

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



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

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P632879

Luminaire Tested: GWS-SA2D-750-U-T2-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P632879  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-21)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA2D-750-U-T2-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS W/ FACTORY INSALLED GLARE SHIELD, WH  
Light Source: (32) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

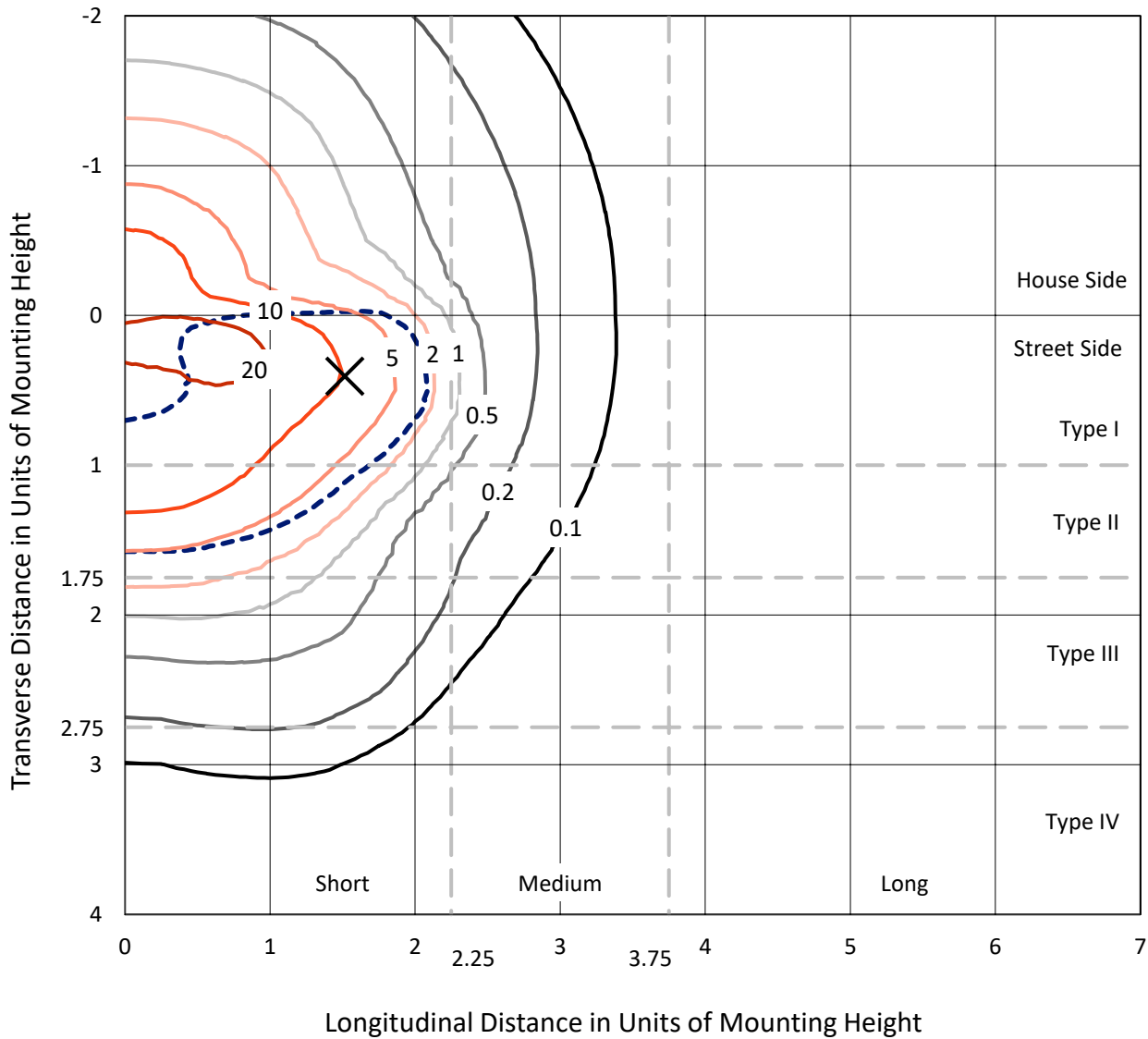
Lumens per Lamp: N/A  
Luminaire Lumens: 9957.7 lumens  
Efficiency: N/A  
Efficacy: 121.3 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2  
  
