

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: P639424

Luminaire Tested: GWS-SA5B-827-U-T2-W-GRSWH

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P639424
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-21)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA5B-827-U-T2-W-GRSWH
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS W/ FACTORY INSALLED GLARE SHIELD, WH
Light Source: (80) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10882.2 lumens
Efficiency: N/A
Efficacy: 94.1 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

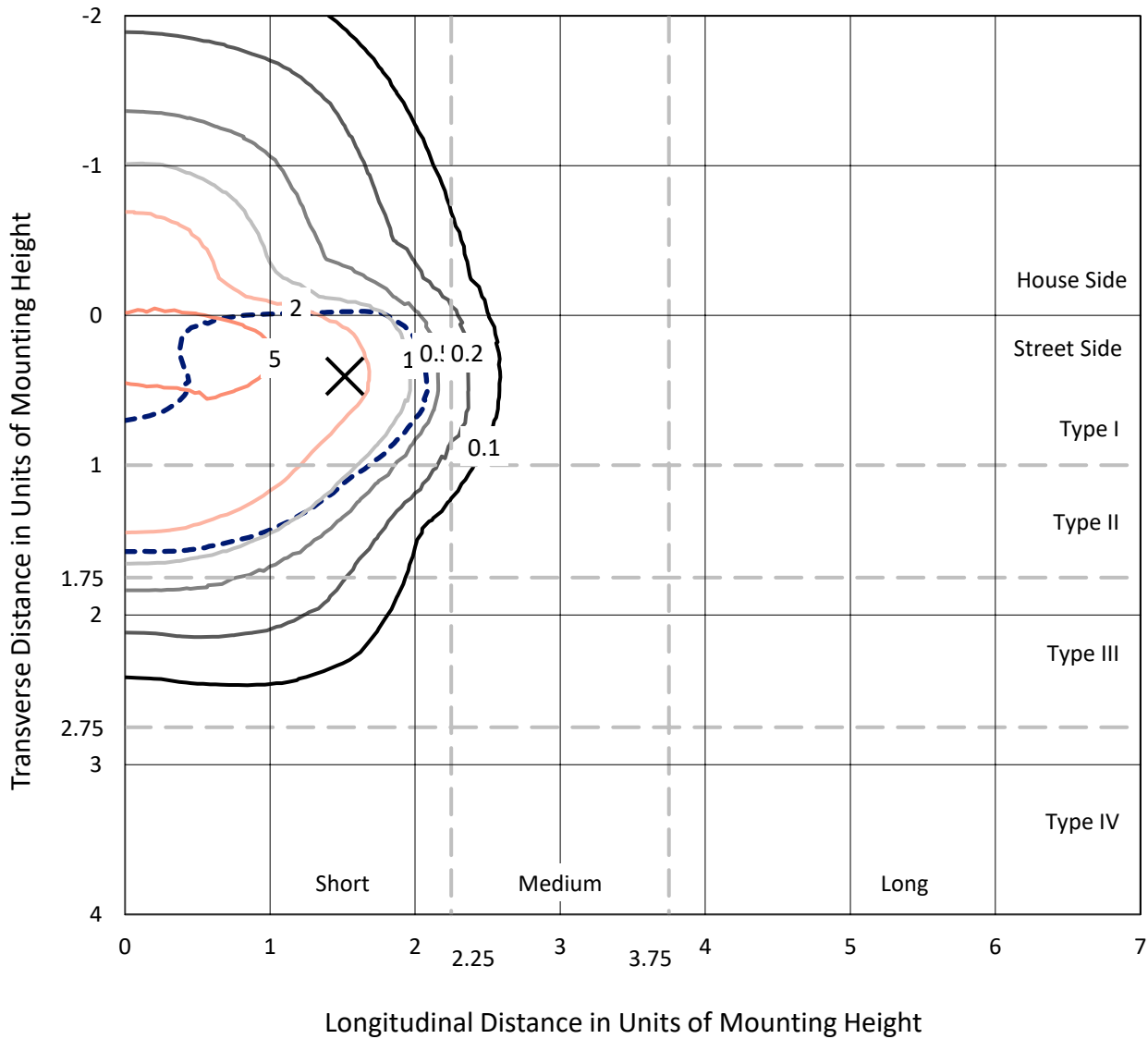
Input Watts (W): 115.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

