

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: P348763

Luminaire Tested: **ARCH-N-PA1-60-730-24VDC-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P348763  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-N-PA1-60-730-24VDC-T2R-HSS  
Description: ARCHEON ROADWAY AND AREA LUMINAIRE  
(1) 70 CRI, 3000K, 1160mA LIGHT ENGINE WITH 16 LEDS AND  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5509 lumens  
Efficiency: N/A  
Efficacy: 93.4 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.75' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G1

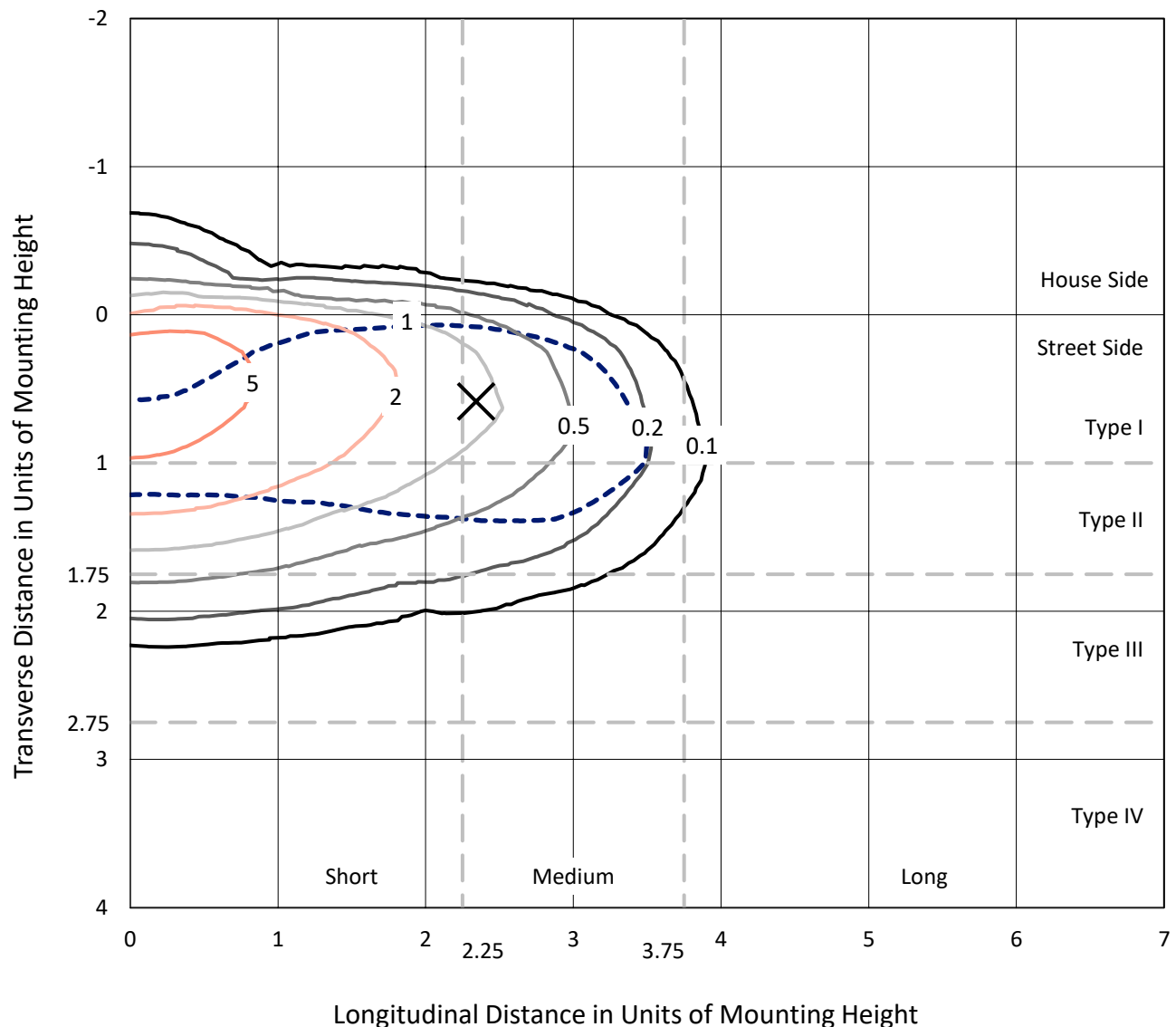
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

