

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: P386430

Luminaire Tested: **GPC-SA2A-750-U-T4FT-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386430  
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: GPC-SA2A-750-U-T4FT-HSS  
Description: GALLEON PEDESTRIAN LUMINAIRE  
(2) 70 CRI, 5000K, 615mA 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: 6906 lumens  
Efficiency: N/A  
Efficacy: 104.6 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2

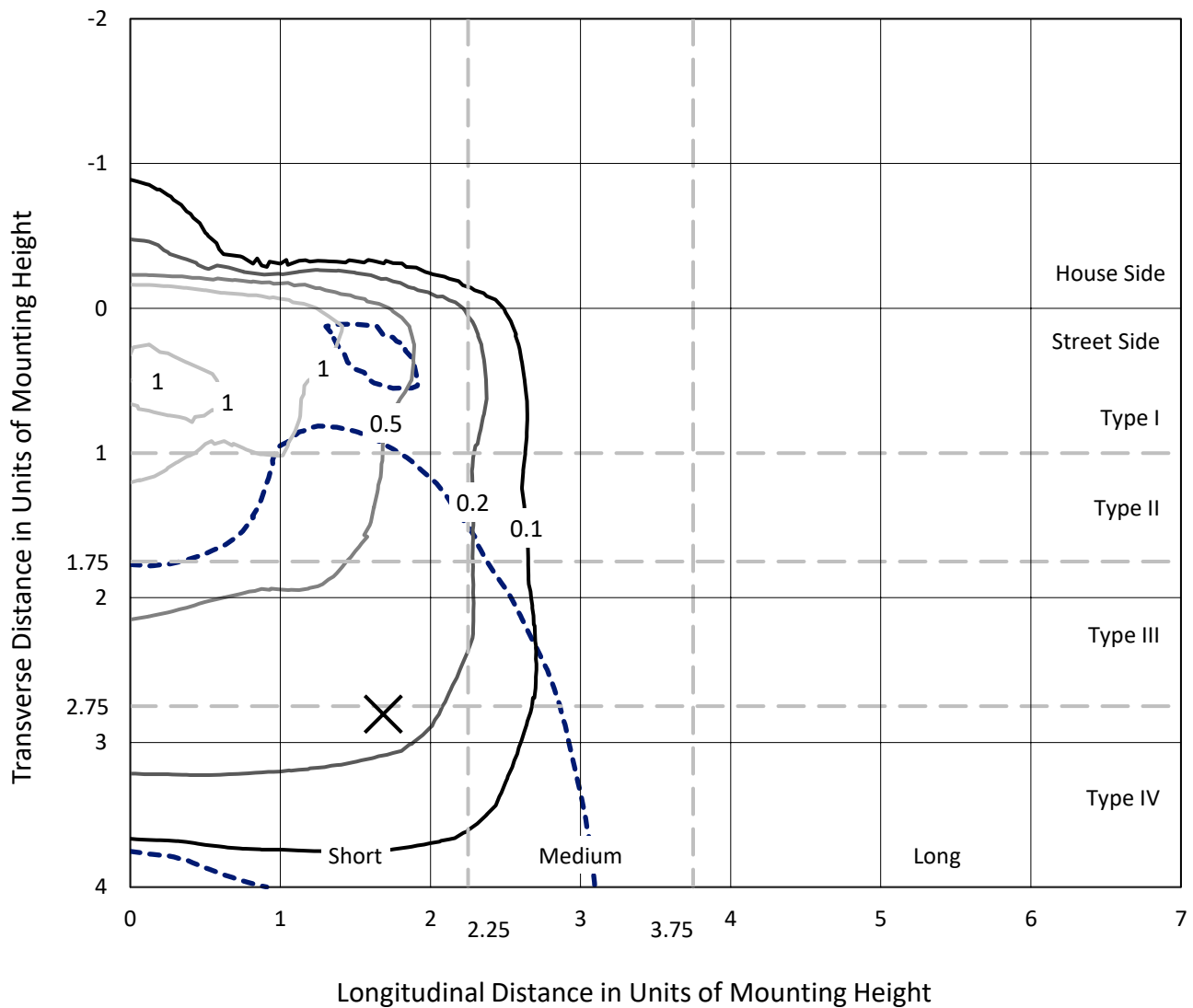
Input Watts (W): 66  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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## Iso-Footcandle Lines of Horizontal Illumination

