

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: P386594

Luminaire Tested: **GPC-SA2B-730-U-T3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386594  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GPC-SA2B-730-U-T3-HSS  
Description: GALLEON PEDESTRIAN LUMINAIRE  
(2) 70 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7916 lumens  
Efficiency: N/A  
Efficacy: 92.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G2

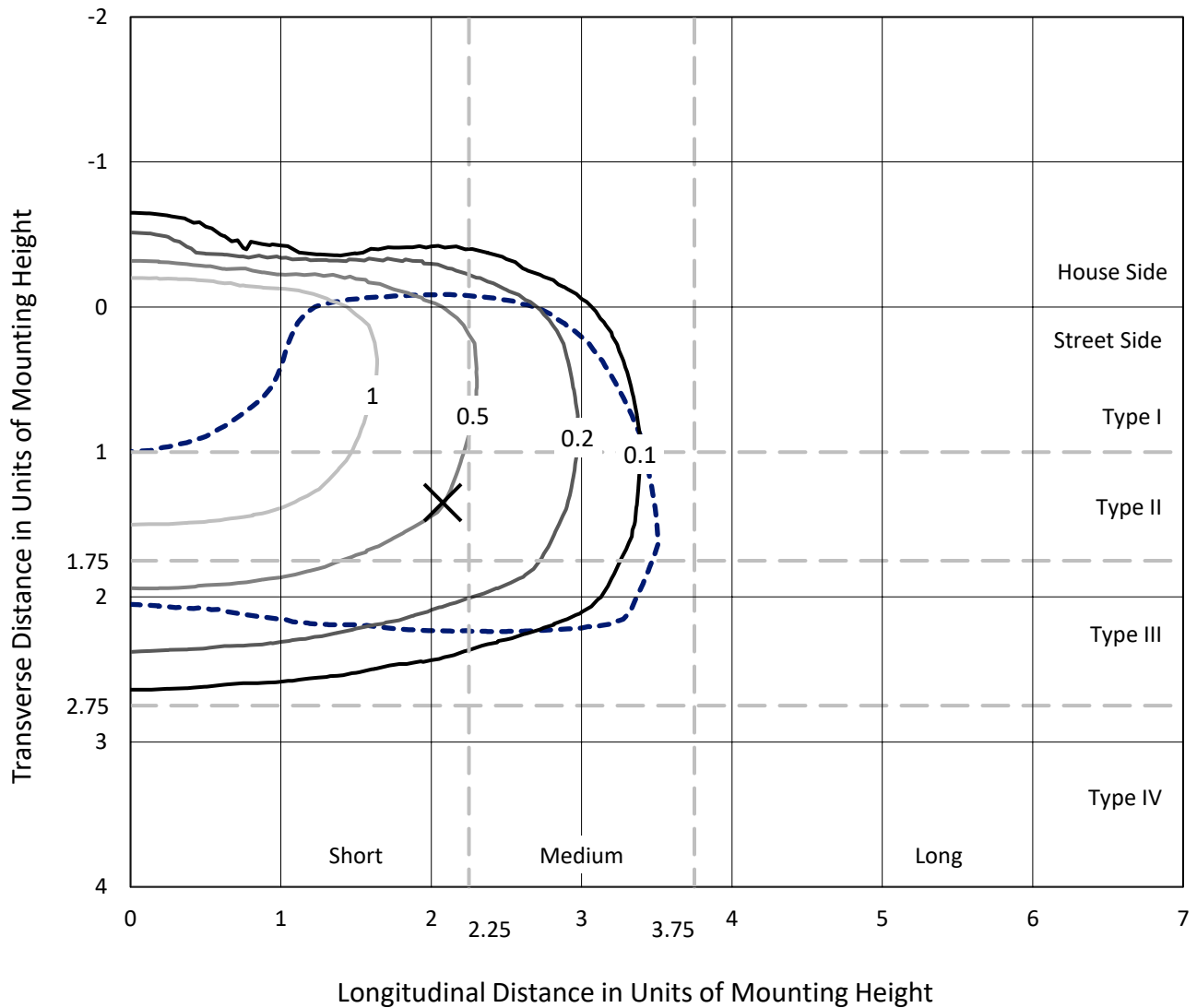
Input Watts (W): 86  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

