

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: P322597

Luminaire Tested: **GLEON-SA3B-750-U-T4FT-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P322597  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3B-750-U-T4FT-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12389 lumens  
Efficiency: N/A  
Efficacy: 99.9 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G3

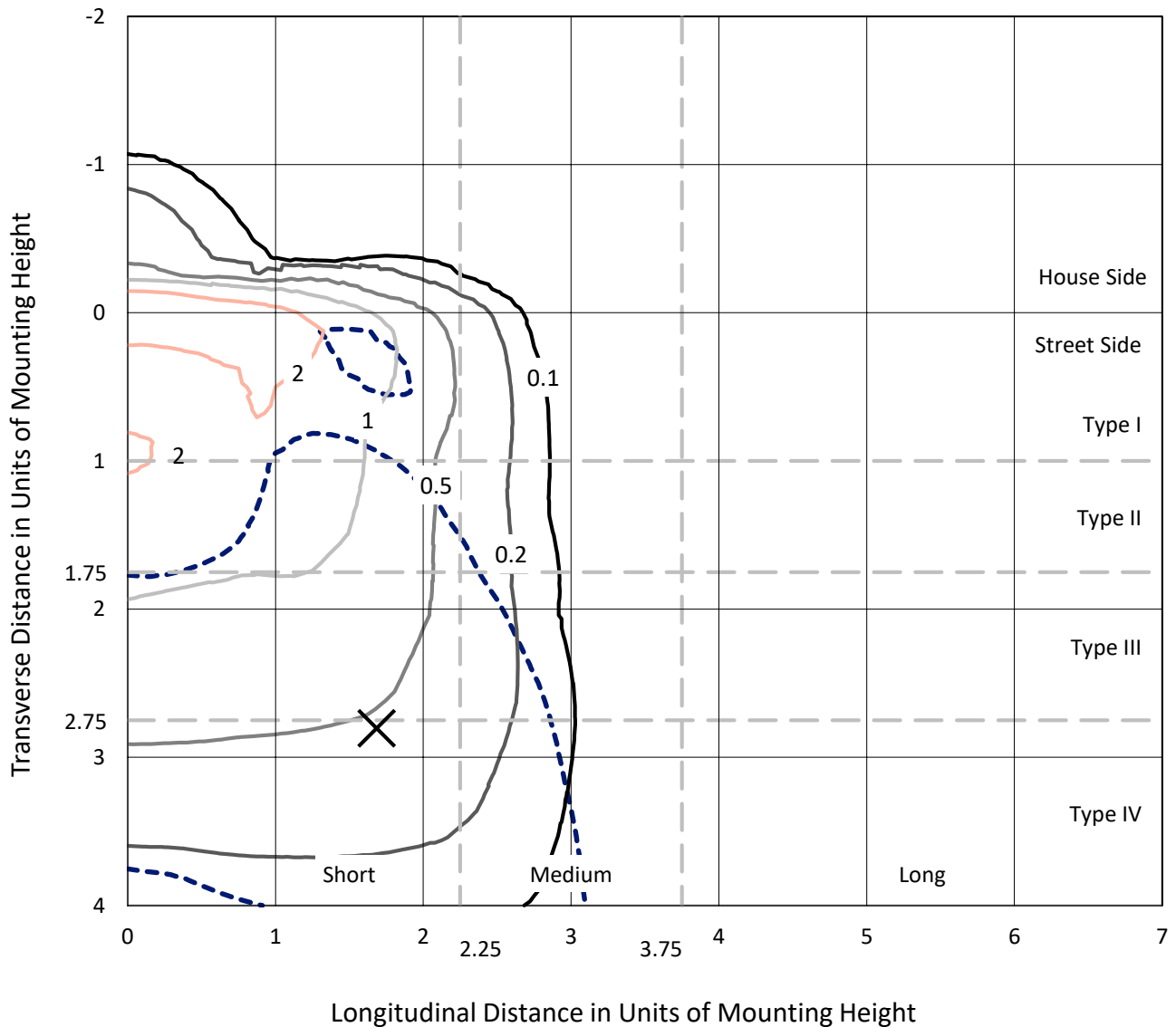
Input Watts (W): 124  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P322597  
 CATALOG NUMBER: GLEON-SA3B-750-U-T4FT-HSS

### Iso-Footcandle Lines of Horizontal Illumination

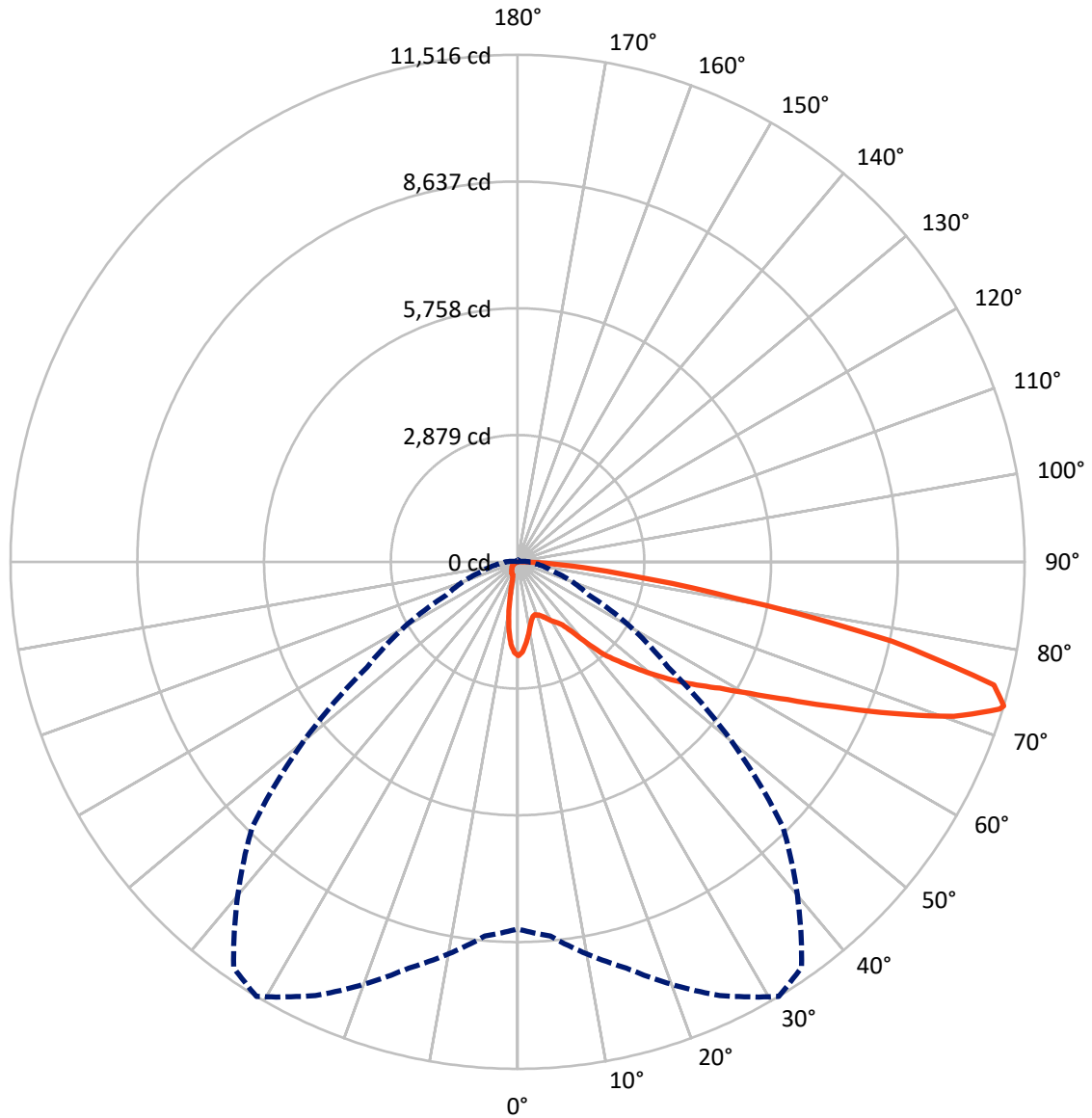
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 3.4 fc  
 Type IV - Short - N/A

REPORT NUMBER: P322597  
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### Luminous Intensity Polar Plot



— Vertical Plane Through 31-Deg Lateral      - - - Horizontal Cone Through 73-Deg Vertical

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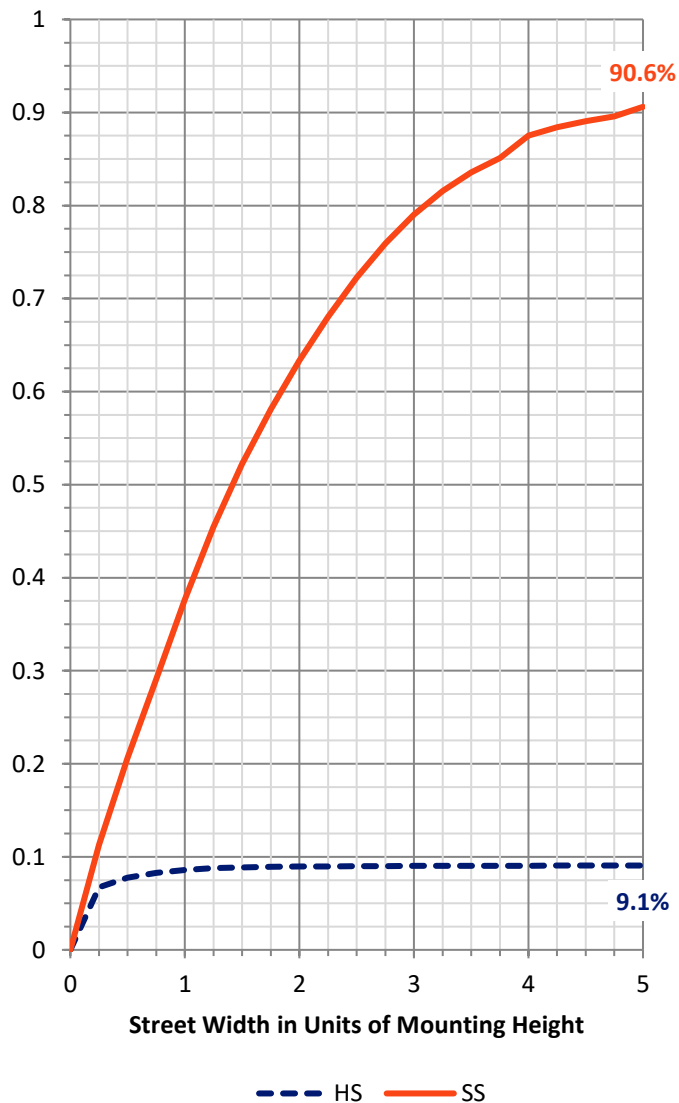
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1129.3   | 0.0    | 1129.3  |
|                    | % Fixture | 9.1      | 0.0    | 9.1     |
| <b>Street Side</b> | Lumens    | 11259.7  | 0.0    | 11259.7 |
|                    | % Fixture | 90.9     | 0.0    | 90.9    |
| <b>Total</b>       | Lumens    | 12389.0  | 0.0    | 12389.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 176.7   | 1.4       |
| 10°-20°   | 383.7   | 3.1       |
| 20°-30°   | 575.0   | 4.6       |
