.3 | 1912.9 | 1860.5 | 1843.7 | 1840.0 |
| 15°   | 2263.7 | 2294.0 | 2265.1 | 2174.0 | 2073.5 | 1968.0 | 1869.4 | 1791.4 | 1736.3 | 1715.7 | 1708.3 |
| 17.5° | 2313.2 | 2342.1 | 2267.4 | 2136.1 | 2006.3 | 1875.0 | 1751.2 | 1671.4 | 1608.3 | 1584.5 | 1581.7 |
| 20°   | 2372.5 | 2385.6 | 2257.6 | 2082.0 | 1913.8 | 1754.5 | 1624.2 | 1549.0 | 1515.3 | 1498.5 | 1496.7 |
| 22.5° | 2445.8 | 2431.8 | 2235.2 | 2008.6 | 1796.5 | 1615.3 | 1509.3 | 1474.2 | 1465.8 | 1462.1 | 1463.5 |
| 25°   | 2523.4 | 2480.4 | 2202.0 | 1912.9 | 1648.5 | 1476.1 | 1425.2 | 1435.0 | 1446.2 | 1444.8 | 1444.8 |
| 27.5° | 2608.9 | 2529.9 | 2151.1 | 1785.8 | 1484.5 | 1362.1 | 1368.2 | 1404.2 | 1421.0 | 1420.5 | 1420.0 |
| 30°   | 2718.6 | 2586.0 | 2086.2 | 1633.1 | 1331.3 | 1281.8 | 1318.7 | 1362.6 | 1385.5 | 1384.5 | 1385.0 |
| 32.5° | 2853.6 | 2647.6 | 1997.9 | 1462.6 | 1220.6 | 1222.5 | 1265.0 | 1308.4 | 1335.0 | 1332.7 | 1333.2 |
| 35°   | 3011.5 | 2716.8 | 1878.3 | 1294.4 | 1147.2 | 1175.3 | 1208.9 | 1239.3 | 1264.5 | 1261.2 | 1258.0 |
| 37.5° | 3183.4 | 2784.5 | 1719.5 | 1144.0 | 1087.5 | 1131.4 | 1159.4 | 1164.5 | 1176.2 | 1167.8 | 1161.7 |
| 40°   | 3346.9 | 2836.4 | 1514.9 | 1020.7 | 1027.2 | 1094.0 | 1112.2 | 1091.7 | 1070.6 | 1067.8 | 1059.4 |
| 42.5° | 3489.4 | 2853.6 | 1307.9 | 922.1  | 963.7  | 1054.8 | 1066.0 | 1023.0 | 985.2  | 967.4  | 959.9  |
| 45°   | 3639.8 | 2859.7 | 1115.0 | 839.4  | 902.5  | 1019.7 | 1031.9 | 974.4  | 921.2  | 882.9  | 870.2  |
| 47.5° | 3836.5 | 2903.6 | 965.1  | 778.2  | 855.8  | 996.4  | 1013.7 | 935.6  | 866.5  | 811.9  | 800.2  |
| 50°   | 4093.8 | 2990.5 | 843.2  | 731.5  | 825.4  | 981.0  | 1000.6 | 897.8  | 821.7  | 755.8  | 744.1  |
| 52.5° | 4379.7 | 3070.4 | 744.6  | 693.7  | 796.0  | 953.9  | 983.8  | 870.7  | 779.6  | 704.0  | 691.3  |
| 55°   | 4579.7 | 3009.2 | 665.2  | 654.4  | 757.7  | 915.1  | 960.4  | 847.8  | 719.4  | 653.5  | 642.3  |
| 57.5° | 4618.0 | 2799.9 | 604.9  | 613.8  | 711.4  | 866.5  | 924.4  | 796.9  | 686.7  | 631.5  | 619.9  |
| 60°   | 4513.3 | 2508.4 | 560.1  | 576.4  | 661.9  | 805.3  | 857.2  | 760.9  | 655.4  | 608.2  | 598.4  |
| 62.5° | 4250.3 | 2209.9 | 526.9  | 542.8  | 615.7  | 743.2  | 815.1  | 723.1  | 623.6  | 581.6  | 571.8  |
| 65°   | 3719.2 | 1855.4 | 495.1  | 512.9  | 572.7  | 689.5  | 777.3  | 688.1  | 592.3  | 560.1  | 550.7  |
| 67.5° | 2807.4 | 1389.7 | 465.3  | 481.1  | 534.4  | 642.8  | 736.2  | 653.5  | 561.9  | 541.4  | 530.2  |
| 70°   | 1653.1 | 870.2  | 431.2  | 448.0  | 494.2  | 594.2  | 692.3  | 615.7  | 524.1  | 514.8  | 500.3  |
| 72.5° | 769.3  | 523.6  | 392.4  | 408.7  | 443.8  | 529.2  | 635.8  | 566.2  | 479.3  | 458.7  | 439.1  |
| 75°   | 459.2  | 383.0  | 346.6  | 361.1  | 385.8  | 460.1  | 564.7  | 515.7  | 436.8  | 409.7  | 389.1  |
| 77.5° | 343.3  | 292.9  | 296.2  | 311.6  | 331.7  | 402.7  | 500.3  | 476.0  | 404.1  | 383.0  | 369.0  |
| 80°   | 247.1  | 222.3  | 241.5  | 258.3  | 279.3  | 366.2  | 479.3  | 440.0  | 365.3  | 337.3  | 324.2  |
| 82.5° | 164.9  | 159.8  | 181.7  | 199.0  | 219.5  | 320.4  | 450.3  | 385.4  | 312.0  | 276.5  | 247.6  |
| 85°   | 91.1   | 96.2   | 122.4  | 129.9  | 147.6  | 225.6  | 369.0  | 309.7  | 235.0  | 189.2  | 180.8  |
| 87.5° | 37.8   | 44.4   | 65.9   | 63.5   | 78.5   | 134.5  | 242.9  | 186.8  | 149.5  | 111.6  | 86.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

