

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: P800885

Luminaire Tested: **ARCH-M-PA2-40-750-24VDC-T4W**

Issue Date: 5/19/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P800885  
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-PA2-40-750-24VDC-T4W  
Description: ARCHEON-M ROADWAY AND AREA LUMINAIRE  
(2) 70 CRI, 5000K, 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: 6415 lumens  
Efficiency: N/A  
Efficacy: 178.2 lumens/watt  
Luminous Opening: Rectangular (W 0.75' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B1 - U0 - G2

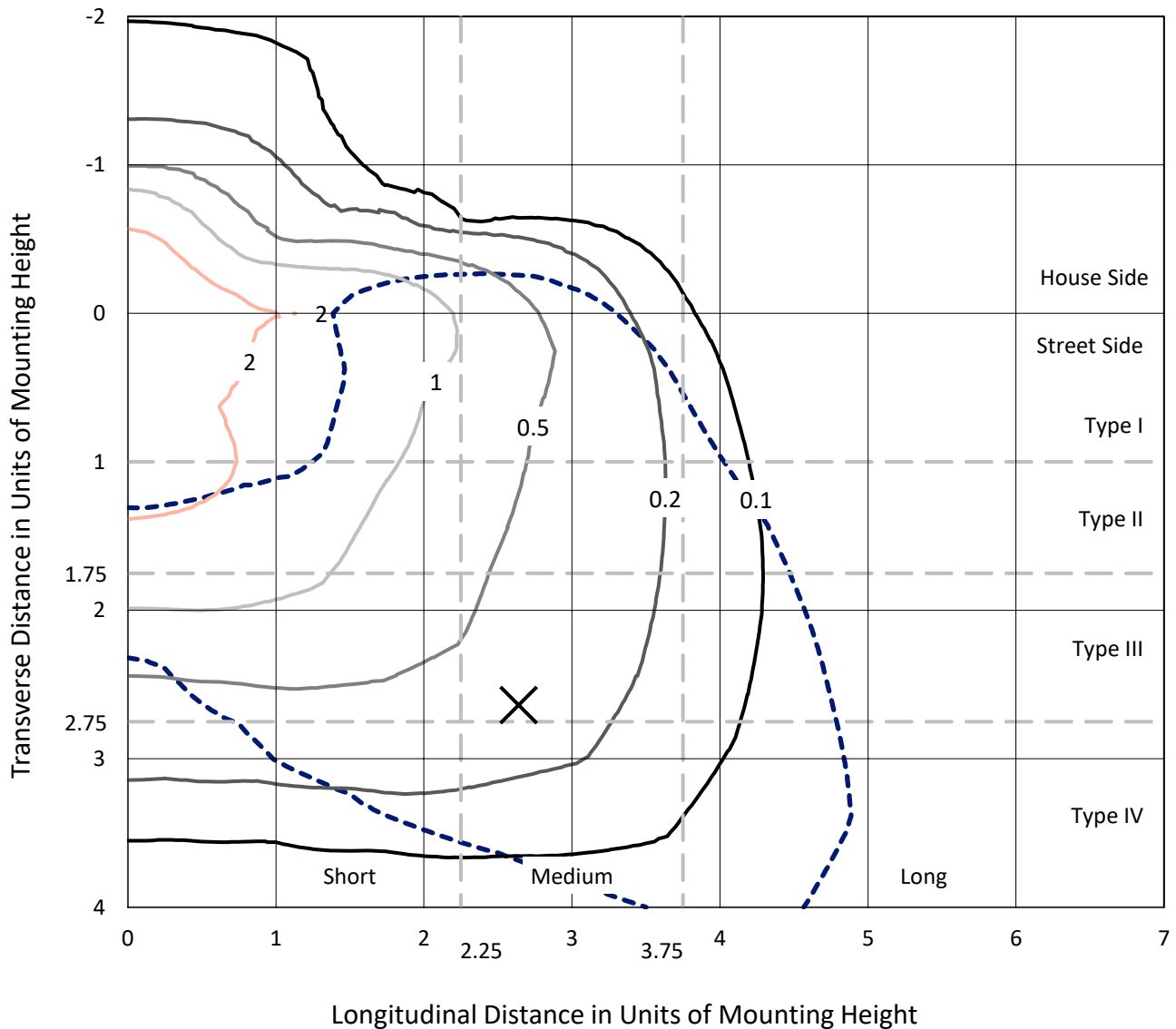
Input Watts (W): 36  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

