

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: INVUE

Report Number: P674546

Luminaire Tested: **CCP-SA2E-730-U-T2R-HSS**

Issue Date: 04/16/2023

**Test Information**

Test Method: LM-79-08  
Report Number: P674546  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 04/16/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: CCP-SA2E-730-U-T2R-HSS  
Description: INVUE CLEAR CURVE POLE MOUNT Light Square Luminaire @1050mA w/ T2R  
distribution lens and House Side Shield  
Light Source: (32) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10081.4 lumens  
Efficiency: N/A  
Efficacy: 94.6 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G2

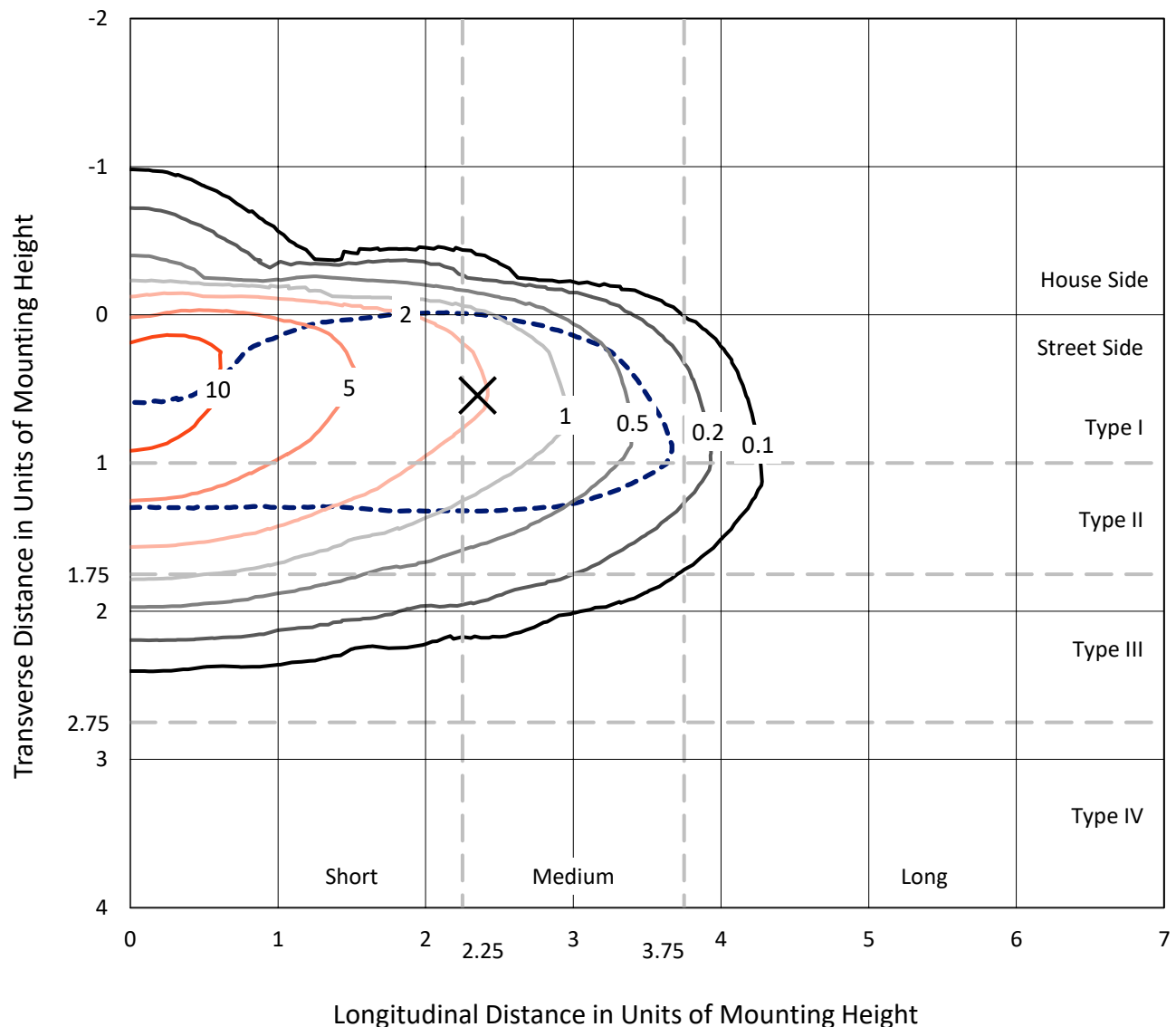
Input Watts (W): 106.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

