

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P631758

Luminaire Tested: GWS-SA2B-735-U-RW-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P631758  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-49)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA2B-735-U-RW-W  
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS  
Light Source: (32) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

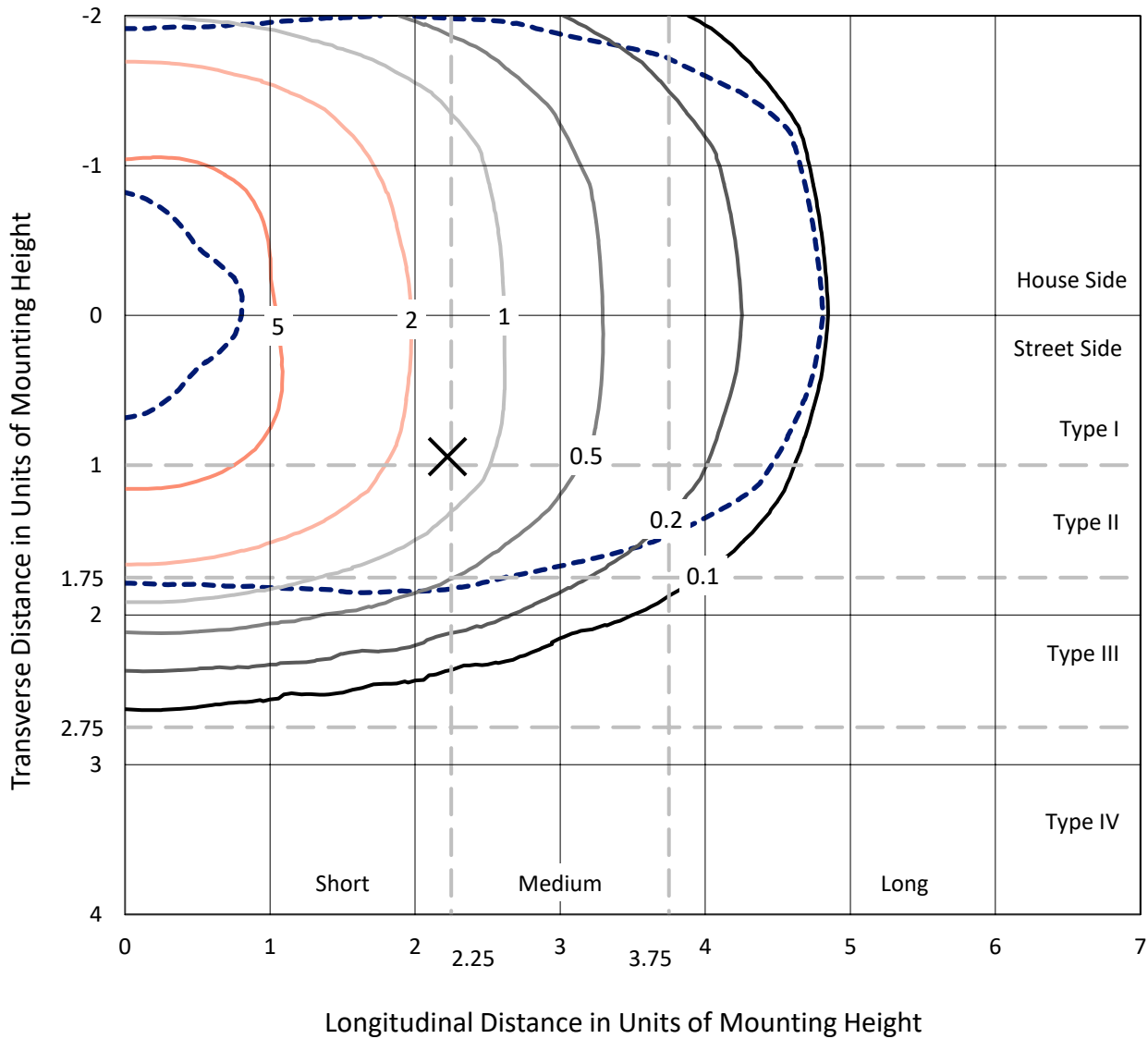
Lumens per Lamp: N/A  
Luminaire Lumens: 7006.9 lumens  
Efficiency: N/A  
Efficacy: 151.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3  
  
