

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: McGRAW-EDISON

Report Number: P386300

Luminaire Tested: **GWC-SA2A-722-U-SL2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P386300  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GWC-SA2A-722-U-SL2-HSS  
Description: GALLEON WALL LUMINAIRE  
(2) 70 CRI, 2200K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL  
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5922 lumens  
Efficiency: N/A  
Efficacy: 89.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G2

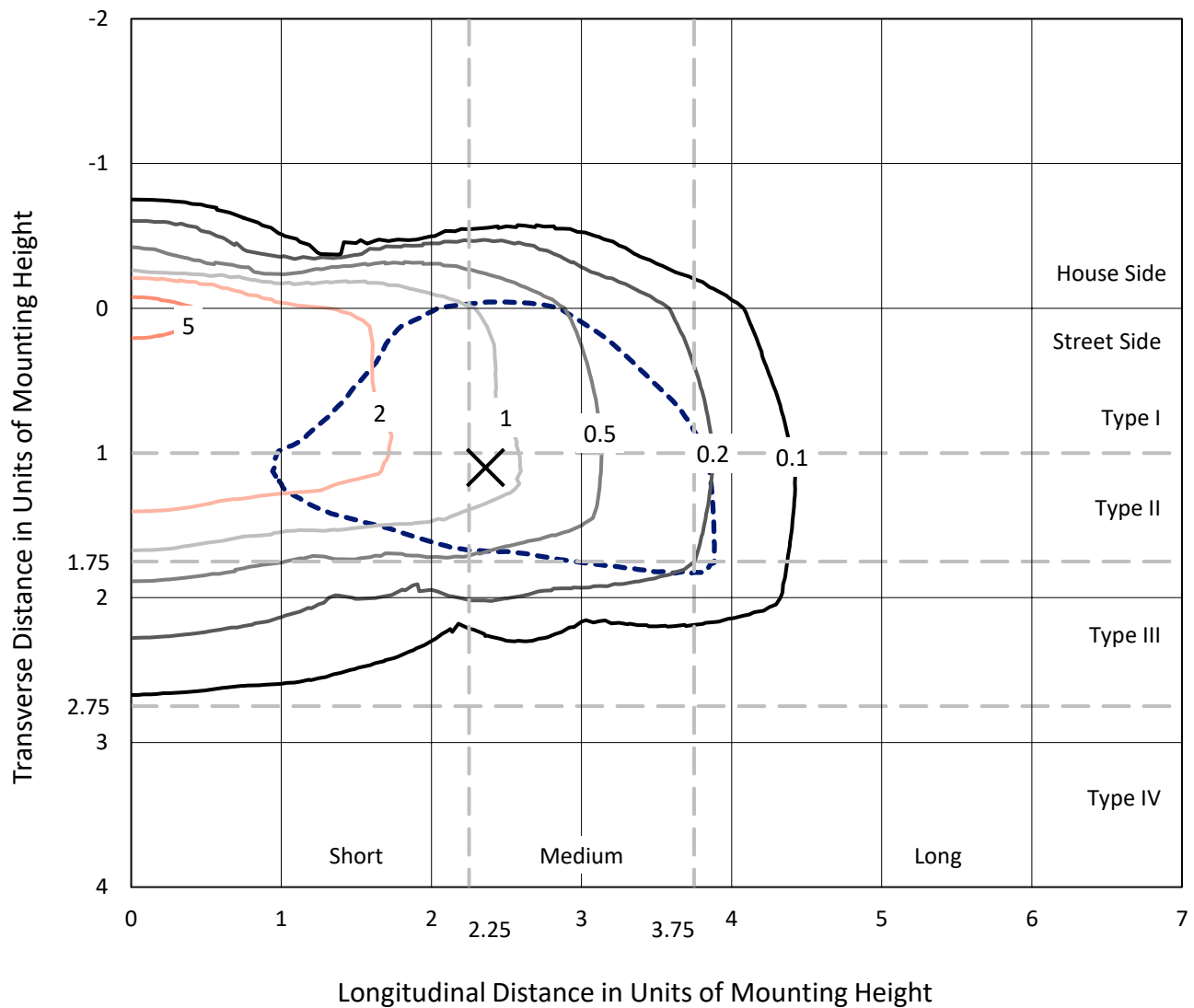
Input Watts (W): 66  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P386300  
 CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

