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

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P631213

Luminaire Tested: GWS-SA1F-730-U-SL3-W-GRSBK

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P631213 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-32) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA1F-730-U-SL3-W-GRSBK |
| Description: | GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK |
| Light Source: | (16) 3000K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4487.2 lumens |
| Efficiency: | N/A |
| Efficacy: | 66.8 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B1 - U0 - G0 |

| | |
|---|---|
| Input Watts (W): | 67.2 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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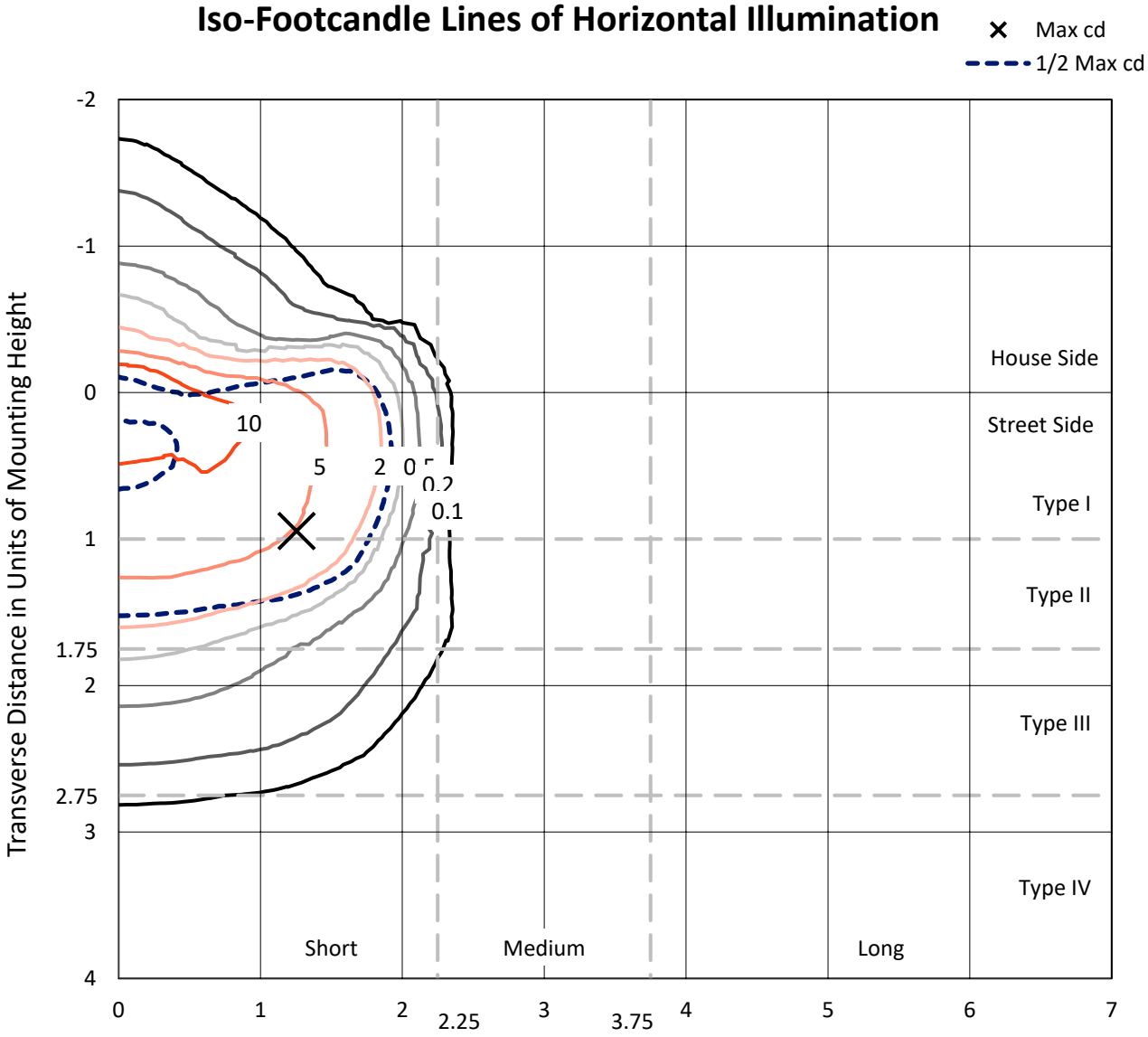
Scaled Data Report

REPORT NUMBER: P631213
CATALOG NUMBER: GWS-SA1F-730-U-SL3-W-GRSBK

## Iso-Footcandle Lines of Horizontal Illumination




Based on 10 foot mounting height. Maximum calculated value = 19.7 fc
Type II - Short - N/A

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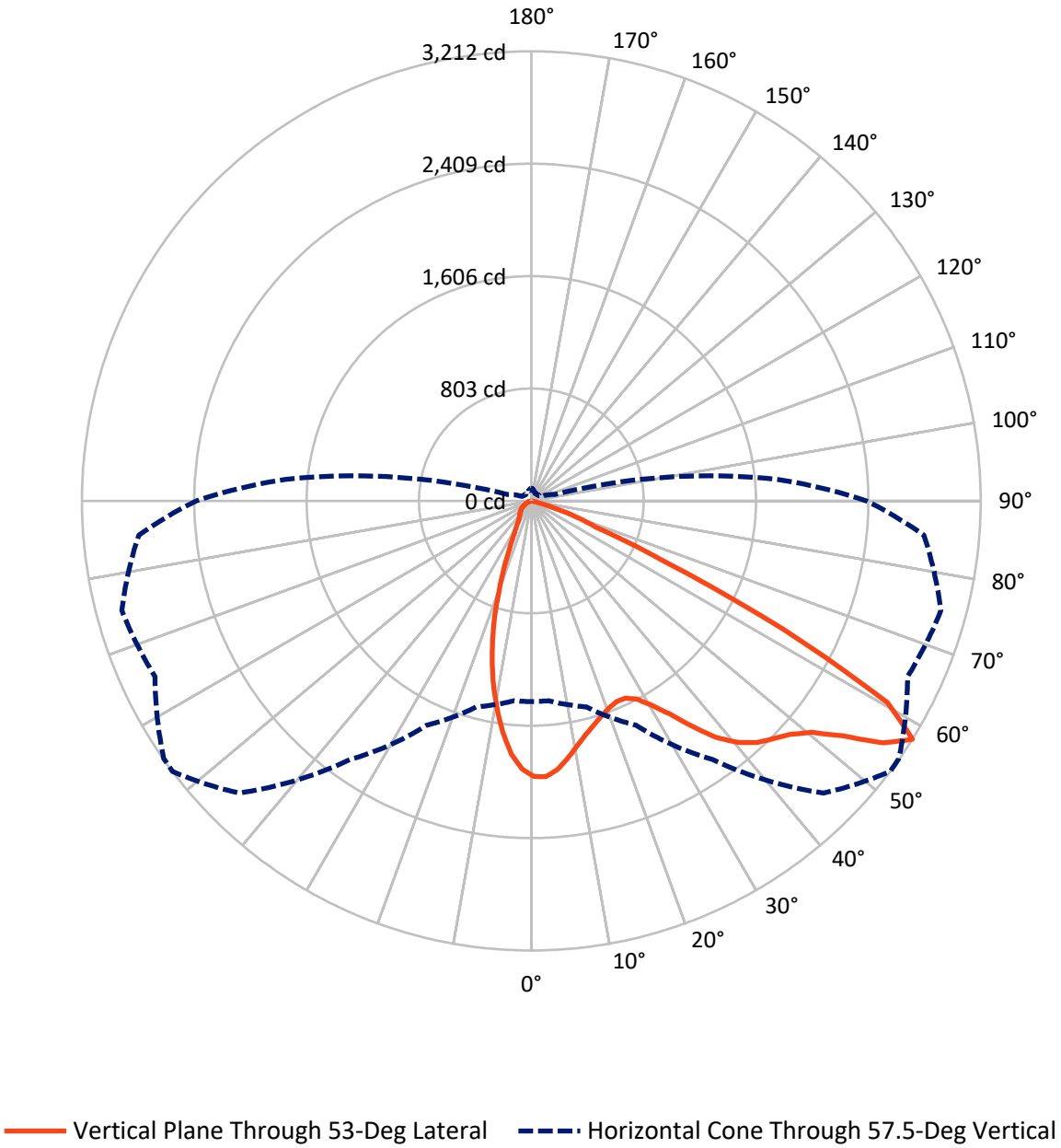
## Luminous Intensity Polar Plot



