

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: P636965

Luminaire Tested: GWS-SA4B-827-U-T4FT-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P636965
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-54)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA4B-827-U-T4FT-W
Description: GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS
Light Source: (64) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10277.6 lumens
Efficiency: N/A
Efficacy: 108.9 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B2 - U0 - G2

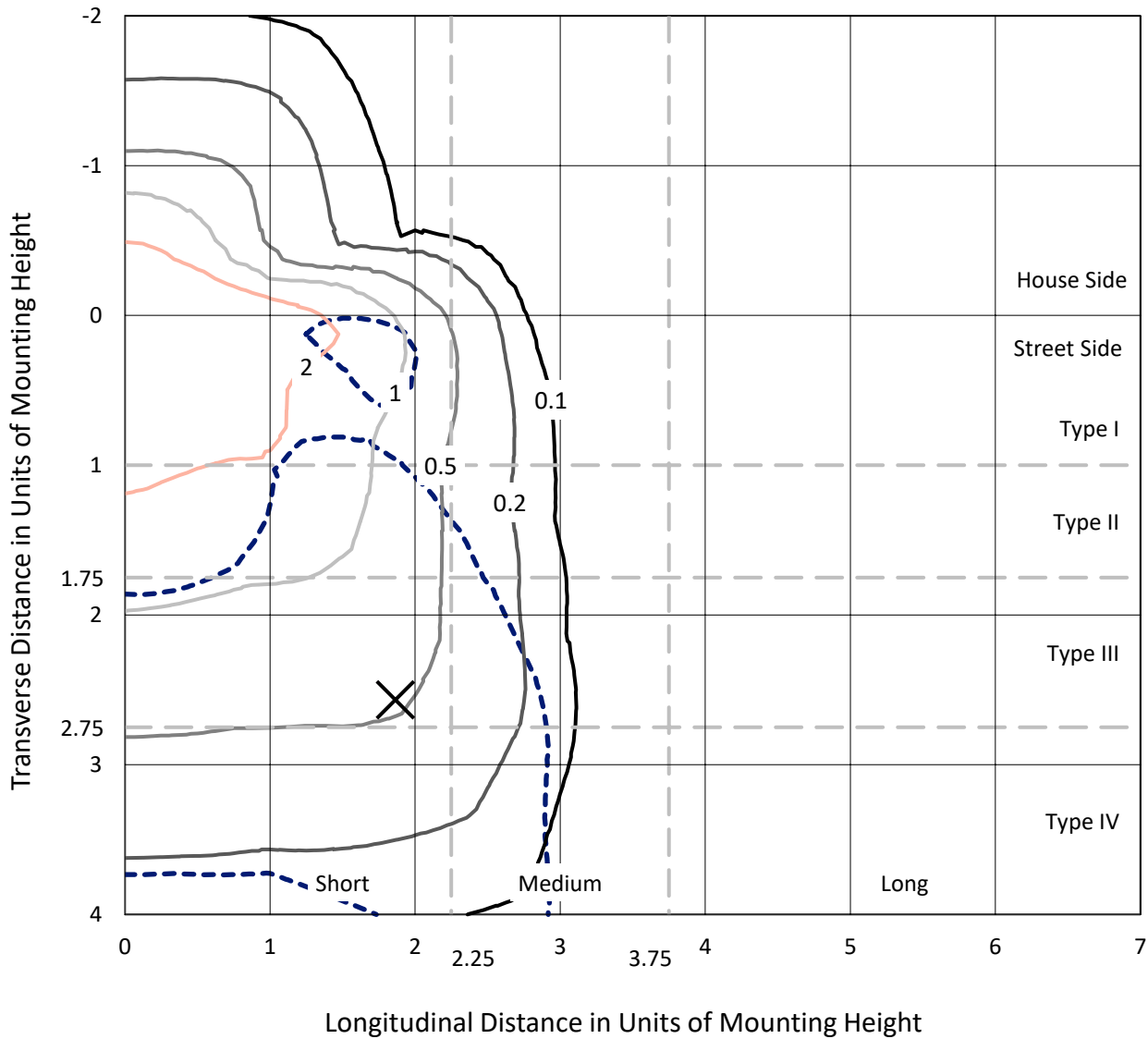
Input Watts (W): 94.4
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P636965
 CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