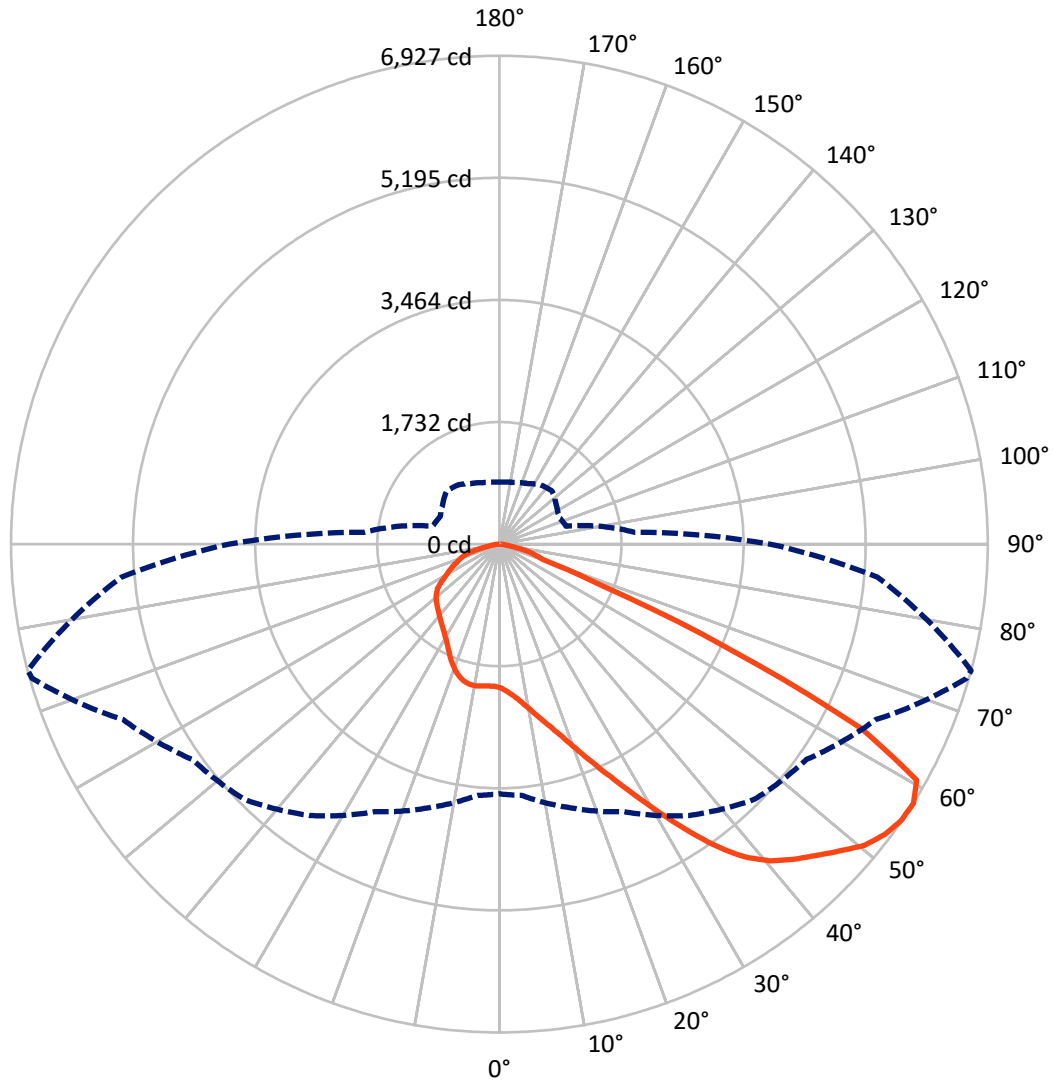
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.2 fc
 Type II - Short - N/A

REPORT NUMBER: P639424
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Luminous Intensity Polar Plot



