

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: P800767

Luminaire Tested: **ARCH-M-PA2-50-730-24VDC-T4W-HSS**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800767  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-50-730-24VDC-T4W-HSS  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 3000K, 305mA LIGHT ENGINES WITH 16 LEDS AND TYPE IV WIDE  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5418 lumens  
Efficiency: N/A  
Efficacy: 117.8 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B1 - U0 - G2

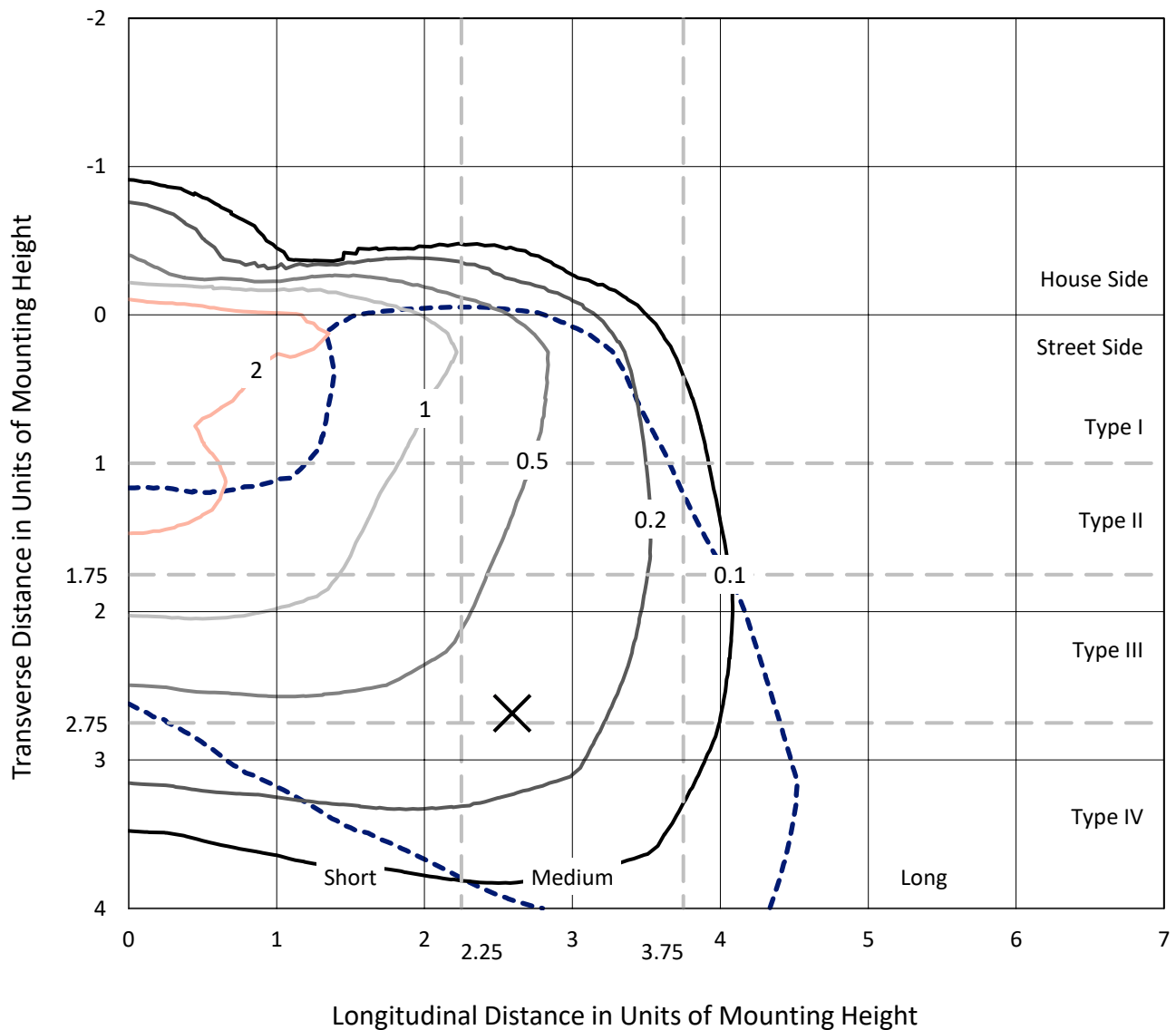
Input Watts (W): 46  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