| 30°-40°   | 914.8   | 7.4       |
| 40°-50°   | 1633.5  | 13.2      |
| 50°-60°   | 2534.7  | 20.5      |
| 60°-70°   | 3369.6  | 27.2      |
| 70°-80°   | 2534.6  | 20.5      |
| 80°-90°   | 266.3   | 2.1       |
| 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°    | 12389.0 | 100.0     |
| 0°-180°   | 12389.0 | 100.0     |

**Coefficient of Utilization**



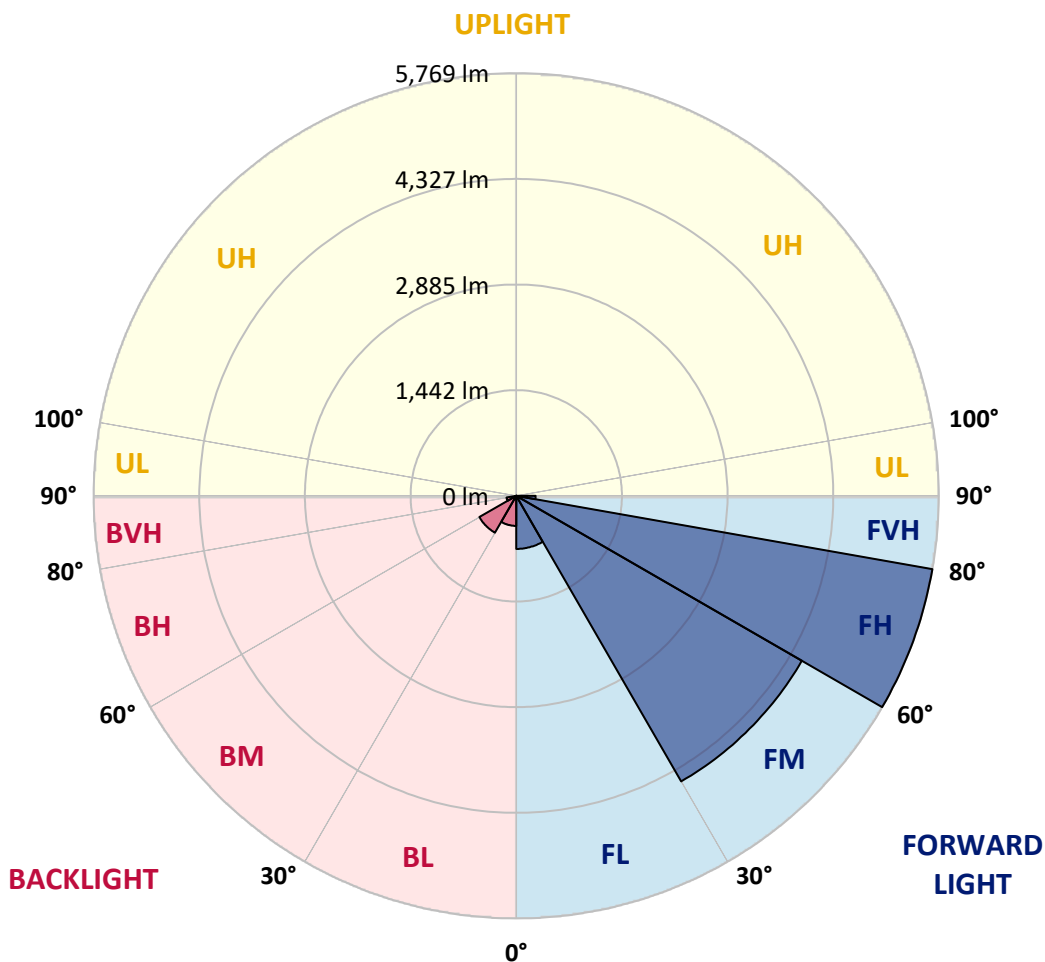
REPORT NUMBER: P322597  
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 724.8  | 5.9       |                         |      |         |
| FM (30°-60°)   | 4501.7 | 36.3      |                         |      |         |
| FH (60°-80°)   | 5769.1 | 46.6      |                         |      | G3/7500 |
| FVH (80°-90°)  | 264.1  | 2.1       |                         |      | G3/500  |
| BL (0°-30°)    | 410.7  | 3.3       | B1/500                  |      |         |
| BM (30°-60°)   | 581.3  | 4.7       | B1/1000                 |      |         |
| BH (60°-80°)   | 135.1  | 1.1       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 2.2    | 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-G3**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°     | 31°     | 35°     | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|
| 0°    | 2131.6 | 2131.6 | 2131.6 | 2131.6  | 2131.6  | 2131.6  | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 |
| 2.5°  | 2020.0 | 2028.5 | 2037.6 | 2039.4  | 2054.6  | 2055.2  | 2077.0 | 2093.4 | 2109.7 | 2125.5 | 2130.9 |
| 5°    | 1812.7 | 1826.6 | 1843.0 | 1859.3  | 1891.5  | 1904.2  | 1957.6 | 2012.1 | 2064.3 | 2114.0 | 2138.2 |
