

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: P800818

Luminaire Tested: **ARCH-M-PA2-40-740-24VDC-T2U**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800818  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-568-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/19/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-M-PA2-40-740-24VDC-T2U  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 4000K, 240mA LIGHT ENGINES WITH 16 LEDS AND TYPE II U OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6411 lumens  
Efficiency: N/A  
Efficacy: 178.1 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

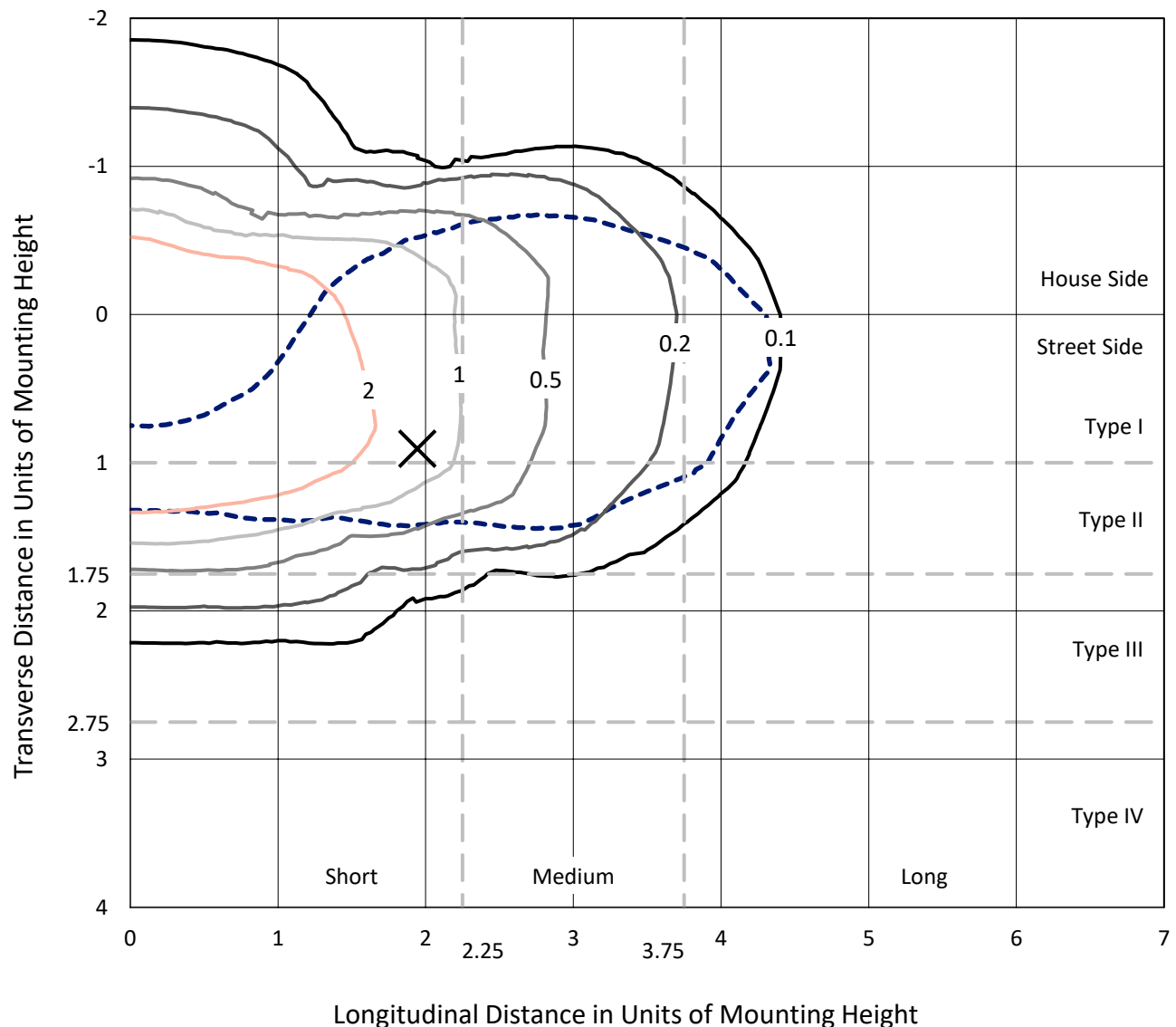
Input Watts (W): 36  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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CATALOG NUMBER: ARCH-M-PA2-40-740-24VDC-T2U