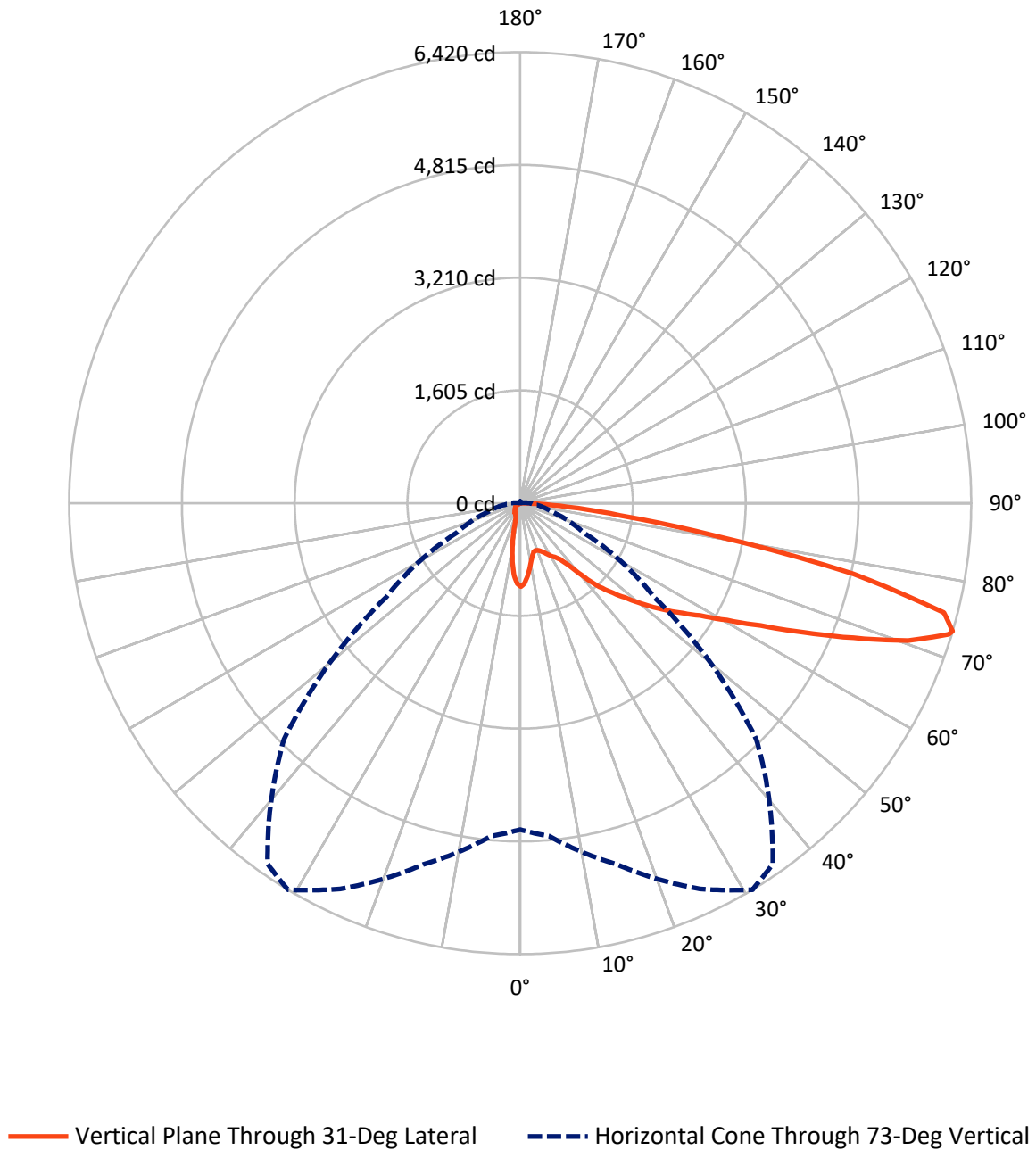
✕ Max cd  
 - - - 1/2 Max cd



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

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## Luminous Intensity Polar Plot