INVUE

Report Number: SP1-2012-088-7

Luminaire Tested: WIS-SA-730-2A-U-SL3-HSS

Test Date: 01/20/2021

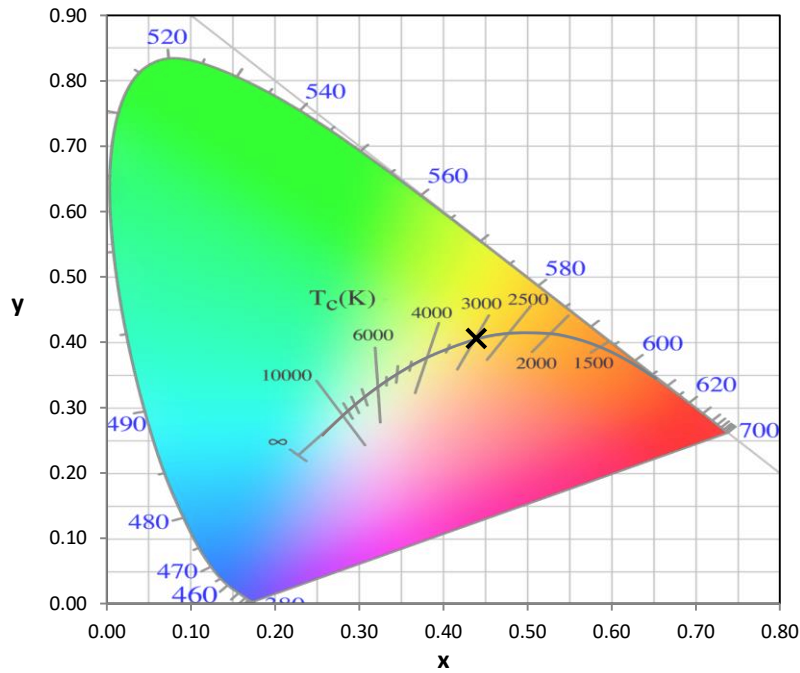


REPORT NUMBER: SP1-2012-088-7

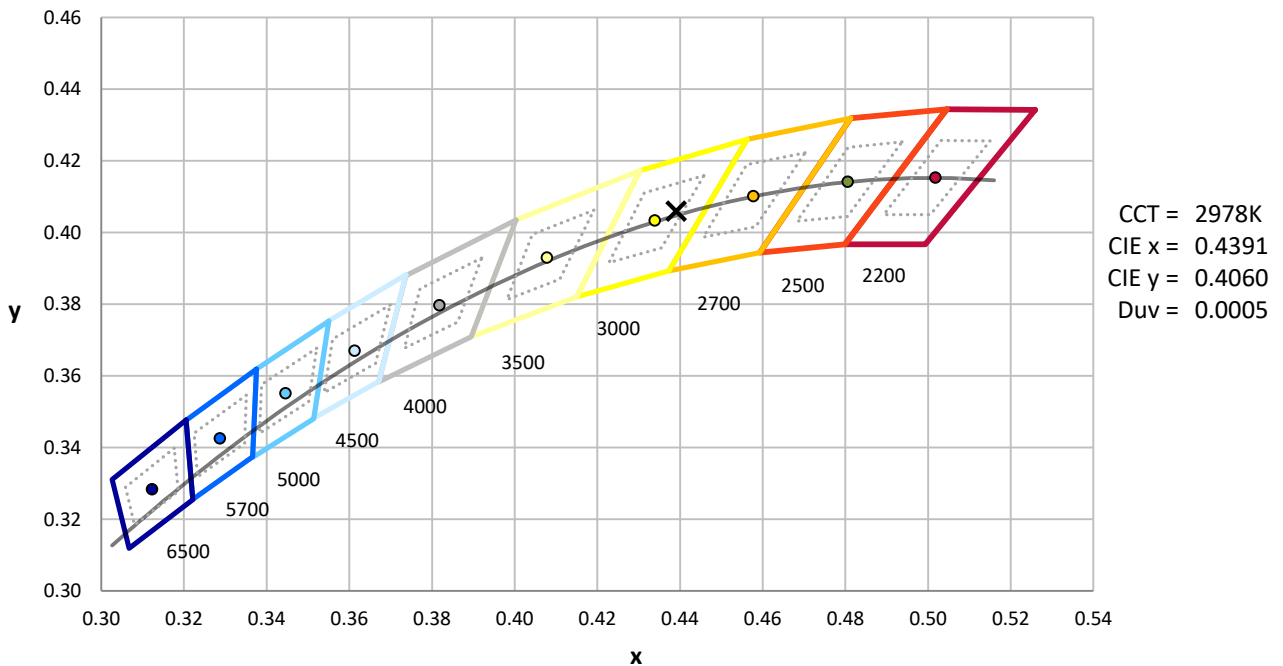
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 7/29/2020        | 1/29/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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**CIE 1931 Chromaticity Diagram**



