

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: P386651

Luminaire Tested: **GPC-SA2B-750-U-T3**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386651  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-14)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GPC-SA2B-750-U-T3  
Description: GALLEON PEDESTRIAN LUMINAIRE  
(2) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11929 lumens  
Efficiency: N/A  
Efficacy: 138.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B2 - U0 - G2

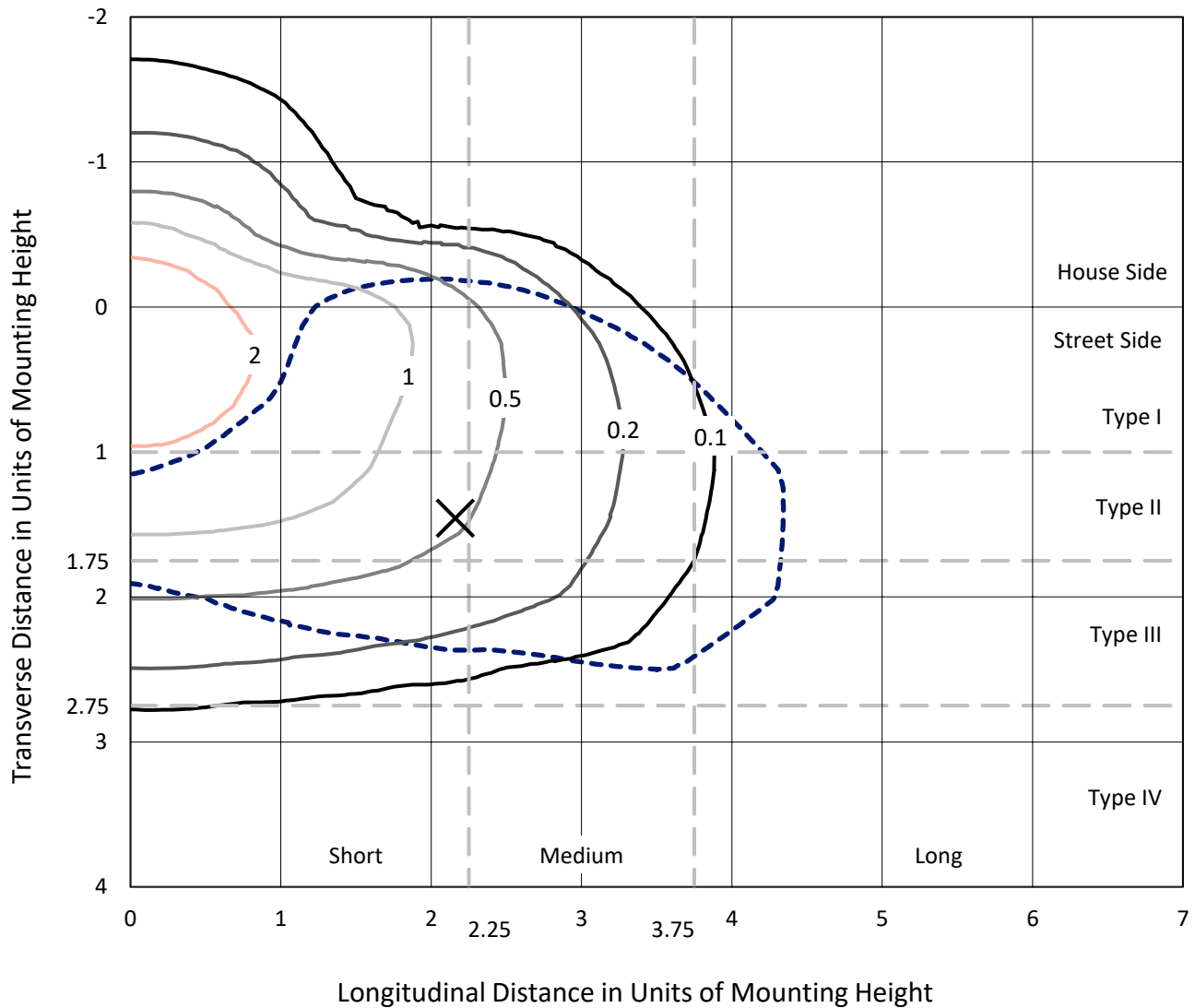
Input Watts (W): 86  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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## Iso-Footcandle Lines of Horizontal Illumination

