

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: P634985

Luminaire Tested: GWS-SA3C-827-U-T4FT-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P634985
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-SA3C-827-U-T4FT-W
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS
Light Source: (48) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9905 lumens
Efficiency: N/A
Efficacy: 106.5 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B2 - U0 - G2

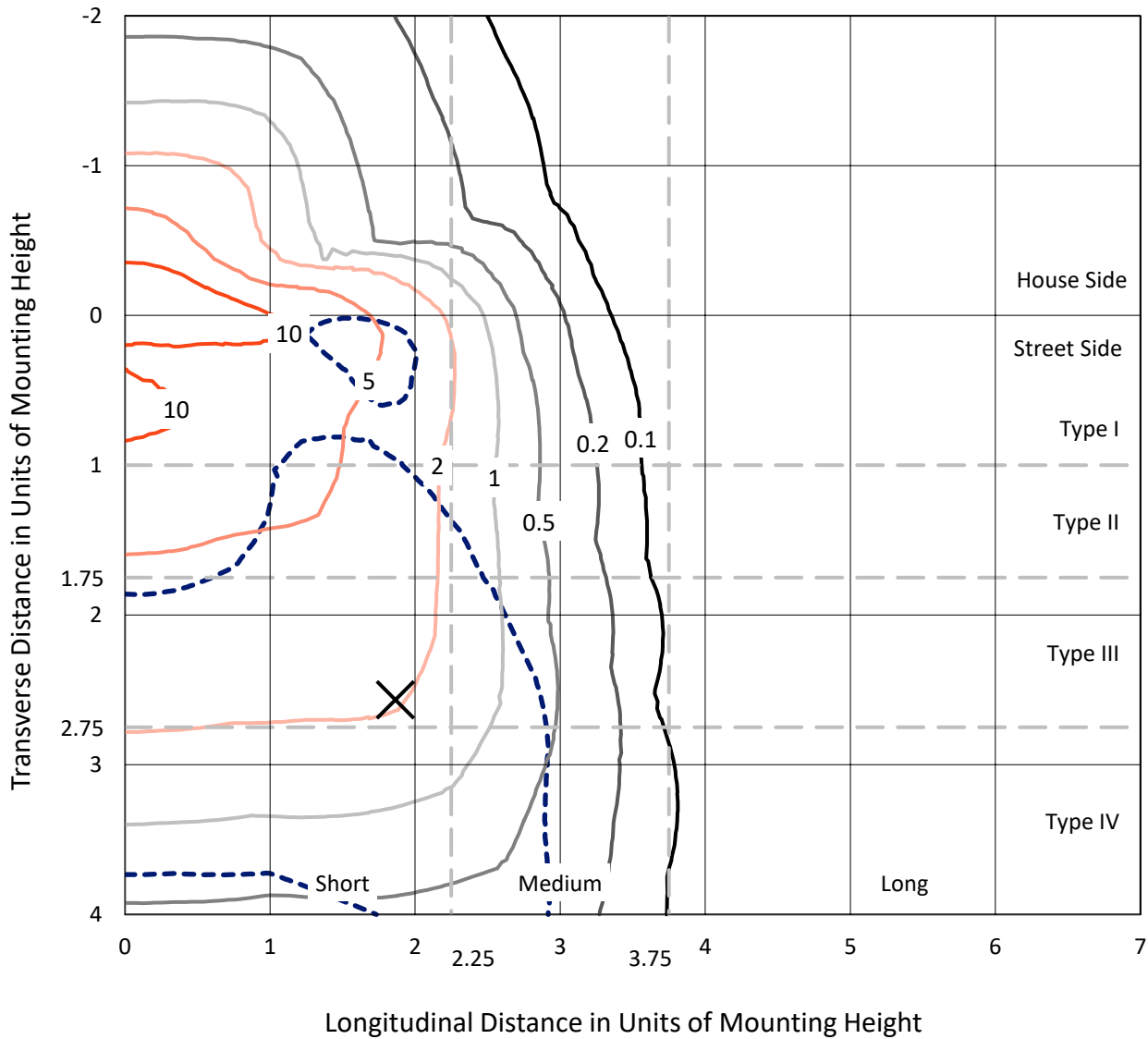
Input Watts (W): 93
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P634985
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Iso-Footcandle Lines of Horizontal Illumination

