

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: P386188

Luminaire Tested: **GPC-SA1D-750-U-SL2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386188  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GPC-SA1D-750-U-SL2-HSS  
Description: GALLEON PEDESTRIAN LUMINAIRE  
(1) 70 CRI, 5000K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE II SPILL  
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6863 lumens  
Efficiency: N/A  
Efficacy: 102.4 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G2

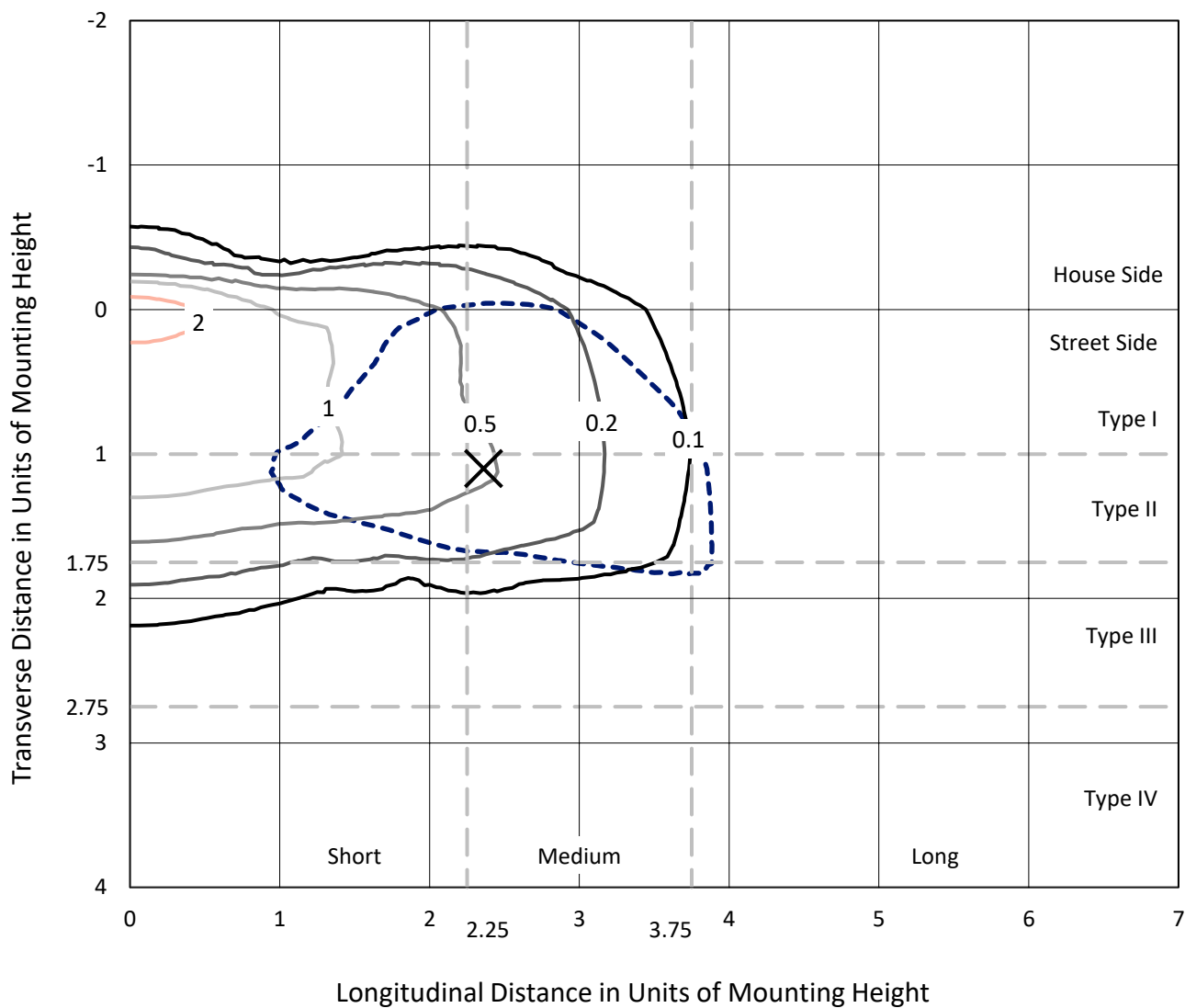
Input Watts (W): 67  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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## Iso-Footcandle Lines of Horizontal Illumination

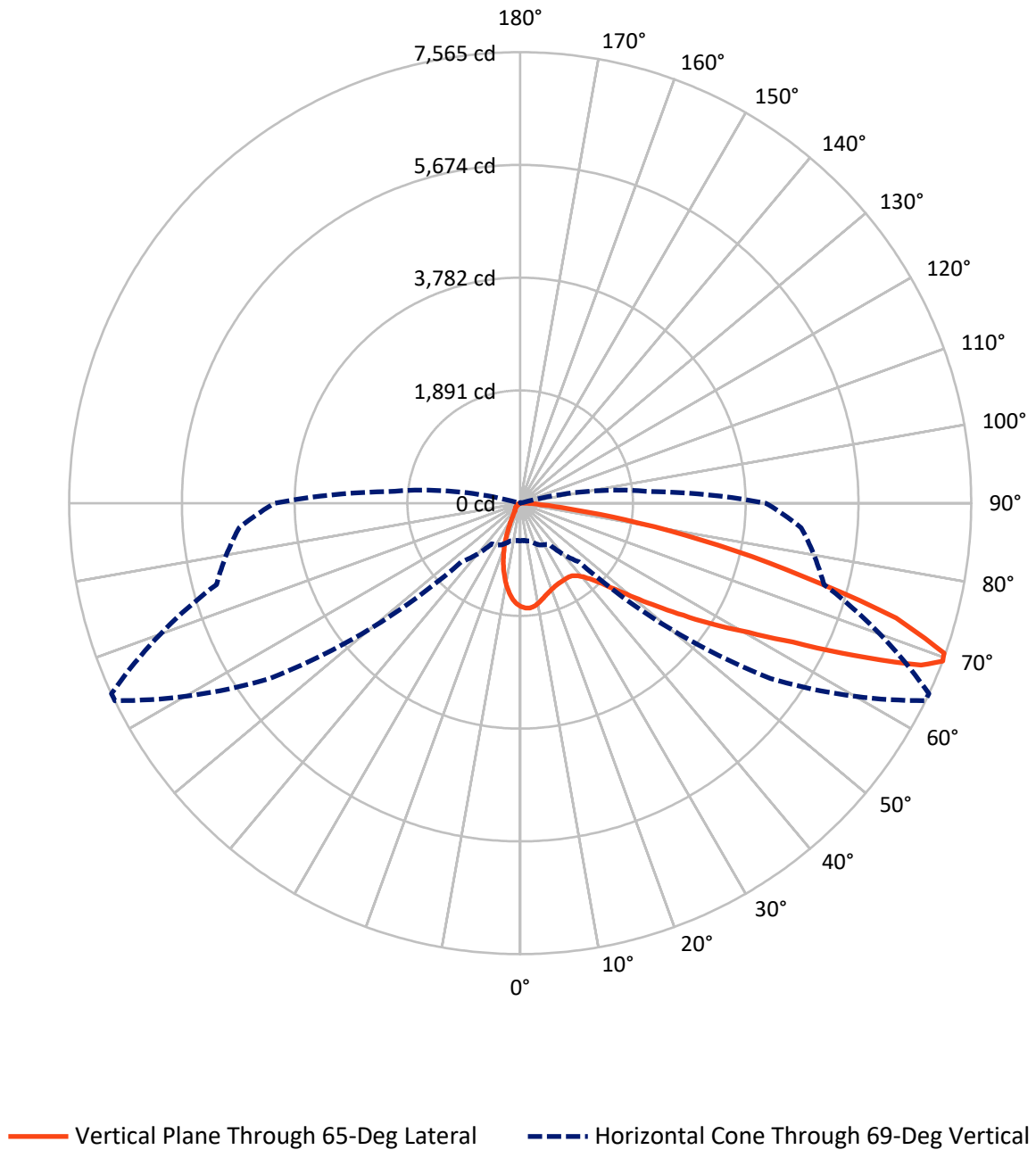
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.8 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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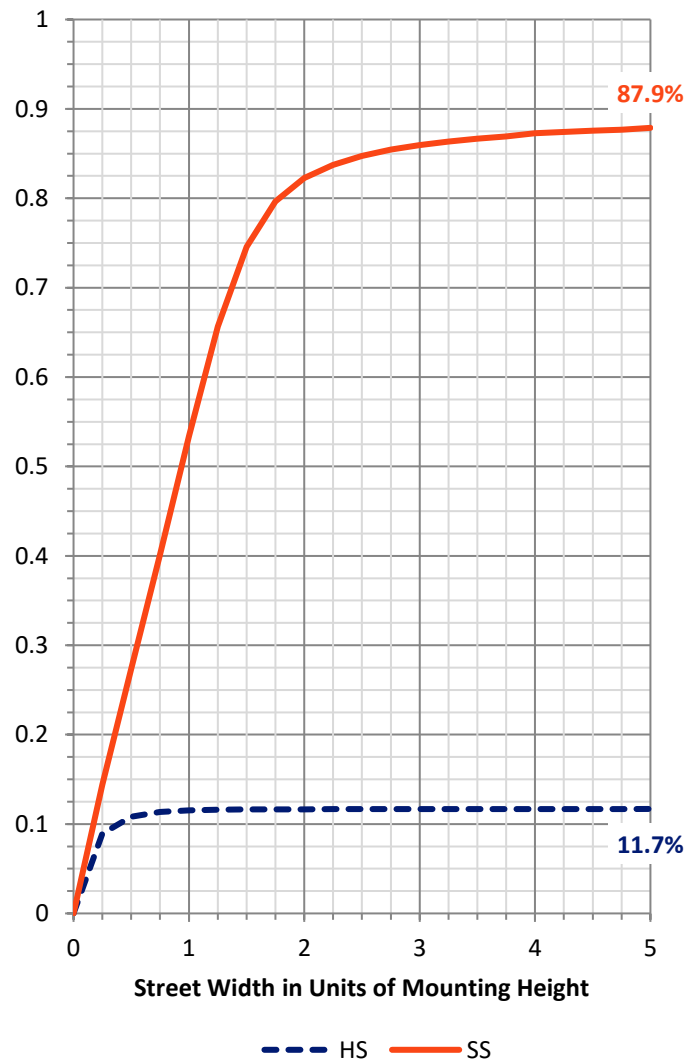
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 809.0    | 0.0    | 809.0  |
|                    | % Fixture | 11.8     | 0.0    | 11.8   |
| <b>Street Side</b> | Lumens    | 6054.0   | 0.0    | 6054.0 |
|                    | % Fixture | 88.2     | 0.0    | 88.2   |
| <b>Total</b>       | Lumens    | 6863.0   | 0.0    | 6863.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 145.0  | 2.1       |
| 10°-20°   | 317.5  | 4.6       |
| 20°-30°   | 439.7  | 6.4       |
| 30°-40°   | 613.1  | 8.9       |
| 40°-50°   | 952.9  | 13.9      |