| 7.5°  | 1591.4 | 1607.2 | 1630.2 | 1670.8  | 1706.6  | 1731.4  | 1815.7 | 1912.7 | 2009.7 | 2101.2 | 2154.0 |
| 10°   | 1389.5 | 1404.1 | 1428.3 | 1471.4  | 1526.5  | 1560.5  | 1673.8 | 1808.4 | 1950.9 | 2089.7 | 2177.6 |
| 12.5° | 1261.0 | 1268.9 | 1282.2 | 1328.3  | 1378.0  | 1416.2  | 1549.6 | 1716.3 | 1902.4 | 2089.1 | 2215.8 |
| 15°   | 1237.3 | 1239.8 | 1228.9 | 1249.5  | 1288.3  | 1325.2  | 1460.4 | 1641.7 | 1865.4 | 2098.8 | 2265.5 |
| 17.5° | 1274.9 | 1273.7 | 1237.3 | 1234.9  | 1265.8  | 1296.1  | 1416.8 | 1590.2 | 1839.3 | 2121.2 | 2329.8 |
| 20°   | 1331.9 | 1327.7 | 1264.6 | 1253.1  | 1285.8  | 1314.3  | 1413.8 | 1570.8 | 1829.6 | 2158.8 | 2408.0 |
| 22.5° | 1407.7 | 1400.4 | 1301.6 | 1289.5  | 1324.6  | 1354.3  | 1451.3 | 1589.6 | 1838.1 | 2209.2 | 2498.9 |
| 25°   | 1501.7 | 1490.8 | 1365.3 | 1351.9  | 1387.7  | 1417.4  | 1518.6 | 1643.5 | 1863.6 | 2270.4 | 2614.1 |
| 27.5° | 1607.8 | 1592.0 | 1467.1 | 1432.6  | 1473.2  | 1504.1  | 1608.4 | 1726.0 | 1903.6 | 2335.3 | 2755.4 |
| 30°   | 1707.8 | 1687.2 | 1574.4 | 1517.4  | 1567.1  | 1601.7  | 1705.4 | 1824.2 | 1967.9 | 2435.3 | 2948.8 |
| 32.5° | 1808.4 | 1785.4 | 1670.2 | 1602.3  | 1647.2  | 1684.8  | 1805.4 | 1959.4 | 2088.5 | 2588.1 | 3205.8 |
| 35°   | 2040.0 | 2015.8 | 1874.5 | 1762.4  | 1761.7  | 1783.0  | 1945.4 | 2144.3 | 2248.0 | 2800.8 | 3512.6 |
| 37.5° | 2429.8 | 2415.9 | 2281.3 | 2068.5  | 2011.5  | 1987.9  | 2136.4 | 2365.0 | 2477.1 | 3093.7 | 3858.7 |