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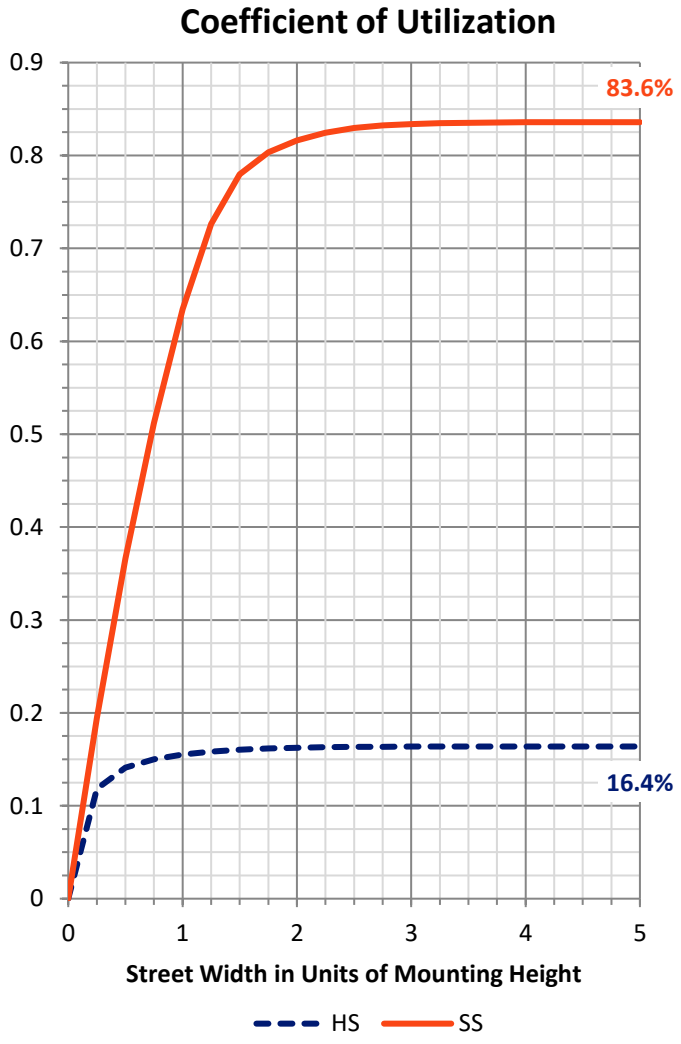
REPORT NUMBER: P631213
CATALOG NUMBER: GWS-SA1F-730-U-SL3-W-GRSBK

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 741.2 | 0.0 | 741.2 |
| | % Fixture | 16.5 | 0.0 | 16.5 |
| **Street Side** | Lumens | 3746.0 | 0.0 | 3746.0 |
| | % Fixture | 83.5 | 0.0 | 83.5 |
| **Total** | Lumens | 4487.2 | 0.0 | 4487.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 168.4 | 3.8 |
| 10°-20° | 369.7 | 8.2 |
| 20°-30° | 481.6 | 10.7 |
| 30°-40° | 698.6 | 15.6 |
| 40°-50° | 1008.1 | 22.5 |
| 50°-60° | 1219.2 | 27.2 |
| 60°-70° | 496.9 | 11.1 |
| 70°-80° | 44.6 | 1.0 |
| 80°-90° | 0.0 | 0.0 |
| 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° | 4487.2 | 100.0 |
| 0°-180° | 4487.2 | 100.0 |



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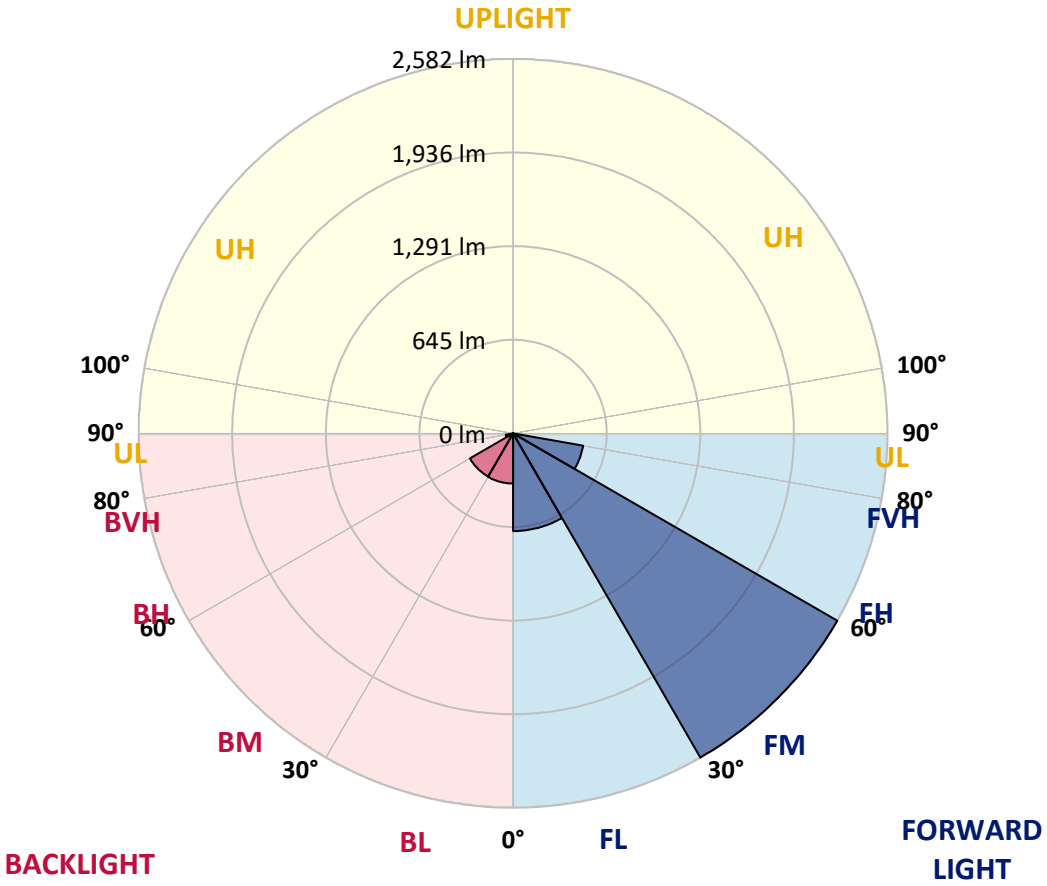
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 673.8 | 15.0 | | | |
| FM | (30°-60°) | 2581.8 | 57.5 | | | |
| FH | (60°-80°) | 490.3 | 10.9 | | | G0/660 |
| FVH | (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| BL | (0°-30°) | 345.9 | 7.7 | B1/500 | | |
| BM | (30°-60°) | 344.0 | 7.7 | B1/1000 | | |
| BH | (60°-80°) | 51.2 | 1.1 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G0**
Type II Short