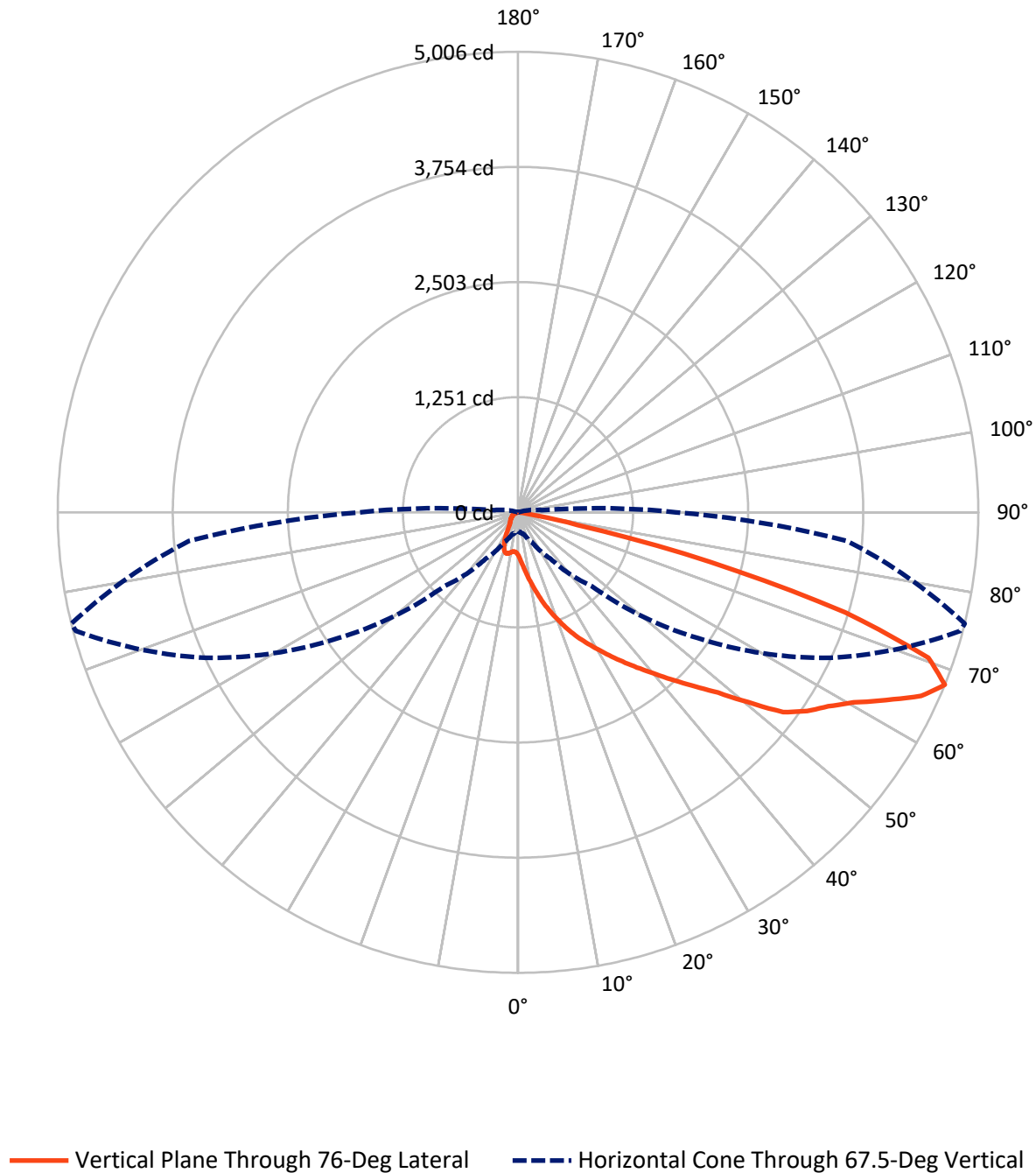


Based on 15 foot mounting height. Maximum calculated value = 7.3 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 273.6    | 0.0    | 273.6  |
|                    | % Fixture | 5.0      | 0.0    | 5.0    |
| <b>Street Side</b> | Lumens    | 5235.4   | 0.0    | 5235.4 |
|                    | % Fixture | 95.0     | 0.0    | 95.0   |
| <b>Total</b>       | Lumens    | 5509.0   | 0.0    | 5509.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 58.1   | 1.1       |
| 10°-20°   | 230.4  | 4.2       |
| 20°-30°   | 468.7  | 8.5       |
| 30°-40°   | 813.5  | 14.8      |
| 40°-50°   | 1149.4 | 20.9      |
| 50°-60°   | 1303.5 | 23.7      |
| 60°-70°   | 1081.1 | 19.6      |
| 70°-80°   | 391.6  | 7.1       |
| 80°-90°   | 12.7   | 0.2       |
| 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°    | 5509.0 | 100.0     |
