

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: P632972

Luminaire Tested: GWS-SA2D-827-U-SL2-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P632972
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-27)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA2D-827-U-SL2-W
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS
Light Source: (32) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8434.7 lumens
Efficiency: N/A
Efficacy: 102.7 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

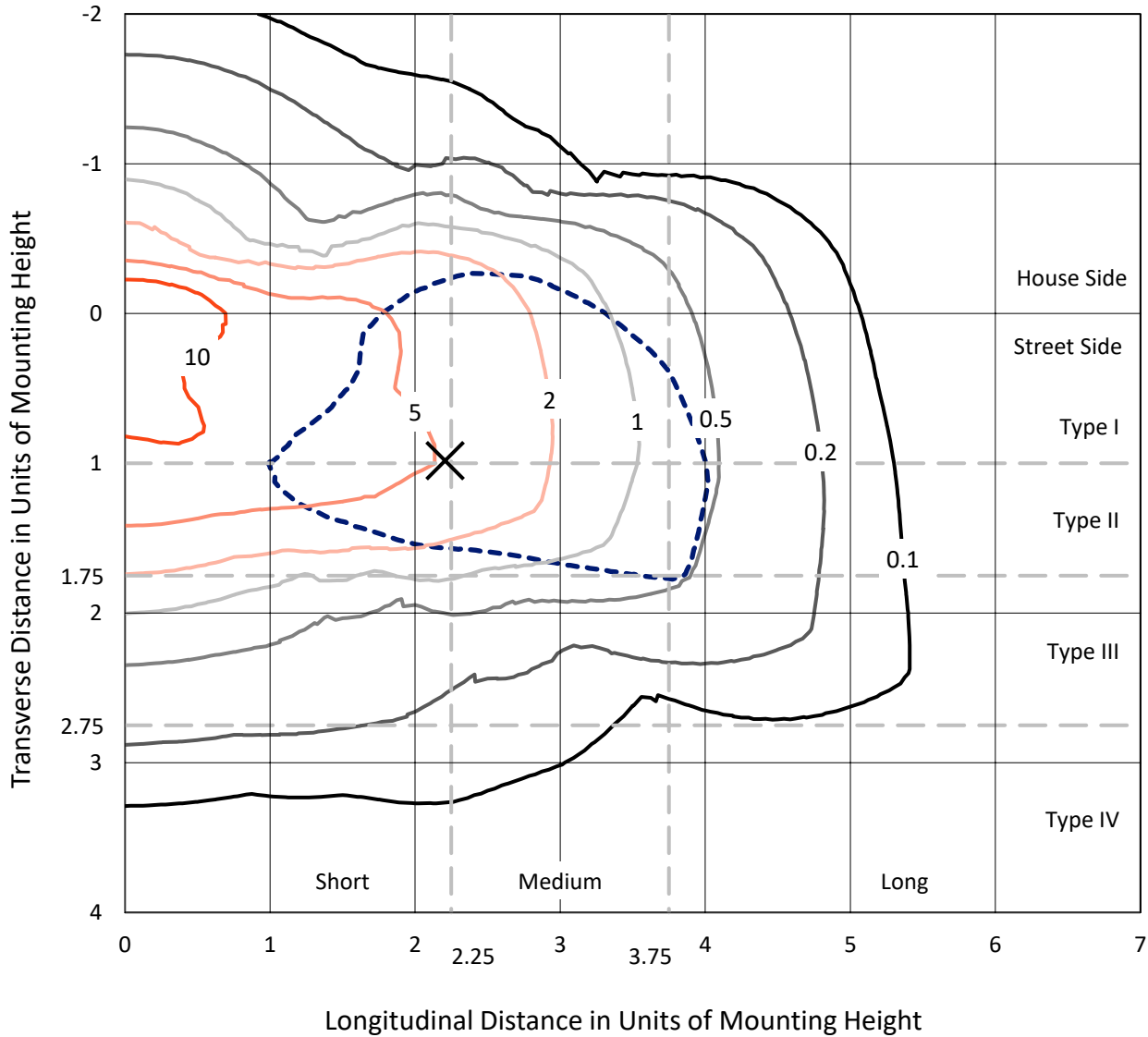
Input Watts (W): 82.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P632972
 CATALOG NUMBER: GWS-SA2D-827-U-SL2-W