| 40°   | 2856.6 | 2844.5 | 2693.5 | 2500.8  | 2414.1  | 2355.9  | 2410.4 | 2672.3 | 2800.8 | 3451.3 | 4212.2 |
| 42.5° | 3338.6 | 3281.0 | 3011.8 | 2954.2  | 2876.6  | 2832.4  | 2783.3 | 3051.2 | 3198.5 | 3840.6 | 4562.6 |
| 45°   | 3776.3 | 3679.3 | 3330.1 | 3242.8  | 3225.2  | 3236.1  | 3263.4 | 3560.5 | 3645.9 | 4303.1 | 4911.8 |
| 47.5° | 4037.0 | 3960.6 | 3692.6 | 3609.0  | 3604.1  | 3676.3  | 3882.4 | 4135.8 | 4091.5 | 4706.3 | 5219.2 |
| 50°   | 4284.9 | 4215.8 | 3993.3 | 4013.9  | 4036.4  | 4134.6  | 4585.0 | 4727.5 | 4498.3 | 5071.8 | 5501.1 |
| 52.5° | 4485.6 | 4380.1 | 4263.7 | 4379.5  | 4489.8  | 4648.1  | 5310.1 | 5258.6 | 4786.9 | 5362.8 | 5742.3 |
| 55°   | 4601.4 | 4553.5 | 4609.9 | 4726.3  | 4933.6  | 5190.7  | 5994.5 | 5700.5 | 4997.9 | 5628.4 | 5903.0 |
| 57.5° | 5025.8 | 4931.8 | 5043.9 | 5144.6  | 5415.0  | 5774.5  | 6580.8 | 6029.7 | 5150.0 | 5792.7 | 5940.0 |
| 60°   | 5539.2 | 5463.5 | 5529.5 | 5696.9  | 6061.8  | 6484.4  | 7128.8 | 6298.3 | 5229.5 | 5898.1 | 5844.2 |
| 62.5° | 6356.5 | 6256.4 | 6215.2 | 6402.5  | 6886.3  | 7347.7  | 7544.7 | 6484.4 | 5211.9 | 5851.5 | 5515.6 |
| 65°   | 7451.3 | 7347.7 | 7163.4 | 7333.1  | 7948.5  | 8274.0  | 8009.7 | 6523.8 | 5090.6 | 5473.8 | 4685.1 |
| 67.5° | 8572.9 | 8497.7 | 8340.1 | 8626.2  | 9181.6  | 9286.4  | 8501.4 | 6428.0 | 4700.2 | 4438.3 | 3310.1 |
| 70°   | 9313.7 | 9281.6 | 9384.0 | 10017.0 | 10512.3 | 10482.0 | 8952.4 | 5913.3 | 3663.5 | 2729.3 | 1637.5 |
| 72.5° | 8779.6 | 8933.6 | 9690.2 | 10837.8 | 11442.8 | 11195.5 | 8720.8 | 4540.8 | 2094.0 | 1050.0 | 473.5  |