## Iso-Footcandle Lines of Horizontal Illumination

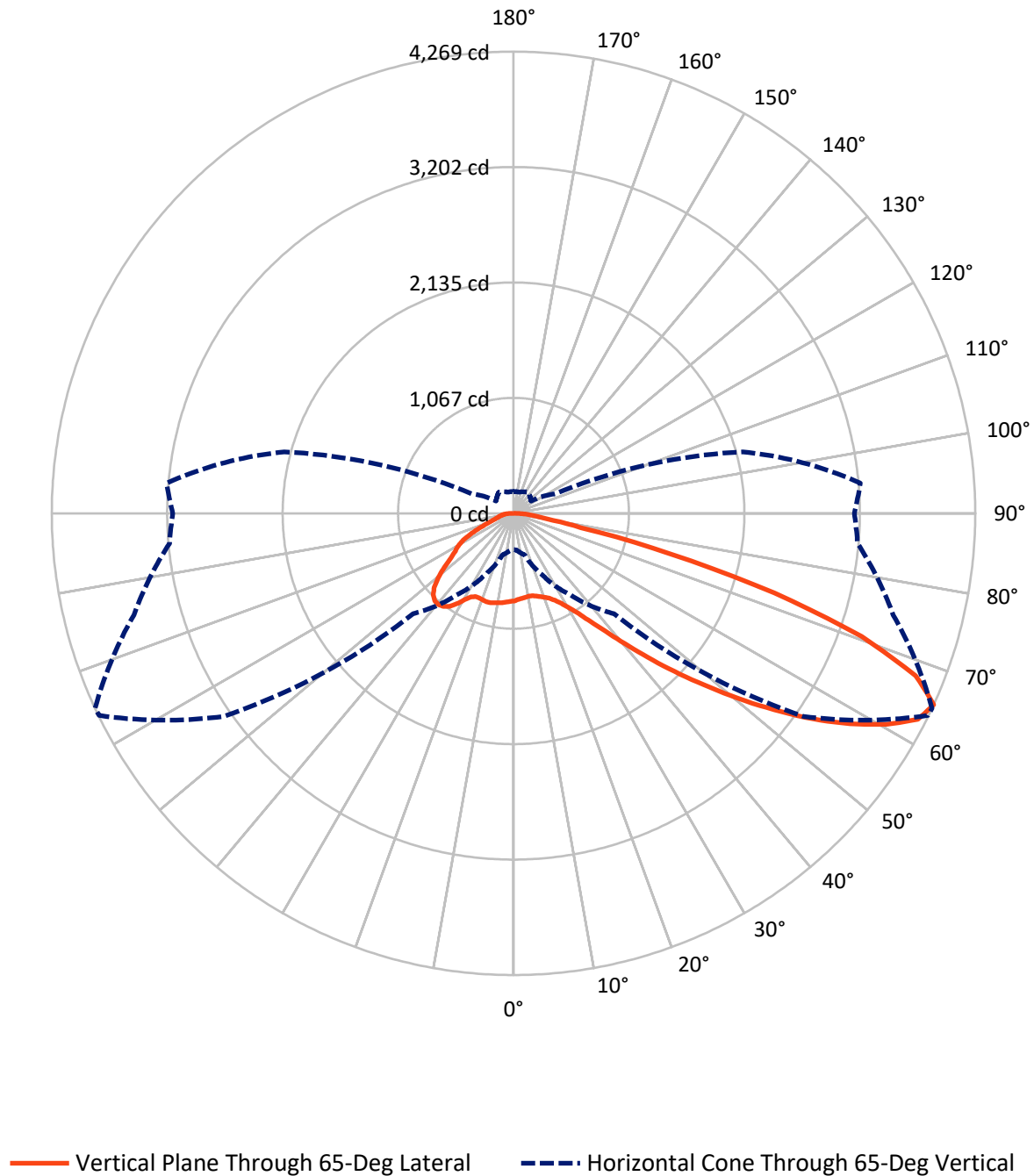
× Max cd  
 --- 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 4.9 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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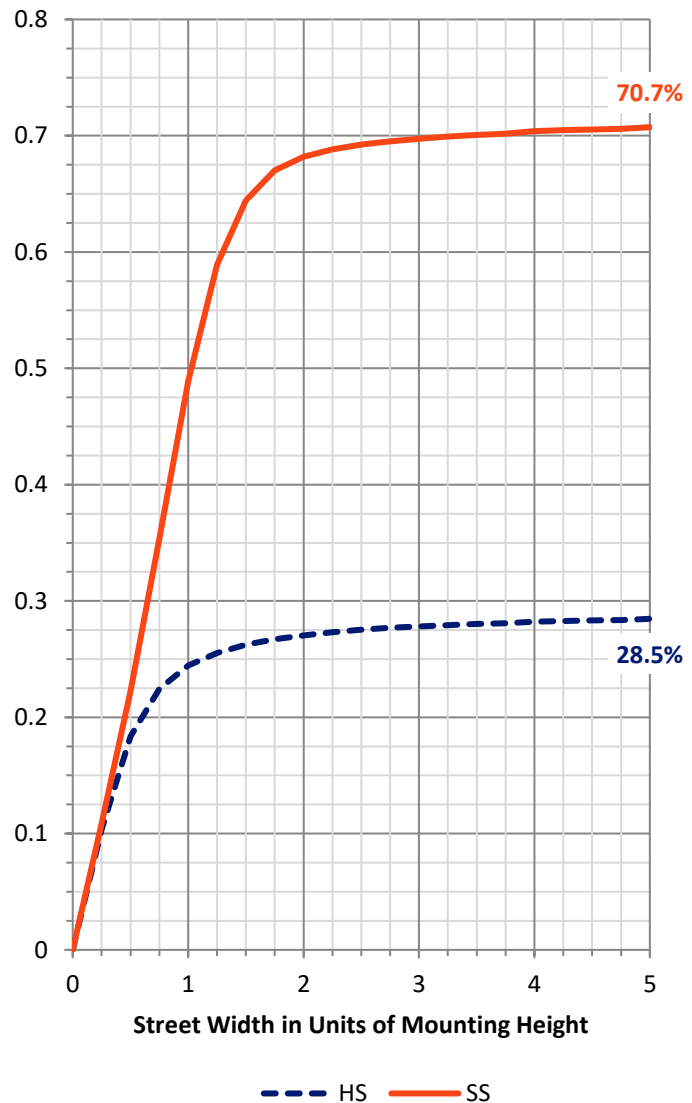
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1853.5   | 0.0    | 1853.5 |
|                    | % Fixture | 28.9     | 0.0    | 28.9   |
| <b>Street Side</b> | Lumens    | 4557.5   | 0.0    | 4557.5 |
|                    | % Fixture | 71.1     | 0.0    | 71.1   |
| <b>Total</b>       | Lumens    | 6411.0   | 0.0    | 6411.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 77.2   | 1.2       |
| 10°-20°   | 230.4  | 3.6       |
| 20°-30°   | 409.3  | 6.4       |
| 30°-40°   | 692.4  | 10.8      |
| 40°-50°   | 1205.4 | 18.8      |
| 50°-60°   | 1557.7 | 24.3      |
| 60°-70°   | 1363.1 | 21.3      |
| 70°-80°   | 741.4  | 11.6      |
| 80°-90°   | 134.0  | 2.1       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 6411.0 | 100.0     |
| 0°-180°   | 6411.0 | 100.0     |

