

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P631429

Luminaire Tested: GWS-SA1F-760-U-SL2-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P631429  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-28)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1F-760-U-SL2-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (16) 5700K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

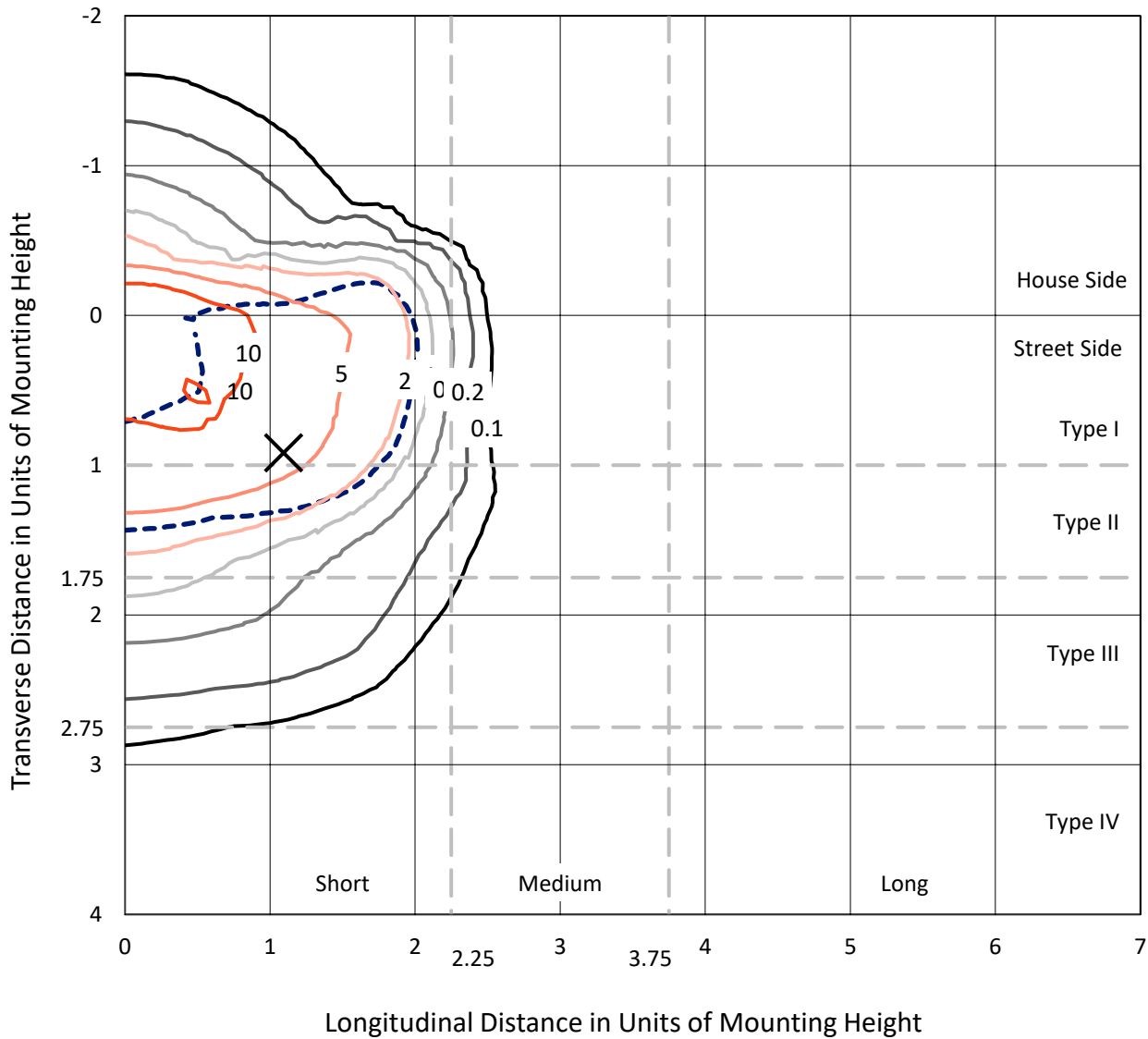
Lumens per Lamp: N/A  
Luminaire Lumens: 4991 lumens  
Efficiency: N/A  
Efficacy: 74.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G0  
  
Input Watts (W): 67.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
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