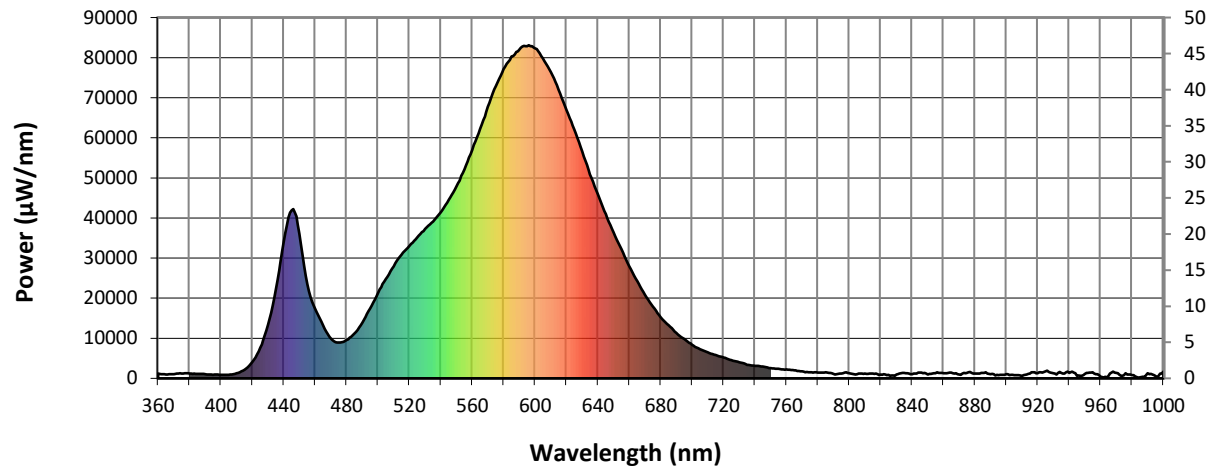
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2012-088-7

### Photopic Flux vs. Wavelength

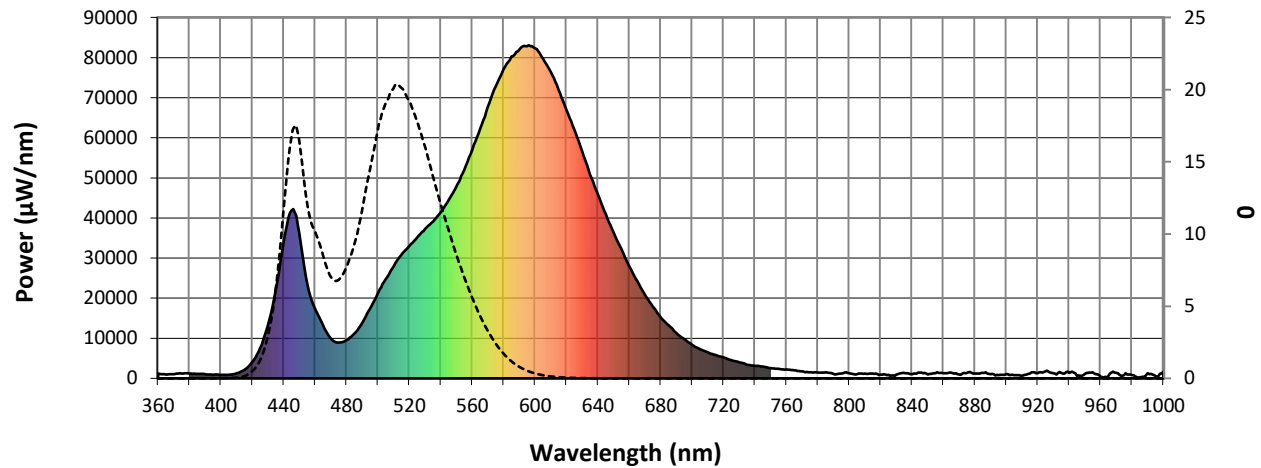


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1195             | 0.0              | 490       | 13880            | 2.0              | 620       | 66879            | 17.4             | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 3.2              | 625       | 62111            | 13.7             | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 4.7              | 630       | 56551            | 10.2             | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 6.9              | 635       | 50866            | 7.6              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 9.6              | 640       | 45859            | 5.5              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 12.8             | 645       | 40924            | 3.9              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 16.0             | 650       | 36434            | 2.7              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 18.9             | 655       | 32132            | 1.8              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 22.0             | 660       | 27953            | 1.2              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 24.3             | 665       | 24284            | 0.8              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.0              | 540       | 41391            | 27.0             | 670       | 20822            | 0.5              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.0              | 545       | 44515            | 29.6             | 675       | 17848            | 0.3              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.0              | 550       | 47864            | 32.5             | 680       | 15278            | 0.2              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 0.0              | 555       | 52101            | 35.6             | 685       | 13213            | 0.1              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 0.1              | 560       | 56892            | 38.7             | 690       | 11304            | 0.1              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 0.3              | 565       | 62242            | 41.4             | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 0.5              | 570       | 67731            | 44.0             | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 0.9              | 575       | 72883            | 45.3             | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 0.9              | 580       | 77104            | 45.8             | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 0.8              | 585       | 80305            | 44.6             | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 0.7              | 590       | 82039            | 42.4             | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 0.7              | 595       | 82883            | 39.3             | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 0.6              | 600       | 82307            | 35.5             | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 0.7              | 605       | 79818            | 30.9             | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 0.9              | 610       | 76405            | 26.2             | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 1.3              | 615       | 71967            | 21.7             | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