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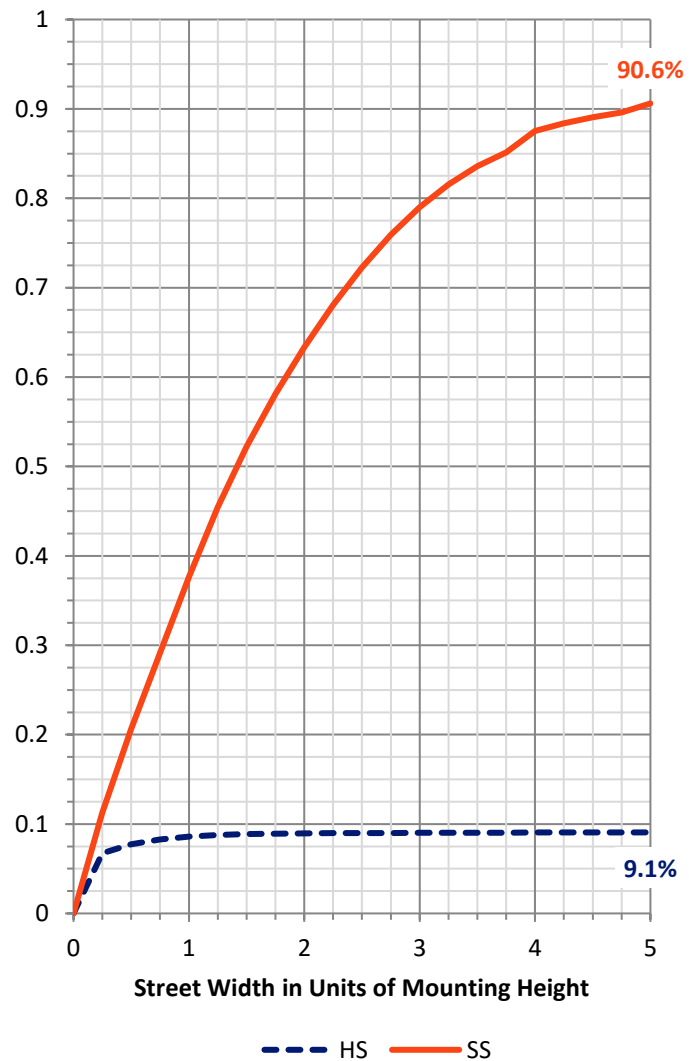
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 629.5    | 0.0    | 629.5  |
|                    | % Fixture | 9.1      | 0.0    | 9.1    |
| <b>Street Side</b> | Lumens    | 6276.5   | 0.0    | 6276.5 |
|                    | % Fixture | 90.9     | 0.0    | 90.9   |
| <b>Total</b>       | Lumens    | 6906.0   | 0.0    | 6906.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 98.5   | 1.4       |
| 10°-20°   | 213.9  | 3.1       |
| 20°-30°   | 320.5  | 4.6       |
| 30°-40°   | 509.9  | 7.4       |
| 40°-50°   | 910.6  | 13.2      |
| 50°-60°   | 1412.9 | 20.5      |
| 60°-70°   | 1878.3 | 27.2      |
| 70°-80°   | 1412.9 | 20.5      |
| 80°-90°   | 148.5  | 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°    | 6906.0 | 100.0     |
| 0°-180°   | 6906.0 | 100.0     |

