

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: P822437

Luminaire Tested: **PMM-SA2A-735-U-SL3**

Issue Date: 04/10/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P822437  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-543-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 04/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: PMM-SA2A-735-U-SL3  
Description: MESA POST TOP DECORATIVE LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS  
EACH AND TYPE III SPILL LIGHT ELIMINATOR OPTICS.  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7265.5 lumens  
Efficiency: N/A  
Efficacy: 110.1 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G2

Input Watts (W): 66  
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

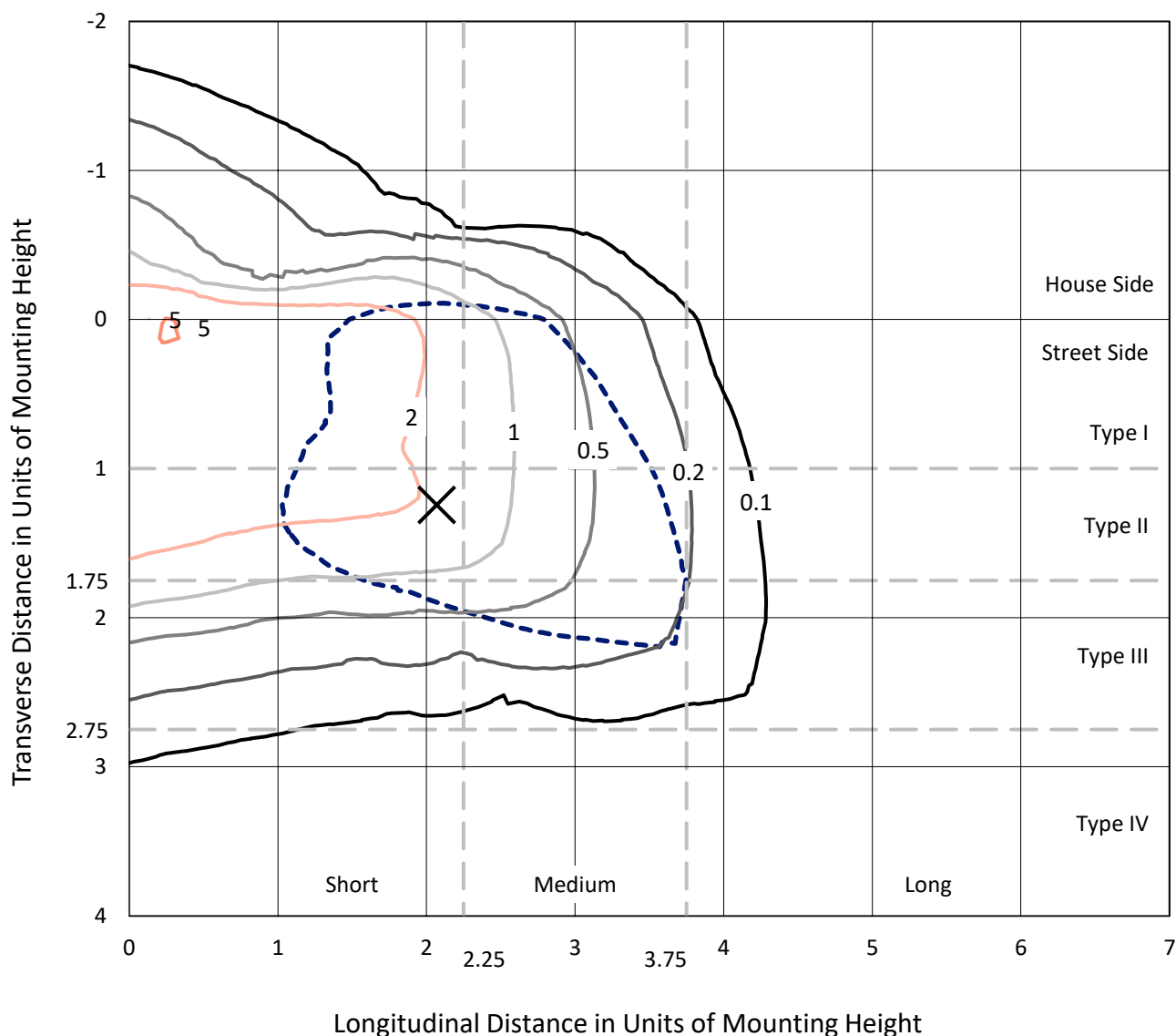
REPORT NUMBER: P822437

CATALOG NUMBER: PMM-SA2A-735-U-SL3

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

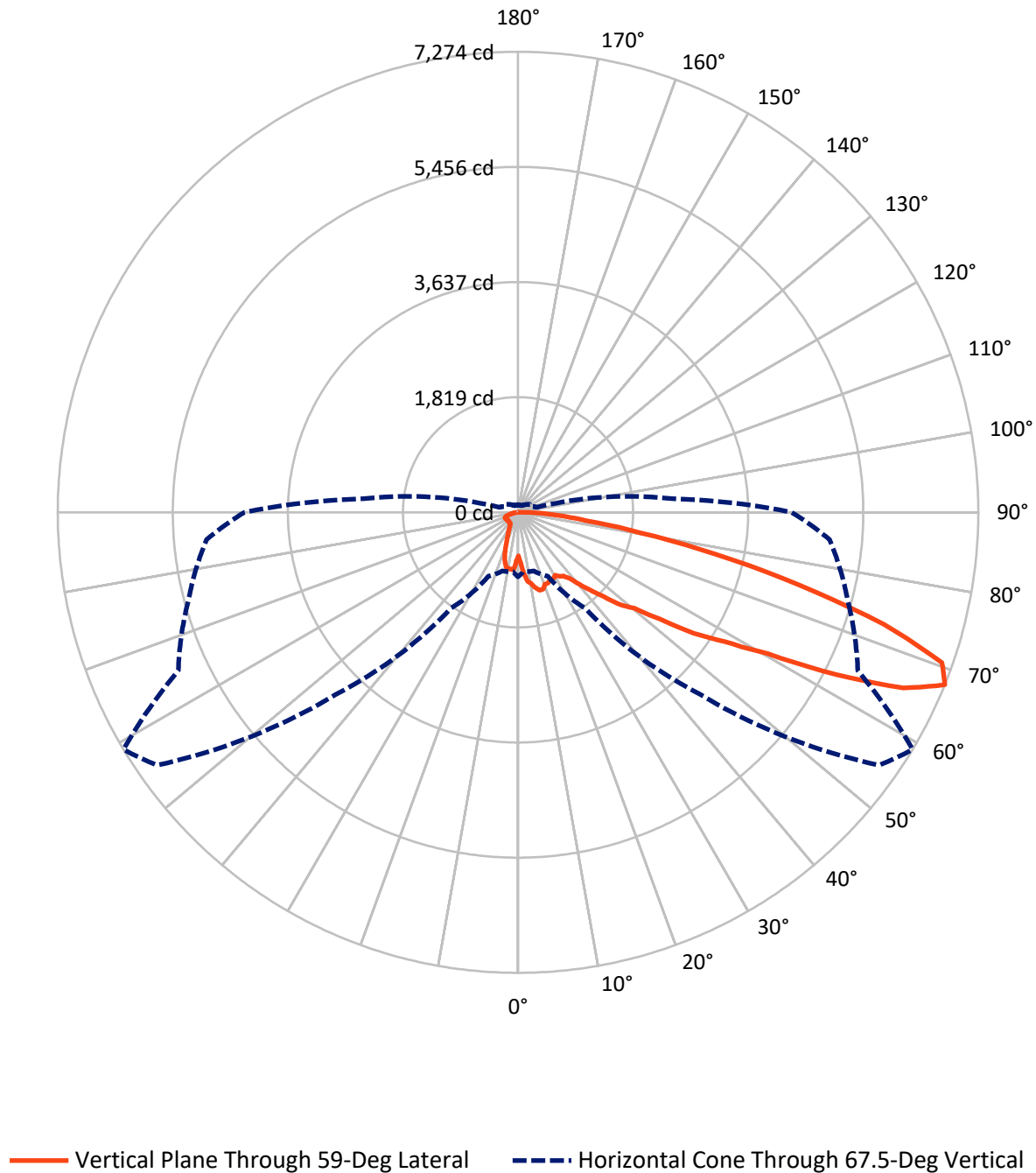


Based on 15 foot mounting height. Maximum calculated value = 5.2 fc

Type III - Short - N/A