REPORT NUMBER: P631429  
 CATALOG NUMBER: GWS-SA1F-760-U-SL2-W-GRSBK

### Iso-Footcandle Lines of Horizontal Illumination

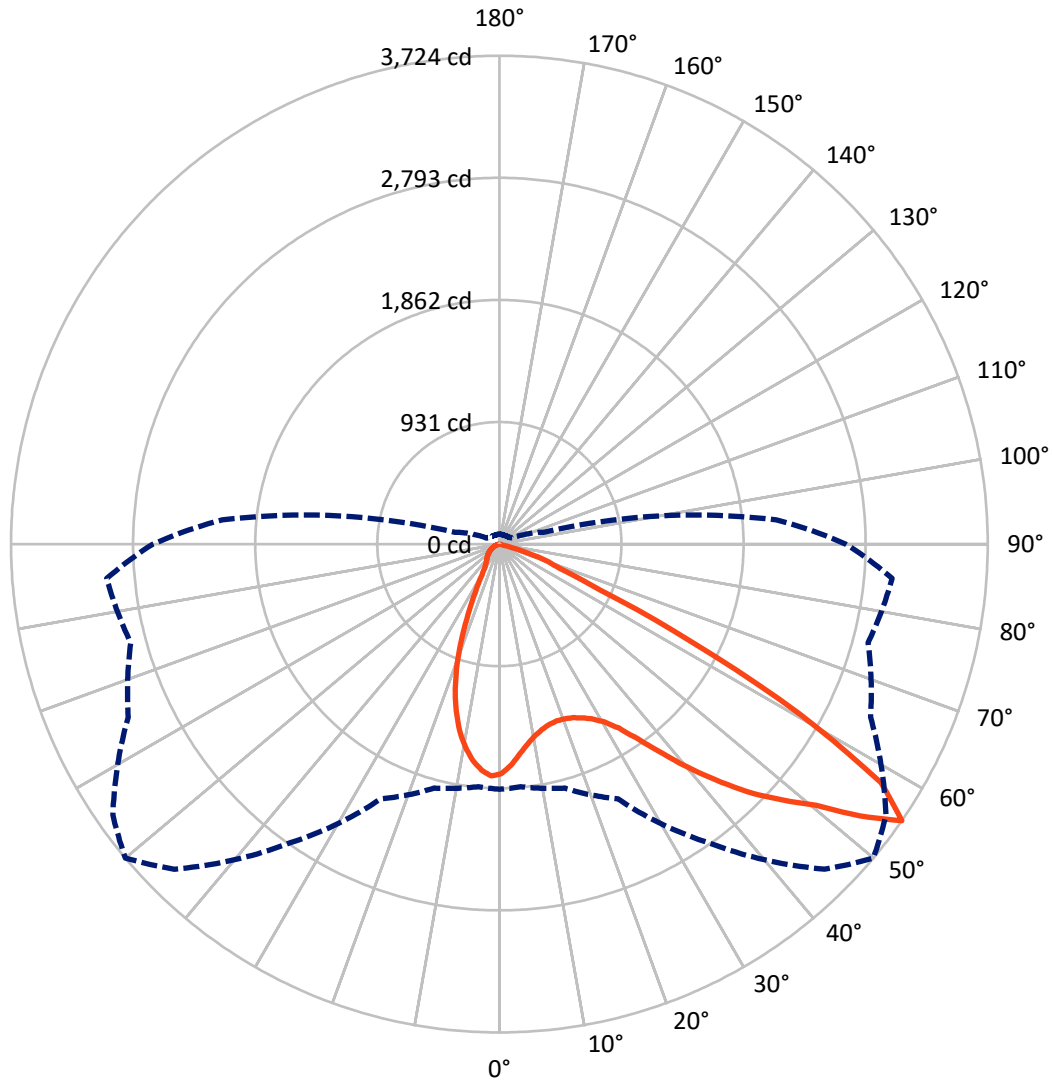
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 17.5 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 50-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

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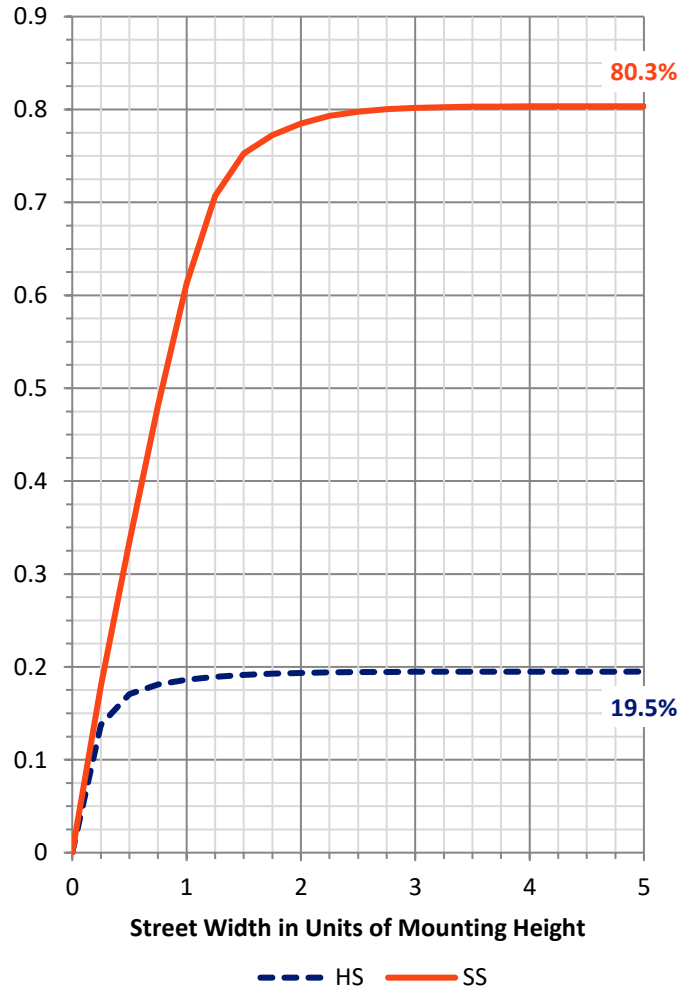
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 983.5    | 0.0    | 983.5  |
|                    | % Fixture | 19.7     | 0.0    | 19.7   |
| <b>Street Side</b> | Lumens    | 4007.5   | 0.0    | 4007.5 |
|                    | % Fixture | 80.3     | 0.0    | 80.3   |
| <b>Total</b>       | Lumens    | 4991.0   | 0.0    | 4991.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 153.8  | 3.1       |
| 10°-20°   | 378.4  | 7.6       |
| 20°-30°   | 533.8  | 10.7      |
| 30°-40°   | 789.9  | 15.8      |
| 40°-50°   | 1139.6 | 22.8      |
| 50°-60°   | 1344.2 | 26.9      |
| 60°-70°   | 599.6  | 12.0      |
| 70°-80°   | 51.6   | 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°    | 4991.0 | 100.0     |
| 0°-180°   | 4991.0 | 100.0     |