Input Watts (W): 82.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P632879  
 CATALOG NUMBER: GWS-SA2D-750-U-T2-W-GRSWH

### Iso-Footcandle Lines of Horizontal Illumination

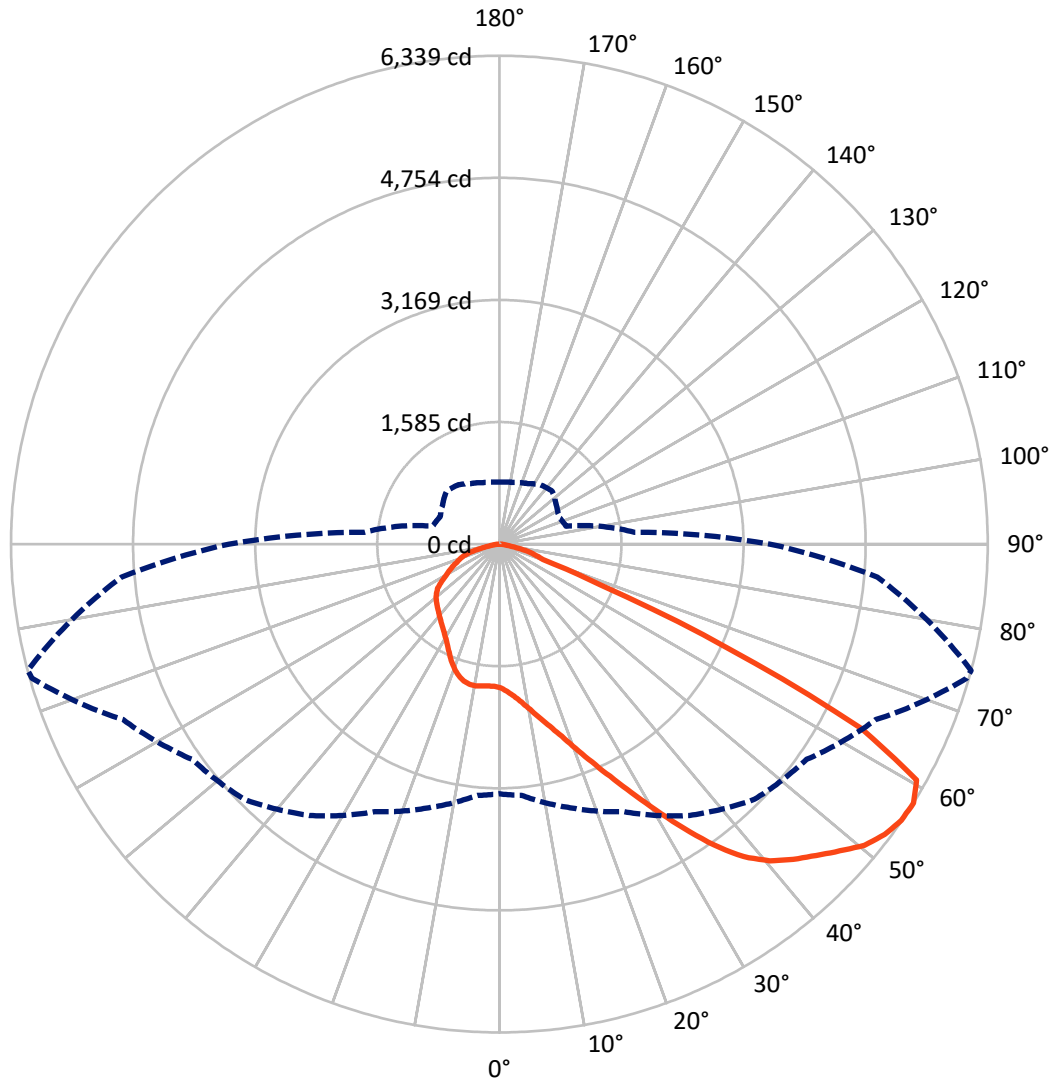
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 26.4 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 75-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 2693.8   | 0.0    | 2693.8 |
|                    | % Fixture | 27.1     | 0.0    | 27.1   |
| <b>Street Side</b> | Lumens    | 7263.9   | 0.0    | 7263.9 |
|                    | % Fixture | 72.9     | 0.0    | 72.9   |
| <b>Total</b>       | Lumens    | 9957.7   | 0.0    | 9957.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 186.6  | 1.9       |
| 10°-20°   | 594.1  | 6.0       |
| 20°-30°   | 1053.7 | 10.6      |
| 30°-40°   | 1613.0 | 16.2      |
| 40°-50°   | 2246.0 | 22.6      |
| 50°-60°   | 2573.5 | 25.8      |
| 60°-70°   | 1322.3 | 13.3      |
| 70°-80°   | 332.9  | 3.3       |
| 80°-90°   | 35.6   | 0.4       |
| 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°    | 9957.7 | 100.0     |
| 0°-180°   | 9957.7 | 100.0     |