— Vertical Plane Through 75-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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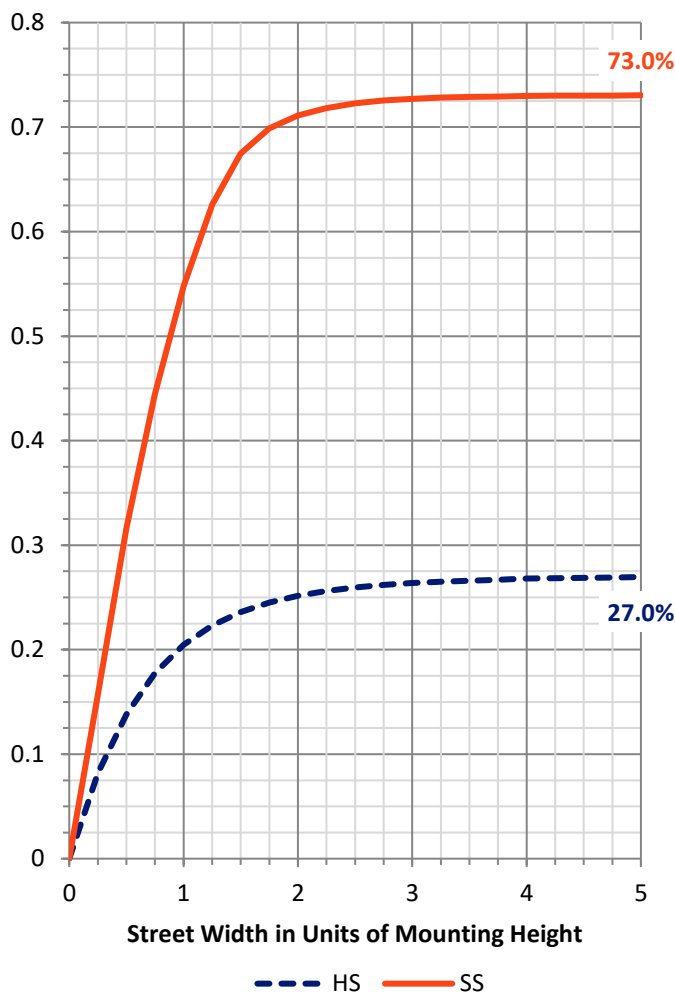
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2943.8 | 0.0 | 2943.8 |
| | % Fixture | 27.1 | 0.0 | 27.1 |
| Street Side | Lumens | 7938.3 | 0.0 | 7938.3 |
| | % Fixture | 72.9 | 0.0 | 72.9 |
| Total | Lumens | 10882.2 | 0.0 | 10882.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 203.9 | 1.9 |
| 10°-20° | 649.3 | 6.0 |
| 20°-30° | 1151.5 | 10.6 |
| 30°-40° | 1762.8 | 16.2 |
| 40°-50° | 2454.5 | 22.6 |
| 50°-60° | 2812.4 | 25.8 |
| 60°-70° | 1445.1 | 13.3 |
| 70°-80° | 363.8 | 3.3 |
| 80°-90° | 38.9 | 0.4 |
| 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° | 10882.2 | 100.0 |
| 0°-180° | 10882.2 | 100.0 |