| 73°   | 8337.1 | 8534.1 | 9552.6 | 10868.7 | 11516.2 | 11245.2 | 8526.2 | 4167.9 | 1784.8 | 828.7  | 358.9  |
| 75°   | 5799.9 | 6041.8 | 7908.4 | 10122.5 | 11173.1 | 10714.1 | 7107.0 | 2551.1 | 826.9  | 367.4  | 144.9  |
| 77.5° | 2816.0 | 2994.8 | 4354.6 | 7313.7  | 8689.3  | 8371.0  | 4424.4 | 950.6  | 373.4  | 229.8  | 66.7   |
| 80°   | 1051.2 | 1168.8 | 1890.3 | 3722.3  | 5021.5  | 5153.1  | 1946.0 | 359.5  | 248.6  | 184.9  | 33.9   |
| 82.5° | 275.2  | 306.8  | 697.2  | 1659.9  | 2573.5  | 2693.5  | 613.5  | 181.3  | 181.9  | 152.2  | 20.6   |
| 85°   | 87.9   | 100.6  | 217.6  | 745.1   | 1212.5  | 1064.6  | 160.0  | 87.9   | 132.2  | 113.4  | 11.5   |
| 87.5° | 10.9   | 13.9   | 69.1   | 175.2   | 267.4   | 148.5   | 24.9   | 26.1   | 56.4   | 63.0   | 6.7    |
| 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: P322597

CATALOG NUMBER: GLEON-SA3B-750-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 | 2131.6 |
| 2.5°  | 2136.4 | 2133.4 | 2134.0 | 2118.2 | 2107.9 | 2087.3 | 2066.1 | 2056.4 | 2046.1 | 2041.8 | 2046.1 |
| 5°    | 2147.3 | 2141.9 | 2126.1 | 2077.6 | 2026.1 | 1959.4 | 1896.9 | 1849.6 | 1790.2 | 1773.9 | 1790.8 |
| 7.5°  | 2164.3 | 2153.4 | 2107.3 | 2008.5 | 1893.9 | 1766.6 | 1623.5 | 1519.2 | 1433.8 | 1378.6 | 1398.6 |
| 10°   | 2189.1 | 2168.5 | 2075.8 | 1907.8 | 1702.9 | 1477.4 | 1274.3 | 1116.1 | 1003.9 | 957.9  | 956.0  |
| 12.5° | 2231.0 | 2192.2 | 2037.0 | 1776.9 | 1469.5 | 1168.8 | 902.7  | 731.1  | 640.2  | 581.4  | 580.2  |
| 15°   | 2277.1 | 2220.1 | 1987.9 | 1619.9 | 1197.9 | 837.2  | 581.4  | 451.0  | 392.2  | 373.4  | 371.0  |