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 53° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 |
| 2.5° | 1940.8 | 1945.2 | 1952.9 | 1962.8 | 1969.4 | 1972.7 | 1972.7 | 1982.1 | 1976.0 | 1971.1 | 1965.6 |
| 5° | 1857.8 | 1862.2 | 1872.6 | 1888.6 | 1904.5 | 1916.1 | 1929.3 | 1939.2 | 1943.0 | 1943.0 | 1933.7 |
| 7.5° | 1740.7 | 1746.7 | 1753.3 | 1775.3 | 1810.0 | 1835.8 | 1858.3 | 1872.6 | 1893.5 | 1900.1 | 1886.9 |
| 10° | 1614.7 | 1620.8 | 1635.6 | 1665.9 | 1705.5 | 1744.0 | 1782.5 | 1800.6 | 1836.3 | 1855.0 | 1840.2 |
| 12.5° | 1508.0 | 1510.8 | 1530.6 | 1566.9 | 1617.5 | 1670.3 | 1717.0 | 1735.7 | 1786.3 | 1814.4 | 1796.8 |
| 15° | 1420.0 | 1421.7 | 1441.5 | 1481.6 | 1539.9 | 1604.8 | 1663.7 | 1682.9 | 1745.1 | 1787.4 | 1761.0 |
| 17.5° | 1353.5 | 1354.0 | 1371.1 | 1414.5 | 1475.6 | 1547.6 | 1617.5 | 1641.1 | 1721.4 | 1772.6 | 1733.0 |
| 20° | 1319.9 | 1318.3 | 1330.4 | 1368.3 | 1426.1 | 1498.1 | 1580.6 | 1609.8 | 1708.2 | 1770.4 | 1711.5 |
| 22.5° | 1320.5 | 1316.6 | 1321.6 | 1348.5 | 1397.5 | 1465.1 | 1557.5 | 1590.5 | 1709.3 | 1779.7 | 1693.4 |
| 25° | 1351.8 | 1346.3 | 1347.4 | 1361.7 | 1396.4 | 1458.0 | 1560.8 | 1596.0 | 1731.3 | 1811.1 | 1686.8 |
| 27.5° | 1404.6 | 1398.6 | 1398.6 | 1405.7 | 1424.4 | 1480.5 | 1602.1 | 1642.2 | 1790.2 | 1872.1 | 1700.5 |
| 30° | 1472.8 | 1466.8 | 1464.6 | 1471.7 | 1487.1 | 1538.8 | 1693.9 | 1735.7 | 1890.8 | 1972.2 | 1744.5 |
| 32.5° | 1550.9 | 1543.8 | 1547.6 | 1557.5 | 1572.4 | 1643.9 | 1812.2 | 1867.7 | 2016.7 | 2106.9 | 1823.7 |
| 35° | 1633.4 | 1627.4 | 1645.0 | 1666.4 | 1689.5 | 1789.6 | 1975.5 | 2023.9 | 2171.3 | 2274.7 | 1944.7 |
| 37.5° | 1712.1 | 1709.3 | 1746.2 | 1791.3 | 1839.1 | 1964.5 | 2141.6 | 2179.0 | 2303.8 | 2457.3 | 2092.6 |
| 40° | 1790.7 | 1790.2 | 1853.4 | 1932.6 | 2009.0 | 2138.8 | 2267.5 | 2298.3 | 2384.7 | 2599.2 | 2234.5 |
| 42.5° | 1878.7 | 1878.7 | 1966.1 | 2071.7 | 2173.5 | 2286.2 | 2359.9 | 2373.7 | 2421.0 | 2681.1 | 2341.2 |
| 45° | 1962.8 | 1967.8 | 2069.0 | 2191.6 | 2312.1 | 2401.2 | 2423.7 | 2424.8 | 2435.8 | 2729.5 | 2429.8 |
| 47.5° | 2029.4 | 2033.8 | 2154.8 | 2296.1 | 2425.9 | 2488.6 | 2491.9 | 2487.0 | 2474.9 | 2775.7 | 2498.0 |
| 50° | 2083.3 | 2089.9 | 2216.4 | 2366.0 | 2504.0 | 2572.8 | 2598.1 | 2593.1 | 2562.3 | 2825.2 | 2545.8 |
| 52.5° | 2109.7 | 2119.0 | 2237.8 | 2400.6 | 2590.9 | 2716.9 | 2787.2 | 2798.8 | 2693.2 | 2852.7 | 2591.5 |
| 55° | 1898.5 | 1912.2 | 2021.7 | 2244.4 | 2639.3 | 2939.6 | 3050.1 | 3047.9 | 2835.1 | 2934.6 | 2702.6 |
| 57.5° | 1433.8 | 1432.7 | 1523.4 | 1767.1 | 2254.3 | 2952.2 | 3211.8 | 3207.4 | 2967.6 | 3029.8 | 2816.4 |
| 60° | 976.2 | 969.6 | 993.8 | 1111.5 | 1576.2 | 2405.0 | 2923.1 | 2982.5 | 2873.6 | 2798.8 | 2391.3 |
| 62.5° | 803.5 | 797.5 | 789.8 | 757.3 | 905.3 | 1498.1 | 2019.5 | 2109.7 | 2095.4 | 1945.2 | 1499.8 |
| 65° | 657.8 | 662.7 | 684.2 | 670.4 | 629.7 | 768.3 | 1048.2 | 1101.6 | 1007.0 | 847.5 | 524.1 |
| 67.5° | 485.1 | 487.3 | 515.3 | 587.9 | 565.9 | 511.5 | 493.3 | 502.1 | 294.2 | 135.3 | 87.4 |
| 70° | 286.5 | 288.2 | 314.0 | 411.4 | 459.2 | 392.7 | 333.3 | 328.3 | 116.6 | 36.3 | 39.6 |
| 72.5° | 162.2 | 158.9 | 163.9 | 195.8 | 250.2 | 208.4 | 171.6 | 156.2 | 35.2 | 20.3 | 20.3 |
| 75° | 77.0 | 74.8 | 64.3 | 60.5 | 55.0 | 35.2 | 22.0 | 18.7 | 8.8 | 8.2 | 8.2 |
| 77.5° | 0.5 | 1.6 | 1.1 | 1.6 | 1.6 | 1.1 | 0.5 | 0.5 | 1.6 | 1.6 | 2.2 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 |