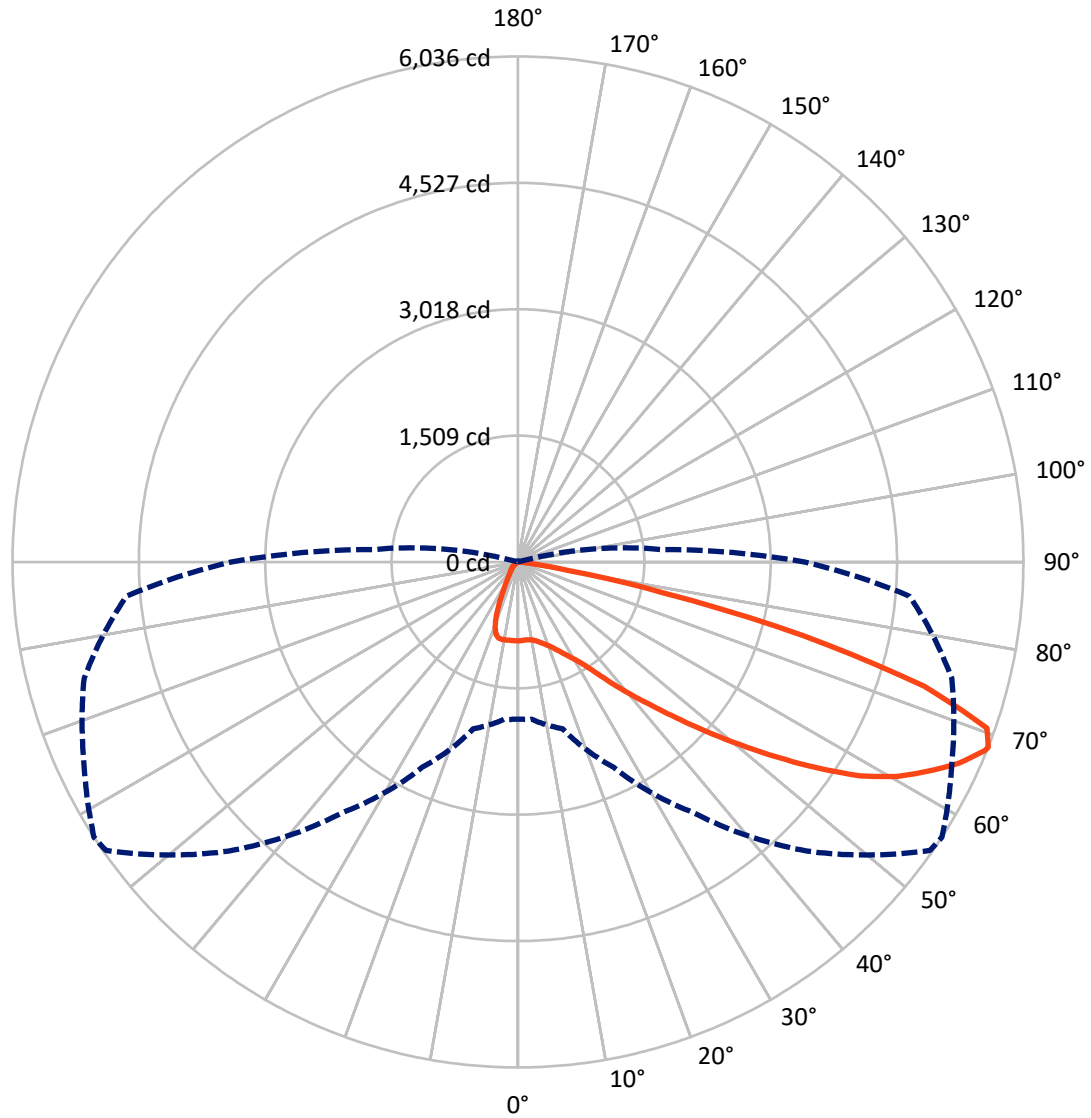
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.9 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral      - - - Horizontal Cone Through 68-Deg Vertical