**Coefficient of Utilization**



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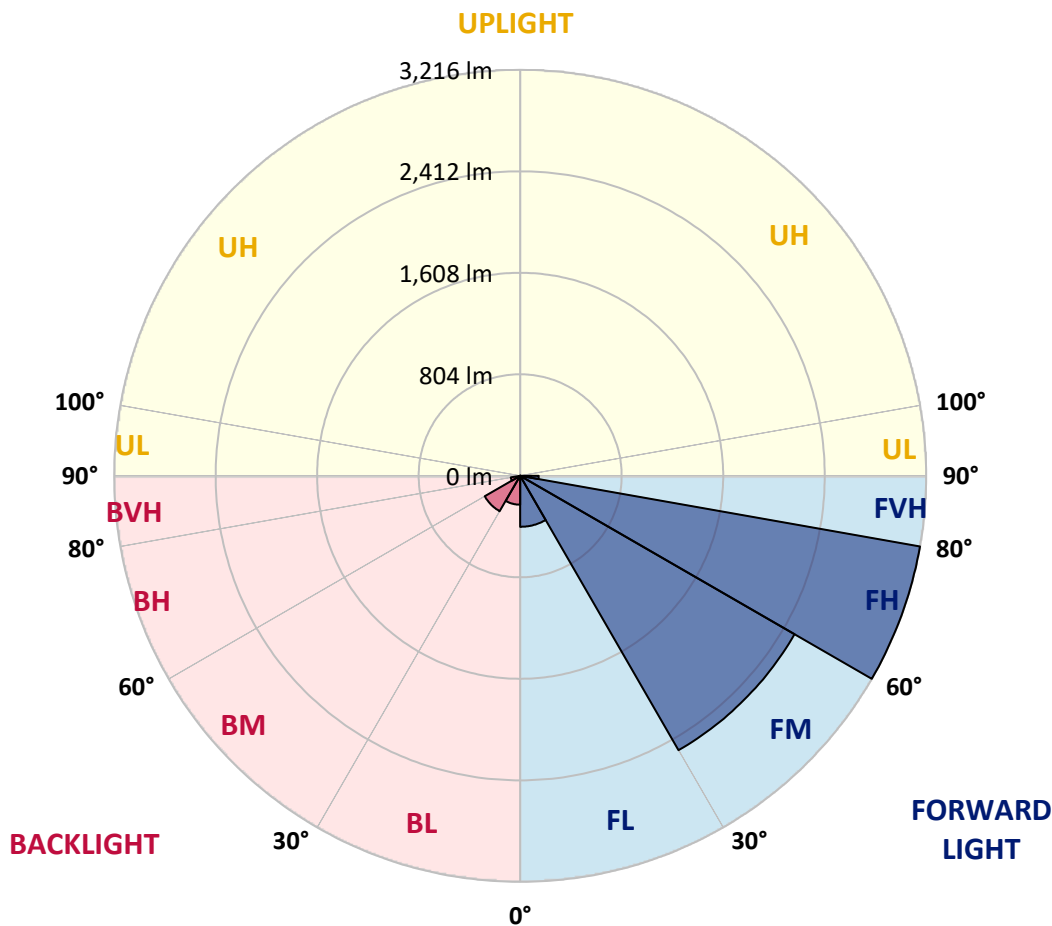
CATALOG NUMBER: GPC-SA2A-750-U-T4FT-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 404.0  | 5.9       |                         |      |         |
| FM   | (30°-60°)   | 2509.4 | 36.3      |                         |      |         |
| FH   | (60°-80°)   | 3215.9 | 46.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 147.2  | 2.1       |                         |      | G2/225  |
| BL   | (0°-30°)    | 228.9  | 3.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 324.0  | 4.7       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 75.3   | 1.1       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.3    | 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 IV Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 31°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 |
| 2.5°  | 1126.0 | 1130.7 | 1135.8 | 1136.8 | 1145.3 | 1145.6 | 1157.8 | 1166.9 | 1176.0 | 1184.8 | 1187.9 |
| 5°    | 1010.4 | 1018.2 | 1027.3 | 1036.5 | 1054.4 | 1061.5 | 1091.2 | 1121.6 | 1150.7 | 1178.4 | 1191.9 |
| 7.5°  | 887.1  | 895.9  | 908.7  | 931.4  | 951.3  | 965.2  | 1012.1 | 1066.2 | 1120.3 | 1171.3 | 1200.7 |
| 10°   | 774.6  | 782.7  | 796.2  | 820.2  | 850.9  | 869.9  | 933.0  | 1008.1 | 1087.5 | 1164.9 | 1213.9 |
| 12.5° | 702.9  | 707.3  | 714.7  | 740.4  | 768.1  | 789.4  | 863.8  | 956.7  | 1060.5 | 1164.5 | 1235.2 |
| 15°   | 689.7  | 691.1  | 685.0  | 696.5  | 718.1  | 738.7  | 814.1  | 915.1  | 1039.8 | 1169.9 | 1262.9 |
| 17.5° | 710.7  | 710.0  | 689.7  | 688.4  | 705.6  | 722.5  | 789.8  | 886.4  | 1025.3 | 1182.4 | 1298.7 |
| 20°   | 742.5  | 740.1  | 704.9  | 698.5  | 716.8  | 732.7  | 788.1  | 875.6  | 1019.9 | 1203.4 | 1342.3 |
| 22.5° | 784.7  | 780.6  | 725.6  | 718.8  | 738.4  | 755.0  | 809.0  | 886.1  | 1024.6 | 1231.4 | 1393.0 |
| 25°   | 837.1  | 831.0  | 761.0  | 753.6  | 773.5  | 790.1  | 846.5  | 916.2  | 1038.8 | 1265.6 | 1457.2 |
| 27.5° | 896.2  | 887.4  | 817.8  | 798.5  | 821.2  | 838.4  | 896.6  | 962.1  | 1061.1 | 1301.7 | 1535.9 |
| 30°   | 952.0  | 940.5  | 877.6  | 845.9  | 873.6  | 892.8  | 950.6  | 1016.9 | 1096.9 | 1357.5 | 1643.7 |