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Scaled Data Report

REPORT NUMBER: P631213
CATALOG NUMBER: GWS-SA1F-730-U-SL3-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 | 1968.3 |
| 2.5° | 1955.7 | 1939.2 | 1935.3 | 1934.2 | 1918.8 | 1902.3 | 1885.3 | 1878.7 | 1868.8 | 1862.7 | 1867.7 |
| 5° | 1918.8 | 1895.2 | 1874.3 | 1855.0 | 1820.9 | 1783.6 | 1751.1 | 1730.2 | 1710.4 | 1697.2 | 1700.5 |
| 7.5° | 1866.6 | 1835.8 | 1788.0 | 1739.0 | 1676.3 | 1620.2 | 1557.5 | 1519.0 | 1483.3 | 1463.5 | 1472.8 |
| 10° | 1811.1 | 1770.4 | 1693.9 | 1610.9 | 1512.4 | 1424.4 | 1334.8 | 1261.6 | 1219.3 | 1179.1 | 1183.5 |
| 12.5° | 1756.6 | 1702.7 | 1588.3 | 1462.4 | 1338.1 | 1208.3 | 1073.0 | 971.8 | 902.5 | 852.5 | 844.8 |
| 15° | 1706.0 | 1636.7 | 1485.5 | 1319.4 | 1150.0 | 977.3 | 804.6 | 660.0 | 579.7 | 530.2 | 526.9 |
| 17.5° | 1660.9 | 1575.1 | 1378.8 | 1169.8 | 957.5 | 736.4 | 537.9 | 429.5 | 383.3 | 361.9 | 359.7 |
| 20° | 1617.5 | 1513.0 | 1269.9 | 1018.0 | 747.4 | 517.0 | 371.2 | 321.2 | 306.3 | 297.5 | 298.6 |
| 22.5° | 1575.7 | 1445.3 | 1155.5 | 849.7 | 560.4 | 363.0 | 287.6 | 268.4 | 266.7 | 267.8 | 268.4 |
| 25° | 1540.5 | 1383.2 | 1037.8 | 687.5 | 399.8 | 276.6 | 240.3 | 234.8 | 239.8 | 246.9 | 248.0 |
| 27.5° | 1522.3 | 1332.6 | 922.8 | 524.1 | 289.3 | 224.9 | 208.4 | 210.6 | 219.4 | 227.1 | 228.2 |
| 30° | 1527.3 | 1294.6 | 804.1 | 380.0 | 222.7 | 189.7 | 184.2 | 188.6 | 197.4 | 204.6 | 205.7 |
| 32.5° | 1562.5 | 1275.4 | 682.5 | 276.6 | 183.1 | 165.5 | 163.3 | 166.6 | 174.3 | 179.8 | 180.4 |
| 35° | 1632.3 | 1279.8 | 567.0 | 211.7 | 157.3 | 147.4 | 146.8 | 149.0 | 152.9 | 156.7 | 157.3 |
| 37.5° | 1735.2 | 1315.5 | 453.2 | 176.0 | 142.4 | 135.3 | 133.1 | 133.1 | 135.8 | 137.5 | 138.6 |
| 40° | 1845.7 | 1369.4 | 363.0 | 155.6 | 132.0 | 124.3 | 119.9 | 118.2 | 120.4 | 122.6 | 123.2 |
| 42.5° | 1937.0 | 1423.3 | 294.8 | 141.3 | 123.7 | 113.3 | 107.8 | 106.7 | 109.4 | 113.3 | 114.4 |
| 45° | 2006.8 | 1465.1 | 245.8 | 129.8 | 114.4 | 102.8 | 96.8 | 96.8 | 101.7 | 108.3 | 109.4 |
| 47.5° | 2070.6 | 1498.7 | 209.5 | 119.3 | 105.6 | 93.5 | 87.4 | 88.5 | 96.8 | 105.6 | 107.2 |
| 50° | 2114.1 | 1525.6 | 182.6 | 110.0 | 98.4 | 85.8 | 80.3 | 82.5 | 92.4 | 102.8 | 104.5 |
| 52.5° | 2160.8 | 1558.6 | 165.0 | 101.7 | 91.8 | 79.7 | 74.8 | 76.4 | 87.4 | 99.0 | 101.2 |
| 55° | 2290.1 | 1669.2 | 164.4 | 90.7 | 80.3 | 71.5 | 69.3 | 69.8 | 80.8 | 94.0 | 96.8 |
| 57.5° | *2395.7* | *1766.5* | *175.4* | *76.4* | *67.1* | *62.7* | *61.6* | *62.1* | *72.0* | *86.9* | *90.2* |
| 60° | 1982.1 | 1372.7 | 145.2 | 63.2 | 56.1 | 55.0 | 53.3 | 54.4 | 63.8 | 77.0 | 79.7 |
| 62.5° | 1173.1 | 784.8 | 69.3 | 48.4 | 47.8 | 46.7 | 45.1 | 47.3 | 56.1 | 67.6 | 69.3 |
| 65° | 400.9 | 232.6 | 44.0 | 39.6 | 40.7 | 39.0 | 37.4 | 39.6 | 47.3 | 53.9 | 54.4 |
| 67.5° | 77.0 | 61.6 | 35.2 | 33.0 | 33.5 | 30.2 | 29.7 | 31.9 | 36.3 | 37.4 | 36.8 |
| 70° | 40.1 | 35.7 | 26.9 | 26.9 | 25.8 | 21.4 | 21.4 | 23.6 | 23.6 | 22.0 | 21.4 |
| 72.5° | 20.9 | 19.8 | 17.6 | 19.8 | 16.5 | 13.2 | 13.2 | 14.3 | 13.2 | 11.0 | 11.0 |
| 75° | 8.2 | 8.2 | 7.7 | 9.9 | 7.1 | 6.0 | 5.5 | 6.6 | 4.9 | 3.8 | 3.8 |
| 77.5° | 2.2 | 2.2 | 2.2 | 2.7 | 1.6 | 1.6 | 1.1 | 1.1 | 0.5 | 0.0 | 0.0 |
| 80° | 0.0 | 0.5 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 |

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# LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