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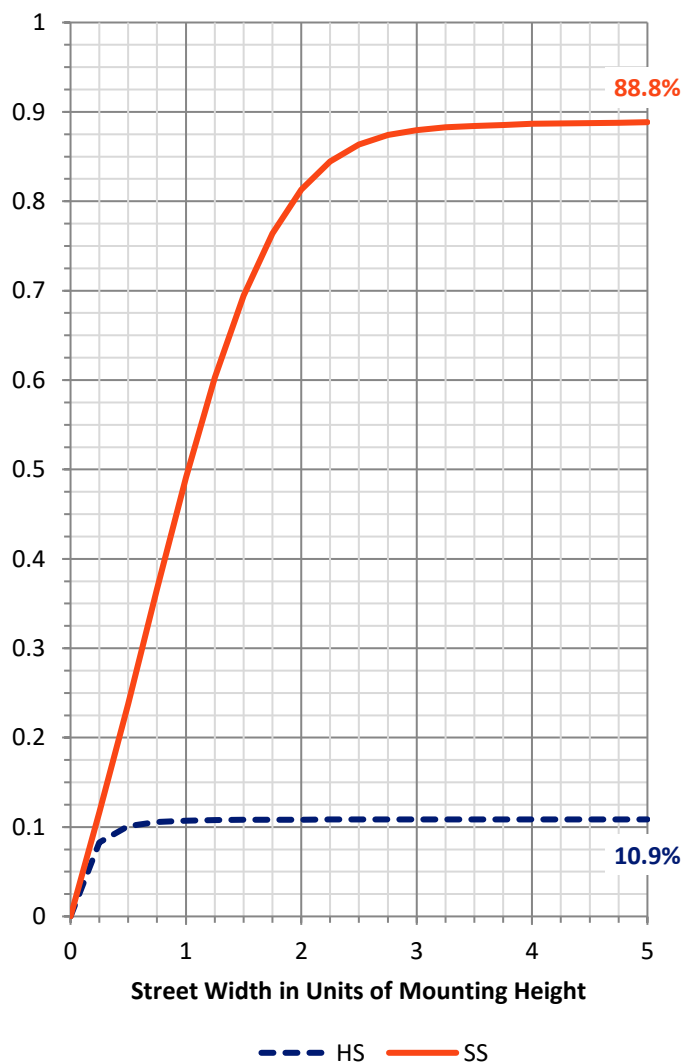
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 868.0    | 0.0    | 868.0  |
|                    | % Fixture | 11.0     | 0.0    | 11.0   |
| <b>Street Side</b> | Lumens    | 7048.0   | 0.0    | 7048.0 |
|                    | % Fixture | 89.0     | 0.0    | 89.0   |
| <b>Total</b>       | Lumens    | 7916.0   | 0.0    | 7916.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 88.0   | 1.1       |
| 10°-20°   | 243.9  | 3.1       |
| 20°-30°   | 420.8  | 5.3       |
| 30°-40°   | 726.3  | 9.2       |
| 40°-50°   | 1242.4 | 15.7      |
| 50°-60°   | 1987.6 | 25.1      |
| 60°-70°   | 2296.5 | 29.0      |
| 70°-80°   | 877.5  | 11.1      |
| 80°-90°   | 32.9   | 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°    | 7916.0 | 100.0     |
| 0°-180°   | 7916.0 | 100.0     |