**Coefficient of Utilization**



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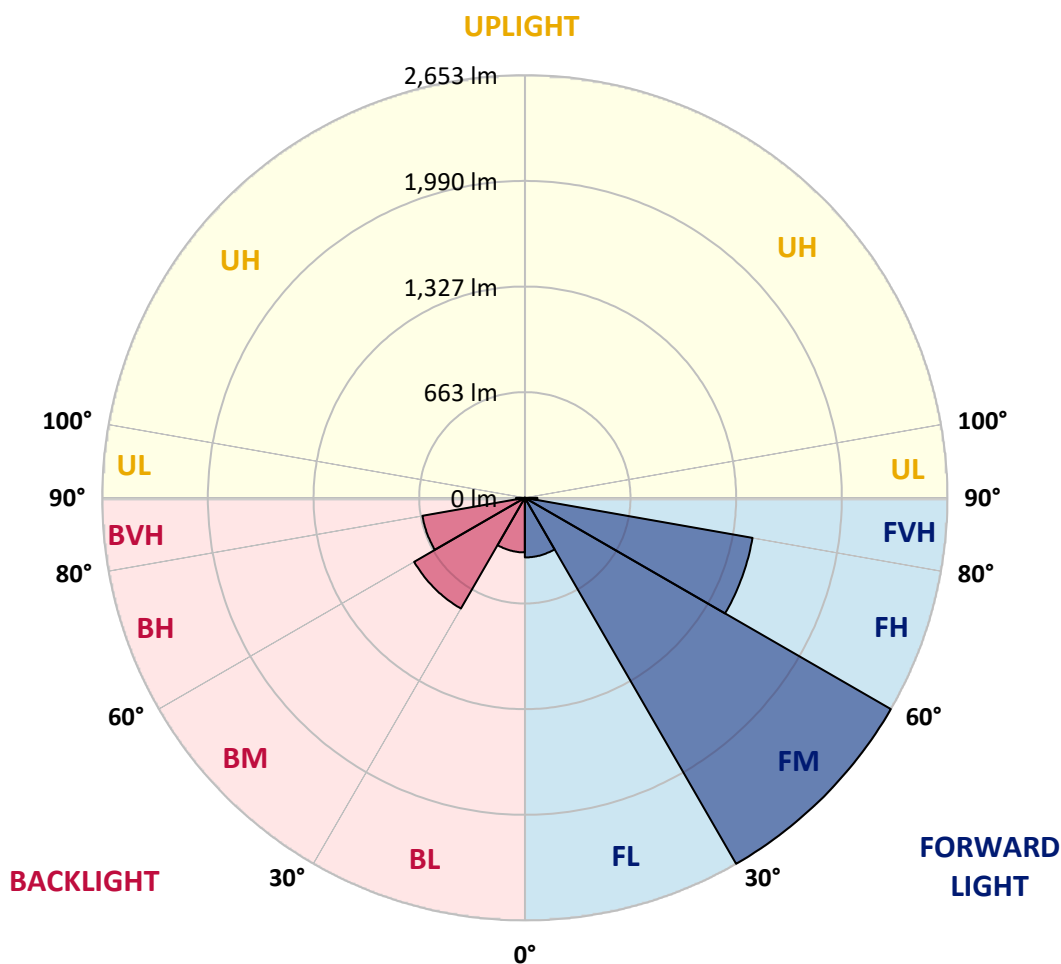
CATALOG NUMBER: ARCH-M-PA2-40-740-24VDC-T2U

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 374.1  | 5.8       |                         |      |         |
| FM   | (30°-60°)   | 2653.0 | 41.4      |                         |      |         |
| FH   | (60°-80°)   | 1451.5 | 22.6      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 78.8   | 1.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 342.8  | 5.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 802.5  | 12.5      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 653.0  | 10.2      | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 55.1   | 0.9       |                         |      | 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 Short