Coefficient of Utilization



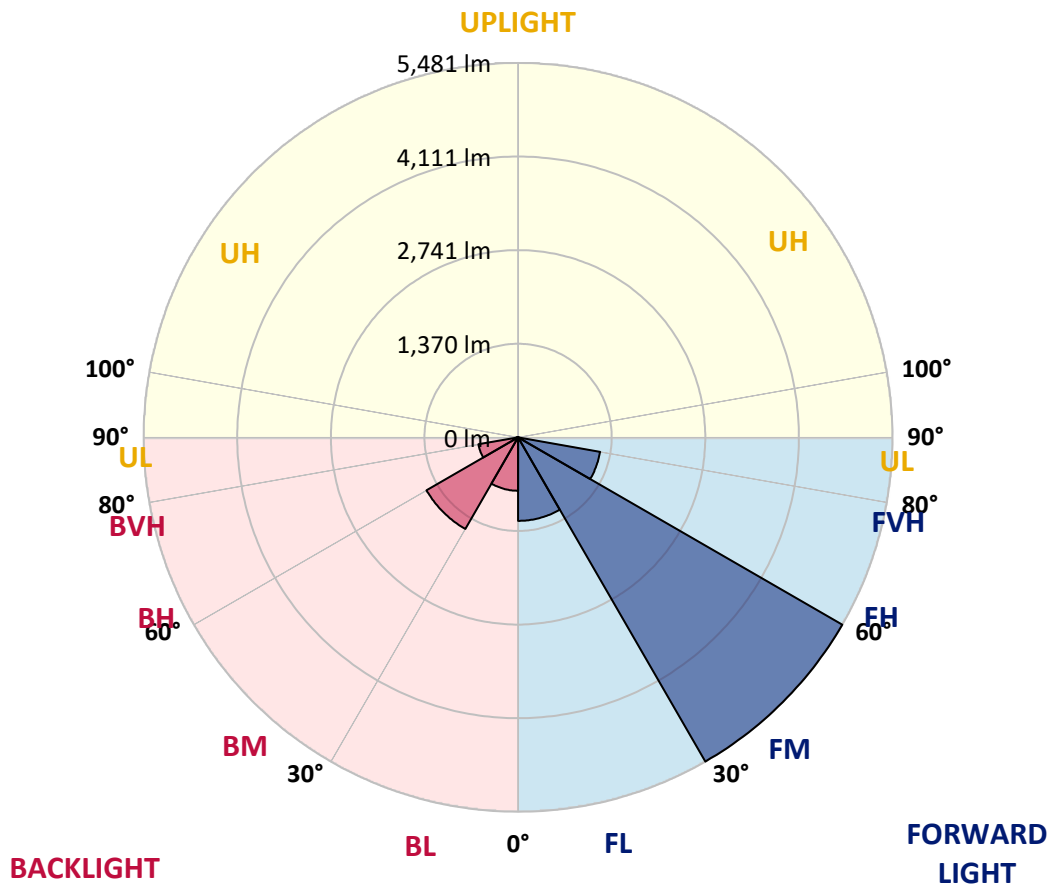
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1222.7 | 11.2 | | | |
| FM (30°-60°) | 5481.5 | 50.4 | | | |
| FH (60°-80°) | 1219.8 | 11.2 | | | G1/1800 |
| FVH (80°-90°) | 14.4 | 0.1 | | | G1/100 |
| BL (0°-30°) | 782.1 | 7.2 | B2/1000 | | |
| BM (30°-60°) | 1548.2 | 14.2 | B2/2500 | | |
| BH (60°-80°) | 589.1 | 5.4 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 24.5 | 0.2 | | | 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° | 74° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 |
| 2.5° | 2189.6 | 2195.2 | 2189.6 | 2198.9 | 2180.2 | 2171.8 | 2151.2 | 2120.3 | 2096.0 | 2092.2 | 2065.1 |
| 5° | 2359.9 | 2372.0 | 2364.5 | 2360.8 | 2335.5 | 2316.8 | 2285.9 | 2224.2 | 2173.7 | 2166.2 | 2112.8 |
| 7.5° | 2469.3 | 2477.8 | 2477.8 | 2480.6 | 2471.2 | 2449.7 | 2416.9 | 2344.0 | 2272.8 | 2261.6 | 2181.1 |
| 10° | 2505.8 | 2512.4 | 2524.5 | 2547.9 | 2566.7 | 2573.2 | 2551.7 | 2481.5 | 2394.5 | 2383.3 | 2271.0 |
| 12.5° | 2514.3 | 2521.7 | 2540.5 | 2583.5 | 2635.0 | 2681.7 | 2685.5 | 2634.0 | 2536.7 | 2524.5 | 2374.8 |
| 15° | 2530.2 | 2537.6 | 2562.9 | 2616.2 | 2692.0 | 2781.9 | 2837.1 | 2801.5 | 2693.9 | 2680.8 | 2492.7 |
| 17.5° | 2528.3 | 2536.7 | 2574.1 | 2645.3 | 2747.2 | 2877.3 | 2984.0 | 2998.9 | 2887.6 | 2865.1 | 2626.5 |
| 20° | 2523.6 | 2531.1 | 2571.3 | 2658.4 | 2784.7 | 2963.4 | 3156.1 | 3233.8 | 3114.0 | 3093.5 | 2782.8 |
| 22.5° | 2561.0 | 2569.5 | 2600.3 | 2672.4 | 2804.3 | 3029.8 | 3315.2 | 3502.4 | 3382.6 | 3353.6 | 2962.5 |
| 25° | 2645.3 | 2657.4 | 2676.1 | 2725.7 | 2839.9 | 3088.8 | 3478.0 | 3806.5 | 3683.9 | 3649.3 | 3158.0 |
| 27.5° | 2775.3 | 2790.3 | 2816.5 | 2839.9 | 2919.4 | 3163.6 | 3639.9 | 4147.1 | 4024.5 | 3988.0 | 3364.8 |
| 30° | 2934.4 | 2954.0 | 2987.7 | 3003.6 | 3057.9 | 3274.0 | 3815.8 | 4498.0 | 4426.8 | 4376.3 | 3597.8 |
| 32.5° | 3154.3 | 3181.4 | 3213.2 | 3217.9 | 3250.7 | 3441.5 | 3989.9 | 4846.0 | 4845.1 | 4809.5 | 3862.6 |
| 35° | 3440.6 | 3469.6 | 3476.2 | 3482.7 | 3498.6 | 3671.7 | 4200.4 | 5163.2 | 5285.8 | 5244.7 | 4150.8 |