| 50°-60°   | 1529.8 | 22.3      |
| 60°-70°   | 1730.5 | 25.2      |
| 70°-80°   | 1016.3 | 14.8      |
| 80°-90°   | 118.2  | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 6863.0 | 100.0     |
| 0°-180°   | 6863.0 | 100.0     |

**Coefficient of Utilization**



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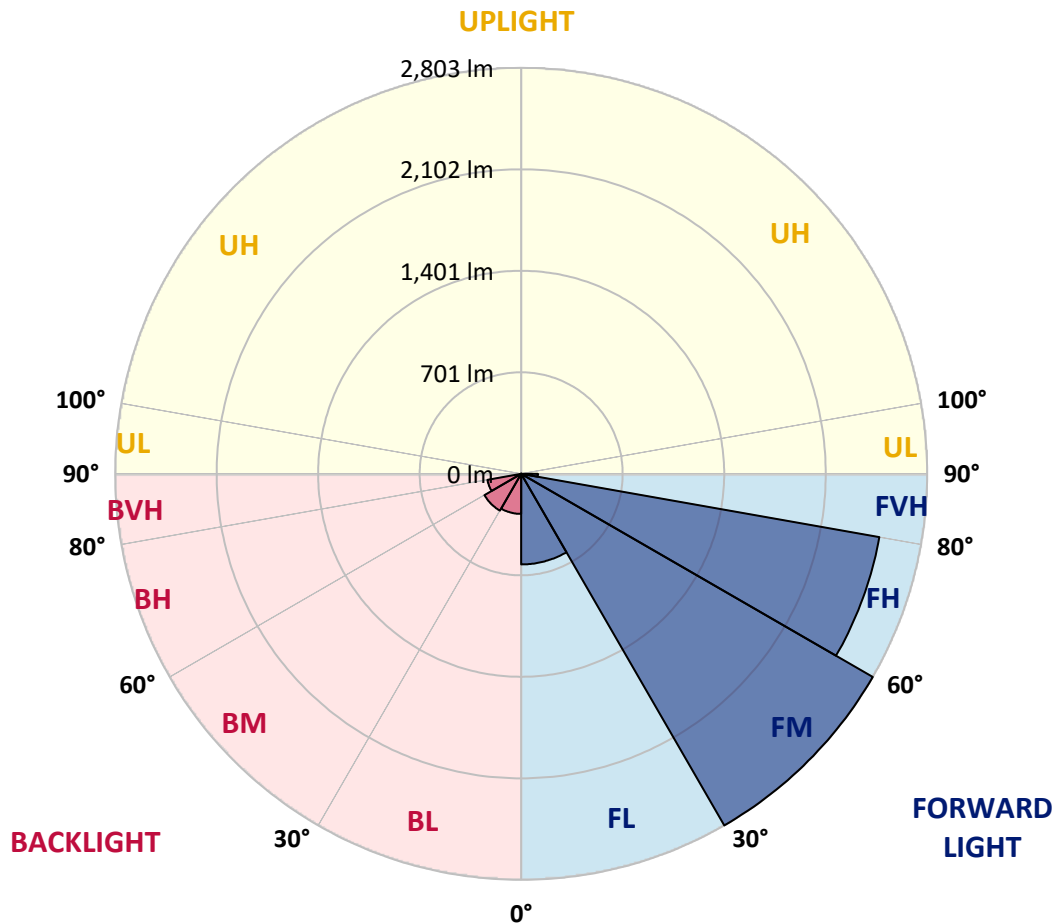
CATALOG NUMBER: GPC-SA1D-750-U-SL2-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 625.4  | 9.1       |                         |      |         |
| FM   | (30°-60°)   | 2802.7 | 40.8      |                         |      |         |
| FH   | (60°-80°)   | 2510.4 | 36.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 115.6  | 1.7       |                         |      | G2/225  |
| BL   | (0°-30°)    | 276.8  | 4.0       | B1/500                  |      |         |
| BM   | (30°-60°)   | 293.2  | 4.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 236.4  | 3.4       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.7    | 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-G2**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 |
| 2.5°  | 1749.7 | 1745.3 | 1748.8 | 1756.4 | 1760.1 | 1760.1 | 1763.0 | 1759.6 | 1760.7 | 1752.3 | 1740.1 |
| 5°    | 1640.2 | 1633.5 | 1643.1 | 1664.3 | 1690.4 | 1712.8 | 1745.9 | 1763.3 | 1765.1 | 1765.4 | 1751.1 |
| 7.5°  | 1522.3 | 1516.2 | 1530.4 | 1555.4 | 1589.1 | 1630.6 | 1688.4 | 1738.9 | 1741.8 | 1769.1 | 1758.7 |
| 10°   | 1426.5 | 1422.1 | 1438.7 | 1465.4 | 1504.9 | 1551.3 | 1622.2 | 1692.5 | 1700.9 | 1761.3 | 1757.5 |