REPORT NUMBER: P800818

CATALOG NUMBER: ARCH-M-PA2-40-740-24VDC-T2U

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  | 810.1  |
| 2.5°  | 795.7  | 794.9  | 793.2  | 794.9  | 795.7  | 797.4  | 796.6  | 798.3  | 797.4  | 800.0  | 804.2  |
| 5°    | 775.5  | 773.8  | 773.0  | 777.2  | 779.7  | 783.9  | 785.6  | 791.5  | 790.7  | 794.9  | 801.7  |
| 7.5°  | 752.7  | 752.7  | 751.9  | 756.9  | 760.3  | 767.9  | 773.8  | 783.9  | 784.8  | 792.4  | 800.0  |
| 10°   | 735.0  | 735.8  | 735.0  | 739.2  | 744.3  | 753.6  | 763.7  | 778.0  | 778.9  | 789.8  | 797.4  |
| 12.5° | 728.2  | 728.2  | 728.2  | 734.1  | 740.9  | 753.6  | 765.4  | 780.6  | 782.2  | 794.1  | 800.8  |
| 15°   | 737.5  | 738.4  | 736.7  | 742.6  | 750.2  | 765.4  | 776.3  | 792.4  | 794.1  | 805.0  | 809.2  |
| 17.5° | 770.4  | 773.8  | 769.6  | 773.0  | 771.3  | 783.1  | 793.2  | 809.2  | 810.1  | 819.4  | 821.1  |
| 20°   | 835.4  | 838.8  | 832.0  | 827.8  | 812.6  | 811.8  | 816.0  | 828.7  | 828.7  | 834.6  | 830.3  |
| 22.5° | 935.8  | 939.2  | 927.4  | 911.4  | 875.1  | 857.3  | 848.1  | 854.0  | 853.1  | 855.7  | 844.7  |
| 25°   | 1069.2 | 1068.3 | 1054.0 | 1024.4 | 966.2  | 923.2  | 900.4  | 891.1  | 891.1  | 886.0  | 872.5  |
| 27.5° | 1234.5 | 1221.9 | 1196.6 | 1161.1 | 1080.1 | 1020.2 | 971.3  | 947.6  | 943.4  | 928.2  | 902.9  |
| 30°   | 1410.9 | 1401.6 | 1365.3 | 1313.9 | 1220.2 | 1143.4 | 1062.4 | 1015.1 | 1012.6 | 979.7  | 941.7  |
| 32.5° | 1618.5 | 1603.3 | 1562.8 | 1501.2 | 1389.0 | 1281.0 | 1179.7 | 1108.0 | 1103.7 | 1051.4 | 999.1  |
| 35°   | 1885.2 | 1872.5 | 1794.0 | 1732.4 | 1588.1 | 1446.4 | 1326.5 | 1231.2 | 1227.8 | 1163.7 | 1097.0 |
| 37.5° | 2205.0 | 2172.1 | 2096.1 | 1980.5 | 1828.6 | 1660.7 | 1508.8 | 1389.0 | 1384.8 | 1313.9 | 1229.5 |
| 40°   | 2490.2 | 2460.7 | 2393.1 | 2286.8 | 2124.0 | 1937.5 | 1731.6 | 1586.4 | 1582.2 | 1496.1 | 1389.8 |
| 42.5° | 2701.1 | 2680.9 | 2637.0 | 2575.4 | 2459.0 | 2345.9 | 2015.9 | 1825.2 | 1817.6 | 1706.3 | 1573.8 |
| 45°   | 2823.5 | 2807.5 | 2782.2 | 2797.3 | 2795.7 | 2774.6 | 2355.2 | 2109.6 | 2085.1 | 1940.8 | 1778.8 |
| 47.5° | 2794.0 | 2779.6 | 2789.8 | 2907.9 | 3070.8 | 3193.1 | 2750.1 | 2400.7 | 2367.8 | 2179.7 | 1997.4 |
| 50°   | 2580.5 | 2586.4 | 2639.5 | 2865.7 | 3231.1 | 3502.8 | 3188.0 | 2732.4 | 2688.5 | 2420.1 | 2205.0 |
| 52.5° | 2191.5 | 2205.8 | 2334.9 | 2651.4 | 3213.4 | 3703.6 | 3583.8 | 3075.0 | 3016.7 | 2654.7 | 2394.0 |
| 55°   | 1740.9 | 1777.1 | 1944.2 | 2276.7 | 2982.1 | 3718.0 | 3882.5 | 3419.3 | 3355.1 | 2875.0 | 2558.5 |
| 57.5° | 1287.7 | 1341.7 | 1535.0 | 1840.4 | 2539.1 | 3491.0 | 4031.9 | 3748.4 | 3670.7 | 3093.5 | 2732.4 |
| 60°   | 816.8  | 849.8  | 1072.5 | 1432.8 | 1943.4 | 2935.7 | 4012.5 | 4028.5 | 3961.0 | 3311.2 | 2913.8 |
| 62.5° | 521.5  | 537.5  | 649.8  | 1021.9 | 1358.6 | 2173.7 | 3800.7 | 4240.3 | 4194.8 | 3509.6 | 3085.9 |
| 65°   | 335.0  | 341.8  | 399.1  | 628.7  | 924.9  | 1312.2 | 3273.3 | 4263.1 | 4269.0 | 3633.6 | 3192.3 |
| 67.5° | 272.6  | 275.9  | 297.0  | 388.2  | 654.0  | 724.9  | 2280.1 | 3939.1 | 4010.8 | 3601.5 | 3156.0 |
| 70°   | 248.1  | 252.3  | 274.2  | 309.7  | 506.3  | 500.4  | 1103.7 | 3296.1 | 3413.4 | 3416.7 | 2994.8 |
| 72.5° | 209.3  | 215.2  | 244.7  | 292.8  | 391.5  | 394.9  | 467.5  | 2347.6 | 2520.6 | 3053.9 | 2752.6 |
| 75°   | 174.7  | 178.1  | 203.4  | 258.2  | 331.6  | 315.6  | 328.3  | 1244.7 | 1494.5 | 2448.8 | 2495.3 |
| 77.5° | 141.8  | 145.1  | 163.7  | 205.9  | 294.5  | 245.6  | 258.2  | 515.6  | 637.1  | 1662.4 | 2039.6 |
| 80°   | 101.3  | 104.6  | 125.7  | 160.3  | 222.8  | 221.1  | 191.6  | 284.4  | 308.8  | 898.7  | 1324.8 |
| 82.5° | 72.6   | 75.1   | 95.4   | 114.8  | 154.4  | 221.9  | 144.3  | 193.2  | 202.5  | 398.3  | 534.2  |
| 85°   | 48.9   | 48.9   | 65.8   | 75.9   | 99.6   | 140.1  | 116.5  | 130.8  | 136.7  | 189.0  | 144.3  |
| 87.5° | 21.1   | 21.1   | 35.4   | 38.8   | 52.3   | 65.0   | 86.9   | 65.8   | 67.5   | 102.1  | 59.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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CATALOG NUMBER: ARCH-M-PA2-40-740-24VDC-T2U