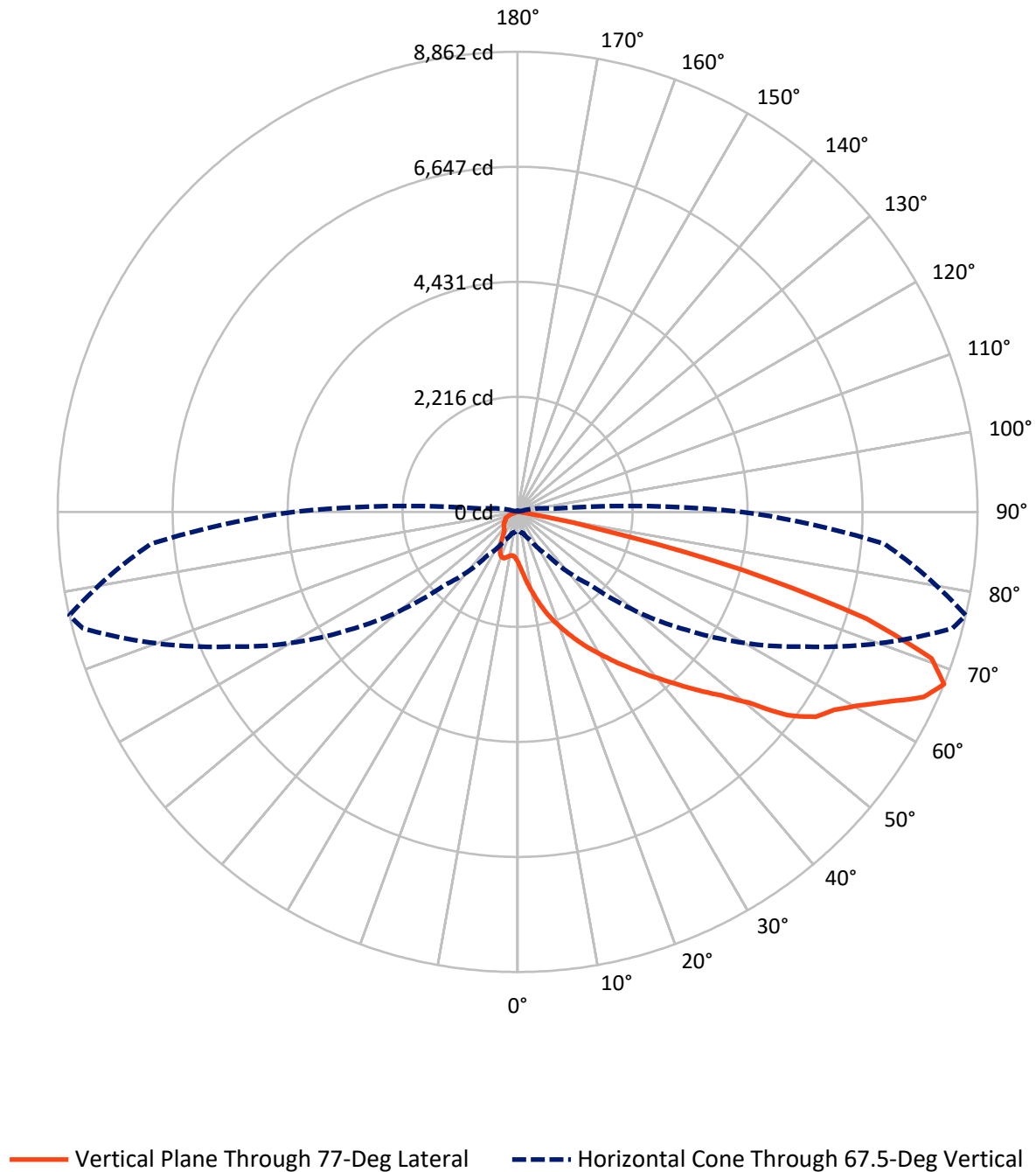
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 12.5 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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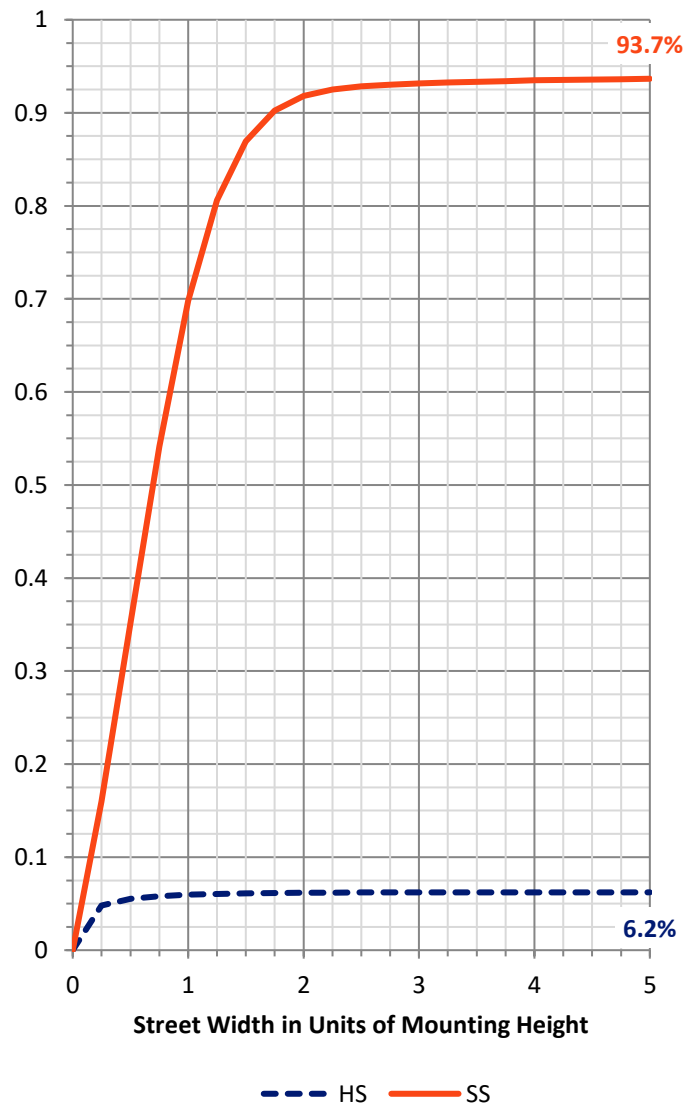
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 630.0    | 0.0    | 630.0   |
|                    | % Fixture | 6.2      | 0.0    | 6.2     |
| <b>Street Side</b> | Lumens    | 9451.4   | 0.0    | 9451.4  |
|                    | % Fixture | 93.8     | 0.0    | 93.8    |
| <b>Total</b>       | Lumens    | 10081.4  | 0.0    | 10081.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 113.5   | 1.1       |
| 10°-20°   | 419.7   | 4.2       |
| 20°-30°   | 819.9   | 8.1       |
| 30°-40°   | 1433.4  | 14.2      |
| 40°-50°   | 2090.5  | 20.7      |
| 50°-60°   | 2444.5  | 24.2      |
| 60°-70°   | 1981.6  | 19.7      |
| 70°-80°   | 744.4   | 7.4       |
| 80°-90°   | 33.8    | 0.3       |
| 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°    | 10081.4 | 100.0     |
| 0°-180°   | 10081.4 | 100.0     |