Iso-Footcandle Lines of Horizontal Illumination

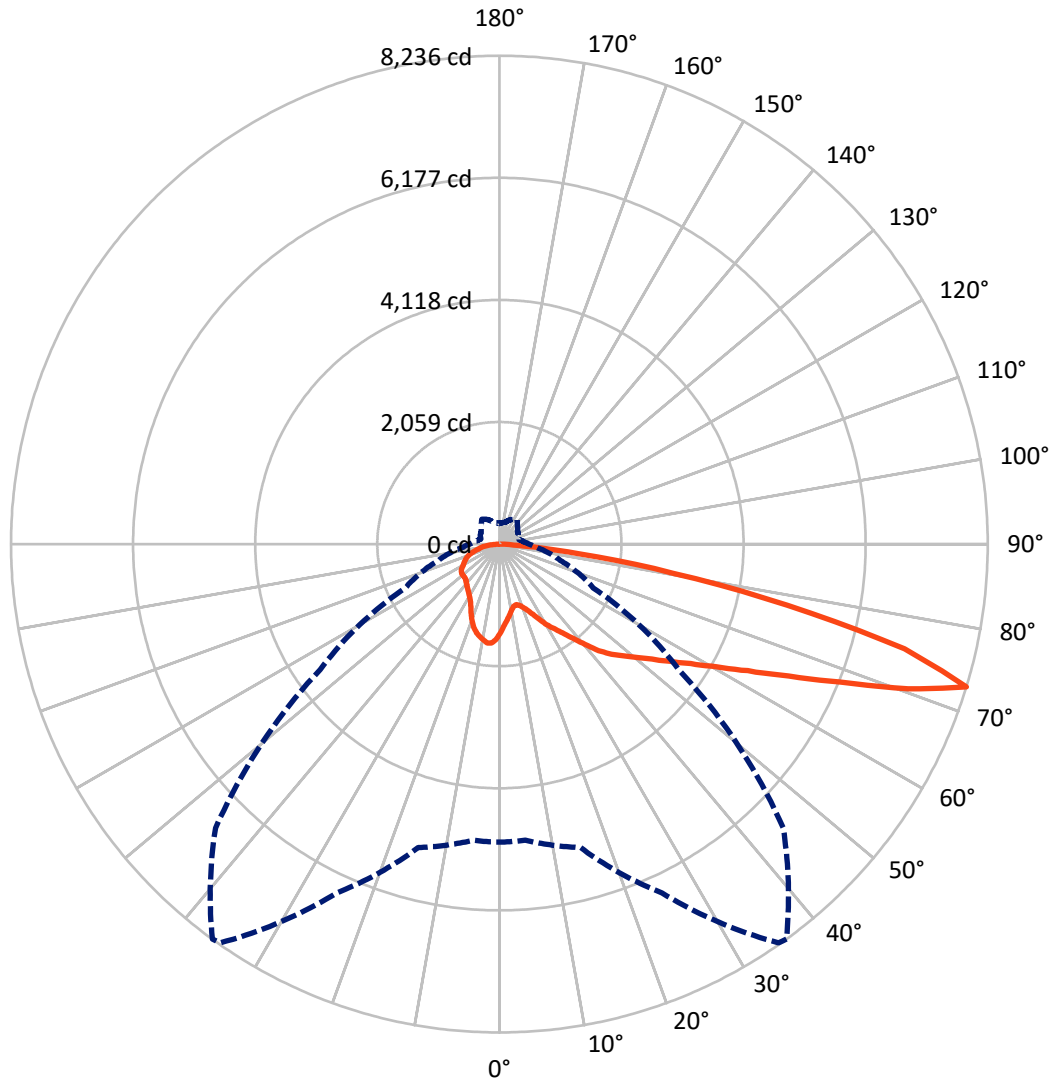
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4 fc
 Type IV - Short - N/A