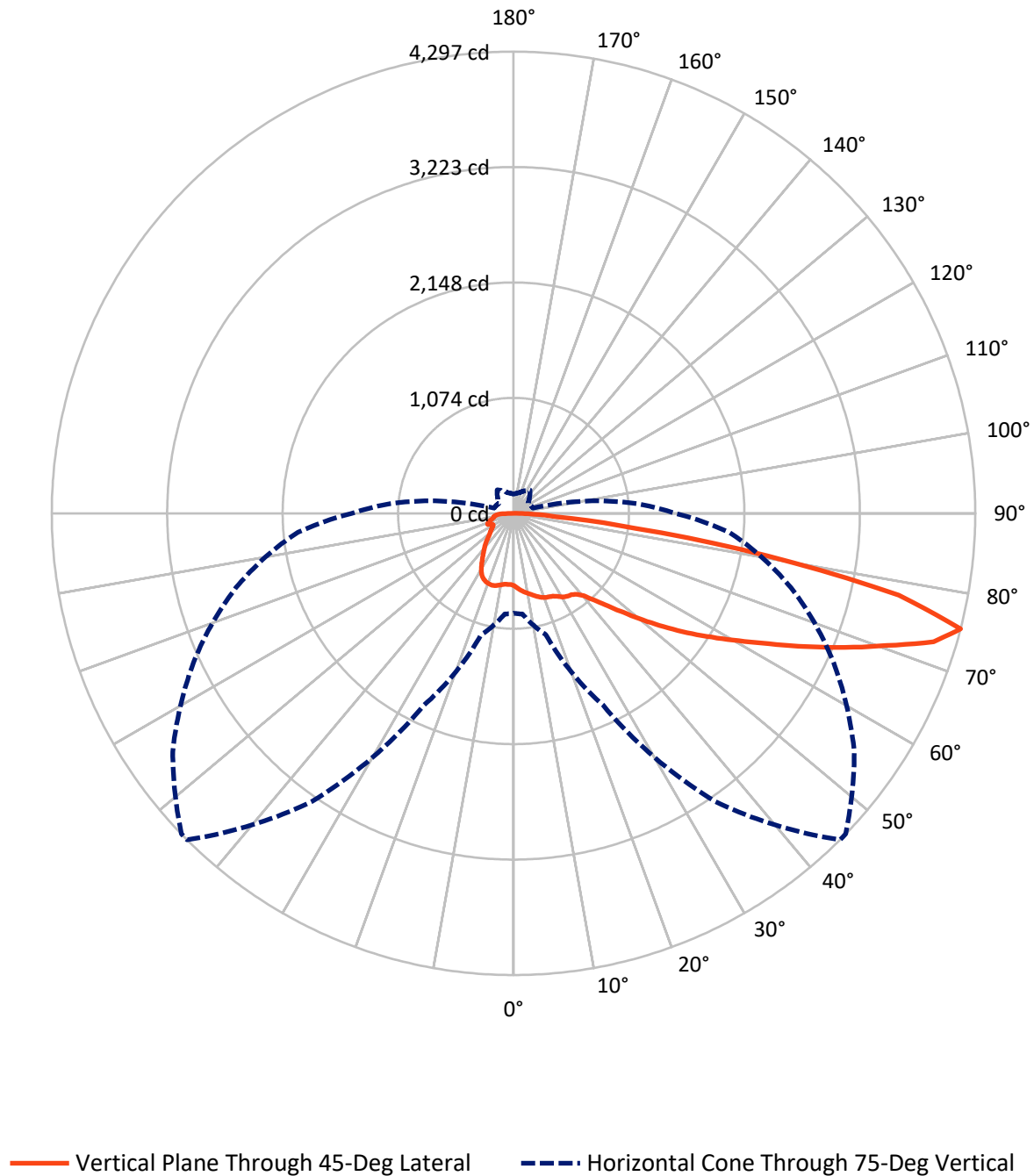
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 3.5 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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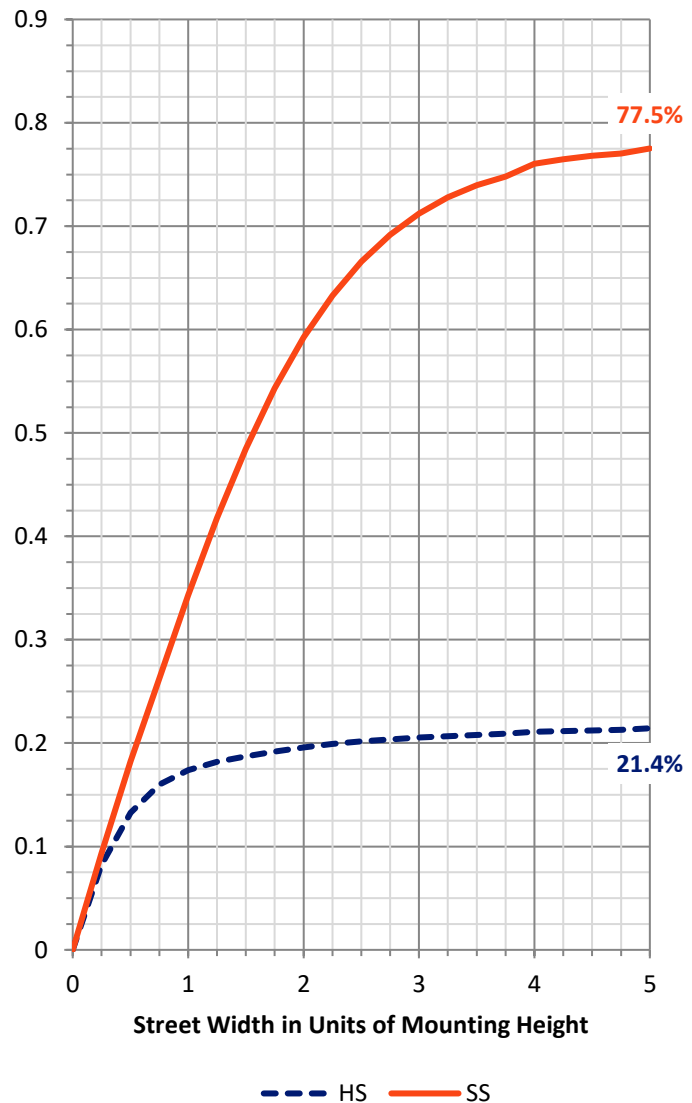
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1417.7   | 0.0    | 1417.7 |
|                    | % Fixture | 22.1     | 0.0    | 22.1   |
| <b>Street Side</b> | Lumens    | 4997.3   | 0.0    | 4997.3 |
|                    | % Fixture | 77.9     | 0.0    | 77.9   |
| <b>Total</b>       | Lumens    | 6415.0   | 0.0    | 6415.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 66.6   | 1.0       |
| 10°-20°   | 212.0  | 3.3       |
| 20°-30°   | 361.5  | 5.6       |
| 30°-40°   | 506.5  | 7.9       |
| 40°-50°   | 744.1  | 11.6      |
| 50°-60°   | 1184.3 | 18.5      |
| 60°-70°   | 1684.6 | 26.3      |
| 70°-80°   | 1410.5 | 22.0      |
| 80°-90°   | 244.8  | 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°    | 6415.0 | 100.0     |
| 0°-180°   | 6415.0 | 100.0     |