Input Watts (W): 46.4  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P631758  
 CATALOG NUMBER: GWS-SA2B-735-U-RW-W

### Iso-Footcandle Lines of Horizontal Illumination

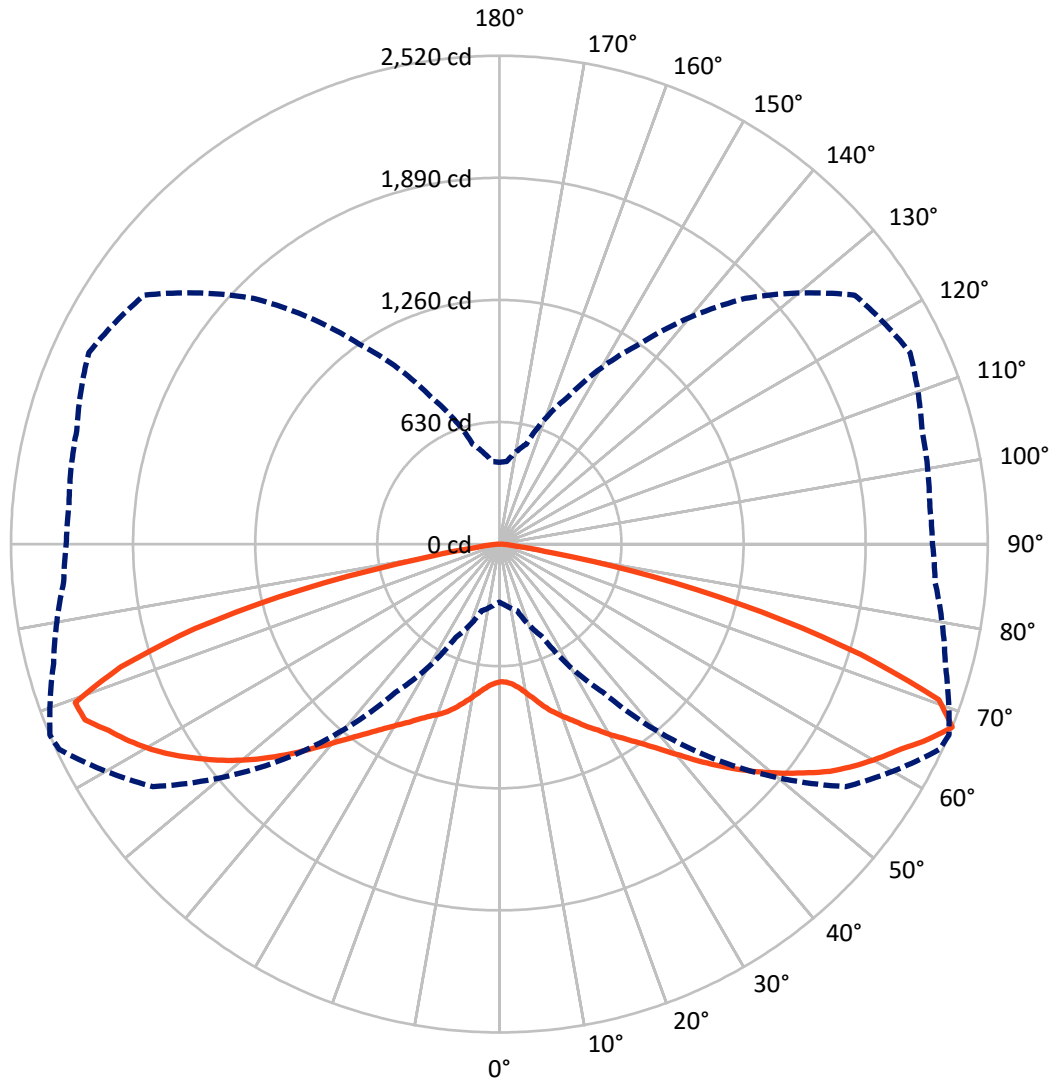
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 8.2 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 67-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 3464.8   | 0.0    | 3464.8 |
|                    | % Fixture | 49.4     | 0.0    | 49.4   |
| <b>Street Side</b> | Lumens    | 3542.1   | 0.0    | 3542.1 |
|                    | % Fixture | 50.6     | 0.0    | 50.6   |
| <b>Total</b>       | Lumens    | 7006.9   | 0.0    | 7006.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 69.6   | 1.0       |
| 10°-20°   | 235.2  | 3.4       |
| 20°-30°   | 461.4  | 6.6       |
| 30°-40°   | 786.1  | 11.2      |
| 40°-50°   | 1262.3 | 18.0      |
| 50°-60°   | 1715.2 | 24.5      |
| 60°-70°   | 1640.7 | 23.4      |
| 70°-80°   | 780.0  | 11.1      |
| 80°-90°   | 56.5   | 0.8       |
| 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°    | 7006.9 | 100.0     |
| 0°-180°   | 7006.9 | 100.0     |