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CATALOG NUMBER: PMM-SA2A-735-U-SL3

## Luminous Intensity Polar Plot



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CATALOG NUMBER: PMM-SA2A-735-U-SL3

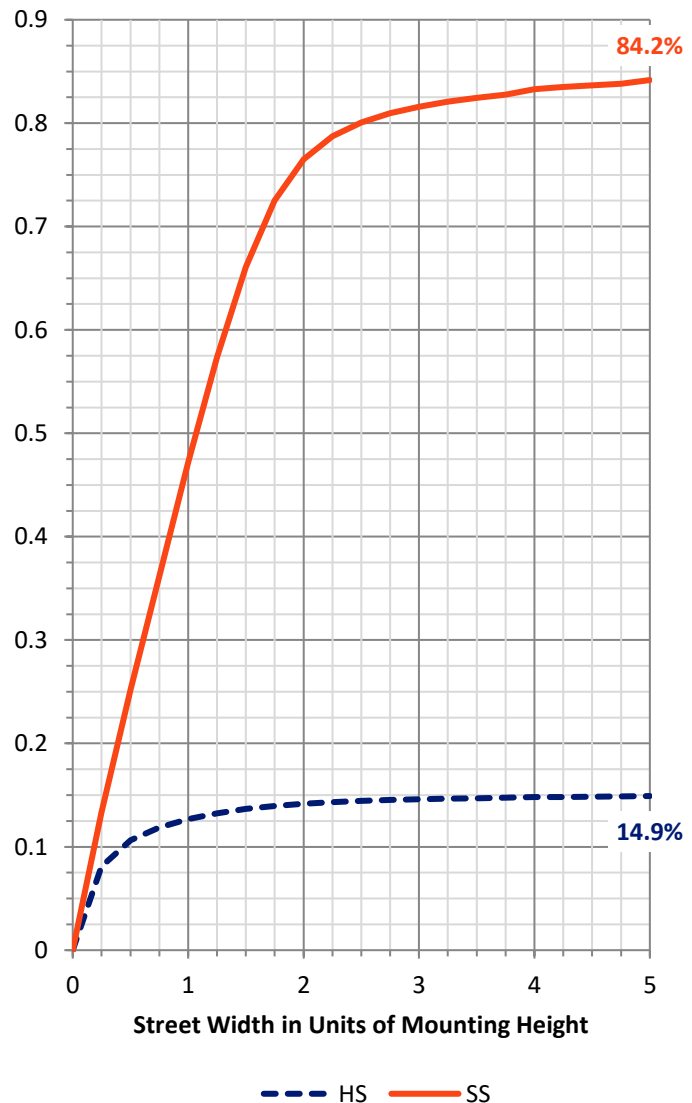
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1093.6   | 0.0    | 1093.6 |
|                    | % Fixture | 15.1     | 0.0    | 15.1   |
| <b>Street Side</b> | Lumens    | 6171.9   | 0.0    | 6171.9 |
|                    | % Fixture | 84.9     | 0.0    | 84.9   |
| <b>Total</b>       | Lumens    | 7265.5   | 0.0    | 7265.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 89.8   | 1.2       |
| 10°-20°   | 265.7  | 3.7       |
| 20°-30°   | 379.5  | 5.2       |
| 30°-40°   | 559.2  | 7.7       |
| 40°-50°   | 944.7  | 13.0      |
| 50°-60°   | 1644.0 | 22.6      |
| 60°-70°   | 2094.9 | 28.8      |
| 70°-80°   | 1109.3 | 15.3      |
| 80°-90°   | 178.5  | 2.5       |
| 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°    | 7265.5 | 100.0     |
| 0°-180°   | 7265.5 | 100.0     |