**Coefficient of Utilization**



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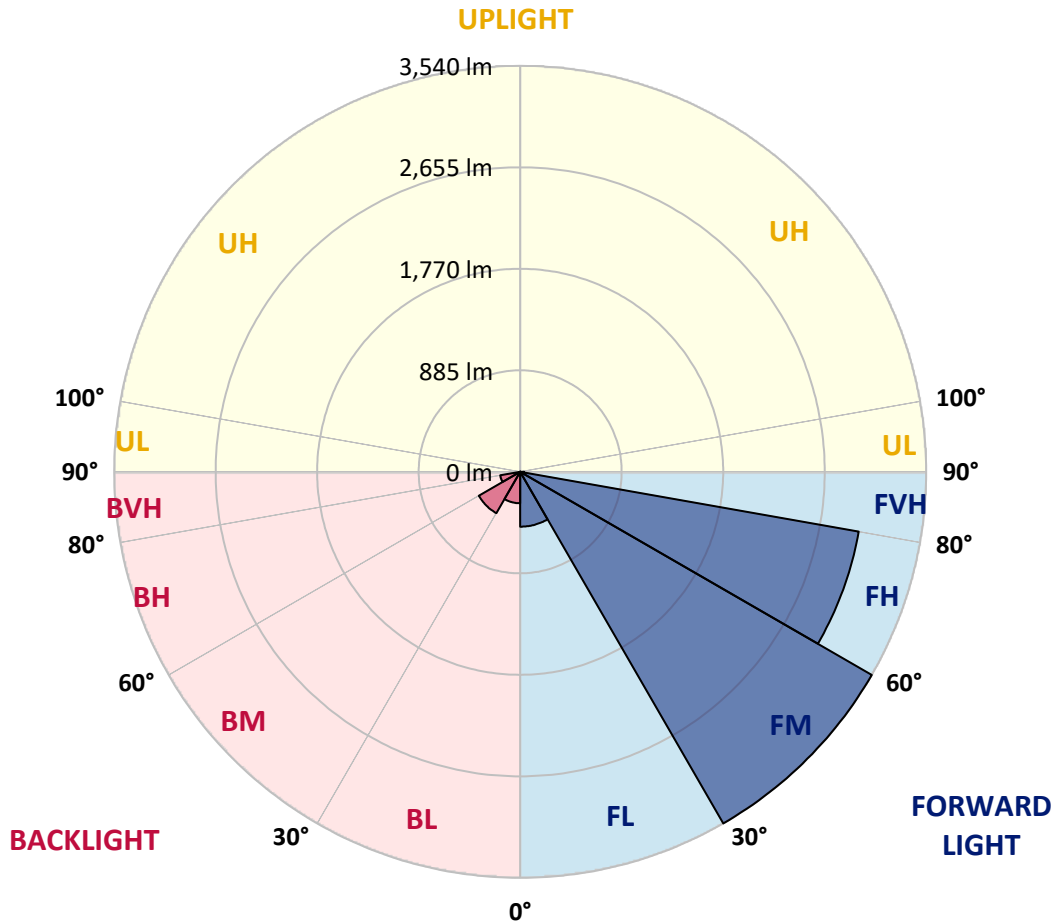
CATALOG NUMBER: GPC-SA2B-730-U-T3-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 478.4  | 6.0       |                         |      |         |
| FM (30°-60°)   | 3540.0 | 44.7      |                         |      |         |
| FH (60°-80°)   | 2997.2 | 37.9      |                         |      | G2/5000 |
| FVH (80°-90°)  | 32.3   | 0.4       |                         |      | G1/100  |
| BL (0°-30°)    | 274.3  | 3.5       | B1/500                  |      |         |
| BM (30°-60°)   | 416.3  | 5.3       | B1/1000                 |      |         |
| BH (60°-80°)   | 176.8  | 2.2       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 0.6    | 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 Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 57°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  | 940.6  |
| 2.5°  | 918.5  | 922.7  | 925.7  | 927.5  | 929.8  | 934.6  | 936.1  | 938.4  | 939.5  | 939.5  | 942.1  |
| 5°    | 882.2  | 886.7  | 893.1  | 898.3  | 908.8  | 922.3  | 932.0  | 935.8  | 942.5  | 948.5  | 951.9  |
| 7.5°  | 848.6  | 853.8  | 861.3  | 873.6  | 891.6  | 913.3  | 933.5  | 938.8  | 951.9  | 964.6  | 970.9  |
| 10°   | 826.8  | 831.0  | 840.7  | 858.3  | 881.9  | 912.2  | 940.6  | 947.0  | 969.5  | 990.8  | 1002.8 |
| 12.5° | 819.4  | 823.1  | 833.2  | 853.0  | 882.2  | 917.8  | 957.1  | 966.5  | 999.4  | 1030.5 | 1047.3 |
| 15°   | 830.2  | 831.0  | 841.8  | 860.5  | 889.3  | 931.6  | 984.4  | 995.7  | 1037.2 | 1077.6 | 1098.6 |