**Coefficient of Utilization**



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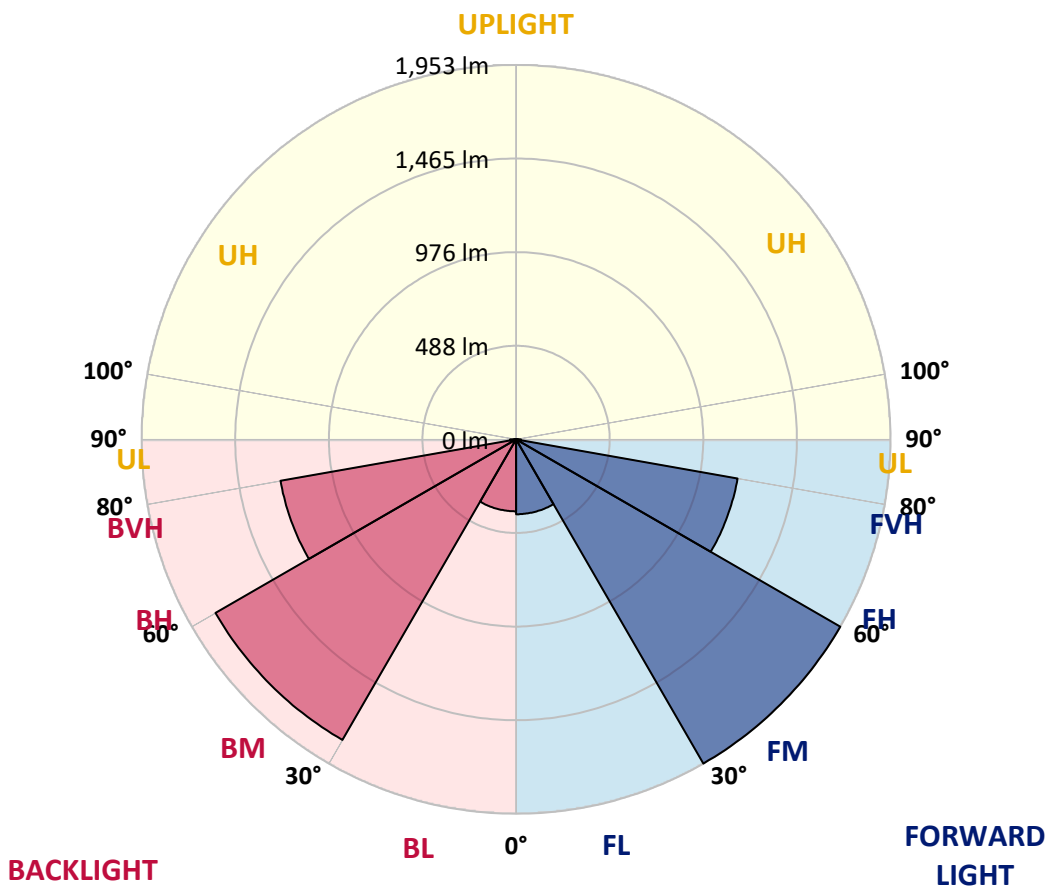
CATALOG NUMBER: GWS-SA2B-735-U-RW-W