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

## Test Information

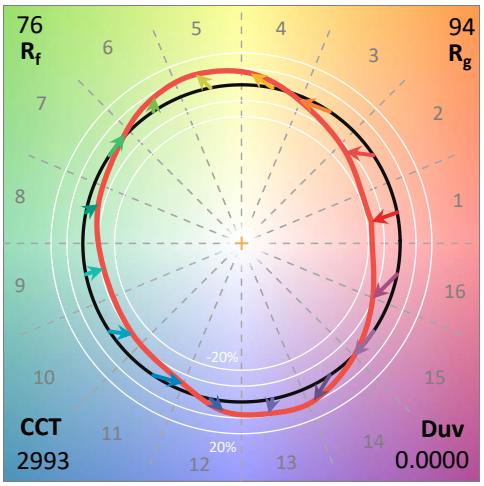
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-2-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-730-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.***TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2993 | CRI (Ra): | 71.8 | | |
| CIE u': | 0.2508 | R1: | 67.5 | R9: | -38.3 |
| CIE v': | 0.5215 | R2: | 82.9 | R10: | 62.5 |
| Duv: | 0.0000 | R3: | 94.7 | R11: | 63.7 |
| CIE x: | 0.4374 | R4: | 67.7 | R12: | 57.8 |
| CIE y: | 0.4043 | R5: | 67.9 | R13: | 70.4 |
| CIE z: | 0.1583 | R6: | 77.6 | R14: | 97.3 |
| Peak Wavelength (nm): | 593 | R7: | 76.0 | | |
| Dominant Wavelength (nm): | 582 | R8: | 40.5 | | |
| Purity: | 53 | | | | |

| | |
|---|---|
| Rf: | 75.7 |
| Rg: | 93.9 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 53M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.0./44% |
| Sphere Temperature (°C): | 25.7 |

Cooper Lighting Solutions Photometric Lab
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REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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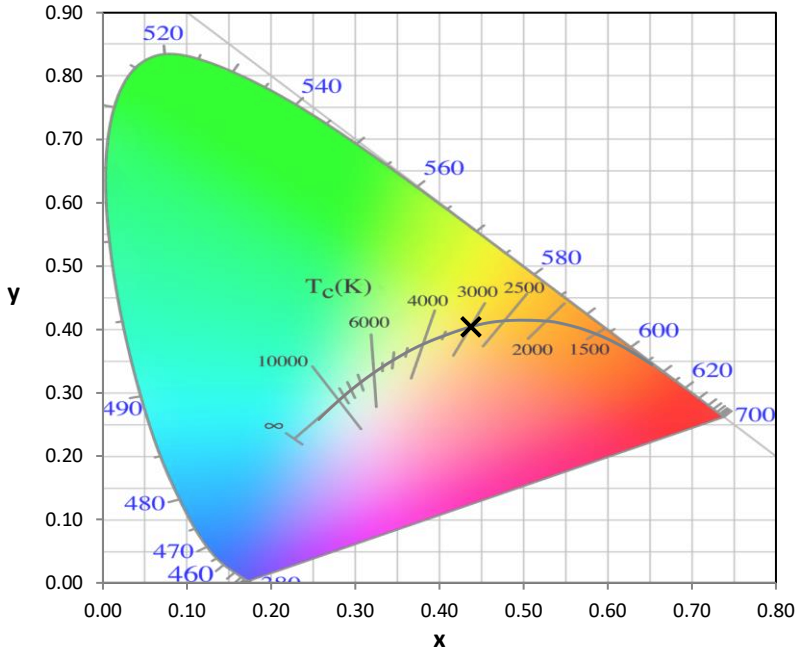
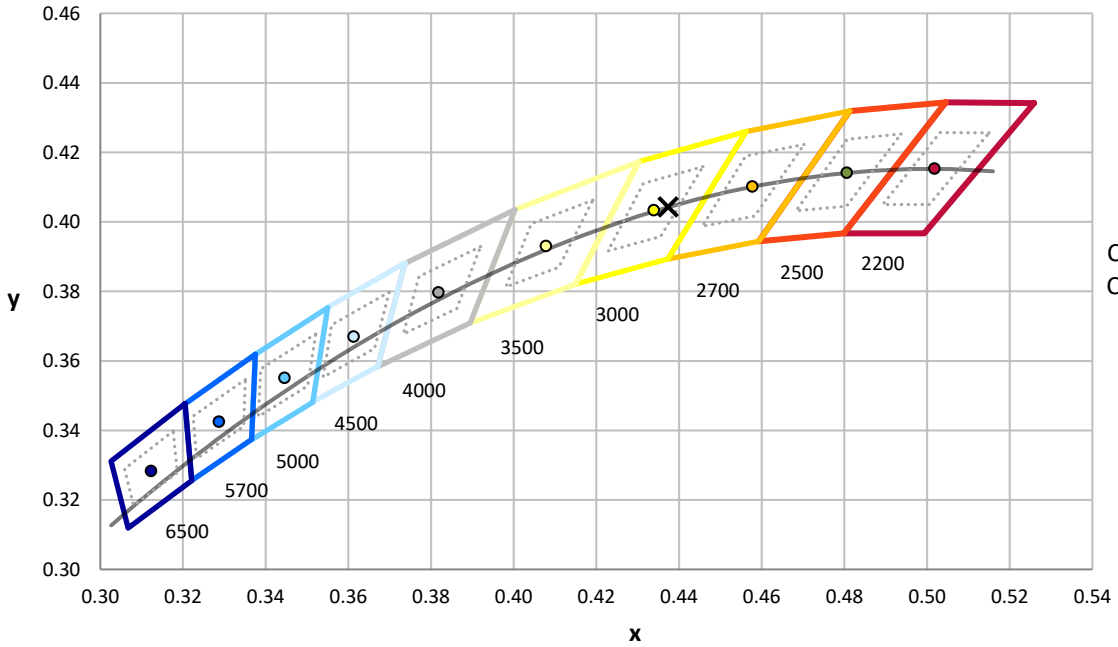
REPORT NUMBER: SP1-1908-441-2-R4

