

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: P800759

Luminaire Tested: **ARCH-M-PA2-40-730-24VDC-T4W**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800759  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-40-730-24VDC-T4W  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 3000K, 240mA LIGHT ENGINES WITH 16 LEDS AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5843 lumens  
Efficiency: N/A  
Efficacy: 162.3 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): 36  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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

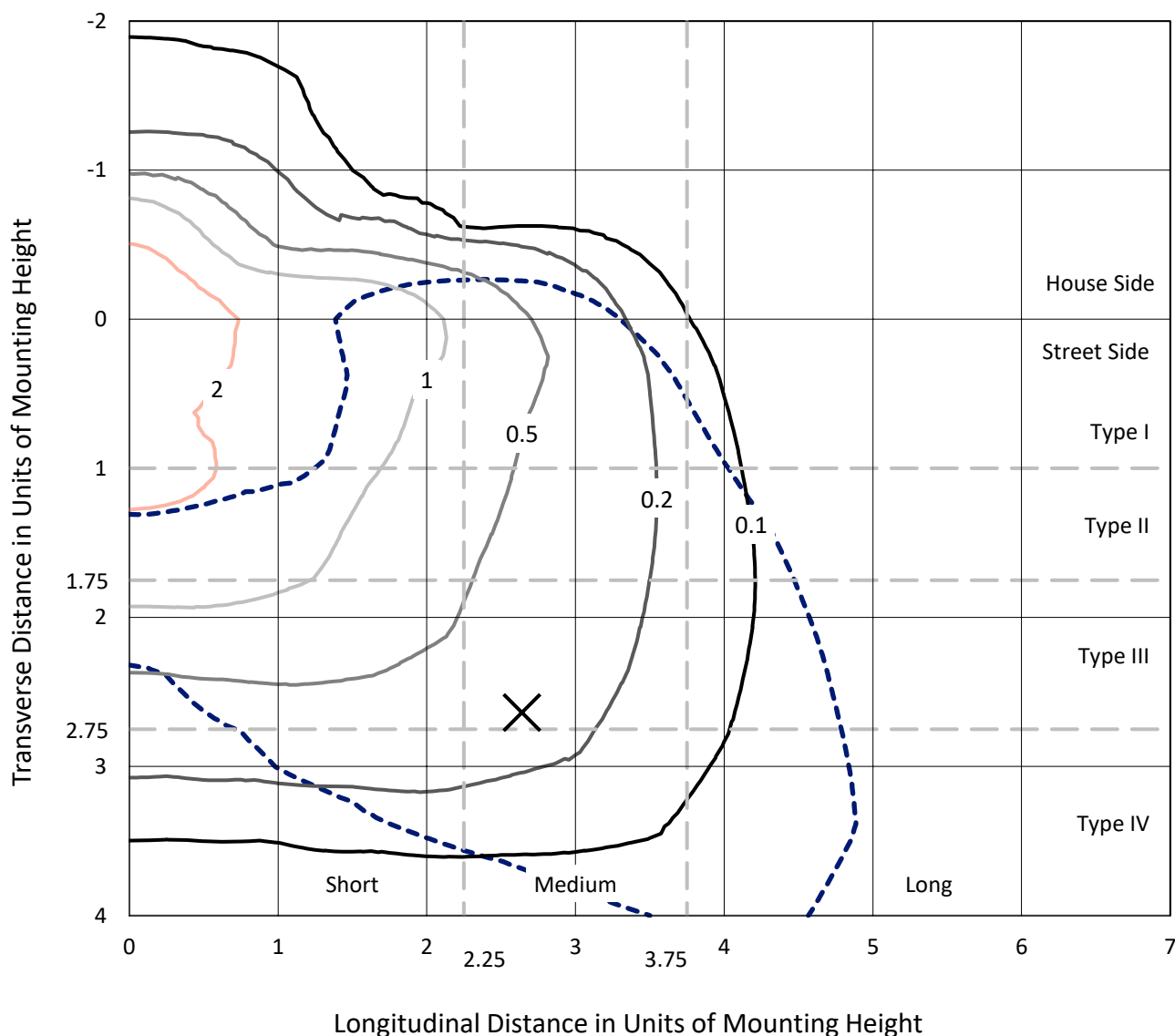
REPORT NUMBER: P800759

CATALOG NUMBER: ARCH-M-PA2-40-730-24VDC-T4W

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

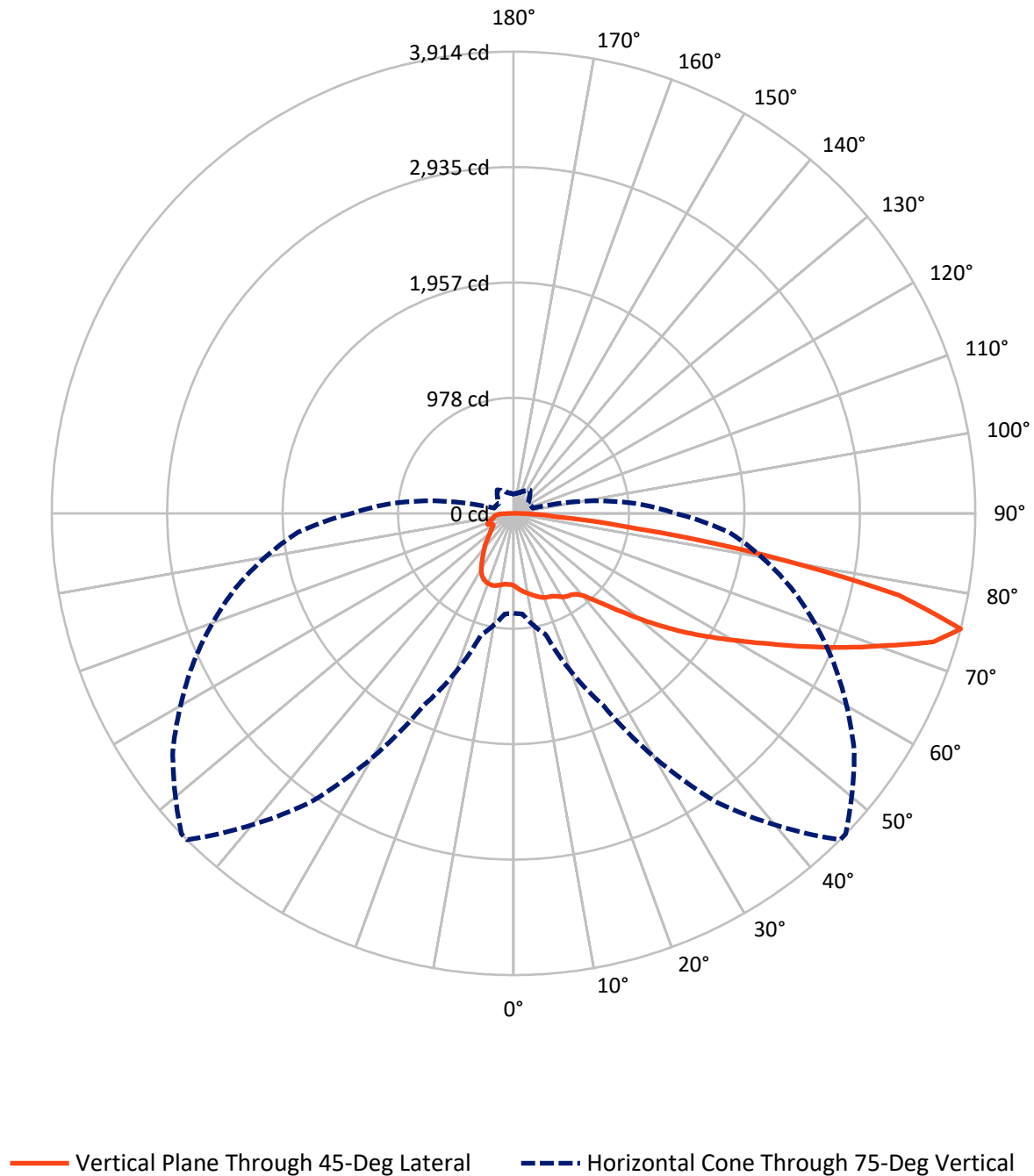


Based on 15 foot mounting height. Maximum calculated value = 3.2 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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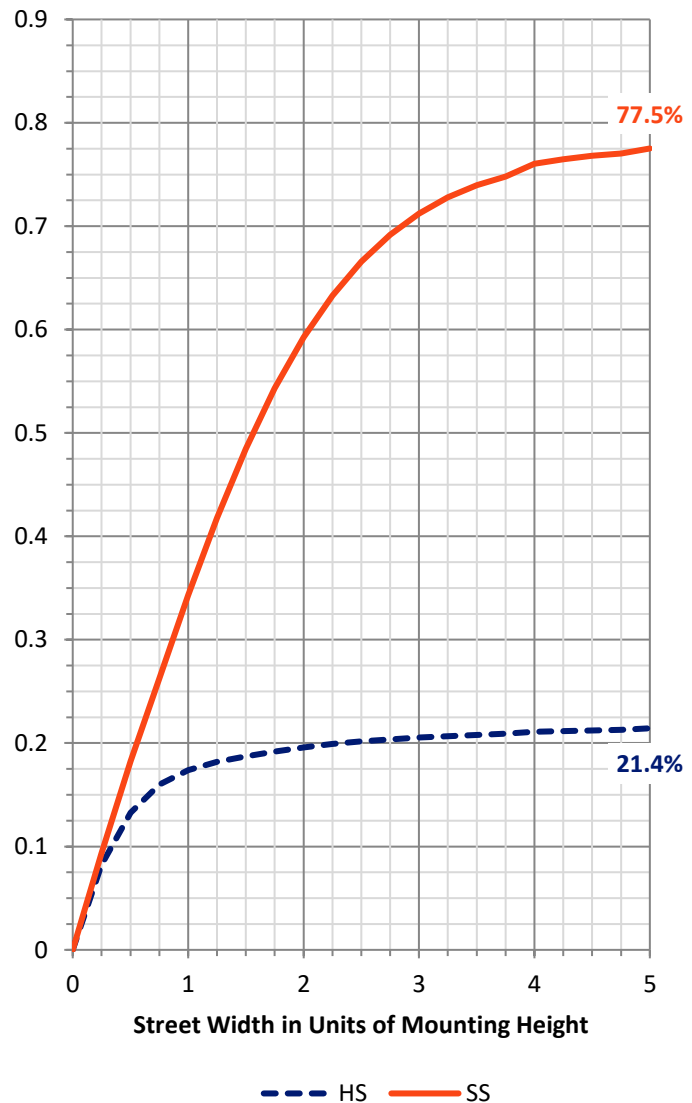
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1291.3   | 0.0    | 1291.3 |
|                    | % Fixture | 22.1     | 0.0    | 22.1   |
| <b>Street Side</b> | Lumens    | 4551.7   | 0.0    | 4551.7 |
|                    | % Fixture | 77.9     | 0.0    | 77.9   |
| <b>Total</b>       | Lumens    | 5843.0   | 0.0    | 5843.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 60.7   | 1.0       |
| 10°-20°   | 193.1  | 3.3       |
| 20°-30°   | 329.3  | 5.6       |
| 30°-40°   | 461.3  | 7.9       |
| 40°-50°   | 677.8  | 11.6      |
| 50°-60°   | 1078.7 | 18.5      |
| 60°-70°   | 1534.4 | 26.3      |
| 70°-80°   | 1284.8 | 22.0      |
| 80°-90°   | 223.0  | 3.8       |
| 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°    | 5843.0 | 100.0     |
| 0°-180°   | 5843.0 | 100.0     |