REPORT NUMBER: P636965
CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

Luminous Intensity Polar Plot



— Vertical Plane Through 36-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

REPORT NUMBER: P636965

CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2369.4 | 0.0 | 2369.4 |
| | % Fixture | 23.1 | 0.0 | 23.1 |
| Street Side | Lumens | 7908.2 | 0.0 | 7908.2 |
| | % Fixture | 76.9 | 0.0 | 76.9 |
| Total | Lumens | 10277.6 | 0.0 | 10277.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 140.6 | 1.4 |
| 10°-20° | 396.7 | 3.9 |
| 20°-30° | 657.0 | 6.4 |
| 30°-40° | 983.9 | 9.6 |
| 40°-50° | 1435.4 | 14.0 |
| 50°-60° | 2043.0 | 19.9 |
| 60°-70° | 2581.1 | 25.1 |
| 70°-80° | 1839.3 | 17.9 |
| 80°-90° | 200.8 | 2.0 |
| 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° | 10277.6 | 100.0 |
| 0°-180° | 10277.6 | 100.0 |

Coefficient of Utilization



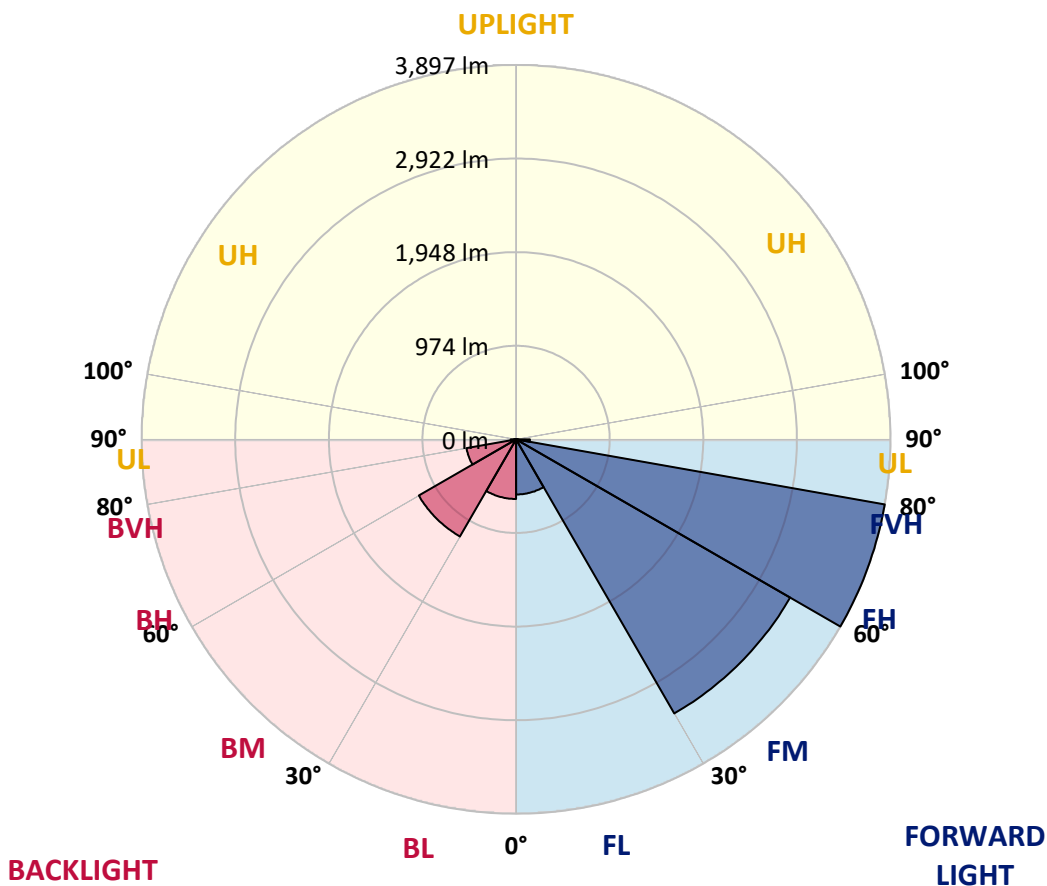
REPORT NUMBER: P636965

CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 573.8 | 5.6 | | | |
| FM (30°-60°) | 3293.7 | 32.0 | | | |
| FH (60°-80°) | 3896.6 | 37.9 | | | G2/5000 |
| FVH (80°-90°) | 144.1 | 1.4 | | | G2/225 |
| BL (0°-30°) | 620.5 | 6.0 | B2/1000 | | |
| BM (30°-60°) | 1168.5 | 11.4 | B2/2500 | | |
| BH (60°-80°) | 523.8 | 5.1 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 56.7 | 0.6 | | | 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 IV Short