**Coefficient of Utilization**



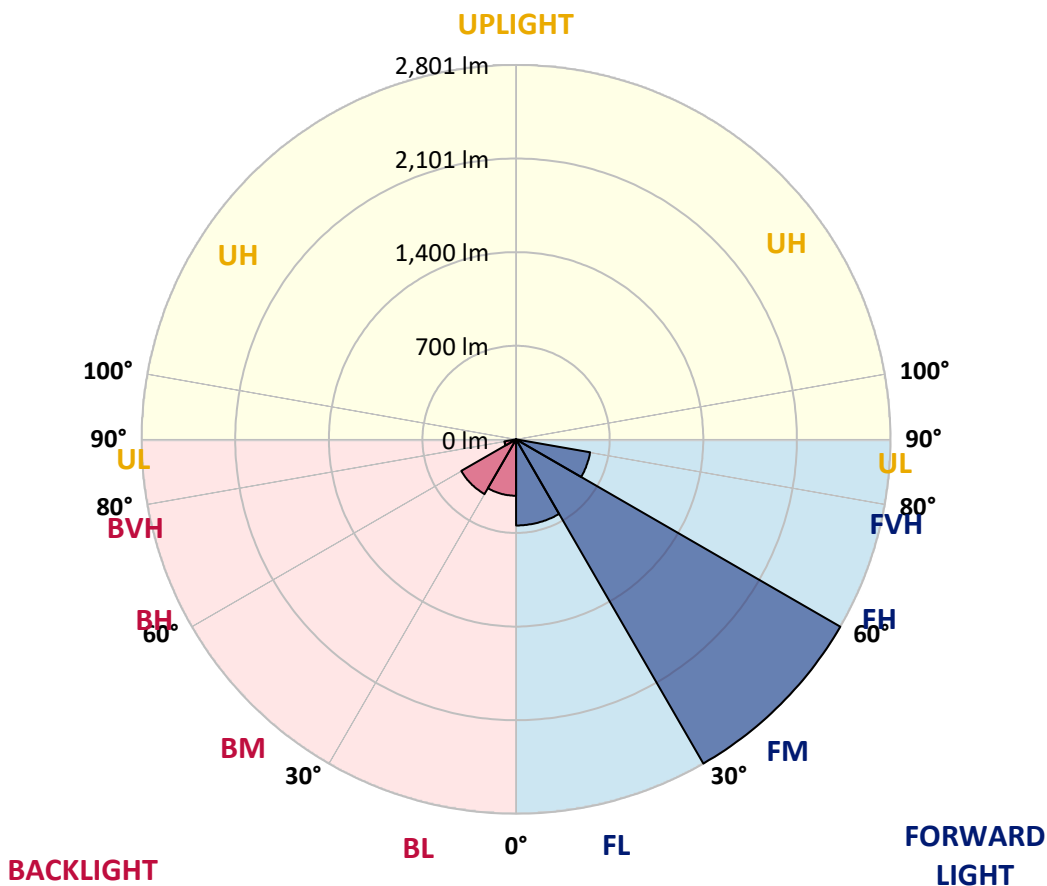
REPORT NUMBER: P631429

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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°)    | 644.4  | 12.9      |                         |      |        |
| FM (30°-60°)   | 2800.8 | 56.1      |                         |      |        |
| FH (60°-80°)   | 562.4  | 11.3      |                         |      | G0/660 |
| FVH (80°-90°)  | 0.0    | 0.0       |                         |      | G0/10  |
| BL (0°-30°)    | 421.7  | 8.4       | B1/500                  |      |        |
| BM (30°-60°)   | 473.0  | 9.5       | B1/1000                 |      |        |
| BH (60°-80°)   | 88.8   | 1.8       | 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°    | 50°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 |
| 2.5°  | 1626.8 | 1628.0 | 1628.7 | 1645.1 | 1651.2 | 1675.6 | 1688.4 | 1695.1 | 1712.7 | 1733.5 | 1750.5 |
| 5°    | 1517.8 | 1515.9 | 1519.0 | 1539.7 | 1553.1 | 1589.0 | 1608.5 | 1621.9 | 1660.9 | 1709.7 | 1750.5 |
| 7.5°  | 1422.7 | 1426.4 | 1430.0 | 1452.6 | 1472.7 | 1511.7 | 1539.7 | 1559.8 | 1614.0 | 1686.5 | 1755.4 |
| 10°   | 1355.7 | 1355.7 | 1361.2 | 1386.8 | 1410.5 | 1458.7 | 1486.7 | 1512.3 | 1576.9 | 1665.8 | 1760.9 |
| 12.5° | 1306.3 | 1306.9 | 1313.6 | 1342.9 | 1370.3 | 1420.3 | 1449.5 | 1474.5 | 1545.8 | 1645.1 | 1762.1 |
| 15°   | 1283.2 | 1281.4 | 1286.8 | 1317.9 | 1348.4 | 1395.3 | 1425.8 | 1450.1 | 1523.9 | 1633.5 | 1768.2 |
| 17.5° | 1277.1 | 1275.9 | 1280.1 | 1310.6 | 1341.7 | 1387.4 | 1417.2 | 1441.6 | 1520.8 | 1637.2 | 1786.5 |
| 20°   | 1294.8 | 1292.3 | 1290.5 | 1316.7 | 1345.9 | 1391.0 | 1422.1 | 1449.5 | 1535.4 | 1657.3 | 1814.5 |
| 22.5° | 1336.8 | 1336.8 | 1332.5 | 1345.3 | 1364.8 | 1405.6 | 1437.9 | 1473.9 | 1573.8 | 1697.5 | 1855.9 |
| 25°   | 1414.2 | 1408.1 | 1400.2 | 1405.6 | 1403.2 | 1428.8 | 1467.2 | 1517.2 | 1646.3 | 1763.9 | 1906.5 |
| 27.5° | 1502.5 | 1508.0 | 1494.6 | 1495.2 | 1473.9 | 1464.8 | 1509.2 | 1584.8 | 1754.2 | 1857.7 | 1981.4 |
| 30°   | 1622.6 | 1618.3 | 1618.9 | 1617.1 | 1567.7 | 1524.5 | 1572.6 | 1673.1 | 1890.0 | 2000.9 | 2078.9 |