**Coefficient of Utilization**



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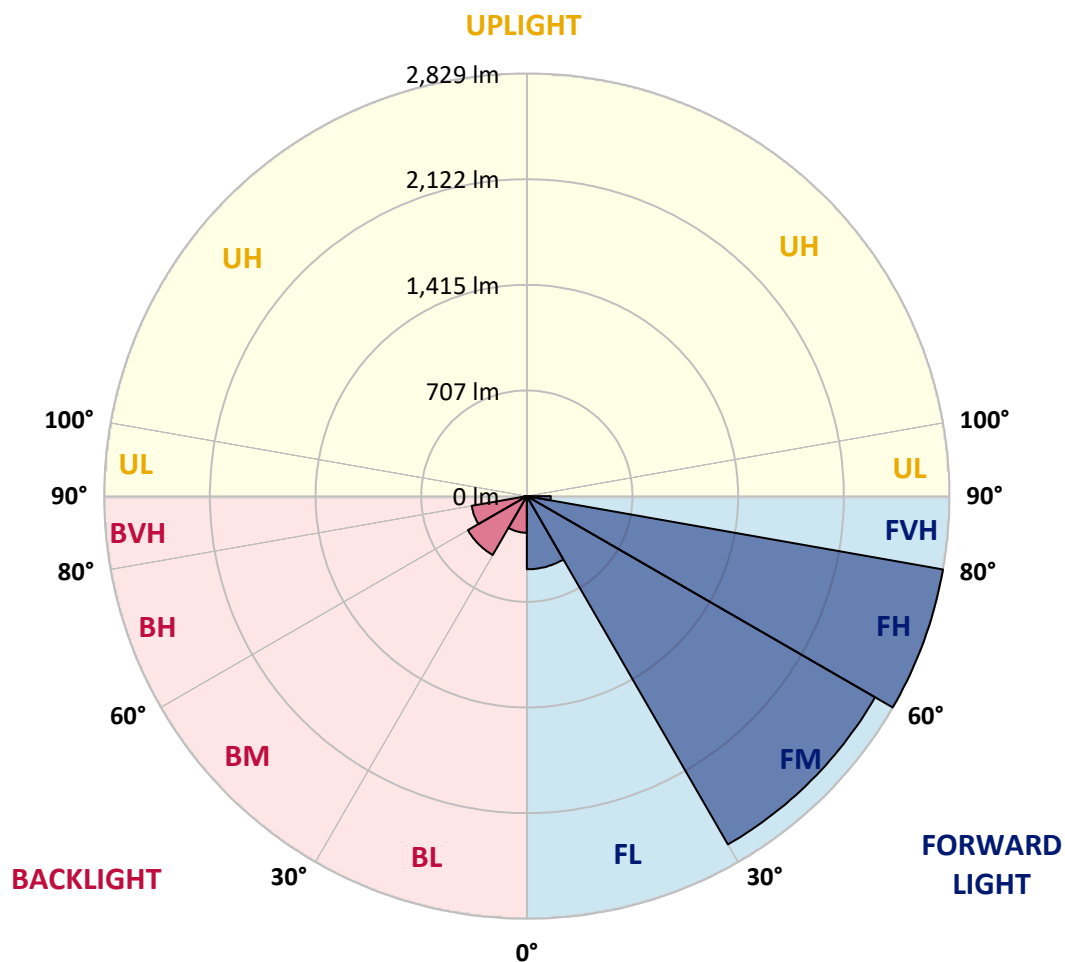
CATALOG NUMBER: PMM-SA2A-735-U-SL3