| 17.5° | 2333.4 | 2252.2 | 1924.2 | 1426.5 | 913.6  | 554.7  | 379.5  | 341.9  | 339.5  | 337.7  | 337.7  |
| 20°   | 2404.4 | 2290.4 | 1842.4 | 1205.2 | 648.1  | 370.4  | 322.5  | 324.9  | 326.2  | 323.7  | 324.3  |
| 22.5° | 2486.8 | 2329.2 | 1744.8 | 967.6  | 438.3  | 309.8  | 308.6  | 311.6  | 312.8  | 311.6  | 312.2  |
| 25°   | 2582.6 | 2374.1 | 1625.9 | 718.4  | 316.5  | 294.0  | 297.1  | 301.3  | 304.3  | 304.3  | 304.3  |
| 27.5° | 2701.4 | 2428.6 | 1482.9 | 501.4  | 273.4  | 277.7  | 286.1  | 294.0  | 298.3  | 299.5  | 299.5  |
| 30°   | 2856.0 | 2496.5 | 1311.3 | 343.7  | 248.6  | 255.8  | 271.6  | 286.8  | 294.6  | 295.8  | 296.5  |
| 32.5° | 3051.2 | 2572.9 | 1112.5 | 254.0  | 227.3  | 232.8  | 249.8  | 275.2  | 290.4  | 292.8  | 292.8  |
| 35°   | 3274.9 | 2661.4 | 898.5  | 221.3  | 212.2  | 214.0  | 227.3  | 256.4  | 283.1  | 289.8  | 290.4  |
| 37.5° | 3519.9 | 2748.7 | 683.2  | 206.7  | 199.5  | 199.5  | 209.2  | 234.0  | 265.5  | 286.1  | 288.6  |
| 40°   | 3748.4 | 2801.5 | 478.9  | 195.2  | 187.9  | 187.9  | 196.4  | 214.6  | 244.3  | 275.2  | 281.9  |
| 42.5° | 3959.4 | 2819.6 | 333.4  | 184.3  | 177.0  | 178.8  | 186.1  | 200.7  | 223.1  | 254.0  | 260.1  |
| 45°   | 4176.4 | 2816.6 | 243.1  | 171.6  | 166.1  | 171.6  | 177.0  | 187.9  | 204.3  | 221.9  | 223.1  |
| 47.5° | 4340.1 | 2791.1 | 192.8  | 159.4  | 155.8  | 163.1  | 167.9  | 175.2  | 184.3  | 183.1  | 183.1  |
| 50°   | 4493.5 | 2729.3 | 155.2  | 143.1  | 145.5  | 154.0  | 156.4  | 158.8  | 159.4  | 147.9  | 146.7  |