| 32.5° | 1716.4 | 1722.5 | 1742.6 | 1754.2 | 1689.6 | 1620.1 | 1671.3 | 1793.2 | 2044.8 | 2164.2 | 2198.3 |
| 35°   | 1815.7 | 1826.7 | 1867.5 | 1905.3 | 1851.0 | 1771.2 | 1826.1 | 1952.2 | 2190.4 | 2325.7 | 2335.4 |
| 37.5° | 1920.5 | 1942.4 | 1991.2 | 2057.6 | 2049.1 | 1978.4 | 2028.4 | 2139.2 | 2305.0 | 2423.2 | 2448.8 |
| 40°   | 2040.5 | 2061.9 | 2141.7 | 2237.3 | 2257.4 | 2241.6 | 2258.1 | 2322.6 | 2380.5 | 2427.4 | 2497.5 |
| 42.5° | 2172.1 | 2201.4 | 2302.5 | 2430.5 | 2506.0 | 2520.1 | 2481.7 | 2475.0 | 2413.4 | 2378.7 | 2487.2 |
| 45°   | 2327.5 | 2361.6 | 2476.2 | 2641.9 | 2761.9 | 2780.8 | 2714.4 | 2628.5 | 2434.1 | 2342.7 | 2456.1 |
| 47.5° | 2501.8 | 2534.1 | 2648.0 | 2847.2 | 3025.8 | 3033.1 | 2917.3 | 2779.0 | 2495.7 | 2384.2 | 2479.8 |
| 50°   | 2560.3 | 2580.4 | 2679.1 | 2913.1 | 3242.1 | 3298.1 | 3130.6 | 2948.4 | 2619.4 | 2506.0 | 2595.6 |
| 52.5° | 2359.2 | 2367.1 | 2453.0 | 2689.4 | 3198.2 | 3558.3 | 3441.9 | 3201.2 | 2839.3 | 2691.9 | 2774.1 |
| 55°   | 1869.3 | 1856.5 | 1926.0 | 2142.9 | 2779.6 | 3505.3 | 3724.0 | 3598.5 | 3122.6 | 2910.0 | 3006.3 |
| 57.5° | 1307.6 | 1292.3 | 1276.5 | 1423.3 | 2074.0 | 2971.5 | 3431.6 | 3654.0 | 3392.6 | 3126.3 | 3256.7 |
| 60°   | 1074.8 | 1060.2 | 983.4  | 915.8  | 1253.9 | 2133.8 | 2635.8 | 3054.4 | 3370.6 | 3115.3 | 3248.8 |
| 62.5° | 928.6  | 920.0  | 889.0  | 797.0  | 737.9  | 1218.0 | 1650.6 | 2051.5 | 2586.5 | 2446.3 | 2453.6 |
| 65°   | 729.3  | 726.9  | 748.2  | 758.0  | 652.6  | 673.9  | 842.0  | 1066.3 | 1398.3 | 1318.5 | 1250.3 |
| 67.5° | 498.4  | 492.9  | 533.1  | 655.6  | 627.6  | 531.9  | 492.9  | 497.2  | 605.0  | 369.8  | 293.7  |
| 70°   | 316.8  | 304.0  | 304.6  | 406.4  | 510.6  | 419.8  | 380.2  | 334.5  | 301.0  | 54.8   | 62.1   |
| 72.5° | 202.9  | 195.0  | 167.6  | 183.4  | 236.4  | 204.7  | 206.6  | 177.9  | 118.8  | 29.2   | 34.1   |
| 75°   | 85.3   | 78.6   | 60.3   | 48.1   | 47.5   | 29.9   | 26.2   | 24.4   | 16.5   | 16.5   | 17.7   |
| 77.5° | 0.6    | 0.0    | 0.0    | 0.6    | 1.2    | 0.6    | 0.6    | 1.2    | 2.4    | 3.7    | 4.3    |
| 80°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.6    |
| 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    |