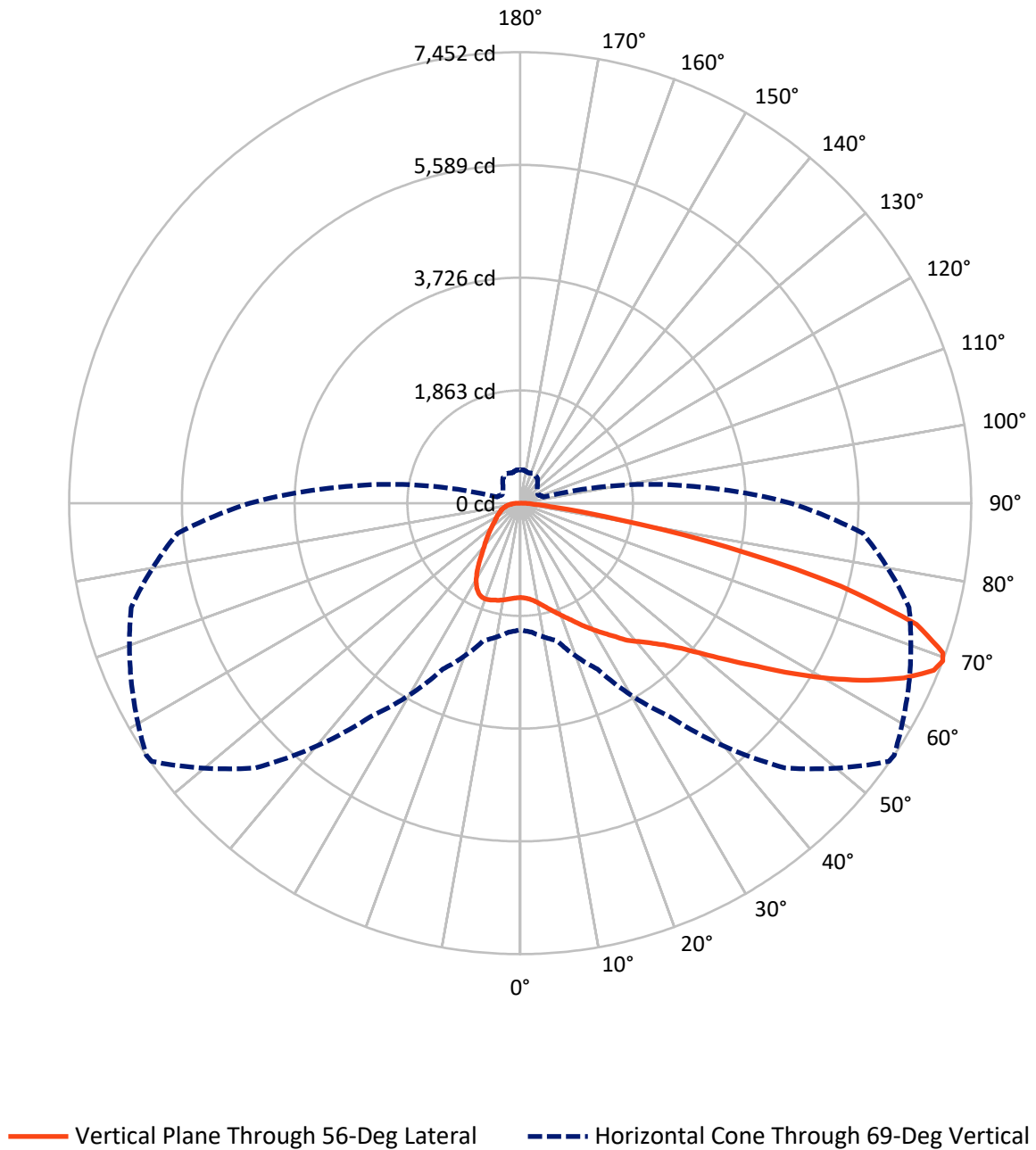
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.7 fc  
 Type III - Short - N/A

