

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: STREETWORKS

Report Number: P800789

Luminaire Tested: **ARCH-M-PA2-80-730-24VDC-T2R**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800789  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-80-730-24VDC-T2R  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 3000K, 535mA LIGHT ENGINES WITH 16 LEDS AND TYPE II ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12111 lumens  
Efficiency: N/A  
Efficacy: 151.4 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G2

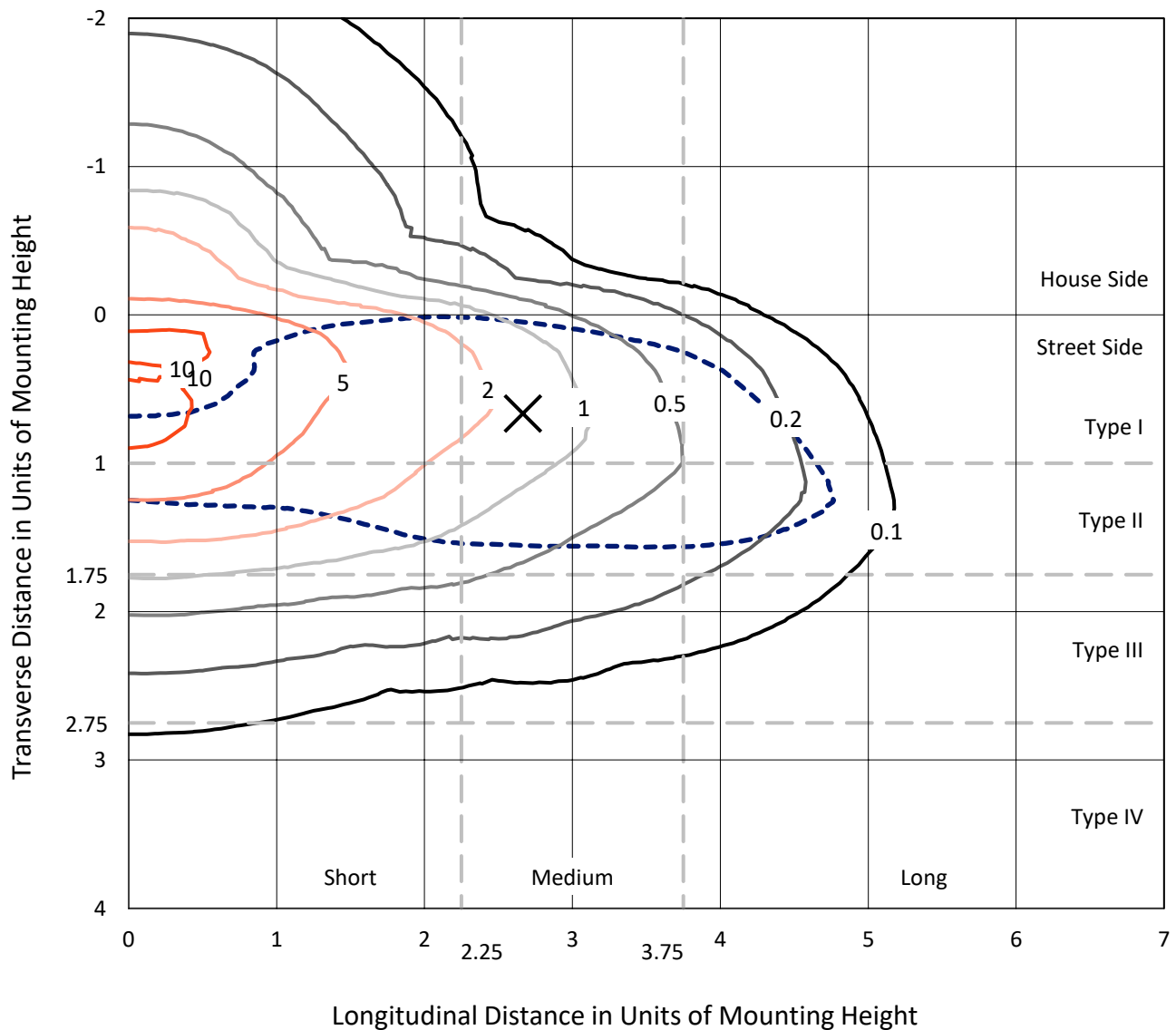
Input Watts (W): 80  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

