

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: P822387

Luminaire Tested: **PMM-SA1C-735-U-RW**

Issue Date: 04/10/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P822387  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1910-543-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 04/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: PMM-SA1C-735-U-RW  
Description: MESA POST TOP DECORATIVE LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS.  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6000.4 lumens  
Efficiency: N/A  
Efficacy: 101.7 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3

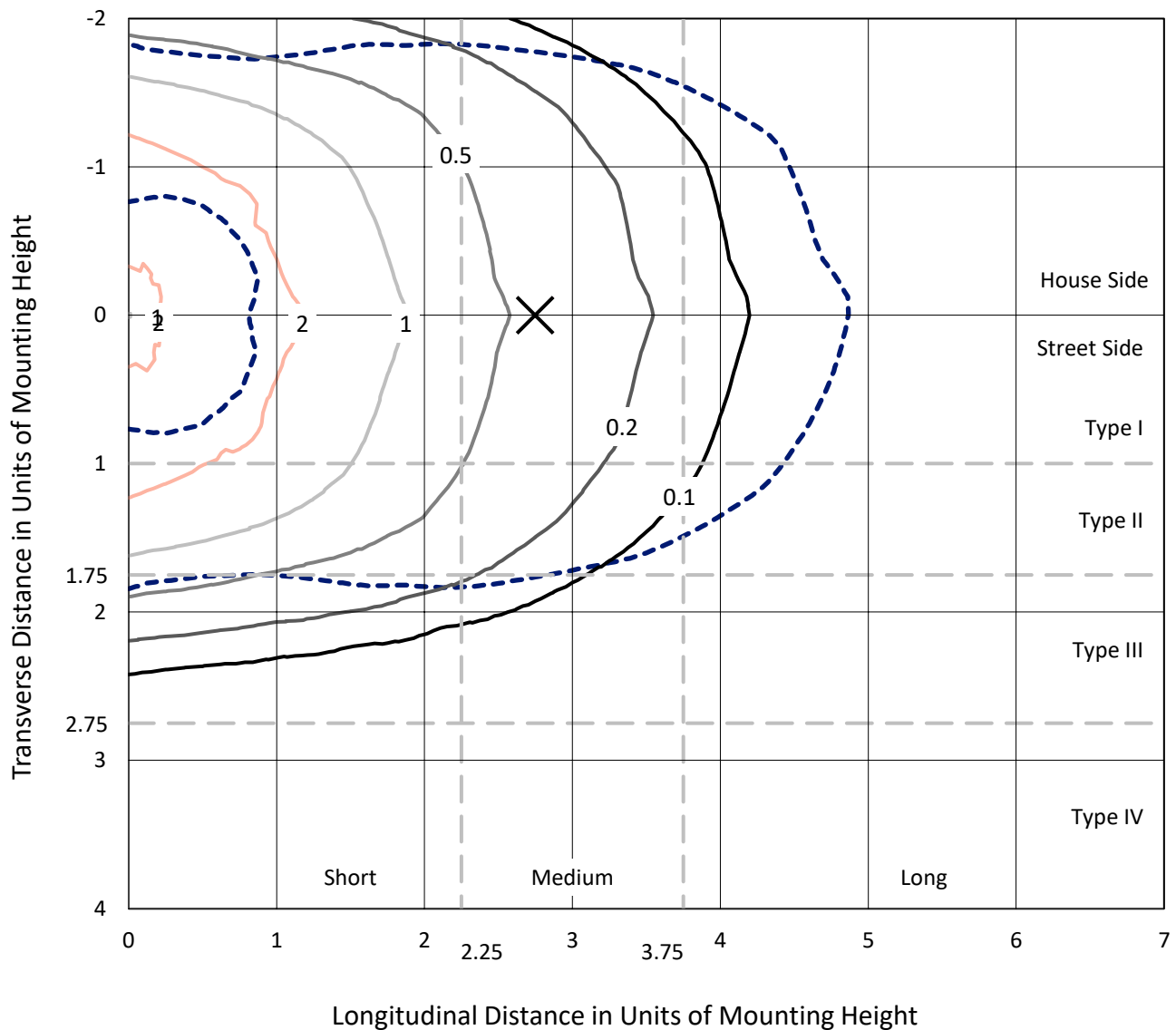
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