**Coefficient of Utilization**



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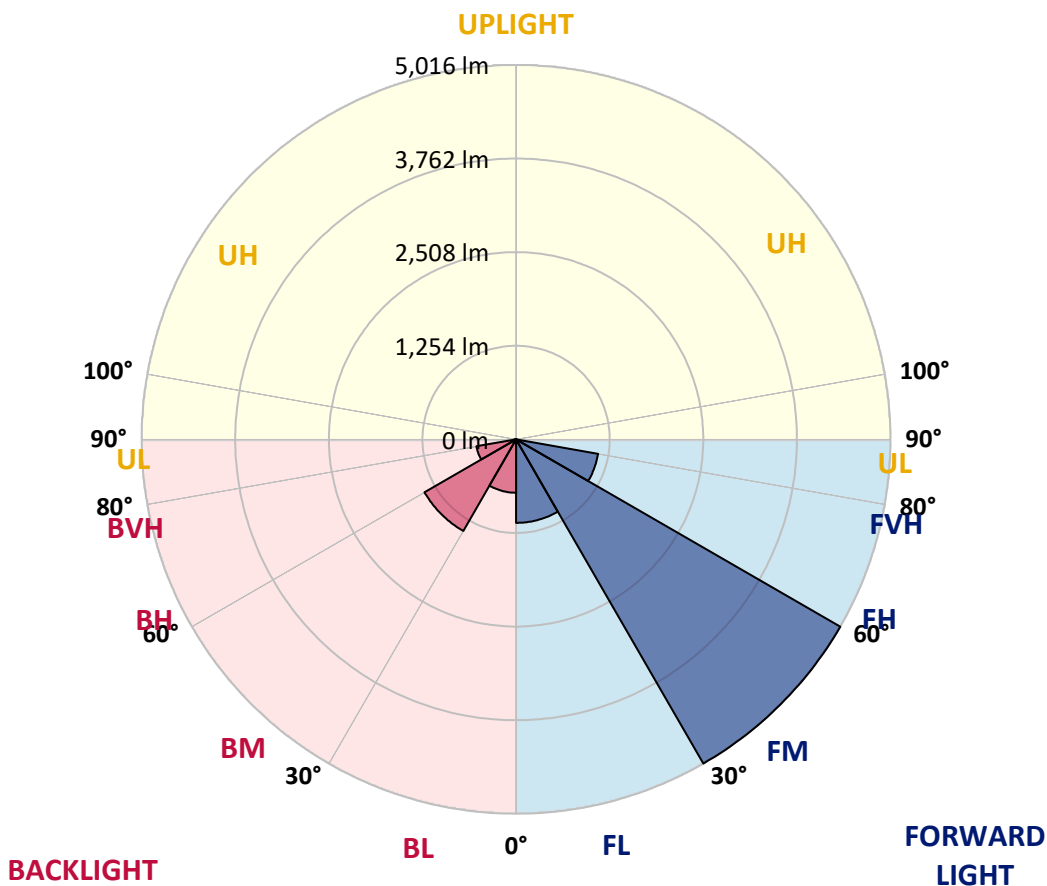
CATALOG NUMBER: GWS-SA2D-750-U-T2-W-GRSWH