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 810.1  | 810.1  | 810.1  | 810.1  | 810.1 | 810.1 | 810.1 | 810.1 | 810.1 | 810.1 | 810.1 |
| 2.5°  | 806.7  | 807.6  | 809.2  | 814.3  | 817.7 | 822.7 | 825.3 | 828.7 | 828.7 | 827.0 | 827.8 |
| 5°    | 805.0  | 807.6  | 813.5  | 822.7  | 828.7 | 837.9 | 844.7 | 849.8 | 851.4 | 849.8 | 850.6 |
| 7.5°  | 804.2  | 808.4  | 818.5  | 832.0  | 840.5 | 852.3 | 861.6 | 867.5 | 871.7 | 870.0 | 870.8 |
| 10°   | 801.7  | 808.4  | 821.1  | 837.9  | 850.6 | 862.4 | 870.8 | 873.4 | 875.9 | 874.2 | 873.4 |
| 12.5° | 805.0  | 812.6  | 826.1  | 846.4  | 860.7 | 870.0 | 872.5 | 868.3 | 862.4 | 859.0 | 858.2 |
| 15°   | 811.8  | 819.4  | 832.9  | 854.0  | 866.6 | 870.0 | 864.1 | 850.6 | 837.1 | 829.5 | 828.7 |
| 17.5° | 821.1  | 826.1  | 837.1  | 855.7  | 865.8 | 861.6 | 849.8 | 833.7 | 823.6 | 817.7 | 818.5 |
| 20°   | 827.0  | 827.0  | 835.4  | 849.8  | 858.2 | 854.8 | 840.5 | 822.7 | 806.7 | 799.1 | 796.6 |
| 22.5° | 835.4  | 831.2  | 832.0  | 844.7  | 856.5 | 851.4 | 821.1 | 789.8 | 767.1 | 758.6 | 757.8 |
| 25°   | 858.2  | 846.4  | 838.8  | 846.4  | 874.2 | 832.9 | 772.1 | 735.8 | 714.7 | 707.1 | 708.0 |
| 27.5° | 886.0  | 870.0  | 854.0  | 866.6  | 888.6 | 790.7 | 709.7 | 668.3 | 655.7 | 649.8 | 652.3 |
| 30°   | 913.9  | 892.8  | 871.7  | 917.3  | 878.4 | 724.9 | 629.5 | 589.0 | 578.0 | 573.8 | 577.2 |
| 32.5° | 965.4  | 930.8  | 905.4  | 984.8  | 847.2 | 649.8 | 542.6 | 505.5 | 495.3 | 490.3 | 488.6 |
| 35°   | 1051.4 | 1007.6 | 982.2  | 1043.8 | 803.3 | 566.2 | 463.3 | 437.1 | 426.1 | 415.2 | 413.5 |
| 37.5° | 1175.5 | 1122.3 | 1099.5 | 1077.6 | 741.7 | 483.5 | 402.5 | 384.8 | 368.8 | 351.9 | 351.0 |
| 40°   | 1324.0 | 1254.8 | 1237.9 | 1092.8 | 656.5 | 405.9 | 360.3 | 343.4 | 323.2 | 307.2 | 308.0 |
| 42.5° | 1495.3 | 1406.7 | 1370.4 | 1088.6 | 551.0 | 364.5 | 329.9 | 311.4 | 293.7 | 279.3 | 278.5 |
| 45°   | 1678.4 | 1578.0 | 1494.5 | 1059.0 | 446.4 | 335.9 | 311.4 | 289.4 | 271.7 | 255.7 | 254.0 |
| 47.5° | 1880.9 | 1768.7 | 1609.2 | 1001.6 | 368.8 | 315.6 | 300.4 | 269.2 | 253.2 | 243.0 | 243.0 |
| 50°   | 2085.1 | 1951.0 | 1714.7 | 914.7  | 323.2 | 300.4 | 284.4 | 258.2 | 245.6 | 237.1 | 237.1 |
| 52.5° | 2259.8 | 2140.8 | 1801.6 | 810.9  | 294.5 | 287.8 | 273.4 | 253.2 | 239.7 | 232.1 | 231.2 |
| 55°   | 2429.4 | 2317.2 | 1879.2 | 708.0  | 270.9 | 270.9 | 270.9 | 248.9 | 233.7 | 227.0 | 226.2 |
| 57.5° | 2598.2 | 2502.8 | 1960.3 | 640.5  | 249.8 | 256.5 | 265.8 | 243.9 | 228.7 | 222.8 | 221.9 |
| 60°   | 2788.9 | 2725.6 | 2053.9 | 593.2  | 231.2 | 241.3 | 259.1 | 238.0 | 220.2 | 215.2 | 214.3 |
| 62.5° | 2991.4 | 2991.4 | 2139.1 | 526.6  | 214.3 | 228.7 | 248.9 | 230.4 | 212.6 | 208.4 | 207.6 |
| 65°   | 3150.1 | 3218.4 | 2194.0 | 427.0  | 197.5 | 216.0 | 237.1 | 220.2 | 202.5 | 201.7 | 200.0 |
| 67.5° | 3168.6 | 3275.8 | 2159.4 | 322.3  | 182.3 | 202.5 | 225.3 | 209.3 | 192.4 | 192.4 | 189.9 |
| 70°   | 3035.3 | 3144.2 | 2051.4 | 241.3  | 171.3 | 189.0 | 210.1 | 195.8 | 179.7 | 181.4 | 177.2 |
| 72.5° | 2812.5 | 2839.5 | 1783.0 | 190.7  | 158.6 | 174.7 | 191.6 | 180.6 | 166.2 | 166.2 | 160.3 |
| 75°   | 2518.9 | 2368.7 | 1295.3 | 159.5  | 143.5 | 157.8 | 173.0 | 163.7 | 151.0 | 146.8 | 143.5 |
| 77.5° | 2005.0 | 1716.4 | 752.7  | 137.5  | 130.8 | 141.8 | 151.9 | 145.1 | 134.2 | 124.9 | 124.9 |
| 80°   | 1221.9 | 1005.9 | 332.5  | 119.0  | 115.6 | 124.0 | 130.8 | 123.2 | 113.9 | 104.6 | 102.1 |
| 82.5° | 465.0  | 388.2  | 161.2  | 102.1  | 101.3 | 106.3 | 111.4 | 103.8 | 97.0  | 92.8  | 80.2  |
| 85°   | 127.4  | 117.3  | 110.5  | 85.2   | 83.5  | 82.7  | 88.6  | 85.2  | 75.9  | 62.4  | 55.7  |
| 87.5° | 48.1   | 54.8   | 59.9   | 52.3   | 55.7  | 51.5  | 59.1  | 54.0  | 48.1  | 31.2  | 27.8  |
| 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: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 |      |       |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R9:  | -29.7 |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R10: | 46.2  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R11: | 68.8  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R12: | 45.6  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R13: | 69.5  |
| CIE z:                    | 0.2385  | R6:       | 68.3 | R14: | 90.7  |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