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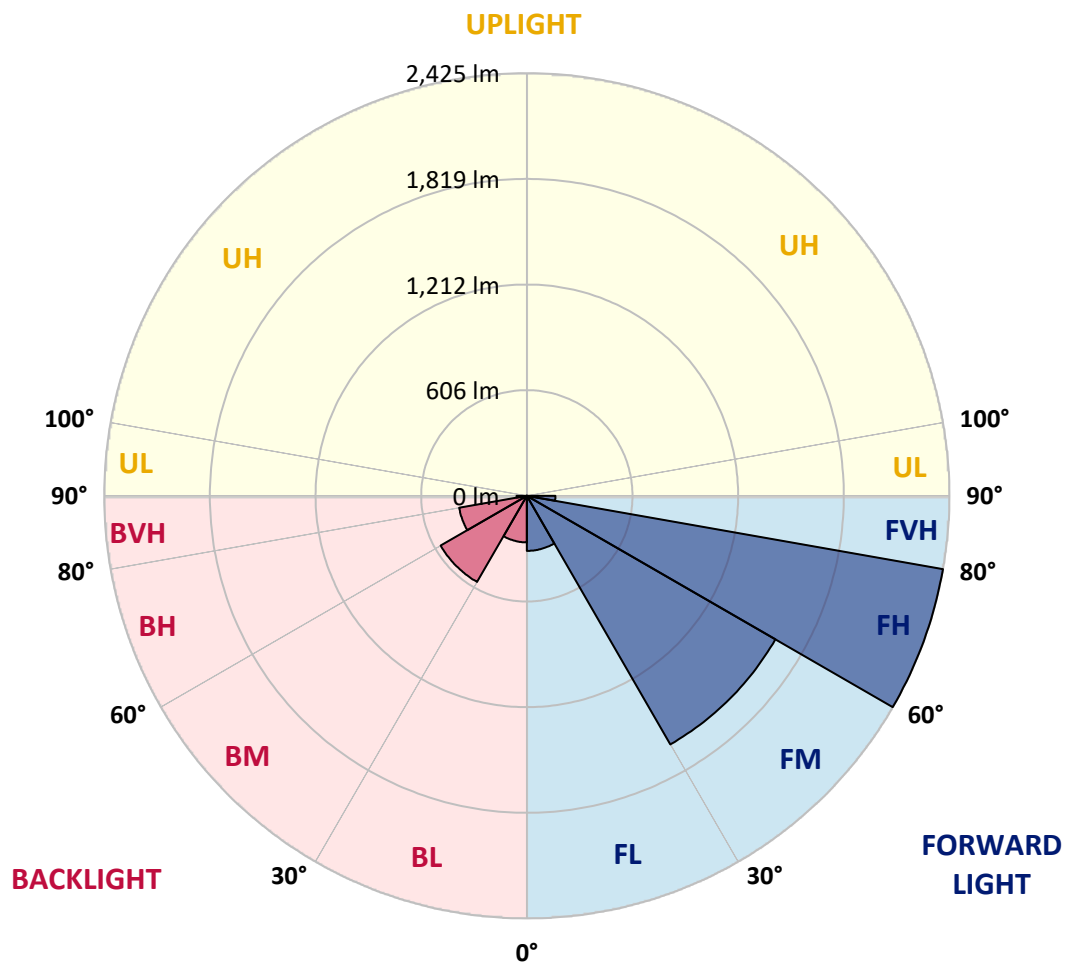
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 315.8  | 5.4       |                         |      |         |
| FM   | (30°-60°)   | 1647.0 | 28.2      |                         |      |         |
| FH   | (60°-80°)   | 2425.0 | 41.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 163.9  | 2.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 267.2  | 4.6       | B1/500                  |      |         |
| BM   | (30°-60°)   | 570.8  | 9.8       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 394.2  | 6.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 59.0   | 1.0       |                         |      | G1/100  |
| 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°    | 45°    | 46°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  | 613.6  |
| 2.5°  | 648.8  | 645.7  | 644.1  | 644.1  | 637.8  | 633.9  | 633.2  | 627.7  | 623.0  | 618.3  | 614.4  |
| 5°    | 686.2  | 683.9  | 679.2  | 675.3  | 666.7  | 655.8  | 654.2  | 642.5  | 630.8  | 619.9  | 610.5  |
| 7.5°  | 720.6  | 715.9  | 710.5  | 702.6  | 688.6  | 673.8  | 671.4  | 655.0  | 638.6  | 622.2  | 609.7  |
| 10°   | 749.5  | 744.8  | 737.0  | 726.1  | 708.1  | 690.2  | 687.8  | 670.6  | 653.5  | 633.9  | 616.0  |
| 12.5° | 776.8  | 772.9  | 761.2  | 746.4  | 725.3  | 708.9  | 706.5  | 691.7  | 673.8  | 651.9  | 628.5  |
| 15°   | 800.2  | 796.3  | 783.8  | 766.7  | 742.5  | 730.0  | 726.8  | 712.8  | 694.8  | 671.4  | 647.2  |
| 17.5° | 811.9  | 811.9  | 798.7  | 779.9  | 757.3  | 747.9  | 745.6  | 728.4  | 712.0  | 689.4  | 665.2  |
| 20°   | 815.8  | 817.4  | 808.0  | 785.4  | 765.9  | 762.0  | 759.6  | 745.6  | 726.8  | 705.0  | 682.3  |
| 22.5° | 818.2  | 821.3  | 813.5  | 787.7  | 771.3  | 769.0  | 767.4  | 758.1  | 743.2  | 722.2  | 699.5  |
| 25°   | 826.0  | 826.0  | 820.5  | 791.6  | 778.4  | 777.6  | 777.6  | 772.1  | 762.0  | 744.0  | 721.4  |
| 27.5° | 837.7  | 836.9  | 829.9  | 800.2  | 794.0  | 796.3  | 795.5  | 794.8  | 787.7  | 769.8  | 745.6  |
| 30°   | 857.2  | 857.2  | 849.4  | 817.4  | 813.5  | 823.7  | 824.4  | 826.0  | 815.1  | 787.0  | 767.4  |
| 32.5° | 886.9  | 883.8  | 876.0  | 834.6  | 828.3  | 837.7  | 839.3  | 838.5  | 829.1  | 802.6  | 793.2  |
| 35°   | 978.2  | 971.2  | 943.1  | 872.8  | 841.6  | 847.1  | 847.9  | 851.8  | 853.3  | 832.2  | 827.6  |