**Coefficient of Utilization**



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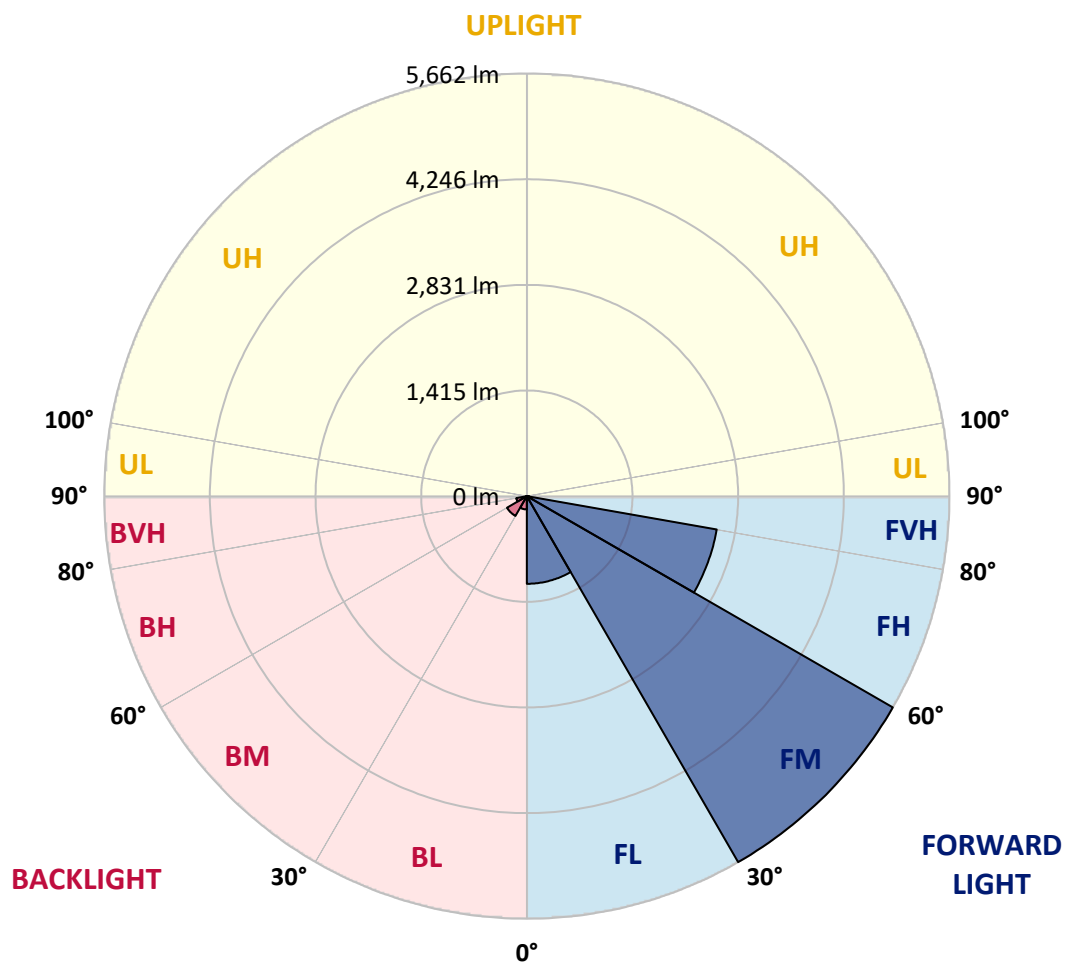
CATALOG NUMBER: CCP-SA2E-730-U-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1174.4 | 11.6      |                         |      |         |
| FM   | (30°-60°)   | 5661.9 | 56.2      |                         |      |         |
| FH   | (60°-80°)   | 2583.2 | 25.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 31.9   | 0.3       |                         |      | G1/100  |
| BL   | (0°-30°)    | 178.7  | 1.8       | B1/500                  |      |         |
| BM   | (30°-60°)   | 306.5  | 3.0       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 142.9  | 1.4       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.0    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 77°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  | 965.6  |
| 2.5°  | 1449.8 | 1397.0 | 1407.0 | 1385.2 | 1356.9 | 1291.4 | 1222.2 | 1153.1 | 1091.2 | 1077.5 | 1015.7 |
| 5°    | 1856.6 | 1840.2 | 1822.9 | 1808.3 | 1749.2 | 1667.3 | 1542.6 | 1384.2 | 1241.4 | 1216.8 | 1088.5 |
| 7.5°  | 2172.4 | 2147.8 | 2163.3 | 2118.7 | 2056.8 | 1977.6 | 1819.3 | 1650.0 | 1429.7 | 1393.3 | 1194.0 |
| 10°   | 2405.4 | 2391.7 | 2399.0 | 2378.1 | 2348.0 | 2268.9 | 2112.3 | 1900.3 | 1645.4 | 1576.3 | 1312.3 |
| 12.5° | 2580.1 | 2582.8 | 2614.7 | 2616.5 | 2591.9 | 2527.3 | 2361.7 | 2140.5 | 1841.1 | 1779.2 | 1443.4 |
| 15°   | 2707.5 | 2710.2 | 2749.4 | 2791.2 | 2819.5 | 2785.8 | 2635.6 | 2388.1 | 2071.4 | 1986.7 | 1580.8 |
| 17.5° | 2728.4 | 2730.3 | 2799.4 | 2884.1 | 2971.4 | 3000.6 | 2885.0 | 2633.8 | 2281.6 | 2185.1 | 1738.3 |
| 20°   | 2742.1 | 2757.6 | 2819.5 | 2916.8 | 3055.2 | 3145.3 | 3082.5 | 2869.5 | 2485.5 | 2373.5 | 1893.0 |
| 22.5° | 2907.7 | 2907.7 | 2944.1 | 3013.3 | 3123.4 | 3264.5 | 3251.7 | 3086.1 | 2683.9 | 2572.8 | 2046.8 |
| 25°   | 3259.0 | 3259.0 | 3223.5 | 3205.3 | 3264.5 | 3375.5 | 3407.4 | 3317.3 | 2910.5 | 2779.4 | 2208.8 |
| 27.5° | 3724.1 | 3724.1 | 3668.6 | 3534.8 | 3483.8 | 3530.2 | 3563.9 | 3518.4 | 3119.8 | 2990.6 | 2379.9 |