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 390.7  | 5.6       |                         |      |         |
| FM (30°-60°)   | 1952.9 | 27.9      |                         |      |         |
| FH (60°-80°)   | 1173.1 | 16.7      |                         |      | G1/1800 |
| FVH (80°-90°)  | 25.4   | 0.4       |                         |      | G1/100  |
| BL (0°-30°)    | 375.5  | 5.4       | B1/500                  |      |         |
| BM (30°-60°)   | 1810.6 | 25.8      | B2/2500                 |      |         |
| BH (60°-80°)   | 1247.6 | 17.8      | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 31.1   | 0.4       |                         |      | 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°    | 67°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  |
| 2.5°  | 694.8  | 695.8  | 697.3  | 700.2  | 703.1  | 707.5  | 711.9  | 711.4  | 713.4  | 714.9  | 716.3  |
| 5°    | 690.9  | 691.9  | 694.4  | 698.3  | 702.7  | 710.0  | 719.2  | 723.2  | 726.1  | 731.4  | 736.3  |
| 7.5°  | 699.2  | 701.2  | 704.6  | 710.0  | 716.8  | 726.1  | 738.8  | 745.6  | 750.0  | 759.7  | 768.0  |
| 10°   | 710.5  | 712.9  | 719.7  | 730.0  | 740.2  | 754.4  | 770.5  | 780.7  | 783.7  | 796.3  | 812.0  |
| 12.5° | 721.2  | 724.1  | 735.3  | 753.9  | 772.4  | 791.5  | 810.5  | 823.2  | 824.2  | 841.2  | 858.8  |
| 15°   | 738.3  | 740.7  | 755.8  | 779.8  | 808.1  | 834.4  | 857.8  | 866.6  | 870.5  | 882.7  | 904.7  |
| 17.5° | 775.8  | 778.8  | 798.3  | 824.2  | 853.9  | 881.7  | 905.2  | 912.5  | 912.5  | 922.7  | 940.8  |
| 20°   | 816.3  | 819.3  | 845.1  | 878.3  | 914.4  | 942.7  | 960.8  | 954.0  | 951.5  | 954.4  | 967.1  |
| 22.5° | 861.7  | 867.1  | 892.0  | 930.5  | 974.9  | 1009.6 | 1018.9 | 998.4  | 991.5  | 984.7  | 987.6  |
| 25°   | 919.8  | 926.1  | 950.5  | 991.5  | 1035.0 | 1071.6 | 1076.9 | 1045.2 | 1041.3 | 1017.4 | 1008.6 |
| 27.5° | 986.6  | 991.5  | 1021.8 | 1062.3 | 1102.8 | 1133.5 | 1139.4 | 1100.3 | 1087.2 | 1054.0 | 1033.5 |
| 30°   | 1073.0 | 1077.4 | 1103.8 | 1143.8 | 1178.9 | 1200.4 | 1207.7 | 1154.0 | 1143.8 | 1093.0 | 1061.3 |
| 32.5° | 1167.2 | 1169.1 | 1196.0 | 1234.5 | 1265.8 | 1286.3 | 1276.0 | 1213.5 | 1198.4 | 1141.3 | 1097.9 |
| 35°   | 1275.0 | 1275.0 | 1309.7 | 1340.9 | 1365.8 | 1371.6 | 1352.1 | 1280.9 | 1263.3 | 1201.3 | 1147.2 |
| 37.5° | 1380.9 | 1383.8 | 1416.0 | 1453.1 | 1475.1 | 1474.1 | 1438.5 | 1360.4 | 1340.4 | 1273.1 | 1213.1 |
| 40°   | 1495.6 | 1501.9 | 1534.1 | 1575.6 | 1596.6 | 1593.7 | 1539.0 | 1452.2 | 1431.7 | 1352.1 | 1293.6 |