| 12.5° | 1350.4 | 1346.9 | 1362.6 | 1393.4 | 1433.7 | 1485.1 | 1559.2 | 1640.8 | 1652.1 | 1743.6 | 1751.7 |
| 15°   | 1294.9 | 1294.3 | 1307.4 | 1337.0 | 1381.7 | 1429.7 | 1505.5 | 1592.9 | 1605.9 | 1724.4 | 1750.8 |
| 17.5° | 1265.9 | 1266.7 | 1276.3 | 1301.6 | 1339.9 | 1387.5 | 1460.2 | 1552.5 | 1566.7 | 1707.3 | 1755.2 |
| 20°   | 1263.0 | 1263.8 | 1269.1 | 1283.3 | 1314.4 | 1356.5 | 1423.3 | 1518.5 | 1533.3 | 1694.5 | 1762.2 |
| 22.5° | 1288.5 | 1287.9 | 1289.4 | 1287.9 | 1305.4 | 1337.3 | 1398.9 | 1492.4 | 1509.5 | 1686.1 | 1767.7 |
| 25°   | 1337.6 | 1336.7 | 1336.1 | 1325.4 | 1313.8 | 1330.9 | 1388.7 | 1477.6 | 1493.8 | 1680.0 | 1770.9 |
| 27.5° | 1405.8 | 1405.3 | 1404.4 | 1386.7 | 1351.8 | 1341.1 | 1389.9 | 1472.1 | 1485.7 | 1675.0 | 1770.3 |
| 30°   | 1495.6 | 1499.6 | 1498.5 | 1473.8 | 1419.5 | 1372.2 | 1402.1 | 1469.2 | 1481.1 | 1665.5 | 1764.2 |
| 32.5° | 1601.0 | 1609.1 | 1615.5 | 1589.1 | 1521.1 | 1433.7 | 1430.2 | 1472.3 | 1481.1 | 1658.2 | 1753.2 |
| 35°   | 1710.5 | 1720.9 | 1744.5 | 1735.2 | 1645.7 | 1526.4 | 1478.7 | 1491.5 | 1498.8 | 1662.3 | 1747.9 |
| 37.5° | 1818.2 | 1830.7 | 1881.8 | 1908.8 | 1808.9 | 1648.9 | 1554.2 | 1538.9 | 1542.6 | 1687.0 | 1753.7 |
| 40°   | 1943.4 | 1962.3 | 2039.8 | 2083.4 | 2003.8 | 1813.0 | 1667.2 | 1620.2 | 1621.6 | 1741.3 | 1780.8 |
| 42.5° | 2107.8 | 2127.2 | 2211.1 | 2279.4 | 2223.3 | 2020.3 | 1820.5 | 1744.5 | 1743.0 | 1842.9 | 1844.4 |
| 45°   | 2308.1 | 2328.5 | 2415.3 | 2491.1 | 2465.8 | 2266.0 | 2016.9 | 1926.0 | 1924.2 | 2003.2 | 1964.9 |