## CIE 1931 Chromaticity Diagram




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




CCT = 2993K
CIE x = 0.4374
CIE y = 0.4043
Duv = 0.0000

Point lies inside the ANSI 3000K 4-step quadrangle

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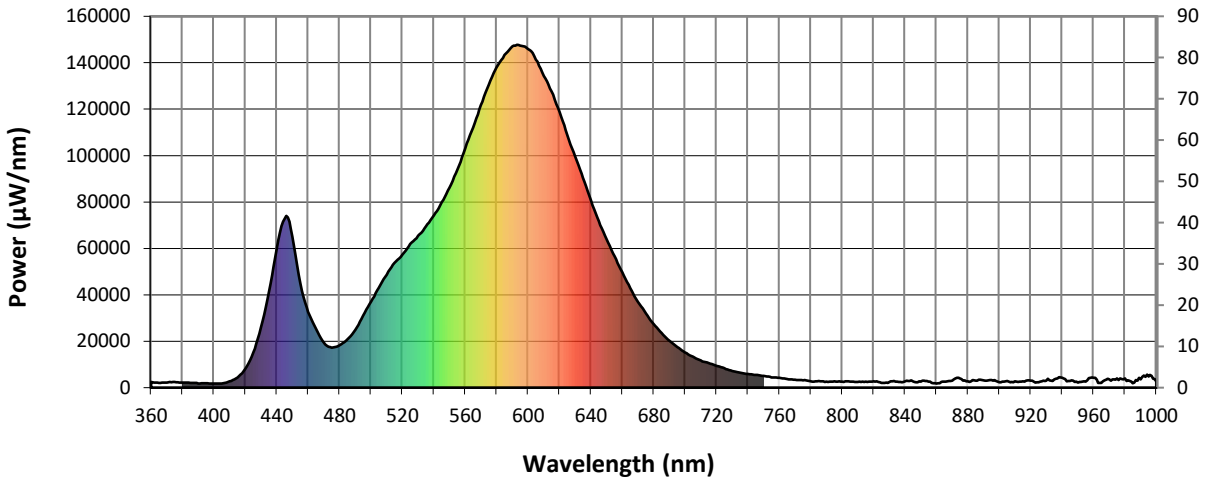
## Photopic Flux vs. Wavelength




######

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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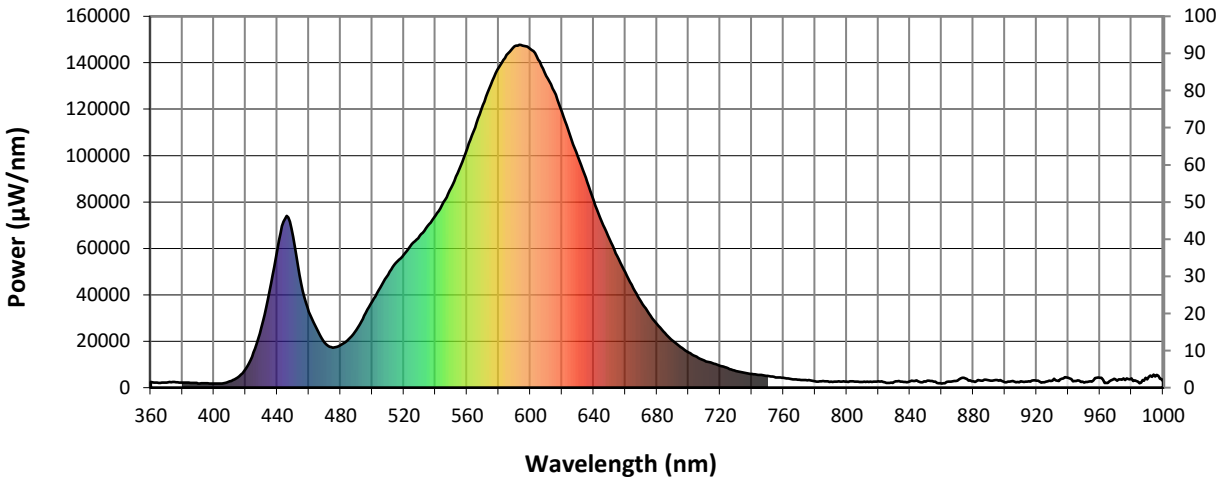
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 8494.8** **S/P: 1.23**

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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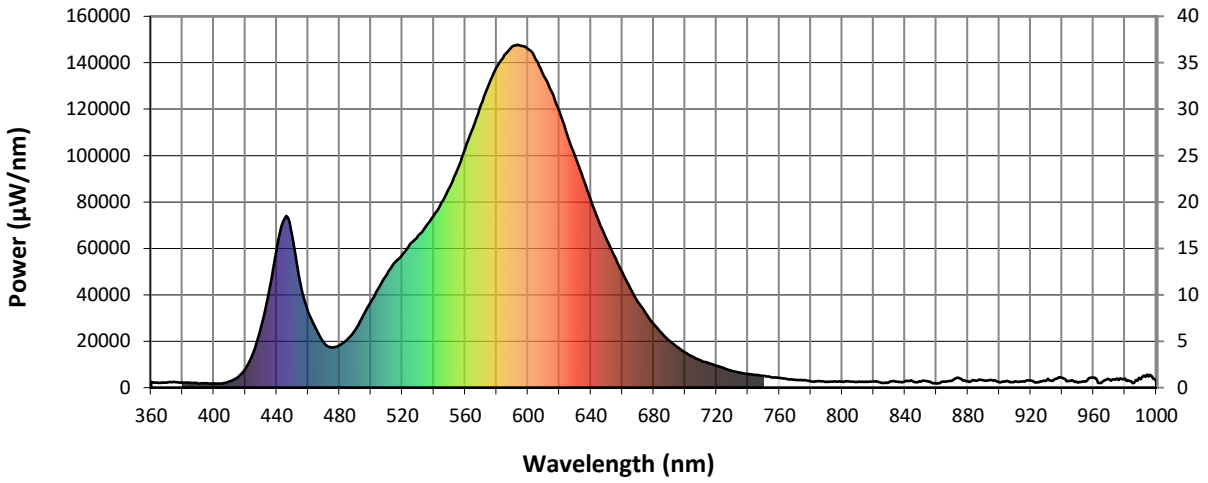
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 3101.5** **M/P: 0.45**

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

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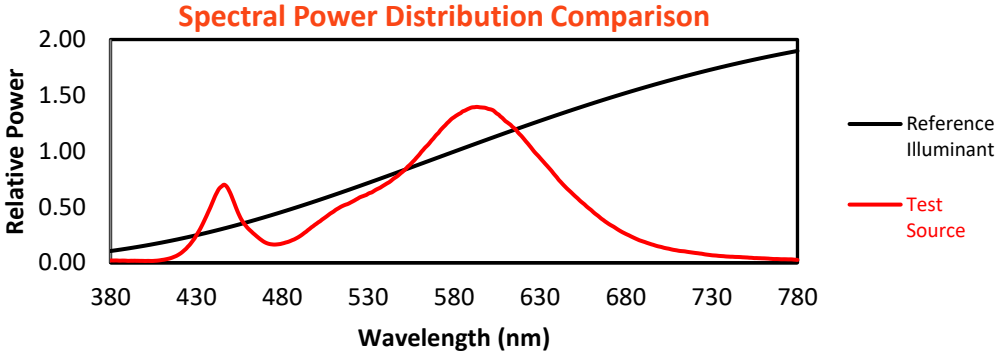
# TM-30-18