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1118.8 | 11.2      |                         |      |         |
| FM (30°-60°)   | 5015.8 | 50.4      |                         |      |         |
| FH (60°-80°)   | 1116.2 | 11.2      |                         |      | G1/1800 |
| FVH (80°-90°)  | 13.2   | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 715.6  | 7.2       | B2/1000                 |      |         |
| BM (30°-60°)   | 1416.7 | 14.2      | B2/2500                 |      |         |
| BH (60°-80°)   | 539.0  | 5.4       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 22.4   | 0.2       |                         |      | 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 II Short





REPORT NUMBER: P632879

CATALOG NUMBER: GWS-SA2D-750-U-T2-W-GRSWH

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 74°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 |
| 2.5°  | 2003.5 | 2008.7 | 2003.5 | 2012.1 | 1995.0 | 1987.3 | 1968.4 | 1940.2 | 1917.9 | 1914.5 | 1889.7 |
| 5°    | 2159.4 | 2170.5 | 2163.7 | 2160.2 | 2137.1 | 2120.0 | 2091.7 | 2035.2 | 1989.0 | 1982.1 | 1933.3 |
| 7.5°  | 2259.6 | 2267.3 | 2267.3 | 2269.8 | 2261.3 | 2241.6 | 2211.6 | 2144.8 | 2079.7 | 2069.5 | 1995.8 |
| 10°   | 2292.9 | 2298.9 | 2310.1 | 2331.5 | 2348.6 | 2354.6 | 2334.9 | 2270.7 | 2191.1 | 2180.8 | 2078.0 |
| 12.5° | 2300.7 | 2307.5 | 2324.6 | 2364.0 | 2411.1 | 2453.9 | 2457.3 | 2410.2 | 2321.2 | 2310.1 | 2173.1 |
| 15°   | 2315.2 | 2322.1 | 2345.2 | 2394.0 | 2463.3 | 2545.5 | 2596.0 | 2563.5 | 2465.0 | 2453.1 | 2281.0 |
| 17.5° | 2313.5 | 2321.2 | 2355.4 | 2420.5 | 2513.8 | 2632.9 | 2730.5 | 2744.2 | 2642.3 | 2621.7 | 2403.4 |
| 20°   | 2309.2 | 2316.1 | 2352.9 | 2432.5 | 2548.1 | 2711.6 | 2888.0 | 2959.1 | 2849.5 | 2830.6 | 2546.4 |
| 22.5° | 2343.5 | 2351.2 | 2379.4 | 2445.4 | 2566.1 | 2772.4 | 3033.6 | 3204.8 | 3095.2 | 3068.7 | 2710.8 |
| 25°   | 2420.5 | 2431.7 | 2448.8 | 2494.2 | 2598.6 | 2826.4 | 3182.6 | 3483.1 | 3370.9 | 3339.2 | 2889.7 |
| 27.5° | 2539.5 | 2553.2 | 2577.2 | 2598.6 | 2671.4 | 2894.9 | 3330.7 | 3794.7 | 3682.6 | 3649.2 | 3079.0 |
| 30°   | 2685.1 | 2703.1 | 2733.9 | 2748.5 | 2798.1 | 2995.9 | 3491.6 | 4115.8 | 4050.8 | 4004.5 | 3292.2 |