| 42.5° | 1601.0 | 1611.2 | 1648.8 | 1691.3 | 1714.2 | 1712.2 | 1655.1 | 1557.6 | 1537.5 | 1447.8 | 1389.2 |
| 45°   | 1684.9 | 1695.6 | 1742.5 | 1801.5 | 1838.1 | 1834.7 | 1777.1 | 1666.9 | 1642.5 | 1548.3 | 1483.9 |
| 47.5° | 1758.6 | 1769.8 | 1822.0 | 1884.5 | 1942.6 | 1948.4 | 1895.7 | 1777.1 | 1751.3 | 1656.1 | 1583.4 |
| 50°   | 1815.2 | 1820.6 | 1879.1 | 1947.4 | 2014.8 | 2047.5 | 2001.6 | 1887.9 | 1856.7 | 1762.5 | 1680.5 |
| 52.5° | 1810.8 | 1818.1 | 1890.3 | 1983.1 | 2073.3 | 2127.0 | 2095.3 | 1992.3 | 1962.1 | 1859.6 | 1779.6 |
| 55°   | 1721.5 | 1728.8 | 1814.7 | 1949.9 | 2106.0 | 2185.1 | 2181.7 | 2091.9 | 2069.9 | 1958.7 | 1882.5 |
| 57.5° | 1591.2 | 1607.3 | 1692.7 | 1838.6 | 2063.1 | 2231.4 | 2245.1 | 2182.6 | 2159.7 | 2055.8 | 1984.5 |
| 60°   | 1358.0 | 1379.5 | 1478.0 | 1667.3 | 1925.5 | 2215.8 | 2312.9 | 2259.2 | 2245.1 | 2146.0 | 2076.7 |
| 62.5° | 986.6  | 1002.3 | 1133.5 | 1381.9 | 1721.5 | 2104.6 | 2370.0 | 2338.3 | 2327.5 | 2227.0 | 2160.2 |
| 65°   | 590.9  | 626.5  | 731.9  | 977.4  | 1388.7 | 1894.7 | 2338.8 | 2441.7 | 2430.5 | 2310.5 | 2231.4 |
| 67.5° | 299.1  | 315.2  | 356.7  | 529.9  | 933.9  | 1567.8 | 2182.1 | 2506.1 | 2519.8 | 2381.7 | 2256.8 |
| 70°   | 185.4  | 189.8  | 201.5  | 261.5  | 466.5  | 1030.1 | 1784.5 | 2338.3 | 2405.1 | 2370.5 | 2190.9 |
| 72.5° | 148.8  | 149.8  | 151.8  | 163.0  | 224.0  | 481.6  | 1128.2 | 1831.3 | 1951.8 | 2213.9 | 2096.7 |
| 75°   | 123.5  | 123.9  | 124.4  | 127.8  | 139.6  | 196.6  | 549.0  | 1258.4 | 1399.5 | 1881.6 | 1944.0 |
| 77.5° | 99.1   | 96.6   | 98.6   | 100.0  | 103.0  | 109.8  | 189.3  | 671.4  | 814.4  | 1235.0 | 1503.4 |
| 80°   | 64.4   | 63.4   | 67.3   | 68.8   | 71.7   | 76.1   | 101.0  | 227.9  | 276.7  | 449.4  | 478.2  |
| 82.5° | 34.6   | 32.7   | 41.0   | 39.5   | 41.0   | 44.4   | 59.5   | 83.4   | 93.7   | 135.7  | 114.7  |
| 85°   | 10.7   | 10.7   | 11.2   | 13.2   | 16.1   | 15.6   | 25.9   | 41.0   | 45.4   | 58.1   | 42.9   |
| 87.5° | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.4    | 5.4    | 8.3    | 11.2   | 20.0   | 15.1   |
| 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: GWS-SA2B-735-U-RW-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  | 709.5  |
| 2.5°  | 719.2  | 714.9  | 717.3  | 718.8  | 718.3  | 717.3  | 712.4  | 711.4  | 709.0  | 705.1  | 704.1  |
| 5°    | 740.7  | 735.8  | 736.3  | 734.9  | 730.0  | 723.6  | 712.9  | 707.5  | 703.1  | 698.3  | 697.8  |