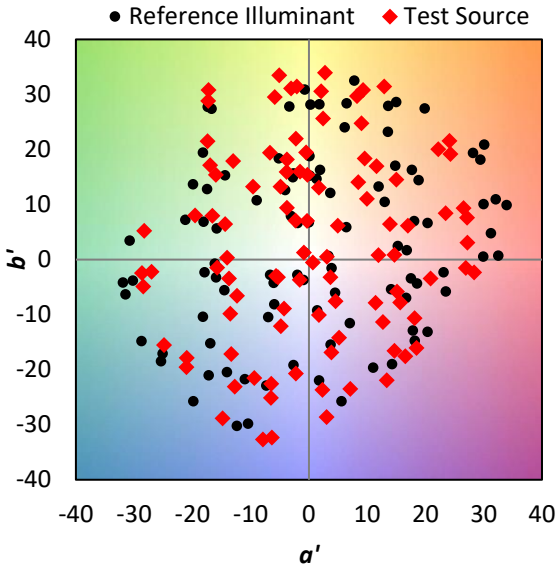
## Summary

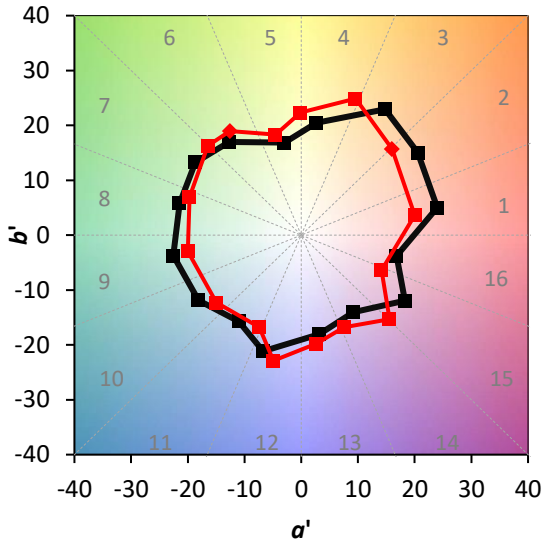
$R_f$ = 75.7
$R_g$ = 93.9
CIE $R_a$ = 71.8
$R_9$ = -38.3

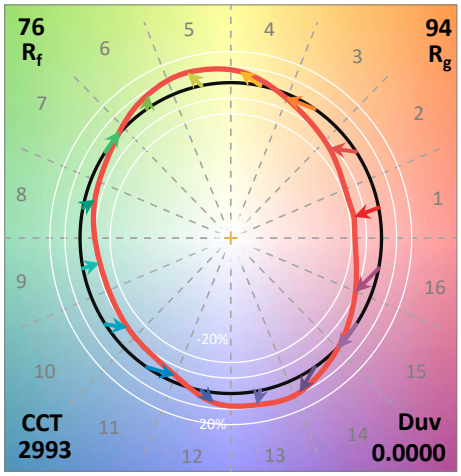
## Spectral Power Distribution Comparison

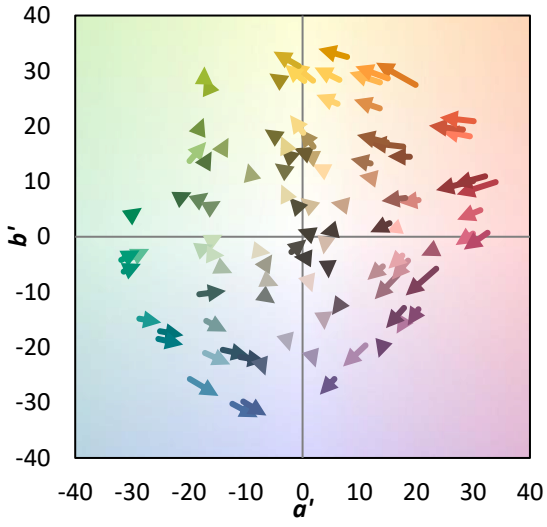



## Color Vector Graphics



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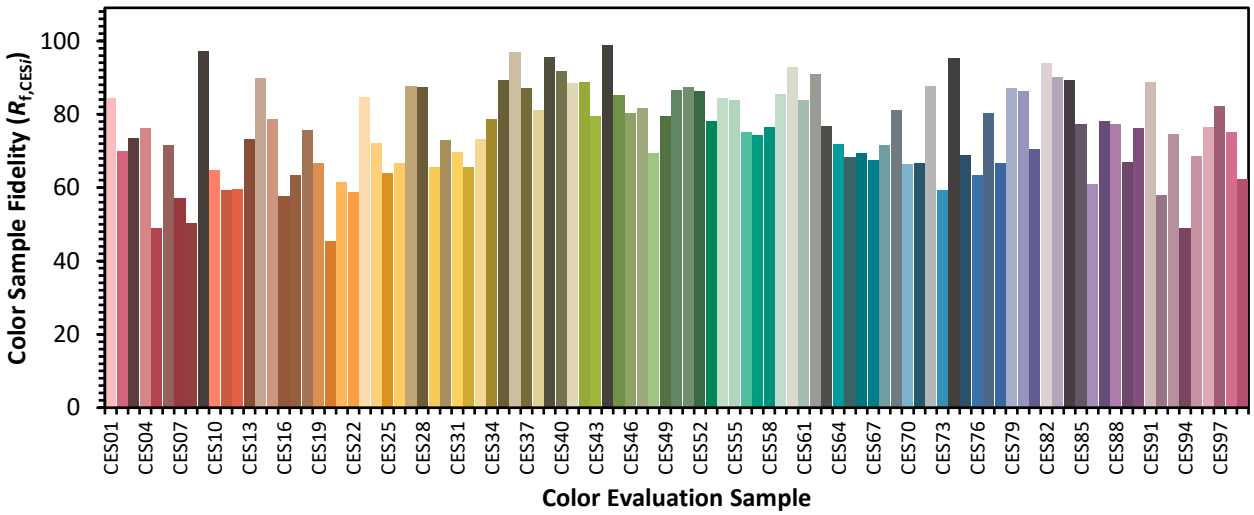
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