| 37.5° | 1138.3 | 1128.9 | 1086.0 | 963.4  | 883.8  | 870.5  | 869.7  | 879.9  | 888.5  | 869.7  | 869.7  |
| 40°   | 1312.4 | 1304.6 | 1279.6 | 1119.5 | 961.8  | 918.1  | 915.0  | 924.4  | 935.3  | 922.0  | 925.9  |
| 42.5° | 1462.3 | 1468.5 | 1470.9 | 1285.1 | 1078.9 | 1007.1 | 998.5  | 985.3  | 1002.4 | 990.7  | 1006.3 |
| 45°   | 1574.7 | 1571.6 | 1614.5 | 1454.5 | 1230.4 | 1118.8 | 1107.1 | 1071.1 | 1093.0 | 1092.2 | 1126.6 |
| 47.5° | 1694.2 | 1688.7 | 1706.6 | 1613.7 | 1402.9 | 1255.4 | 1237.4 | 1184.3 | 1217.1 | 1239.8 | 1296.8 |
| 50°   | 1807.4 | 1808.9 | 1815.2 | 1739.4 | 1590.3 | 1421.7 | 1399.0 | 1328.0 | 1374.8 | 1422.5 | 1502.9 |
| 52.5° | 1954.9 | 1944.0 | 1936.2 | 1886.2 | 1800.3 | 1595.0 | 1580.2 | 1499.0 | 1564.6 | 1620.8 | 1727.7 |
| 55°   | 2083.7 | 2076.7 | 2072.0 | 2069.7 | 1976.0 | 1786.3 | 1770.7 | 1686.3 | 1780.8 | 1820.6 | 1978.3 |
| 57.5° | 2221.1 | 2217.2 | 2242.2 | 2282.0 | 2244.6 | 1980.7 | 1964.3 | 1883.1 | 1988.5 | 2016.6 | 2250.0 |
| 60°   | 2321.8 | 2324.2 | 2392.9 | 2494.4 | 2468.6 | 2191.5 | 2172.0 | 2100.1 | 2190.7 | 2215.7 | 2521.7 |
| 62.5° | 2322.6 | 2346.1 | 2505.3 | 2687.2 | 2716.9 | 2434.3 | 2411.6 | 2333.6 | 2398.4 | 2398.4 | 2765.3 |
| 65°   | 2100.9 | 2127.5 | 2485.0 | 2734.8 | 2968.3 | 2723.1 | 2701.3 | 2578.7 | 2602.9 | 2570.1 | 2994.0 |
| 67.5° | 1880.0 | 1911.2 | 2247.7 | 2738.8 | 3144.7 | 3032.3 | 3006.5 | 2823.9 | 2782.5 | 2699.7 | 3154.1 |
| 70°   | 1733.2 | 1755.0 | 2036.1 | 2688.0 | 3250.9 | 3355.5 | 3336.0 | 3056.5 | 2923.8 | 2808.2 | 3120.5 |
| 72.5° | 1459.2 | 1451.4 | 1719.9 | 2446.8 | 3310.2 | 3722.5 | 3706.1 | 3309.5 | 3046.4 | 2756.7 | 2661.5 |
| 75°   | 847.1  | 856.4  | 1067.2 | 1792.5 | 2983.9 | 3913.7 | 3912.2 | 3525.7 | 2992.5 | 2435.1 | 1833.9 |
| 77.5° | 244.4  | 251.4  | 350.5  | 787.7  | 1887.0 | 3338.3 | 3445.3 | 3224.4 | 2529.5 | 1735.5 | 950.9  |
| 80°   | 107.0  | 112.4  | 152.2  | 262.3  | 812.7  | 2180.5 | 2274.2 | 2180.5 | 1525.5 | 796.3  | 373.2  |
| 82.5° | 63.2   | 67.1   | 99.2   | 162.4  | 389.6  | 1037.6 | 1164.0 | 1016.5 | 658.1  | 338.1  | 154.6  |
| 85°   | 35.9   | 37.5   | 57.0   | 103.1  | 245.1  | 363.0  | 407.5  | 381.8  | 320.9  | 192.1  | 81.2   |
| 87.5° | 16.4   | 17.2   | 28.1   | 48.4   | 137.4  | 122.6  | 127.3  | 168.6  | 185.8  | 117.1  | 40.6   |
| 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: P800759