| 32.5° | 2886.3 | 2911.1 | 2940.2 | 2944.5 | 2974.5 | 3149.2 | 3650.9 | 4434.3 | 4433.5 | 4400.9 | 3534.5 |
| 35°   | 3148.3 | 3174.8 | 3180.8 | 3186.8 | 3201.4 | 3359.8 | 3843.6 | 4724.6 | 4836.8 | 4799.1 | 3798.2 |
| 37.5° | 3434.3 | 3472.8 | 3482.2 | 3455.7 | 3476.2 | 3613.2 | 4060.2 | 4957.5 | 5187.8 | 5147.6 | 4053.3 |
| 40°   | 3740.0 | 3755.4 | 3781.0 | 3739.1 | 3764.8 | 3903.5 | 4272.5 | 5106.5 | 5449.8 | 5407.0 | 4254.5 |
| 42.5° | 3959.1 | 3987.4 | 4025.9 | 4010.5 | 4025.1 | 4151.8 | 4421.5 | 5178.4 | 5636.5 | 5593.7 | 4399.2 |
| 45°   | 4197.2 | 4205.7 | 4230.6 | 4227.1 | 4235.7 | 4353.9 | 4528.5 | 5210.1 | 5803.4 | 5764.9 | 4522.5 |
| 47.5° | 4404.4 | 4417.2 | 4433.5 | 4414.6 | 4395.8 | 4472.9 | 4615.9 | 5237.5 | 5996.1 | 5949.8 | 4651.8 |
| 50°   | 4603.9 | 4615.0 | 4634.7 | 4579.9 | 4509.7 | 4529.4 | 4658.7 | 5275.1 | 6176.7 | 6144.2 | 4753.7 |
| 52.5° | 4640.7 | 4652.7 | 4745.1 | 4756.3 | 4666.4 | 4597.0 | 4734.0 | 5358.2 | 6282.9 | 6262.4 | 4790.5 |
| 55°   | 4177.5 | 4198.9 | 4383.0 | 4594.5 | 4816.2 | 4794.0 | 4854.7 | 5401.9 | 6324.9 | 6330.0 | 4856.5 |
| 57.5° | 3242.5 | 3273.3 | 3542.2 | 3832.4 | 4299.1 | 4685.2 | 4870.2 | 5390.7 | 6310.3 | 6338.6 | 4924.1 |
| 60°   | 2126.8 | 2144.8 | 2463.3 | 2788.7 | 3272.5 | 3806.7 | 4359.0 | 5190.4 | 6181.0 | 6221.3 | 4907.0 |
| 62.5° | 1284.3 | 1304.9 | 1560.9 | 1807.5 | 2092.6 | 2449.6 | 2956.5 | 4171.5 | 5181.0 | 5270.9 | 3930.0 |
| 65°   | 896.5  | 923.9  | 1148.2 | 1351.1 | 1449.6 | 1375.9 | 1497.5 | 2329.8 | 3227.9 | 3265.6 | 2401.7 |
| 67.5° | 649.9  | 668.7  | 852.8  | 1094.2 | 1203.0 | 971.8  | 740.6  | 1031.7 | 1405.9 | 1419.6 | 990.6  |
| 70°   | 425.5  | 446.9  | 613.9  | 833.1  | 982.1  | 787.7  | 554.0  | 558.3  | 591.6  | 598.5  | 575.4  |
| 72.5° | 233.7  | 246.6  | 379.3  | 553.1  | 580.5  | 470.9  | 432.4  | 464.1  | 487.2  | 487.2  | 493.2  |
| 75°   | 120.7  | 131.9  | 155.0  | 182.4  | 220.0  | 257.7  | 311.7  | 358.8  | 383.6  | 385.3  | 382.7  |
| 77.5° | 61.6   | 65.9   | 83.1   | 89.9   | 98.5   | 114.7  | 149.0  | 190.9  | 213.2  | 221.8  | 220.0  |
| 80°   | 29.1   | 30.8   | 35.1   | 41.1   | 50.5   | 64.2   | 80.5   | 95.9   | 109.6  | 111.3  | 120.7  |
| 82.5° | 15.4   | 17.1   | 18.8   | 22.3   | 27.4   | 34.2   | 47.1   | 56.5   | 65.1   | 66.8   | 74.5   |