REPORT NUMBER: P631429

CATALOG NUMBER: GWS-SA1F-760-U-SL2-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 | 1751.1 |
| 2.5°  | 1760.9 | 1746.2 | 1762.7 | 1768.8 | 1768.2 | 1768.8 | 1751.1 | 1738.9 | 1738.3 | 1723.1 | 1715.8 |
| 5°    | 1767.6 | 1756.0 | 1768.2 | 1760.3 | 1741.4 | 1717.6 | 1685.9 | 1658.5 | 1646.3 | 1628.7 | 1620.1 |
| 7.5°  | 1780.4 | 1768.2 | 1766.4 | 1734.7 | 1687.8 | 1637.8 | 1581.7 | 1531.8 | 1505.0 | 1472.7 | 1474.5 |
| 10°   | 1789.5 | 1775.5 | 1751.7 | 1687.1 | 1609.2 | 1529.3 | 1445.9 | 1371.5 | 1324.6 | 1281.4 | 1274.0 |
| 12.5° | 1793.2 | 1772.4 | 1717.0 | 1619.5 | 1509.8 | 1405.6 | 1283.2 | 1177.2 | 1104.0 | 1047.4 | 1039.5 |
| 15°   | 1799.9 | 1766.4 | 1672.5 | 1537.9 | 1387.4 | 1239.9 | 1083.9 | 938.9  | 842.0  | 776.9  | 782.3  |
| 17.5° | 1810.2 | 1759.7 | 1622.6 | 1446.5 | 1255.8 | 1047.4 | 836.6  | 670.2  | 581.3  | 543.5  | 544.1  |
| 20°   | 1824.8 | 1751.7 | 1567.7 | 1345.9 | 1098.0 | 829.9  | 584.9  | 459.4  | 434.4  | 433.2  | 431.4  |
| 22.5° | 1844.3 | 1743.8 | 1509.2 | 1235.7 | 910.9  | 581.3  | 389.3  | 350.3  | 360.7  | 380.8  | 384.5  |
| 25°   | 1867.5 | 1734.1 | 1444.0 | 1111.4 | 706.8  | 381.4  | 291.9  | 285.8  | 310.7  | 337.6  | 343.6  |
| 27.5° | 1903.4 | 1729.2 | 1369.7 | 970.0  | 496.0  | 273.6  | 238.8  | 242.5  | 265.0  | 287.6  | 293.1  |
| 30°   | 1964.4 | 1738.3 | 1288.7 | 811.6  | 318.7  | 218.1  | 207.2  | 212.6  | 224.8  | 236.4  | 241.3  |
| 32.5° | 2047.2 | 1765.1 | 1210.1 | 638.5  | 227.3  | 189.5  | 187.1  | 190.1  | 195.0  | 201.7  | 203.5  |
| 35°   | 2144.1 | 1811.4 | 1129.0 | 457.0  | 187.7  | 173.0  | 170.6  | 170.6  | 173.0  | 174.3  | 174.9  |
| 37.5° | 2223.9 | 1860.2 | 1052.9 | 304.0  | 168.2  | 160.2  | 156.6  | 154.8  | 154.2  | 155.4  | 156.0  |
| 40°   | 2258.7 | 1880.3 | 970.0  | 221.2  | 154.2  | 148.7  | 143.2  | 137.7  | 137.7  | 142.0  | 142.6  |
| 42.5° | 2234.3 | 1857.7 | 874.3  | 182.8  | 144.4  | 136.5  | 128.0  | 123.1  | 125.5  | 129.8  | 131.0  |
| 45°   | 2182.5 | 1802.3 | 768.9  | 161.5  | 134.7  | 124.3  | 114.5  | 111.5  | 113.9  | 119.4  | 120.6  |
| 47.5° | 2174.0 | 1765.7 | 642.8  | 147.4  | 124.3  | 113.9  | 103.6  | 100.5  | 103.6  | 107.8  | 109.1  |
| 50°   | 2258.7 | 1797.4 | 502.7  | 135.3  | 114.5  | 103.0  | 94.4   | 91.4   | 93.2   | 95.7   | 96.9   |
| 52.5° | 2413.4 | 1915.0 | 405.8  | 123.7  | 103.0  | 92.0   | 86.5   | 82.9   | 82.9   | 85.3   | 85.9   |
| 55°   | 2641.9 | 2120.4 | 350.3  | 110.3  | 89.6   | 83.5   | 78.6   | 74.9   | 74.9   | 76.2   | 76.8   |
| 57.5° | 2905.1 | 2368.9 | 363.1  | 92.6   | 78.6   | 75.6   | 71.3   | 68.2   | 69.5   | 69.5   | 69.5   |
| 60°   | 2868.6 | 2350.7 | 388.7  | 78.0   | 69.5   | 68.2   | 64.6   | 63.4   | 66.4   | 64.0   | 62.8   |
| 62.5° | 2113.0 | 1623.8 | 203.5  | 64.0   | 59.7   | 58.5   | 56.1   | 58.5   | 62.8   | 56.1   | 53.6   |
| 65°   | 1026.1 | 786.0  | 81.6   | 52.4   | 50.6   | 49.4   | 48.1   | 51.8   | 54.2   | 43.9   | 41.4   |
| 67.5° | 241.3  | 196.2  | 53.0   | 44.5   | 42.0   | 39.6   | 40.8   | 41.4   | 39.6   | 29.9   | 28.6   |
| 70°   | 62.8   | 61.5   | 41.4   | 37.2   | 33.5   | 31.1   | 31.1   | 30.5   | 26.2   | 18.9   | 17.7   |
| 72.5° | 34.1   | 33.5   | 29.9   | 28.0   | 23.2   | 20.7   | 21.3   | 18.9   | 14.6   | 11.0   | 10.4   |
| 75°   | 17.1   | 18.3   | 17.1   | 15.8   | 12.8   | 11.6   | 11.6   | 10.4   | 7.3    | 4.3    | 4.3    |
| 77.5° | 3.7    | 4.3    | 4.3    | 3.7    | 3.0    | 2.4    | 2.4    | 3.0    | 1.2    | 0.0    | 0.0    |
| 80°   | 0.6    | 0.6    | 0.6    | 0.6    | 0.6    | 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    |



Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-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-760-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

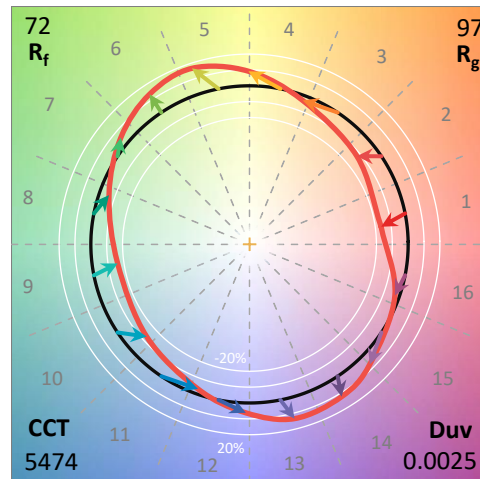
\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 5474  
 CIE u': 0.2052  
 CIE v': 0.4804  
 Duv: 0.0025  
 CIE x: 0.3330  
 CIE y: 0.3466  
 CIE z: 0.3204  
 Peak Wavelength (nm): 442  
 Dominant Wavelength (nm): 554  
 Purity: 4.1

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 |      |       |
| R1:       | 70.6 | R9:  | -27.1 |
| R2:       | 74.6 | R10: | 40.8  |
| R3:       | 78.3 | R11: | 74.6  |
| R4:       | 73.8 | R12: | 50.4  |
| R5:       | 72.4 | R13: | 70.0  |
| R6:       | 67.5 | R14: | 87.8  |
| R7:       | 77.5 |      |       |
| R8:       | 58.9 |      |       |

Rf: 72.1  
 Rg: 97.2



**Test Conditions**

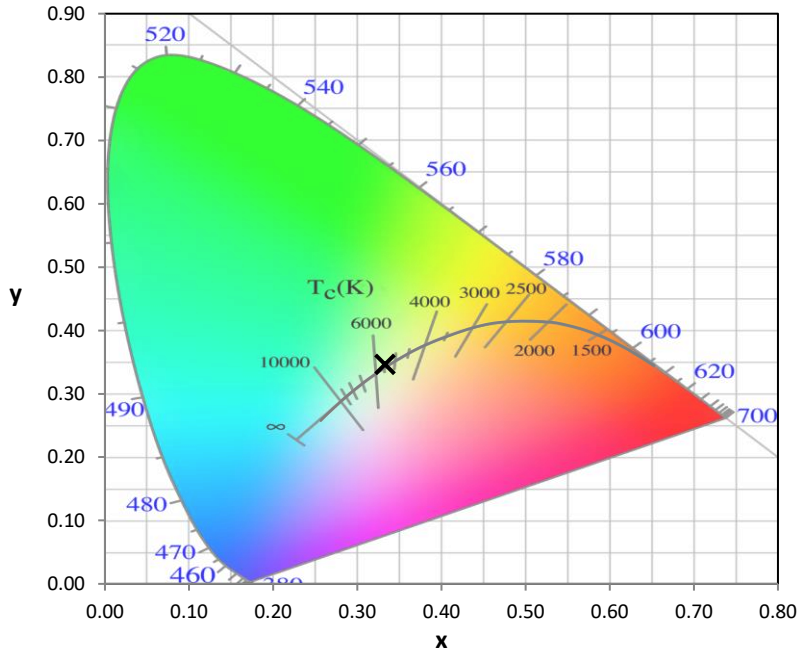
Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-R4