CATALOG NUMBER: ARCH-M-PA2-40-730-24VDC-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 613.6  | 613.6  | 613.6 | 613.6 | 613.6 | 613.6 | 613.6 | 613.6 | 613.6 | 613.6 | 613.6 |
| 2.5°  | 612.9  | 610.5  | 605.8 | 604.3 | 601.9 | 602.7 | 603.5 | 603.5 | 604.3 | 601.9 | 601.9 |
| 5°    | 606.6  | 602.7  | 598.0 | 598.0 | 598.0 | 604.3 | 609.7 | 612.9 | 614.4 | 614.4 | 612.9 |
| 7.5°  | 604.3  | 599.6  | 594.1 | 595.7 | 597.2 | 605.1 | 615.2 | 625.4 | 628.5 | 628.5 | 626.9 |
| 10°   | 609.0  | 604.3  | 600.4 | 602.7 | 606.6 | 612.9 | 620.7 | 630.0 | 637.8 | 638.6 | 637.8 |
| 12.5° | 619.9  | 614.4  | 610.5 | 615.2 | 619.9 | 623.8 | 627.7 | 631.6 | 641.7 | 643.3 | 643.3 |
| 15°   | 637.8  | 632.4  | 627.7 | 631.6 | 633.2 | 633.2 | 633.2 | 633.2 | 643.3 | 644.9 | 644.9 |
| 17.5° | 655.8  | 651.1  | 646.4 | 647.2 | 642.5 | 636.3 | 633.9 | 633.2 | 638.6 | 643.3 | 644.1 |
| 20°   | 673.0  | 669.1  | 664.4 | 656.6 | 644.9 | 633.2 | 629.3 | 629.3 | 632.4 | 639.4 | 639.4 |
| 22.5° | 691.7  | 687.0  | 679.2 | 661.3 | 641.7 | 625.4 | 621.5 | 623.8 | 627.7 | 637.1 | 636.3 |
| 25°   | 712.8  | 706.5  | 693.3 | 659.7 | 631.6 | 612.1 | 612.9 | 619.9 | 626.9 | 637.1 | 637.1 |
| 27.5° | 736.2  | 727.6  | 701.1 | 647.2 | 609.0 | 590.2 | 597.2 | 613.6 | 623.8 | 634.7 | 636.3 |
| 30°   | 762.0  | 754.2  | 707.3 | 625.4 | 572.3 | 555.1 | 572.3 | 598.8 | 614.4 | 624.6 | 626.9 |
| 32.5° | 793.2  | 787.0  | 712.8 | 597.2 | 524.6 | 509.8 | 534.8 | 567.6 | 592.6 | 604.3 | 606.6 |
| 35°   | 832.2  | 826.0  | 719.8 | 565.2 | 480.1 | 464.5 | 487.2 | 520.7 | 553.5 | 568.4 | 573.0 |
| 37.5° | 883.0  | 873.6  | 726.1 | 530.9 | 442.7 | 424.7 | 435.6 | 466.1 | 495.8 | 516.1 | 521.5 |
| 40°   | 947.8  | 933.0  | 731.5 | 491.9 | 409.9 | 389.6 | 393.5 | 408.3 | 425.5 | 443.4 | 450.5 |
| 42.5° | 1039.1 | 1009.5 | 732.3 | 450.5 | 376.3 | 357.6 | 356.0 | 360.7 | 360.7 | 360.7 | 363.0 |
| 45°   | 1166.4 | 1110.2 | 733.9 | 411.4 | 342.0 | 322.4 | 317.8 | 316.2 | 304.5 | 281.8 | 280.3 |
| 47.5° | 1327.2 | 1242.1 | 740.9 | 378.6 | 306.0 | 288.9 | 282.6 | 276.4 | 254.5 | 231.1 | 226.4 |
| 50°   | 1533.3 | 1395.1 | 755.0 | 347.4 | 275.6 | 263.9 | 256.1 | 241.2 | 217.0 | 199.1 | 194.4 |
| 52.5° | 1770.7 | 1577.0 | 768.2 | 314.6 | 253.0 | 245.1 | 235.8 | 217.8 | 192.1 | 181.1 | 179.6 |
| 55°   | 2043.1 | 1780.0 | 794.8 | 285.7 | 233.4 | 228.0 | 219.4 | 202.2 | 182.7 | 174.9 | 174.1 |
| 57.5° | 2321.8 | 2007.2 | 832.2 | 260.0 | 214.7 | 211.6 | 211.6 | 196.7 | 184.2 | 181.1 | 181.1 |
| 60°   | 2590.4 | 2202.4 | 803.4 | 235.8 | 197.5 | 199.1 | 213.9 | 210.0 | 200.6 | 204.5 | 206.9 |
| 62.5° | 2798.9 | 2317.2 | 651.9 | 216.3 | 185.0 | 199.1 | 237.3 | 237.3 | 226.4 | 224.8 | 224.8 |
| 65°   | 2887.9 | 2315.6 | 458.3 | 201.4 | 180.3 | 218.6 | 264.7 | 252.2 | 223.3 | 212.4 | 210.0 |
| 67.5° | 2865.2 | 2214.1 | 316.2 | 191.3 | 178.8 | 238.9 | 277.2 | 242.0 | 209.2 | 199.9 | 192.8 |
| 70°   | 2666.1 | 1999.4 | 243.6 | 181.9 | 176.4 | 230.3 | 273.3 | 230.3 | 198.3 | 189.7 | 183.5 |
| 72.5° | 2150.9 | 1603.6 | 202.2 | 172.5 | 167.1 | 213.1 | 260.0 | 219.4 | 189.7 | 180.3 | 174.1 |
| 75°   | 1371.7 | 1008.7 | 171.0 | 160.0 | 149.1 | 191.3 | 242.0 | 208.5 | 180.3 | 167.9 | 163.2 |
| 77.5° | 659.7  | 434.9  | 149.1 | 145.2 | 134.3 | 177.2 | 224.1 | 194.4 | 167.9 | 157.7 | 154.6 |
| 80°   | 267.0  | 199.1  | 129.6 | 130.4 | 123.4 | 168.6 | 211.6 | 181.1 | 155.4 | 144.4 | 139.0 |
| 82.5° | 139.0  | 115.5  | 109.3 | 112.4 | 112.4 | 160.8 | 202.2 | 170.2 | 144.4 | 139.7 | 121.8 |
| 85°   | 74.9   | 71.8   | 84.3  | 90.6  | 97.6  | 145.2 | 188.2 | 158.5 | 131.9 | 113.2 | 109.3 |
| 87.5° | 36.7   | 46.8   | 47.6  | 54.7  | 67.9  | 116.3 | 158.5 | 132.7 | 110.1 | 91.3  | 89.8  |
| 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