## Iso-Footcandle Lines of Horizontal Illumination

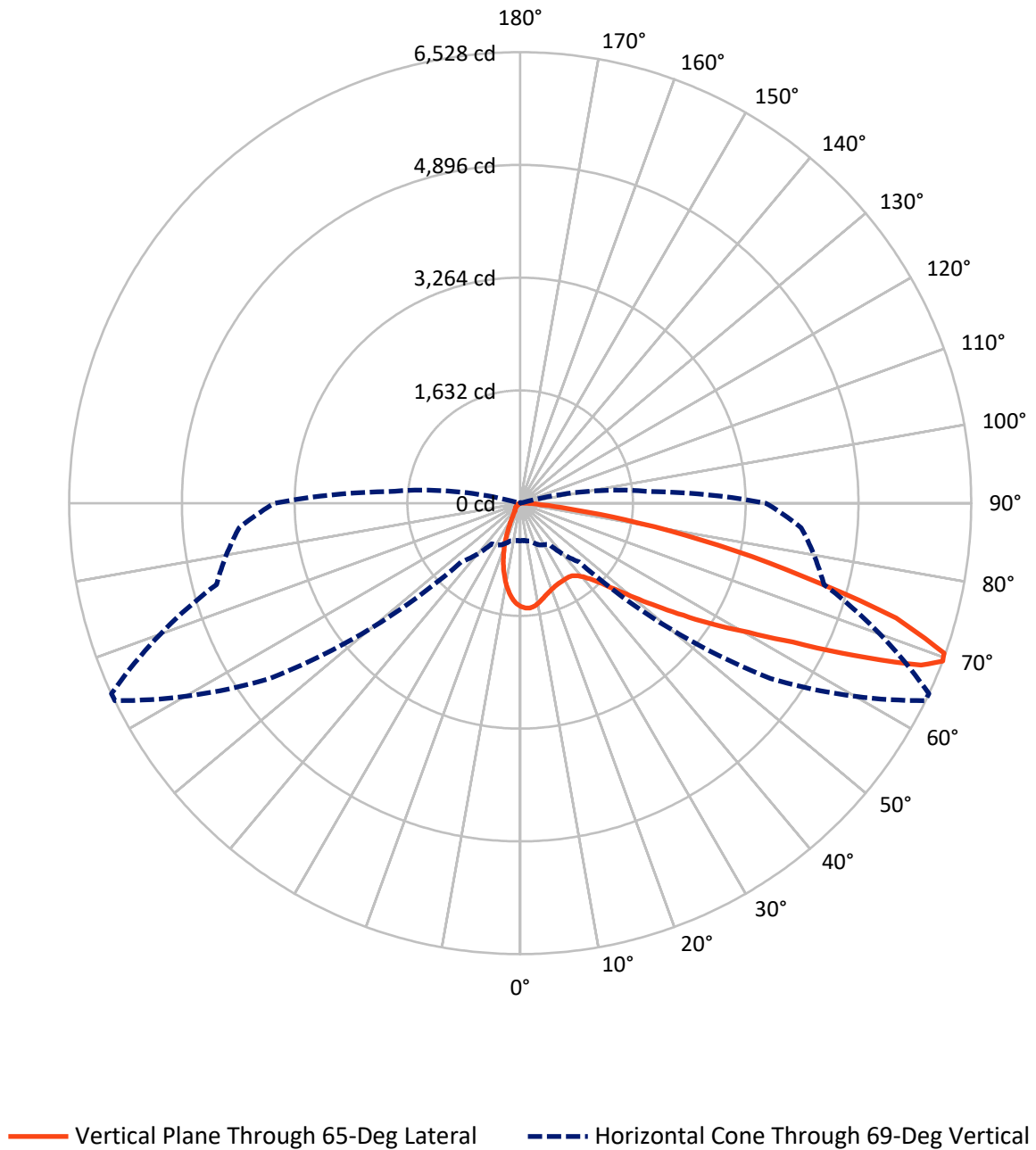
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 6.7 fc  
 Type III - Medium - N/A

REPORT NUMBER: P386300  
CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P386300

CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

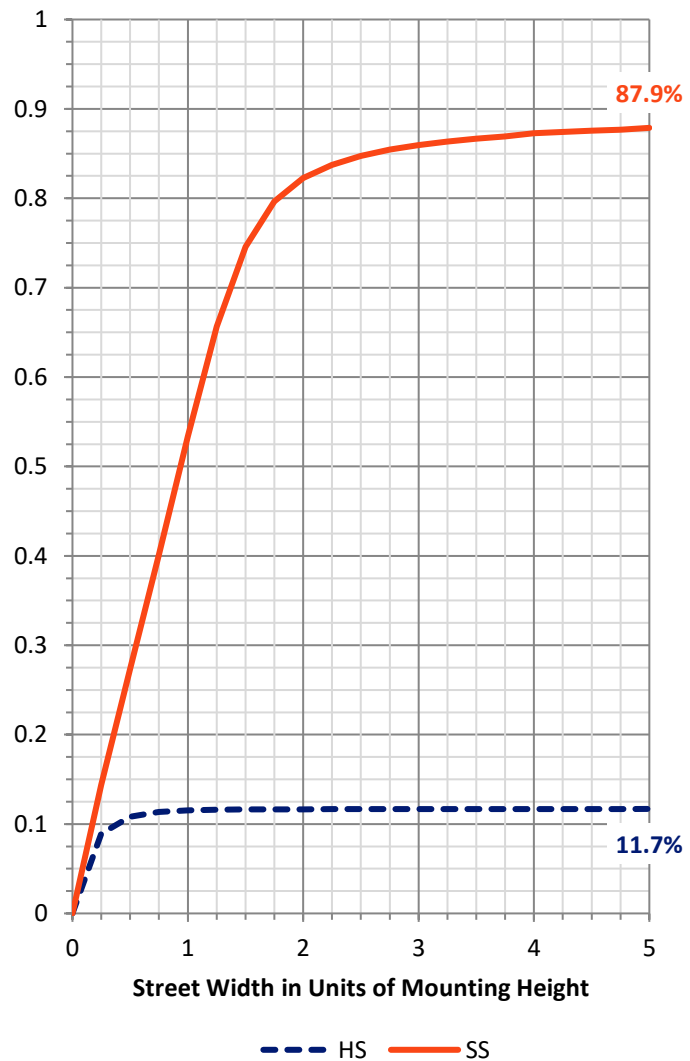
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 698.1    | 0.0    | 698.1  |
|                    | % Fixture | 11.8     | 0.0    | 11.8   |
| <b>Street Side</b> | Lumens    | 5223.9   | 0.0    | 5223.9 |
|                    | % Fixture | 88.2     | 0.0    | 88.2   |
| <b>Total</b>       | Lumens    | 5922.0   | 0.0    | 5922.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 125.1  | 2.1       |
| 10°-20°   | 273.9  | 4.6       |
| 20°-30°   | 379.4  | 6.4       |
| 30°-40°   | 529.0  | 8.9       |
| 40°-50°   | 822.3  | 13.9      |
| 50°-60°   | 1320.1 | 22.3      |
| 60°-70°   | 1493.2 | 25.2      |
| 70°-80°   | 877.0  | 14.8      |
| 80°-90°   | 102.0  | 1.7       |
| 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°    | 5922.0 | 100.0     |
| 0°-180°   | 5922.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P386300