Iso-Footcandle Lines of Horizontal Illumination

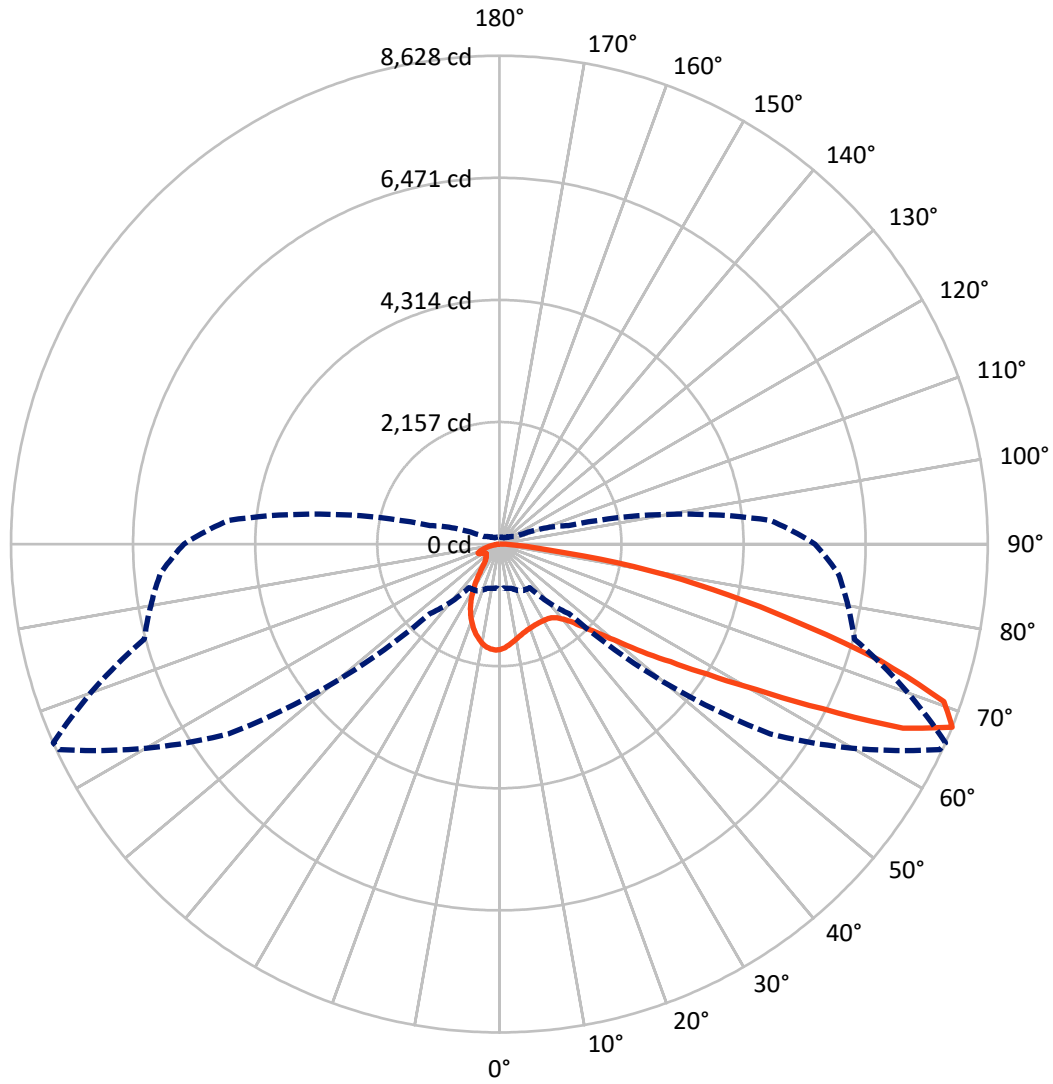
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 18.6 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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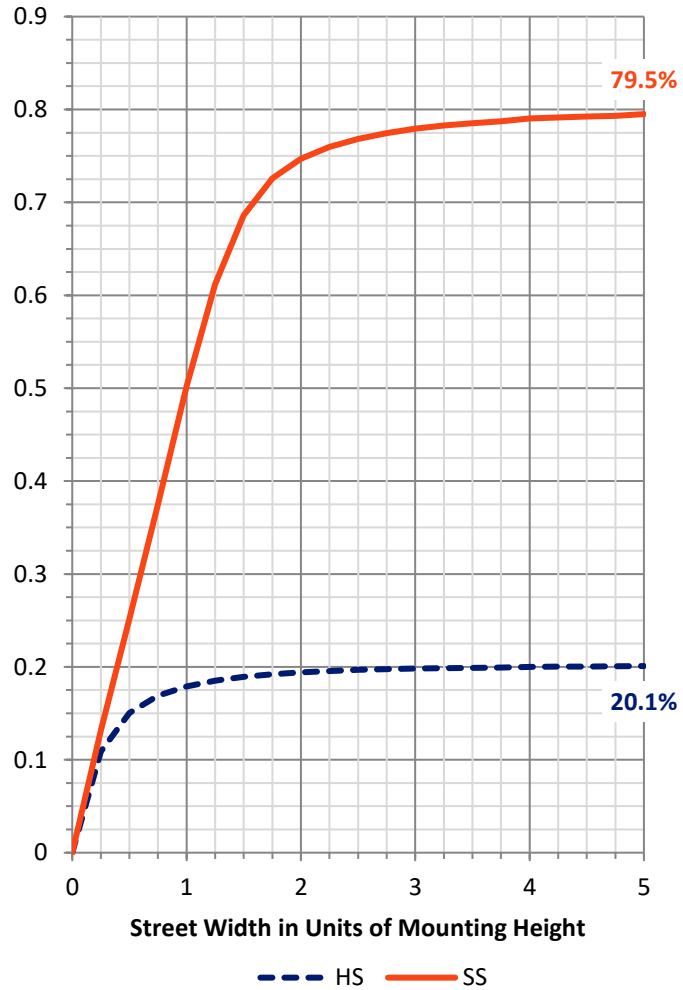
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1711.6 | 0.0 | 1711.6 |
| | % Fixture | 20.3 | 0.0 | 20.3 |
| Street Side | Lumens | 6723.1 | 0.0 | 6723.1 |
| | % Fixture | 79.7 | 0.0 | 79.7 |
| Total | Lumens | 8434.7 | 0.0 | 8434.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 163.6 | 1.9 |
| 10°-20° | 402.0 | 4.8 |
| 20°-30° | 552.6 | 6.6 |
| 30°-40° | 755.4 | 9.0 |
| 40°-50° | 1144.7 | 13.6 |
| 50°-60° | 1779.5 | 21.1 |
| 60°-70° | 2166.5 | 25.7 |
| 70°-80° | 1319.7 | 15.6 |
| 80°-90° | 150.7 | 1.8 |
| 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° | 8434.7 | 100.0 |
| 0°-180° | 8434.7 | 100.0 |