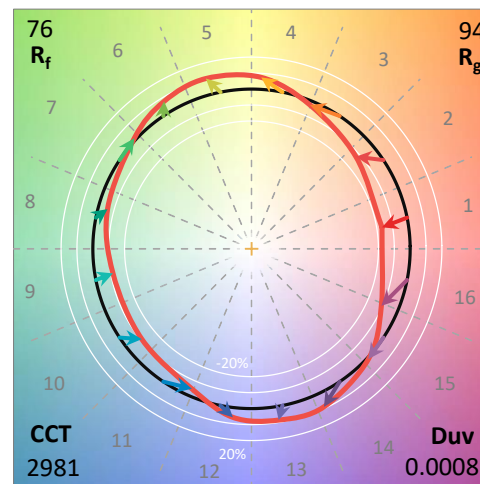
### Test Information

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

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| 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            |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

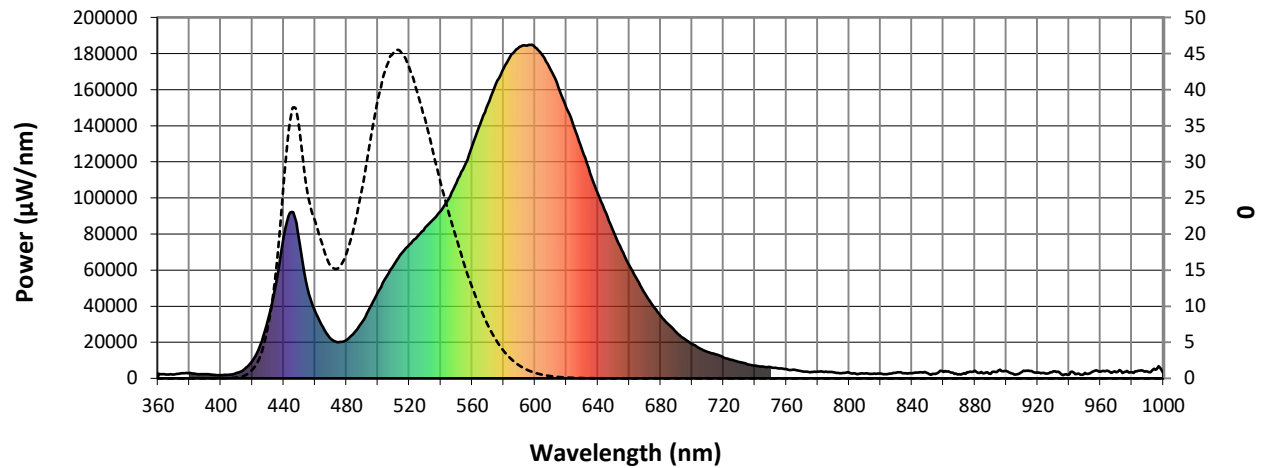


#####

| λ<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



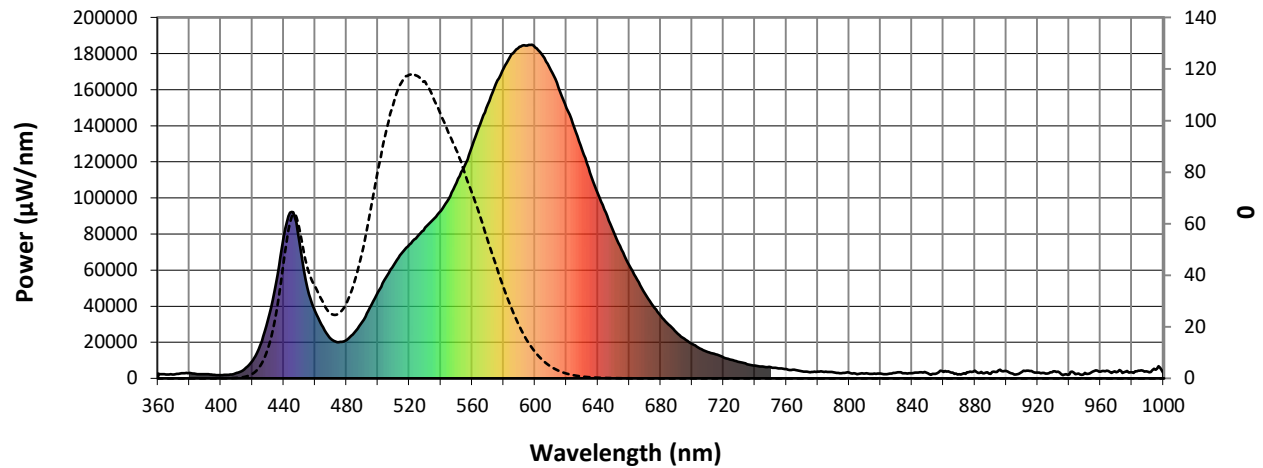
Scotopic Lumens: 10635.1

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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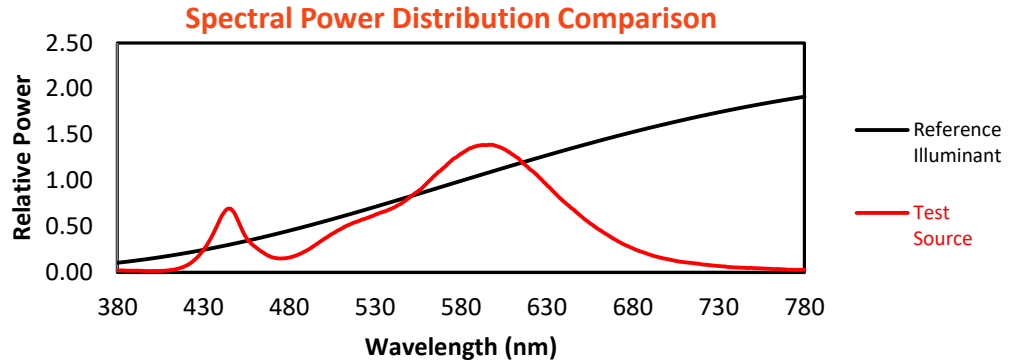
### Melanopic Flux vs. Wavelength