| 32.5° | 1008.1 | 995.2  | 931.0  | 893.2  | 918.2  | 939.1  | 1006.4 | 1092.2 | 1164.2 | 1442.7 | 1787.0 |
| 35°   | 1137.2 | 1123.6 | 1044.9 | 982.4  | 982.0  | 993.9  | 1084.4 | 1195.3 | 1253.1 | 1561.3 | 1958.0 |
| 37.5° | 1354.5 | 1346.7 | 1271.7 | 1153.0 | 1121.3 | 1108.1 | 1190.9 | 1318.3 | 1380.8 | 1724.5 | 2151.0 |
| 40°   | 1592.4 | 1585.6 | 1501.5 | 1394.0 | 1345.7 | 1313.2 | 1343.6 | 1489.6 | 1561.3 | 1923.9 | 2348.0 |
| 42.5° | 1861.0 | 1828.9 | 1678.9 | 1646.8 | 1603.5 | 1578.8 | 1551.5 | 1700.8 | 1783.0 | 2140.8 | 2543.3 |
| 45°   | 2105.0 | 2050.9 | 1856.3 | 1807.6 | 1797.8 | 1803.9 | 1819.1 | 1984.7 | 2032.4 | 2398.7 | 2738.0 |
| 47.5° | 2250.3 | 2207.8 | 2058.4 | 2011.7 | 2009.0 | 2049.3 | 2164.2 | 2305.4 | 2280.7 | 2623.4 | 2909.3 |
| 50°   | 2388.5 | 2350.0 | 2226.0 | 2237.5 | 2250.0 | 2304.7 | 2555.8 | 2635.2 | 2507.5 | 2827.2 | 3066.5 |
| 52.5° | 2500.4 | 2441.6 | 2376.7 | 2441.3 | 2502.8 | 2591.0 | 2960.0 | 2931.3 | 2668.4 | 2989.4 | 3201.0 |
| 55°   | 2565.0 | 2538.3 | 2569.7 | 2634.6 | 2750.1 | 2893.4 | 3341.5 | 3177.6 | 2786.0 | 3137.4 | 3290.5 |
| 57.5° | 2801.5 | 2749.1 | 2811.6 | 2867.7 | 3018.5 | 3218.9 | 3668.3 | 3361.1 | 2870.8 | 3229.0 | 3311.1 |
| 60°   | 3087.7 | 3045.5 | 3082.3 | 3175.6 | 3379.0 | 3614.6 | 3973.8 | 3510.8 | 2915.1 | 3287.8 | 3257.7 |
| 62.5° | 3543.3 | 3487.5 | 3464.5 | 3569.0 | 3838.6 | 4095.8 | 4205.6 | 3614.6 | 2905.3 | 3261.8 | 3074.6 |
| 65°   | 4153.6 | 4095.8 | 3993.1 | 4087.7 | 4430.7 | 4612.2 | 4464.8 | 3636.6 | 2837.7 | 3051.2 | 2611.6 |
| 67.5° | 4778.8 | 4736.9 | 4649.0 | 4808.5 | 5118.1 | 5176.5 | 4738.9 | 3583.2 | 2620.0 | 2474.0 | 1845.1 |
| 70°   | 5191.7 | 5173.8 | 5230.9 | 5583.8 | 5859.9 | 5843.0 | 4990.3 | 3296.3 | 2042.2 | 1521.4 | 912.8  |
| 72.5° | 4894.0 | 4979.9 | 5401.6 | 6041.3 | 6378.6 | 6240.7 | 4861.2 | 2531.2 | 1167.2 | 585.3  | 263.9  |
| 73°   | 4647.3 | 4757.2 | 5324.9 | 6058.6 | 6419.5 | 6268.4 | 4752.8 | 2323.3 | 994.9  | 462.0  | 200.1  |
| 75°   | 3233.1 | 3367.9 | 4408.4 | 5642.6 | 6228.2 | 5972.4 | 3961.7 | 1422.0 | 460.9  | 204.8  | 80.8   |
| 77.5° | 1569.7 | 1669.4 | 2427.4 | 4076.9 | 4843.7 | 4666.3 | 2466.3 | 529.9  | 208.2  | 128.1  | 37.2   |
| 80°   | 586.0  | 651.5  | 1053.7 | 2074.9 | 2799.1 | 2872.5 | 1084.8 | 200.4  | 138.6  | 103.1  | 18.9   |