REPORT NUMBER: P800789

CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T2R

## Iso-Footcandle Lines of Horizontal Illumination

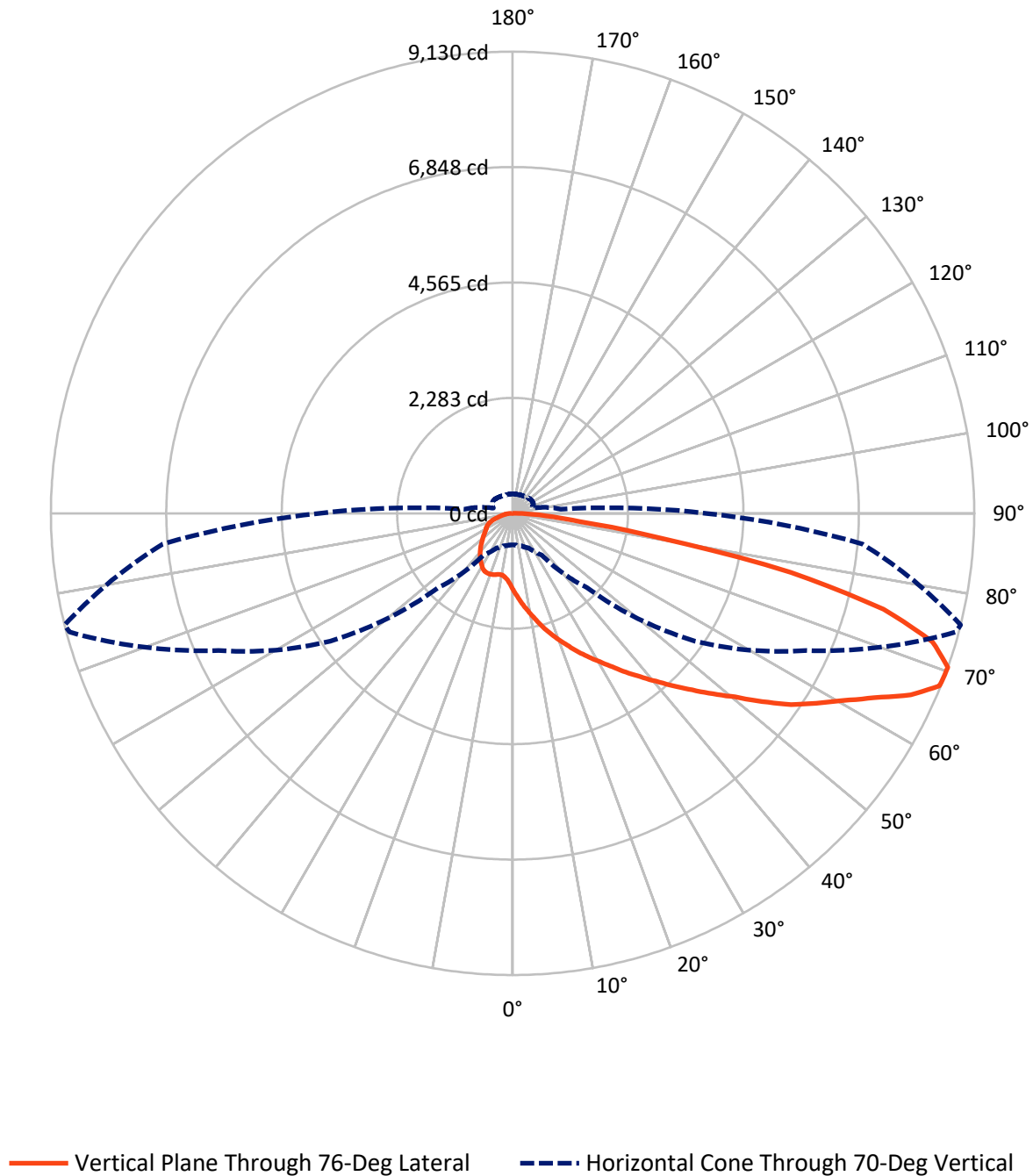
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 11.4 fc  
 Type II - Medium - N/A

REPORT NUMBER: P800789  
CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T2R

## Luminous Intensity Polar Plot



REPORT NUMBER: P800789

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1977.2   | 0.0    | 1977.2  |
|                    | % Fixture | 16.3     | 0.0    | 16.3    |
| <b>Street Side</b> | Lumens    | 10133.8  | 0.0    | 10133.8 |
|                    | % Fixture | 83.7     | 0.0    | 83.7    |
| <b>Total</b>       | Lumens    | 12111.0  | 0.0    | 12111.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 157.4   | 1.3       |
| 10°-20°   | 534.8   | 4.4       |
| 20°-30°   | 956.9   | 7.9       |
| 30°-40°   | 1547.9  | 12.8      |
| 40°-50°   | 2239.3  | 18.5      |
| 50°-60°   | 2563.0  | 21.2      |
| 60°-70°   | 2357.7  | 19.5      |
| 70°-80°   | 1458.0  | 12.0      |
| 80°-90°   | 296.1   | 2.4       |
| 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°    | 12111.0 | 100.0     |
| 0°-180°   | 12111.0 | 100.0     |