| 85°   | 6.0    | 6.8    | 7.7    | 8.6    | 12.0   | 14.6   | 19.7   | 26.5   | 32.5   | 32.5   | 38.5   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.9    | 1.7    | 3.4    | 4.3    | 6.0    | 6.0    | 10.3   |
| 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: GWS-SA2D-750-U-T2-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 | 1864.8 |
| 2.5°  | 1883.7 | 1858.8 | 1847.7 | 1829.7 | 1815.2 | 1798.9 | 1786.1 | 1776.6 | 1770.7 | 1767.2 | 1763.8 |
| 5°    | 1914.5 | 1876.8 | 1846.9 | 1810.9 | 1786.1 | 1762.1 | 1742.4 | 1728.7 | 1721.9 | 1716.7 | 1713.3 |
| 7.5°  | 1962.4 | 1911.9 | 1855.4 | 1799.8 | 1756.1 | 1717.6 | 1692.7 | 1678.2 | 1668.8 | 1665.3 | 1662.8 |
| 10°   | 2028.4 | 1958.2 | 1864.8 | 1776.6 | 1711.6 | 1669.6 | 1652.5 | 1645.6 | 1646.5 | 1644.8 | 1643.9 |
| 12.5° | 2102.9 | 2007.0 | 1862.3 | 1735.5 | 1663.6 | 1638.8 | 1639.7 | 1650.8 | 1663.6 | 1667.1 | 1667.9 |
| 15°   | 2183.4 | 2054.9 | 1837.4 | 1682.5 | 1626.0 | 1628.5 | 1650.8 | 1677.3 | 1701.3 | 1710.7 | 1712.4 |
| 17.5° | 2270.7 | 2095.2 | 1792.1 | 1624.2 | 1595.1 | 1622.5 | 1663.6 | 1707.3 | 1742.4 | 1757.8 | 1762.1 |
| 20°   | 2368.3 | 2129.4 | 1727.8 | 1566.9 | 1566.0 | 1611.4 | 1671.3 | 1728.7 | 1773.2 | 1793.8 | 1797.2 |
| 22.5° | 2471.9 | 2150.8 | 1649.1 | 1513.8 | 1536.1 | 1596.8 | 1665.3 | 1725.3 | 1772.4 | 1792.9 | 1797.2 |
| 25°   | 2576.4 | 2157.7 | 1562.6 | 1465.0 | 1505.2 | 1573.7 | 1636.2 | 1684.2 | 1728.7 | 1746.7 | 1750.1 |
| 27.5° | 2674.0 | 2138.0 | 1480.4 | 1423.0 | 1477.0 | 1539.5 | 1581.4 | 1607.1 | 1637.9 | 1651.6 | 1654.2 |
| 30°   | 2773.3 | 2098.6 | 1411.0 | 1389.6 | 1445.3 | 1492.4 | 1511.2 | 1512.9 | 1524.9 | 1524.9 | 1526.6 |
| 32.5° | 2873.5 | 2040.4 | 1350.3 | 1357.1 | 1405.9 | 1436.7 | 1439.3 | 1419.6 | 1405.1 | 1381.1 | 1380.2 |
| 35°   | 2989.0 | 1981.3 | 1300.6 | 1320.3 | 1359.7 | 1378.5 | 1370.8 | 1333.1 | 1298.0 | 1258.6 | 1256.9 |
| 37.5° | 3096.1 | 1920.5 | 1258.6 | 1282.6 | 1307.4 | 1321.1 | 1303.2 | 1257.8 | 1228.7 | 1188.4 | 1182.4 |
| 40°   | 3184.3 | 1865.7 | 1218.4 | 1243.2 | 1255.2 | 1267.2 | 1238.1 | 1201.3 | 1205.6 | 1183.3 | 1182.4 |
| 42.5° | 3235.6 | 1812.6 | 1180.7 | 1199.6 | 1207.3 | 1215.8 | 1190.1 | 1162.7 | 1185.9 | 1168.7 | 1169.6 |