| 82.5° | 153.4  | 171.0  | 388.6  | 925.3  | 1434.5 | 1501.5 | 342.0  | 101.0  | 101.4  | 84.8   | 11.5   |
| 85°   | 49.0   | 56.1   | 121.3  | 415.3  | 675.9  | 593.4  | 89.2   | 49.0   | 73.7   | 63.2   | 6.4    |
| 87.5° | 6.1    | 7.8    | 38.5   | 97.7   | 149.0  | 82.8   | 13.9   | 14.5   | 31.4   | 35.1   | 3.7    |
| 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-SA2A-750-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 | 1188.2 |
| 2.5°  | 1190.9 | 1189.2 | 1189.5 | 1180.8 | 1175.0 | 1163.5 | 1151.7 | 1146.3 | 1140.5 | 1138.2 | 1140.5 |
| 5°    | 1197.0 | 1193.9 | 1185.2 | 1158.1 | 1129.4 | 1092.2 | 1057.4 | 1031.1 | 997.9  | 988.8  | 998.3  |
| 7.5°  | 1206.4 | 1200.4 | 1174.7 | 1119.6 | 1055.7 | 984.8  | 905.0  | 846.9  | 799.2  | 768.5  | 779.6  |
| 10°   | 1220.3 | 1208.8 | 1157.1 | 1063.5 | 949.3  | 823.6  | 710.3  | 622.1  | 559.6  | 533.9  | 532.9  |
| 12.5° | 1243.6 | 1222.0 | 1135.5 | 990.5  | 819.2  | 651.5  | 503.2  | 407.6  | 356.9  | 324.1  | 323.4  |
| 15°   | 1269.3 | 1237.5 | 1108.1 | 903.0  | 667.8  | 466.7  | 324.1  | 251.4  | 218.6  | 208.2  | 206.8  |
| 17.5° | 1300.7 | 1255.4 | 1072.6 | 795.2  | 509.3  | 309.2  | 211.5  | 190.6  | 189.2  | 188.2  | 188.2  |
| 20°   | 1340.3 | 1276.7 | 1027.0 | 671.8  | 361.3  | 206.5  | 179.8  | 181.1  | 181.8  | 180.5  | 180.8  |
| 22.5° | 1386.2 | 1298.4 | 972.6  | 539.3  | 244.3  | 172.7  | 172.0  | 173.7  | 174.4  | 173.7  | 174.0  |
| 25°   | 1439.6 | 1323.4 | 906.4  | 400.5  | 176.4  | 163.9  | 165.6  | 168.0  | 169.6  | 169.6  | 169.6  |
| 27.5° | 1505.9 | 1353.8 | 826.6  | 279.5  | 152.4  | 154.8  | 159.5  | 163.9  | 166.3  | 166.9  | 166.9  |
| 30°   | 1592.0 | 1391.6 | 731.0  | 191.6  | 138.6  | 142.6  | 151.4  | 159.8  | 164.2  | 164.9  | 165.3  |
| 32.5° | 1700.8 | 1434.2 | 620.1  | 141.6  | 126.7  | 129.8  | 139.2  | 153.4  | 161.9  | 163.2  | 163.2  |
| 35°   | 1825.5 | 1483.5 | 500.8  | 123.3  | 118.3  | 119.3  | 126.7  | 142.9  | 157.8  | 161.5  | 161.9  |
| 37.5° | 1962.1 | 1532.2 | 380.9  | 115.2  | 111.2  | 111.2  | 116.6  | 130.4  | 148.0  | 159.5  | 160.9  |
| 40°   | 2089.5 | 1561.6 | 267.0  | 108.8  | 104.8  | 104.8  | 109.5  | 119.6  | 136.2  | 153.4  | 157.1  |