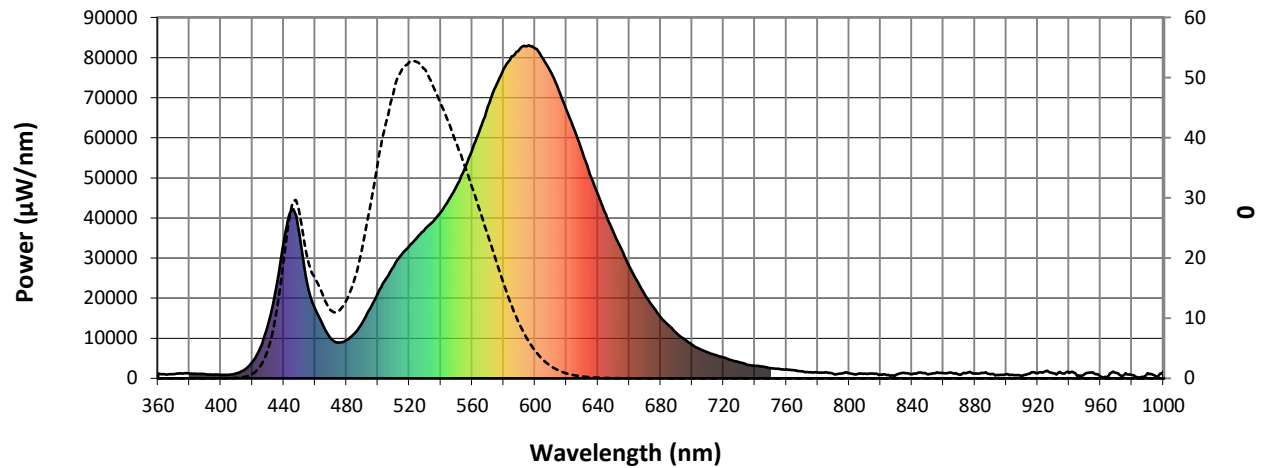
### Scotopic Flux vs. Wavelength


**Scotopic Lumens: 1728.4**
**S/P: 0.45**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1195             | 0.0              | 490       | 13880            | 21.4             | 620       | 66879            | 0.8              | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 28.1             | 625       | 62111            | 0.5              | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 35.6             | 630       | 56551            | 0.3              | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 42.1             | 635       | 50866            | 0.2              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 47.4             | 640       | 45859            | 0.1              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 51.1             | 645       | 40924            | 0.1              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 52.5             | 650       | 36434            | 0.0              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 52.6             | 655       | 32132            | 0.0              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 51.4             | 660       | 27953            | 0.0              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 48.8             | 665       | 24284            | 0.0              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.1              | 540       | 41391            | 45.7             | 670       | 20822            | 0.0              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.2              | 545       | 44515            | 42.7             | 675       | 17848            | 0.0              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.7              | 550       | 47864            | 39.1             | 680       | 15278            | 0.0              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 1.9              | 555       | 52101            | 35.6             | 685       | 13213            | 0.0              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 4.5              | 560       | 56892            | 31.8             | 690       | 11304            | 0.0              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 10.0             | 565       | 62242            | 27.9             | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 19.0             | 570       | 67731            | 23.9             | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 28.0             | 575       | 72883            | 19.8             | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 28.0             | 580       | 77104            | 15.9             | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 20.5             | 585       | 80305            | 12.3             | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 16.8             | 590       | 82039            | 9.1              | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 14.0             | 595       | 82883            | 6.6              | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 11.4             | 600       | 82307            | 4.6              | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 11.1             | 605       | 79818            | 3.1              | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 12.9             | 610       | 76405            | 2.1              | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 16.2             | 615       | 71967            | 1.3              | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 4752**
**S/P: 1.23**