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CATALOG NUMBER: GPC-SA2B-750-U-T3

## Luminous Intensity Polar Plot



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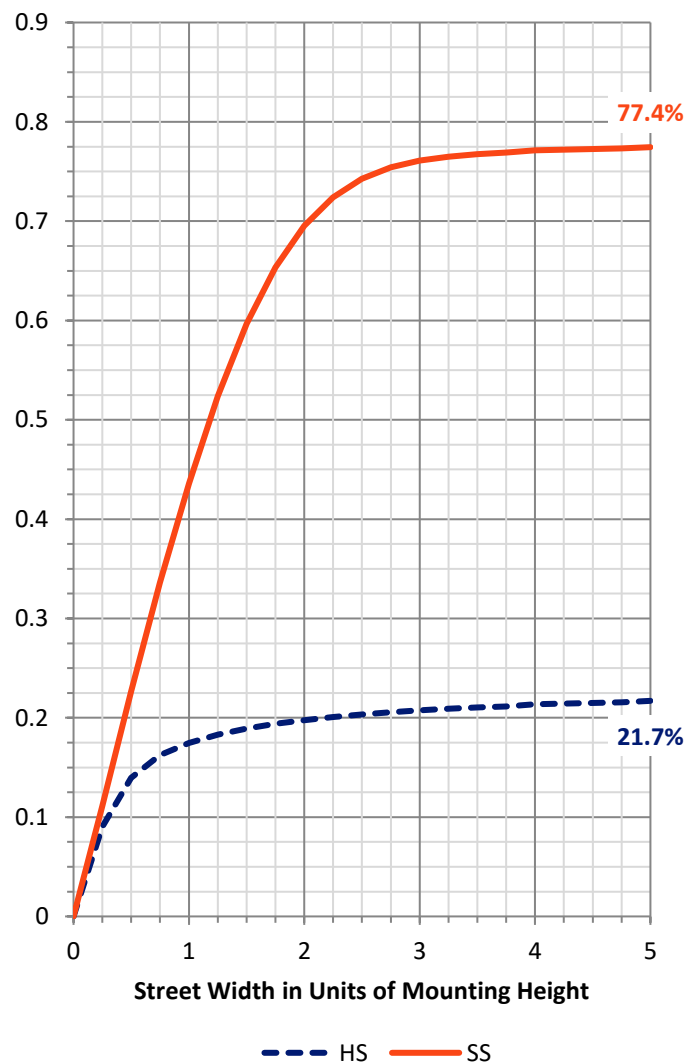
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2656.6   | 0.0    | 2656.6  |
|                    | % Fixture | 22.3     | 0.0    | 22.3    |
| <b>Street Side</b> | Lumens    | 9272.4   | 0.0    | 9272.4  |
|                    | % Fixture | 77.7     | 0.0    | 77.7    |
| <b>Total</b>       | Lumens    | 11929.0  | 0.0    | 11929.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 153.2   | 1.3       |
| 10°-20°   | 492.5   | 4.1       |
| 20°-30°   | 859.8   | 7.2       |
| 30°-40°   | 1235.1  | 10.4      |
| 40°-50°   | 1709.2  | 14.3      |
| 50°-60°   | 2504.3  | 21.0      |
| 60°-70°   | 3053.2  | 25.6      |
| 70°-80°   | 1688.0  | 14.2      |
| 80°-90°   | 233.8   | 2.0       |
| 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°    | 11929.0 | 100.0     |
| 0°-180°   | 11929.0 | 100.0     |