### Test Conditions

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-2

| 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: SP1-2101-121-2

**CIE 1931 Chromaticity Diagram**



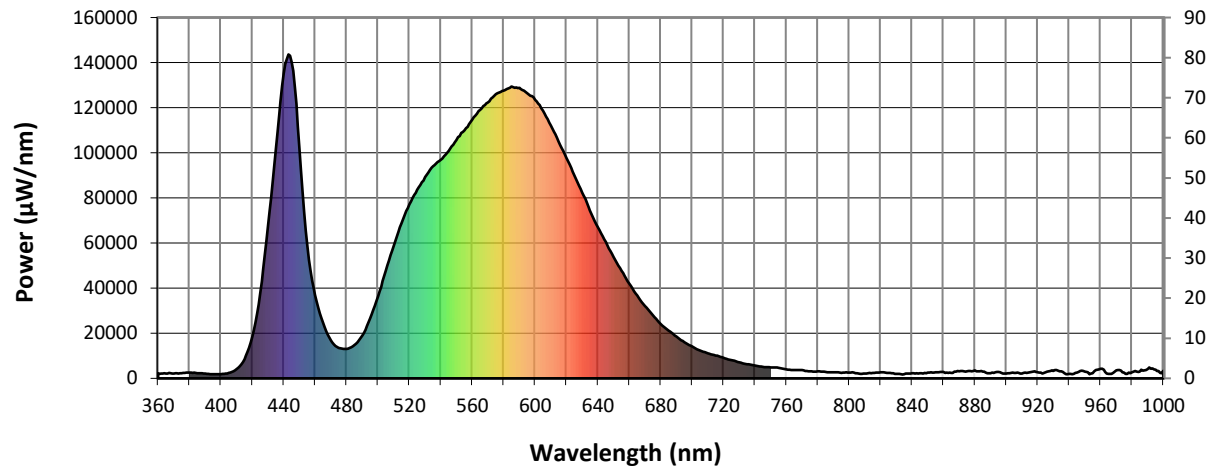
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

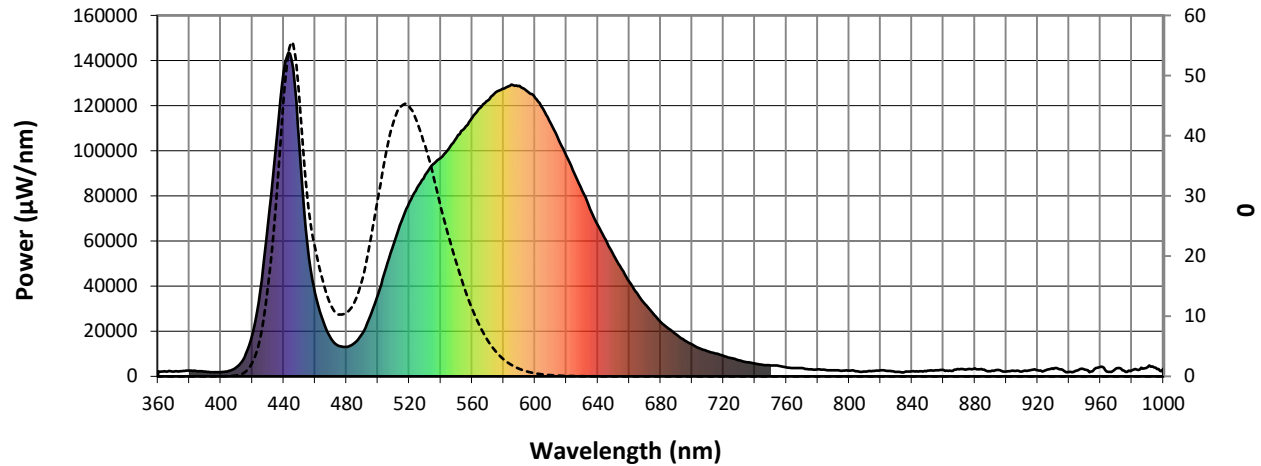


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| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 2.7              | 620       | 97577            | 25.4             | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 4.8              | 625       | 90158            | 19.9             | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 8.0              | 630       | 82240            | 14.9             | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 13.3             | 635       | 74361            | 11.2             | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 20.2             | 640       | 66994            | 8.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 28.5             | 645       | 60405            | 5.8              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 37.4             | 650       | 53806            | 3.9              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 44.9             | 655       | 47610            | 2.7              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 52.6             | 660       | 42018            | 1.8              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 58.4             | 665       | 36742            | 1.2              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.0              | 540       | 96845            | 63.1             | 670       | 32105            | 0.7              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.0              | 545       | 100829           | 67.1             | 675       | 27946            | 0.5              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 0.1              | 550       | 105648           | 71.8             | 680       | 24146            | 0.3              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 0.2              | 555       | 110017           | 75.1             | 685       | 21191            | 0.2              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 0.5              | 560       | 114586           | 77.9             | 690       | 18544            | 0.1              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 1.2              | 565       | 118987           | 79.1             | 695       | 16058            | 0.1              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 2.1              | 570       | 122326           | 79.5             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 2.9              | 575       | 125968           | 78.4             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 2.7              | 580       | 127613           | 75.8             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 2.0              | 585       | 129466           | 71.9             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 1.5              | 590       | 128813           | 66.6             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 1.3              | 595       | 126387           | 59.9             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 1.0              | 600       | 123477           | 53.2             | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 1.1              | 605       | 118718           | 46.0             | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 1.2              | 610       | 112091           | 38.5             | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 1.7              | 615       | 105039           | 31.7             | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10425.8