| 47.5° | 2535.2 | 2555.3 | 2632.8 | 2710.9 | 2738.2 | 2552.9 | 2266.9 | 2173.7 | 2169.6 | 2225.9 | 2151.0 |
| 50°   | 2730.1 | 2743.2 | 2814.6 | 2919.7 | 3042.9 | 2905.5 | 2577.9 | 2488.2 | 2483.8 | 2521.9 | 2424.3 |
| 52.5° | 2800.9 | 2808.5 | 2881.1 | 3028.3 | 3335.6 | 3382.9 | 2986.5 | 2870.9 | 2867.7 | 2884.3 | 2788.2 |
| 55°   | 2657.5 | 2671.1 | 2760.3 | 2978.7 | 3494.1 | 3922.5 | 3502.3 | 3344.9 | 3320.8 | 3285.0 | 3168.6 |
| 57.5° | 2266.6 | 2288.4 | 2384.2 | 2674.6 | 3420.1 | 4350.5 | 4260.2 | 3881.0 | 3845.5 | 3627.1 | 3477.9 |
| 60°   | 1698.3 | 1725.0 | 1804.6 | 2117.9 | 3024.8 | 4503.0 | 5088.5 | 4478.3 | 4398.5 | 3899.5 | 3762.2 |
| 62.5° | 1165.4 | 1178.7 | 1232.8 | 1436.9 | 2227.7 | 4253.3 | 5781.4 | 5278.4 | 5132.6 | 4195.8 | 4069.7 |
| 65°   | 890.1  | 894.7  | 916.8  | 987.1  | 1326.6 | 3454.9 | 6057.0 | 6334.0 | 6157.7 | 4550.0 | 4388.9 |
| 67.5° | 717.3  | 713.5  | 744.0  | 844.5  | 888.3  | 2107.8 | 5735.5 | 7332.7 | 7250.2 | 5023.7 | 4710.1 |
| 69°   | 632.5  | 627.3  | 658.3  | 775.1  | 834.3  | 1393.4 | 5127.4 | 7559.5 | 7564.7 | 5273.7 | 4732.1 |
| 70°   | 569.2  | 572.7  | 603.5  | 733.9  | 816.0  | 1093.7 | 4546.6 | 7501.7 | 7543.0 | 5367.2 | 4599.7 |
| 72.5° | 380.1  | 389.4  | 451.3  | 609.3  | 784.7  | 827.7  | 2745.2 | 6437.4 | 6595.9 | 5156.7 | 3946.3 |
| 75°   | 214.3  | 221.3  | 294.8  | 459.4  | 739.4  | 788.2  | 1450.0 | 4742.6 | 4895.9 | 4312.2 | 3043.1 |
| 77.5° | 105.1  | 108.9  | 166.7  | 296.5  | 618.3  | 751.0  | 822.4  | 3221.5 | 3396.6 | 2814.6 | 1721.2 |