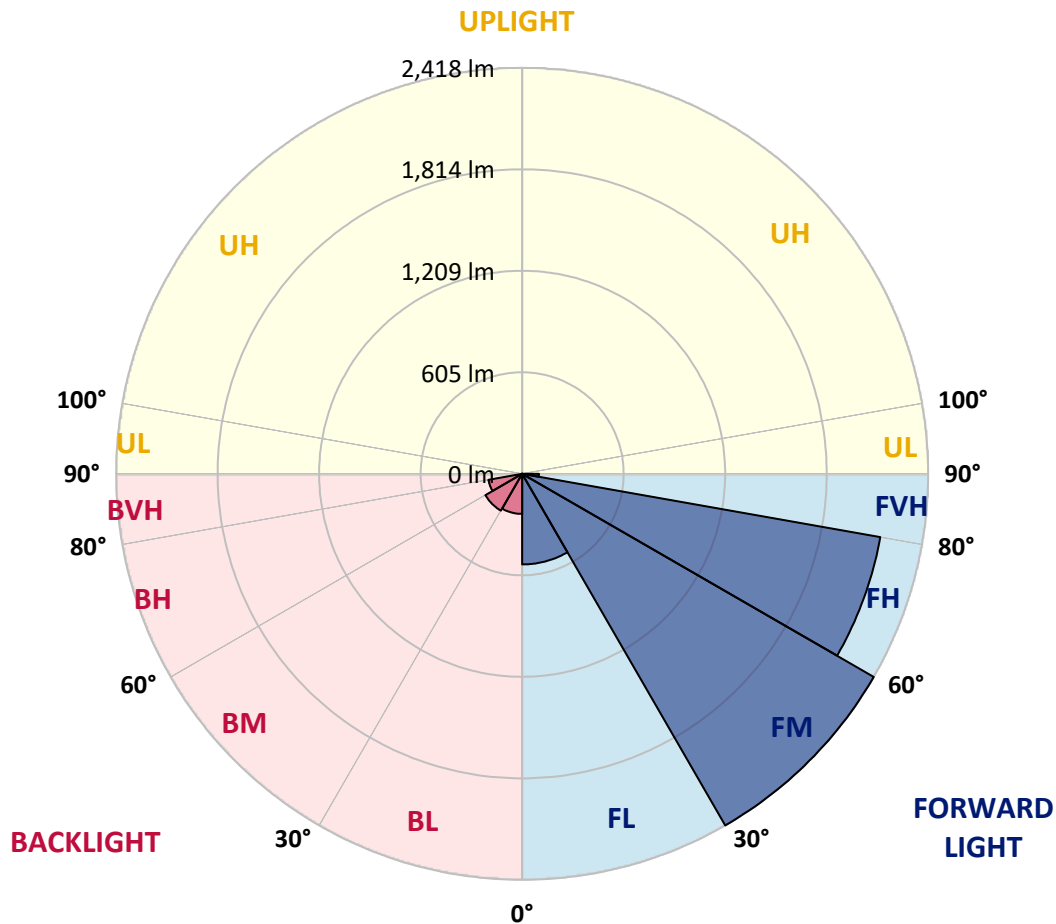
CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 539.6  | 9.1       |                         |      |         |
| FM   | (30°-60°)   | 2418.4 | 40.8      |                         |      |         |
| FH   | (60°-80°)   | 2166.2 | 36.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 99.7   | 1.7       |                         |      | G1/100  |
| BL   | (0°-30°)    | 238.8  | 4.0       | B1/500                  |      |         |
| BM   | (30°-60°)   | 253.0  | 4.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 204.0  | 3.4       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.3    | 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 III Medium