| 42.5° | 2207.1 | 1571.8 | 185.9  | 102.7  | 98.7   | 99.7   | 103.7  | 111.9  | 124.4  | 141.6  | 145.0  |
| 45°   | 2328.1 | 1570.1 | 135.5  | 95.6   | 92.6   | 95.6   | 98.7   | 104.8  | 113.9  | 123.7  | 124.4  |
| 47.5° | 2419.3 | 1555.9 | 107.5  | 88.9   | 86.9   | 90.9   | 93.6   | 97.7   | 102.7  | 102.1  | 102.1  |
| 50°   | 2504.8 | 1521.4 | 86.5   | 79.8   | 81.1   | 85.8   | 87.2   | 88.5   | 88.9   | 82.5   | 81.8   |
| 52.5° | 2569.7 | 1467.7 | 69.3   | 70.0   | 75.4   | 80.1   | 78.7   | 76.7   | 73.3   | 65.6   | 64.2   |
| 55°   | 2591.3 | 1364.3 | 54.4   | 57.8   | 66.9   | 73.0   | 67.9   | 63.5   | 57.1   | 50.7   | 49.3   |
| 57.5° | 2552.1 | 1230.8 | 44.3   | 44.9   | 56.4   | 61.5   | 55.8   | 50.7   | 43.6   | 38.2   | 37.2   |
| 60°   | 2469.0 | 1082.4 | 36.5   | 33.8   | 43.6   | 48.0   | 44.3   | 39.2   | 32.8   | 28.7   | 28.4   |
| 62.5° | 2304.1 | 924.3  | 30.1   | 26.4   | 33.1   | 36.8   | 34.5   | 30.8   | 25.3   | 22.6   | 22.3   |
| 65°   | 1957.3 | 739.4  | 24.3   | 21.3   | 25.7   | 28.7   | 26.7   | 24.0   | 19.9   | 17.9   | 17.6   |
| 67.5° | 1366.3 | 499.8  | 19.9   | 17.6   | 20.3   | 22.6   | 21.0   | 19.6   | 15.9   | 15.5   | 15.9   |
| 70°   | 659.0  | 241.0  | 16.6   | 14.2   | 15.9   | 17.6   | 16.9   | 15.9   | 15.2   | 17.6   | 20.3   |
| 72.5° | 188.9  | 80.8   | 13.2   | 11.8   | 12.8   | 13.9   | 14.5   | 14.2   | 16.6   | 21.3   | 24.7   |
| 73°   | 145.3  | 65.2   | 12.5   | 11.2   | 12.2   | 13.5   | 14.2   | 13.9   | 16.9   | 21.6   | 24.7   |
| 75°   | 62.2   | 31.4   | 9.5    | 9.1    | 10.1   | 11.8   | 12.5   | 12.5   | 16.9   | 22.0   | 23.7   |
| 77.5° | 28.0   | 16.9   | 6.1    | 7.1    | 8.8    | 9.5    | 10.5   | 10.5   | 13.5   | 16.9   | 16.9   |
| 80°   | 15.9   | 9.1    | 4.7    | 5.4    | 6.4    | 6.4    | 6.4    | 5.7    | 6.1    | 6.8    | 7.4    |
| 82.5° | 10.1   | 6.1    | 3.7    | 4.4    | 4.1    | 3.4    | 2.7    | 2.7    | 2.4    | 2.7    | 3.4    |
| 85°   | 5.7    | 3.4    | 3.4    | 2.7    | 1.7    | 1.4    | 1.7    | 1.4    | 0.3    | 0.0    | 0.3    |
| 87.5° | 3.4    | 2.0    | 1.0    | 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    |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