Coefficient of Utilization



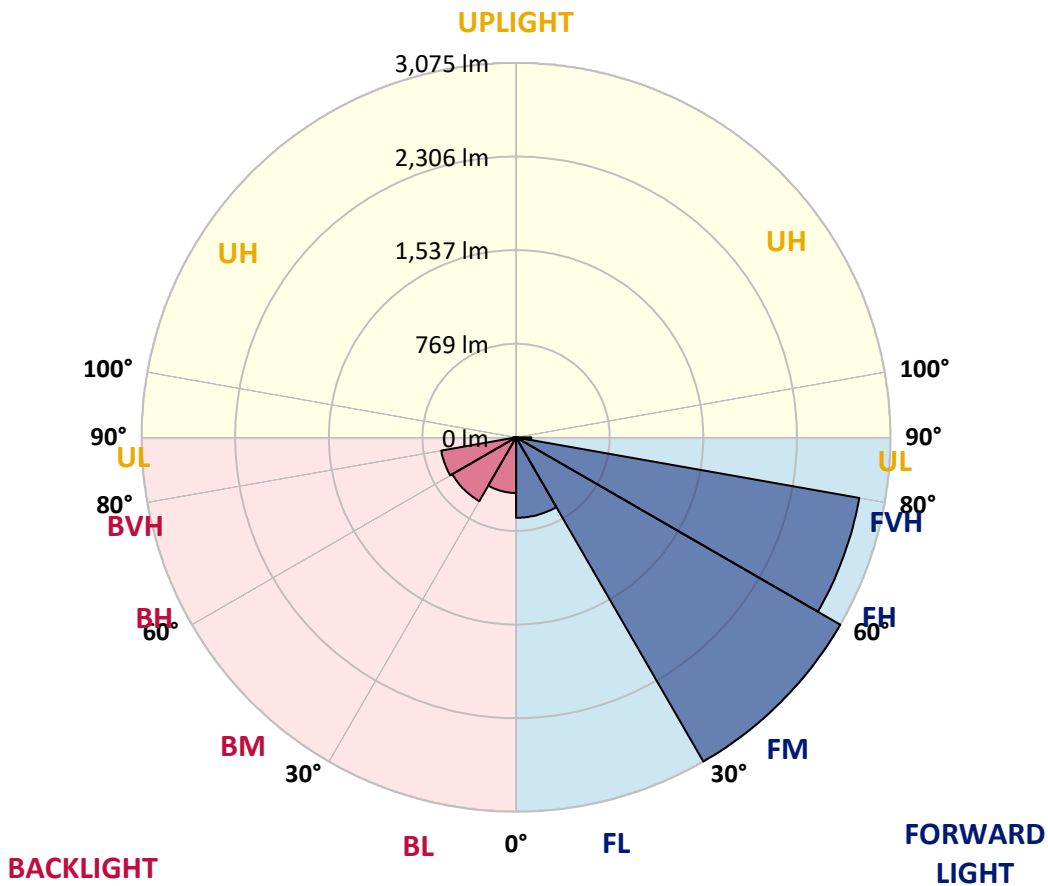
REPORT NUMBER: P632972

CATALOG NUMBER: GWS-SA2D-827-U-SL2-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 660.9 | 7.8 | | | |
| FM (30°-60°) | 3074.8 | 36.5 | | | |
| FH (60°-80°) | 2862.1 | 33.9 | | | G2/5000 |
| FVH (80°-90°) | 125.3 | 1.5 | | | G2/225 |
| BL (0°-30°) | 457.2 | 5.4 | B1/500 | | |
| BM (30°-60°) | 604.9 | 7.2 | B1/1000 | | |
| BH (60°-80°) | 624.1 | 7.4 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 25.4 | 0.3 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 |
| 2.5° | 1745.7 | 1751.8 | 1748.1 | 1771.5 | 1772.8 | 1802.3 | 1818.9 | 1833.1 | 1834.3 | 1852.8 | 1865.1 |
| 5° | 1626.3 | 1630.0 | 1630.0 | 1652.2 | 1666.9 | 1706.3 | 1744.5 | 1785.1 | 1788.1 | 1832.4 | 1866.3 |
| 7.5° | 1529.7 | 1533.4 | 1530.9 | 1560.5 | 1579.5 | 1623.2 | 1671.8 | 1734.0 | 1740.1 | 1811.5 | 1870.6 |
| 10° | 1454.0 | 1452.8 | 1458.9 | 1486.0 | 1510.6 | 1562.9 | 1617.1 | 1687.8 | 1697.1 | 1787.5 | 1875.5 |
| 12.5° | 1402.3 | 1403.6 | 1407.3 | 1435.6 | 1462.0 | 1513.7 | 1569.7 | 1646.6 | 1656.5 | 1759.8 | 1873.1 |
| 15° | 1377.7 | 1375.3 | 1378.3 | 1404.2 | 1429.4 | 1474.9 | 1532.8 | 1612.2 | 1622.0 | 1735.2 | 1873.7 |
| 17.5° | 1372.2 | 1370.3 | 1369.7 | 1388.2 | 1407.3 | 1449.7 | 1505.1 | 1585.7 | 1596.2 | 1719.2 | 1877.4 |
| 20° | 1389.4 | 1386.9 | 1380.2 | 1388.2 | 1396.2 | 1431.9 | 1485.4 | 1566.6 | 1578.3 | 1708.8 | 1884.8 |
| 22.5° | 1436.8 | 1432.5 | 1422.0 | 1412.2 | 1401.7 | 1423.3 | 1473.1 | 1552.5 | 1564.2 | 1702.0 | 1892.1 |
| 25° | 1508.8 | 1505.1 | 1494.0 | 1471.9 | 1433.7 | 1430.0 | 1470.6 | 1546.3 | 1558.0 | 1697.1 | 1895.2 |
| 27.5° | 1607.9 | 1602.3 | 1591.2 | 1559.2 | 1497.1 | 1455.3 | 1479.9 | 1545.7 | 1556.8 | 1691.5 | 1892.1 |
| 30° | 1725.4 | 1721.7 | 1715.5 | 1676.8 | 1593.7 | 1508.8 | 1500.8 | 1550.6 | 1559.2 | 1688.5 | 1886.0 |
| 32.5° | 1844.8 | 1841.1 | 1846.0 | 1827.5 | 1725.4 | 1597.4 | 1546.3 | 1564.2 | 1570.3 | 1687.8 | 1880.4 |
| 35° | 1950.0 | 1954.3 | 1990.0 | 1993.0 | 1892.7 | 1717.4 | 1618.3 | 1595.5 | 1596.8 | 1700.2 | 1882.9 |
| 37.5° | 2060.1 | 2076.7 | 2123.5 | 2163.5 | 2079.8 | 1876.1 | 1725.4 | 1654.6 | 1653.4 | 1731.5 | 1898.3 |
| 40° | 2206.0 | 2213.3 | 2273.0 | 2348.1 | 2295.8 | 2094.0 | 1877.4 | 1751.2 | 1742.6 | 1795.5 | 1939.5 |
| 42.5° | 2348.1 | 2365.9 | 2461.3 | 2547.5 | 2530.2 | 2339.5 | 2068.7 | 1895.8 | 1880.4 | 1908.7 | 2024.4 |
| 45° | 2529.0 | 2546.2 | 2653.3 | 2764.1 | 2795.4 | 2617.0 | 2313.6 | 2101.3 | 2086.0 | 2079.2 | 2180.1 |
| 47.5° | 2709.9 | 2727.8 | 2823.7 | 2983.7 | 3093.9 | 2964.0 | 2632.4 | 2372.7 | 2347.5 | 2321.0 | 2415.2 |
| 50° | 2831.7 | 2852.7 | 2944.3 | 3136.3 | 3394.8 | 3397.2 | 3010.2 | 2728.4 | 2696.4 | 2654.5 | 2746.2 |