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 489.7  | 6.7       |                         |      |         |
| FM   | (30°-60°)   | 2692.5 | 37.1      |                         |      |         |
| FH   | (60°-80°)   | 2829.4 | 38.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 160.3  | 2.2       |                         |      | G2/225  |
| BL   | (0°-30°)    | 245.2  | 3.4       | B1/500                  |      |         |
| BM   | (30°-60°)   | 455.4  | 6.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 374.8  | 5.2       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 18.2   | 0.3       |                         |      | 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 III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 59°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  | 687.5  |
| 2.5°  | 858.4  | 818.4  | 775.8  | 787.9  | 812.2  | 823.3  | 811.2  | 799.6  | 784.5  | 766.6  | 827.6  |
| 5°    | 1041.0 | 981.5  | 973.0  | 972.6  | 964.0  | 929.6  | 973.8  | 970.7  | 988.6  | 1007.1 | 1054.5 |
| 7.5°  | 1093.0 | 1070.9 | 1046.8 | 1058.2 | 1014.8 | 1012.9 | 1082.0 | 1101.6 | 1136.1 | 1124.7 | 1188.4 |
| 10°   | 1066.2 | 1041.2 | 1053.9 | 1049.3 | 1053.3 | 1098.8 | 1141.0 | 1142.2 | 1179.2 | 1215.6 | 1174.6 |
| 12.5° | 1019.1 | 1020.9 | 1071.2 | 1069.3 | 1133.9 | 1218.6 | 1231.2 | 1221.4 | 1281.7 | 1257.1 | 1292.2 |
| 15°   | 1052.7 | 1075.2 | 1062.5 | 1073.3 | 1098.8 | 1206.6 | 1241.7 | 1277.4 | 1334.7 | 1356.9 | 1321.8 |
| 17.5° | 1106.3 | 1118.3 | 1061.6 | 1055.8 | 1108.4 | 1159.5 | 1246.7 | 1277.1 | 1286.1 | 1444.0 | 1394.4 |
| 20°   | 1083.5 | 1107.8 | 1052.3 | 981.3  | 1068.6 | 1136.4 | 1222.4 | 1213.0 | 1256.4 | 1450.8 | 1409.5 |
| 22.5° | 1148.1 | 1107.8 | 1037.2 | 986.8  | 1017.6 | 1079.7 | 1152.8 | 1213.4 | 1264.8 | 1411.0 | 1431.4 |
| 25°   | 1160.4 | 1141.3 | 1075.4 | 1025.2 | 1014.8 | 1037.0 | 1141.0 | 1180.7 | 1267.5 | 1465.2 | 1419.7 |
| 27.5° | 1235.6 | 1206.9 | 1072.6 | 1074.2 | 1022.2 | 983.1  | 1104.0 | 1187.5 | 1299.0 | 1431.7 | 1448.3 |
| 30°   | 1328.8 | 1306.9 | 1138.6 | 1144.8 | 1072.6 | 1000.6 | 1129.3 | 1154.5 | 1317.1 | 1484.0 | 1484.3 |
| 32.5° | 1398.7 | 1437.2 | 1268.2 | 1184.4 | 1158.9 | 1105.0 | 1090.5 | 1204.2 | 1295.9 | 1578.9 | 1545.9 |
| 35°   | 1524.7 | 1554.6 | 1368.0 | 1300.8 | 1214.3 | 1153.7 | 1195.8 | 1236.8 | 1384.3 | 1703.5 | 1637.4 |