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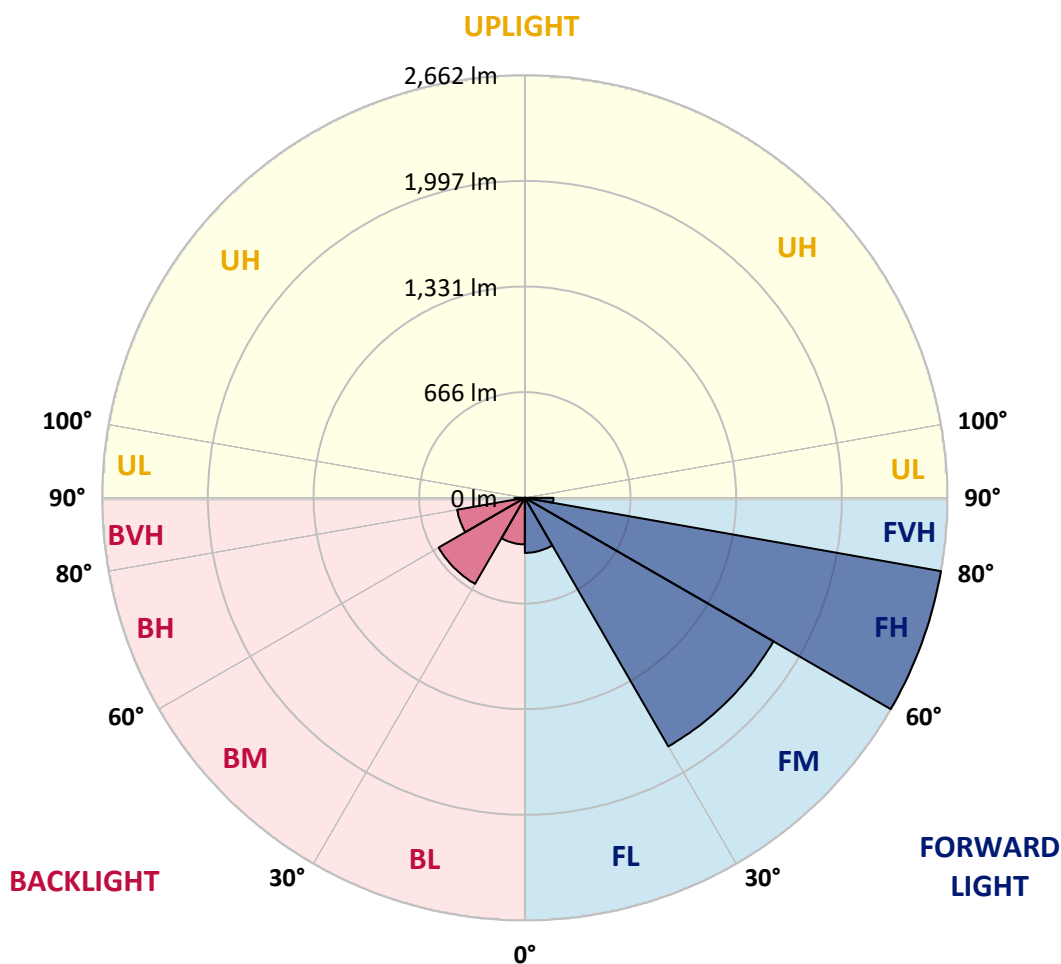
CATALOG NUMBER: ARCH-M-PA2-40-750-24VDC-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 346.8  | 5.4       |                         |      |         |
| FM   | (30°-60°)   | 1808.2 | 28.2      |                         |      |         |
| FH   | (60°-80°)   | 2662.4 | 41.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 180.0  | 2.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 293.4  | 4.6       | B1/500                  |      |         |
| BM   | (30°-60°)   | 626.7  | 9.8       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 432.8  | 6.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 64.8   | 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°    | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  | 673.7  |
| 2.5°  | 712.3  | 708.9  | 707.1  | 707.1  | 700.3  | 696.0  | 695.1  | 689.1  | 684.0  | 678.9  | 674.6  |
| 5°    | 753.4  | 750.9  | 745.7  | 741.4  | 732.0  | 720.0  | 718.3  | 705.4  | 692.6  | 680.6  | 670.3  |
| 7.5°  | 791.1  | 786.0  | 780.0  | 771.4  | 756.0  | 739.7  | 737.1  | 719.1  | 701.1  | 683.1  | 669.4  |
| 10°   | 822.9  | 817.7  | 809.1  | 797.1  | 777.4  | 757.7  | 755.1  | 736.3  | 717.4  | 696.0  | 676.3  |
| 12.5° | 852.9  | 848.6  | 835.7  | 819.4  | 796.3  | 778.3  | 775.7  | 759.4  | 739.7  | 715.7  | 690.0  |
| 15°   | 878.6  | 874.3  | 860.6  | 841.7  | 815.1  | 801.4  | 798.0  | 782.6  | 762.9  | 737.1  | 710.6  |
| 17.5° | 891.4  | 891.4  | 876.9  | 856.3  | 831.4  | 821.1  | 818.6  | 799.7  | 781.7  | 756.9  | 730.3  |
| 20°   | 895.7  | 897.4  | 887.1  | 862.3  | 840.9  | 836.6  | 834.0  | 818.6  | 798.0  | 774.0  | 749.1  |
| 22.5° | 898.3  | 901.7  | 893.1  | 864.9  | 846.9  | 844.3  | 842.6  | 832.3  | 816.0  | 792.9  | 768.0  |
| 25°   | 906.9  | 906.9  | 900.9  | 869.1  | 854.6  | 853.7  | 853.7  | 847.7  | 836.6  | 816.9  | 792.0  |
| 27.5° | 919.7  | 918.9  | 911.1  | 878.6  | 871.7  | 874.3  | 873.4  | 872.6  | 864.9  | 845.1  | 818.6  |
| 30°   | 941.1  | 941.1  | 932.6  | 897.4  | 893.1  | 904.3  | 905.1  | 906.9  | 894.9  | 864.0  | 842.6  |
| 32.5° | 973.7  | 970.3  | 961.7  | 916.3  | 909.4  | 919.7  | 921.4  | 920.6  | 910.3  | 881.1  | 870.9  |
| 35°   | 1074.0 | 1066.3 | 1035.4 | 958.3  | 924.0  | 930.0  | 930.9  | 935.1  | 936.9  | 913.7  | 908.6  |
| 37.5° | 1249.7 | 1239.4 | 1192.3 | 1057.7 | 970.3  | 955.7  | 954.9  | 966.0  | 975.4  | 954.9  | 954.9  |
| 40°   | 1440.9 | 1432.3 | 1404.9 | 1229.1 | 1056.0 | 1008.0 | 1004.6 | 1014.9 | 1026.9 | 1012.3 | 1016.6 |
| 42.5° | 1605.4 | 1612.3 | 1614.9 | 1410.9 | 1184.6 | 1105.7 | 1096.3 | 1081.7 | 1100.6 | 1087.7 | 1104.9 |
| 45°   | 1728.9 | 1725.4 | 1772.6 | 1596.9 | 1350.9 | 1228.3 | 1215.4 | 1176.0 | 1200.0 | 1199.1 | 1236.9 |