**Coefficient of Utilization**



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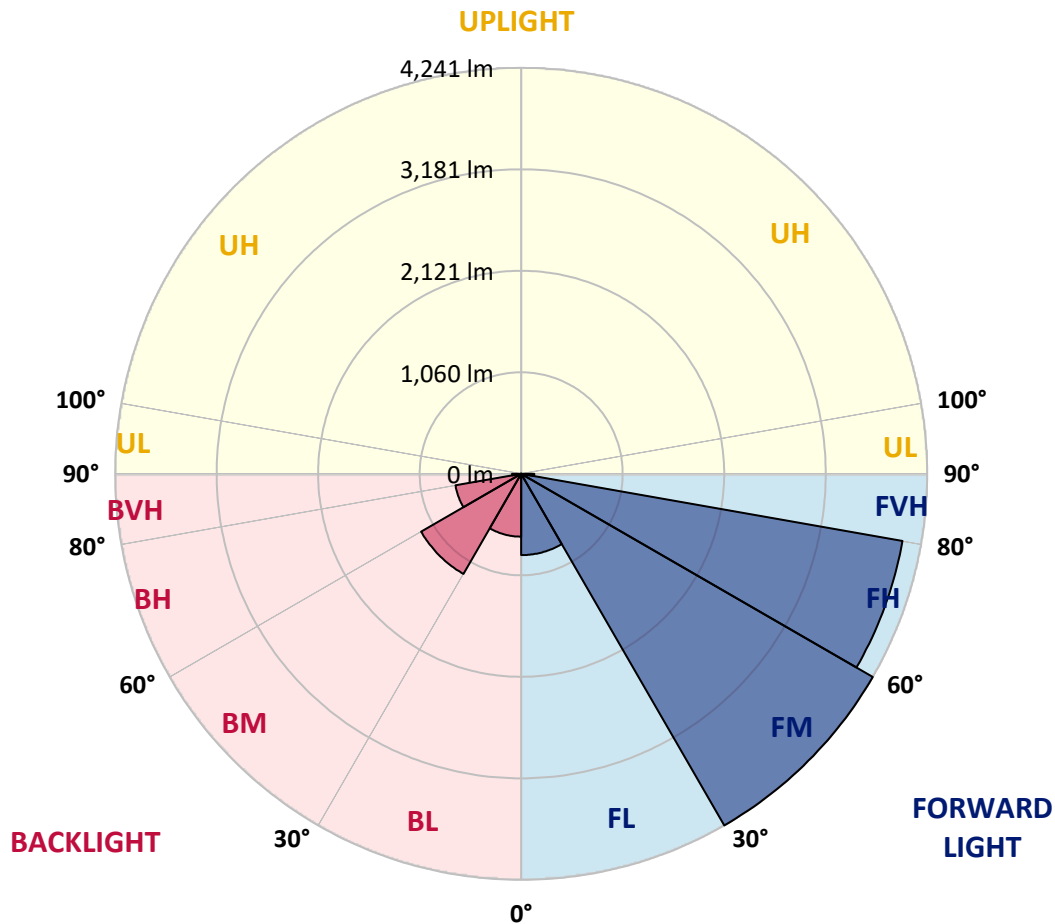
CATALOG NUMBER: GPC-SA2B-750-U-T3