| 30°   | 4206.4 | 4222.8 | 4126.3 | 3956.2 | 3777.8 | 3742.3 | 3709.5 | 3699.5 | 3342.8 | 3197.1 | 2553.7 |
| 32.5° | 4690.6 | 4688.8 | 4568.6 | 4356.6 | 4123.6 | 3998.0 | 3891.5 | 3879.7 | 3579.4 | 3436.5 | 2718.4 |
| 35°   | 5077.4 | 5078.3 | 4951.8 | 4734.3 | 4464.9 | 4304.7 | 4133.6 | 4078.1 | 3838.8 | 3679.5 | 2915.0 |
| 37.5° | 5412.3 | 5393.2 | 5256.7 | 5050.1 | 4798.9 | 4633.3 | 4420.3 | 4275.6 | 4107.2 | 3945.2 | 3111.6 |
| 40°   | 5604.3 | 5578.8 | 5446.0 | 5249.4 | 5059.2 | 4932.7 | 4745.2 | 4514.0 | 4402.1 | 4227.4 | 3335.5 |
| 42.5° | 5632.5 | 5610.7 | 5522.4 | 5404.1 | 5248.5 | 5137.4 | 5087.4 | 4783.4 | 4711.5 | 4553.2 | 3603.0 |
| 45°   | 5553.4 | 5517.9 | 5488.7 | 5426.9 | 5383.2 | 5329.5 | 5397.7 | 5070.1 | 5066.5 | 4909.0 | 3867.9 |
| 47.5° | 5356.8 | 5308.5 | 5315.8 | 5384.1 | 5433.2 | 5481.5 | 5694.4 | 5446.0 | 5424.1 | 5276.7 | 4215.5 |
| 50°   | 5021.0 | 4997.3 | 5077.4 | 5212.1 | 5406.8 | 5599.8 | 5990.2 | 5830.0 | 5916.5 | 5778.2 | 4695.1 |
| 52.5° | 4338.4 | 4367.5 | 4606.9 | 4930.9 | 5267.6 | 5655.3 | 6267.8 | 6403.4 | 6624.5 | 6510.8 | 5177.5 |
| 55°   | 3519.3 | 3508.4 | 3827.8 | 4403.0 | 4940.9 | 5619.8 | 6388.8 | 6741.0 | 7088.7 | 6969.5 | 5446.0 |
| 57.5° | 2834.9 | 2854.0 | 3069.7 | 3638.5 | 4386.6 | 5345.9 | 6417.0 | 6917.6 | 7275.2 | 7196.1 | 5694.4 |
| 60°   | 2127.8 | 2146.0 | 2342.6 | 2837.7 | 3649.5 | 4774.3 | 6184.1 | 6979.5 | 7625.6 | 7565.6 | 6091.2 |
| 62.5° | 1354.2 | 1377.9 | 1575.4 | 2056.8 | 2789.4 | 3886.1 | 5660.7 | 6914.9 | 7991.5 | 8041.5 | 6632.7 |
| 65°   | 666.2  | 687.1  | 832.7  | 1201.3 | 1864.8 | 2905.9 | 4930.9 | 6668.2 | 8457.5 | 8600.3 | 7066.8 |
| 67.5° | 368.6  | 378.6  | 428.7  | 611.6  | 1040.2 | 1993.1 | 3962.5 | 6141.3 | 8671.3 | 8862.4 | 7096.0 |
| 70°   | 286.7  | 289.4  | 308.5  | 356.8  | 506.9  | 1169.5 | 2818.5 | 5264.0 | 8228.1 | 8459.3 | 6505.3 |
| 72.5° | 241.2  | 244.8  | 253.9  | 270.3  | 316.7  | 608.8  | 1771.0 | 4068.1 | 6923.0 | 7027.7 | 5032.8 |
| 75°   | 176.6  | 182.0  | 207.5  | 222.1  | 250.3  | 369.5  | 780.9  | 2444.5 | 4575.0 | 4472.2 | 2815.8 |
| 77.5° | 148.3  | 152.9  | 159.3  | 180.2  | 206.6  | 252.1  | 273.9  | 1024.8 | 1862.0 | 1619.0 | 739.0  |