| 47.5° | 1860.0 | 1854.0 | 1873.7 | 1771.7 | 1540.3 | 1378.3 | 1358.6 | 1300.3 | 1336.3 | 1361.1 | 1423.7 |
| 50°   | 1984.3 | 1986.0 | 1992.9 | 1909.7 | 1746.0 | 1560.9 | 1536.0 | 1458.0 | 1509.4 | 1561.7 | 1650.0 |
| 52.5° | 2146.3 | 2134.3 | 2125.7 | 2070.9 | 1976.6 | 1751.1 | 1734.9 | 1645.7 | 1717.7 | 1779.4 | 1896.9 |
| 55°   | 2287.7 | 2280.0 | 2274.9 | 2272.3 | 2169.4 | 1961.1 | 1944.0 | 1851.4 | 1955.1 | 1998.9 | 2172.0 |
| 57.5° | 2438.6 | 2434.3 | 2461.7 | 2505.4 | 2464.3 | 2174.6 | 2156.6 | 2067.4 | 2183.1 | 2214.0 | 2470.3 |
| 60°   | 2549.1 | 2551.7 | 2627.1 | 2738.6 | 2710.3 | 2406.0 | 2384.6 | 2305.7 | 2405.1 | 2432.6 | 2768.6 |
| 62.5° | 2550.0 | 2575.7 | 2750.6 | 2950.3 | 2982.9 | 2672.6 | 2647.7 | 2562.0 | 2633.1 | 2633.1 | 3036.0 |
| 65°   | 2306.6 | 2335.7 | 2728.3 | 3002.6 | 3258.9 | 2989.7 | 2965.7 | 2831.1 | 2857.7 | 2821.7 | 3287.1 |
| 67.5° | 2064.0 | 2098.3 | 2467.7 | 3006.9 | 3452.6 | 3329.1 | 3300.9 | 3100.3 | 3054.9 | 2964.0 | 3462.9 |
| 70°   | 1902.9 | 1926.9 | 2235.4 | 2951.1 | 3569.1 | 3684.0 | 3662.6 | 3355.7 | 3210.0 | 3083.1 | 3426.0 |
| 72.5° | 1602.0 | 1593.4 | 1888.3 | 2686.3 | 3634.3 | 4086.9 | 4068.9 | 3633.4 | 3344.6 | 3026.6 | 2922.0 |
| 75°   | 930.0  | 940.3  | 1171.7 | 1968.0 | 3276.0 | 4296.9 | 4295.1 | 3870.9 | 3285.4 | 2673.4 | 2013.4 |
| 77.5° | 268.3  | 276.0  | 384.9  | 864.9  | 2071.7 | 3665.1 | 3782.6 | 3540.0 | 2777.1 | 1905.4 | 1044.0 |
| 80°   | 117.4  | 123.4  | 167.1  | 288.0  | 892.3  | 2394.0 | 2496.9 | 2394.0 | 1674.9 | 874.3  | 409.7  |
| 82.5° | 69.4   | 73.7   | 108.9  | 178.3  | 427.7  | 1139.1 | 1278.0 | 1116.0 | 722.6  | 371.1  | 169.7  |
| 85°   | 39.4   | 41.1   | 62.6   | 113.1  | 269.1  | 398.6  | 447.4  | 419.1  | 352.3  | 210.9  | 89.1   |
| 87.5° | 18.0   | 18.9   | 30.9   | 53.1   | 150.9  | 134.6  | 139.7  | 185.1  | 204.0  | 128.6  | 44.6   |
| 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-PA2-40-750-24VDC-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 673.7  | 673.7  | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 |
| 2.5°  | 672.9  | 670.3  | 665.1 | 663.4 | 660.9 | 661.7 | 662.6 | 662.6 | 663.4 | 660.9 | 660.9 |
| 5°    | 666.0  | 661.7  | 656.6 | 656.6 | 656.6 | 663.4 | 669.4 | 672.9 | 674.6 | 674.6 | 672.9 |
| 7.5°  | 663.4  | 658.3  | 652.3 | 654.0 | 655.7 | 664.3 | 675.4 | 686.6 | 690.0 | 690.0 | 688.3 |
| 10°   | 668.6  | 663.4  | 659.1 | 661.7 | 666.0 | 672.9 | 681.4 | 691.7 | 700.3 | 701.1 | 700.3 |
| 12.5° | 680.6  | 674.6  | 670.3 | 675.4 | 680.6 | 684.9 | 689.1 | 693.4 | 704.6 | 706.3 | 706.3 |
| 15°   | 700.3  | 694.3  | 689.1 | 693.4 | 695.1 | 695.1 | 695.1 | 695.1 | 706.3 | 708.0 | 708.0 |
| 17.5° | 720.0  | 714.9  | 709.7 | 710.6 | 705.4 | 698.6 | 696.0 | 695.1 | 701.1 | 706.3 | 707.1 |