| 80°   | 44.4   | 46.5   | 83.3   | 183.0  | 442.0  | 716.7  | 610.7  | 1982.6 | 2004.4 | 1102.7 | 458.5  |
| 82.5° | 17.1   | 17.7   | 35.1   | 114.1  | 280.8  | 558.7  | 510.8  | 940.0  | 917.4  | 207.6  | 104.5  |
| 85°   | 2.0    | 2.3    | 12.8   | 68.5   | 156.2  | 287.5  | 415.0  | 405.1  | 374.9  | 41.2   | 53.7   |
| 87.5° | 0.0    | 0.0    | 0.9    | 20.9   | 46.5   | 134.7  | 215.8  | 168.1  | 151.6  | 13.4   | 27.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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CATALOG NUMBER: GPC-SA1D-750-U-SL2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 | 1734.3 |
| 2.5°  | 1729.9 | 1727.0 | 1711.4 | 1688.7 | 1667.2 | 1640.5 | 1614.9 | 1599.5 | 1587.3 | 1579.2 | 1588.8 |
| 5°    | 1734.6 | 1721.8 | 1674.2 | 1613.2 | 1553.4 | 1486.0 | 1423.3 | 1370.1 | 1349.2 | 1326.0 | 1336.4 |
| 7.5°  | 1733.1 | 1709.0 | 1623.4 | 1514.7 | 1405.0 | 1291.4 | 1184.0 | 1101.2 | 1058.2 | 1016.1 | 1026.9 |
| 10°   | 1725.9 | 1685.2 | 1555.4 | 1394.5 | 1230.2 | 1066.9 | 914.5  | 798.6  | 733.9  | 675.2  | 683.6  |
| 12.5° | 1709.9 | 1653.3 | 1475.3 | 1256.9 | 1037.0 | 821.8  | 643.2  | 494.8  | 415.3  | 380.1  | 384.5  |
| 15°   | 1700.3 | 1622.2 | 1390.5 | 1117.5 | 830.8  | 572.4  | 393.2  | 292.4  | 256.1  | 244.5  | 246.0  |
| 17.5° | 1695.7 | 1592.3 | 1302.8 | 958.0  | 620.0  | 364.5  | 254.1  | 224.2  | 216.4  | 214.3  | 214.9  |
| 20°   | 1691.0 | 1562.1 | 1212.4 | 800.4  | 427.2  | 245.1  | 208.8  | 200.1  | 197.2  | 194.6  | 195.2  |