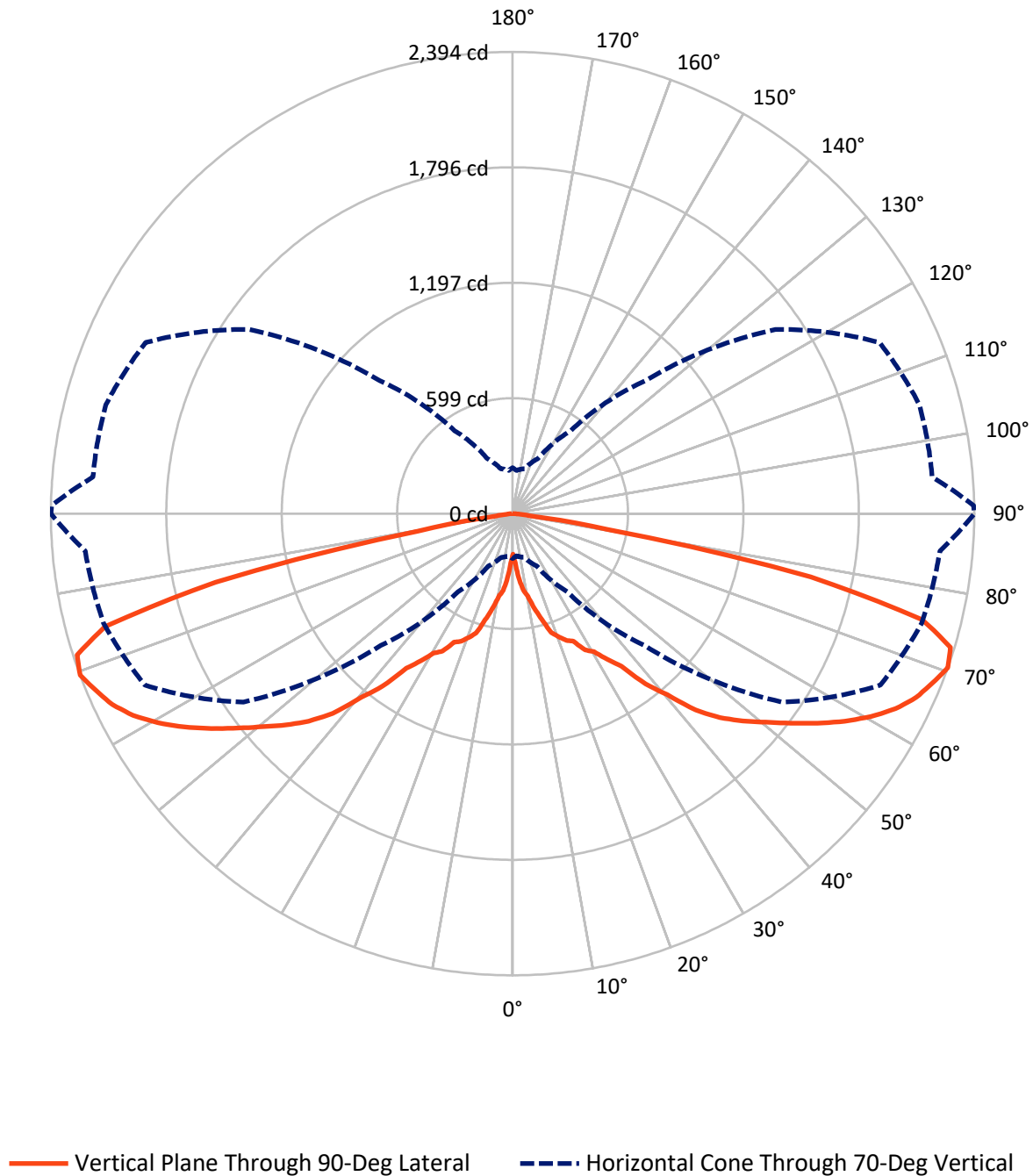
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 2.7 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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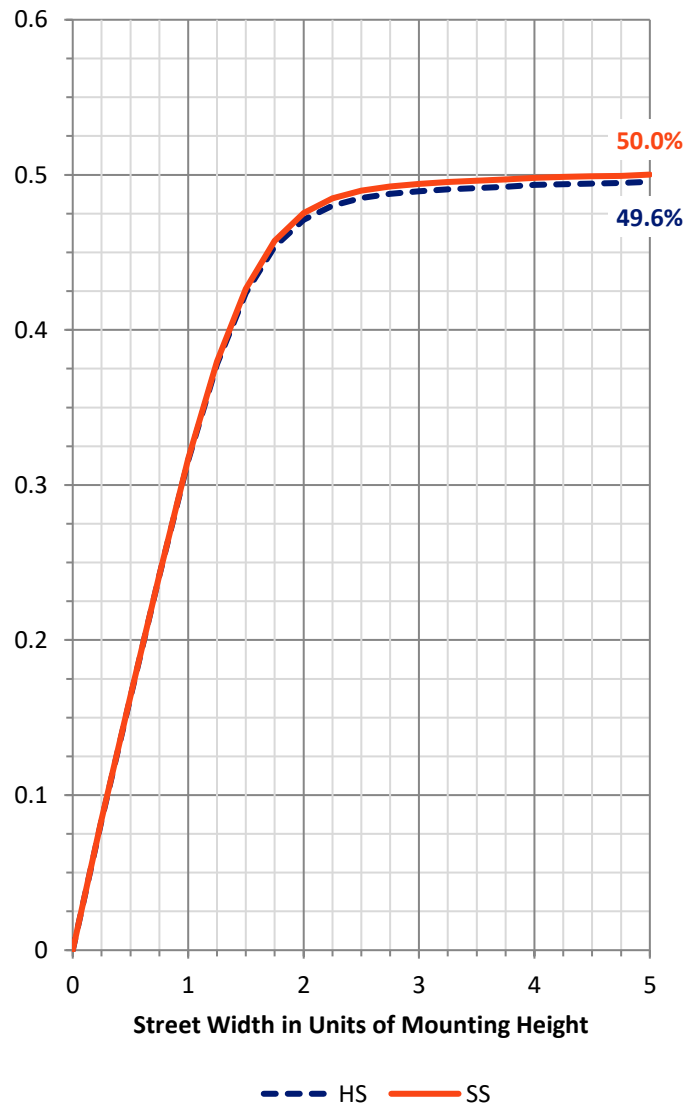
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 2989.1   | 0.0    | 2989.1 |
|                    | % Fixture | 49.8     | 0.0    | 49.8   |
| <b>Street Side</b> | Lumens    | 3011.3   | 0.0    | 3011.3 |
|                    | % Fixture | 50.2     | 0.0    | 50.2   |
| <b>Total</b>       | Lumens    | 6000.4   | 0.0    | 6000.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 31.8   | 0.5       |
| 10°-20°   | 145.6  | 2.4       |
| 20°-30°   | 314.8  | 5.2       |
| 30°-40°   | 600.7  | 10.0      |
| 40°-50°   | 1091.2 | 18.2      |
| 50°-60°   | 1532.9 | 25.5      |
| 60°-70°   | 1463.6 | 24.4      |
| 70°-80°   | 751.1  | 12.5      |
| 80°-90°   | 68.9   | 1.1       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 6000.4 | 100.0     |
| 0°-180°   | 6000.4 | 100.0     |