| 17.5° | 872.1  | 868.8  | 874.4  | 882.6  | 905.4  | 950.0  | 1013.2 | 1030.1 | 1085.5 | 1133.0 | 1152.9 |
| 20°   | 976.9  | 976.9  | 964.2  | 941.8  | 942.1  | 978.4  | 1052.2 | 1071.3 | 1139.0 | 1194.0 | 1212.0 |
| 22.5° | 1156.2 | 1152.9 | 1127.4 | 1072.4 | 1021.9 | 1027.5 | 1099.7 | 1124.4 | 1203.4 | 1262.2 | 1268.1 |
| 25°   | 1371.8 | 1367.7 | 1328.4 | 1250.9 | 1163.3 | 1106.8 | 1164.1 | 1192.5 | 1280.1 | 1332.2 | 1319.8 |
| 27.5° | 1600.2 | 1596.8 | 1557.9 | 1461.7 | 1337.0 | 1233.3 | 1240.8 | 1267.8 | 1358.4 | 1409.6 | 1370.3 |
| 30°   | 1821.4 | 1822.5 | 1783.9 | 1685.1 | 1544.0 | 1394.7 | 1338.1 | 1353.9 | 1434.3 | 1486.4 | 1430.2 |
| 32.5° | 2031.7 | 2033.2 | 1999.9 | 1889.5 | 1757.7 | 1582.2 | 1472.9 | 1468.8 | 1522.7 | 1574.0 | 1509.6 |
| 35°   | 2219.3 | 2223.0 | 2200.2 | 2114.5 | 1974.8 | 1791.1 | 1647.7 | 1638.0 | 1648.1 | 1706.1 | 1631.2 |
| 37.5° | 2400.0 | 2402.3 | 2385.1 | 2312.8 | 2196.0 | 2020.5 | 1868.5 | 1854.7 | 1833.0 | 1877.5 | 1791.8 |
| 40°   | 2598.1 | 2592.4 | 2572.6 | 2507.1 | 2406.8 | 2273.9 | 2105.8 | 2081.9 | 2044.1 | 2083.8 | 2002.9 |
| 42.5° | 2782.2 | 2775.8 | 2779.2 | 2705.1 | 2620.5 | 2534.4 | 2382.5 | 2341.3 | 2319.2 | 2364.9 | 2261.9 |
| 45°   | 3012.4 | 3009.0 | 3020.3 | 2955.9 | 2887.4 | 2824.9 | 2699.5 | 2654.6 | 2644.8 | 2698.4 | 2575.2 |
| 47.5° | 3239.6 | 3247.8 | 3282.7 | 3255.3 | 3227.6 | 3172.6 | 3035.2 | 3015.0 | 3021.0 | 3085.8 | 2905.7 |
| 50°   | 3429.0 | 3438.7 | 3534.2 | 3565.6 | 3605.7 | 3573.5 | 3435.7 | 3423.4 | 3447.0 | 3505.4 | 3261.3 |
| 52.5° | 3566.0 | 3585.8 | 3704.5 | 3849.4 | 3995.3 | 4017.0 | 3879.7 | 3868.4 | 3900.3 | 3909.2 | 3536.1 |