| 22.5° | 1683.2 | 1533.0 | 1115.4 | 640.6  | 288.1  | 198.9  | 188.2  | 179.8  | 173.7  | 170.5  | 171.0  |
| 25°   | 1673.6 | 1502.5 | 1016.4 | 477.1  | 210.3  | 177.4  | 167.3  | 155.4  | 148.1  | 142.3  | 142.6  |
| 27.5° | 1658.2 | 1465.1 | 914.2  | 347.3  | 176.6  | 158.9  | 145.2  | 132.1  | 119.9  | 113.3  | 113.3  |
| 30°   | 1636.7 | 1422.7 | 800.6  | 248.6  | 158.3  | 140.6  | 124.0  | 107.7  | 94.7   | 88.6   | 88.0   |
| 32.5° | 1612.9 | 1378.5 | 685.9  | 188.5  | 143.7  | 123.4  | 104.5  | 87.4   | 75.8   | 70.9   | 70.6   |
| 35°   | 1592.6 | 1330.9 | 571.5  | 158.0  | 129.2  | 106.9  | 86.2   | 71.7   | 62.4   | 58.4   | 58.1   |
| 37.5° | 1579.5 | 1283.3 | 460.0  | 141.1  | 116.2  | 91.5   | 72.3   | 59.2   | 52.6   | 49.4   | 49.1   |
| 40°   | 1577.5 | 1247.9 | 358.1  | 128.4  | 104.0  | 77.8   | 60.4   | 50.2   | 44.1   | 40.7   | 40.4   |
| 42.5° | 1603.9 | 1227.5 | 274.7  | 117.6  | 91.5   | 65.9   | 51.4   | 43.0   | 36.6   | 33.1   | 32.8   |
| 45°   | 1673.3 | 1233.9 | 211.4  | 108.0  | 79.0   | 55.8   | 43.6   | 35.7   | 29.9   | 27.3   | 26.7   |
| 47.5° | 1799.9 | 1278.1 | 168.1  | 98.4   | 67.1   | 47.3   | 37.2   | 29.6   | 24.7   | 22.1   | 21.8   |
| 50°   | 2025.3 | 1381.7 | 140.6  | 88.0   | 56.0   | 40.4   | 30.8   | 24.1   | 20.0   | 17.7   | 17.4   |
| 52.5° | 2324.4 | 1566.4 | 125.5  | 77.8   | 46.5   | 34.3   | 25.3   | 19.2   | 15.7   | 13.9   | 13.6   |
| 55°   | 2654.3 | 1790.0 | 115.6  | 66.8   | 38.0   | 28.5   | 20.0   | 15.1   | 12.2   | 10.7   | 10.2   |