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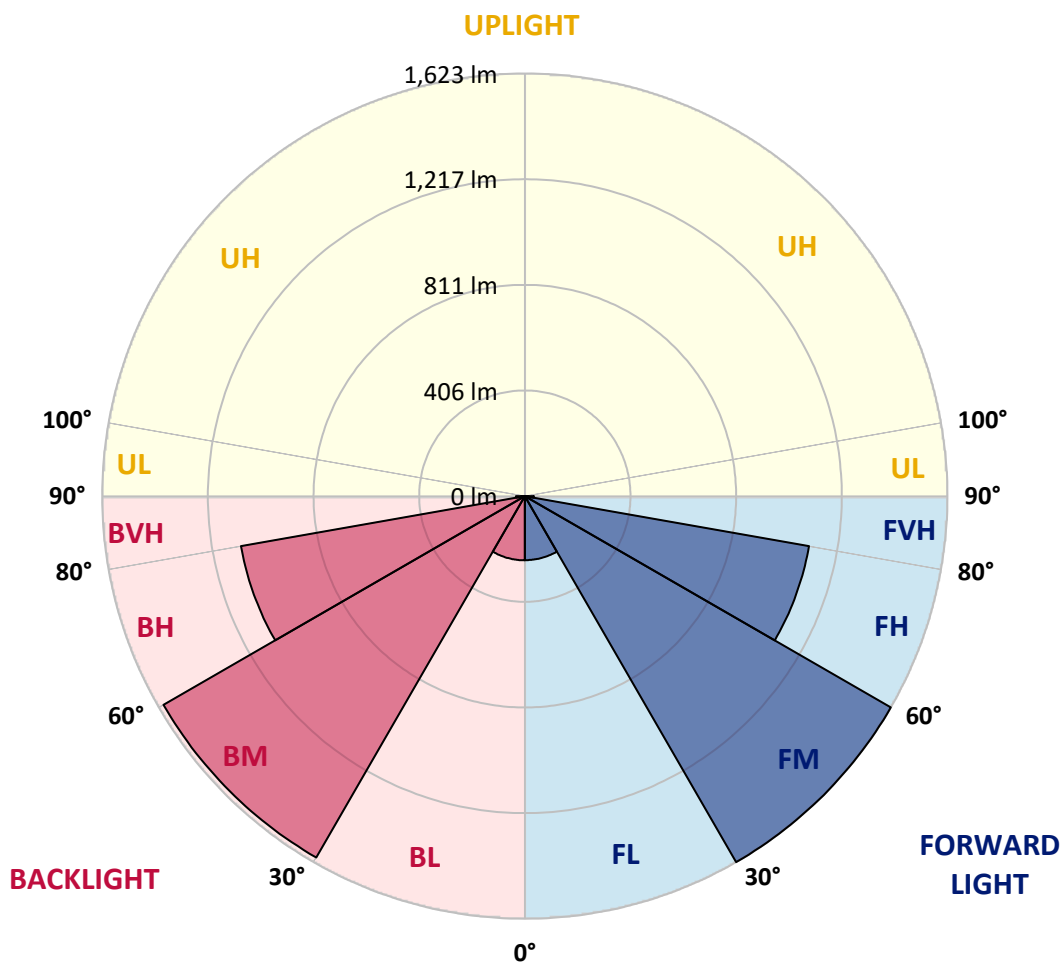
CATALOG NUMBER: PMM-SA1C-735-U-RW