| 52.5° | 2827.4 | 2841.0 | 2928.3 | 3149.9 | 3611.4 | 3895.0 | 3516.0 | 3181.2 | 3155.4 | 3064.3 | 3144.3 |
| 55° | 2605.3 | 2625.6 | 2713.6 | 2990.5 | 3634.7 | 4367.0 | 4259.3 | 3715.4 | 3669.2 | 3506.1 | 3594.1 |
| 57.5° | 2159.2 | 2176.4 | 2265.0 | 2606.5 | 3427.4 | 4608.8 | 5203.2 | 4395.9 | 4332.5 | 3987.3 | 4088.9 |
| 60° | 1630.0 | 1609.1 | 1650.9 | 1950.0 | 2931.4 | 4615.0 | 6036.4 | 5318.9 | 5213.1 | 4501.7 | 4586.7 |
| 62.5° | 1223.3 | 1202.4 | 1211.6 | 1295.9 | 1987.5 | 4242.1 | 6511.4 | 6581.6 | 6406.8 | 5082.6 | 5066.0 |
| 65° | 966.7 | 955.0 | 981.4 | 1039.3 | 1158.7 | 3230.5 | 6515.1 | 7947.0 | 7836.8 | 5755.8 | 5557.6 |
| 67.5° | 787.6 | 780.2 | 807.3 | 914.4 | 939.6 | 1735.8 | 5841.9 | 8584.4 | 8627.5 | 6492.9 | 6013.6 |
| 70° | 634.4 | 623.3 | 665.8 | 806.7 | 873.8 | 1050.4 | 4184.8 | 8259.6 | 8329.1 | 6932.3 | 5885.0 |
| 72.5° | 438.1 | 438.7 | 460.3 | 653.5 | 843.6 | 907.0 | 2367.2 | 6877.5 | 7028.3 | 6534.2 | 5173.7 |
| 75° | 295.4 | 297.8 | 304.0 | 431.3 | 777.2 | 879.9 | 1261.4 | 5206.9 | 5313.4 | 5400.7 | 4276.5 |
| 77.5° | 178.4 | 179.7 | 193.8 | 260.9 | 536.0 | 821.5 | 854.7 | 3774.4 | 3858.1 | 3560.3 | 2650.8 |
| 80° | 103.4 | 107.7 | 120.6 | 174.8 | 361.8 | 617.2 | 661.5 | 2314.2 | 2409.0 | 1582.6 | 842.4 |
| 82.5° | 45.5 | 48.6 | 65.8 | 101.5 | 211.1 | 524.9 | 516.3 | 914.4 | 900.8 | 441.2 | 292.3 |
| 85° | 8.0 | 9.8 | 14.2 | 32.0 | 77.5 | 276.9 | 400.6 | 403.7 | 379.7 | 167.4 | 121.2 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 60.3 | 108.3 | 107.7 | 47.4 | 41.8 |
| 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: P632972
 CATALOG NUMBER: GWS-SA2D-827-U-SL2-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 | 1863.8 |
| 2.5° | 1873.1 | 1856.4 | 1871.2 | 1873.1 | 1870.0 | 1867.5 | 1849.1 | 1833.1 | 1831.2 | 1814.0 | 1814.0 |
| 5° | 1879.8 | 1864.4 | 1871.8 | 1857.7 | 1835.5 | 1812.8 | 1773.4 | 1746.3 | 1734.0 | 1711.8 | 1711.8 |
| 7.5° | 1889.1 | 1873.1 | 1864.4 | 1829.4 | 1777.7 | 1727.8 | 1664.5 | 1611.5 | 1590.0 | 1558.6 | 1557.4 |
| 10° | 1897.7 | 1877.4 | 1847.8 | 1779.5 | 1697.1 | 1617.7 | 1525.4 | 1450.3 | 1399.3 | 1361.7 | 1361.7 |
| 12.5° | 1897.1 | 1870.6 | 1812.1 | 1711.2 | 1597.4 | 1482.3 | 1359.3 | 1246.0 | 1178.4 | 1119.9 | 1116.2 |
| 15° | 1895.8 | 1859.5 | 1766.6 | 1631.9 | 1481.1 | 1321.7 | 1154.4 | 1006.7 | 906.4 | 849.2 | 844.2 |
| 17.5° | 1894.6 | 1845.4 | 1715.5 | 1541.4 | 1339.6 | 1122.4 | 901.5 | 741.5 | 657.8 | 622.7 | 623.9 |
| 20° | 1894.6 | 1829.4 | 1660.8 | 1437.4 | 1176.5 | 883.6 | 661.5 | 545.2 | 524.3 | 526.1 | 528.0 |
| 22.5° | 1889.1 | 1809.7 | 1599.9 | 1324.2 | 995.0 | 649.8 | 488.0 | 448.6 | 459.7 | 476.9 | 479.3 |
| 25° | 1876.1 | 1777.1 | 1529.1 | 1198.7 | 779.0 | 473.2 | 398.1 | 390.7 | 411.0 | 432.6 | 438.7 |