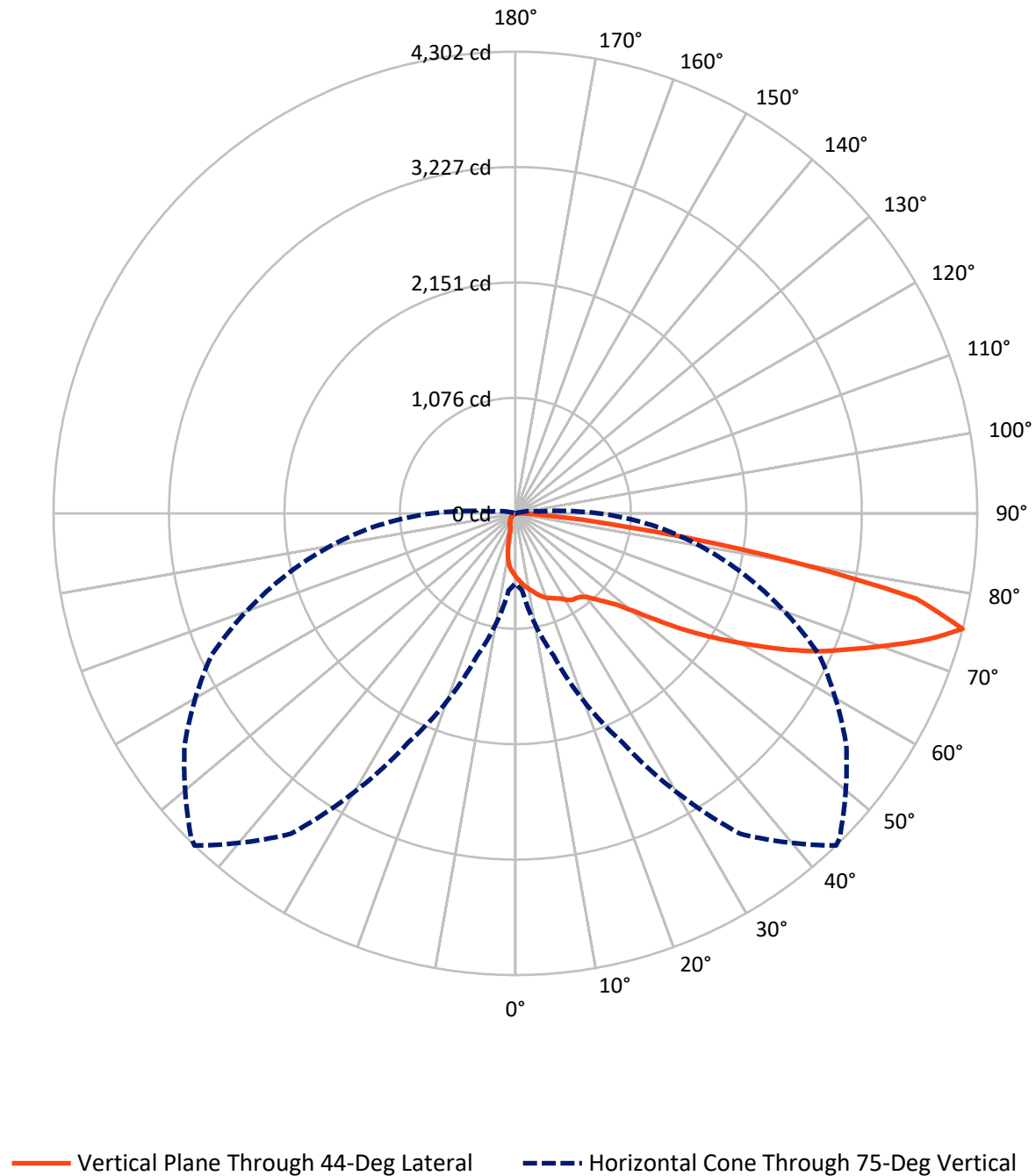
× Max cd  
 --- 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 3.6 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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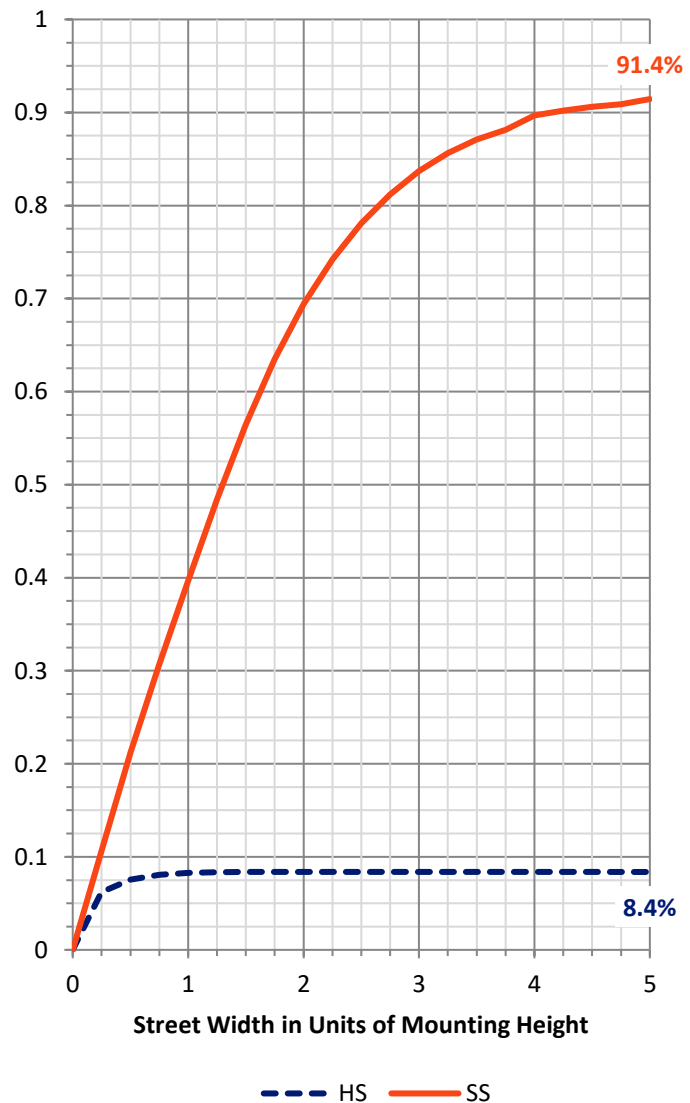
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 456.9    | 0.0    | 456.9  |
|                    | % Fixture | 8.4      | 0.0    | 8.4    |
| <b>Street Side</b> | Lumens    | 4961.1   | 0.0    | 4961.1 |
|                    | % Fixture | 91.6     | 0.0    | 91.6   |
| <b>Total</b>       | Lumens    | 5418.0   | 0.0    | 5418.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 55.6   | 1.0       |
| 10°-20°   | 155.8  | 2.9       |
| 20°-30°   | 257.2  | 4.7       |
| 30°-40°   | 373.3  | 6.9       |
| 40°-50°   | 606.8  | 11.2      |
| 50°-60°   | 1069.7 | 19.7      |
| 60°-70°   | 1537.4 | 28.4      |
| 70°-80°   | 1231.1 | 22.7      |
| 80°-90°   | 131.2  | 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°    | 5418.0 | 100.0     |
| 0°-180°   | 5418.0 | 100.0     |