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 245.9  | 4.1       |                         |      |         |
| FM   | (30°-60°)   | 1622.6 | 27.0      |                         |      |         |
| FH   | (60°-80°)   | 1107.9 | 18.5      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 34.9   | 0.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 246.3  | 4.1       | B1/500                  |      |         |
| BM   | (30°-60°)   | 1602.1 | 26.7      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1106.7 | 18.4      | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 33.9   | 0.6       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G3**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  |
| 2.5°  | 255.1  | 245.7  | 233.7  | 240.7  | 243.7  | 248.7  | 248.1  | 245.7  | 235.1  | 252.6  | 254.6  |
| 5°    | 319.4  | 304.3  | 298.7  | 297.6  | 299.1  | 294.3  | 310.0  | 305.5  | 313.9  | 329.8  | 333.4  |
| 7.5°  | 363.6  | 352.4  | 340.5  | 344.1  | 329.0  | 326.8  | 347.3  | 365.5  | 370.1  | 399.1  | 401.1  |
| 10°   | 384.5  | 373.6  | 376.7  | 374.5  | 372.8  | 386.9  | 396.4  | 409.8  | 429.0  | 431.7  | 435.8  |
| 12.5° | 402.3  | 406.6  | 420.4  | 420.0  | 442.9  | 467.8  | 464.2  | 478.1  | 481.3  | 514.8  | 504.6  |
| 15°   | 447.3  | 456.2  | 455.3  | 463.8  | 473.7  | 514.8  | 515.1  | 538.7  | 560.3  | 573.4  | 570.0  |
| 17.5° | 513.1  | 516.3  | 503.2  | 503.6  | 532.6  | 549.4  | 568.1  | 564.0  | 620.4  | 646.2  | 647.8  |
| 20°   | 552.5  | 560.5  | 545.5  | 525.5  | 576.8  | 600.0  | 610.4  | 586.3  | 646.6  | 681.4  | 681.4  |
| 22.5° | 621.4  | 600.7  | 577.8  | 564.5  | 609.6  | 634.2  | 633.0  | 626.2  | 658.3  | 719.8  | 714.0  |
| 25°   | 659.3  | 647.6  | 636.2  | 639.5  | 662.5  | 675.1  | 691.9  | 676.1  | 706.2  | 751.9  | 732.7  |
| 27.5° | 731.3  | 709.6  | 653.4  | 698.2  | 698.2  | 688.7  | 724.2  | 731.8  | 712.0  | 786.5  | 800.8  |
| 30°   | 812.7  | 805.2  | 725.7  | 773.1  | 758.5  | 731.8  | 799.9  | 795.0  | 762.0  | 837.8  | 831.3  |
| 32.5° | 889.9  | 914.6  | 839.3  | 813.2  | 835.1  | 845.3  | 809.6  | 824.2  | 830.5  | 903.7  | 900.5  |
| 35°   | 1008.0 | 1029.0 | 929.0  | 922.4  | 886.0  | 876.4  | 903.7  | 908.6  | 909.1  | 986.1  | 972.0  |