REPORT NUMBER: P386300

CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 |
| 2.5°  | 1509.8 | 1506.0 | 1509.0 | 1515.5 | 1518.8 | 1518.8 | 1521.3 | 1518.3 | 1519.3 | 1512.0 | 1501.5 |
| 5°    | 1415.3 | 1409.5 | 1417.8 | 1436.1 | 1458.7 | 1478.0 | 1506.5 | 1521.6 | 1523.1 | 1523.3 | 1511.0 |
| 7.5°  | 1313.6 | 1308.3 | 1320.6 | 1342.1 | 1371.2 | 1407.0 | 1456.9 | 1500.5 | 1503.0 | 1526.6 | 1517.5 |
| 10°   | 1230.9 | 1227.1 | 1241.4 | 1264.5 | 1298.5 | 1338.6 | 1399.8 | 1460.4 | 1467.7 | 1519.8 | 1516.5 |
| 12.5° | 1165.2 | 1162.2 | 1175.7 | 1202.3 | 1237.1 | 1281.5 | 1345.4 | 1415.8 | 1425.6 | 1504.5 | 1511.5 |
| 15°   | 1117.4 | 1116.9 | 1128.1 | 1153.7 | 1192.3 | 1233.6 | 1299.0 | 1374.5 | 1385.7 | 1488.0 | 1510.8 |
| 17.5° | 1092.3 | 1093.1 | 1101.3 | 1123.1 | 1156.2 | 1197.3 | 1259.9 | 1339.6 | 1351.9 | 1473.2 | 1514.5 |
| 20°   | 1089.8 | 1090.6 | 1095.1 | 1107.3 | 1134.2 | 1170.5 | 1228.1 | 1310.3 | 1323.1 | 1462.2 | 1520.6 |
| 22.5° | 1111.9 | 1111.3 | 1112.6 | 1111.3 | 1126.4 | 1153.9 | 1207.1 | 1287.8 | 1302.5 | 1454.9 | 1525.3 |
| 25°   | 1154.2 | 1153.4 | 1152.9 | 1143.7 | 1133.7 | 1148.4 | 1198.3 | 1275.0 | 1289.0 | 1449.6 | 1528.1 |
| 27.5° | 1213.1 | 1212.6 | 1211.8 | 1196.5 | 1166.5 | 1157.2 | 1199.3 | 1270.2 | 1282.0 | 1445.4 | 1527.6 |
| 30°   | 1290.5 | 1294.0 | 1293.0 | 1271.7 | 1224.9 | 1184.0 | 1209.8 | 1267.7 | 1278.0 | 1437.1 | 1522.3 |
| 32.5° | 1381.5 | 1388.5 | 1394.0 | 1371.2 | 1312.6 | 1237.1 | 1234.1 | 1270.5 | 1278.0 | 1430.8 | 1512.8 |
| 35°   | 1476.0 | 1485.0 | 1505.3 | 1497.3 | 1420.1 | 1317.1 | 1276.0 | 1287.0 | 1293.3 | 1434.4 | 1508.3 |
| 37.5° | 1568.9 | 1579.7 | 1623.8 | 1647.1 | 1560.9 | 1422.8 | 1341.1 | 1327.9 | 1331.1 | 1455.7 | 1513.3 |
| 40°   | 1676.9 | 1693.2 | 1760.1 | 1797.7 | 1729.0 | 1564.4 | 1438.6 | 1398.0 | 1399.3 | 1502.5 | 1536.6 |
| 42.5° | 1818.8 | 1835.5 | 1908.0 | 1966.8 | 1918.5 | 1743.3 | 1570.9 | 1505.3 | 1504.0 | 1590.2 | 1591.5 |
| 45°   | 1991.7 | 2009.2 | 2084.1 | 2149.5 | 2127.7 | 1955.3 | 1740.3 | 1661.9 | 1660.4 | 1728.5 | 1695.5 |
| 47.5° | 2187.6 | 2204.9 | 2271.8 | 2339.2 | 2362.8 | 2202.9 | 1956.1 | 1875.6 | 1872.1 | 1920.7 | 1856.1 |
| 50°   | 2355.8 | 2367.0 | 2428.7 | 2519.4 | 2625.6 | 2507.1 | 2224.5 | 2147.0 | 2143.3 | 2176.1 | 2091.9 |
| 52.5° | 2416.9 | 2423.4 | 2486.1 | 2613.1 | 2878.2 | 2919.1 | 2577.0 | 2477.3 | 2474.5 | 2488.8 | 2405.9 |
| 55°   | 2293.1 | 2304.9 | 2381.8 | 2570.3 | 3015.1 | 3384.7 | 3022.1 | 2886.2 | 2865.5 | 2834.6 | 2734.1 |
| 57.5° | 1955.8 | 1974.6 | 2057.3 | 2307.9 | 2951.2 | 3754.0 | 3676.1 | 3348.8 | 3318.3 | 3129.8 | 3001.0 |
| 60°   | 1465.4 | 1488.5 | 1557.1 | 1827.5 | 2610.1 | 3885.6 | 4390.8 | 3864.3 | 3795.4 | 3364.9 | 3246.3 |
| 62.5° | 1005.6 | 1017.1 | 1063.7 | 1239.9 | 1922.2 | 3670.1 | 4988.7 | 4554.7 | 4428.9 | 3620.5 | 3511.7 |
| 65°   | 768.0  | 772.1  | 791.1  | 851.7  | 1144.7 | 2981.2 | 5226.5 | 5465.5 | 5313.4 | 3926.2 | 3787.1 |
| 67.5° | 618.9  | 615.7  | 642.0  | 728.7  | 766.5  | 1818.8 | 4949.1 | 6327.3 | 6256.1 | 4334.9 | 4064.3 |
| 69°   | 545.8  | 541.3  | 568.1  | 668.8  | 719.9  | 1202.3 | 4424.3 | 6523.0 | 6527.5 | 4550.6 | 4083.3 |
| 70°   | 491.1  | 494.2  | 520.7  | 633.2  | 704.1  | 943.7  | 3923.2 | 6473.1 | 6508.7 | 4631.3 | 3969.0 |
| 72.5° | 328.0  | 336.0  | 389.4  | 525.7  | 677.1  | 714.2  | 2368.8 | 5554.7 | 5691.6 | 4449.7 | 3405.2 |
| 75°   | 184.9  | 190.9  | 254.3  | 396.4  | 638.0  | 680.1  | 1251.2 | 4092.3 | 4224.6 | 3721.0 | 2625.9 |
| 77.5° | 90.7   | 94.0   | 143.8  | 255.8  | 533.5  | 648.0  | 709.7  | 2779.8 | 2930.9 | 2428.7 | 1485.2 |
| 80°   | 38.3   | 40.1   | 71.9   | 157.9  | 381.4  | 618.4  | 527.0  | 1710.8 | 1729.5 | 951.5  | 395.7  |
| 82.5° | 14.8   | 15.3   | 30.3   | 98.5   | 242.3  | 482.1  | 440.8  | 811.1  | 791.6  | 179.2  | 90.2   |
| 85°   | 1.8    | 2.0    | 11.0   | 59.1   | 134.8  | 248.1  | 358.1  | 349.6  | 323.5  | 35.6   | 46.4   |
| 87.5° | 0.0    | 0.0    | 0.8    | 18.0   | 40.1   | 116.3  | 186.2  | 145.1  | 130.8  | 11.5   | 24.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P386300