| 80°   | 101.0  | 106.5  | 123.8  | 134.7  | 174.7  | 166.5  | 113.8  | 274.8  | 374.0  | 304.9  | 142.0  |
| 82.5° | 71.9   | 76.4   | 85.5   | 110.1  | 126.5  | 88.3   | 61.9   | 83.7   | 90.1   | 85.5   | 46.4   |
| 85°   | 22.8   | 29.1   | 61.9   | 91.0   | 68.3   | 30.0   | 39.1   | 31.9   | 28.2   | 27.3   | 18.2   |
| 87.5° | 4.6    | 4.6    | 30.9   | 36.4   | 27.3   | 15.5   | 13.7   | 10.0   | 12.7   | 12.7   | 10.0   |
| 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: CCP-SA2E-730-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 965.6  | 965.6  | 965.6 | 965.6 | 965.6 | 965.6 | 965.6 | 965.6 | 965.6 | 965.6 | 965.6 |
| 2.5°  | 986.5  | 945.6  | 886.4 | 830.9 | 774.5 | 734.4 | 706.2 | 678.0 | 667.1 | 662.5 | 650.7 |
| 5°    | 1030.2 | 952.0  | 834.6 | 739.9 | 670.7 | 627.1 | 600.7 | 577.9 | 563.3 | 558.8 | 552.4 |
| 7.5°  | 1093.0 | 980.2  | 811.8 | 702.6 | 633.4 | 586.1 | 543.3 | 494.2 | 455.0 | 439.6 | 433.2 |
| 10°   | 1161.3 | 1022.9 | 815.4 | 695.3 | 603.4 | 499.6 | 404.1 | 324.9 | 290.3 | 277.6 | 268.5 |
| 12.5° | 1261.4 | 1070.3 | 830.9 | 687.1 | 513.3 | 356.8 | 258.5 | 225.7 | 217.5 | 215.7 | 213.9 |
| 15°   | 1361.5 | 1136.7 | 856.4 | 632.5 | 383.1 | 243.0 | 214.8 | 202.9 | 198.4 | 193.8 | 193.8 |
| 17.5° | 1462.5 | 1200.4 | 866.4 | 526.0 | 264.8 | 210.2 | 195.7 | 185.7 | 178.4 | 174.7 | 172.0 |
| 20°   | 1576.3 | 1267.8 | 837.3 | 395.9 | 212.1 | 192.0 | 175.6 | 163.8 | 157.4 | 153.8 | 151.1 |
| 22.5° | 1699.1 | 1334.2 | 773.6 | 275.8 | 192.9 | 172.9 | 157.4 | 145.6 | 139.2 | 135.6 | 134.7 |
| 25°   | 1814.7 | 1391.5 | 671.6 | 207.5 | 173.8 | 154.7 | 140.2 | 130.1 | 125.6 | 122.0 | 121.0 |
| 27.5° | 1933.9 | 1440.7 | 538.8 | 182.9 | 158.4 | 140.2 | 125.6 | 117.4 | 112.9 | 110.1 | 109.2 |
| 30°   | 2050.4 | 1474.3 | 401.3 | 167.5 | 144.7 | 126.5 | 113.8 | 107.4 | 102.8 | 100.1 | 99.2  |
| 32.5° | 2170.6 | 1493.5 | 271.2 | 153.8 | 131.1 | 114.7 | 103.8 | 97.4  | 94.6  | 91.9  | 91.9  |
| 35°   | 2286.1 | 1490.7 | 195.7 | 141.1 | 120.1 | 103.8 | 93.7  | 89.2  | 88.3  | 85.5  | 85.5  |