| 37.5° | 1757.7 | 1723.3 | 1553.3 | 1447.7 | 1415.4 | 1327.9 | 1351.3 | 1322.7 | 1480.3 | 1843.6 | 1816.5 |
| 40°   | 1892.5 | 1862.7 | 1683.9 | 1625.4 | 1497.3 | 1508.4 | 1479.1 | 1500.1 | 1608.7 | 1992.7 | 1984.0 |
| 42.5° | 2025.6 | 1985.5 | 1834.4 | 1793.8 | 1666.0 | 1611.8 | 1617.0 | 1684.8 | 1806.7 | 2233.4 | 2204.8 |
| 45°   | 2157.0 | 2054.6 | 1988.3 | 1999.1 | 1937.5 | 1826.4 | 1834.0 | 1897.9 | 2022.8 | 2508.7 | 2442.7 |
| 47.5° | 2257.7 | 2173.1 | 2121.3 | 2108.1 | 2077.7 | 2226.3 | 2159.8 | 2185.7 | 2240.8 | 2753.7 | 2728.8 |
| 50°   | 2448.3 | 2349.5 | 2282.0 | 2262.9 | 2366.5 | 2573.4 | 2437.8 | 2382.1 | 2499.4 | 3070.6 | 3057.6 |
| 52.5° | 2753.4 | 2630.3 | 2517.9 | 2516.7 | 2666.3 | 2800.6 | 2896.0 | 2799.9 | 2843.1 | 3395.0 | 3432.0 |
| 55°   | 3019.8 | 2877.2 | 2776.3 | 2832.0 | 3045.0 | 3127.2 | 3451.4 | 3376.3 | 3340.0 | 3722.7 | 3828.3 |
| 57.5° | 3119.2 | 2952.6 | 2886.7 | 2968.9 | 3283.0 | 3705.4 | 4048.1 | 3850.4 | 3815.0 | 4093.4 | 4314.7 |
| 60°   | 2900.9 | 2724.8 | 2728.8 | 2883.7 | 3427.7 | 4130.0 | 4700.5 | 4532.7 | 4325.2 | 4554.9 | 4771.0 |
| 62.5° | 2279.0 | 2119.8 | 2223.5 | 2459.1 | 3306.4 | 4542.6 | 5574.9 | 5645.8 | 4908.0 | 4937.6 | 5024.1 |
| 65°   | 1549.0 | 1438.8 | 1532.4 | 1763.0 | 2681.7 | 4767.6 | 6407.7 | 6691.6 | 5438.9 | 5188.2 | 5133.4 |
| 67.5° | 1019.4 | 941.5  | 959.6  | 1113.0 | 1846.1 | 4064.4 | 6964.7 | 7274.1 | 5924.0 | 5393.9 | 4940.6 |
| 70°   | 789.4  | 726.6  | 718.6  | 798.9  | 1094.8 | 2823.7 | 6634.7 | 7105.1 | 6219.6 | 5201.1 | 4306.4 |
| 72.5° | 619.5  | 571.7  | 576.1  | 653.3  | 847.9  | 1566.5 | 5134.0 | 6042.0 | 5774.4 | 4485.7 | 3308.6 |
| 75°   | 483.0  | 444.0  | 465.8  | 554.2  | 784.2  | 973.5  | 3542.2 | 4585.7 | 4464.3 | 3321.5 | 1887.0 |
| 77.5° | 350.7  | 325.4  | 356.5  | 471.9  | 737.1  | 835.3  | 2205.1 | 3199.3 | 2860.0 | 1705.4 | 647.5  |
| 80°   | 230.0  | 215.9  | 241.4  | 384.8  | 668.4  | 803.9  | 1362.7 | 1960.3 | 1413.2 | 479.0  | 245.1  |
| 82.5° | 135.5  | 129.3  | 150.5  | 260.5  | 537.3  | 753.4  | 908.9  | 1089.3 | 578.2  | 202.6  | 130.2  |
| 85°   | 71.1   | 66.5   | 89.2   | 149.6  | 370.4  | 687.8  | 715.6  | 652.1  | 279.3  | 88.0   | 62.2   |
| 87.5° | 23.7   | 23.1   | 37.9   | 57.9   | 140.1  | 365.2  | 381.8  | 309.8  | 115.1  | 25.5   | 13.5   |
| 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: PMM-SA2A-735-U-SL3