| 45°   | 3273.3 | 1766.4 | 1146.5 | 1153.3 | 1172.2 | 1185.0 | 1161.0 | 1130.2 | 1135.3 | 1069.4 | 1054.0 |
| 47.5° | 3316.1 | 1740.7 | 1113.9 | 1107.1 | 1140.5 | 1162.7 | 1125.9 | 1081.4 | 1050.6 | 985.5  | 979.5  |
| 50°   | 3361.5 | 1731.3 | 1079.7 | 1060.9 | 1101.1 | 1122.5 | 1079.7 | 1024.0 | 983.8  | 948.7  | 945.3  |
| 52.5° | 3376.9 | 1730.4 | 1036.9 | 1005.2 | 1045.4 | 1075.4 | 1039.4 | 982.9  | 935.0  | 900.7  | 899.0  |
| 55°   | 3437.7 | 1755.2 | 982.1  | 929.0  | 966.7  | 1028.3 | 1001.8 | 920.4  | 881.9  | 866.5  | 864.8  |
| 57.5° | 3508.8 | 1759.5 | 895.6  | 845.9  | 898.2  | 970.9  | 937.6  | 867.3  | 825.4  | 806.6  | 804.8  |
| 60°   | 3479.7 | 1654.2 | 803.1  | 782.6  | 839.9  | 917.0  | 886.2  | 825.4  | 776.6  | 758.6  | 756.9  |
| 62.5° | 2651.7 | 1167.9 | 735.5  | 727.8  | 777.4  | 839.1  | 833.1  | 769.7  | 723.5  | 710.7  | 708.9  |
| 65°   | 1595.1 | 820.3  | 670.4  | 669.6  | 704.7  | 763.7  | 771.5  | 720.1  | 671.3  | 653.3  | 653.3  |
| 67.5° | 788.6  | 627.6  | 596.8  | 592.5  | 614.8  | 656.7  | 689.3  | 647.3  | 606.2  | 589.1  | 586.5  |
| 70°   | 557.4  | 553.1  | 542.8  | 530.9  | 535.1  | 552.3  | 566.0  | 530.9  | 487.2  | 470.1  | 466.6  |
| 72.5° | 482.0  | 482.9  | 476.1  | 466.6  | 463.2  | 451.2  | 439.2  | 413.6  | 387.0  | 369.0  | 370.7  |
| 75°   | 374.2  | 375.9  | 380.2  | 376.7  | 367.3  | 354.5  | 341.6  | 309.1  | 287.7  | 270.6  | 267.1  |
| 77.5° | 218.3  | 226.9  | 240.6  | 237.2  | 238.9  | 220.9  | 215.8  | 184.1  | 164.4  | 152.4  | 149.8  |
| 80°   | 123.3  | 128.4  | 134.4  | 138.7  | 133.6  | 125.9  | 114.7  | 97.6   | 91.6   | 83.1   | 81.3   |
| 82.5° | 74.5   | 79.6   | 82.2   | 85.6   | 83.9   | 73.6   | 65.1   | 53.9   | 48.8   | 44.5   | 43.7   |
| 85°   | 37.7   | 41.1   | 43.7   | 45.4   | 40.2   | 33.4   | 30.0   | 24.0   | 20.5   | 18.0   | 18.0   |
| 87.5° | 9.4    | 10.3   | 12.0   | 10.3   | 9.4    | 4.3    | 3.4    | 0.9    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-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

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**



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| 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)