REPORT NUMBER: P636965

CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 36° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 |
| 2.5° | 1372.2 | 1369.9 | 1365.3 | 1379.1 | 1392.8 | 1391.3 | 1410.4 | 1428.7 | 1448.5 | 1469.1 | 1496.5 |
| 5° | 1262.4 | 1260.9 | 1257.0 | 1277.6 | 1298.2 | 1297.5 | 1328.7 | 1358.5 | 1398.9 | 1443.2 | 1498.1 |
| 7.5° | 1152.5 | 1148.7 | 1154.1 | 1180.0 | 1209.0 | 1212.0 | 1254.7 | 1303.6 | 1362.3 | 1428.7 | 1506.5 |
| 10° | 1055.7 | 1054.9 | 1057.2 | 1086.2 | 1129.7 | 1132.7 | 1187.6 | 1255.5 | 1333.3 | 1421.8 | 1525.5 |
| 12.5° | 1030.5 | 1029.0 | 1022.9 | 1037.4 | 1070.2 | 1074.7 | 1135.0 | 1218.1 | 1313.5 | 1425.6 | 1551.5 |
| 15° | 1071.7 | 1067.9 | 1046.5 | 1039.6 | 1055.7 | 1059.5 | 1110.6 | 1196.0 | 1302.0 | 1432.5 | 1584.3 |
| 17.5° | 1142.6 | 1140.3 | 1099.9 | 1071.7 | 1082.4 | 1085.4 | 1123.6 | 1192.2 | 1299.0 | 1446.2 | 1624.7 |
| 20° | 1246.4 | 1236.4 | 1173.1 | 1130.4 | 1130.4 | 1135.0 | 1157.9 | 1209.0 | 1302.8 | 1463.0 | 1670.5 |
| 22.5° | 1383.7 | 1363.8 | 1274.6 | 1216.6 | 1201.4 | 1207.5 | 1217.4 | 1250.9 | 1318.8 | 1491.2 | 1727.7 |
| 25° | 1537.7 | 1519.4 | 1413.4 | 1331.8 | 1310.4 | 1312.7 | 1304.3 | 1310.4 | 1353.9 | 1530.1 | 1798.6 |
| 27.5° | 1701.7 | 1689.5 | 1576.6 | 1472.9 | 1439.3 | 1439.3 | 1409.6 | 1395.1 | 1402.7 | 1574.3 | 1877.9 |
| 30° | 1848.2 | 1831.4 | 1736.1 | 1622.4 | 1578.2 | 1578.2 | 1521.7 | 1490.4 | 1472.1 | 1628.5 | 1984.0 |
| 32.5° | 1925.2 | 1915.3 | 1852.0 | 1765.0 | 1710.9 | 1702.5 | 1653.7 | 1617.1 | 1574.3 | 1708.6 | 2127.4 |
| 35° | 2025.9 | 2023.6 | 1985.5 | 1917.6 | 1848.9 | 1836.7 | 1803.2 | 1774.2 | 1700.2 | 1808.5 | 2318.0 |
| 37.5° | 2152.5 | 2148.7 | 2142.6 | 2102.2 | 2019.8 | 2017.5 | 1987.8 | 1952.7 | 1856.6 | 1952.7 | 2549.2 |
| 40° | 2294.4 | 2287.5 | 2279.9 | 2279.1 | 2229.6 | 2221.2 | 2218.9 | 2179.2 | 2045.0 | 2126.6 | 2790.2 |
| 42.5° | 2489.7 | 2466.0 | 2394.3 | 2426.4 | 2463.0 | 2455.3 | 2484.3 | 2424.8 | 2279.9 | 2333.3 | 3018.3 |