| 20°   | 738.9  | 734.6  | 729.4 | 720.9 | 708.0 | 695.1 | 690.9 | 690.9 | 694.3 | 702.0 | 702.0 |
| 22.5° | 759.4  | 754.3  | 745.7 | 726.0 | 704.6 | 686.6 | 682.3 | 684.9 | 689.1 | 699.4 | 698.6 |
| 25°   | 782.6  | 775.7  | 761.1 | 724.3 | 693.4 | 672.0 | 672.9 | 680.6 | 688.3 | 699.4 | 699.4 |
| 27.5° | 808.3  | 798.9  | 769.7 | 710.6 | 668.6 | 648.0 | 655.7 | 673.7 | 684.9 | 696.9 | 698.6 |
| 30°   | 836.6  | 828.0  | 776.6 | 686.6 | 628.3 | 609.4 | 628.3 | 657.4 | 674.6 | 685.7 | 688.3 |
| 32.5° | 870.9  | 864.0  | 782.6 | 655.7 | 576.0 | 559.7 | 587.1 | 623.1 | 650.6 | 663.4 | 666.0 |
| 35°   | 913.7  | 906.9  | 790.3 | 620.6 | 527.1 | 510.0 | 534.9 | 571.7 | 607.7 | 624.0 | 629.1 |
| 37.5° | 969.4  | 959.1  | 797.1 | 582.9 | 486.0 | 466.3 | 478.3 | 511.7 | 544.3 | 566.6 | 572.6 |
| 40°   | 1040.6 | 1024.3 | 803.1 | 540.0 | 450.0 | 427.7 | 432.0 | 448.3 | 467.1 | 486.9 | 494.6 |
| 42.5° | 1140.9 | 1108.3 | 804.0 | 494.6 | 413.1 | 392.6 | 390.9 | 396.0 | 396.0 | 396.0 | 398.6 |
| 45°   | 1280.6 | 1218.9 | 805.7 | 451.7 | 375.4 | 354.0 | 348.9 | 347.1 | 334.3 | 309.4 | 307.7 |
| 47.5° | 1457.1 | 1363.7 | 813.4 | 415.7 | 336.0 | 317.1 | 310.3 | 303.4 | 279.4 | 253.7 | 248.6 |
| 50°   | 1683.4 | 1531.7 | 828.9 | 381.4 | 302.6 | 289.7 | 281.1 | 264.9 | 238.3 | 218.6 | 213.4 |
| 52.5° | 1944.0 | 1731.4 | 843.4 | 345.4 | 277.7 | 269.1 | 258.9 | 239.1 | 210.9 | 198.9 | 197.1 |
| 55°   | 2243.1 | 1954.3 | 872.6 | 313.7 | 256.3 | 250.3 | 240.9 | 222.0 | 200.6 | 192.0 | 191.1 |
| 57.5° | 2549.1 | 2203.7 | 913.7 | 285.4 | 235.7 | 232.3 | 232.3 | 216.0 | 202.3 | 198.9 | 198.9 |
| 60°   | 2844.0 | 2418.0 | 882.0 | 258.9 | 216.9 | 218.6 | 234.9 | 230.6 | 220.3 | 224.6 | 227.1 |
| 62.5° | 3072.9 | 2544.0 | 715.7 | 237.4 | 203.1 | 218.6 | 260.6 | 260.6 | 248.6 | 246.9 | 246.9 |
| 65°   | 3170.6 | 2542.3 | 503.1 | 221.1 | 198.0 | 240.0 | 290.6 | 276.9 | 245.1 | 233.1 | 230.6 |
| 67.5° | 3145.7 | 2430.9 | 347.1 | 210.0 | 196.3 | 262.3 | 304.3 | 265.7 | 229.7 | 219.4 | 211.7 |
| 70°   | 2927.1 | 2195.1 | 267.4 | 199.7 | 193.7 | 252.9 | 300.0 | 252.9 | 217.7 | 208.3 | 201.4 |
| 72.5° | 2361.4 | 1760.6 | 222.0 | 189.4 | 183.4 | 234.0 | 285.4 | 240.9 | 208.3 | 198.0 | 191.1 |
| 75°   | 1506.0 | 1107.4 | 187.7 | 175.7 | 163.7 | 210.0 | 265.7 | 228.9 | 198.0 | 184.3 | 179.1 |
| 77.5° | 724.3  | 477.4  | 163.7 | 159.4 | 147.4 | 194.6 | 246.0 | 213.4 | 184.3 | 173.1 | 169.7 |
| 80°   | 293.1  | 218.6  | 142.3 | 143.1 | 135.4 | 185.1 | 232.3 | 198.9 | 170.6 | 158.6 | 152.6 |
| 82.5° | 152.6  | 126.9  | 120.0 | 123.4 | 123.4 | 176.6 | 222.0 | 186.9 | 158.6 | 153.4 | 133.7 |
| 85°   | 82.3   | 78.9   | 92.6  | 99.4  | 107.1 | 159.4 | 206.6 | 174.0 | 144.9 | 124.3 | 120.0 |
| 87.5° | 40.3   | 51.4   | 52.3  | 60.0  | 74.6  | 127.7 | 174.0 | 145.7 | 120.9 | 100.3 | 98.6  |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-8