| 37.5° | 1212.6 | 1182.4 | 1083.6 | 1037.2 | 1041.3 | 1029.9 | 1035.3 | 996.8  | 1002.2 | 1114.0 | 1121.1 |
| 40°   | 1362.1 | 1328.1 | 1218.2 | 1184.8 | 1103.1 | 1152.0 | 1108.7 | 1104.8 | 1094.1 | 1239.0 | 1235.1 |
| 42.5° | 1527.3 | 1480.5 | 1358.9 | 1314.4 | 1227.7 | 1207.6 | 1187.7 | 1232.7 | 1229.8 | 1364.0 | 1393.7 |
| 45°   | 1652.0 | 1557.6 | 1494.2 | 1466.4 | 1414.4 | 1365.5 | 1346.5 | 1366.8 | 1357.5 | 1457.2 | 1509.0 |
| 47.5° | 1730.8 | 1648.8 | 1575.9 | 1517.5 | 1467.6 | 1587.5 | 1491.5 | 1464.5 | 1445.8 | 1557.4 | 1607.2 |
| 50°   | 1793.5 | 1699.0 | 1612.8 | 1593.4 | 1632.8 | 1738.8 | 1587.3 | 1527.7 | 1550.6 | 1632.8 | 1700.6 |
| 52.5° | 1810.6 | 1710.3 | 1633.0 | 1620.6 | 1727.1 | 1746.4 | 1721.8 | 1621.5 | 1615.5 | 1723.3 | 1805.2 |
| 55°   | 1758.5 | 1662.4 | 1625.7 | 1693.6 | 1811.3 | 1795.2 | 1832.6 | 1768.7 | 1725.7 | 1815.7 | 1918.7 |
| 57.5° | 1624.5 | 1529.1 | 1520.5 | 1618.2 | 1766.5 | 1903.2 | 1921.7 | 1871.1 | 1814.7 | 1910.0 | 2031.6 |
| 60°   | 1404.4 | 1317.4 | 1339.5 | 1447.4 | 1671.2 | 1865.7 | 1964.0 | 1917.8 | 1900.3 | 1995.1 | 2136.2 |
| 62.5° | 1061.7 | 993.9  | 1053.0 | 1203.5 | 1497.1 | 1817.4 | 2022.3 | 2015.1 | 1989.8 | 2085.6 | 2228.6 |
| 65°   | 677.0  | 641.3  | 701.6  | 854.6  | 1226.9 | 1729.3 | 2050.4 | 2060.0 | 2083.4 | 2155.3 | 2300.1 |
| 67.5° | 393.5  | 374.5  | 411.2  | 536.5  | 873.7  | 1419.9 | 1998.3 | 2137.8 | 2150.0 | 2191.4 | 2347.0 |
| 70°   | 232.7  | 220.3  | 235.4  | 301.3  | 494.7  | 967.4  | 1704.5 | 2103.8 | 2195.8 | 2224.5 | 2394.4 |
| 72.5° | 177.6  | 165.8  | 159.3  | 178.2  | 258.2  | 499.7  | 1152.5 | 1783.3 | 2159.1 | 2202.6 | 2374.5 |
| 75°   | 153.4  | 142.3  | 134.5  | 136.2  | 153.7  | 237.4  | 624.7  | 1275.5 | 1839.7 | 2005.5 | 2193.4 |
| 77.5° | 131.8  | 121.9  | 116.3  | 115.8  | 117.9  | 130.3  | 261.2  | 691.6  | 1152.2 | 1441.7 | 1581.2 |
| 80°   | 105.6  | 97.7   | 96.5   | 96.5   | 93.3   | 92.4   | 129.9  | 263.2  | 438.5  | 519.9  | 498.5  |
| 82.5° | 77.1   | 69.3   | 77.1   | 76.1   | 71.3   | 67.4   | 82.7   | 113.8  | 135.2  | 106.8  | 84.4   |
| 85°   | 52.1   | 45.0   | 50.9   | 51.8   | 47.1   | 35.0   | 49.7   | 56.9   | 58.4   | 36.5   | 30.2   |
| 87.5° | 18.3   | 17.8   | 28.7   | 25.1   | 20.4   | 11.9   | 18.3   | 19.7   | 20.7   | 12.9   | 8.8    |
| 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-SA1C-735-U-RW