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 687.5  | 687.5  | 687.5  | 687.5 | 687.5 | 687.5 | 687.5 | 687.5 | 687.5 | 687.5 | 687.5 |
| 2.5°  | 835.9  | 823.6  | 752.8  | 762.6 | 771.8 | 767.3 | 764.5 | 732.4 | 729.3 | 775.0 | 771.3 |
| 5°    | 1053.3 | 1002.2 | 941.8  | 939.1 | 899.4 | 858.7 | 866.7 | 853.8 | 857.4 | 876.3 | 878.1 |
| 7.5°  | 1168.1 | 1104.4 | 1046.8 | 953.2 | 873.7 | 809.5 | 819.6 | 816.5 | 808.2 | 850.7 | 862.1 |
| 10°   | 1166.0 | 1109.3 | 1044.3 | 931.0 | 877.5 | 825.1 | 762.3 | 702.9 | 685.4 | 664.4 | 666.3 |
| 12.5° | 1242.9 | 1192.7 | 1051.1 | 935.7 | 863.0 | 772.8 | 655.2 | 590.3 | 528.0 | 526.8 | 511.1 |
| 15°   | 1267.0 | 1230.0 | 1065.6 | 909.1 | 761.7 | 632.4 | 510.8 | 440.3 | 395.4 | 386.4 | 373.2 |
| 17.5° | 1327.6 | 1269.8 | 1021.6 | 823.6 | 644.1 | 494.5 | 383.9 | 334.6 | 331.0 | 337.1 | 330.3 |
| 20°   | 1331.6 | 1237.7 | 942.1  | 697.0 | 517.6 | 374.7 | 313.1 | 288.5 | 301.7 | 316.8 | 316.2 |
| 22.5° | 1328.2 | 1197.4 | 873.5  | 589.3 | 388.8 | 301.1 | 274.4 | 268.8 | 281.1 | 303.6 | 306.3 |
| 25°   | 1293.7 | 1184.2 | 787.6  | 484.0 | 315.6 | 258.1 | 250.6 | 254.0 | 269.4 | 295.9 | 295.9 |
| 27.5° | 1329.8 | 1130.2 | 679.8  | 393.8 | 265.4 | 229.6 | 234.9 | 243.5 | 254.9 | 285.1 | 290.7 |
| 30°   | 1318.0 | 1148.1 | 593.0  | 317.1 | 234.0 | 210.0 | 221.7 | 230.3 | 243.2 | 274.6 | 277.4 |
| 32.5° | 1349.5 | 1100.4 | 520.0  | 266.6 | 213.3 | 202.3 | 205.0 | 216.8 | 233.6 | 258.3 | 263.3 |
| 35°   | 1397.5 | 1117.9 | 436.3  | 239.9 | 203.2 | 193.3 | 198.6 | 207.8 | 224.8 | 248.7 | 252.7 |
| 37.5° | 1550.8 | 1117.0 | 378.4  | 225.1 | 201.3 | 191.5 | 194.0 | 200.5 | 220.1 | 242.0 | 251.3 |
| 40°   | 1649.4 | 1181.1 | 325.8  | 221.7 | 199.2 | 190.6 | 188.5 | 195.5 | 211.2 | 237.1 | 243.5 |
| 42.5° | 1834.4 | 1220.1 | 303.0  | 220.4 | 198.9 | 185.4 | 183.2 | 191.5 | 206.9 | 230.9 | 240.7 |
| 45°   | 2029.9 | 1275.9 | 284.8  | 219.9 | 198.0 | 184.5 | 177.9 | 188.5 | 201.3 | 224.4 | 235.9 |
| 47.5° | 2259.9 | 1393.8 | 274.6  | 217.7 | 196.1 | 185.7 | 176.1 | 181.4 | 195.8 | 218.9 | 230.3 |
| 50°   | 2561.0 | 1549.9 | 276.8  | 214.6 | 198.9 | 185.9 | 173.4 | 175.8 | 189.0 | 211.5 | 223.2 |
| 52.5° | 2927.1 | 1791.6 | 290.7  | 215.9 | 200.8 | 184.5 | 172.1 | 170.9 | 182.3 | 202.0 | 213.7 |
| 55°   | 3368.3 | 2134.6 | 332.2  | 221.7 | 200.8 | 184.1 | 170.3 | 164.7 | 173.4 | 189.4 | 200.8 |
| 57.5° | 3900.6 | 2531.7 | 413.5  | 224.4 | 199.2 | 182.3 | 166.3 | 156.4 | 161.6 | 174.9 | 185.7 |
| 60°   | 4357.8 | 2852.3 | 497.2  | 226.3 | 202.3 | 177.9 | 158.3 | 146.0 | 149.3 | 159.5 | 169.0 |
| 62.5° | 4590.9 | 2942.2 | 522.4  | 224.8 | 210.6 | 175.2 | 148.7 | 134.9 | 135.2 | 143.7 | 152.4 |
| 65°   | 4634.6 | 2822.4 | 421.2  | 223.2 | 221.3 | 174.9 | 142.0 | 125.3 | 123.2 | 129.3 | 136.7 |
| 67.5° | 4323.1 | 2449.8 | 303.9  | 219.9 | 222.6 | 173.0 | 137.3 | 117.6 | 112.1 | 116.4 | 122.5 |
| 70°   | 3670.6 | 1972.9 | 255.3  | 213.1 | 207.8 | 163.8 | 129.3 | 109.6 | 102.2 | 105.3 | 109.9 |
| 72.5° | 2736.5 | 1459.7 | 222.6  | 198.6 | 181.0 | 140.1 | 117.0 | 100.7 | 93.0  | 95.1  | 98.6  |
| 75°   | 1520.4 | 778.6  | 186.2  | 172.7 | 147.8 | 113.3 | 99.8  | 89.2  | 82.5  | 83.5  | 87.1  |
| 77.5° | 504.9  | 287.3  | 136.7  | 137.0 | 111.8 | 87.5  | 82.2  | 76.4  | 71.1  | 71.5  | 74.5  |
| 80°   | 228.8  | 158.8  | 97.9   | 98.6  | 77.9  | 63.4  | 63.2  | 61.3  | 57.9  | 56.9  | 59.2  |
| 82.5° | 132.7  | 96.3   | 67.1   | 64.0  | 50.2  | 41.3  | 45.8  | 45.0  | 44.1  | 40.6  | 41.3  |
| 85°   | 65.3   | 51.7   | 35.1   | 33.3  | 27.7  | 20.6  | 24.6  | 25.5  | 24.6  | 21.0  | 20.6  |
| 87.5° | 16.0   | 17.0   | 8.7    | 8.0   | 4.7   | 2.1   | 3.7   | 3.7   | 4.7   | 3.1   | 1.6   |
| 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: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 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-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 |      |       |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R9:  | -34.6 |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R10: | 57.8  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R11: | 68.6  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R12: | 53.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R13: | 70.9  |
| CIE z:                    | 0.1817 | R6:       | 75.0 | R14: | 96.2  |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