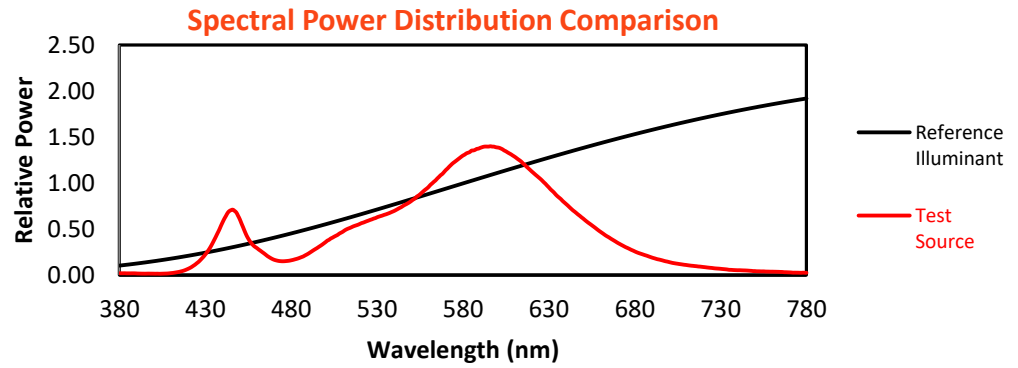
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1195             | 0.0              | 490       | 13880            | 11.5             | 620       | 66879            | 0.1              | 750       | 2571             | 0.0              | 880       | 1235             | 0.0              |
| 365       | 985              | 0.0              | 495       | 17408            | 14.4             | 625       | 62111            | 0.0              | 755       | 2394             | 0.0              | 885       | 1368             | 0.0              |
| 370       | 1066             | 0.0              | 500       | 21285            | 17.1             | 630       | 56551            | 0.0              | 760       | 2199             | 0.0              | 890       | 1027             | 0.0              |
| 375       | 1227             | 0.0              | 505       | 24779            | 19.0             | 635       | 50866            | 0.0              | 765       | 2031             | 0.0              | 895       | 822              | 0.0              |
| 380       | 1176             | 0.0              | 510       | 27951            | 20.1             | 640       | 45859            | 0.0              | 770       | 1735             | 0.0              | 900       | 1068             | 0.0              |
| 385       | 1115             | 0.0              | 515       | 30815            | 20.1             | 645       | 40924            | 0.0              | 775       | 1538             | 0.0              | 905       | 823              | 0.0              |
| 390       | 1039             | 0.0              | 520       | 33040            | 19.2             | 650       | 36434            | 0.0              | 780       | 1455             | 0.0              | 910       | 531              | 0.0              |
| 395       | 908              | 0.0              | 525       | 35159            | 17.8             | 655       | 32132            | 0.0              | 785       | 1506             | 0.0              | 915       | 1184             | 0.0              |
| 400       | 903              | 0.0              | 530       | 37292            | 16.1             | 660       | 27953            | 0.0              | 790       | 1154             | 0.0              | 920       | 1320             | 0.0              |
| 405       | 911              | 0.0              | 535       | 39123            | 14.1             | 665       | 24284            | 0.0              | 795       | 1232             | 0.0              | 925       | 1757             | 0.0              |
| 410       | 1264             | 0.0              | 540       | 41391            | 12.1             | 670       | 20822            | 0.0              | 800       | 1247             | 0.0              | 930       | 1279             | 0.0              |
| 415       | 2142             | 0.1              | 545       | 44515            | 10.3             | 675       | 17848            | 0.0              | 805       | 1043             | 0.0              | 935       | 1399             | 0.0              |
| 420       | 4052             | 0.5              | 550       | 47864            | 8.6              | 680       | 15278            | 0.0              | 810       | 1235             | 0.0              | 940       | 1325             | 0.0              |
| 425       | 7647             | 1.2              | 555       | 52101            | 7.0              | 685       | 13213            | 0.0              | 815       | 1173             | 0.0              | 945       | 612              | 0.0              |
| 430       | 13366            | 2.8              | 560       | 56892            | 5.6              | 690       | 11304            | 0.0              | 820       | 948              | 0.0              | 950       | 1094             | 0.0              |
| 435       | 22367            | 6.0              | 565       | 62242            | 4.4              | 695       | 9794             | 0.0              | 825       | 846              | 0.0              | 955       | 1493             | 0.0              |
| 440       | 34007            | 11.4             | 570       | 67731            | 3.3              | 700       | 8390             | 0.0              | 830       | 987              | 0.0              | 960       | 385              | 0.0              |
| 445       | 41889            | 16.5             | 575       | 72883            | 2.4              | 705       | 7303             | 0.0              | 835       | 1395             | 0.0              | 965       | 585              | 0.0              |
| 450       | 36090            | 16.6             | 580       | 77104            | 1.7              | 710       | 6501             | 0.0              | 840       | 1079             | 0.0              | 970       | 1360             | 0.0              |
| 455       | 23459            | 12.3             | 585       | 80305            | 1.2              | 715       | 5811             | 0.0              | 845       | 1430             | 0.0              | 975       | 805              | 0.0              |
| 460       | 17429            | 10.3             | 590       | 82039            | 0.8              | 720       | 5196             | 0.0              | 850       | 984              | 0.0              | 980       | 813              | 0.0              |
| 465       | 13265            | 8.7              | 595       | 82883            | 0.5              | 725       | 4576             | 0.0              | 855       | 1315             | 0.0              | 985       | 214              | 0.0              |
| 470       | 9887             | 7.1              | 600       | 82307            | 0.3              | 730       | 4031             | 0.0              | 860       | 1245             | 0.0              | 990       | 1247             | 0.0              |
| 475       | 8912             | 6.8              | 605       | 79818            | 0.2              | 735       | 3393             | 0.0              | 865       | 1445             | 0.0              | 995       | 597              | 0.0              |
| 480       | 9543             | 7.7              | 610       | 76405            | 0.1              | 740       | 3117             | 0.0              | 870       | 998              | 0.0              | 1000      | 1691             | 0.0              |
| 485       | 11169            | 9.2              | 615       | 71967            | 0.1              | 745       | 2946             | 0.0              | 875       | 1326             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2012-088-7