S/P: 1.47

| 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       | 2304             | 0.0              | 490       | 19043            | 29.3             | 620       | 97577            | 1.2              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 43.0             | 625       | 90158            | 0.8              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 60.8             | 630       | 82240            | 0.5              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 81.1             | 635       | 74361            | 0.3              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 99.6             | 640       | 66994            | 0.2              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 113.9            | 645       | 60405            | 0.1              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 122.6            | 650       | 53806            | 0.1              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 125.0            | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 123.1            | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.1              | 535       | 94097            | 117.3            | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 107.0            | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.9              | 545       | 100829           | 96.7             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 3.0              | 550       | 105648           | 86.4             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 9.3              | 555       | 110017           | 75.2             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 23.0             | 560       | 114586           | 64.0             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 45.7             | 565       | 118987           | 53.4             | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 75.5             | 570       | 122326           | 43.2             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 93.8             | 575       | 125968           | 34.3             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 79.3             | 580       | 127613           | 26.3             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 51.3             | 585       | 129466           | 19.8             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 35.6             | 590       | 128813           | 14.3             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 26.0             | 595       | 126387           | 10.1             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 19.3             | 600       | 123477           | 7.0              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 16.8             | 605       | 118718           | 4.7              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 17.7             | 610       | 112091           | 3.0              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 21.4             | 615       | 105039           | 1.9              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



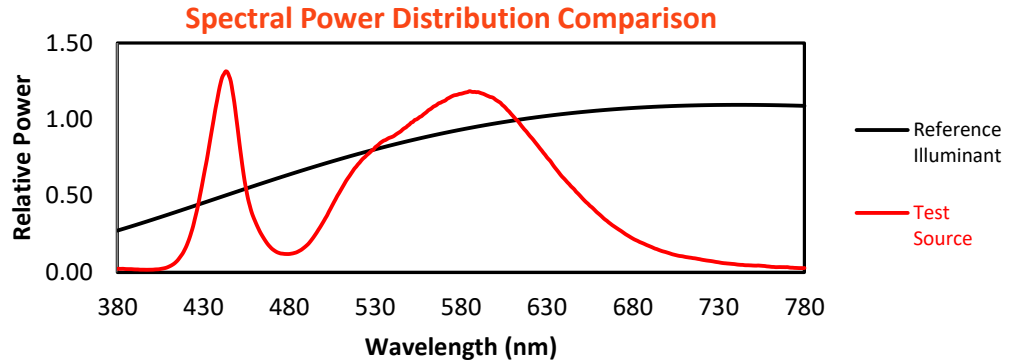
**Melanopic Lumens: 3927.2**

**M/P: 0.55**

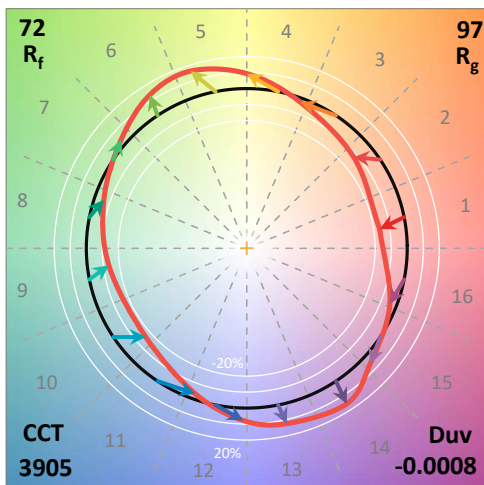
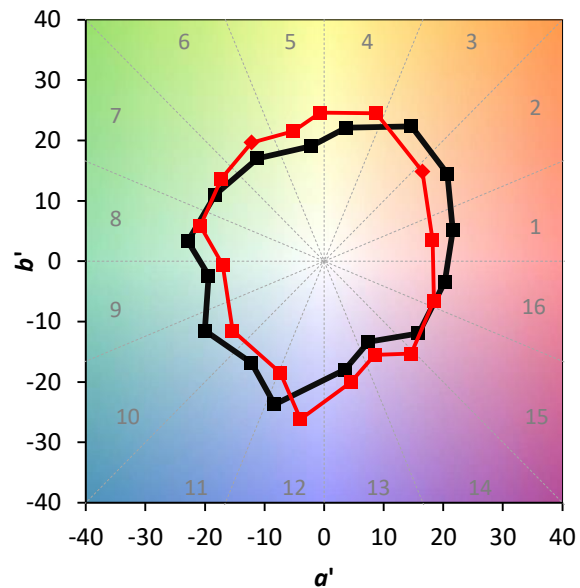
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 15.8             | 620       | 97577            | 0.1              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 22.0             | 625       | 90158            | 0.0              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 29.2             | 630       | 82240            | 0.0              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 36.6             | 635       | 74361            | 0.0              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 42.2             | 640       | 66994            | 0.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 44.9             | 645       | 60405            | 0.0              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 44.9             | 650       | 53806            | 0.0              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 42.4             | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 38.6             | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 33.9             | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 28.3             | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.6              | 545       | 100829           | 23.4             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 2.1              | 550       | 105648           | 19.0             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 5.9              | 555       | 110017           | 14.8             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 14.3             | 560       | 114586           | 11.3             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 27.3             | 565       | 118987           | 8.4              | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 45.1             | 570       | 122326           | 6.0              | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 55.3             | 575       | 125968           | 4.2              | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 47.2             | 580       | 127613           | 2.9              | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 30.8             | 585       | 129466           | 1.9              | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 21.7             | 590       | 128813           | 1.3              | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 16.1             | 595       | 126387           | 0.8              | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 12.0             | 600       | 123477           | 0.5              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 10.3             | 605       | 118718           | 0.3              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 10.5             | 610       | 112091           | 0.2              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 12.1             | 615       | 105039           | 0.1              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