### Test Conditions

Stabilization Time: 81M  
 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 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength

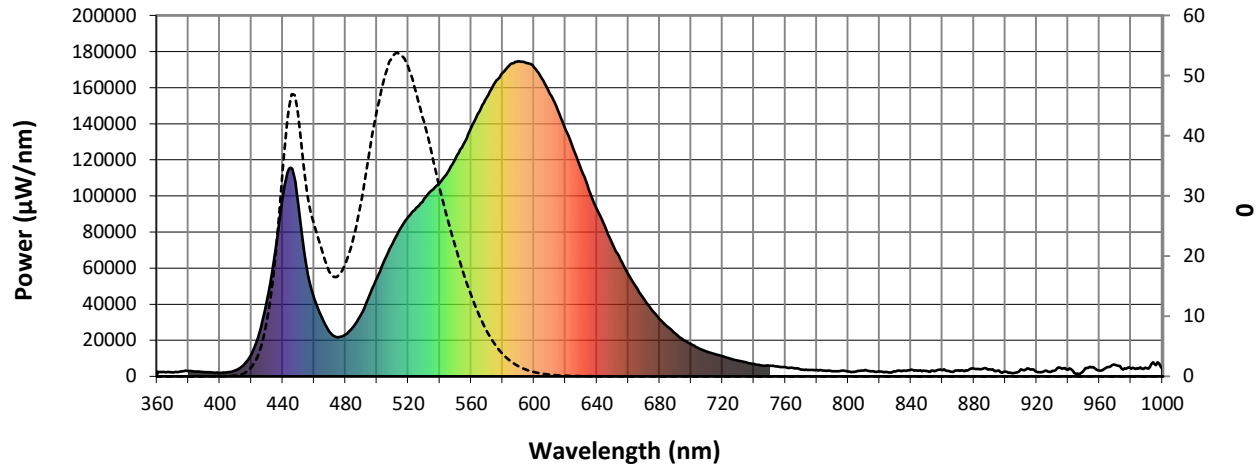


#####

| 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       | 2672             | 0.0              | 490       | 34553            | 4.9              | 620       | 136720           | 35.6             | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 8.0              | 625       | 126308           | 27.9             | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 12.1             | 630       | 114625           | 20.7             | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 18.1             | 635       | 103216           | 15.5             | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 25.4             | 640       | 92605            | 11.1             | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 33.9             | 645       | 83234            | 8.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 43.0             | 650       | 73263            | 5.4              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 50.1             | 655       | 64627            | 3.7              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 57.9             | 660       | 56614            | 2.4              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 64.0             | 665       | 49537            | 1.6              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.0              | 540       | 107316           | 69.9             | 670       | 42866            | 0.9              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.0              | 545       | 113101           | 75.3             | 675       | 36708            | 0.6              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 0.0              | 550       | 120690           | 82.0             | 680       | 31814            | 0.4              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 0.1              | 555       | 128583           | 87.8             | 685       | 27485            | 0.2              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 0.3              | 560       | 137796           | 93.6             | 690       | 23698            | 0.1              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 0.8              | 565       | 146577           | 97.5             | 695       | 20309            | 0.1              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 1.6              | 570       | 154581           | 100.5            | 700       | 17890            | 0.1              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 2.4              | 575       | 162633           | 101.2            | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 2.5              | 580       | 168101           | 99.9             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 2.1              | 585       | 173145           | 96.2             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 1.8              | 590       | 174675           | 90.3             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 1.7              | 595       | 173724           | 82.3             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 1.5              | 600       | 171241           | 73.8             | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 1.7              | 605       | 165134           | 64.0             | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 2.2              | 610       | 156652           | 53.8             | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 3.3              | 615       | 147879           | 44.6             | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 12126

S/P: 1.36

| 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       | 2672             | 0.0              | 490       | 34553            | 53.2             | 620       | 136720           | 1.7              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 71.7             | 625       | 126308           | 1.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 91.4             | 630       | 114625           | 0.6              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 110.0            | 635       | 103216           | 0.4              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 125.1            | 640       | 92605            | 0.2              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 135.7            | 645       | 83234            | 0.1              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 140.8            | 650       | 73263            | 0.1              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 139.6            | 655       | 64627            | 0.1              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 135.7            | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.1              | 535       | 103269           | 128.7            | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.2              | 540       | 107316           | 118.6            | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.6              | 545       | 113101           | 108.4            | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 2.0              | 550       | 120690           | 98.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 5.9              | 555       | 128583           | 87.9             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 14.3             | 560       | 137796           | 77.0             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 30.5             | 565       | 146577           | 65.8             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 55.5             | 570       | 154581           | 54.6             | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 77.4             | 575       | 162633           | 44.3             | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 73.6             | 580       | 168101           | 34.6             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 53.7             | 585       | 173145           | 26.5             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 41.9             | 590       | 174675           | 19.5             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 34.3             | 595       | 173724           | 13.9             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 27.9             | 600       | 171241           | 9.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 27.1             | 605       | 165134           | 6.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 31.3             | 610       | 156652           | 4.2              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 40.0             | 615       | 147879           | 2.7              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 4490.7**

**M/P: 0.5**

| 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       | 2672             | 0.0              | 490       | 34553            | 28.8             | 620       | 136720           | 0.1              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 36.6             | 625       | 126308           | 0.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 43.9             | 630       | 114625           | 0.0              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 49.6             | 635       | 103216           | 0.0              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 53.0             | 640       | 92605            | 0.0              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 53.5             | 645       | 83234            | 0.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 51.6             | 650       | 73263            | 0.0              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 47.3             | 655       | 64627            | 0.0              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 42.5             | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 37.2             | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.1              | 540       | 107316           | 31.4             | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.4              | 545       | 113101           | 26.3             | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 1.4              | 550       | 120690           | 21.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 3.7              | 555       | 128583           | 17.3             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 8.9              | 560       | 137796           | 13.6             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 18.2             | 565       | 146577           | 10.3             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 33.2             | 570       | 154581           | 7.6              | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 45.6             | 575       | 162633           | 5.4              | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 43.8             | 580       | 168101           | 3.8              | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 32.2             | 585       | 173145           | 2.6              | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 25.6             | 590       | 174675           | 1.7              | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 21.2             | 595       | 173724           | 1.1              | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 17.4             | 600       | 171241           | 0.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 16.6             | 605       | 165134           | 0.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 18.6             | 610       | 156652           | 0.3              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 22.7             | 615       | 147879           | 0.2              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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TM-30-18