REPORT NUMBER: P800789

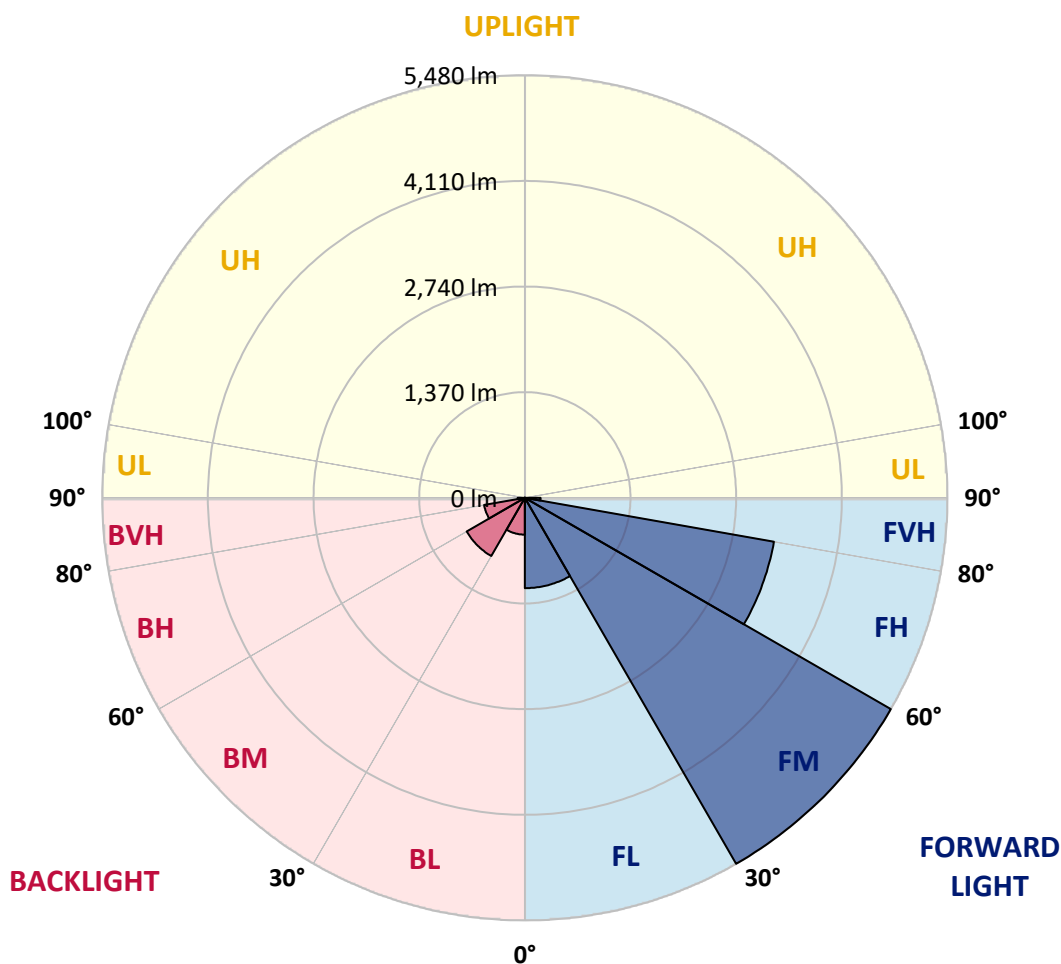
CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T2R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1171.5 | 9.7       |                         |      |         |
| FM   | (30°-60°)   | 5479.7 | 45.2      |                         |      |         |
| FH   | (60°-80°)   | 3279.3 | 27.1      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 203.2  | 1.7       |                         |      | G2/225  |
| BL   | (0°-30°)    | 477.6  | 3.9       | B1/500                  |      |         |
| BM   | (30°-60°)   | 870.6  | 7.2       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 536.3  | 4.4       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 92.8   | 0.8       |                         |      | 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 Medium