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 849.0  | 7.1       |                         |      |         |
| FM   | (30°-60°)   | 4241.2 | 35.6      |                         |      |         |
| FH   | (60°-80°)   | 4044.5 | 33.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 137.7  | 1.2       |                         |      | G2/225  |
| BL   | (0°-30°)    | 656.5  | 5.5       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1207.3 | 10.1      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 696.6  | 5.8       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 96.1   | 0.8       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 56°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 |
| 2.5°  | 1569.4 | 1571.0 | 1569.8 | 1573.1 | 1569.4 | 1571.9 | 1569.8 | 1569.8 | 1568.6 | 1564.9 | 1560.8 |
| 5°    | 1594.1 | 1597.3 | 1595.3 | 1598.6 | 1594.1 | 1594.9 | 1591.2 | 1591.2 | 1587.5 | 1579.7 | 1571.5 |
| 7.5°  | 1632.7 | 1636.4 | 1634.7 | 1638.0 | 1631.9 | 1631.9 | 1626.9 | 1626.5 | 1619.1 | 1606.4 | 1596.9 |
| 10°   | 1678.7 | 1683.6 | 1682.0 | 1686.9 | 1682.0 | 1683.6 | 1678.7 | 1678.7 | 1668.8 | 1650.8 | 1638.8 |
| 12.5° | 1745.7 | 1751.9 | 1747.3 | 1746.9 | 1744.9 | 1748.2 | 1744.1 | 1743.2 | 1734.2 | 1709.5 | 1693.1 |
| 15°   | 1835.3 | 1841.9 | 1832.4 | 1831.6 | 1820.1 | 1818.8 | 1818.8 | 1817.6 | 1811.9 | 1782.3 | 1755.1 |
| 17.5° | 1938.4 | 1940.5 | 1932.3 | 1919.1 | 1904.3 | 1894.9 | 1893.6 | 1896.9 | 1896.9 | 1862.4 | 1819.3 |
| 20°   | 2039.5 | 2043.2 | 2036.6 | 2021.9 | 2002.9 | 1989.0 | 1979.1 | 1985.7 | 1985.3 | 1944.2 | 1883.0 |
| 22.5° | 2149.7 | 2158.3 | 2148.4 | 2129.5 | 2107.3 | 2091.7 | 2074.5 | 2080.2 | 2080.6 | 2030.1 | 1945.4 |
| 25°   | 2292.3 | 2284.4 | 2278.3 | 2251.6 | 2219.9 | 2203.9 | 2187.9 | 2193.6 | 2192.0 | 2122.5 | 2009.9 |
| 27.5° | 2418.4 | 2420.1 | 2411.8 | 2383.5 | 2346.9 | 2311.6 | 2310.7 | 2314.4 | 2308.3 | 2218.7 | 2070.8 |
| 30°   | 2565.1 | 2565.9 | 2554.4 | 2529.0 | 2489.1 | 2443.5 | 2432.8 | 2439.0 | 2425.8 | 2309.9 | 2134.9 |
| 32.5° | 2711.0 | 2715.1 | 2702.4 | 2671.6 | 2639.5 | 2584.0 | 2562.7 | 2566.8 | 2533.9 | 2403.2 | 2201.0 |
| 35°   | 2838.8 | 2844.6 | 2840.5 | 2819.9 | 2785.0 | 2737.3 | 2711.8 | 2709.4 | 2668.7 | 2517.5 | 2288.6 |
| 37.5° | 2969.1 | 2974.4 | 2969.9 | 2952.6 | 2938.7 | 2888.1 | 2874.6 | 2874.6 | 2803.9 | 2634.2 | 2399.9 |
| 40°   | 3103.0 | 3111.3 | 3105.9 | 3082.1 | 3070.2 | 3047.2 | 3014.7 | 3006.9 | 2930.5 | 2774.3 | 2581.6 |
| 42.5° | 3227.6 | 3238.2 | 3259.6 | 3245.6 | 3221.4 | 3224.7 | 3159.3 | 3155.2 | 3099.3 | 2981.4 | 2809.6 |
| 45°   | 3404.3 | 3419.9 | 3456.0 | 3445.4 | 3440.4 | 3422.4 | 3344.7 | 3341.0 | 3319.6 | 3260.0 | 3092.8 |
| 47.5° | 3597.0 | 3618.4 | 3683.7 | 3685.8 | 3738.8 | 3704.7 | 3599.1 | 3586.3 | 3591.3 | 3593.7 | 3438.4 |
| 50°   | 3774.5 | 3798.0 | 3905.2 | 3955.8 | 4080.7 | 4088.1 | 3919.2 | 3907.7 | 3927.0 | 3983.7 | 3841.1 |