Luminaire Tested: IFLD-S-SA2E-750-U-T2

Test Date: 03/05/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-8  
 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-SA2E-750-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4832   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2115 | R1:       | 69.5 | R9:  | -27.7 |
| CIE v':                   | 0.4900 | R2:       | 75.7 | R10: | 42.9  |
| Duv:                      | 0.0025 | R3:       | 80.8 | R11: | 71.2  |
| CIE x:                    | 0.3506 | R4:       | 73.2 | R12: | 44.6  |
| CIE y:                    | 0.3611 | R5:       | 70.3 | R13: | 69.8  |
| CIE z:                    | 0.2884 | R6:       | 67.3 | R14: | 89.2  |
| Peak Wavelength (nm):     | 444    | R7:       | 79.9 |      |       |
| Dominant Wavelength (nm): | 572    | R8:       | 57.2 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 72.3   |           |      |      |       |
| Rg:                       | 96.7   |           |      |      |       |



### Test Conditions

Stabilization Time: 47M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.9/31%  
 Sphere Temperature (°C): 24.4

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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**



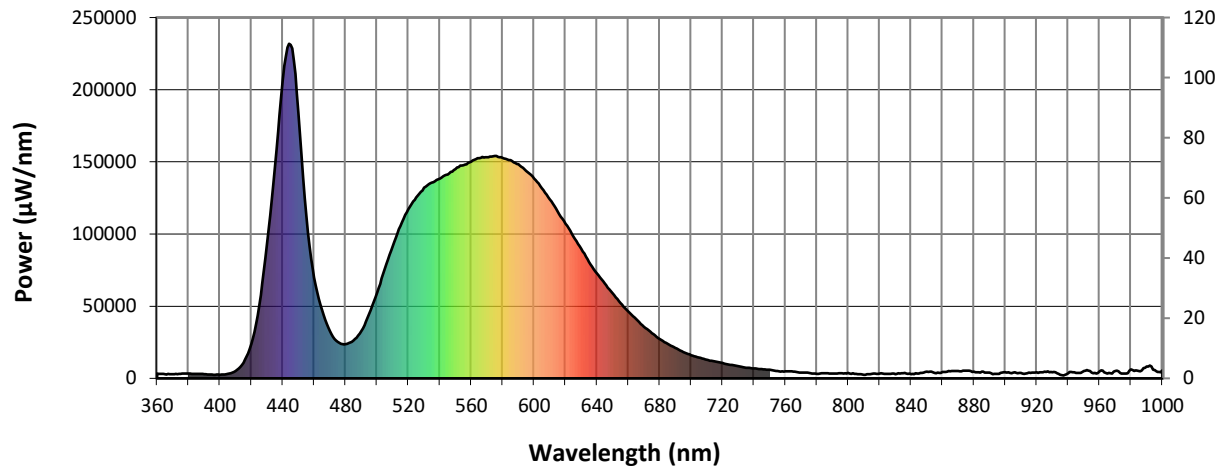
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 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       | 3353             | 0.0              | 490       | 32805            | 4.7              | 620       | 107081           | 27.9             | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 8.1              | 625       | 98536            | 21.7             | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 13.1             | 630       | 89745            | 16.2             | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 21.2             | 635       | 80639            | 12.1             | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 31.4             | 640       | 72702            | 8.7              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 43.7             | 645       | 65679            | 6.3              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 56.9             | 650       | 59001            | 4.3              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 67.2             | 655       | 52143            | 3.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 77.8             | 660       | 46377            | 1.9              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.0              | 535       | 135784           | 84.2             | 665       | 41029            | 1.3              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.0              | 540       | 138313           | 90.1             | 670       | 35613            | 0.8              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 0.0              | 545       | 141311           | 94.1             | 675       | 31345            | 0.5              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 0.1              | 550       | 144916           | 98.5             | 680       | 27204            | 0.3              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 0.3              | 555       | 147753           | 100.9            | 685       | 23938            | 0.2              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 0.7              | 560       | 150201           | 102.1            | 690       | 21157            | 0.1              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 1.7              | 565       | 152596           | 101.5            | 695       | 18244            | 0.1              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 3.2              | 570       | 153241           | 99.6             | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 4.8              | 575       | 154079           | 95.9             | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 4.8              | 580       | 152658           | 90.7             | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 3.8              | 585       | 151127           | 84.0             | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 2.9              | 590       | 148249           | 76.6             | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 2.4              | 595       | 143567           | 68.1             | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 2.0              | 600       | 138422           | 59.7             | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 2.0              | 605       | 131783           | 51.0             | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 2.3              | 610       | 124021           | 42.6             | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 3.1              | 615       | 115646           | 34.9             | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 15745.7