CATALOG NUMBER: GWC-SA2A-722-U-SL2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 | 1496.5 |
| 2.5°  | 1492.7 | 1490.2 | 1476.7 | 1457.2 | 1438.6 | 1415.6 | 1393.5 | 1380.2 | 1369.7 | 1362.7 | 1371.0 |
| 5°    | 1496.8 | 1485.7 | 1444.6 | 1392.0 | 1340.4 | 1282.2 | 1228.1 | 1182.3 | 1164.2 | 1144.2 | 1153.2 |
| 7.5°  | 1495.5 | 1474.7 | 1400.8 | 1307.1 | 1212.3 | 1114.4 | 1021.6 | 950.2  | 913.1  | 876.8  | 886.1  |
| 10°   | 1489.2 | 1454.2 | 1342.1 | 1203.3 | 1061.5 | 920.7  | 789.1  | 689.1  | 633.2  | 582.6  | 589.9  |
| 12.5° | 1475.5 | 1426.6 | 1273.0 | 1084.5 | 894.8  | 709.2  | 555.0  | 427.0  | 358.3  | 328.0  | 331.8  |
| 15°   | 1467.2 | 1399.8 | 1199.8 | 964.3  | 716.9  | 493.9  | 339.3  | 252.3  | 221.0  | 211.0  | 212.2  |
| 17.5° | 1463.2 | 1374.0 | 1124.1 | 826.7  | 535.0  | 314.5  | 219.3  | 193.5  | 186.7  | 184.9  | 185.4  |
| 20°   | 1459.2 | 1347.9 | 1046.2 | 690.6  | 368.6  | 211.5  | 180.2  | 172.7  | 170.1  | 167.9  | 168.4  |
| 22.5° | 1452.4 | 1322.8 | 962.5  | 552.8  | 248.6  | 171.7  | 162.4  | 155.1  | 149.9  | 147.1  | 147.6  |
| 25°   | 1444.1 | 1296.5 | 877.1  | 411.7  | 181.4  | 153.1  | 144.3  | 134.1  | 127.8  | 122.8  | 123.0  |
| 27.5° | 1430.8 | 1264.2 | 788.8  | 299.7  | 152.4  | 137.1  | 125.3  | 114.0  | 103.5  | 97.7   | 97.7   |
| 30°   | 1412.3 | 1227.6 | 690.9  | 214.5  | 136.6  | 121.3  | 107.0  | 93.0   | 81.7   | 76.4   | 75.9   |
| 32.5° | 1391.8 | 1189.5 | 591.9  | 162.6  | 124.0  | 106.5  | 90.2   | 75.4   | 65.4   | 61.1   | 60.9   |
| 35°   | 1374.2 | 1148.4 | 493.2  | 136.3  | 111.5  | 92.2   | 74.4   | 61.9   | 53.9   | 50.4   | 50.1   |
| 37.5° | 1362.9 | 1107.3 | 396.9  | 121.8  | 100.2  | 78.9   | 62.4   | 51.1   | 45.4   | 42.6   | 42.3   |
| 40°   | 1361.2 | 1076.8 | 309.0  | 110.8  | 89.7   | 67.2   | 52.1   | 43.4   | 38.1   | 35.1   | 34.8   |
| 42.5° | 1384.0 | 1059.2 | 237.1  | 101.5  | 78.9   | 56.9   | 44.4   | 37.1   | 31.6   | 28.6   | 28.3   |
| 45°   | 1443.9 | 1064.7 | 182.4  | 93.2   | 68.2   | 48.1   | 37.6   | 30.8   | 25.8   | 23.6   | 23.1   |
| 47.5° | 1553.1 | 1102.8 | 145.1  | 84.9   | 57.9   | 40.8   | 32.1   | 25.6   | 21.3   | 19.0   | 18.8   |
| 50°   | 1747.6 | 1192.3 | 121.3  | 75.9   | 48.4   | 34.8   | 26.6   | 20.8   | 17.3   | 15.3   | 15.0   |
| 52.5° | 2005.7 | 1351.7 | 108.3  | 67.2   | 40.1   | 29.6   | 21.8   | 16.5   | 13.5   | 12.0   | 11.8   |
| 55°   | 2290.4 | 1544.6 | 99.7   | 57.6   | 32.8   | 24.6   | 17.3   | 13.0   | 10.5   | 9.3    | 8.8    |
| 57.5° | 2568.3 | 1711.8 | 91.7   | 48.4   | 27.3   | 20.0   | 13.8   | 10.3   | 8.3    | 7.0    | 6.8    |
| 60°   | 2823.6 | 1865.4 | 82.4   | 38.8   | 22.3   | 15.8   | 10.8   | 8.0    | 6.5    | 5.3    | 5.3    |
| 62.5° | 3097.0 | 1984.1 | 69.7   | 30.3   | 18.3   | 12.0   | 8.8    | 7.3    | 5.3    | 4.5    | 4.3    |
| 65°   | 3386.7 | 2072.3 | 54.6   | 23.6   | 14.3   | 9.0    | 7.3    | 7.5    | 4.3    | 3.3    | 3.0    |
| 67.5° | 3600.7 | 2054.8 | 40.3   | 18.5   | 11.0   | 7.0    | 7.0    | 8.0    | 3.8    | 2.5    | 2.3    |
| 69°   | 3553.6 | 1912.2 | 33.8   | 16.0   | 9.5    | 6.0    | 6.5    | 8.0    | 3.5    | 2.3    | 2.0    |
| 70°   | 3417.0 | 1754.4 | 29.8   | 14.3   | 8.5    | 5.5    | 6.3    | 7.8    | 3.3    | 2.3    | 2.0    |
| 72.5° | 2845.7 | 1321.3 | 23.3   | 10.8   | 6.8    | 4.5    | 5.3    | 6.8    | 3.3    | 2.3    | 1.8    |
| 75°   | 2140.5 | 845.7  | 17.8   | 7.8    | 5.0    | 3.5    | 4.0    | 5.0    | 3.3    | 2.0    | 1.8    |
| 77.5° | 1164.7 | 305.0  | 12.8   | 5.3    | 3.5    | 2.8    | 2.8    | 3.8    | 3.0    | 1.5    | 1.0    |
| 80°   | 299.5  | 76.7   | 8.0    | 3.5    | 2.8    | 2.0    | 1.8    | 2.5    | 1.8    | 0.3    | 0.0    |
| 82.5° | 73.9   | 17.3   | 4.3    | 2.5    | 2.0    | 0.8    | 0.8    | 1.3    | 0.8    | 0.0    | 0.0    |
| 85°   | 40.6   | 8.5    | 2.8    | 1.8    | 1.0    | 0.0    | 0.0    | 0.3    | 0.0    | 0.0    | 0.0    |
| 87.5° | 20.8   | 2.5    | 0.8    | 0.5    | 0.3    | 0.0    | 0.0    | 0.0    | 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    |

LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-4

Luminaire Tested: IFLD-S-SA2B-722-U-T3R

Test Date: 03/03/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/03/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2B-722-U-T3R**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 800mA.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 2218    | CRI (Ra): | 72.2 |      |       |
| CIE u':                   | 0.2889  | R1:       | 69.1 | R9:  | -16.8 |
| CIE v':                   | 0.5350  | R2:       | 83.2 | R10: | 61.9  |
| Duv:                      | -0.0005 | R3:       | 95.4 | R11: | 60.1  |
| CIE x:                    | 0.5026  | R4:       | 66.4 | R12: | 51.2  |
| CIE y:                    | 0.4136  | R5:       | 66.2 | R13: | 71.3  |
| CIE z:                    | 0.0839  | R6:       | 76.7 | R14: | 97.1  |
| Peak Wavelength (nm):     | 606     | R7:       | 76.7 |      |       |
| Dominant Wavelength (nm): | 587     | R8:       | 43.9 |      |       |
| Purity:                   | 75.3    |           |      |      |       |
| Rf:                       | 70      |           |      |      |       |
| Rg:                       | 99.3    |           |      |      |       |



### Test Conditions

Stabilization Time: 95M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.3/31%  
 Sphere Temperature (°C): 24.8

REPORT NUMBER: SP1-2101-121-4

| 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            |

REPORT NUMBER: SP1-2101-121-4

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 2200K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-4

### 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       | 2623             | 0.0              | 490       | 7941             | 1.1              | 620       | 205150           | 53.4             | 750       | 13431            | 0.0              | 880       | 3867             | 0.0              |
| 365       | 2260             | 0.0              | 495       | 11299            | 2.0              | 625       | 198277           | 43.7             | 755       | 12426            | 0.0              | 885       | 3345             | 0.0              |
| 370       | 2306             | 0.0              | 500       | 16633            | 3.7              | 630       | 187878           | 34.0             | 760       | 11385            | 0.0              | 890       | 2956             | 0.0              |
| 375       | 2437             | 0.0              | 505       | 23672            | 6.6              | 635       | 176836           | 26.6             | 765       | 9797             | 0.0              | 895       | 2272             | 0.0              |
| 380       | 2473             | 0.0              | 510       | 32025            | 11.0             | 640       | 164455           | 19.7             | 770       | 8562             | 0.0              | 900       | 3003             | 0.0              |
| 385       | 2203             | 0.0              | 515       | 41295            | 17.1             | 645       | 154086           | 14.8             | 775       | 7810             | 0.0              | 905       | 2480             | 0.0              |
| 390       | 2262             | 0.0              | 520       | 50628            | 24.6             | 650       | 141592           | 10.3             | 780       | 7052             | 0.0              | 910       | 2068             | 0.0              |
| 395       | 2028             | 0.0              | 525       | 58836            | 31.6             | 655       | 128604           | 7.4              | 785       | 6345             | 0.0              | 915       | 2064             | 0.0              |
| 400       | 1806             | 0.0              | 530       | 67109            | 39.5             | 660       | 116713           | 4.9              | 790       | 5524             | 0.0              | 920       | 2581             | 0.0              |
| 405       | 1945             | 0.0              | 535       | 74404            | 46.1             | 665       | 104993           | 3.3              | 795       | 5788             | 0.0              | 925       | 3137             | 0.0              |
| 410       | 3199             | 0.0              | 540       | 81280            | 53.0             | 670       | 93149            | 2.0              | 800       | 5282             | 0.0              | 930       | 2747             | 0.0              |
| 415       | 5572             | 0.0              | 545       | 88806            | 59.1             | 675       | 82543            | 1.4              | 805       | 4258             | 0.0              | 935       | 2471             | 0.0              |
| 420       | 10322            | 0.0              | 550       | 97367            | 66.2             | 680       | 73089            | 0.8              | 810       | 5156             | 0.0              | 940       | 2339             | 0.0              |
| 425       | 18494            | 0.1              | 555       | 106598           | 72.8             | 685       | 64438            | 0.6              | 815       | 4391             | 0.0              | 945       | 2917             | 0.0              |
| 430       | 28541            | 0.2              | 560       | 117615           | 79.9             | 690       | 56546            | 0.3              | 820       | 4383             | 0.0              | 950       | 1966             | 0.0              |
| 435       | 37453            | 0.4              | 565       | 129103           | 85.8             | 695       | 49328            | 0.2              | 825       | 4881             | 0.0              | 955       | 1580             | 0.0              |
| 440       | 44455            | 0.7              | 570       | 141415           | 92.0             | 700       | 43493            | 0.1              | 830       | 3588             | 0.0              | 960       | 1318             | 0.0              |
| 445       | 45934            | 1.0              | 575       | 155854           | 97.0             | 705       | 38035            | 0.1              | 835       | 3835             | 0.0              | 965       | 1419             | 0.0              |
| 450       | 37926            | 1.0              | 580       | 168613           | 100.2            | 710       | 33716            | 0.0              | 840       | 3014             | 0.0              | 970       | 1917             | 0.0              |
| 455       | 24793            | 0.8              | 585       | 182390           | 101.3            | 715       | 30449            | 0.0              | 845       | 3765             | 0.0              | 975       | 1210             | 0.0              |
| 460       | 15340            | 0.6              | 590       | 194054           | 100.3            | 720       | 27240            | 0.0              | 850       | 2906             | 0.0              | 980       | 3915             | 0.0              |
| 465       | 10883            | 0.6              | 595       | 203639           | 96.5             | 725       | 24231            | 0.0              | 855       | 2947             | 0.0              | 985       | 3180             | 0.0              |
| 470       | 8138             | 0.5              | 600       | 211043           | 91.0             | 730       | 21490            | 0.0              | 860       | 3864             | 0.0              | 990       | 5676             | 0.0              |
| 475       | 6653             | 0.5              | 605       | 214591           | 83.1             | 735       | 18548            | 0.0              | 865       | 3546             | 0.0              | 995       | 4736             | 0.0              |
| 480       | 6220             | 0.6              | 610       | 214337           | 73.6             | 740       | 16963            | 0.0              | 870       | 3253             | 0.0              | 1000      | 5113             | 0.0              |
| 485       | 6613             | 0.8              | 615       | 211915           | 64.0             | 745       | 14922            | 0.0              | 875       | 2450             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-4