| 52.5° | 3916.3 | 3945.9 | 4079.9 | 4236.0 | 4450.1 | 4510.9 | 4313.3 | 4304.7 | 4319.0 | 4416.8 | 4296.4 |
| 55°   | 4020.3 | 4052.3 | 4198.2 | 4482.6 | 4824.5 | 4931.8 | 4767.0 | 4758.7 | 4767.8 | 4892.3 | 4791.6 |
| 57.5° | 4044.5 | 4052.3 | 4264.0 | 4648.6 | 5140.5 | 5398.2 | 5322.2 | 5305.7 | 5261.3 | 5369.8 | 5338.2 |
| 60°   | 3930.7 | 3961.9 | 4209.7 | 4707.0 | 5385.0 | 5858.0 | 5902.4 | 5881.9 | 5757.3 | 5846.1 | 5820.6 |
| 62.5° | 3699.7 | 3755.6 | 4007.1 | 4618.2 | 5480.8 | 6233.6 | 6471.6 | 6446.9 | 6232.4 | 6289.9 | 6167.5 |
| 65°   | 3322.5 | 3346.3 | 3610.6 | 4312.0 | 5359.1 | 6474.0 | 6979.1 | 6966.8 | 6696.8 | 6606.8 | 6231.6 |
| 67.5° | 2647.7 | 2692.5 | 2916.9 | 3672.2 | 4861.5 | 6445.7 | 7371.5 | 7370.3 | 7000.0 | 6724.3 | 6004.3 |
| 69°   | 2091.7 | 2138.1 | 2351.8 | 3025.0 | 4301.8 | 6186.4 | 7437.3 | 7451.7 | 7085.5 | 6652.8 | 5679.7 |
| 70°   | 1667.6 | 1721.4 | 1868.2 | 2547.9 | 3804.9 | 5844.5 | 7382.6 | 7408.5 | 7069.1 | 6534.9 | 5380.1 |
| 72.5° | 709.7  | 753.3  | 857.6  | 1313.4 | 2319.0 | 4364.2 | 6750.2 | 6848.0 | 6688.1 | 5980.9 | 4446.4 |
| 75°   | 309.9  | 323.4  | 370.7  | 535.5  | 1029.4 | 2375.3 | 5288.0 | 5468.9 | 5718.7 | 5055.4 | 3312.2 |
| 77.5° | 226.8  | 232.6  | 258.5  | 314.4  | 461.9  | 897.1  | 3400.6 | 3505.8 | 4124.2 | 3678.8 | 2031.7 |
| 80°   | 175.5  | 179.6  | 199.7  | 231.0  | 301.6  | 362.9  | 1550.9 | 1641.3 | 2319.0 | 1889.5 | 846.1  |
| 82.5° | 139.7  | 142.6  | 156.6  | 170.1  | 208.3  | 219.9  | 514.9  | 571.2  | 856.0  | 521.9  | 224.0  |
| 85°   | 129.9  | 133.1  | 138.1  | 124.1  | 133.6  | 129.0  | 222.7  | 233.0  | 258.5  | 205.1  | 93.7   |
| 87.5° | 58.8   | 69.4   | 136.8  | 96.6   | 71.1   | 56.7   | 91.2   | 95.3   | 107.3  | 107.7  | 41.5   |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 | 1559.5 |
| 2.5°  | 1563.2 | 1562.0 | 1564.1 | 1559.1 | 1565.3 | 1564.9 | 1562.8 | 1563.6 | 1567.8 | 1567.3 | 1567.8 |
| 5°    | 1572.7 | 1571.9 | 1574.3 | 1570.6 | 1578.0 | 1580.5 | 1580.9 | 1584.6 | 1589.1 | 1590.4 | 1590.4 |
| 7.5°  | 1596.5 | 1596.5 | 1597.8 | 1592.8 | 1597.8 | 1597.3 | 1595.3 | 1599.0 | 1603.5 | 1603.9 | 1603.5 |
| 10°   | 1637.6 | 1638.0 | 1636.0 | 1623.2 | 1619.1 | 1608.0 | 1597.8 | 1598.2 | 1603.9 | 1608.4 | 1609.7 |
| 12.5° | 1689.4 | 1687.8 | 1678.7 | 1655.3 | 1638.0 | 1615.4 | 1604.7 | 1604.3 | 1610.1 | 1613.8 | 1615.0 |
| 15°   | 1748.6 | 1744.1 | 1720.6 | 1682.4 | 1652.0 | 1629.8 | 1612.5 | 1608.4 | 1605.2 | 1601.0 | 1601.5 |
| 17.5° | 1804.5 | 1794.2 | 1755.1 | 1702.1 | 1670.1 | 1640.5 | 1607.2 | 1580.5 | 1562.0 | 1551.3 | 1548.0 |
| 20°   | 1861.2 | 1841.0 | 1784.7 | 1720.6 | 1679.9 | 1626.1 | 1562.0 | 1507.8 | 1474.1 | 1458.4 | 1455.6 |
| 22.5° | 1913.0 | 1880.5 | 1812.3 | 1739.9 | 1672.1 | 1577.6 | 1476.9 | 1398.0 | 1351.2 | 1330.2 | 1331.9 |
| 25°   | 1963.5 | 1918.3 | 1841.0 | 1753.5 | 1632.7 | 1492.1 | 1358.6 | 1261.6 | 1207.4 | 1183.9 | 1183.1 |