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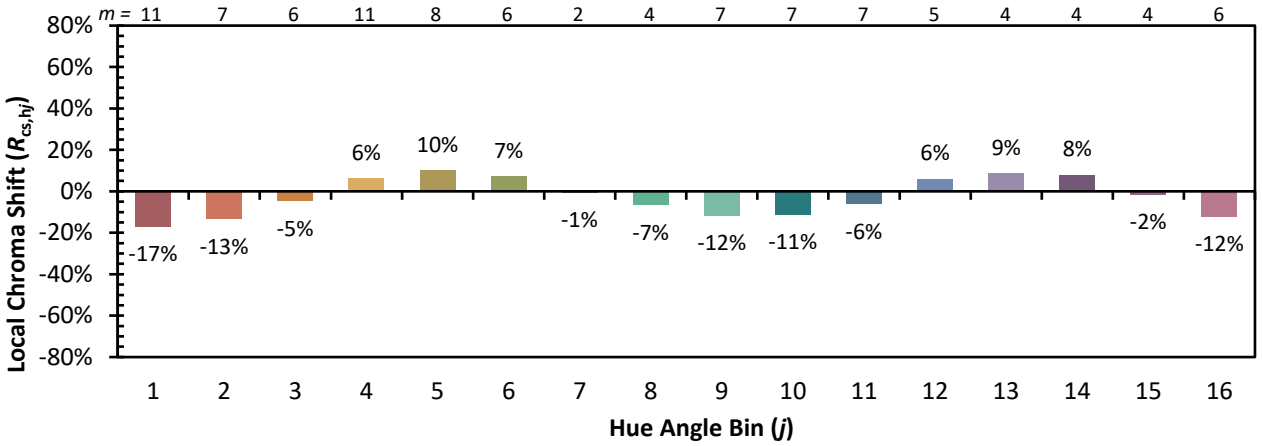
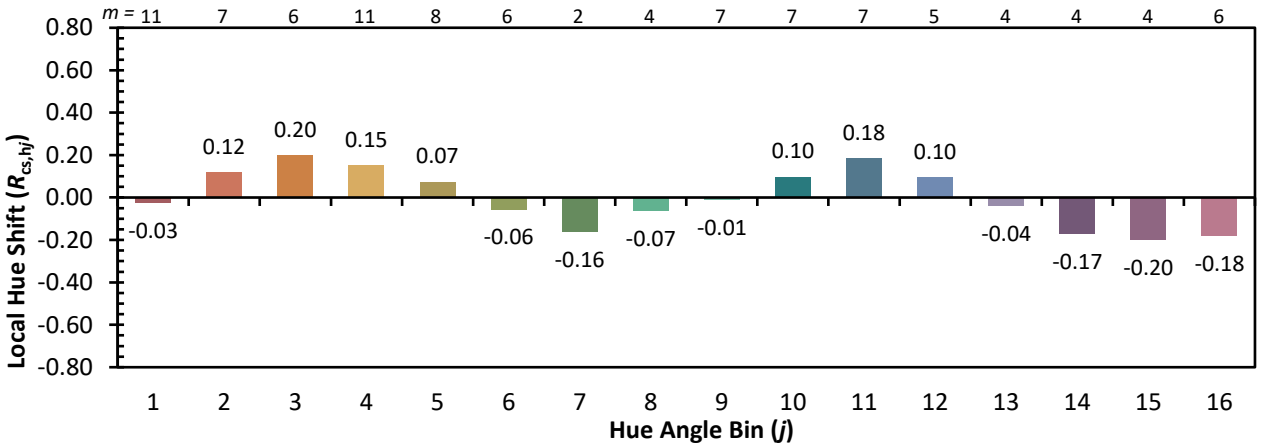
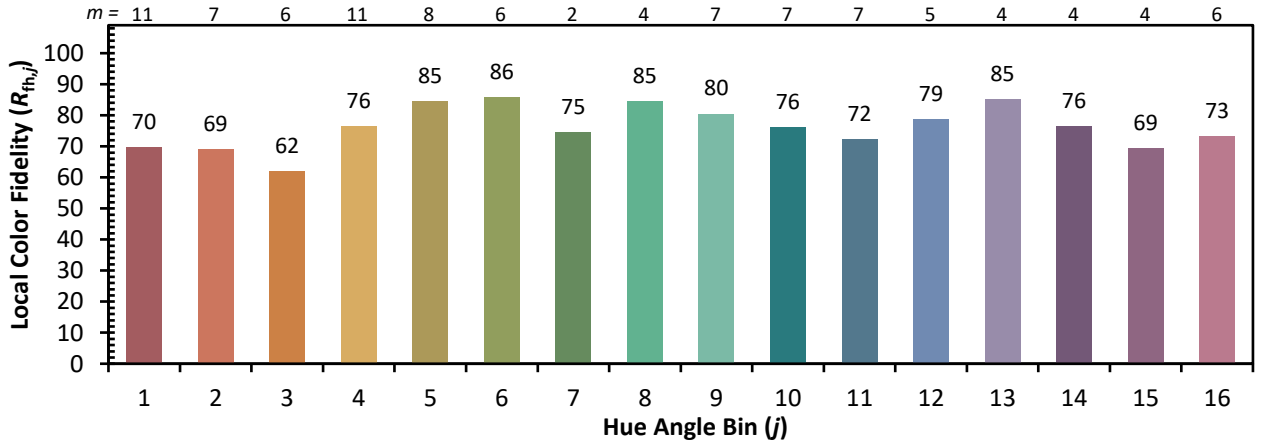
### Color Rendition by Hue-Angle Bin



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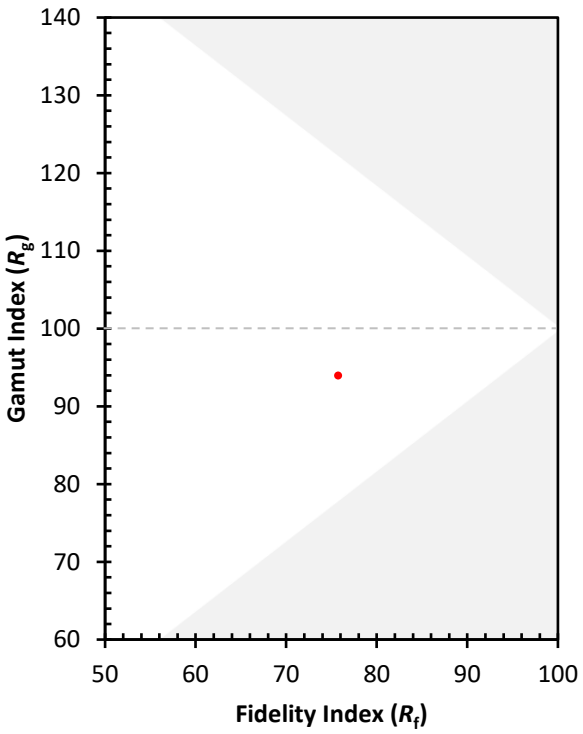
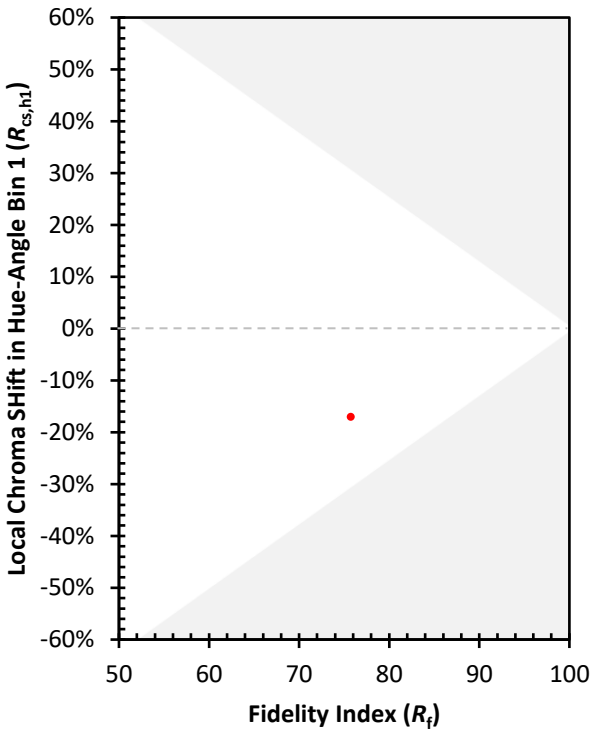
## TM-30-18

### Measure Comparisons




(END OF REPORT)