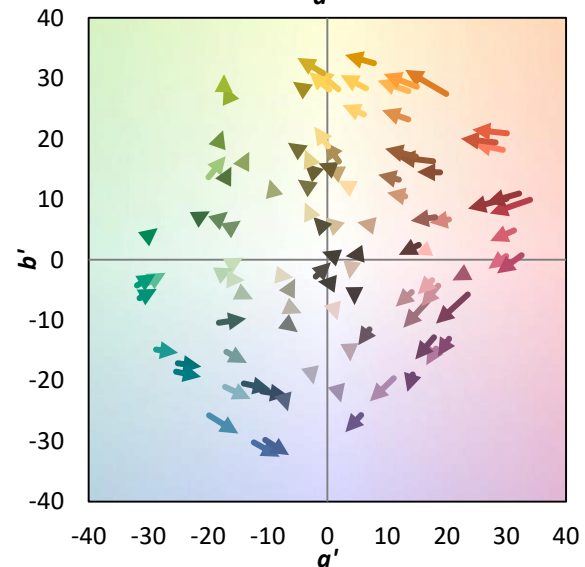
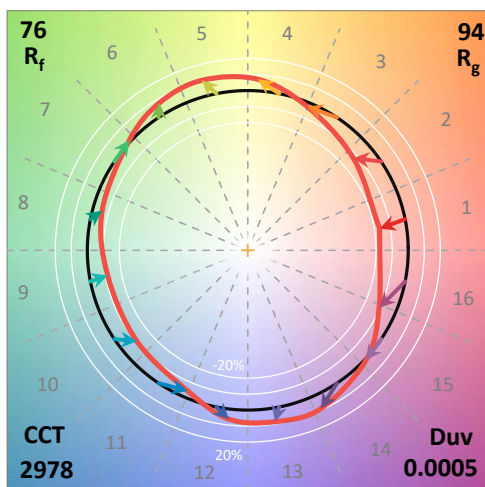
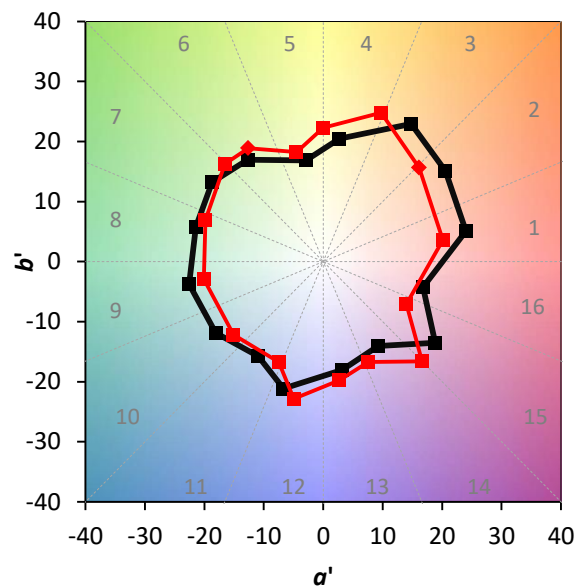
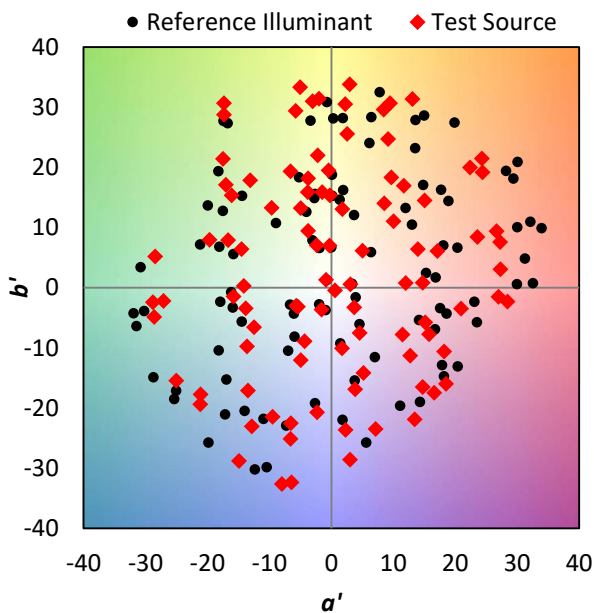
TM-30-18