| 27.5° | 2007.9 | 1956.5 | 1872.3 | 1742.4 | 1559.1 | 1370.5 | 1218.5 | 1123.9 | 1078.7 | 1058.6 | 1055.3 |
| 30°   | 2058.8 | 2004.6 | 1913.8 | 1700.1 | 1451.5 | 1230.0 | 1081.6 | 1015.0 | 983.0  | 962.8  | 959.1  |
| 32.5° | 2120.9 | 2069.9 | 1947.9 | 1623.2 | 1313.8 | 1083.3 | 974.8  | 928.3  | 899.1  | 876.5  | 872.4  |
| 35°   | 2211.3 | 2156.2 | 1956.5 | 1513.1 | 1162.6 | 967.4  | 896.3  | 848.6  | 809.2  | 780.0  | 777.1  |
| 37.5° | 2324.7 | 2264.3 | 1936.8 | 1370.5 | 1015.9 | 892.2  | 830.9  | 772.2  | 720.8  | 679.7  | 673.1  |
| 40°   | 2488.3 | 2397.0 | 1882.1 | 1206.1 | 907.8  | 834.2  | 767.2  | 700.3  | 636.6  | 588.5  | 579.0  |
| 42.5° | 2684.7 | 2552.8 | 1798.3 | 1042.6 | 828.5  | 775.5  | 703.9  | 620.9  | 560.1  | 526.0  | 521.1  |
| 45°   | 2934.6 | 2714.7 | 1682.0 | 899.6  | 750.4  | 716.7  | 635.7  | 559.3  | 521.5  | 496.4  | 492.3  |
| 47.5° | 3219.8 | 2896.3 | 1559.9 | 783.3  | 684.2  | 661.6  | 581.1  | 531.8  | 501.8  | 482.0  | 478.3  |
| 50°   | 3570.3 | 3101.4 | 1430.5 | 687.9  | 617.7  | 595.5  | 555.2  | 516.6  | 492.7  | 477.5  | 473.8  |
| 52.5° | 3965.6 | 3332.8 | 1337.2 | 612.7  | 562.6  | 546.6  | 541.6  | 508.3  | 489.0  | 477.5  | 473.8  |
| 55°   | 4391.4 | 3568.2 | 1236.5 | 549.4  | 514.9  | 519.4  | 532.6  | 509.2  | 496.0  | 482.0  | 476.7  |
| 57.5° | 4817.5 | 3811.5 | 1124.3 | 496.0  | 477.1  | 499.3  | 526.4  | 510.8  | 499.7  | 486.1  | 481.2  |
| 60°   | 5154.5 | 3965.6 | 950.5  | 451.2  | 447.1  | 477.1  | 511.6  | 498.5  | 484.1  | 484.5  | 483.7  |
| 62.5° | 5311.9 | 3957.4 | 758.6  | 411.4  | 417.1  | 447.1  | 487.8  | 479.2  | 467.2  | 483.3  | 484.5  |
| 65°   | 5223.5 | 3760.1 | 590.5  | 375.2  | 385.1  | 415.9  | 463.1  | 469.7  | 473.8  | 504.6  | 508.8  |
| 67.5° | 4852.9 | 3376.3 | 457.4  | 343.6  | 355.9  | 394.5  | 465.6  | 511.6  | 517.0  | 549.4  | 549.0  |
| 69°   | 4469.4 | 3016.3 | 397.4  | 327.1  | 341.5  | 399.8  | 497.7  | 538.3  | 518.2  | 552.7  | 547.8  |
| 70°   | 4148.1 | 2731.6 | 365.3  | 316.0  | 334.9  | 409.3  | 519.0  | 537.9  | 512.0  | 541.6  | 533.4  |
| 72.5° | 3194.7 | 1965.1 | 309.9  | 295.5  | 312.7  | 391.6  | 525.2  | 526.0  | 497.7  | 503.4  | 489.4  |
| 75°   | 2191.2 | 1241.9 | 270.4  | 267.5  | 279.0  | 353.0  | 505.5  | 502.6  | 460.3  | 452.0  | 440.5  |
| 77.5° | 1208.2 | 630.8  | 229.7  | 240.8  | 248.6  | 312.7  | 459.4  | 455.3  | 420.4  | 403.1  | 399.0  |
| 80°   | 466.0  | 276.2  | 194.0  | 214.1  | 219.0  | 270.8  | 402.7  | 399.0  | 369.9  | 347.7  | 341.5  |
| 82.5° | 175.9  | 144.7  | 160.3  | 185.3  | 183.7  | 223.6  | 341.1  | 339.0  | 310.7  | 278.2  | 268.3  |
| 85°   | 81.4   | 86.7   | 127.0  | 152.9  | 141.0  | 165.6  | 272.9  | 276.6  | 242.0  | 203.4  | 203.4  |
| 87.5° | 34.5   | 48.5   | 90.0   | 115.5  | 94.9   | 111.8  | 200.1  | 191.1  | 175.5  | 121.6  | 114.2  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