| 37.5° | 2412.6 | 1471.6 | 166.5 | 129.2 | 108.3 | 93.7  | 85.5  | 82.8  | 81.9  | 80.1  | 79.2  |
| 40°   | 2556.4 | 1428.8 | 152.0 | 120.1 | 98.3  | 85.5  | 78.3  | 76.4  | 75.5  | 73.7  | 73.7  |
| 42.5° | 2713.9 | 1373.3 | 143.8 | 110.1 | 90.1  | 77.4  | 71.9  | 69.2  | 68.3  | 66.4  | 66.4  |
| 45°   | 2896.8 | 1320.5 | 138.3 | 100.1 | 82.8  | 71.0  | 65.5  | 62.8  | 61.9  | 60.1  | 60.1  |
| 47.5° | 3146.2 | 1290.5 | 129.2 | 91.0  | 74.6  | 64.6  | 59.2  | 57.3  | 55.5  | 53.7  | 53.7  |
| 50°   | 3489.3 | 1255.0 | 117.4 | 81.9  | 68.3  | 58.2  | 54.6  | 51.9  | 51.0  | 49.1  | 49.1  |
| 52.5° | 3771.4 | 1179.5 | 105.6 | 72.8  | 61.0  | 53.7  | 50.1  | 48.2  | 46.4  | 45.5  | 45.5  |
| 55°   | 3870.6 | 1091.2 | 93.7  | 65.5  | 55.5  | 50.1  | 46.4  | 44.6  | 43.7  | 42.8  | 42.8  |
| 57.5° | 4029.0 | 1063.0 | 82.8  | 58.2  | 50.1  | 46.4  | 42.8  | 41.9  | 41.0  | 40.0  | 39.1  |
| 60°   | 4299.3 | 1079.4 | 72.8  | 51.9  | 45.5  | 41.9  | 39.1  | 38.2  | 36.4  | 34.6  | 34.6  |
| 62.5° | 4561.4 | 1059.3 | 61.9  | 45.5  | 39.1  | 37.3  | 34.6  | 32.8  | 29.1  | 26.4  | 24.6  |
| 65°   | 4625.1 | 925.6  | 53.7  | 38.2  | 32.8  | 30.9  | 28.2  | 24.6  | 19.1  | 15.5  | 15.5  |
| 67.5° | 4316.5 | 703.5  | 46.4  | 32.8  | 27.3  | 25.5  | 20.0  | 16.4  | 11.8  | 9.1   | 9.1   |
| 70°   | 3562.1 | 445.9  | 38.2  | 25.5  | 22.8  | 17.3  | 12.7  | 11.8  | 8.2   | 7.3   | 6.4   |
| 72.5° | 2570.1 | 243.9  | 31.9  | 20.9  | 16.4  | 10.9  | 9.1   | 7.3   | 5.5   | 3.6   | 3.6   |
| 75°   | 1301.4 | 114.7  | 23.7  | 16.4  | 10.9  | 7.3   | 5.5   | 3.6   | 3.6   | 2.7   | 2.7   |
| 77.5° | 368.6  | 52.8   | 15.5  | 10.9  | 7.3   | 4.6   | 3.6   | 2.7   | 2.7   | 1.8   | 1.8   |
| 80°   | 72.8   | 26.4   | 10.0  | 7.3   | 5.5   | 3.6   | 2.7   | 1.8   | 1.8   | 0.9   | 0.9   |
| 82.5° | 26.4   | 13.7   | 7.3   | 5.5   | 4.6   | 3.6   | 1.8   | 0.9   | 0.9   | 0.0   | 0.0   |
| 85°   | 13.7   | 7.3    | 5.5   | 4.6   | 3.6   | 2.7   | 1.8   | 0.9   | 0.0   | 0.0   | 0.0   |
| 87.5° | 7.3    | 5.5    | 4.6   | 4.6   | 3.6   | 2.7   | 1.8   | 0.9   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-6