| 55°   | 3661.1 | 3678.7 | 3813.0 | 4078.1 | 4375.3 | 4468.8 | 4383.5 | 4340.1 | 4334.1 | 4245.4 | 3825.0 |
| 57.5° | 3677.9 | 3676.1 | 3869.2 | 4225.9 | 4673.2 | 4914.6 | 4860.7 | 4818.1 | 4695.3 | 4556.0 | 4156.3 |
| 60°   | 3582.9 | 3593.7 | 3817.9 | 4277.2 | 4860.4 | 5251.9 | 5256.0 | 5200.6 | 5009.3 | 4858.1 | 4477.4 |
| 62.5° | 3290.1 | 3334.3 | 3560.8 | 4142.8 | 4858.1 | 5387.8 | 5545.7 | 5503.4 | 5274.7 | 5105.5 | 4803.1 |
| 65°   | 2815.5 | 2831.2 | 3047.2 | 3682.4 | 4529.8 | 5330.9 | 5806.6 | 5790.9 | 5513.9 | 5345.8 | 4970.4 |
| 67.5° | 2056.1 | 2022.0 | 2248.8 | 2899.7 | 3835.1 | 4999.2 | 5993.8 | 6013.6 | 5698.4 | 5395.2 | 4792.2 |
| 68°   | 1876.4 | 1886.5 | 2063.2 | 2706.2 | 3653.2 | 4882.1 | 6006.1 | 6036.4 | 5716.8 | 5363.0 | 4694.9 |
| 70°   | 1118.4 | 1137.9 | 1295.5 | 1863.3 | 2779.2 | 4219.2 | 5872.9 | 5942.1 | 5607.5 | 5031.0 | 4060.8 |
| 72.5° | 285.6  | 308.8  | 457.8  | 834.0  | 1587.4 | 2972.7 | 4957.7 | 5074.8 | 4868.6 | 4081.4 | 2741.4 |
| 75°   | 117.5  | 123.5  | 163.6  | 274.7  | 591.4  | 1339.3 | 3267.7 | 3518.5 | 3375.1 | 2443.5 | 1239.0 |
| 77.5° | 81.2   | 85.3   | 105.2  | 152.3  | 256.0  | 454.0  | 1602.0 | 1783.2 | 1606.5 | 834.0  | 270.2  |
| 80°   | 58.4   | 61.8   | 75.2   | 101.4  | 147.1  | 162.1  | 522.2  | 603.8  | 479.5  | 183.0  | 67.0   |
| 82.5° | 34.8   | 37.4   | 56.1   | 72.2   | 89.5   | 77.5   | 129.9  | 147.5  | 138.9  | 91.0   | 29.9   |
| 85°   | 17.2   | 20.2   | 37.8   | 51.7   | 48.3   | 32.6   | 39.7   | 44.2   | 54.6   | 55.4   | 16.1   |
| 87.5° | 1.1    | 2.2    | 22.1   | 31.1   | 13.5   | 7.5    | 11.6   | 14.2   | 19.5   | 27.3   | 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    |