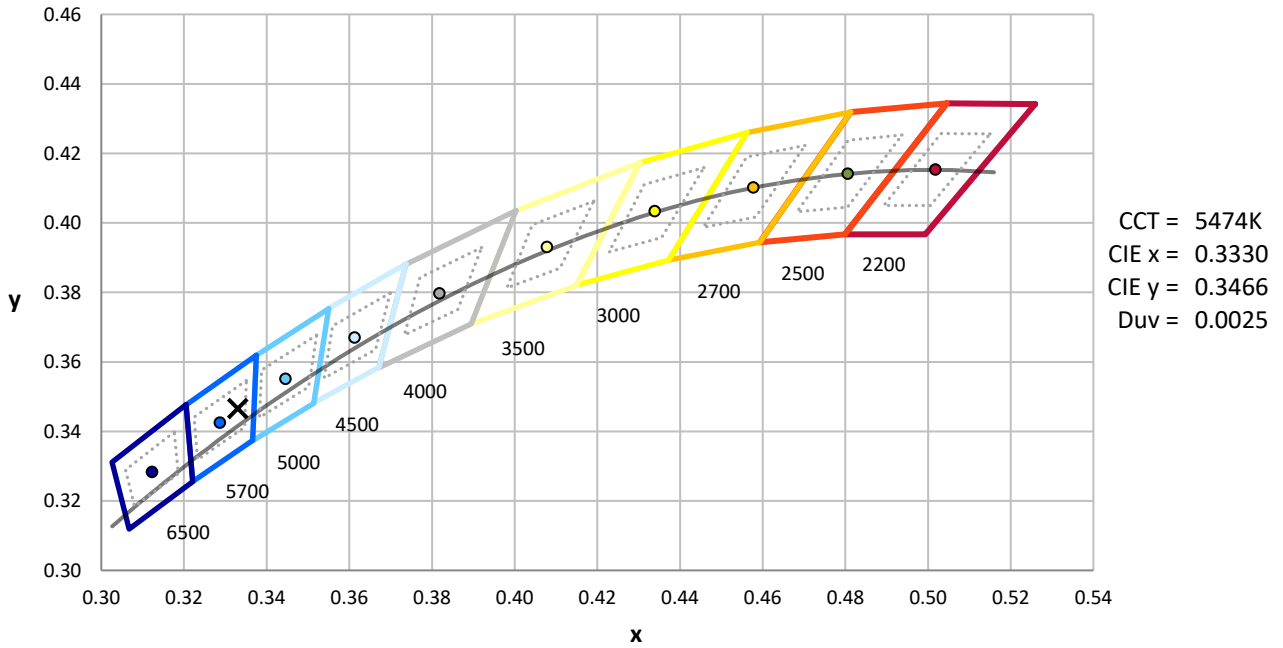
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-R4