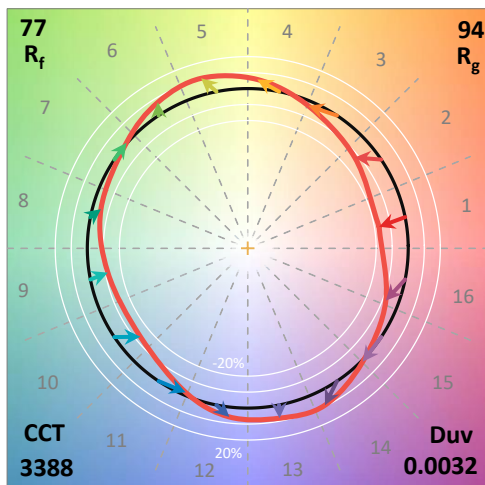
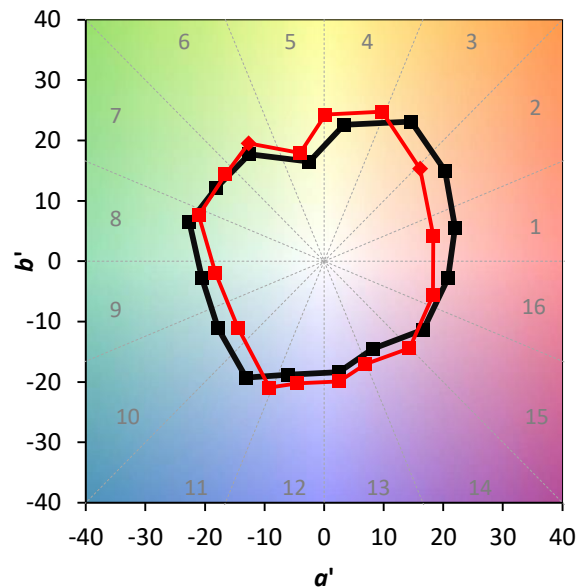
### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 $CIE R_a = 73.1$   
 $R_g = -34.6$

### Spectral Power Distribution Comparison

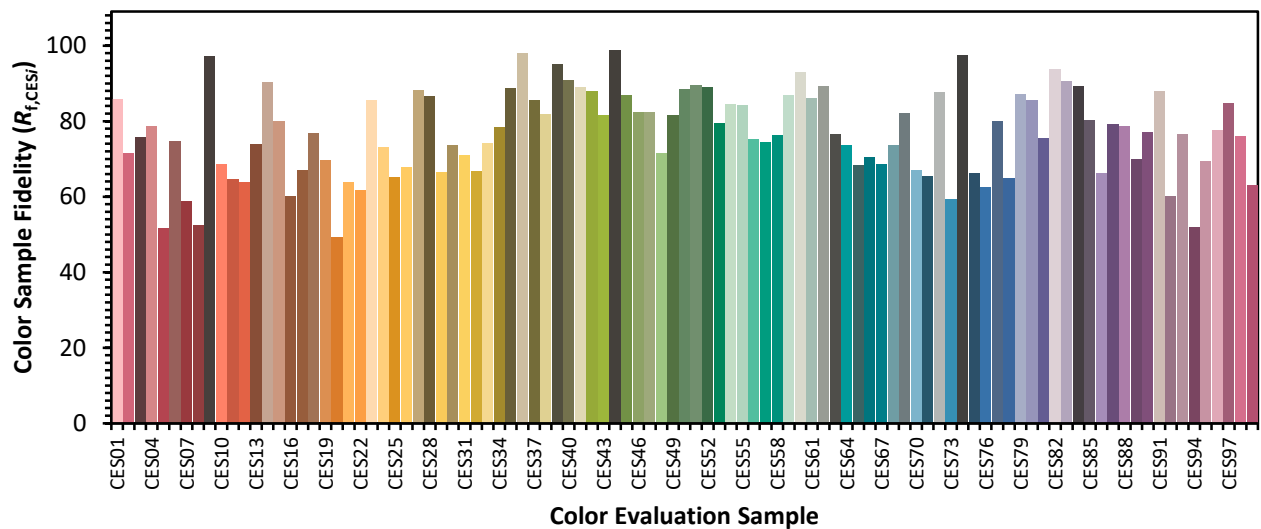


### Color Vector Graphics

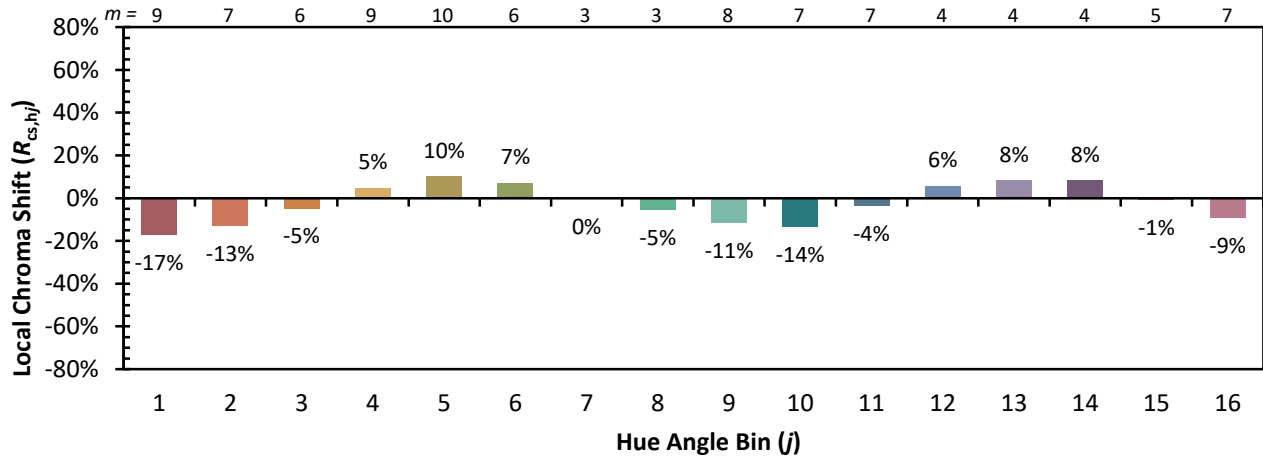


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)