S/P: 1.71

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3353             | 0.0              | 490       | 32805            | 50.5             | 620       | 107081           | 1.3              | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 72.0             | 625       | 98536            | 0.8              | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 99.1             | 630       | 89745            | 0.5              | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 128.8            | 635       | 80639            | 0.3              | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 155.1            | 640       | 72702            | 0.2              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 175.1            | 645       | 65679            | 0.1              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 186.4            | 650       | 59001            | 0.1              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 187.3            | 655       | 52143            | 0.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 182.2            | 660       | 46377            | 0.0              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.1              | 535       | 135784           | 169.2            | 665       | 41029            | 0.0              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.3              | 540       | 138313           | 152.8            | 670       | 35613            | 0.0              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 1.1              | 545       | 141311           | 135.5            | 675       | 31345            | 0.0              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 3.9              | 550       | 144916           | 118.5            | 680       | 27204            | 0.0              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 12.4             | 555       | 147753           | 101.0            | 685       | 23938            | 0.0              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 31.7             | 560       | 150201           | 84.0             | 690       | 21157            | 0.0              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 65.7             | 565       | 152596           | 68.5             | 695       | 18244            | 0.0              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 115.3            | 570       | 153241           | 54.1             | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 154.7            | 575       | 154079           | 42.0             | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 142.8            | 580       | 152658           | 31.5             | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 98.4             | 585       | 151127           | 23.1             | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 67.5             | 590       | 148249           | 16.5             | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 50.1             | 595       | 143567           | 11.4             | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 37.5             | 600       | 138422           | 7.8              | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 31.5             | 605       | 131783           | 5.2              | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 32.0             | 610       | 124021           | 3.4              | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 38.0             | 615       | 115646           | 2.1              | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 6193.8**

**M/P: 0.67**

| 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       | 3353             | 0.0              | 490       | 32805            | 27.3             | 620       | 107081           | 0.1              | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 36.8             | 625       | 98536            | 0.1              | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 47.6             | 630       | 89745            | 0.0              | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 58.2             | 635       | 80639            | 0.0              | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 65.7             | 640       | 72702            | 0.0              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 69.0             | 645       | 65679            | 0.0              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 68.3             | 650       | 59001            | 0.0              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 63.5             | 655       | 52143            | 0.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 57.1             | 660       | 46377            | 0.0              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.1              | 535       | 135784           | 48.9             | 665       | 41029            | 0.0              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.2              | 540       | 138313           | 40.5             | 670       | 35613            | 0.0              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 0.7              | 545       | 141311           | 32.8             | 675       | 31345            | 0.0              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 2.7              | 550       | 144916           | 26.0             | 680       | 27204            | 0.0              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 7.9              | 555       | 147753           | 19.9             | 685       | 23938            | 0.0              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 19.7             | 560       | 150201           | 14.8             | 690       | 21157            | 0.0              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 39.2             | 565       | 152596           | 10.7             | 695       | 18244            | 0.0              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 68.9             | 570       | 153241           | 7.5              | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 91.1             | 575       | 154079           | 5.1              | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 84.9             | 580       | 152658           | 3.4              | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 59.0             | 585       | 151127           | 2.2              | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 41.2             | 590       | 148249           | 1.5              | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 31.0             | 595       | 143567           | 0.9              | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 23.3             | 600       | 138422           | 0.6              | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 19.2             | 605       | 131783           | 0.4              | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 19.1             | 610       | 124021           | 0.2              | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 21.6             | 615       | 115646           | 0.1              | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

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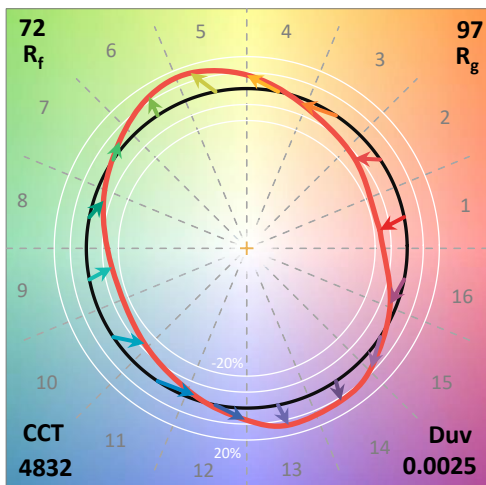
TM-30-18