REPORT NUMBER: P800789

CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T2R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 |
| 2.5°  | 1930.2 | 1915.9 | 1914.3 | 1892.0 | 1871.3 | 1815.5 | 1775.7 | 1705.6 | 1635.6 | 1634.0 | 1563.9 |
| 5°    | 2231.2 | 2216.9 | 2208.9 | 2181.8 | 2146.8 | 2073.5 | 2001.9 | 1893.6 | 1774.1 | 1766.2 | 1634.0 |
| 7.5°  | 2435.0 | 2422.3 | 2406.4 | 2395.2 | 2361.8 | 2296.5 | 2208.9 | 2079.9 | 1915.9 | 1899.9 | 1715.2 |
| 10°   | 2572.0 | 2564.0 | 2560.8 | 2552.9 | 2532.2 | 2479.6 | 2395.2 | 2258.3 | 2057.6 | 2040.1 | 1801.2 |
| 12.5° | 2630.9 | 2627.7 | 2642.1 | 2664.4 | 2672.3 | 2651.6 | 2570.4 | 2441.4 | 2213.7 | 2194.6 | 1904.7 |
| 15°   | 2562.4 | 2565.6 | 2602.3 | 2678.7 | 2759.9 | 2804.5 | 2756.7 | 2630.9 | 2390.4 | 2363.4 | 2025.7 |
| 17.5° | 2530.6 | 2535.4 | 2560.8 | 2634.1 | 2748.8 | 2887.3 | 2909.6 | 2810.9 | 2560.8 | 2522.6 | 2153.2 |
| 20°   | 2586.3 | 2592.7 | 2611.8 | 2669.1 | 2748.8 | 2896.9 | 3013.1 | 2982.9 | 2728.1 | 2688.3 | 2275.8 |
| 22.5° | 2728.1 | 2736.0 | 2734.4 | 2771.1 | 2825.2 | 2927.1 | 3070.5 | 3145.3 | 2903.3 | 2858.7 | 2403.2 |
| 25°   | 3030.7 | 3024.3 | 2970.1 | 2952.6 | 2967.0 | 3032.2 | 3146.9 | 3301.4 | 3086.4 | 3041.8 | 2537.0 |
| 27.5° | 3441.5 | 3433.6 | 3334.8 | 3245.7 | 3166.0 | 3194.7 | 3255.2 | 3427.2 | 3272.7 | 3221.8 | 2664.4 |
| 30°   | 3881.1 | 3871.5 | 3756.9 | 3611.9 | 3435.2 | 3393.8 | 3385.8 | 3537.1 | 3460.7 | 3406.5 | 2799.7 |
| 32.5° | 4309.5 | 4301.5 | 4178.9 | 4010.1 | 3766.4 | 3642.2 | 3565.8 | 3659.7 | 3674.1 | 3621.5 | 2947.8 |
| 35°   | 4699.7 | 4699.7 | 4594.6 | 4393.9 | 4118.4 | 3930.5 | 3804.6 | 3811.0 | 3919.3 | 3858.8 | 3116.7 |
| 37.5° | 5046.8 | 5045.3 | 4930.6 | 4733.1 | 4468.7 | 4253.7 | 4097.7 | 3994.2 | 4153.4 | 4100.9 | 3293.4 |
| 40°   | 5322.4 | 5311.2 | 5226.8 | 5054.8 | 4788.9 | 4575.4 | 4417.8 | 4209.2 | 4414.6 | 4366.8 | 3481.4 |
| 42.5° | 5523.0 | 5516.7 | 5459.3 | 5309.6 | 5056.4 | 4855.7 | 4747.4 | 4479.9 | 4710.8 | 4663.0 | 3701.1 |