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 CATALOG NUMBER: GPC-SA2B-730-U-T3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 940.6  | 940.6  | 940.6  | 940.6  | 940.6 | 940.6 | 940.6 | 940.6 | 940.6 | 940.6 | 940.6 |
| 2.5°  | 943.2  | 943.6  | 941.0  | 939.9  | 940.6 | 936.1 | 934.3 | 935.0 | 935.0 | 936.1 | 934.3 |
| 5°    | 952.6  | 952.6  | 948.1  | 942.1  | 938.8 | 930.1 | 924.5 | 923.0 | 921.9 | 921.2 | 919.7 |
| 7.5°  | 972.8  | 970.6  | 962.7  | 949.6  | 938.4 | 919.7 | 905.4 | 898.0 | 894.2 | 892.7 | 891.6 |
| 10°   | 1005.4 | 1001.3 | 988.2  | 963.8  | 938.0 | 904.7 | 873.6 | 851.5 | 833.2 | 825.7 | 821.2 |
| 12.5° | 1049.2 | 1043.2 | 1021.1 | 980.7  | 935.4 | 874.0 | 806.6 | 741.9 | 681.6 | 656.9 | 644.6 |
| 15°   | 1099.7 | 1091.1 | 1056.3 | 994.9  | 920.0 | 804.8 | 658.4 | 545.0 | 461.5 | 430.1 | 416.6 |
| 17.5° | 1151.0 | 1139.8 | 1087.0 | 1003.9 | 874.0 | 661.4 | 461.9 | 348.9 | 293.1 | 278.1 | 272.9 |
| 20°   | 1202.6 | 1186.2 | 1113.6 | 997.1  | 769.9 | 476.9 | 304.7 | 254.9 | 238.8 | 234.3 | 232.8 |
| 22.5° | 1251.7 | 1226.2 | 1137.5 | 970.9  | 609.7 | 320.0 | 241.1 | 225.3 | 220.1 | 217.5 | 216.7 |
| 25°   | 1294.3 | 1258.8 | 1158.5 | 890.1  | 431.6 | 241.8 | 217.1 | 211.9 | 205.1 | 200.3 | 200.6 |
| 27.5° | 1334.4 | 1291.4 | 1171.2 | 756.8  | 287.8 | 206.6 | 201.0 | 193.9 | 181.5 | 174.4 | 174.4 |
| 30°   | 1382.7 | 1334.8 | 1180.6 | 582.4  | 211.9 | 182.7 | 178.2 | 167.3 | 150.5 | 141.1 | 141.1 |
| 32.5° | 1455.3 | 1400.7 | 1174.6 | 408.7  | 175.5 | 160.6 | 150.1 | 135.1 | 116.8 | 107.8 | 107.4 |
| 35°   | 1566.5 | 1502.5 | 1131.9 | 268.0  | 155.0 | 139.6 | 122.8 | 104.4 | 88.3  | 80.8  | 80.5  |
| 37.5° | 1716.2 | 1638.7 | 1036.1 | 191.6  | 138.9 | 120.2 | 99.9  | 79.7  | 67.7  | 62.9  | 62.5  |
| 40°   | 1910.5 | 1797.0 | 899.1  | 155.3  | 123.9 | 101.4 | 77.1  | 61.8  | 53.5  | 49.8  | 50.2  |
| 42.5° | 2143.6 | 1966.6 | 734.8  | 134.0  | 109.3 | 83.5  | 60.3  | 48.7  | 43.4  | 40.8  | 40.1  |
| 45°   | 2402.7 | 2133.9 | 562.6  | 119.4  | 94.7  | 67.4  | 47.2  | 38.6  | 34.4  | 32.9  | 32.9  |
| 47.5° | 2687.5 | 2296.7 | 411.7  | 106.7  | 79.0  | 52.0  | 37.8  | 31.4  | 28.1  | 26.9  | 26.6  |
| 50°   | 2946.2 | 2409.8 | 296.8  | 93.2   | 64.8  | 41.2  | 30.7  | 26.2  | 24.0  | 22.5  | 22.5  |
| 52.5° | 3161.8 | 2445.3 | 218.6  | 78.6   | 52.4  | 32.9  | 25.5  | 22.5  | 20.2  | 19.1  | 19.1  |
| 55°   | 3351.5 | 2430.7 | 162.4  | 64.8   | 42.3  | 26.9  | 21.7  | 19.1  | 17.2  | 16.1  | 16.1  |
| 57.5° | 3533.4 | 2383.6 | 121.3  | 52.8   | 34.1  | 21.7  | 18.3  | 16.1  | 14.2  | 13.5  | 13.5  |
| 60°   | 3682.0 | 2305.0 | 90.2   | 42.7   | 27.3  | 17.6  | 15.3  | 13.1  | 11.6  | 10.5  | 10.5  |
| 62.5° | 3802.6 | 2218.1 | 66.3   | 35.2   | 21.7  | 13.8  | 12.0  | 10.9  | 8.6   | 7.5   | 7.5   |
| 65°   | 3803.3 | 2074.0 | 49.8   | 29.2   | 16.8  | 10.9  | 9.0   | 8.6   | 5.6   | 4.5   | 4.1   |
| 67.5° | 3528.2 | 1788.1 | 38.2   | 25.1   | 13.1  | 8.2   | 6.7   | 7.1   | 3.0   | 1.9   | 1.5   |
| 68°   | 3428.3 | 1715.4 | 35.9   | 24.7   | 12.4  | 7.9   | 6.4   | 7.1   | 2.6   | 1.5   | 1.1   |
| 70°   | 2890.4 | 1364.7 | 28.8   | 24.0   | 10.9  | 6.0   | 5.2   | 7.1   | 2.2   | 1.1   | 0.7   |
| 72.5° | 1848.7 | 792.0  | 21.3   | 19.1   | 8.2   | 4.5   | 3.4   | 6.4   | 2.2   | 0.7   | 0.4   |
| 75°   | 786.8  | 245.5  | 14.6   | 13.5   | 4.9   | 3.4   | 2.2   | 4.1   | 1.5   | 0.4   | 0.0   |
| 77.5° | 165.8  | 55.4   | 8.6    | 8.2    | 3.4   | 2.2   | 1.5   | 1.1   | 0.4   | 0.0   | 0.0   |
| 80°   | 42.7   | 16.1   | 4.5    | 4.1    | 1.9   | 1.1   | 0.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 13.5   | 6.4    | 2.6    | 1.9    | 0.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 6.7    | 3.7    | 1.5    | 0.7    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 3.7    | 1.1    | 0.4    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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