| 45° | 2729.9 | 2672.0 | 2530.1 | 2539.2 | 2631.5 | 2646.8 | 2747.5 | 2733.0 | 2538.5 | 2572.0 | 3258.5 |
| 47.5° | 2874.1 | 2823.8 | 2691.8 | 2684.2 | 2799.3 | 2818.4 | 3037.3 | 3064.8 | 2816.9 | 2859.6 | 3555.2 |
| 50° | 2992.3 | 2957.2 | 2848.9 | 2859.6 | 2981.6 | 3000.7 | 3324.9 | 3383.6 | 3079.3 | 3154.0 | 3900.0 |
| 52.5° | 3135.0 | 3084.6 | 3000.7 | 3051.1 | 3200.6 | 3223.4 | 3644.5 | 3707.8 | 3315.7 | 3477.4 | 4257.0 |
| 55° | 3215.1 | 3194.5 | 3196.0 | 3273.0 | 3460.7 | 3491.9 | 3979.3 | 3968.7 | 3532.4 | 3754.3 | 4525.5 |
| 57.5° | 3399.6 | 3392.0 | 3462.2 | 3491.2 | 3764.2 | 3804.7 | 4314.2 | 4222.7 | 3729.2 | 3968.7 | 4654.4 |
| 60° | 3725.3 | 3706.3 | 3767.3 | 3811.5 | 4139.5 | 4196.7 | 4688.0 | 4471.3 | 3862.6 | 4128.1 | 4610.9 |
| 62.5° | 4183.0 | 4159.4 | 4161.6 | 4231.8 | 4642.2 | 4702.4 | 5103.7 | 4678.8 | 3903.8 | 4152.5 | 4335.6 |
| 65° | 4752.0 | 4717.7 | 4678.8 | 4774.1 | 5309.6 | 5360.0 | 5556.0 | 4829.8 | 3805.4 | 3917.6 | 3760.4 |
| 67.5° | 5352.3 | 5324.1 | 5278.3 | 5478.2 | 6173.8 | 6204.3 | 6063.2 | 4816.9 | 3493.5 | 3289.0 | 2637.6 |
| 70° | 5387.4 | 5394.3 | 5610.9 | 6334.0 | 7302.0 | 7309.6 | 6543.0 | 4556.0 | 2829.1 | 2131.9 | 1314.2 |
| 72.5° | 5025.9 | 5014.4 | 5296.6 | 6490.4 | 8209.6 | 8235.6 | 6769.5 | 3691.0 | 1748.3 | 1063.3 | 616.3 |
| 75° | 4082.3 | 4102.2 | 4398.9 | 5678.8 | 7036.5 | 7059.4 | 5518.6 | 2176.2 | 830.7 | 520.2 | 394.3 |
| 77.5° | 1757.4 | 1868.0 | 2453.1 | 4000.7 | 5039.6 | 4968.7 | 2844.4 | 881.8 | 443.2 | 370.7 | 302.1 |
| 80° | 507.2 | 550.7 | 874.1 | 1902.3 | 3019.8 | 2966.4 | 1125.8 | 330.3 | 308.9 | 278.4 | 216.6 |
| 82.5° | 164.0 | 181.5 | 320.4 | 757.4 | 1353.1 | 1351.6 | 427.1 | 195.3 | 202.1 | 189.2 | 139.6 |
| 85° | 45.8 | 52.6 | 98.4 | 229.6 | 418.8 | 410.4 | 123.6 | 92.3 | 107.5 | 109.1 | 69.4 |
| 87.5° | 0.0 | 0.0 | 0.8 | 1.5 | 1.5 | 1.5 | 3.1 | 13.7 | 31.3 | 39.7 | 28.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P636965