**CANDELA DISTRIBUTION (continued):**

|       | 91°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  | 210.6  |
| 2.5°  | 255.4  | 252.5  | 237.8  | 240.1  | 245.7  | 248.3  | 251.0  | 240.1  | 234.7  | 251.7  | 250.0  |
| 5°    | 334.4  | 323.7  | 311.8  | 310.0  | 310.8  | 300.3  | 306.4  | 303.7  | 304.9  | 315.9  | 318.0  |
| 7.5°  | 400.5  | 387.6  | 371.8  | 359.4  | 338.1  | 321.0  | 335.4  | 342.6  | 344.9  | 364.3  | 371.6  |
| 10°   | 436.3  | 425.4  | 420.7  | 397.3  | 390.3  | 388.1  | 384.8  | 373.0  | 386.0  | 381.3  | 384.9  |
| 12.5° | 506.3  | 504.1  | 480.1  | 464.8  | 466.2  | 470.4  | 448.9  | 437.3  | 420.4  | 446.7  | 437.3  |
| 15°   | 565.9  | 575.4  | 551.3  | 523.4  | 509.5  | 516.6  | 500.3  | 483.2  | 468.1  | 476.1  | 466.0  |
| 17.5° | 642.1  | 641.8  | 594.8  | 564.9  | 563.7  | 563.2  | 539.1  | 501.7  | 519.7  | 514.1  | 514.6  |
| 20°   | 682.4  | 675.8  | 617.5  | 582.9  | 612.3  | 601.9  | 580.3  | 532.1  | 553.0  | 559.8  | 564.2  |
| 22.5° | 716.2  | 712.6  | 641.8  | 616.4  | 635.4  | 635.7  | 614.0  | 588.8  | 586.1  | 607.2  | 595.9  |
| 25°   | 739.8  | 754.4  | 687.7  | 681.7  | 689.9  | 681.7  | 660.5  | 643.9  | 633.3  | 664.9  | 633.3  |
| 27.5° | 795.7  | 775.0  | 694.8  | 729.3  | 734.5  | 692.8  | 719.4  | 699.9  | 670.2  | 709.4  | 722.3  |
| 30°   | 835.6  | 847.8  | 744.4  | 796.4  | 790.4  | 751.9  | 762.9  | 762.1  | 726.6  | 803.0  | 794.0  |
| 32.5° | 904.2  | 889.6  | 825.4  | 821.2  | 835.8  | 834.2  | 815.6  | 824.7  | 833.4  | 888.8  | 902.3  |
| 35°   | 974.5  | 990.0  | 877.2  | 905.1  | 901.0  | 874.8  | 923.1  | 917.5  | 943.6  | 1057.4 | 1019.7 |
| 37.5° | 1133.0 | 1058.9 | 993.5  | 989.8  | 1017.5 | 1021.6 | 1006.0 | 1030.6 | 1086.8 | 1174.4 | 1214.7 |
| 40°   | 1236.9 | 1203.1 | 1091.9 | 1096.3 | 1057.8 | 1124.0 | 1080.3 | 1159.3 | 1202.0 | 1349.7 | 1335.4 |
| 42.5° | 1394.0 | 1311.5 | 1204.7 | 1219.4 | 1211.5 | 1179.7 | 1237.4 | 1278.0 | 1339.3 | 1451.8 | 1524.6 |
| 45°   | 1511.0 | 1397.9 | 1347.3 | 1338.2 | 1337.3 | 1392.7 | 1385.5 | 1450.4 | 1472.3 | 1556.9 | 1617.2 |
| 47.5° | 1599.7 | 1503.6 | 1428.7 | 1438.9 | 1409.3 | 1567.6 | 1483.2 | 1503.4 | 1547.7 | 1627.4 | 1697.7 |
| 50°   | 1705.0 | 1598.0 | 1512.9 | 1538.2 | 1610.4 | 1671.2 | 1594.8 | 1560.3 | 1581.9 | 1676.0 | 1754.4 |
| 52.5° | 1802.6 | 1689.9 | 1596.3 | 1617.4 | 1735.4 | 1707.7 | 1699.4 | 1612.1 | 1609.4 | 1685.1 | 1774.0 |
| 55°   | 1916.6 | 1789.6 | 1707.0 | 1774.0 | 1815.9 | 1781.6 | 1768.5 | 1662.2 | 1596.6 | 1638.6 | 1722.5 |
| 57.5° | 2028.5 | 1888.4 | 1806.2 | 1820.1 | 1873.1 | 1839.0 | 1740.5 | 1576.8 | 1494.8 | 1503.1 | 1588.0 |
| 60°   | 2133.3 | 1979.1 | 1911.2 | 1897.9 | 1940.2 | 1806.7 | 1634.2 | 1420.5 | 1311.8 | 1291.8 | 1365.3 |
| 62.5° | 2223.0 | 2054.9 | 1990.7 | 1954.3 | 1994.6 | 1807.9 | 1468.6 | 1169.5 | 1050.1 | 982.5  | 1039.7 |
| 65°   | 2294.3 | 2117.9 | 2072.3 | 2053.2 | 2067.9 | 1697.9 | 1210.6 | 858.7  | 712.3  | 637.4  | 670.8  |
| 67.5° | 2341.7 | 2153.2 | 2132.2 | 2157.1 | 1962.5 | 1414.2 | 896.9  | 549.6  | 414.2  | 373.3  | 394.3  |
| 70°   | 2390.8 | 2184.3 | 2183.6 | 2099.2 | 1664.1 | 974.9  | 523.8  | 316.8  | 241.0  | 225.2  | 238.3  |
| 72.5° | 2374.3 | 2147.3 | 2158.3 | 1835.8 | 1153.2 | 521.1  | 276.5  | 179.2  | 163.2  | 168.8  | 180.5  |
| 75°   | 2198.7 | 1952.4 | 1899.5 | 1319.8 | 654.2  | 242.2  | 159.3  | 135.7  | 134.7  | 143.3  | 154.6  |
| 77.5° | 1594.8 | 1359.7 | 1220.1 | 748.1  | 280.4  | 131.1  | 117.2  | 113.3  | 113.3  | 120.2  | 130.3  |
| 80°   | 525.8  | 455.0  | 474.2  | 289.4  | 132.6  | 90.5   | 91.5   | 93.2   | 92.7   | 94.4   | 102.8  |
| 82.5° | 86.4   | 89.5   | 138.3  | 118.2  | 80.0   | 61.8   | 69.0   | 72.5   | 73.4   | 65.7   | 74.6   |
| 85°   | 30.6   | 34.6   | 58.9   | 54.7   | 46.2   | 31.1   | 45.5   | 50.9   | 50.1   | 43.8   | 48.4   |
| 87.5° | 9.5    | 12.2   | 21.4   | 16.6   | 13.9   | 8.5    | 17.0   | 19.9   | 25.1   | 10.2   | 9.2    |
| 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