| 7.5°  | 774.4  | 769.0  | 767.6  | 760.7  | 747.1  | 732.4  | 715.3  | 705.6  | 698.3  | 691.9  | 690.9  |
| 10°   | 817.3  | 812.0  | 807.1  | 791.0  | 768.5  | 749.0  | 726.6  | 712.4  | 701.7  | 693.9  | 692.4  |
| 12.5° | 865.1  | 860.8  | 848.6  | 825.1  | 798.3  | 775.4  | 752.4  | 734.9  | 719.2  | 707.5  | 706.1  |
| 15°   | 918.3  | 908.6  | 890.0  | 859.8  | 834.4  | 815.9  | 788.0  | 764.1  | 739.3  | 723.6  | 720.2  |
| 17.5° | 955.4  | 947.1  | 925.2  | 895.9  | 875.9  | 859.8  | 827.1  | 792.9  | 759.3  | 736.3  | 731.4  |
| 20°   | 981.8  | 973.0  | 948.1  | 926.6  | 920.3  | 906.6  | 868.6  | 829.0  | 790.0  | 761.7  | 755.4  |
| 22.5° | 1000.8 | 991.5  | 966.2  | 955.4  | 964.2  | 961.8  | 924.7  | 879.8  | 833.4  | 799.8  | 792.0  |
| 25°   | 1018.9 | 1010.1 | 987.6  | 991.5  | 1014.9 | 1022.3 | 982.3  | 930.0  | 877.3  | 837.8  | 828.5  |
| 27.5° | 1035.9 | 1024.7 | 1014.5 | 1035.9 | 1069.1 | 1082.8 | 1040.3 | 981.3  | 924.2  | 883.7  | 876.4  |
| 30°   | 1062.3 | 1049.1 | 1047.6 | 1078.9 | 1131.6 | 1143.3 | 1096.4 | 1037.4 | 980.8  | 939.8  | 930.5  |
| 32.5° | 1095.5 | 1083.3 | 1084.2 | 1131.1 | 1192.1 | 1201.8 | 1161.8 | 1106.7 | 1050.1 | 1009.1 | 996.4  |
| 35°   | 1140.4 | 1125.2 | 1133.5 | 1191.1 | 1252.6 | 1270.6 | 1238.4 | 1192.6 | 1137.4 | 1095.5 | 1081.3 |
| 37.5° | 1202.3 | 1180.4 | 1197.4 | 1257.9 | 1319.9 | 1346.8 | 1321.9 | 1287.7 | 1233.1 | 1190.6 | 1177.4 |
| 40°   | 1281.4 | 1263.3 | 1270.1 | 1337.0 | 1400.9 | 1433.1 | 1417.5 | 1383.8 | 1329.7 | 1285.3 | 1270.1 |
| 42.5° | 1375.1 | 1357.0 | 1354.6 | 1425.8 | 1489.7 | 1538.5 | 1523.4 | 1492.7 | 1436.5 | 1385.8 | 1371.2 |
| 45°   | 1466.8 | 1450.2 | 1453.6 | 1526.3 | 1598.1 | 1651.2 | 1636.1 | 1600.0 | 1539.0 | 1480.5 | 1468.7 |
| 47.5° | 1562.4 | 1548.8 | 1551.7 | 1628.8 | 1707.8 | 1761.0 | 1742.0 | 1698.1 | 1626.8 | 1564.4 | 1550.2 |
| 50°   | 1660.5 | 1644.9 | 1649.3 | 1730.3 | 1815.7 | 1865.9 | 1836.7 | 1771.8 | 1693.2 | 1632.2 | 1620.0 |
| 52.5° | 1758.1 | 1739.6 | 1750.8 | 1827.4 | 1915.7 | 1955.7 | 1901.6 | 1823.0 | 1746.9 | 1686.4 | 1672.7 |
| 55°   | 1870.3 | 1850.8 | 1838.6 | 1920.6 | 2007.9 | 2024.5 | 1950.4 | 1858.6 | 1768.4 | 1699.5 | 1691.3 |
| 57.5° | 1972.8 | 1956.2 | 1933.3 | 2015.3 | 2079.7 | 2067.5 | 1987.9 | 1848.9 | 1716.1 | 1627.8 | 1616.1 |
| 60°   | 2064.5 | 2050.4 | 2030.4 | 2100.2 | 2129.4 | 2102.1 | 1957.7 | 1733.2 | 1587.3 | 1495.1 | 1489.7 |
| 62.5° | 2149.0 | 2133.8 | 2115.3 | 2174.8 | 2170.9 | 2107.5 | 1820.1 | 1555.6 | 1360.4 | 1261.4 | 1252.6 |