**Coefficient of Utilization**



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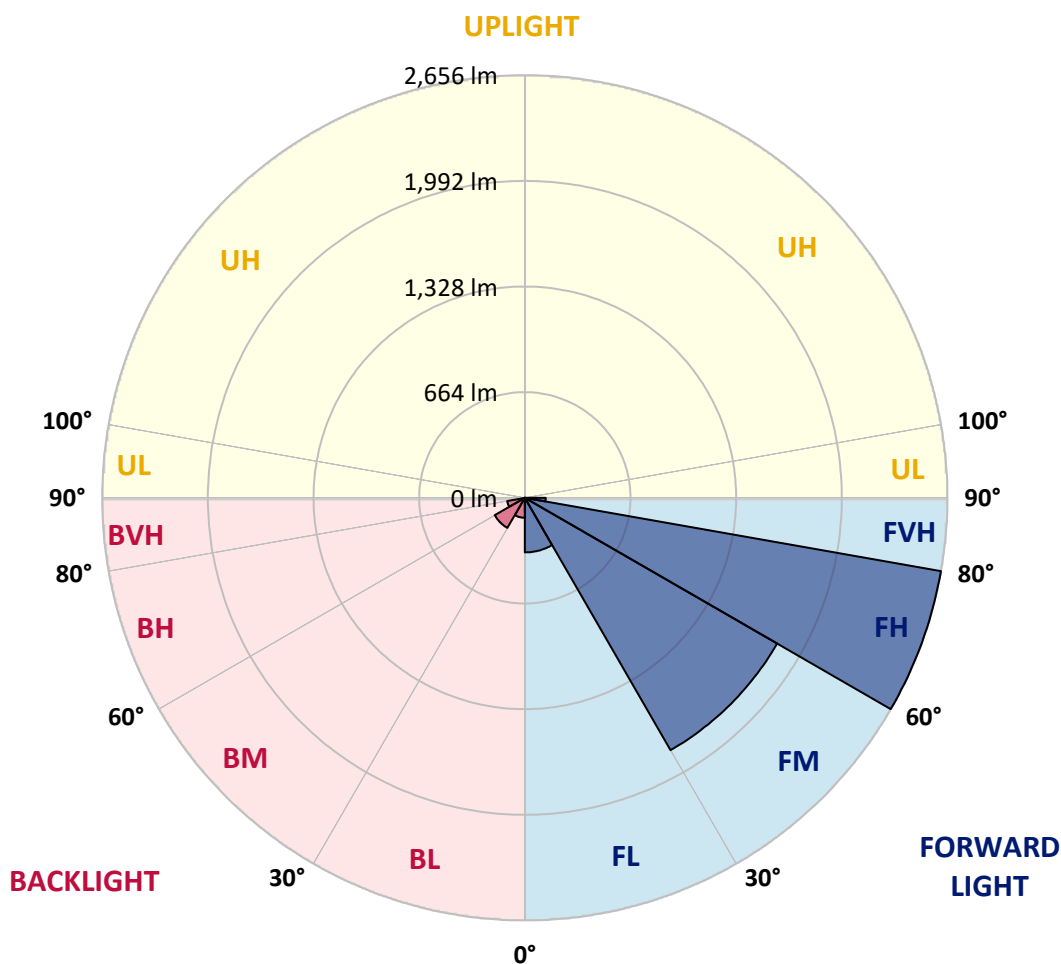
CATALOG NUMBER: ARCH-M-PA2-50-730-24VDC-T4W-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 343.1  | 6.3       |                         |      |         |
| FM   | (30°-60°)   | 1831.3 | 33.8      |                         |      |         |
| FH   | (60°-80°)   | 2655.8 | 49.0      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 130.8  | 2.4       |                         |      | G2/225  |
| BL   | (0°-30°)    | 125.5  | 2.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 218.4  | 4.0       | B0/220                  |      |         |
| BH   | (60°-80°)   | 112.6  | 2.1       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 0.3    | 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 Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 44°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  | 589.7  |
| 2.5°  | 642.7  | 641.7  | 638.7  | 633.7  | 628.7  | 623.7  | 622.7  | 614.7  | 605.7  | 598.7  | 592.7  |
| 5°    | 699.7  | 698.7  | 693.7  | 682.7  | 671.7  | 658.7  | 657.7  | 638.7  | 621.7  | 602.7  | 586.7  |
| 7.5°  | 758.7  | 756.7  | 747.7  | 730.7  | 711.7  | 691.7  | 689.7  | 661.7  | 636.7  | 611.7  | 588.7  |
| 10°   | 804.6  | 802.6  | 789.6  | 769.6  | 743.7  | 718.7  | 715.7  | 686.7  | 661.7  | 629.7  | 598.7  |
| 12.5° | 849.6  | 845.6  | 828.6  | 806.6  | 774.6  | 750.7  | 747.7  | 717.7  | 687.7  | 654.7  | 616.7  |
| 15°   | 891.6  | 886.6  | 870.6  | 842.6  | 808.6  | 785.6  | 783.6  | 751.7  | 720.7  | 682.7  | 640.7  |
| 17.5° | 920.6  | 918.6  | 899.6  | 868.6  | 835.6  | 816.6  | 814.6  | 781.6  | 750.7  | 710.7  | 665.7  |
| 20°   | 935.6  | 935.6  | 917.6  | 883.6  | 853.6  | 840.6  | 837.6  | 806.6  | 776.6  | 738.7  | 691.7  |
| 22.5° | 938.6  | 941.6  | 927.6  | 890.6  | 868.6  | 857.6  | 855.6  | 828.6  | 799.6  | 764.6  | 720.7  |
| 25°   | 944.6  | 944.6  | 937.6  | 897.6  | 881.6  | 878.6  | 877.6  | 853.6  | 827.6  | 792.6  | 749.7  |
| 27.5° | 951.6  | 951.6  | 946.6  | 907.6  | 901.6  | 900.6  | 899.6  | 888.6  | 867.6  | 826.6  | 783.6  |
| 30°   | 969.6  | 970.6  | 966.6  | 927.6  | 923.6  | 934.6  | 936.6  | 930.6  | 904.6  | 853.6  | 818.6  |
| 32.5° | 1014.5 | 1005.5 | 994.5  | 941.6  | 948.6  | 962.6  | 963.6  | 951.6  | 923.6  | 882.6  | 860.6  |