| 0°-180°   | 5509.0 | 100.0     |

**Coefficient of Utilization**



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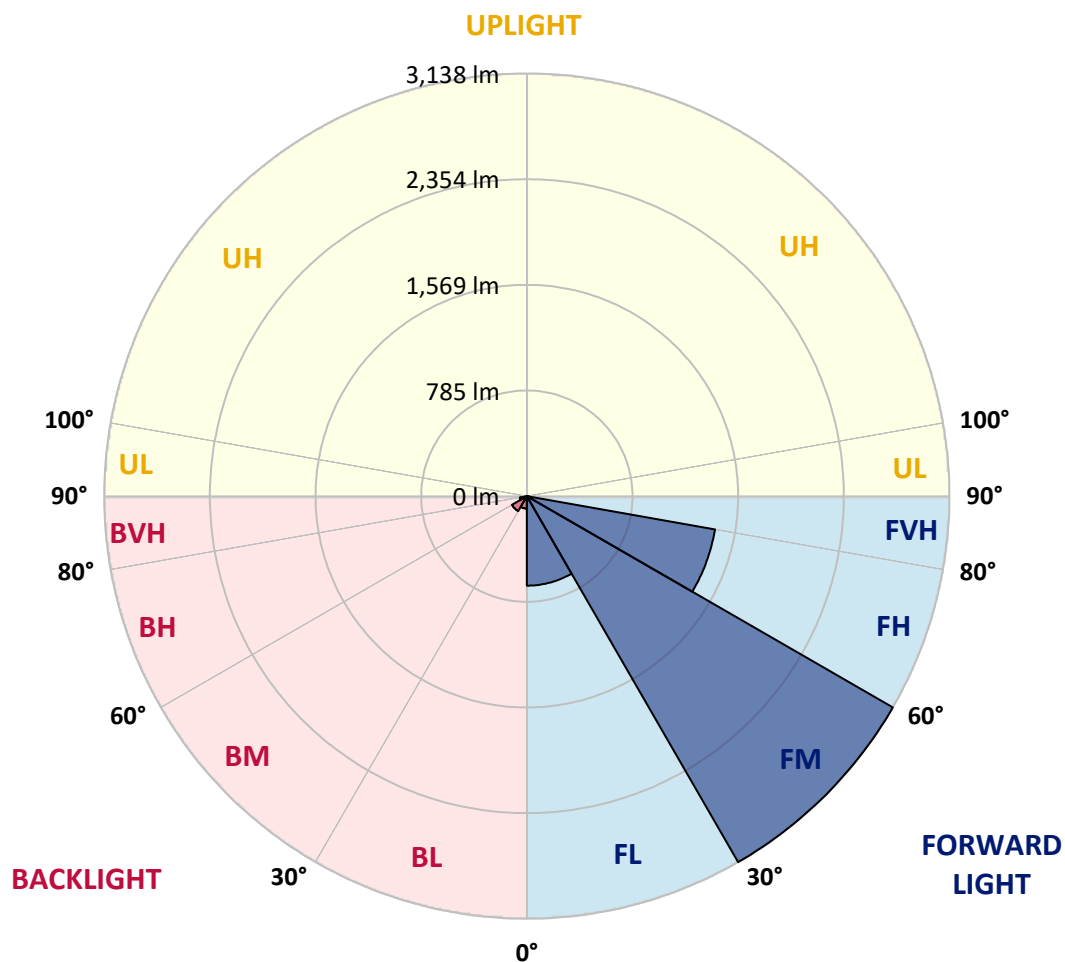
CATALOG NUMBER: ARCH-N-PA1-60-730-24VDC-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 664.9  | 12.1      |                         |      |         |
| FM   | (30°-60°)   | 3138.4 | 57.0      |                         |      |         |
| FH   | (60°-80°)   | 1419.9 | 25.8      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 12.3   | 0.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 92.3   | 1.7       | B0/110                  |      |         |
| BM   | (30°-60°)   | 128.0  | 2.3       | B0/220                  |      |         |
| BH   | (60°-80°)   | 52.9   | 1.0       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.4    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**

Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  | 467.3  |
| 2.5°  | 697.6  | 681.9  | 685.5  | 675.4  | 657.1  | 619.4  | 587.3  | 556.9  | 521.4  | 520.2  | 491.0  |
| 5°    | 940.7  | 927.4  | 925.7  | 905.2  | 871.9  | 807.9  | 745.6  | 674.7  | 595.5  | 589.7  | 527.7  |
| 7.5°  | 1161.3 | 1150.7 | 1146.8 | 1122.4 | 1060.4 | 998.1  | 917.0  | 812.7  | 688.9  | 678.3  | 577.2  |
| 10°   | 1330.8 | 1325.7 | 1326.7 | 1309.3 | 1256.2 | 1198.2 | 1091.8 | 958.8  | 794.9  | 778.5  | 636.5  |
| 12.5° | 1459.2 | 1460.4 | 1469.1 | 1458.5 | 1428.8 | 1385.8 | 1272.1 | 1114.5 | 912.2  | 889.7  | 704.4  |
| 15°   | 1553.6 | 1559.6 | 1575.5 | 1588.8 | 1586.6 | 1549.5 | 1445.2 | 1272.6 | 1036.8 | 1011.9 | 779.9  |
| 17.5° | 1614.6 | 1621.4 | 1644.6 | 1674.0 | 1701.0 | 1692.4 | 1612.2 | 1425.1 | 1162.8 | 1134.0 | 860.8  |
| 20°   | 1668.2 | 1676.2 | 1701.0 | 1739.9 | 1790.4 | 1801.2 | 1748.6 | 1573.1 | 1288.5 | 1253.5 | 944.3  |
| 22.5° | 1784.3 | 1784.1 | 1799.3 | 1822.0 | 1870.0 | 1898.0 | 1864.7 | 1710.5 | 1412.8 | 1376.4 | 1029.5 |
| 25°   | 1994.3 | 1986.4 | 1981.1 | 1963.2 | 1973.8 | 1991.2 | 1972.6 | 1838.9 | 1537.9 | 1500.9 | 1115.9 |
| 27.5° | 2243.9 | 2248.7 | 2205.8 | 2157.7 | 2120.6 | 2102.7 | 2072.3 | 1957.9 | 1658.1 | 1617.5 | 1200.4 |
| 30°   | 2507.3 | 2508.7 | 2458.0 | 2396.7 | 2314.9 | 2247.1 | 2194.4 | 2071.6 | 1781.7 | 1737.5 | 1282.5 |
| 32.5° | 2744.8 | 2735.4 | 2685.2 | 2601.7 | 2498.3 | 2422.1 | 2312.7 | 2198.5 | 1912.5 | 1869.8 | 1373.7 |
| 35°   | 2933.1 | 2922.0 | 2860.9 | 2784.9 | 2677.7 | 2600.9 | 2469.4 | 2325.3 | 2050.1 | 2008.3 | 1465.2 |
| 37.5° | 3070.7 | 3057.6 | 2994.9 | 2916.7 | 2824.2 | 2779.6 | 2651.1 | 2463.1 | 2200.2 | 2155.3 | 1561.5 |
| 40°   | 3118.5 | 3107.1 | 3067.8 | 3010.6 | 2936.2 | 2926.1 | 2844.0 | 2621.7 | 2363.6 | 2315.9 | 1670.6 |
| 42.5° | 3090.0 | 3078.9 | 3064.9 | 3045.6 | 3014.7 | 3024.3 | 3026.0 | 2802.5 | 2545.2 | 2498.1 | 1791.1 |
| 45°   | 2977.0 | 2967.1 | 2981.6 | 3009.8 | 3048.2 | 3096.0 | 3192.1 | 2996.8 | 2747.9 | 2697.7 | 1930.4 |
| 47.5° | 2810.7 | 2803.5 | 2843.5 | 2914.0 | 3026.3 | 3158.0 | 3343.9 | 3201.0 | 2975.6 | 2929.0 | 2104.2 |
| 50°   | 2574.1 | 2572.9 | 2653.1 | 2781.7 | 2954.3 | 3188.0 | 3500.8 | 3433.2 | 3291.8 | 3242.8 | 2345.8 |
| 52.5° | 2205.8 | 2208.2 | 2365.8 | 2571.7 | 2828.1 | 3167.7 | 3601.7 | 3731.6 | 3659.6 | 3608.7 | 2555.1 |
| 55°   | 1855.0 | 1869.5 | 1981.3 | 2278.2 | 2634.5 | 3092.4 | 3636.5 | 3870.9 | 3862.7 | 3814.4 | 2671.4 |
| 57.5° | 1511.6 | 1537.9 | 1645.5 | 1922.9 | 2351.8 | 2918.8 | 3617.4 | 3931.2 | 4013.8 | 3976.8 | 2824.9 |
| 60°   | 1139.3 | 1151.4 | 1275.5 | 1534.7 | 1989.0 | 2602.1 | 3479.1 | 3964.0 | 4220.4 | 4194.8 | 3047.7 |
| 62.5° | 724.9  | 755.1  | 865.1  | 1115.2 | 1548.7 | 2162.3 | 3245.9 | 3963.6 | 4478.9 | 4492.9 | 3335.2 |
| 65°   | 381.9  | 417.1  | 475.5  | 691.1  | 1064.3 | 1671.1 | 2895.2 | 3926.4 | 4796.1 | 4815.6 | 3560.0 |
| 67.5° | 205.9  | 216.0  | 246.9  | 358.7  | 617.2  | 1132.1 | 2379.8 | 3742.9 | 4979.8 | 5005.6 | 3591.3 |
| 70°   | 150.6  |        |        |        |        |        |        |        |        |        |        |