Luminaire Tested: IFLD-S-SA2E-730-U-T2

Test Date: 03/04/2021

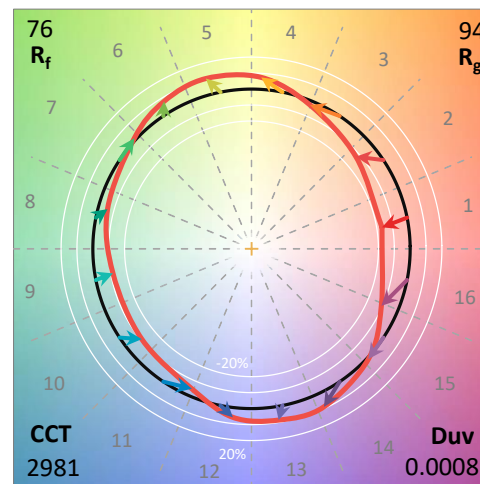
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2E-730-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2981   | CRI (Ra): | 72.3 |      |       |
| CIE u':                   | 0.2509 | R1:       | 68.0 | R9:  | -36.9 |
| CIE v':                   | 0.5228 | R2:       | 82.9 | R10: | 62.7  |
| Duv:                      | 0.0008 | R3:       | 95.0 | R11: | 65.3  |
| CIE x:                    | 0.4393 | R4:       | 68.7 | R12: | 58.3  |
| CIE y:                    | 0.4068 | R5:       | 68.4 | R13: | 70.8  |
| CIE z:                    | 0.1540 | R6:       | 77.8 | R14: | 97.4  |
| Peak Wavelength (nm):     | 598    | R7:       | 76.5 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 41.3 |      |       |
| Purity:                   | 54.3   |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.1   |           |      |      |       |



### Test Conditions

Stabilization Time: 64M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

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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

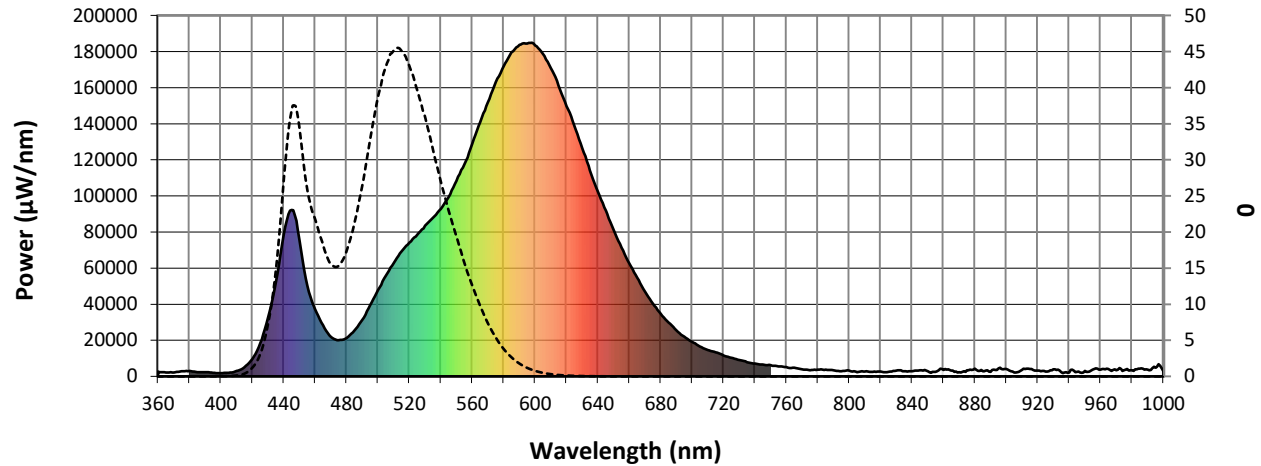


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| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 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