| 35°   | 1127.5 | 1074.5 | 1024.5 | 953.6  | 956.6  | 970.6  | 972.6  | 971.6  | 954.6  | 919.6  | 908.6  |
| 37.5° | 1232.4 | 1157.5 | 1086.5 | 981.5  | 971.6  | 986.5  | 990.5  | 1007.5 | 994.5  | 970.6  | 973.6  |
| 40°   | 1293.4 | 1264.4 | 1214.4 | 1058.5 | 1001.5 | 1024.5 | 1028.5 | 1054.5 | 1049.5 | 1039.5 | 1058.5 |
| 42.5° | 1481.3 | 1483.3 | 1429.3 | 1173.5 | 1056.5 | 1093.5 | 1098.5 | 1119.5 | 1126.5 | 1131.5 | 1177.5 |
| 45°   | 1699.2 | 1706.2 | 1693.2 | 1380.4 | 1160.5 | 1172.5 | 1179.5 | 1207.4 | 1233.4 | 1265.4 | 1349.4 |
| 47.5° | 1961.1 | 1955.1 | 1907.1 | 1633.2 | 1341.4 | 1274.4 | 1279.4 | 1333.4 | 1378.4 | 1448.3 | 1568.3 |
| 50°   | 2193.0 | 2208.0 | 2117.0 | 1869.1 | 1596.3 | 1435.3 | 1430.3 | 1483.3 | 1564.3 | 1662.2 | 1813.2 |
| 52.5° | 2426.9 | 2404.9 | 2282.0 | 2103.0 | 1898.1 | 1654.2 | 1639.2 | 1668.2 | 1782.2 | 1898.1 | 2053.1 |
| 55°   | 2488.9 | 2490.9 | 2448.9 | 2358.9 | 2150.0 | 1920.1 | 1895.1 | 1893.1 | 2035.1 | 2114.0 | 2304.9 |
| 57.5° | 2610.8 | 2615.8 | 2625.8 | 2643.8 | 2544.8 | 2186.0 | 2160.0 | 2132.0 | 2270.0 | 2315.9 | 2557.8 |
| 60°   | 2734.7 | 2740.7 | 2801.7 | 2898.7 | 2832.7 | 2472.9 | 2444.9 | 2378.9 | 2455.9 | 2517.8 | 2823.7 |
| 62.5° | 2718.7 | 2760.7 | 2937.6 | 3130.6 | 3122.6 | 2787.7 | 2752.7 | 2593.8 | 2642.8 | 2696.8 | 3067.6 |
| 65°   | 2454.9 | 2499.9 | 2897.7 | 3194.5 | 3413.4 | 3098.6 | 3041.6 | 2815.7 | 2818.7 | 2883.7 | 3302.5 |
| 67.5° | 2219.0 | 2268.0 | 2647.8 | 3167.5 | 3605.3 | 3377.4 | 3318.5 | 3038.6 | 2991.6 | 3099.6 | 3428.4 |
| 70°   | 2083.0 | 2132.0 | 2448.9 | 3083.6 | 3659.3 | 3686.3 | 3635.3 | 3293.5 | 3197.5 | 3296.5 | 3287.5 |
| 72.5° | 1630.3 | 1707.2 | 2195.0 | 2923.7 | 3717.3 | 4017.2 | 3977.2 | 3616.3 | 3372.4 | 3090.6 | 2502.8 |
| 75°   | 649.7  | 720.7  | 1370.4 | 2352.9 | 3644.3 | 4302.0 | 4271.0 | 3761.3 | 3121.6 | 2207.0 | 1281.4 |
| 77.5° | 195.9  | 209.9  | 380.8  | 1163.5 | 2671.8 | 3814.2 | 3804.3 | 3162.5 | 2209.0 | 1024.5 | 349.8  |
| 80°   | 65.0   | 72.0   | 116.9  | 320.9  | 1219.4 | 2382.9 | 2427.9 | 2015.1 | 1003.5 | 234.9  | 71.0   |
| 82.5° | 27.0   | 30.0   | 59.0   | 128.9  | 431.8  | 1026.5 | 1011.5 | 902.6  | 349.8  | 145.9  | 26.0   |
| 85°   | 7.0    | 9.0    | 27.0   | 74.0   | 157.9  | 353.8  | 371.8  | 302.9  | 197.9  | 120.9  | 8.0    |
| 87.5° | 0.0    | 0.0    | 13.0   | 30.0   | 71.0   | 107.0  | 111.9  | 92.0   | 111.9  | 91.0   | 4.0    |
| 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: P800767