**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-2-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-730-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 | R9:  | -38.3 |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R10: | 62.5  |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R11: | 63.7  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R12: | 57.8  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R13: | 70.4  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R14: | 97.3  |
| CIE z:                    | 0.1583 | R6:       | 77.6 |      |       |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



**Test Conditions**

Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-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 3000K 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    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 8494.8**

**S/P: 1.23**

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 2397                                 | NR                             | 490               | 24908                                | NR                             | 620               | 118784                               | NR                             | 750               | 5037                                 | NR                             | 880               | 2677                                 | NR                             |
| 365               | 2084                                 | NR                             | 495               | 30998                                | NR                             | 625               | 108951                               | NR                             | 755               | 4413                                 | NR                             | 885               | 2940                                 | NR                             |
| 370               | 2143                                 | NR                             | 500               | 37103                                | NR                             | 630               | 99573                                | NR                             | 760               | 4189                                 | NR                             | 890               | 3116                                 | NR                             |
| 375               | 2413                                 | NR                             | 505               | 42987                                | NR                             | 635               | 90444                                | NR                             | 765               | 3677                                 | NR                             | 895               | 3345                                 | NR                             |
| 380               | 2172                                 | NR                             | 510               | 48702                                | NR                             | 640               | 80749                                | NR                             | 770               | 3366                                 | NR                             | 900               | 2312                                 | NR                             |
| 385               | 1997                                 | NR                             | 515               | 53741                                | NR                             | 645               | 71664                                | NR                             | 775               | 3211                                 | NR                             | 905               | 2829                                 | NR                             |
| 390               | 1830                                 | NR                             | 520               | 57283                                | NR                             | 650               | 63936                                | NR                             | 780               | 2682                                 | NR                             | 910               | 2783                                 | NR                             |
| 395               | 1861                                 | NR                             | 525               | 61876                                | NR                             | 655               | 56611                                | NR                             | 785               | 2804                                 | NR                             | 915               | 2662                                 | NR                             |
| 400               | 1717                                 | NR                             | 530               | 65398                                | NR                             | 660               | 49763                                | NR                             | 790               | 2581                                 | NR                             | 920               | 3047                                 | NR                             |
| 405               | 1761                                 | NR                             | 535               | 69597                                | NR                             | 665               | 42891                                | NR                             | 795               | 2711                                 | NR                             | 925               | 2256                                 | NR                             |
| 410               | 2680                                 | NR                             | 540               | 74214                                | NR                             | 670               | 36939                                | NR                             | 800               | 2609                                 | NR                             | 930               | 2976                                 | NR                             |
| 415               | 4374                                 | NR                             | 545               | 79911                                | NR                             | 675               | 31946                                | NR                             | 805               | 2581                                 | NR                             | 935               | 3503                                 | NR                             |
| 420               | 8071                                 | NR                             | 550               | 86153                                | NR                             | 680               | 27385                                | NR                             | 810               | 2404                                 | NR                             | 940               | 4226                                 | NR                             |
| 425               | 15169                                | NR                             | 555               | 93952                                | NR                             | 685               | 23504                                | NR                             | 815               | 2556                                 | NR                             | 945               | 2930                                 | NR                             |
| 430               | 26038                                | NR                             | 560               | 102904                               | NR                             | 690               | 20210                                | NR                             | 820               | 2742                                 | NR                             | 950               | 2115                                 | NR                             |
| 435               | 41316                                | NR                             | 565               | 112009                               | NR                             | 695               | 17459                                | NR                             | 825               | 2014                                 | NR                             | 955               | 2634                                 | NR                             |
| 440               | 59674                                | NR                             | 570               | 121662                               | NR                             | 700               | 15207                                | NR                             | 830               | 2488                                 | NR                             | 960               | 4200                                 | NR                             |
| 445               | 72751                                | NR                             | 575               | 130476                               | NR                             | 705               | 13322                                | NR                             | 835               | 2625                                 | NR                             | 965               | 1982                                 | NR                             |
| 450               | 65091                                | NR                             | 580               | 137926                               | NR                             | 710               | 11676                                | NR                             | 840               | 2754                                 | NR                             | 970               | 3613                                 | NR                             |
| 455               | 44894                                | NR                             | 585               | 143406                               | NR                             | 715               | 10626                                | NR                             | 845               | 2708                                 | NR                             | 975               | 4034                                 | NR                             |
| 460               | 32712                                | NR                             | 590               | 147039                               | NR                             | 720               | 9416                                 | NR                             | 850               | 2608                                 | NR                             | 980               | 3922                                 | NR                             |
| 465               | 25296                                | NR                             | 595               | 147365                               | NR                             | 725               | 8333                                 | NR                             | 855               | 2605                                 | NR                             | 985               | 1909                                 | NR                             |
| 470               | 19318                                | NR                             | 600               | 145800                               | NR                             | 730               | 7134                                 | NR                             | 860               | 1765                                 | NR                             | 990               | 3617                                 | NR                             |
| 475               | 17265                                | NR                             | 605               | 141363                               | NR                             | 735               | 6437                                 | NR                             | 865               | 2581                                 | NR                             | 995               | 4767                                 | NR                             |
| 480               | 18260                                | NR                             | 610               | 134199                               | NR                             | 740               | 5834                                 | NR                             | 870               | 3016                                 | NR                             | 1000              | 2528                                 | NR                             |
| 485               | 20845                                | NR                             | 615               | 127683                               | NR                             | 745               | 5500                                 | NR                             | 875               | 3952                                 | NR                             |                   |                                      |                                |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

| 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    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

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**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_9 = -38.3$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)