| 45°   | 5601.1 | 5613.8 | 5613.8 | 5472.1 | 5271.4 | 5088.3 | 5040.5 | 4777.7 | 5030.9 | 4983.1 | 3936.8 |
| 47.5° | 5475.2 | 5508.7 | 5577.2 | 5586.7 | 5410.0 | 5285.7 | 5301.7 | 5077.1 | 5360.6 | 5335.1 | 4194.8 |
| 50°   | 5081.9 | 5144.0 | 5293.7 | 5564.4 | 5465.7 | 5437.0 | 5524.6 | 5382.9 | 5714.1 | 5706.2 | 4508.6 |
| 52.5° | 4067.4 | 4218.7 | 4685.3 | 5171.1 | 5427.5 | 5507.1 | 5746.0 | 5726.9 | 6169.6 | 6182.3 | 4917.9 |
| 55°   | 3119.8 | 3177.2 | 3717.1 | 4543.6 | 5193.4 | 5484.8 | 5894.1 | 6062.9 | 6663.3 | 6679.2 | 5293.7 |
| 57.5° | 2522.6 | 2560.8 | 2855.5 | 3717.1 | 4659.9 | 5363.8 | 6010.4 | 6258.8 | 7042.3 | 7083.7 | 5628.1 |
| 60°   | 1998.7 | 2054.4 | 2251.9 | 2844.3 | 3912.9 | 5072.3 | 6091.6 | 6477.0 | 7450.0 | 7512.1 | 6027.9 |
| 62.5° | 1485.9 | 1512.9 | 1699.3 | 2107.0 | 3097.5 | 4548.4 | 6048.6 | 6714.3 | 7950.1 | 8025.0 | 6508.8 |
| 65°   | 1057.5 | 1081.4 | 1213.5 | 1498.6 | 2290.1 | 3839.7 | 5798.5 | 6891.0 | 8577.6 | 8654.0 | 6993.0 |
| 67.5° | 791.5  | 801.1  | 875.9  | 1047.9 | 1543.2 | 2982.9 | 5292.1 | 6860.8 | 9036.2 | 9104.7 | 7187.3 |
| 70°   | 625.9  | 629.1  | 665.7  | 758.1  | 1003.3 | 2076.7 | 4405.0 | 6416.5 | 9069.7 | 9130.2 | 6942.0 |
| 72.5° | 519.2  | 517.6  | 538.3  | 582.9  | 699.1  | 1313.9 | 3263.2 | 5591.5 | 8639.7 | 8681.1 | 6257.2 |
| 75°   | 428.4  | 431.6  | 445.9  | 471.4  | 533.5  | 866.4  | 2114.9 | 4460.8 | 7622.0 | 7577.4 | 5250.7 |
| 77.5° | 359.9  | 358.3  | 364.7  | 387.0  | 431.6  | 622.7  | 1239.0 | 3223.4 | 5648.8 | 5626.5 | 3446.3 |
| 80°   | 289.8  | 293.0  | 302.6  | 321.7  | 363.1  | 474.6  | 732.6  | 2011.4 | 3030.7 | 2949.4 | 1646.7 |
| 82.5° | 194.3  | 224.6  | 243.7  | 266.0  | 313.7  | 350.4  | 465.0  | 1022.4 | 1355.3 | 1334.6 | 746.9  |
| 85°   | 92.4   | 122.6  | 181.6  | 207.0  | 254.8  | 219.8  | 315.3  | 487.3  | 678.4  | 670.5  | 269.1  |
| 87.5° | 19.1   | 19.1   | 97.1   | 116.3  | 157.7  | 94.0   | 175.2  | 211.8  | 328.1  | 307.4  | 109.9  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P800789