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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 467.3  | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 |
| 2.5°  | 476.5  | 463.5 | 438.8 | 414.7 | 394.4 | 377.8 | 362.8 | 356.8 | 351.9 | 351.2 | 347.4 |
| 5°    | 497.7  | 471.4 | 424.4 | 385.7 | 359.9 | 341.6 | 325.9 | 316.2 | 308.7 | 305.8 | 303.2 |
| 7.5°  | 529.8  | 490.0 | 422.4 | 378.0 | 347.1 | 316.2 | 287.2 | 255.9 | 236.3 | 228.8 | 224.5 |
| 10°   | 568.9  | 514.6 | 429.7 | 375.8 | 321.8 | 256.6 | 208.6 | 168.7 | 152.6 | 147.2 | 145.8 |
| 12.5° | 614.6  | 545.3 | 442.2 | 362.3 | 267.7 | 182.2 | 143.9 | 130.3 | 126.7 | 125.0 | 125.0 |
| 15°   | 666.9  | 578.8 | 451.1 | 323.2 | 197.9 | 137.8 | 124.6 | 118.3 | 114.4 | 112.2 | 112.5 |
| 17.5° | 720.5  | 611.7 | 446.8 | 266.5 | 146.0 | 122.6 | 112.7 | 106.0 | 100.7 | 98.5  | 98.0  |
| 20°   | 774.6  | 642.1 | 422.7 | 198.4 | 123.6 | 111.3 | 100.2 | 92.7  | 87.4  | 85.2  | 84.7  |
| 22.5° | 830.6  | 667.9 | 380.2 | 145.6 | 111.0 | 98.7  | 87.9  | 80.4  | 75.3  | 73.4  | 72.4  |
| 25°   | 885.2  | 688.9 | 320.8 | 117.8 | 99.2  | 86.9  | 76.5  | 69.5  | 64.9  | 63.0  | 62.8  |
| 27.5° | 936.1  | 702.2 | 252.0 | 104.0 | 88.8  | 76.3  | 66.9  | 60.6  | 56.7  | 55.3  | 55.0  |
| 30°   | 982.0  | 703.4 | 186.3 | 93.9  | 79.7  | 67.1  | 58.4  | 52.9  | 49.5  | 48.0  | 47.6  |
| 32.5° | 1028.3 | 693.3 | 135.7 | 84.7  | 71.2  | 59.1  | 50.7  | 46.3  | 43.9  | 42.7  | 42.7  |
| 35°   | 1072.0 | 669.8 | 105.7 | 76.8  | 63.0  | 51.4  | 44.7  | 41.5  | 40.1  | 38.9  | 38.9  |
| 37.5° | 1114.7 | 636.3 | 89.8  | 69.8  | 55.3  | 44.9  | 39.3  | 37.4  | 36.2  | 35.0  | 35.0  |
| 40°   | 1158.2 | 594.1 | 81.6  | 63.2  | 49.0  | 39.8  | 35.0  | 33.3  | 32.1  | 31.1  | 30.9  |