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### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

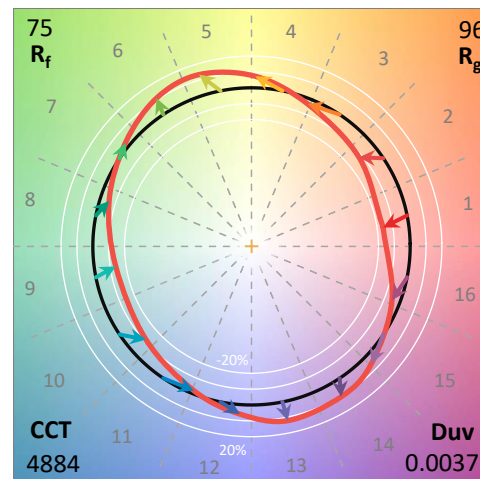
\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |

### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7



REPORT NUMBER: SP1-1908-441-4-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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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 5000K 4-step quadrangle

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**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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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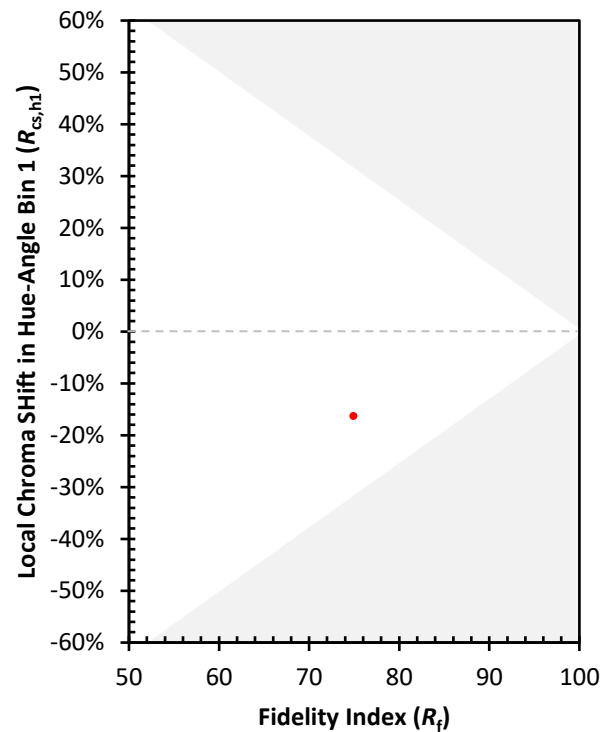
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)