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 7290.1

S/P: 0.84

| 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       | 2623             | 0.0              | 490       | 7941             | 12.2             | 620       | 205150           | 2.6              | 750       | 13431            | 0.0              | 880       | 3867             | 0.0              |
| 365       | 2260             | 0.0              | 495       | 11299            | 18.3             | 625       | 198277           | 1.7              | 755       | 12426            | 0.0              | 885       | 3345             | 0.0              |
| 370       | 2306             | 0.0              | 500       | 16633            | 27.8             | 630       | 187878           | 1.1              | 760       | 11385            | 0.0              | 890       | 2956             | 0.0              |
| 375       | 2437             | 0.0              | 505       | 23672            | 40.2             | 635       | 176836           | 0.7              | 765       | 9797             | 0.0              | 895       | 2272             | 0.0              |
| 380       | 2473             | 0.0              | 510       | 32025            | 54.3             | 640       | 164455           | 0.4              | 770       | 8562             | 0.0              | 900       | 3003             | 0.0              |
| 385       | 2203             | 0.0              | 515       | 41295            | 68.4             | 645       | 154086           | 0.3              | 775       | 7810             | 0.0              | 905       | 2480             | 0.0              |
| 390       | 2262             | 0.0              | 520       | 50628            | 80.5             | 650       | 141592           | 0.2              | 780       | 7052             | 0.0              | 910       | 2068             | 0.0              |
| 395       | 2028             | 0.0              | 525       | 58836            | 88.0             | 655       | 128604           | 0.1              | 785       | 6345             | 0.0              | 915       | 2064             | 0.0              |
| 400       | 1806             | 0.0              | 530       | 67109            | 92.5             | 660       | 116713           | 0.1              | 790       | 5524             | 0.0              | 920       | 2581             | 0.0              |
| 405       | 1945             | 0.1              | 535       | 74404            | 92.7             | 665       | 104993           | 0.0              | 795       | 5788             | 0.0              | 925       | 3137             | 0.0              |
| 410       | 3199             | 0.2              | 540       | 81280            | 89.8             | 670       | 93149            | 0.0              | 800       | 5282             | 0.0              | 930       | 2747             | 0.0              |
| 415       | 5572             | 0.6              | 545       | 88806            | 85.1             | 675       | 82543            | 0.0              | 805       | 4258             | 0.0              | 935       | 2471             | 0.0              |
| 420       | 10322            | 1.7              | 550       | 97367            | 79.6             | 680       | 73089            | 0.0              | 810       | 5156             | 0.0              | 940       | 2339             | 0.0              |
| 425       | 18494            | 4.5              | 555       | 106598           | 72.8             | 685       | 64438            | 0.0              | 815       | 4391             | 0.0              | 945       | 2917             | 0.0              |
| 430       | 28541            | 9.7              | 560       | 117615           | 65.7             | 690       | 56546            | 0.0              | 820       | 4383             | 0.0              | 950       | 1966             | 0.0              |
| 435       | 37453            | 16.7             | 565       | 129103           | 57.9             | 695       | 49328            | 0.0              | 825       | 4881             | 0.0              | 955       | 1580             | 0.0              |
| 440       | 44455            | 24.8             | 570       | 141415           | 49.9             | 700       | 43493            | 0.0              | 830       | 3588             | 0.0              | 960       | 1318             | 0.0              |
| 445       | 45934            | 30.8             | 575       | 155854           | 42.4             | 705       | 38035            | 0.0              | 835       | 3835             | 0.0              | 965       | 1419             | 0.0              |
| 450       | 37926            | 29.4             | 580       | 168613           | 34.7             | 710       | 33716            | 0.0              | 840       | 3014             | 0.0              | 970       | 1917             | 0.0              |
| 455       | 24793            | 21.7             | 585       | 182390           | 27.9             | 715       | 30449            | 0.0              | 845       | 3765             | 0.0              | 975       | 1210             | 0.0              |
| 460       | 15340            | 14.8             | 590       | 194054           | 21.6             | 720       | 27240            | 0.0              | 850       | 2906             | 0.0              | 980       | 3915             | 0.0              |
| 465       | 10883            | 11.5             | 595       | 203639           | 16.2             | 725       | 24231            | 0.0              | 855       | 2947             | 0.0              | 985       | 3180             | 0.0              |
| 470       | 8138             | 9.4              | 600       | 211043           | 11.9             | 730       | 21490            | 0.0              | 860       | 3864             | 0.0              | 990       | 5676             | 0.0              |
| 475       | 6653             | 8.3              | 605       | 214591           | 8.4              | 735       | 18548            | 0.0              | 865       | 3546             | 0.0              | 995       | 4736             | 0.0              |
| 480       | 6220             | 8.4              | 610       | 214337           | 5.8              | 740       | 16963            | 0.0              | 870       | 3253             | 0.0              | 1000      | 5113             | 0.0              |
| 485       | 6613             | 9.6              | 615       | 211915           | 3.9              | 745       | 14922            | 0.0              | 875       | 2450             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-4

### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 2276.7**      **M/P: 0.26**

| 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       | 2623             | 0.0              | 490       | 7941             | 6.6              | 620       | 205150           | 0.2              | 750       | 13431            | 0.0              | 880       | 3867             | 0.0              |
| 365       | 2260             | 0.0              | 495       | 11299            | 9.3              | 625       | 198277           | 0.1              | 755       | 12426            | 0.0              | 885       | 3345             | 0.0              |
| 370       | 2306             | 0.0              | 500       | 16633            | 13.4             | 630       | 187878           | 0.1              | 760       | 11385            | 0.0              | 890       | 2956             | 0.0              |
| 375       | 2437             | 0.0              | 505       | 23672            | 18.2             | 635       | 176836           | 0.0              | 765       | 9797             | 0.0              | 895       | 2272             | 0.0              |
| 380       | 2473             | 0.0              | 510       | 32025            | 23.0             | 640       | 164455           | 0.0              | 770       | 8562             | 0.0              | 900       | 3003             | 0.0              |
| 385       | 2203             | 0.0              | 515       | 41295            | 27.0             | 645       | 154086           | 0.0              | 775       | 7810             | 0.0              | 905       | 2480             | 0.0              |
| 390       | 2262             | 0.0              | 520       | 50628            | 29.5             | 650       | 141592           | 0.0              | 780       | 7052             | 0.0              | 910       | 2068             | 0.0              |
| 395       | 2028             | 0.0              | 525       | 58836            | 29.8             | 655       | 128604           | 0.0              | 785       | 6345             | 0.0              | 915       | 2064             | 0.0              |
| 400       | 1806             | 0.0              | 530       | 67109            | 29.0             | 660       | 116713           | 0.0              | 790       | 5524             | 0.0              | 920       | 2581             | 0.0              |
| 405       | 1945             | 0.0              | 535       | 74404            | 26.8             | 665       | 104993           | 0.0              | 795       | 5788             | 0.0              | 925       | 3137             | 0.0              |
| 410       | 3199             | 0.1              | 540       | 81280            | 23.8             | 670       | 93149            | 0.0              | 800       | 5282             | 0.0              | 930       | 2747             | 0.0              |
| 415       | 5572             | 0.4              | 545       | 88806            | 20.6             | 675       | 82543            | 0.0              | 805       | 4258             | 0.0              | 935       | 2471             | 0.0              |
| 420       | 10322            | 1.2              | 550       | 97367            | 17.5             | 680       | 73089            | 0.0              | 810       | 5156             | 0.0              | 940       | 2339             | 0.0              |
| 425       | 18494            | 2.9              | 555       | 106598           | 14.4             | 685       | 64438            | 0.0              | 815       | 4391             | 0.0              | 945       | 2917             | 0.0              |
| 430       | 28541            | 6.0              | 560       | 117615           | 11.6             | 690       | 56546            | 0.0              | 820       | 4383             | 0.0              | 950       | 1966             | 0.0              |
| 435       | 37453            | 10.0             | 565       | 129103           | 9.1              | 695       | 49328            | 0.0              | 825       | 4881             | 0.0              | 955       | 1580             | 0.0              |
| 440       | 44455            | 14.9             | 570       | 141415           | 6.9              | 700       | 43493            | 0.0              | 830       | 3588             | 0.0              | 960       | 1318             | 0.0              |
| 445       | 45934            | 18.1             | 575       | 155854           | 5.2              | 705       | 38035            | 0.0              | 835       | 3835             | 0.0              | 965       | 1419             | 0.0              |
| 450       | 37926            | 17.5             | 580       | 168613           | 3.8              | 710       | 33716            | 0.0              | 840       | 3014             | 0.0              | 970       | 1917             | 0.0              |
| 455       | 24793            | 13.0             | 585       | 182390           | 2.7              | 715       | 30449            | 0.0              | 845       | 3765             | 0.0              | 975       | 1210             | 0.0              |
| 460       | 15340            | 9.0              | 590       | 194054           | 1.9              | 720       | 27240            | 0.0              | 850       | 2906             | 0.0              | 980       | 3915             | 0.0              |
| 465       | 10883            | 7.1              | 595       | 203639           | 1.3              | 725       | 24231            | 0.0              | 855       | 2947             | 0.0              | 985       | 3180             | 0.0              |
| 470       | 8138             | 5.8              | 600       | 211043           | 0.9              | 730       | 21490            | 0.0              | 860       | 3864             | 0.0              | 990       | 5676             | 0.0              |
| 475       | 6653             | 5.1              | 605       | 214591           | 0.6              | 735       | 18548            | 0.0              | 865       | 3546             | 0.0              | 995       | 4736             | 0.0              |
| 480       | 6220             | 5.0              | 610       | 214337           | 0.4              | 740       | 16963            | 0.0              | 870       | 3253             | 0.0              | 1000      | 5113             | 0.0              |
| 485       | 6613             | 5.5              | 615       | 211915           | 0.3              | 745       | 14922            | 0.0              | 875       | 2450             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-4

TM-30-18

### Summary

$R_f = 70$   
 $R_g = 99.3$   
 CIE  $R_a = 72.2$   
 $R_g = -16.8$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 57 | CES51 = 74 | CES76 = 57 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 84 | CES53 = 65 | CES78 = 64 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 85 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 52 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 43 | CES33 = 54 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 71 | CES59 = 84 | CES84 = 92 |
| CES10 = 79 | CES35 = 86 | CES60 = 90 | CES85 = 81 |
| CES11 = 62 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 71 | CES87 = 78 |
| CES13 = 45 | CES38 = 54 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 85 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 70 | CES93 = 78 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 64 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 64 | CES96 = 78 |
| CES22 = 81 | CES47 = 61 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 57 | CES98 = 72 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)