| 42.5° | 1211.5 | 545.3 | 76.3  | 57.2  | 43.4  | 35.2  | 30.9  | 29.0  | 28.0  | 27.0  | 26.6  |
| 45°   | 1273.3 | 503.3 | 71.9  | 51.2  | 38.9  | 31.4  | 26.8  | 24.9  | 23.4  | 22.2  | 22.0  |
| 47.5° | 1362.4 | 472.9 | 66.1  | 44.7  | 34.5  | 27.3  | 23.2  | 21.0  | 18.8  | 17.6  | 17.4  |
| 50°   | 1476.1 | 447.8 | 58.7  | 38.9  | 30.2  | 23.2  | 19.3  | 16.7  | 14.7  | 13.5  | 13.5  |
| 52.5° | 1532.6 | 414.9 | 51.9  | 33.8  | 25.3  | 19.6  | 15.7  | 12.6  | 11.6  | 10.4  | 10.4  |
| 55°   | 1555.2 | 389.8 | 45.1  | 28.7  | 21.0  | 16.2  | 12.3  | 9.7   | 8.9   | 8.2   | 8.0   |
| 57.5° | 1619.0 | 382.6 | 39.3  | 24.4  | 17.4  | 12.8  | 9.4   | 7.2   | 6.8   | 5.8   | 5.8   |
| 60°   | 1721.6 | 386.2 | 34.0  | 20.8  | 14.0  | 9.9   | 7.0   | 5.6   | 5.1   | 4.1   | 4.1   |
| 62.5° | 1832.4 | 381.6 | 28.7  | 17.9  | 10.9  | 7.2   | 4.8   | 4.1   | 4.1   | 2.4   | 2.2   |
| 65°   | 1853.6 | 339.9 | 24.6  | 14.7  | 8.4   | 5.3   | 3.1   | 2.7   | 3.6   | 0.5   | 0.0   |
| 67.5° | 1720.4 | 263.6 | 21.2  | 11.3  | 6.3   | 4.1   | 2.4   | 1.2   | 3.1   | 0.0   | 0.0   |
| 70°   | 1375.7 | 167.5 | 17.1  | 8.2   | 4.8   | 3.4   | 1.9   | 0.5   | 2.4   | 0.0   | 0.0   |
| 72.5° | 972.8  | 97.3  | 13.5  | 5.8   | 4.1   | 2.7   | 1.4   | 0.0   | 1.4   | 0.0   | 0.0   |
| 75°   | 491.9  | 51.9  | 8.4   | 4.3   | 3.1   | 1.9   | 1.0   | 0.0   | 0.2   | 0.0   | 0.0   |
| 77.5° | 106.5  | 24.1  | 5.3   | 3.1   | 2.2   | 1.2   | 0.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 23.2   | 10.6  | 3.4   | 1.9   | 1.2   | 0.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 8.4    | 5.6   | 1.7   | 1.0   | 0.5   | 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              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10635.1