CATALOG NUMBER: GWS-SA4B-827-U-T4FT-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 | 1504.2 |
| 2.5° | 1513.3 | 1511.0 | 1542.3 | 1566.7 | 1589.6 | 1604.9 | 1609.4 | 1612.5 | 1618.6 | 1621.6 | 1618.6 |
| 5° | 1524.0 | 1535.4 | 1587.3 | 1625.5 | 1656.0 | 1674.3 | 1675.0 | 1673.5 | 1678.1 | 1674.3 | 1672.0 |
| 7.5° | 1546.9 | 1569.0 | 1634.6 | 1675.0 | 1694.9 | 1695.6 | 1677.3 | 1656.0 | 1645.3 | 1636.1 | 1633.1 |
| 10° | 1577.4 | 1610.2 | 1681.9 | 1708.6 | 1702.5 | 1674.3 | 1633.8 | 1600.3 | 1581.2 | 1567.5 | 1564.4 |
| 12.5° | 1619.4 | 1656.0 | 1723.8 | 1723.1 | 1684.9 | 1634.6 | 1587.3 | 1546.9 | 1519.4 | 1503.4 | 1498.1 |
| 15° | 1659.0 | 1705.5 | 1754.4 | 1718.5 | 1658.3 | 1597.2 | 1536.2 | 1482.1 | 1445.4 | 1420.3 | 1415.7 |
| 17.5° | 1707.8 | 1757.4 | 1776.5 | 1704.0 | 1624.7 | 1546.1 | 1464.5 | 1393.6 | 1344.0 | 1314.2 | 1312.0 |
| 20° | 1764.3 | 1808.5 | 1787.2 | 1678.8 | 1581.2 | 1478.2 | 1367.6 | 1288.3 | 1234.9 | 1205.9 | 1208.2 |
| 22.5° | 1829.9 | 1861.9 | 1790.2 | 1644.5 | 1521.0 | 1382.1 | 1258.6 | 1182.3 | 1146.4 | 1131.2 | 1131.9 |
| 25° | 1900.0 | 1920.6 | 1784.9 | 1598.0 | 1428.7 | 1264.7 | 1146.4 | 1111.3 | 1108.3 | 1104.5 | 1106.0 |
| 27.5° | 1983.2 | 1978.6 | 1768.9 | 1532.4 | 1304.3 | 1128.1 | 1067.9 | 1077.0 | 1089.2 | 1087.7 | 1089.2 |
| 30° | 2094.6 | 2051.1 | 1748.3 | 1441.6 | 1156.4 | 1013.7 | 1021.3 | 1047.3 | 1063.3 | 1064.8 | 1069.4 |
| 32.5° | 2221.9 | 2131.2 | 1715.5 | 1318.1 | 1015.2 | 949.6 | 977.9 | 1009.1 | 1028.2 | 1032.0 | 1038.1 |
| 35° | 2373.7 | 2222.7 | 1657.5 | 1164.0 | 913.8 | 911.5 | 937.4 | 958.8 | 979.4 | 980.9 | 980.9 |
| 37.5° | 2548.4 | 2314.2 | 1565.2 | 993.9 | 851.2 | 878.7 | 903.1 | 907.7 | 913.0 | 908.5 | 910.7 |
| 40° | 2708.6 | 2402.7 | 1434.0 | 839.0 | 800.1 | 849.7 | 870.3 | 855.1 | 838.3 | 826.8 | 829.1 |
| 42.5° | 2842.8 | 2463.0 | 1260.1 | 730.7 | 748.3 | 823.8 | 839.8 | 808.5 | 775.7 | 754.4 | 757.4 |