| 65°   | 2215.8 | 2202.1 | 2196.8 | 2243.6 | 2237.3 | 2002.6 | 1605.9 | 1264.8 | 994.0  | 882.2  | 878.8  |
| 67.5° | 2234.8 | 2229.5 | 2258.3 | 2337.8 | 2238.7 | 1791.8 | 1259.4 | 838.8  | 533.8  | 427.9  | 421.6  |
| 70°   | 2163.6 | 2163.1 | 2245.6 | 2359.3 | 2035.8 | 1368.7 | 743.2  | 378.2  | 268.4  | 238.1  | 234.2  |
| 72.5° | 2070.9 | 2069.4 | 2134.8 | 2035.3 | 1509.7 | 749.0  | 312.8  | 202.5  | 167.9  | 159.6  | 159.6  |
| 75°   | 1918.6 | 1914.7 | 1964.0 | 1548.3 | 849.0  | 282.0  | 165.9  | 139.1  | 131.7  | 130.3  | 130.3  |
| 77.5° | 1563.9 | 1531.2 | 1453.6 | 956.9  | 296.2  | 138.6  | 109.8  | 109.3  | 104.9  | 104.4  | 104.4  |
| 80°   | 514.3  | 514.3  | 597.7  | 365.0  | 130.8  | 85.4   | 77.6   | 81.5   | 77.1   | 74.2   | 73.7   |
| 82.5° | 83.9   | 115.6  | 164.4  | 104.4  | 70.8   | 53.2   | 47.8   | 50.7   | 53.2   | 42.5   | 42.5   |
| 85°   | 33.2   | 43.4   | 63.4   | 48.8   | 32.7   | 21.5   | 22.9   | 25.4   | 22.4   | 19.5   | 19.0   |
| 87.5° | 12.7   | 15.6   | 22.4   | 11.7   | 6.8    | 3.9    | 2.4    | 2.4    | 2.0    | 2.0    | 2.0    |
| 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

All Brands

Data applicable to all product families using SA light engines

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: 4π  
 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  
 CIE u': 0.2371  
 CIE v': 0.5177  
 Duv: 0.0032  
 CIE x: 0.4153  
 CIE y: 0.4030  
 CIE z: 0.1817  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 45.7  
  
 Rf: 76.9  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 73.1 |      |       |
| R1:       | 68.9 | R9:  | -34.6 |
| R2:       | 81.1 | R10: | 57.8  |
| R3:       | 93.1 | R11: | 68.6  |
| R4:       | 71.6 | R12: | 53.9  |
| R5:       | 69.4 | R13: | 70.9  |
| R6:       | 75.0 | R14: | 96.2  |
| R7:       | 79.5 |      |       |
| R8:       | 46.4 |      |       |

**Test Conditions**

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1



REPORT NUMBER: SP1-2101-121-7

| 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**



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| λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | 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 (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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           |        |               |               |

**Summary**

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



**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)