S/P: 1.22

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2718             | 0.0              | 490       | 31388            | 48.3             | 620       | 149681           | 1.9              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 63.6             | 625       | 139059           | 1.2              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 80.0             | 630       | 126485           | 0.7              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 94.6             | 635       | 114115           | 0.4              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 106.4            | 640       | 102385           | 0.3              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 114.6            | 645       | 91895            | 0.2              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 117.8            | 650       | 81196            | 0.1              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 117.4            | 655       | 71232            | 0.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 115.2            | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.1              | 535       | 87899            | 109.5            | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.2              | 540       | 92850            | 102.6            | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.5              | 545       | 99487            | 95.4             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.6              | 550       | 108411           | 88.6             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 4.5              | 555       | 117570           | 80.3             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 11.0             | 560       | 128783           | 72.0             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 23.5             | 565       | 140888           | 63.2             | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 43.8             | 570       | 151789           | 53.6             | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 61.8             | 575       | 163210           | 44.4             | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 58.9             | 580       | 171760           | 35.4             | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 43.9             | 585       | 179606           | 27.4             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 36.0             | 590       | 183682           | 20.5             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 29.9             | 595       | 184440           | 14.7             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 25.1             | 600       | 183413           | 10.3             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 25.0             | 605       | 178745           | 7.0              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 28.9             | 610       | 170867           | 4.6              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 36.9             | 615       | 161088           | 3.0              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 3860**

**M/P: 0.44**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2718             | 0.0              | 490       | 31388            | 26.1             | 620       | 149681           | 0.1              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 32.5             | 625       | 139059           | 0.1              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 38.4             | 630       | 126485           | 0.0              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 42.7             | 635       | 114115           | 0.0              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 45.1             | 640       | 102385           | 0.0              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 45.2             | 645       | 91895            | 0.0              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 43.1             | 650       | 81196            | 0.0              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 39.8             | 655       | 71232            | 0.0              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 36.1             | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 31.6             | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.1              | 540       | 92850            | 27.2             | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.3              | 545       | 99487            | 23.1             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.1              | 550       | 108411           | 19.5             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 2.9              | 555       | 117570           | 15.9             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 6.9              | 560       | 128783           | 12.7             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 14.0             | 565       | 140888           | 9.9              | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 26.2             | 570       | 151789           | 7.4              | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 36.4             | 575       | 163210           | 5.4              | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 35.0             | 580       | 171760           | 3.8              | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 26.3             | 585       | 179606           | 2.7              | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 22.0             | 590       | 183682           | 1.8              | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 18.5             | 595       | 184440           | 1.2              | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 15.6             | 600       | 183413           | 0.8              | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 15.3             | 605       | 178745           | 0.5              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 17.2             | 610       | 170867           | 0.3              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 21.0             | 615       | 161088           | 0.2              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

### Summary

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

### Spectral Power Distribution Comparison



### Color Vector Graphics

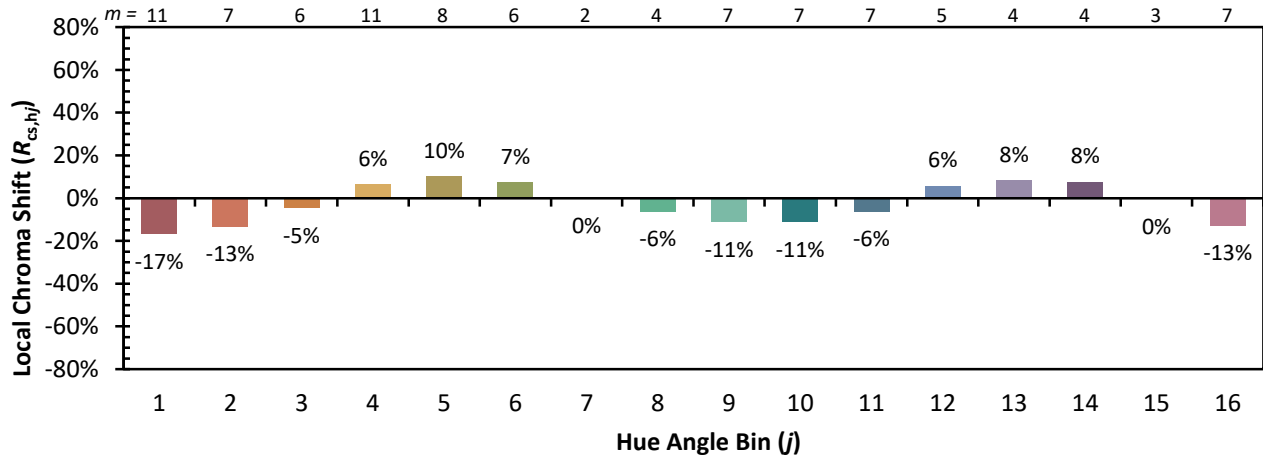


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)