CATALOG NUMBER: ARCH-M-PA2-50-730-24VDC-T4W-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 589.7  | 589.7  | 589.7 | 589.7 | 589.7 | 589.7 | 589.7 | 589.7 | 589.7 | 589.7 | 589.7 |
| 2.5°  | 587.7  | 582.7  | 573.7 | 567.7 | 559.7 | 557.7 | 553.7 | 548.7 | 547.7 | 542.8 | 543.7 |
| 5°    | 577.7  | 569.7  | 553.7 | 542.8 | 529.8 | 525.8 | 518.8 | 513.8 | 509.8 | 502.8 | 503.8 |
| 7.5°  | 575.7  | 563.7  | 541.8 | 520.8 | 499.8 | 484.8 | 463.8 | 446.8 | 432.8 | 417.8 | 420.8 |
| 10°   | 582.7  | 567.7  | 536.8 | 507.8 | 469.8 | 421.8 | 366.8 | 330.8 | 312.9 | 294.9 | 296.9 |
| 12.5° | 596.7  | 578.7  | 538.8 | 494.8 | 417.8 | 335.8 | 259.9 | 210.9 | 197.9 | 189.9 | 190.9 |
| 15°   | 617.7  | 595.7  | 544.7 | 469.8 | 347.8 | 242.9 | 172.9 | 151.9 | 156.9 | 159.9 | 159.9 |
| 17.5° | 639.7  | 614.7  | 549.7 | 424.8 | 268.9 | 169.9 | 140.9 | 138.9 | 145.9 | 152.9 | 152.9 |
| 20°   | 666.7  | 634.7  | 550.7 | 367.8 | 193.9 | 137.9 | 132.9 | 132.9 | 137.9 | 145.9 | 145.9 |
| 22.5° | 692.7  | 656.7  | 541.8 | 302.9 | 147.9 | 127.9 | 127.9 | 127.9 | 130.9 | 138.9 | 139.9 |
| 25°   | 723.7  | 683.7  | 522.8 | 233.9 | 126.9 | 121.9 | 121.9 | 122.9 | 124.9 | 131.9 | 132.9 |
| 27.5° | 756.7  | 711.7  | 490.8 | 170.9 | 115.9 | 114.9 | 115.9 | 116.9 | 117.9 | 124.9 | 126.9 |
| 30°   | 794.6  | 742.7  | 449.8 | 127.9 | 106.0 | 106.0 | 108.9 | 110.9 | 110.9 | 116.9 | 118.9 |
| 32.5° | 838.6  | 783.6  | 400.8 | 106.0 | 96.0  | 95.0  | 100.0 | 103.0 | 103.0 | 108.0 | 109.9 |
| 35°   | 893.6  | 825.6  | 341.8 | 94.0  | 88.0  | 86.0  | 88.0  | 93.0  | 95.0  | 99.0  | 100.0 |
| 37.5° | 966.6  | 875.6  | 278.9 | 87.0  | 82.0  | 78.0  | 78.0  | 79.0  | 83.0  | 87.0  | 88.0  |
| 40°   | 1059.5 | 930.6  | 216.9 | 82.0  | 76.0  | 72.0  | 69.0  | 68.0  | 67.0  | 70.0  | 72.0  |
| 42.5° | 1176.5 | 992.5  | 161.9 | 77.0  | 71.0  | 65.0  | 61.0  | 57.0  | 52.0  | 51.0  | 52.0  |
| 45°   | 1326.4 | 1068.5 | 119.9 | 73.0  | 68.0  | 59.0  | 52.0  | 45.0  | 36.0  | 33.0  | 34.0  |
| 47.5° | 1503.3 | 1147.5 | 94.0  | 69.0  | 66.0  | 52.0  | 43.0  | 31.0  | 22.0  | 20.0  | 21.0  |
| 50°   | 1691.2 | 1223.4 | 80.0  | 64.0  | 62.0  | 45.0  | 31.0  | 19.0  | 13.0  | 13.0  | 14.0  |
| 52.5° | 1851.1 | 1266.4 | 73.0  | 60.0  | 56.0  | 37.0  | 20.0  | 11.0  | 8.0   | 8.0   | 9.0   |
| 55°   | 2006.1 | 1289.4 | 68.0  | 56.0  | 48.0  | 26.0  | 11.0  | 7.0   | 5.0   | 5.0   | 5.0   |
| 57.5° | 2166.0 | 1299.4 | 62.0  | 51.0  | 38.0  | 16.0  | 6.0   | 4.0   | 3.0   | 3.0   | 3.0   |
| 60°   | 2307.9 | 1280.4 | 53.0  | 42.0  | 25.0  | 8.0   | 3.0   | 3.0   | 2.0   | 1.0   | 1.0   |
| 62.5° | 2426.9 | 1244.4 | 37.0  | 30.0  | 15.0  | 4.0   | 2.0   | 1.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2499.9 | 1186.5 | 24.0  | 20.0  | 9.0   | 3.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 2478.9 | 1077.5 | 15.0  | 13.0  | 4.0   | 2.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 2237.0 | 883.6  | 11.0  | 8.0   | 3.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1612.3 | 597.7  | 8.0   | 5.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 775.6  | 212.9  | 5.0   | 4.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 189.9  | 47.0   | 3.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 42.0   | 9.0    | 2.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 14.0   | 4.0    | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 5.0    | 2.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 3.0    | 1.0    | 0.0   | 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   |