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

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

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### Test Information

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

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

### Spectral Parameters

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



### Test Conditions

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

REPORT NUMBER: SP1-1908-441-4-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Summary**

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

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

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



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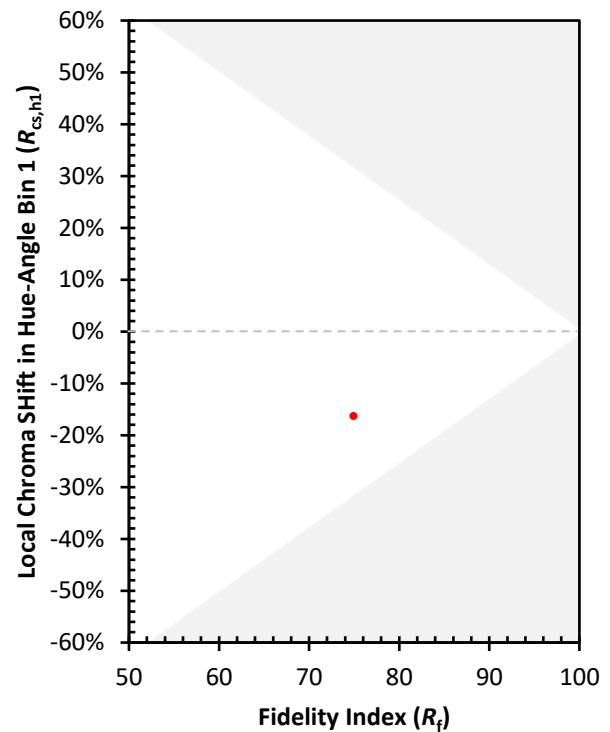
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)