| 27.5° | 1855.8 | 1739.5 | 1449.7 | 1051.6 | 573.5 | 380.3 | 350.1 | 349.5 | 365.5 | 381.5 | 387.0 |
| 30° | 1834.3 | 1697.7 | 1366.0 | 887.9 | 415.3 | 331.0 | 319.4 | 319.4 | 327.4 | 337.2 | 336.0 |
| 32.5° | 1809.1 | 1655.2 | 1276.2 | 717.5 | 338.4 | 303.4 | 299.7 | 297.8 | 299.0 | 302.7 | 302.7 |
| 35° | 1787.5 | 1617.7 | 1183.9 | 537.2 | 303.4 | 288.0 | 284.3 | 280.0 | 278.1 | 275.7 | 276.9 |
| 37.5° | 1779.5 | 1588.2 | 1088.5 | 404.9 | 286.1 | 276.9 | 270.7 | 264.6 | 260.3 | 259.1 | 258.4 |
| 40° | 1792.5 | 1575.9 | 993.1 | 333.5 | 273.8 | 265.2 | 258.4 | 250.4 | 246.7 | 246.7 | 246.7 |
| 42.5° | 1842.9 | 1585.1 | 895.9 | 301.5 | 265.2 | 255.4 | 245.5 | 238.1 | 236.9 | 238.1 | 238.7 |
| 45° | 1935.2 | 1620.8 | 795.0 | 285.5 | 257.8 | 245.5 | 233.8 | 228.3 | 228.3 | 229.5 | 229.5 |
| 47.5° | 2100.1 | 1714.3 | 695.3 | 275.7 | 250.4 | 237.5 | 225.2 | 219.7 | 219.1 | 220.3 | 220.3 |
| 50° | 2385.6 | 1882.9 | 605.5 | 268.9 | 244.9 | 231.4 | 219.1 | 211.7 | 209.8 | 209.2 | 209.2 |
| 52.5° | 2745.6 | 2175.2 | 548.3 | 264.0 | 238.1 | 224.6 | 212.3 | 202.4 | 198.8 | 196.9 | 196.9 |
| 55° | 3180.6 | 2564.7 | 548.3 | 260.3 | 229.5 | 216.6 | 202.4 | 192.6 | 187.1 | 184.6 | 184.6 |
| 57.5° | 3673.5 | 3018.2 | 643.0 | 257.2 | 222.7 | 207.4 | 192.0 | 182.1 | 176.0 | 172.3 | 172.3 |
| 60° | 4175.0 | 3497.5 | 877.5 | 252.9 | 216.6 | 195.7 | 180.3 | 171.1 | 163.1 | 158.8 | 158.1 |
| 62.5° | 4695.0 | 4025.5 | 1186.4 | 255.4 | 212.3 | 184.6 | 168.0 | 157.5 | 150.8 | 146.4 | 145.8 |
| 65° | 5171.2 | 4528.2 | 1456.5 | 274.4 | 212.9 | 174.8 | 153.8 | 144.6 | 139.1 | 133.5 | 132.9 |
| 67.5° | 5575.5 | 4805.7 | 1267.0 | 313.2 | 225.8 | 163.1 | 139.7 | 130.4 | 125.5 | 121.8 | 121.2 |
| 70° | 5292.4 | 4382.4 | 718.7 | 337.2 | 243.7 | 150.8 | 123.7 | 117.5 | 112.6 | 110.1 | 109.5 |
| 72.5° | 4525.7 | 3710.4 | 480.6 | 297.8 | 222.1 | 134.8 | 108.9 | 104.0 | 100.3 | 97.2 | 96.6 |
| 75° | 3666.1 | 2942.5 | 367.4 | 244.3 | 172.9 | 109.5 | 93.5 | 89.8 | 86.1 | 83.1 | 82.5 |
| 77.5° | 2169.0 | 1700.2 | 270.7 | 193.2 | 121.8 | 85.5 | 77.5 | 74.5 | 70.8 | 68.3 | 67.7 |
| 80° | 692.2 | 590.7 | 171.7 | 132.9 | 80.6 | 65.8 | 59.7 | 57.2 | 53.5 | 50.5 | 49.8 |
| 82.5° | 264.0 | 228.3 | 91.1 | 67.7 | 53.5 | 44.9 | 40.0 | 37.5 | 35.1 | 32.0 | 31.4 |
| 85° | 116.9 | 109.5 | 50.5 | 36.3 | 28.9 | 22.2 | 19.7 | 18.5 | 15.4 | 12.9 | 12.3 |
| 87.5° | 41.2 | 41.2 | 21.5 | 10.5 | 6.2 | 3.1 | 1.8 | 0.6 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Invue
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 2764
 CIE u': 0.2591
 CIE v': 0.5290
 Duv: 0.0020
 CIE x: 0.4581
 CIE y: 0.4156
 CIE z: 0.1263
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 583
 Purity: 62.2537
 Rf: 84.7
 Rg: 94.6