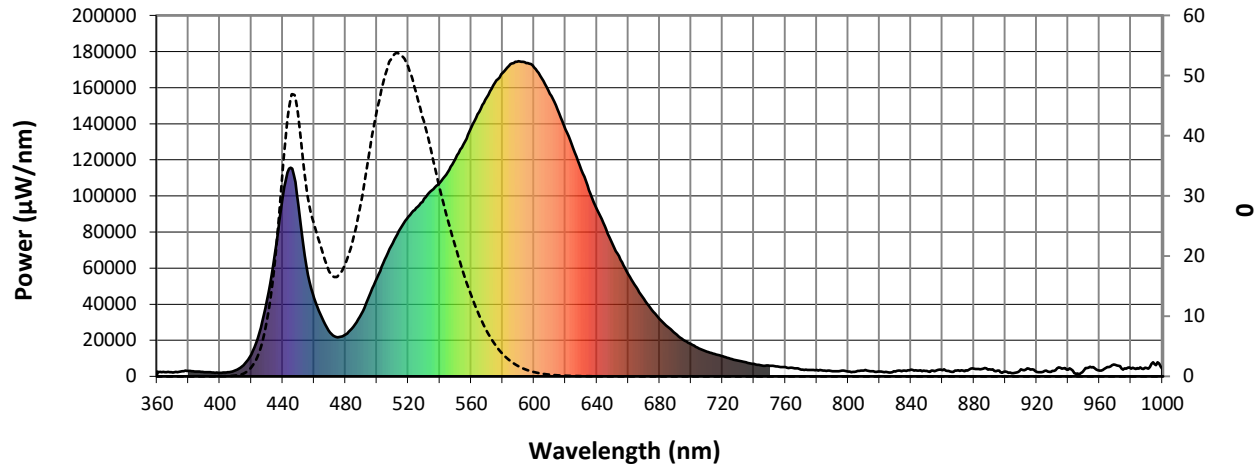


#####

| 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

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 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                            |                   |                               |                                |

REPORT NUMBER: SP1-2101-121-7

### 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              |           |                  |                  |

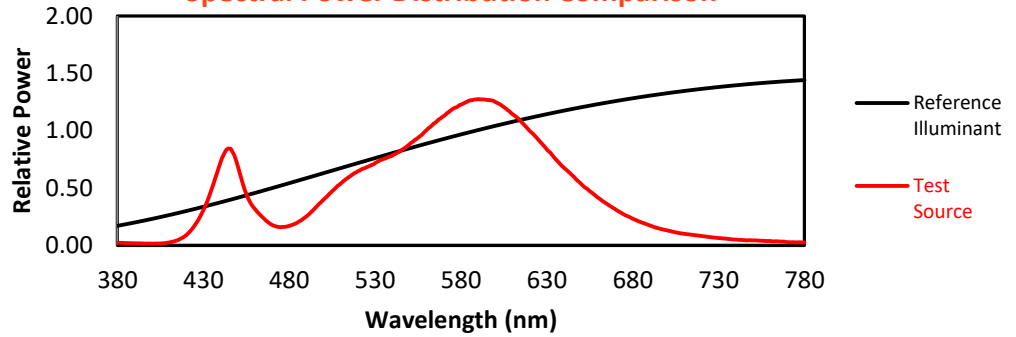
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TM-30-18

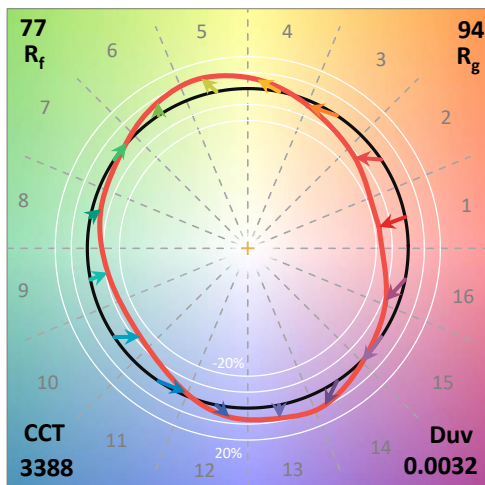
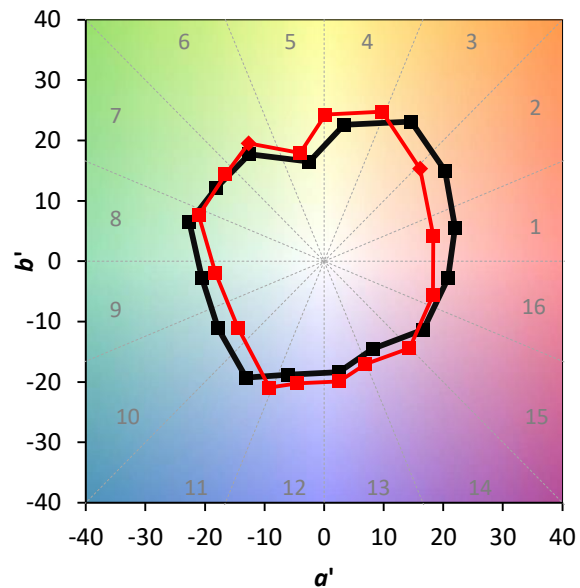
### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 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)