| 57.5° | 2976.3 | 1983.7 | 106.3  | 56.0   | 31.7   | 23.2   | 16.0   | 11.9   | 9.6    | 8.1    | 7.8    |
| 60°   | 3272.3 | 2161.8 | 95.5   | 45.0   | 25.8   | 18.3   | 12.5   | 9.3    | 7.6    | 6.1    | 6.1    |
| 62.5° | 3589.1 | 2299.4 | 80.7   | 35.1   | 21.2   | 13.9   | 10.2   | 8.4    | 6.1    | 5.2    | 4.9    |
| 65°   | 3924.8 | 2401.6 | 63.3   | 27.3   | 16.6   | 10.5   | 8.4    | 8.7    | 4.9    | 3.8    | 3.5    |
| 67.5° | 4172.8 | 2381.3 | 46.8   | 21.5   | 12.8   | 8.1    | 8.1    | 9.3    | 4.4    | 2.9    | 2.6    |
| 69°   | 4118.2 | 2216.1 | 39.2   | 18.6   | 11.0   | 7.0    | 7.6    | 9.3    | 4.1    | 2.6    | 2.3    |
| 70°   | 3959.9 | 2033.1 | 34.6   | 16.6   | 9.9    | 6.4    | 7.3    | 9.0    | 3.8    | 2.6    | 2.3    |
| 72.5° | 3297.8 | 1531.3 | 27.0   | 12.5   | 7.8    | 5.2    | 6.1    | 7.8    | 3.8    | 2.6    | 2.0    |
| 75°   | 2480.6 | 980.1  | 20.6   | 9.0    | 5.8    | 4.1    | 4.6    | 5.8    | 3.8    | 2.3    | 2.0    |
| 77.5° | 1349.8 | 353.4  | 14.8   | 6.1    | 4.1    | 3.2    | 3.2    | 4.4    | 3.5    | 1.7    | 1.2    |
| 80°   | 347.0  | 88.9   | 9.3    | 4.1    | 3.2    | 2.3    | 2.0    | 2.9    | 2.0    | 0.3    | 0.0    |
| 82.5° | 85.7   | 20.0   | 4.9    | 2.9    | 2.3    | 0.9    | 0.9    | 1.5    | 0.9    | 0.0    | 0.0    |
| 85°   | 47.0   | 9.9    | 3.2    | 2.0    | 1.2    | 0.0    | 0.0    | 0.3    | 0.0    | 0.0    | 0.0    |
| 87.5° | 24.1   | 2.9    | 0.9    | 0.6    | 0.3    | 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    |

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)