| 37.5° | 3753.1 | 3795.2 | 3805.5 | 3776.5 | 3799.0 | 3948.7 | 4437.1 | 5417.8 | 5669.5 | 5625.5 | 4429.6 |
| 40° | 4087.2 | 4104.0 | 4132.1 | 4086.2 | 4114.3 | 4265.9 | 4669.2 | 5580.6 | 5955.8 | 5909.0 | 4649.5 |
| 42.5° | 4326.7 | 4357.6 | 4399.7 | 4382.9 | 4398.8 | 4537.3 | 4832.0 | 5659.2 | 6159.8 | 6113.0 | 4807.7 |
| 45° | 4586.8 | 4596.2 | 4623.3 | 4619.6 | 4629.0 | 4758.1 | 4949.0 | 5693.8 | 6342.2 | 6300.1 | 4942.4 |
| 47.5° | 4813.3 | 4827.3 | 4845.1 | 4824.5 | 4803.9 | 4888.1 | 5044.4 | 5723.7 | 6552.8 | 6502.2 | 5083.7 |
| 50° | 5031.3 | 5043.5 | 5065.0 | 5005.1 | 4928.4 | 4949.9 | 5091.2 | 5764.9 | 6750.2 | 6714.6 | 5195.1 |
| 52.5° | 5071.5 | 5084.6 | 5185.7 | 5197.9 | 5099.6 | 5023.8 | 5173.5 | 5855.7 | 6866.2 | 6843.8 | 5235.3 |
| 55° | 4565.3 | 4588.7 | 4789.9 | 5021.0 | 5263.4 | 5239.0 | 5305.5 | 5903.4 | 6912.1 | 6917.7 | 5307.3 |
| 57.5° | 3543.5 | 3577.2 | 3871.0 | 4188.2 | 4698.2 | 5120.2 | 5322.3 | 5891.2 | 6896.2 | 6927.1 | 5381.3 |
| 60° | 2324.3 | 2344.0 | 2692.0 | 3047.6 | 3576.3 | 4160.2 | 4763.7 | 5672.3 | 6754.9 | 6798.9 | 5362.5 |
| 62.5° | 1403.6 | 1426.0 | 1705.8 | 1975.3 | 2286.9 | 2677.1 | 3231.0 | 4558.8 | 5662.0 | 5760.2 | 4294.9 |
| 65° | 979.7 | 1009.6 | 1254.8 | 1476.5 | 1584.2 | 1503.7 | 1636.6 | 2546.1 | 3527.6 | 3568.8 | 2624.7 |
| 67.5° | 710.2 | 730.8 | 932.0 | 1195.8 | 1314.7 | 1062.0 | 809.4 | 1127.5 | 1536.4 | 1551.4 | 1082.6 |
| 70° | 465.0 | 488.4 | 670.9 | 910.4 | 1073.3 | 860.9 | 605.4 | 610.1 | 646.6 | 654.1 | 628.8 |
| 72.5° | 255.4 | 269.5 | 414.5 | 604.5 | 634.4 | 514.6 | 472.5 | 507.2 | 532.4 | 532.4 | 539.0 |
| 75° | 131.9 | 144.1 | 169.4 | 199.3 | 240.5 | 281.6 | 340.6 | 392.1 | 419.2 | 421.1 | 418.3 |
| 77.5° | 67.4 | 72.0 | 90.8 | 98.2 | 107.6 | 125.4 | 162.8 | 208.7 | 233.0 | 242.3 | 240.5 |
| 80° | 31.8 | 33.7 | 38.4 | 44.9 | 55.2 | 70.2 | 88.0 | 104.8 | 119.8 | 121.6 | 131.9 |
| 82.5° | 16.8 | 18.7 | 20.6 | 24.3 | 29.9 | 37.4 | 51.5 | 61.8 | 71.1 | 73.0 | 81.4 |
| 85° | 6.5 | 7.5 | 8.4 | 9.4 | 13.1 | 15.9 | 21.5 | 29.0 | 35.6 | 35.6 | 42.1 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 1.9 | 3.7 | 4.7 | 6.5 | 6.5 | 11.2 |
| 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: P639424