CATALOG NUMBER: ARCH-M-PA2-80-730-24VDC-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 | 1514.5 |
| 2.5°  | 1522.5 | 1479.5 | 1393.5 | 1325.0 | 1254.9 | 1215.1 | 1165.8 | 1141.9 | 1137.1 | 1124.4 | 1133.9 |
| 5°    | 1549.6 | 1465.2 | 1302.7 | 1196.0 | 1124.4 | 1089.3 | 1071.8 | 1065.4 | 1063.8 | 1060.7 | 1060.7 |
| 7.5°  | 1586.2 | 1457.2 | 1245.4 | 1137.1 | 1090.9 | 1079.8 | 1084.5 | 1094.1 | 1095.7 | 1098.9 | 1097.3 |
| 10°   | 1630.8 | 1458.8 | 1213.5 | 1122.8 | 1100.5 | 1102.1 | 1118.0 | 1130.7 | 1137.1 | 1141.9 | 1140.3 |
| 12.5° | 1692.9 | 1477.9 | 1208.8 | 1132.3 | 1122.8 | 1129.1 | 1145.1 | 1157.8 | 1164.2 | 1165.8 | 1165.8 |
| 15°   | 1774.1 | 1517.7 | 1219.9 | 1153.0 | 1145.1 | 1149.8 | 1159.4 | 1164.2 | 1165.8 | 1164.2 | 1164.2 |
| 17.5° | 1863.3 | 1565.5 | 1235.8 | 1165.8 | 1153.0 | 1148.2 | 1145.1 | 1140.3 | 1130.7 | 1124.4 | 1124.4 |
| 20°   | 1949.3 | 1608.5 | 1243.8 | 1164.2 | 1141.9 | 1122.8 | 1103.6 | 1079.8 | 1063.8 | 1051.1 | 1051.1 |
| 22.5° | 2035.3 | 1648.3 | 1243.8 | 1146.6 | 1111.6 | 1075.0 | 1035.2 | 996.9  | 973.1  | 957.1  | 957.1  |
| 25°   | 2126.1 | 1686.5 | 1234.2 | 1116.4 | 1063.8 | 1011.3 | 957.1  | 909.4  | 885.5  | 869.5  | 866.4  |
| 27.5° | 2202.5 | 1708.8 | 1208.8 | 1073.4 | 1004.9 | 938.0  | 875.9  | 826.5  | 809.0  | 794.7  | 794.7  |
| 30°   | 2283.7 | 1723.2 | 1161.0 | 1017.7 | 938.0  | 861.6  | 797.9  | 758.1  | 739.0  | 718.2  | 716.7  |
| 32.5° | 2374.5 | 1732.7 | 1106.8 | 958.7  | 869.5  | 788.3  | 734.2  | 702.3  | 660.9  | 638.6  | 635.4  |
| 35°   | 2479.6 | 1745.5 | 1049.5 | 891.8  | 801.1  | 727.8  | 696.0  | 643.4  | 603.6  | 584.5  | 582.9  |
| 37.5° | 2591.1 | 1755.0 | 987.4  | 832.9  | 739.0  | 688.0  | 656.1  | 594.0  | 559.0  | 530.3  | 527.1  |
| 40°   | 2709.0 | 1755.0 | 923.7  | 775.6  | 689.6  | 670.5  | 610.0  | 554.2  | 495.3  | 481.0  | 477.8  |
| 42.5° | 2839.5 | 1751.8 | 860.0  | 719.8  | 643.4  | 630.7  | 582.9  | 524.0  | 493.7  | 481.0  | 477.8  |
| 45°   | 2978.1 | 1740.7 | 799.5  | 656.1  | 595.6  | 570.1  | 533.5  | 517.6  | 504.8  | 504.8  | 504.8  |
| 47.5° | 3135.8 | 1731.1 | 731.0  | 598.8  | 560.6  | 531.9  | 504.8  | 495.3  | 493.7  | 498.5  | 503.3  |
| 50°   | 3338.0 | 1727.9 | 673.7  | 557.4  | 533.5  | 500.1  | 496.9  | 488.9  | 490.5  | 490.5  | 490.5  |
| 52.5° | 3583.3 | 1699.3 | 619.5  | 527.1  | 506.4  | 466.6  | 476.2  | 484.1  | 487.3  | 485.7  | 484.1  |
| 55°   | 3763.2 | 1648.3 | 573.3  | 506.4  | 487.3  | 453.9  | 466.6  | 479.4  | 482.5  | 477.8  | 477.8  |
| 57.5° | 3925.7 | 1576.6 | 536.7  | 490.5  | 474.6  | 445.9  | 460.3  | 473.0  | 469.8  | 468.2  | 466.6  |
| 60°   | 4112.0 | 1508.2 | 508.0  | 482.5  | 461.8  | 442.7  | 455.5  | 463.4  | 458.7  | 455.5  | 453.9  |
| 62.5° | 4314.3 | 1441.3 | 487.3  | 482.5  | 452.3  | 441.1  | 450.7  | 453.9  | 444.3  | 441.1  | 441.1  |
| 65°   | 4408.2 | 1336.2 | 465.0  | 482.5  | 447.5  | 438.0  | 441.1  | 438.0  | 428.4  | 428.4  | 426.8  |
| 67.5° | 4253.7 | 1162.6 | 436.4  | 476.2  | 453.9  | 433.2  | 426.8  | 422.0  | 410.9  | 410.9  | 407.7  |
| 70°   | 3826.9 | 955.5  | 395.0  | 455.5  | 455.5  | 431.6  | 407.7  | 396.5  | 383.8  | 388.6  | 382.2  |
| 72.5° | 3269.5 | 758.1  | 344.0  | 420.4  | 445.9  | 430.0  | 387.0  | 369.5  | 358.3  | 363.1  | 353.6  |
| 75°   | 2648.4 | 587.7  | 283.5  | 364.7  | 422.0  | 422.0  | 366.3  | 342.4  | 329.7  | 329.7  | 318.5  |
| 77.5° | 1688.1 | 434.8  | 230.9  | 302.6  | 379.0  | 410.9  | 348.8  | 312.1  | 293.0  | 288.3  | 280.3  |
| 80°   | 836.1  | 305.8  | 189.5  | 240.5  | 323.3  | 385.4  | 336.0  | 277.1  | 250.0  | 240.5  | 226.1  |
| 82.5° | 444.3  | 211.8  | 151.3  | 187.9  | 258.0  | 347.2  | 320.1  | 238.9  | 205.4  | 191.1  | 175.2  |
| 85°   | 199.1  | 130.6  | 121.0  | 143.3  | 195.9  | 285.1  | 288.3  | 195.9  | 157.7  | 187.9  | 138.6  |
| 87.5° | 73.3   | 58.9   | 58.9   | 73.3   | 113.1  | 119.4  | 203.8  | 125.8  | 100.3  | 68.5   | 54.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-6