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.9 | | |
| R1: | 78.8 | R9: | -1.5 |
| R2: | 89.9 | R10: | 77.9 |
| R3: | 96.2 | R11: | 78.9 |
| R4: | 79.1 | R12: | 71.6 |
| R5: | 79.1 | R13: | 81.2 |
| R6: | 88.8 | R14: | 98.5 |
| R7: | 81.3 | R15: | 69.9 |
| R8: | 54.3 | | |



Test Conditions

Stabilization Time: 81M
 Operation Time: 2H 21M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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CIE 1931 Chromaticity Diagram



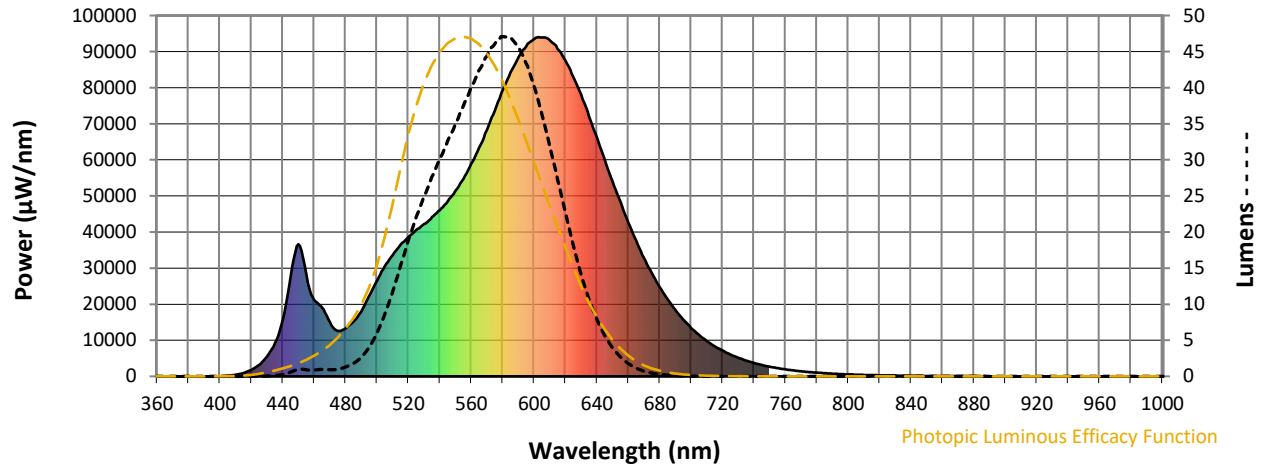
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength

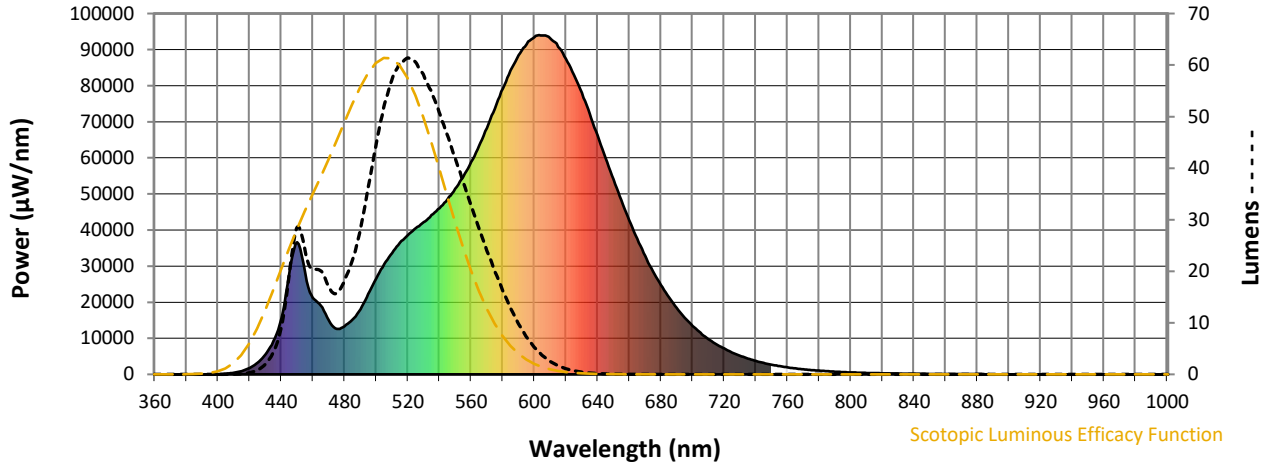


Photopic Lumens: 4337.9

| 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 | 0 | 0.0 | 490 | 18018 | 2.6 | 620 | 87426 | 22.8 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 3.9 | 625 | 83013 | 18.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 5.8 | 630 | 78077 | 14.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 8.5 | 635 | 72080 | 10.7 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 11.5 | 640 | 66249 | 7.9 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 15.2 | 645 | 59973 | 5.7 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 18.7 | 650 | 53972 | 3.9 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 21.9 | 655 | 48369 | 2.7 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 24.9 | 660 | 42641 | 1.8 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 27.6 | 665 | 37602 | 1.1 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 30.0 | 670 | 32798 | 0.7 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.0 | 545 | 48553 | 32.5 | 675 | 28558 | 0.5 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.0 | 550 | 51408 | 34.9 | 680 | 24782 | 0.3 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.0 | 555 | 54711 | 37.4 | 685 | 21386 | 0.2 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 0.0 | 560 | 58847 | 40.0 | 690 | 18413 | 0.1 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 0.1 | 565 | 63386 | 42.4 | 695 | 15721 | 0.1 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 0.2 | 570 | 68196 | 44.3 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 0.6 | 575 | 73613 | 46.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 0.9 | 580 | 79207 | 47.1 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 0.9 | 585 | 84248 | 47.0 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 0.9 | 590 | 88397 | 45.7 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 1.0 | 595 | 91428 | 43.4 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 0.9 | 600 | 93452 | 40.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 1.0 | 605 | 93959 | 36.4 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 1.3 | 610 | 93079 | 32.0 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 1.8 | 615 | 90707 | 27.3 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 75.9 | 620 | 87426 | 0.4 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 93.2 | 625 | 83013 | 0.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 107.8 | 630 | 78077 | 0.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 118.7 | 635 | 72080 | 0.1 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 122.2 | 640 | 66249 | 0.1 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 120.8 | 645 | 59973 | 0.0 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 113.9 | 650 | 53972 | 0.0 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 104.1 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 92.4 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 80.5 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.1 | 540 | 46032 | 68.2 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.3 | 545 | 48553 | 57.1 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 1.1 | 550 | 51408 | 46.7 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 2.5 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 5.9 | 560 | 58847 | 29.4 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 12.5 | 565 | 63386 | 22.5 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 26.3 | 570 | 68196 | 16.9 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 55.2 | 575 | 73613 | 12.4 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 85.4 | 580 | 79207 | 9.0 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 75.1 | 585 | 84248 | 6.3 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 63.2 | 590 | 88397 | 4.4 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 63.2 | 595 | 91428 | 3.0 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 54.2 | 600 | 93452 | 2.0 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 48.8 | 605 | 93959 | 1.3 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 54.2 | 610 | 93079 | 0.9 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 63.3 | 615 | 90707 | 0.5 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: 9797