**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 3540                                 | NR                             | 490               | 33363                                | NR                             | 620               | 80193                                | NR                             | 750               | 4663                                 | NR                             | 880               | 4678                                 | NR                             |
| 365               | 2862                                 | NR                             | 495               | 44177                                | NR                             | 625               | 73091                                | NR                             | 755               | 4147                                 | NR                             | 885               | 4128                                 | NR                             |
| 370               | 2865                                 | NR                             | 500               | 57019                                | NR                             | 630               | 66269                                | NR                             | 760               | 4040                                 | NR                             | 890               | 4504                                 | NR                             |
| 375               | 3254                                 | NR                             | 505               | 70030                                | NR                             | 635               | 60012                                | NR                             | 765               | 3474                                 | NR                             | 895               | 4371                                 | NR                             |
| 380               | 3076                                 | NR                             | 510               | 81972                                | NR                             | 640               | 53914                                | NR                             | 770               | 3469                                 | NR                             | 900               | 4082                                 | NR                             |
| 385               | 2904                                 | NR                             | 515               | 92590                                | NR                             | 645               | 48385                                | NR                             | 775               | 3181                                 | NR                             | 905               | 2982                                 | NR                             |
| 390               | 2689                                 | NR                             | 520               | 100305                               | NR                             | 650               | 43219                                | NR                             | 780               | 2969                                 | NR                             | 910               | 4351                                 | NR                             |
| 395               | 2619                                 | NR                             | 525               | 107452                               | NR                             | 655               | 38562                                | NR                             | 785               | 3132                                 | NR                             | 915               | 3365                                 | NR                             |
| 400               | 2679                                 | NR                             | 530               | 111373                               | NR                             | 660               | 34110                                | NR                             | 790               | 2507                                 | NR                             | 920               | 3430                                 | NR                             |
| 405               | 3515                                 | NR                             | 535               | 114505                               | NR                             | 665               | 30085                                | NR                             | 795               | 2968                                 | NR                             | 925               | 4264                                 | NR                             |
| 410               | 6934                                 | NR                             | 540               | 116408                               | NR                             | 670               | 26205                                | NR                             | 800               | 2758                                 | NR                             | 930               | 4095                                 | NR                             |
| 415               | 14943                                | NR                             | 545               | 118700                               | NR                             | 675               | 22906                                | NR                             | 805               | 2872                                 | NR                             | 935               | 5048                                 | NR                             |
| 420               | 31939                                | NR                             | 550               | 119209                               | NR                             | 680               | 20058                                | NR                             | 810               | 3094                                 | NR                             | 940               | 4074                                 | NR                             |
| 425               | 64701                                | NR                             | 555               | 120742                               | NR                             | 685               | 17413                                | NR                             | 815               | 3222                                 | NR                             | 945               | 4949                                 | NR                             |
| 430               | 110939                               | NR                             | 560               | 121594                               | NR                             | 690               | 15447                                | NR                             | 820               | 3238                                 | NR                             | 950               | 4387                                 | NR                             |
| 435               | 164597                               | NR                             | 565               | 121913                               | NR                             | 695               | 13398                                | NR                             | 825               | 3524                                 | NR                             | 955               | 4978                                 | NR                             |
| 440               | 207696                               | NR                             | 570               | 122147                               | NR                             | 700               | 11777                                | NR                             | 830               | 2921                                 | NR                             | 960               | 4706                                 | NR                             |
| 445               | 201830                               | NR                             | 575               | 121605                               | NR                             | 705               | 10412                                | NR                             | 835               | 3595                                 | NR                             | 965               | 5083                                 | NR                             |
| 450               | 145410                               | NR                             | 580               | 120248                               | NR                             | 710               | 9544                                 | NR                             | 840               | 3016                                 | NR                             | 970               | 4522                                 | NR                             |
| 455               | 89594                                | NR                             | 585               | 117717                               | NR                             | 715               | 8940                                 | NR                             | 845               | 4032                                 | NR                             | 975               | 4740                                 | NR                             |
| 460               | 58321                                | NR                             | 590               | 114359                               | NR                             | 720               | 7897                                 | NR                             | 850               | 3579                                 | NR                             | 980               | 6122                                 | NR                             |
| 465               | 39318                                | NR                             | 595               | 109974                               | NR                             | 725               | 7045                                 | NR                             | 855               | 4571                                 | NR                             | 985               | 6450                                 | NR                             |
| 470               | 27693                                | NR                             | 600               | 105269                               | NR                             | 730               | 6483                                 | NR                             | 860               | 4485                                 | NR                             | 990               | 4875                                 | NR                             |
| 475               | 23081                                | NR                             | 605               | 99453                                | NR                             | 735               | 5838                                 | NR                             | 865               | 3978                                 | NR                             | 995               | 4764                                 | NR                             |
| 480               | 23002                                | NR                             | 610               | 92921                                | NR                             | 740               | 5261                                 | NR                             | 870               | 4298                                 | NR                             | 1000              | 3640                                 | NR                             |
| 485               | 26201                                | NR                             | 615               | 86989                                | NR                             | 745               | 4760                                 | NR                             | 875               | 4356                                 | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| 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    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-9-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| 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    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |





REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

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

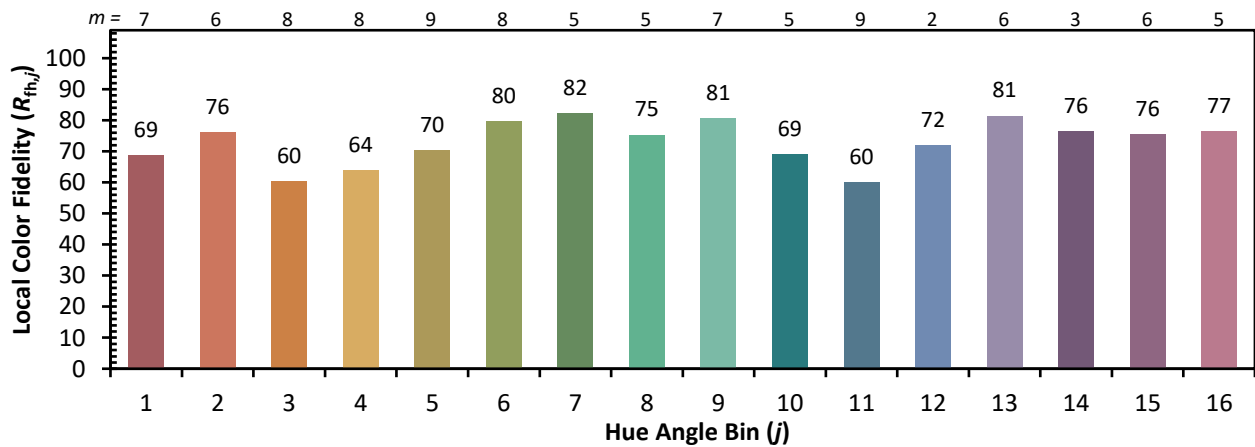
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|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Measure Comparisons



(END OF REPORT)