Luminaire Tested: IFLD-S-SA2E-730-U-T2

Test Date: 03/04/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2E-730-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2981   | CRI (Ra): | 72.3 |      |       |
| CIE u':                   | 0.2509 | R1:       | 68.0 | R9:  | -36.9 |
| CIE v':                   | 0.5228 | R2:       | 82.9 | R10: | 62.7  |
| Duv:                      | 0.0008 | R3:       | 95.0 | R11: | 65.3  |
| CIE x:                    | 0.4393 | R4:       | 68.7 | R12: | 58.3  |
| CIE y:                    | 0.4068 | R5:       | 68.4 | R13: | 70.8  |
| CIE z:                    | 0.1540 | R6:       | 77.8 | R14: | 97.4  |
| Peak Wavelength (nm):     | 598    | R7:       | 76.5 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 41.3 |      |       |
| Purity:                   | 54.3   |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.1   |           |      |      |       |



### Test Conditions

Stabilization Time: 64M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-6

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

REPORT NUMBER: SP1-2101-121-6

**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

REPORT NUMBER: SP1-2101-121-6

### Photopic Flux vs. Wavelength



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| 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       | 2718             | 0.0              | 490       | 31388            | 4.5              | 620       | 149681           | 39.0             | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 7.1              | 625       | 139059           | 30.7             | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 10.5             | 630       | 126485           | 22.9             | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 15.6             | 635       | 114115           | 17.1             | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 21.6             | 640       | 102385           | 12.2             | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 28.6             | 645       | 91895            | 8.8              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 35.9             | 650       | 81196            | 5.9              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 42.1             | 655       | 71232            | 4.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 49.2             | 660       | 62529            | 2.6              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 54.5             | 665       | 54721            | 1.7              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.0              | 540       | 92850            | 60.5             | 670       | 47069            | 1.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.0              | 545       | 99487            | 66.2             | 675       | 40348            | 0.7              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 0.0              | 550       | 108411           | 73.7             | 680       | 34816            | 0.4              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 0.1              | 555       | 117570           | 80.3             | 685       | 29890            | 0.3              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 0.3              | 560       | 128783           | 87.5             | 690       | 25584            | 0.1              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 0.6              | 565       | 140888           | 93.7             | 695       | 21945            | 0.1              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 1.2              | 570       | 151789           | 98.7             | 700       | 19163            | 0.1              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 1.9              | 575       | 163210           | 101.6            | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 2.0              | 580       | 171760           | 102.1            | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 1.7              | 585       | 179606           | 99.8             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 1.5              | 590       | 183682           | 95.0             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 1.5              | 595       | 184440           | 87.4             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 1.4              | 600       | 183413           | 79.0             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 1.6              | 605       | 178745           | 69.2             | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 2.0              | 610       | 170867           | 58.7             | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 3.0              | 615       | 161088           | 48.6             | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Scotopic Flux vs. Wavelength