| 45° | 2993.9 | 2518.7 | 1055.7 | 657.5 | 704.0 | 805.5 | 816.2 | 775.7 | 733.8 | 701.7 | 697.2 |
| 47.5° | 3202.1 | 2632.3 | 874.1 | 606.4 | 672.8 | 795.6 | 813.1 | 758.2 | 703.3 | 655.2 | 649.9 |
| 50° | 3459.1 | 2793.2 | 722.3 | 572.8 | 658.3 | 790.2 | 812.3 | 739.1 | 673.5 | 617.1 | 613.3 |
| 52.5° | 3739.8 | 2950.4 | 610.2 | 546.9 | 643.8 | 774.2 | 808.5 | 717.8 | 642.2 | 581.2 | 576.7 |
| 55° | 3926.7 | 3012.2 | 534.7 | 522.5 | 620.1 | 749.0 | 793.3 | 697.2 | 595.0 | 539.3 | 532.4 |
| 57.5° | 3981.6 | 2932.8 | 482.1 | 500.4 | 589.6 | 713.9 | 764.3 | 653.7 | 566.0 | 521.7 | 516.4 |
| 60° | 3887.1 | 2733.0 | 449.3 | 482.1 | 556.1 | 668.9 | 713.9 | 628.5 | 543.1 | 503.4 | 499.6 |
| 62.5° | 3620.1 | 2424.8 | 424.1 | 463.0 | 521.7 | 621.7 | 681.9 | 598.0 | 517.9 | 486.6 | 481.3 |
| 65° | 3083.1 | 1988.5 | 403.5 | 443.2 | 488.9 | 576.7 | 646.8 | 567.5 | 490.5 | 466.8 | 460.7 |
| 67.5° | 2156.3 | 1396.6 | 381.4 | 419.5 | 456.1 | 533.2 | 610.2 | 539.3 | 462.2 | 444.7 | 438.6 |
| 70° | 1054.1 | 740.6 | 354.7 | 392.1 | 421.0 | 488.9 | 573.6 | 505.0 | 424.9 | 414.9 | 406.6 |
| 72.5° | 501.9 | 414.2 | 323.4 | 354.7 | 373.0 | 430.2 | 512.6 | 455.4 | 380.6 | 359.3 | 344.8 |
| 75° | 336.4 | 294.4 | 282.2 | 310.4 | 315.0 | 360.8 | 439.4 | 392.8 | 335.6 | 311.2 | 299.0 |
| 77.5° | 254.8 | 225.0 | 237.2 | 262.4 | 253.2 | 296.7 | 361.6 | 350.1 | 302.8 | 280.7 | 274.6 |
| 80° | 179.2 | 164.0 | 188.4 | 203.7 | 196.8 | 252.5 | 325.7 | 299.8 | 249.4 | 225.0 | 220.4 |
| 82.5° | 112.9 | 109.8 | 138.8 | 141.1 | 143.4 | 199.8 | 267.7 | 235.7 | 193.7 | 159.4 | 148.0 |
| 85° | 56.4 | 62.5 | 83.1 | 83.1 | 82.4 | 103.0 | 152.6 | 132.7 | 104.5 | 83.1 | 80.9 |
| 87.5° | 19.1 | 26.7 | 35.8 | 29.0 | 22.1 | 17.5 | 19.8 | 24.4 | 25.9 | 25.2 | 25.2 |
| 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 |