### Summary

$R_f = 76.2$   
 $R_g = 94.2$   
 CIE  $R_a = 72.4$   
 $R_g = -36.8$

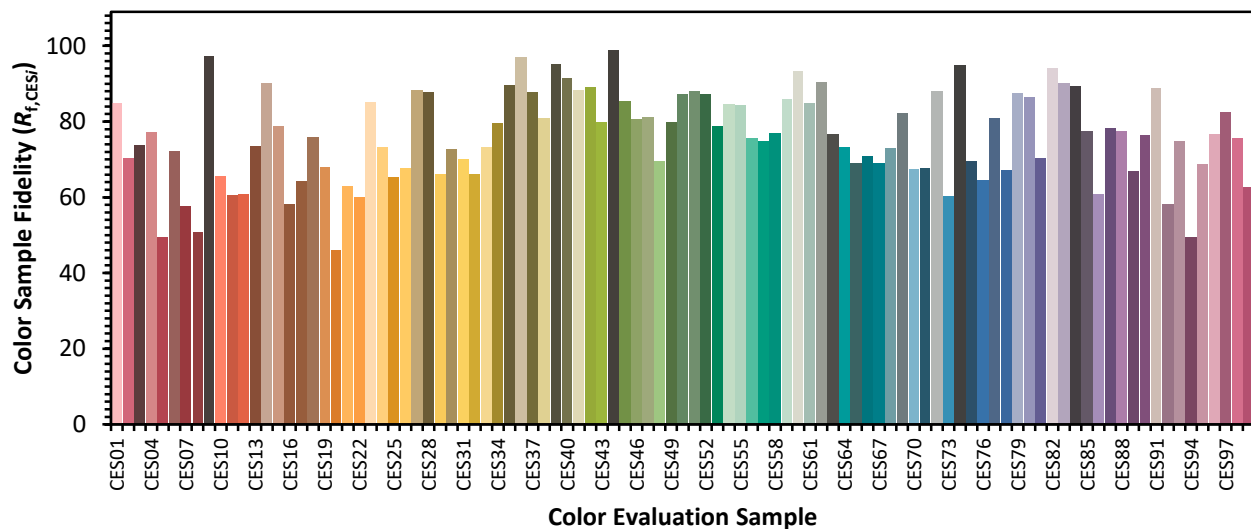


### Color Vector Graphics

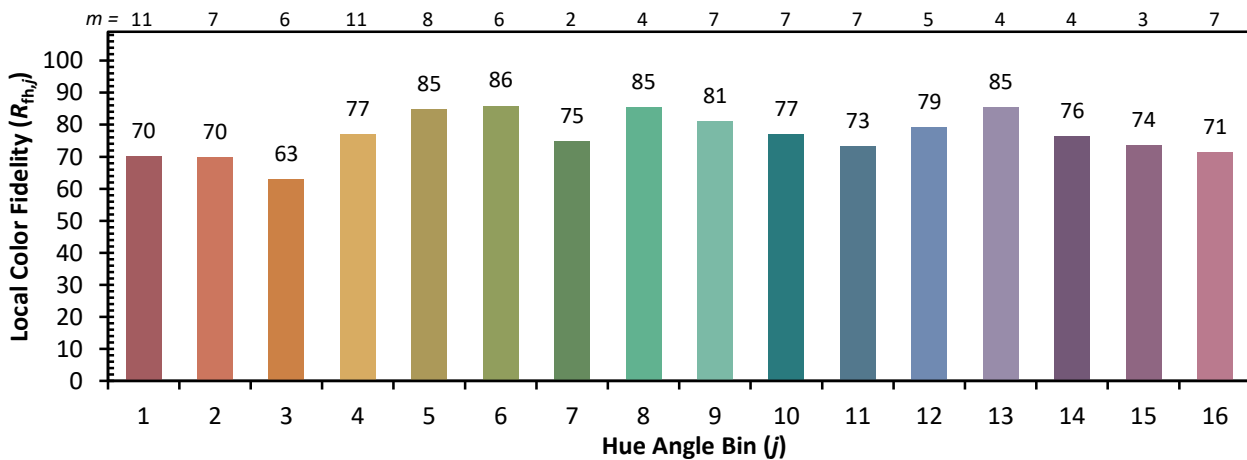
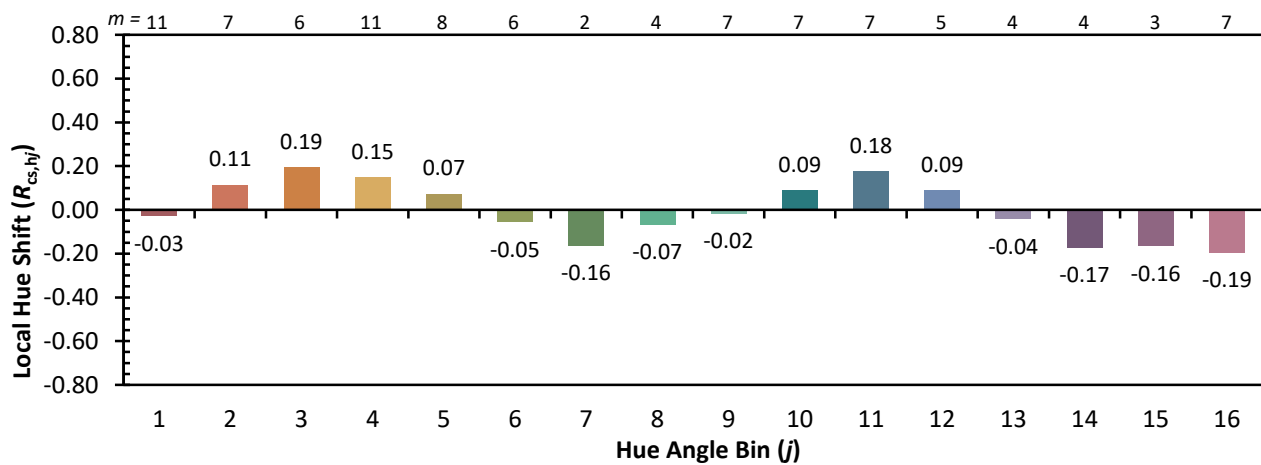
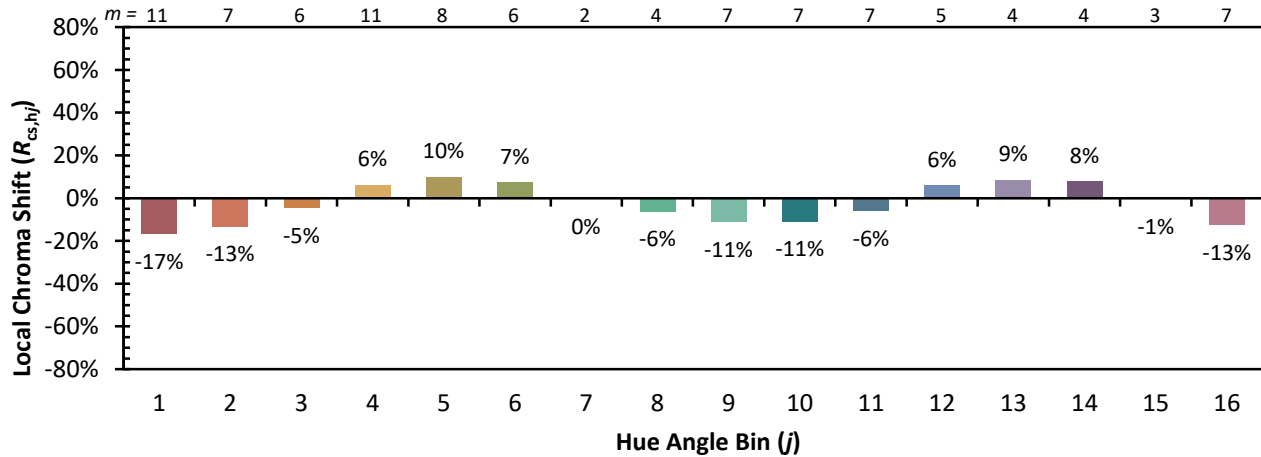