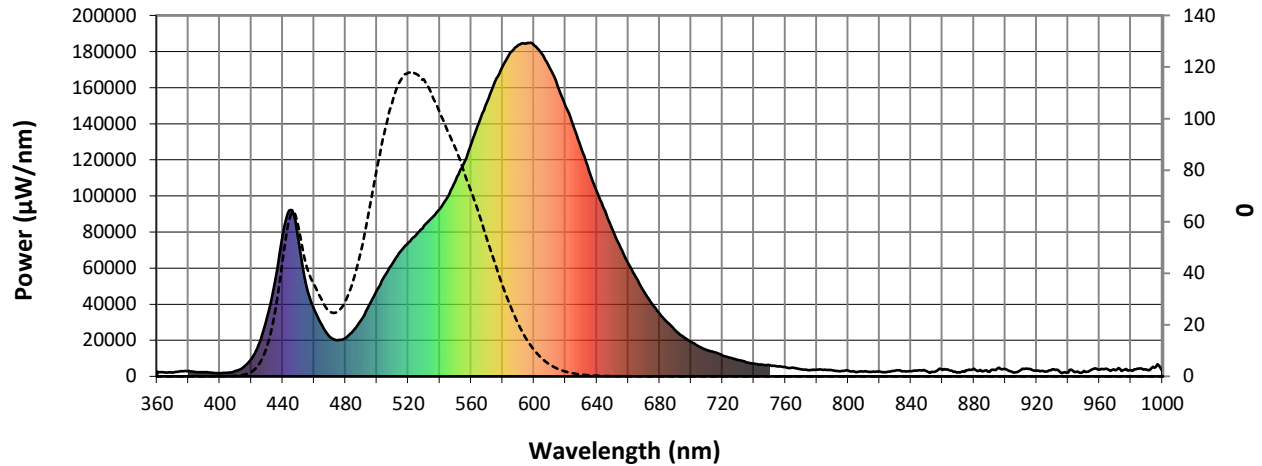
Scotopic Lumens: 10635.1

S/P: 1.22

| 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       | 2718             | 0.0              | 490       | 31388            | 48.3             | 620       | 149681           | 1.9              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 63.6             | 625       | 139059           | 1.2              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 80.0             | 630       | 126485           | 0.7              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 94.6             | 635       | 114115           | 0.4              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 106.4            | 640       | 102385           | 0.3              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 114.6            | 645       | 91895            | 0.2              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 117.8            | 650       | 81196            | 0.1              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 117.4            | 655       | 71232            | 0.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 115.2            | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.1              | 535       | 87899            | 109.5            | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.2              | 540       | 92850            | 102.6            | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.5              | 545       | 99487            | 95.4             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.6              | 550       | 108411           | 88.6             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 4.5              | 555       | 117570           | 80.3             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 11.0             | 560       | 128783           | 72.0             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 23.5             | 565       | 140888           | 63.2             | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 43.8             | 570       | 151789           | 53.6             | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 61.8             | 575       | 163210           | 44.4             | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 58.9             | 580       | 171760           | 35.4             | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 43.9             | 585       | 179606           | 27.4             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 36.0             | 590       | 183682           | 20.5             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 29.9             | 595       | 184440           | 14.7             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 25.1             | 600       | 183413           | 10.3             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 25.0             | 605       | 178745           | 7.0              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 28.9             | 610       | 170867           | 4.6              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 36.9             | 615       | 161088           | 3.0              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 3860**

**M/P: 0.44**

| 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       | 2718             | 0.0              | 490       | 31388            | 26.1             | 620       | 149681           | 0.1              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 32.5             | 625       | 139059           | 0.1              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 38.4             | 630       | 126485           | 0.0              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 42.7             | 635       | 114115           | 0.0              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 45.1             | 640       | 102385           | 0.0              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 45.2             | 645       | 91895            | 0.0              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 43.1             | 650       | 81196            | 0.0              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 39.8             | 655       | 71232            | 0.0              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 36.1             | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 31.6             | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.1              | 540       | 92850            | 27.2             | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.3              | 545       | 99487            | 23.1             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.1              | 550       | 108411           | 19.5             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 2.9              | 555       | 117570           | 15.9             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 6.9              | 560       | 128783           | 12.7             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 14.0             | 565       | 140888           | 9.9              | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 26.2             | 570       | 151789           | 7.4              | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 36.4             | 575       | 163210           | 5.4              | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 35.0             | 580       | 171760           | 3.8              | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 26.3             | 585       | 179606           | 2.7              | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 22.0             | 590       | 183682           | 1.8              | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 18.5             | 595       | 184440           | 1.2              | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 15.6             | 600       | 183413           | 0.8              | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 15.3             | 605       | 178745           | 0.5              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 17.2             | 610       | 170867           | 0.3              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 21.0             | 615       | 161088           | 0.2              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

### Summary

$R_f = 76.2$   
 $R_g = 94.1$   
 CIE  $R_a = 72.3$   
 $R_g = -36.9$

### Spectral Power Distribution Comparison



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 88 | CES76 = 64 |
| CES02 = 63 | CES27 = 88 | CES52 = 87 | CES77 = 81 |
| CES03 = 31 | CES28 = 88 | CES53 = 79 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 72 | CES55 = 84 | CES80 = 87 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 66 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 77 | CES83 = 90 |
| CES09 = 29 | CES34 = 80 | CES59 = 86 | CES84 = 90 |
| CES10 = 76 | CES35 = 90 | CES60 = 93 | CES85 = 78 |
| CES11 = 59 | CES36 = 96 | CES61 = 85 | CES86 = 61 |
| CES12 = 65 | CES37 = 88 | CES62 = 90 | CES87 = 79 |
| CES13 = 43 | CES38 = 80 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 73 | CES89 = 67 |
| CES15 = 71 | CES40 = 91 | CES65 = 69 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 71 | CES91 = 90 |
| CES17 = 50 | CES42 = 89 | CES67 = 69 | CES92 = 59 |
| CES18 = 56 | CES43 = 80 | CES68 = 73 | CES93 = 75 |
| CES19 = 73 | CES44 = 99 | CES69 = 82 | CES94 = 50 |
| CES20 = 66 | CES45 = 85 | CES70 = 68 | CES95 = 69 |
| CES21 = 87 | CES46 = 80 | CES71 = 68 | CES96 = 77 |
| CES22 = 79 | CES47 = 81 | CES72 = 88 | CES97 = 83 |
| CES23 = 92 | CES48 = 69 | CES73 = 61 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 70 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)