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

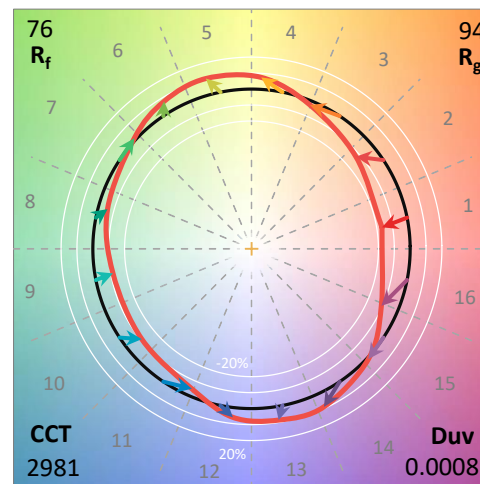
### Test Information

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**



REPORT NUMBER: SP1-2101-121-6

### Photopic Flux vs. Wavelength

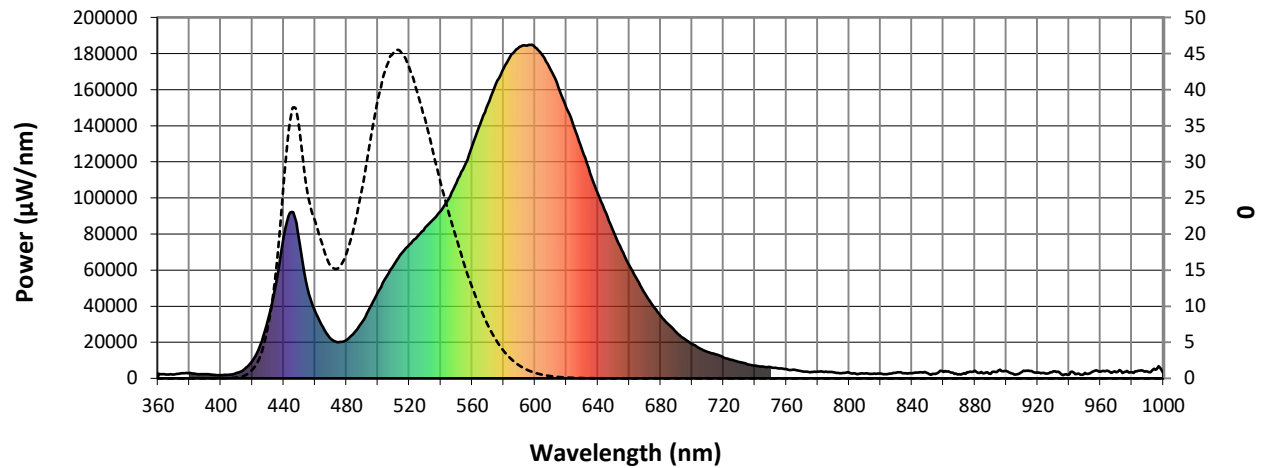


#####

| 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       | 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              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



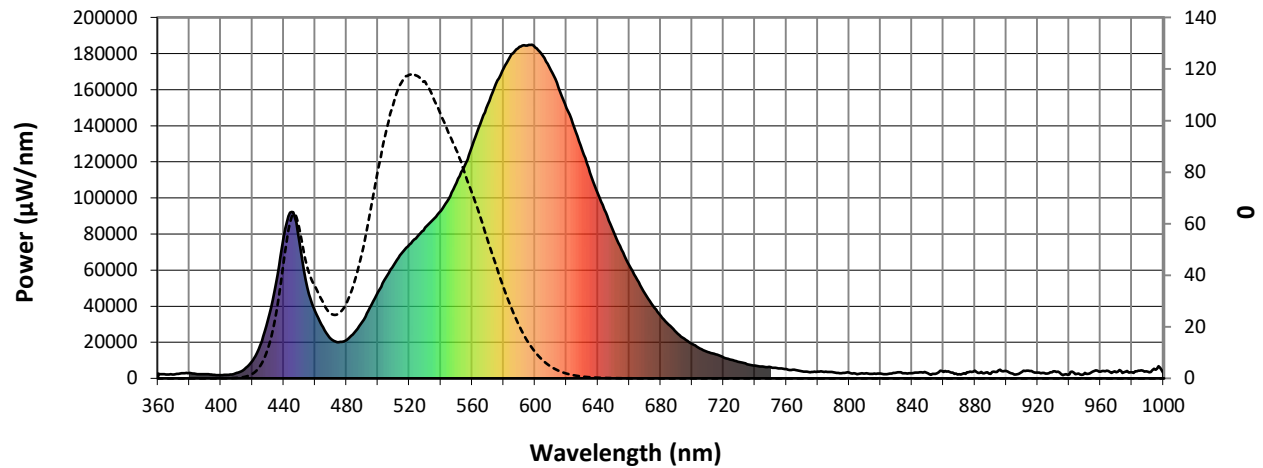
Scotopic Lumens: 10635.1

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              |           |                  |                  |

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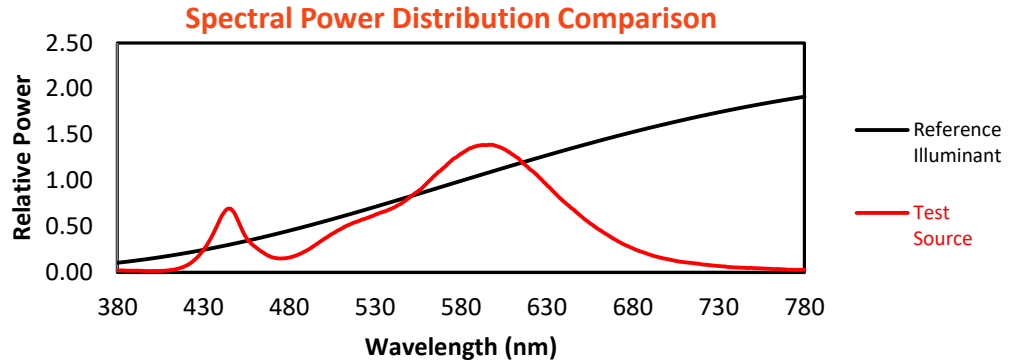
### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 3860**
**M/P: 0.44**