M/P: 2.26

| 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 | 0 | 0.0 | 490 | 18018 | 27.7 | 620 | 87426 | 1.1 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 36.0 | 625 | 83013 | 0.7 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 44.2 | 630 | 78077 | 0.4 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 51.8 | 635 | 72080 | 0.3 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 57.0 | 640 | 66249 | 0.2 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 60.5 | 645 | 59973 | 0.1 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 61.4 | 650 | 53972 | 0.1 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 60.6 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 58.2 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 55.0 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 50.9 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.1 | 545 | 48553 | 46.6 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.3 | 550 | 51408 | 42.0 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.8 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 1.9 | 560 | 58847 | 32.9 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 4.1 | 565 | 63386 | 28.4 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 8.7 | 570 | 68196 | 24.1 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 18.5 | 575 | 73613 | 20.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 28.3 | 580 | 79207 | 16.3 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 24.7 | 585 | 84248 | 12.9 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 20.4 | 590 | 88397 | 9.8 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 20.1 | 595 | 91428 | 7.3 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 17.2 | 600 | 93452 | 5.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 15.7 | 605 | 93959 | 3.7 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 18.0 | 610 | 93079 | 2.5 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 21.9 | 615 | 90707 | 1.7 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

Summary

$R_f = 84.7$
 $R_g = 94.6$
 $CIE R_a = 80.9$
 $R_g = -1.5$

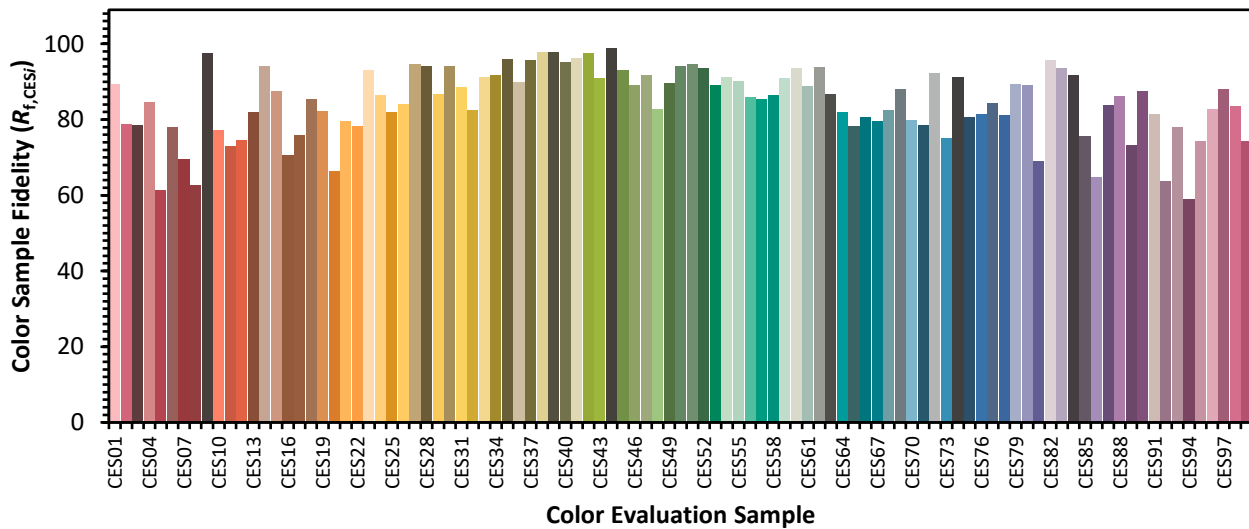


Color Vector Graphics



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

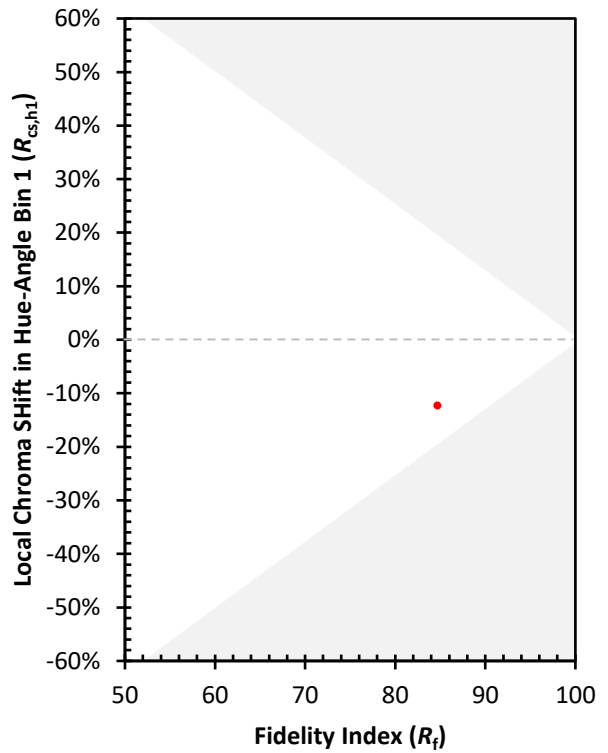
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)