### Summary

$R_f = 72.3$   
 $R_g = 96.7$   
 $CIE R_a = 71.7$   
 $R_g = -27.7$

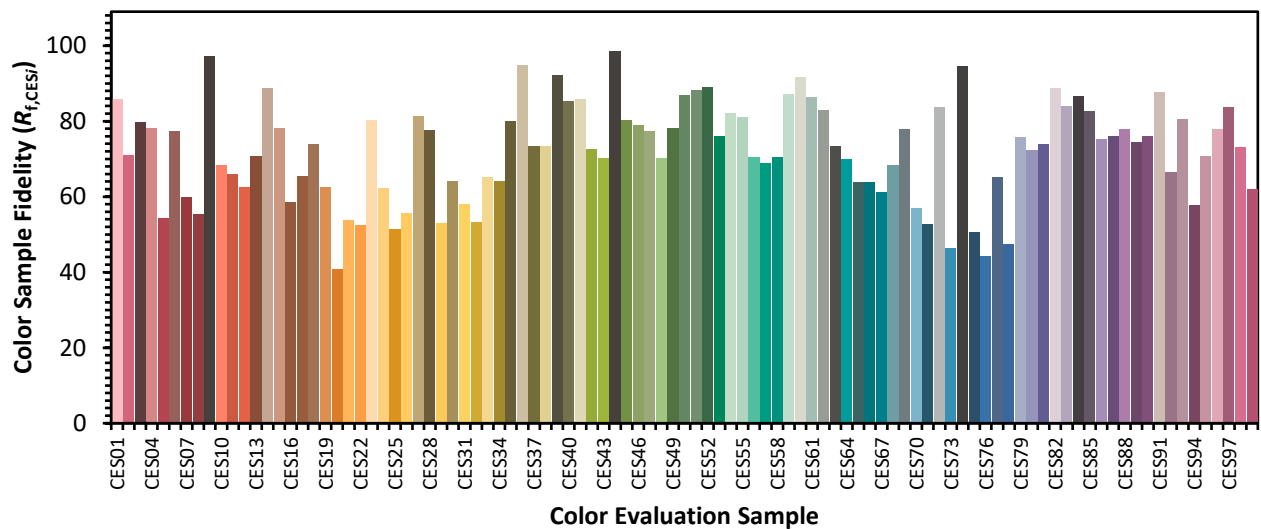


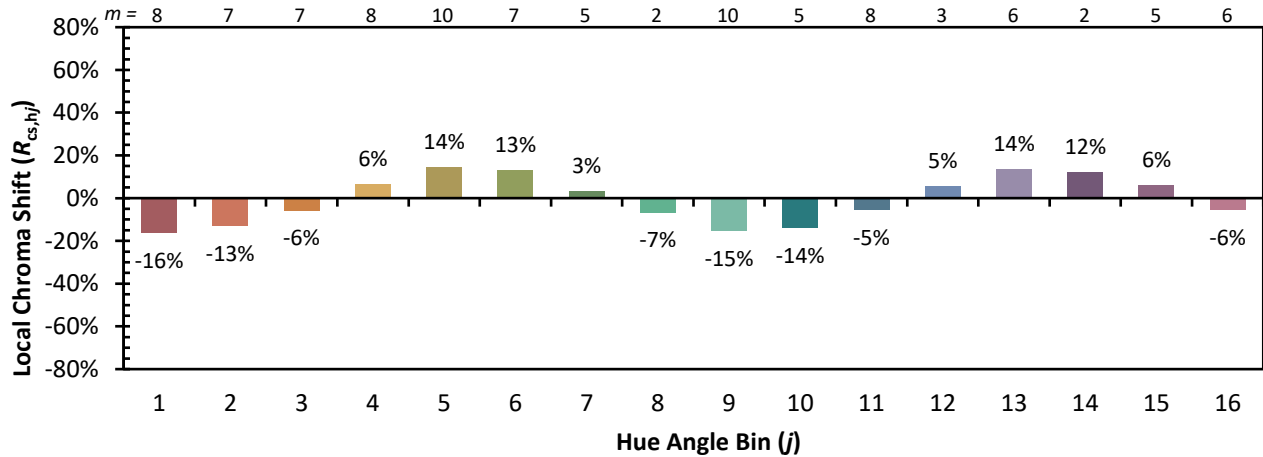
### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 88 | CES76 = 44 |
| CES02 = 60 | CES27 = 81 | CES52 = 89 | CES77 = 65 |
| CES03 = 30 | CES28 = 78 | CES53 = 76 | CES78 = 47 |
| CES04 = 69 | CES29 = 53 | CES54 = 82 | CES79 = 76 |
| CES05 = 46 | CES30 = 64 | CES55 = 81 | CES80 = 72 |
| CES06 = 50 | CES31 = 58 | CES56 = 70 | CES81 = 74 |
| CES07 = 39 | CES32 = 53 | CES57 = 69 | CES82 = 89 |
| CES08 = 38 | CES33 = 65 | CES58 = 70 | CES83 = 84 |
| CES09 = 29 | CES34 = 64 | CES59 = 87 | CES84 = 87 |
| CES10 = 73 | CES35 = 80 | CES60 = 92 | CES85 = 83 |
| CES11 = 56 | CES36 = 95 | CES61 = 86 | CES86 = 75 |
| CES12 = 62 | CES37 = 73 | CES62 = 83 | CES87 = 76 |
| CES13 = 42 | CES38 = 73 | CES63 = 73 | CES88 = 78 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 74 |
| CES15 = 70 | CES40 = 85 | CES65 = 64 | CES90 = 76 |
| CES16 = 46 | CES41 = 86 | CES66 = 64 | CES91 = 88 |
| CES17 = 49 | CES42 = 73 | CES67 = 61 | CES92 = 66 |
| CES18 = 55 | CES43 = 70 | CES68 = 68 | CES93 = 81 |
| CES19 = 71 | CES44 = 98 | CES69 = 78 | CES94 = 58 |
| CES20 = 64 | CES45 = 80 | CES70 = 57 | CES95 = 71 |
| CES21 = 85 | CES46 = 79 | CES71 = 53 | CES96 = 78 |
| CES22 = 77 | CES47 = 77 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 70 | CES73 = 46 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 95 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 50 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)