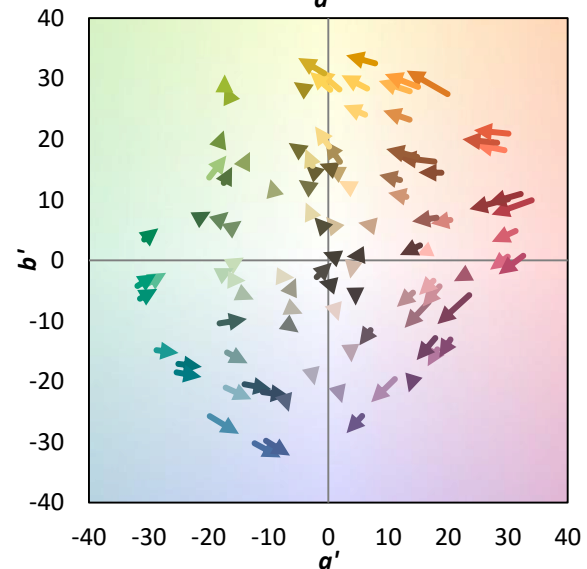
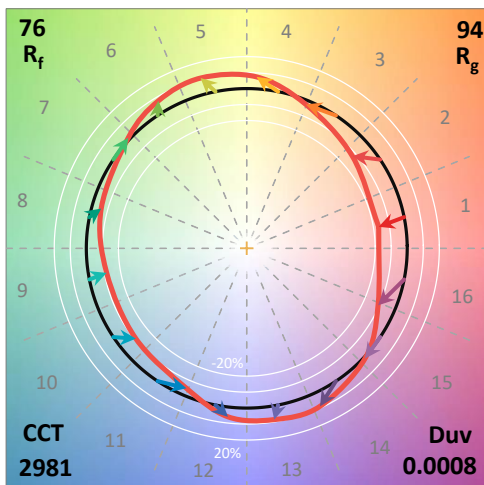
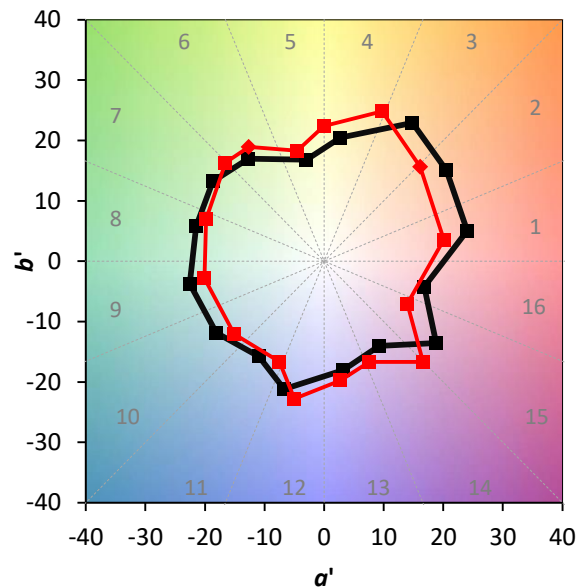
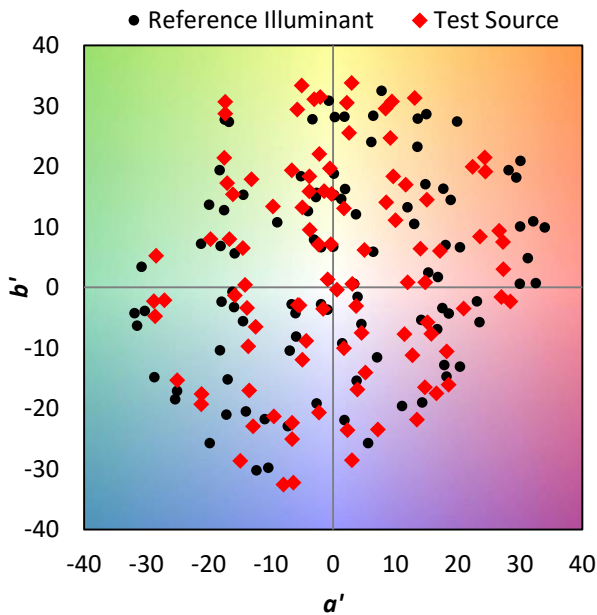
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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  $R_a = 72.3$   
 $R_g = -36.9$



### 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)