CATALOG NUMBER: GWS-SA5B-827-U-T2-W-GRSWH

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 | 2038.0 |
| 2.5° | 2058.6 | 2031.4 | 2019.3 | 1999.6 | 1983.7 | 1965.9 | 1951.9 | 1941.6 | 1935.0 | 1931.3 | 1927.6 |
| 5° | 2092.2 | 2051.1 | 2018.3 | 1979.0 | 1951.9 | 1925.7 | 1904.2 | 1889.2 | 1881.7 | 1876.1 | 1872.4 |
| 7.5° | 2144.6 | 2089.4 | 2027.7 | 1966.9 | 1919.1 | 1877.0 | 1849.9 | 1834.0 | 1823.7 | 1820.0 | 1817.1 |
| 10° | 2216.7 | 2140.0 | 2038.0 | 1941.6 | 1870.5 | 1824.6 | 1805.9 | 1798.4 | 1799.4 | 1797.5 | 1796.6 |
| 12.5° | 2298.1 | 2193.3 | 2035.2 | 1896.7 | 1818.1 | 1790.9 | 1791.9 | 1804.0 | 1818.1 | 1821.8 | 1822.8 |
| 15° | 2386.1 | 2245.7 | 2008.0 | 1838.7 | 1776.9 | 1779.7 | 1804.0 | 1833.1 | 1859.3 | 1869.5 | 1871.4 |
| 17.5° | 2481.5 | 2289.7 | 1958.4 | 1775.0 | 1743.2 | 1773.2 | 1818.1 | 1865.8 | 1904.2 | 1921.0 | 1925.7 |
| 20° | 2588.2 | 2327.1 | 1888.3 | 1712.3 | 1711.4 | 1761.0 | 1826.5 | 1889.2 | 1937.9 | 1960.3 | 1964.1 |
| 22.5° | 2701.4 | 2350.5 | 1802.2 | 1654.3 | 1678.7 | 1745.1 | 1820.0 | 1885.5 | 1936.9 | 1959.4 | 1964.1 |
| 25° | 2815.5 | 2358.0 | 1707.7 | 1601.0 | 1645.0 | 1719.8 | 1788.1 | 1840.5 | 1889.2 | 1908.8 | 1912.6 |
| 27.5° | 2922.2 | 2336.5 | 1617.8 | 1555.1 | 1614.1 | 1682.4 | 1728.3 | 1756.3 | 1790.0 | 1805.0 | 1807.8 |
| 30° | 3030.8 | 2293.4 | 1542.0 | 1518.7 | 1579.5 | 1630.9 | 1651.5 | 1653.4 | 1666.5 | 1666.5 | 1668.4 |
| 32.5° | 3140.2 | 2229.8 | 1475.6 | 1483.1 | 1536.4 | 1570.1 | 1572.9 | 1551.4 | 1535.5 | 1509.3 | 1508.4 |
| 35° | 3266.6 | 2165.2 | 1421.3 | 1442.9 | 1485.9 | 1506.5 | 1498.1 | 1456.9 | 1418.5 | 1375.5 | 1373.6 |
| 37.5° | 3383.5 | 2098.8 | 1375.5 | 1401.7 | 1428.8 | 1443.8 | 1424.1 | 1374.6 | 1342.7 | 1298.8 | 1292.2 |
| 40° | 3479.9 | 2038.9 | 1331.5 | 1358.6 | 1371.7 | 1384.8 | 1353.0 | 1312.8 | 1317.5 | 1293.2 | 1292.2 |