| 52.5° | 4609.9 | 2632.9 | 124.3  | 125.5  | 135.2  | 143.7  | 141.3  | 137.6  | 131.6  | 117.6  | 115.2  |
| 55°   | 4648.7 | 2447.4 | 97.6   | 103.7  | 120.0  | 130.9  | 121.9  | 114.0  | 102.5  | 90.9   | 88.5   |
| 57.5° | 4578.4 | 2207.9 | 79.4   | 80.6   | 101.2  | 110.3  | 100.0  | 90.9   | 78.2   | 68.5   | 66.7   |
| 60°   | 4429.2 | 1941.8 | 65.5   | 60.6   | 78.2   | 86.1   | 79.4   | 70.3   | 58.8   | 51.5   | 50.9   |
| 62.5° | 4133.4 | 1658.1 | 54.0   | 47.3   | 59.4   | 66.1   | 61.8   | 55.2   | 45.5   | 40.6   | 40.0   |
| 65°   | 3511.4 | 1326.5 | 43.6   | 38.2   | 46.1   | 51.5   | 47.9   | 43.0   | 35.8   | 32.1   | 31.5   |
| 67.5° | 2451.0 | 896.6  | 35.8   | 31.5   | 36.4   | 40.6   | 37.6   | 35.2   | 28.5   | 27.9   | 28.5   |
| 70°   | 1182.2 | 432.3  | 29.7   | 25.5   | 28.5   | 31.5   | 30.3   | 28.5   | 27.3   | 31.5   | 36.4   |
| 72.5° | 338.9  | 144.9  | 23.6   | 21.2   | 23.0   | 24.9   | 26.1   | 25.5   | 29.7   | 38.2   | 44.3   |
| 73°   | 260.7  | 117.0  | 22.4   | 20.0   | 21.8   | 24.2   | 25.5   | 24.9   | 30.3   | 38.8   | 44.3   |
| 75°   | 111.5  | 56.4   | 17.0   | 16.4   | 18.2   | 21.2   | 22.4   | 22.4   | 30.3   | 39.4   | 42.4   |
| 77.5° | 50.3   | 30.3   | 10.9   | 12.7   | 15.8   | 17.0   | 18.8   | 18.8   | 24.2   | 30.3   | 30.3   |
| 80°   | 28.5   | 16.4   | 8.5    | 9.7    | 11.5   | 11.5   | 11.5   | 10.3   | 10.9   | 12.1   | 13.3   |
| 82.5° | 18.2   | 10.9   | 6.7    | 7.9    | 7.3    | 6.1    | 4.8    | 4.8    | 4.2    | 4.8    | 6.1    |