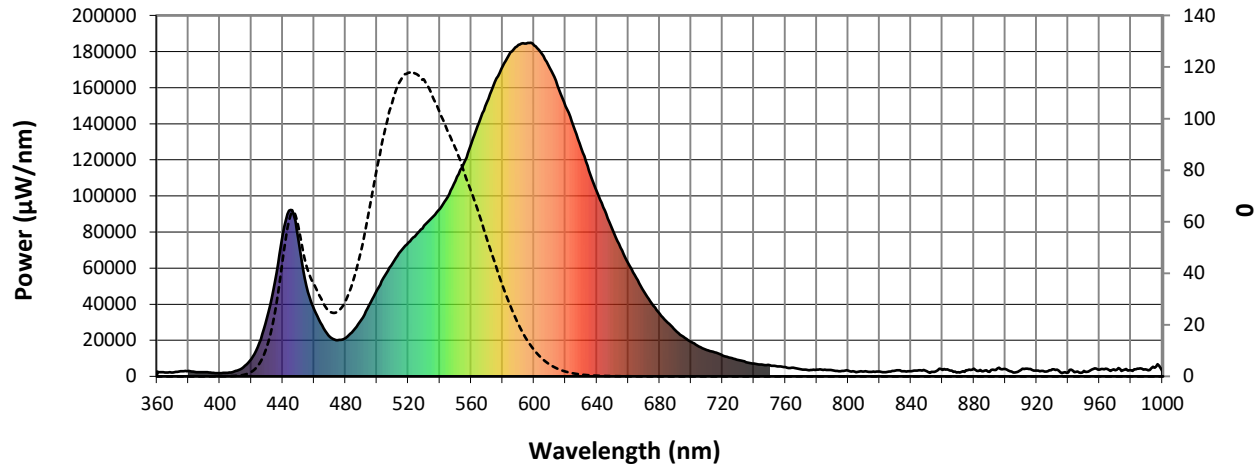
Scotopic Lumens: 10635.1

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              |           |                  |                  |

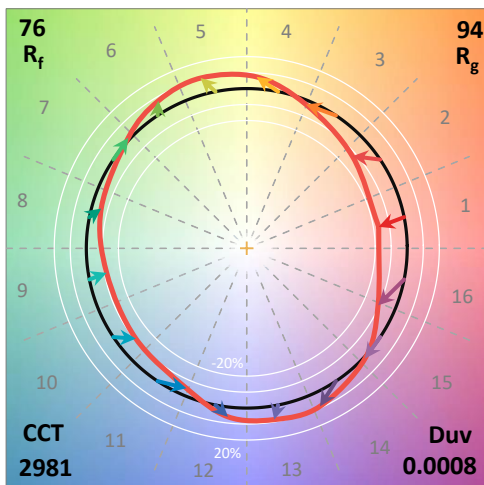
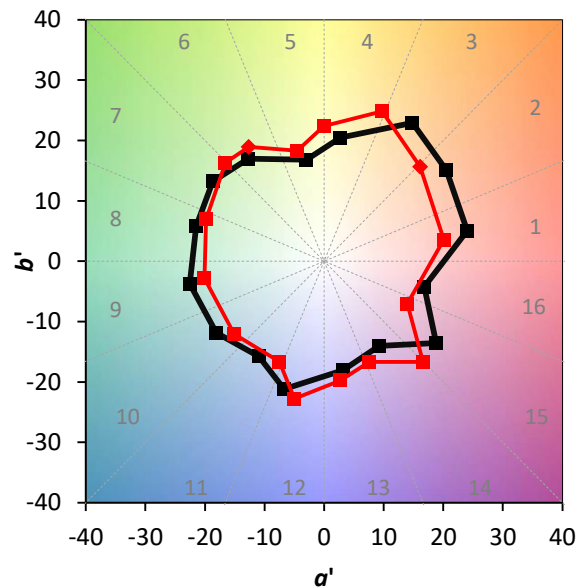
### Summary

$R_f = 76.2$   
 $R_g = 94.1$   
 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)