| 42.5° | 3536.0 | 1980.9 | 1290.3 | 1310.9 | 1319.4 | 1328.7 | 1300.6 | 1270.7 | 1296.0 | 1277.2 | 1278.2 |
| 45° | 3577.2 | 1930.4 | 1252.9 | 1260.4 | 1281.0 | 1295.0 | 1268.8 | 1235.1 | 1240.8 | 1168.7 | 1151.9 |
| 47.5° | 3624.0 | 1902.3 | 1217.4 | 1209.9 | 1246.4 | 1270.7 | 1230.5 | 1181.8 | 1148.1 | 1077.0 | 1070.5 |
| 50° | 3673.6 | 1892.0 | 1179.9 | 1159.3 | 1203.3 | 1226.7 | 1179.9 | 1119.1 | 1075.1 | 1036.8 | 1033.0 |
| 52.5° | 3690.4 | 1891.1 | 1133.1 | 1098.5 | 1142.5 | 1175.3 | 1136.0 | 1074.2 | 1021.8 | 984.4 | 982.5 |
| 55° | 3756.9 | 1918.2 | 1073.3 | 1015.2 | 1056.4 | 1123.8 | 1094.8 | 1005.9 | 963.8 | 946.9 | 945.1 |
| 57.5° | 3834.5 | 1922.9 | 978.8 | 924.5 | 981.6 | 1061.1 | 1024.6 | 947.9 | 902.0 | 881.4 | 879.6 |
| 60° | 3802.7 | 1807.8 | 877.7 | 855.2 | 917.9 | 1002.1 | 968.5 | 902.0 | 848.7 | 829.0 | 827.2 |
| 62.5° | 2897.9 | 1276.3 | 803.8 | 795.4 | 849.6 | 917.0 | 910.4 | 841.2 | 790.7 | 776.6 | 774.8 |
| 65° | 1743.2 | 896.4 | 732.7 | 731.7 | 770.1 | 834.7 | 843.1 | 786.9 | 733.6 | 713.9 | 713.9 |
| 67.5° | 861.8 | 685.9 | 652.2 | 647.5 | 671.8 | 717.7 | 753.2 | 707.4 | 662.5 | 643.8 | 641.0 |
| 70° | 609.1 | 604.5 | 593.2 | 580.1 | 584.8 | 603.5 | 618.5 | 580.1 | 532.4 | 513.7 | 510.0 |
| 72.5° | 526.8 | 527.7 | 520.3 | 510.0 | 506.2 | 493.1 | 480.0 | 451.9 | 422.9 | 403.3 | 405.2 |
| 75° | 408.9 | 410.8 | 415.5 | 411.7 | 401.4 | 387.4 | 373.3 | 337.8 | 314.4 | 295.7 | 291.9 |
| 77.5° | 238.6 | 248.0 | 262.9 | 259.2 | 261.1 | 241.4 | 235.8 | 201.2 | 179.7 | 166.6 | 163.7 |
| 80° | 134.7 | 140.4 | 146.9 | 151.6 | 146.0 | 137.5 | 125.4 | 106.7 | 100.1 | 90.8 | 88.9 |
| 82.5° | 81.4 | 87.0 | 89.8 | 93.6 | 91.7 | 80.5 | 71.1 | 58.9 | 53.3 | 48.7 | 47.7 |
| 85° | 41.2 | 44.9 | 47.7 | 49.6 | 44.0 | 36.5 | 32.7 | 26.2 | 22.5 | 19.6 | 19.6 |
| 87.5° | 10.3 | 11.2 | 13.1 | 11.2 | 10.3 | 4.7 | 3.7 | 0.9 | 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