| 85°   | 10.3   | 6.1    | 6.1    | 4.8    | 3.0    | 2.4    | 3.0    | 2.4    | 0.6    | 0.0    | 0.6    |
| 87.5° | 6.1    | 3.6    | 1.8    | 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  
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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: SP1-1908-441-4-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 .

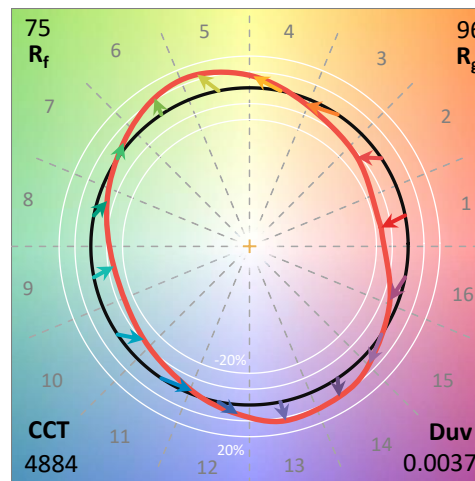
**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 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 | R9:  | -28.4 |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R10: | 48.6  |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R11: | 73.2  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R12: | 50.7  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R13: | 71.2  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R14: | 91.4  |
| CIE z:                    | 0.2884 | R6:       | 70.7 |      |       |
| 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

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| 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 (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    | 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 (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    | 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 (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    | 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  $R_a = 73.5$   
 $R_g = -28.4$



**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)