### Summary

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



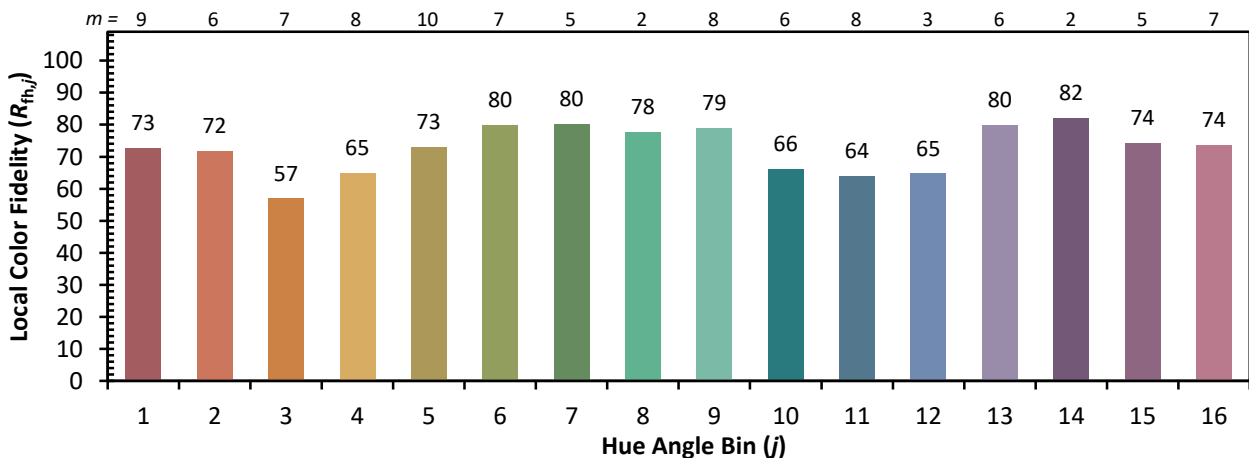
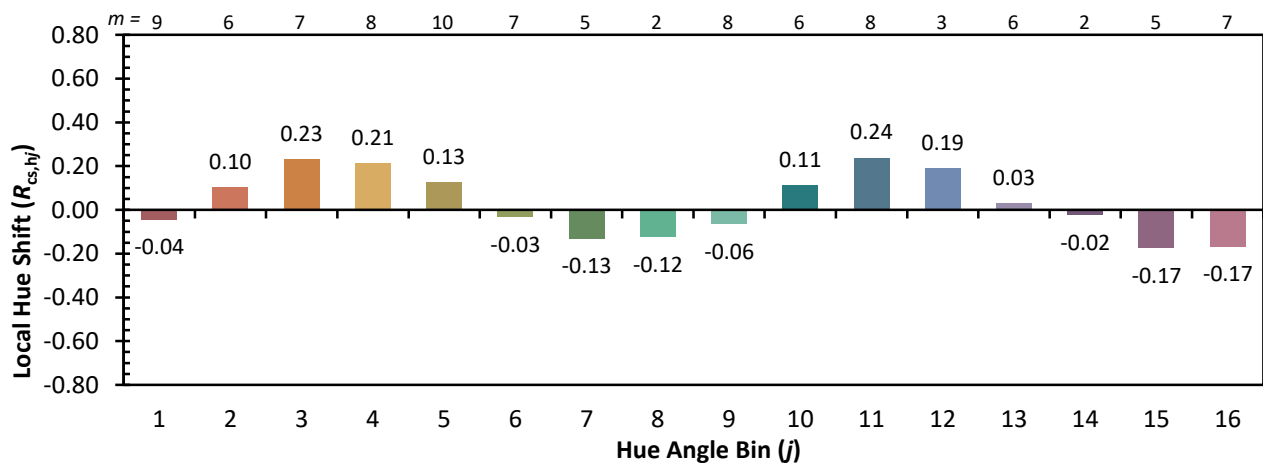
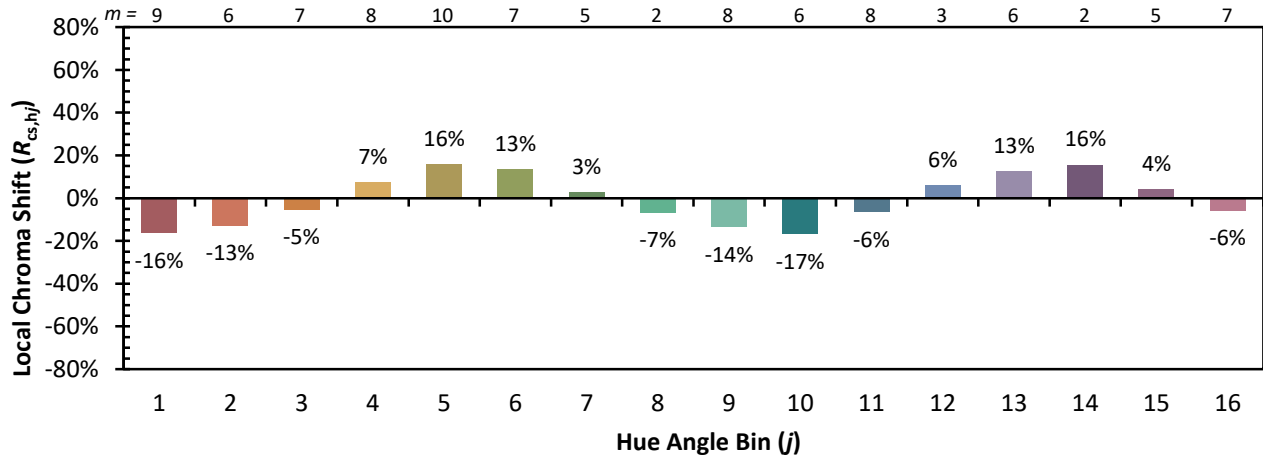
### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**


(END OF REPORT)