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

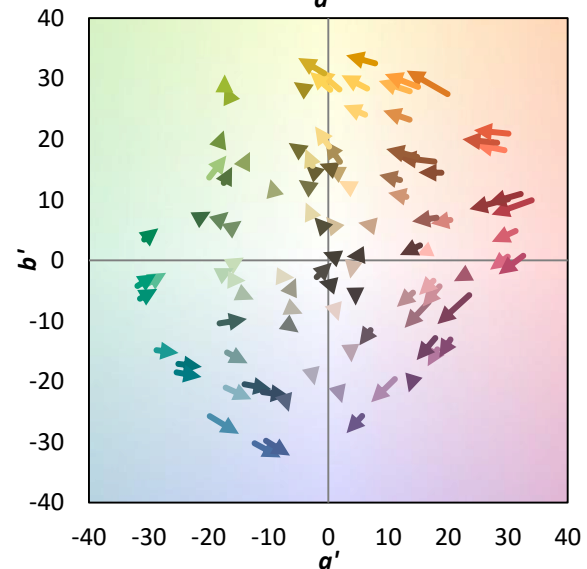
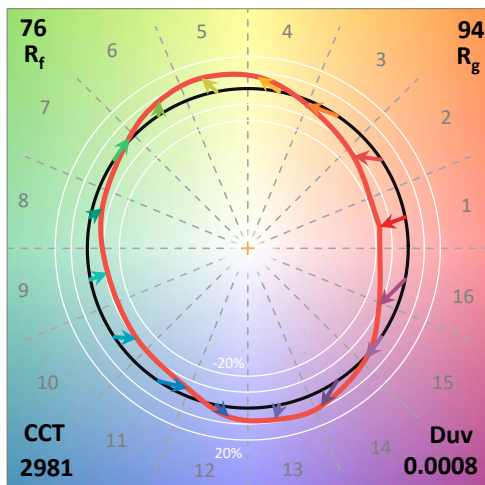
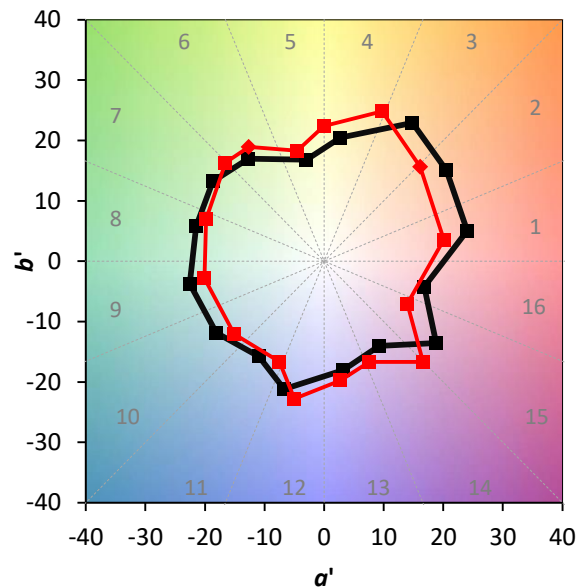
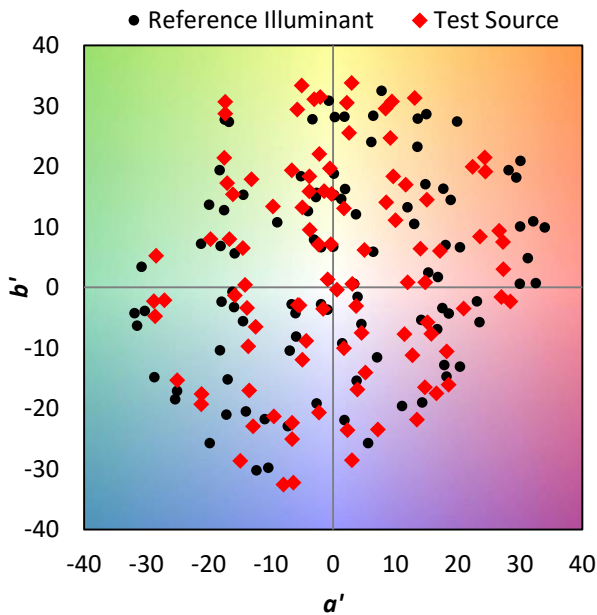
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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)