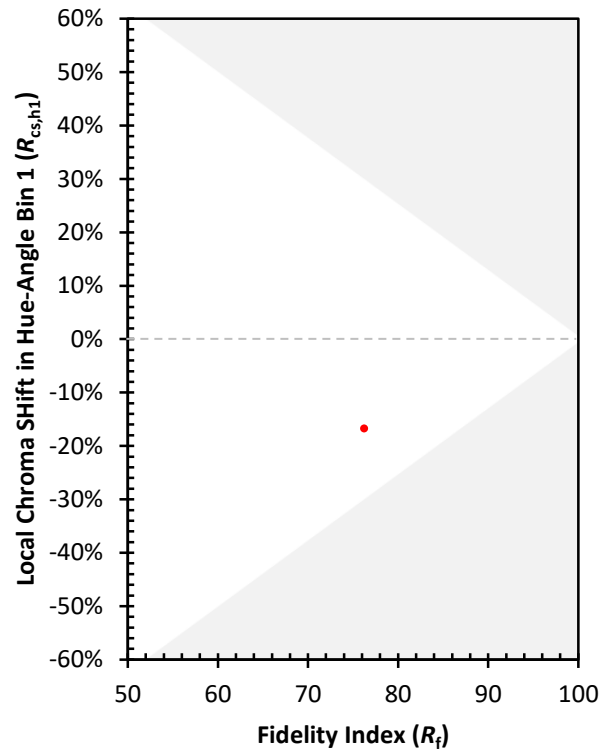
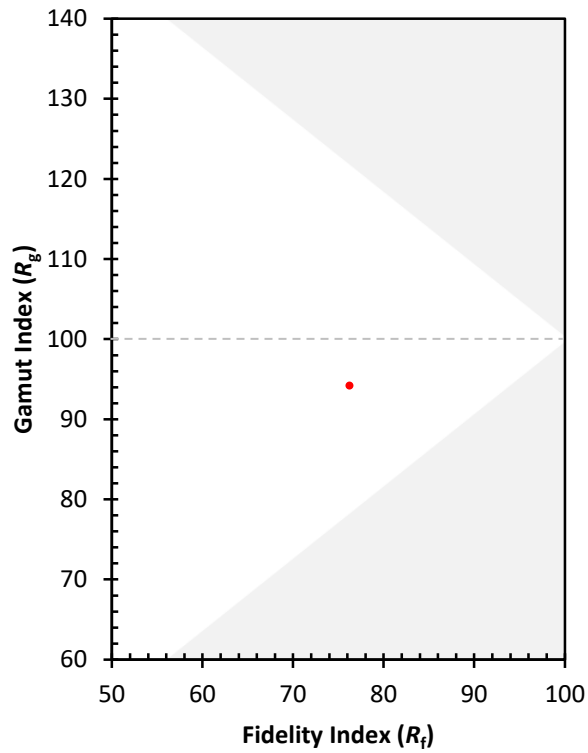
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 88 | CES76 = 65 |
| CES02 = 63 | CES27 = 88 | CES52 = 87 | CES77 = 81 |
| CES03 = 31 | CES28 = 88 | CES53 = 79 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 85 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 87 |
| CES06 = 51 | CES31 = 70 | CES56 = 76 | CES81 = 70 |
| CES07 = 41 | CES32 = 66 | CES57 = 75 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 77 | CES83 = 90 |
| CES09 = 29 | CES34 = 80 | CES59 = 86 | CES84 = 89 |
| CES10 = 76 | CES35 = 90 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 85 | CES86 = 61 |
| CES12 = 65 | CES37 = 88 | CES62 = 90 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 78 |
| CES14 = 74 | CES39 = 95 | CES64 = 73 | CES89 = 67 |
| CES15 = 71 | CES40 = 91 | CES65 = 69 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 71 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 69 | CES92 = 58 |
| CES18 = 56 | CES43 = 80 | CES68 = 73 | CES93 = 75 |
| CES19 = 73 | CES44 = 99 | CES69 = 82 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 67 | CES95 = 69 |
| CES21 = 87 | CES46 = 81 | CES71 = 68 | CES96 = 77 |
| CES22 = 79 | CES47 = 81 | CES72 = 88 | CES97 = 83 |
| CES23 = 92 | CES48 = 69 | CES73 = 60 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**


(END OF REPORT)