CCT = 2764K
 CIE x = 0.4581
 CIE y = 0.4156
 Duv = 0.0020

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

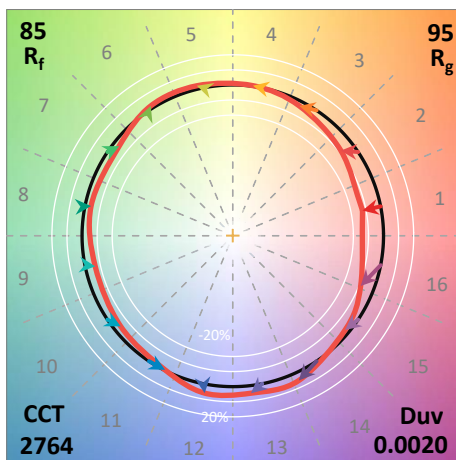
| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 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 $R_a = 80.9$
 $R_9 = -1.5$



Color Vector Graphics

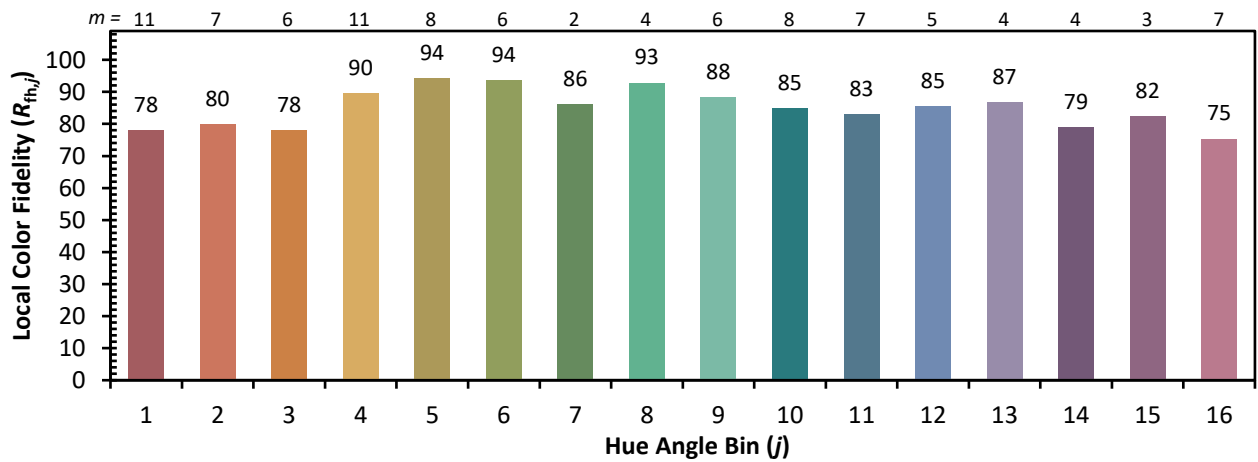


Individual Sample Fidelity Index ($R_{f,i}$)

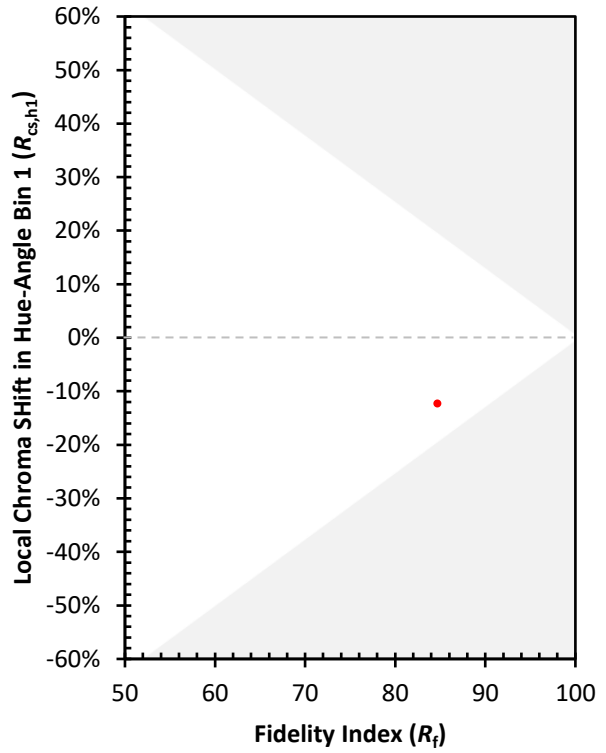
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 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)