REPORT NUMBER: SP1-2407-157-9

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

REPORT NUMBER: SP1-2407-157-9

Photopic Flux vs. Wavelength



Photopic Lumens: 4337.9

| 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 | 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 (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 | 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



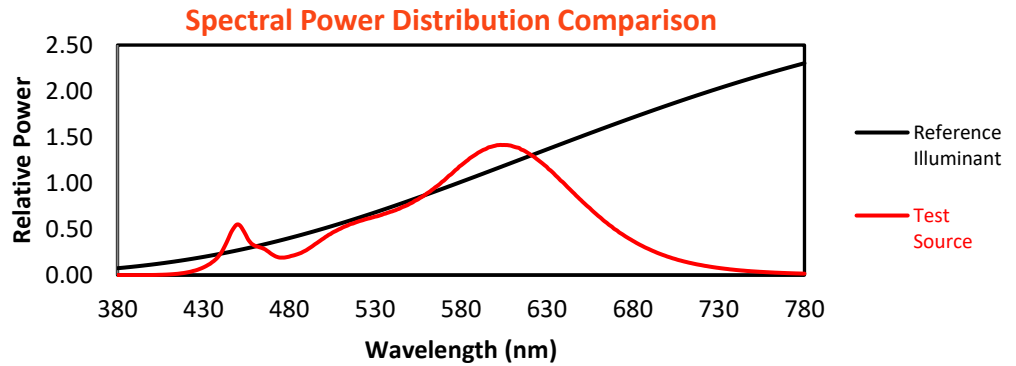
Melanopic Lumens: 9797

M/P: 2.26

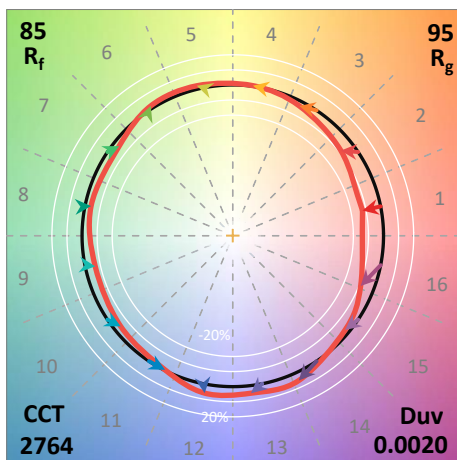
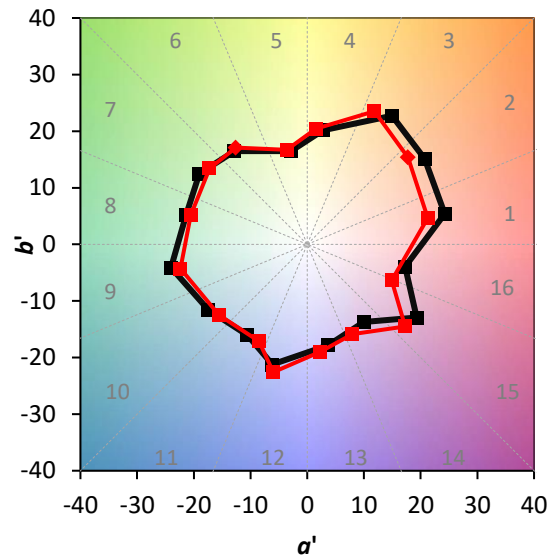
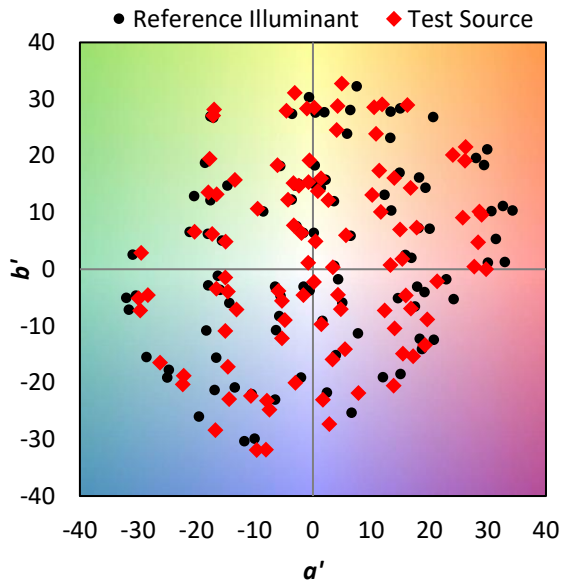
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 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)