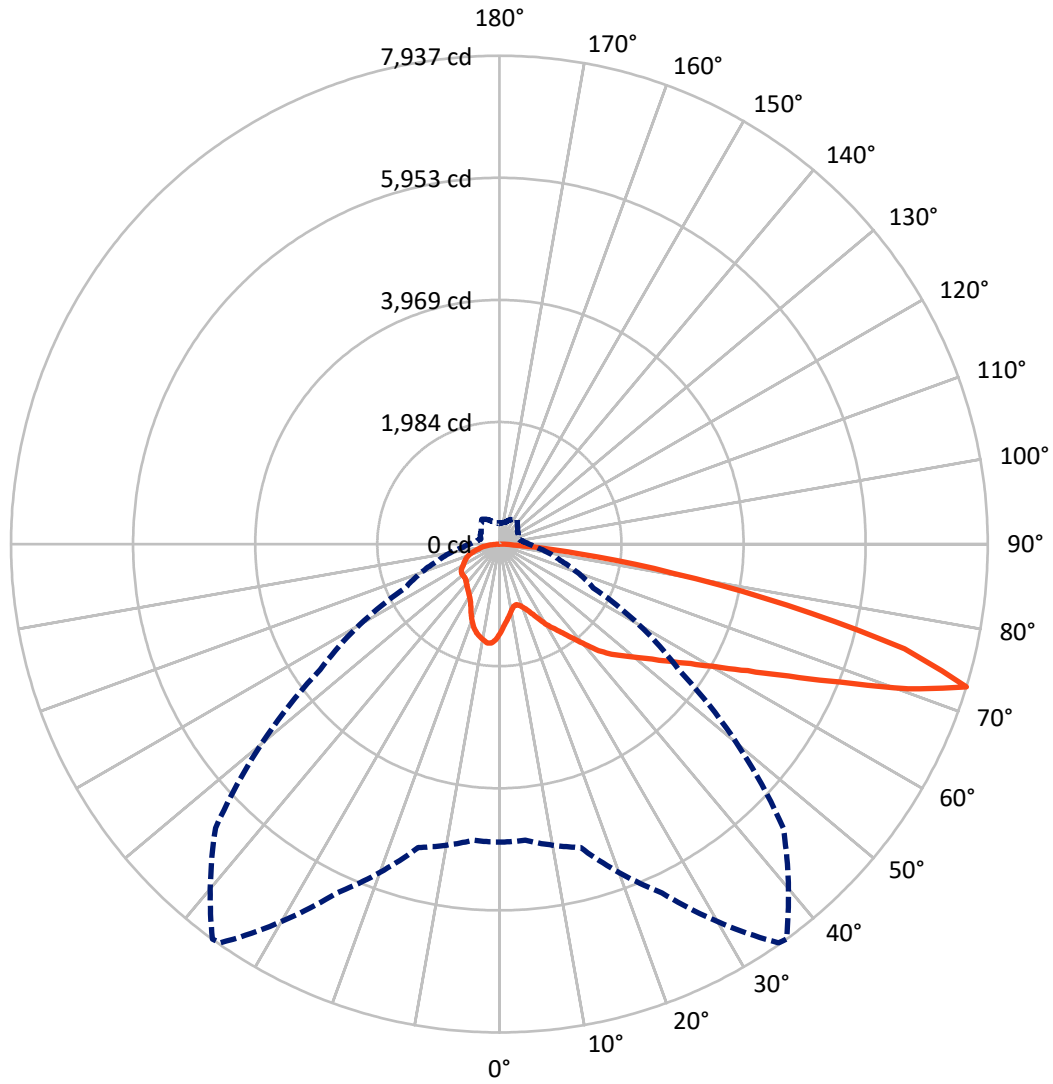
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 15.4 fc
 Type IV - Short - N/A

REPORT NUMBER: P634985
CATALOG NUMBER: GWS-SA3C-827-U-T4FT-W

Luminous Intensity Polar Plot



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

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 2283.5 | 0.0 | 2283.5 |
| | % Fixture | 23.1 | 0.0 | 23.1 |
| Street Side | Lumens | 7621.5 | 0.0 | 7621.5 |
| | % Fixture | 76.9 | 0.0 | 76.9 |
| Total | Lumens | 9905.0 | 0.0 | 9905.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 135.5 | 1.4 |
| 10°-20° | 382.3 | 3.9 |
| 20°-30° | 633.1 | 6.4 |
| 30°-40° | 948.2 | 9.6 |
| 40°-50° | 1383.3 | 14.0 |
| 50°-60° | 1968.9 | 19.9 |
| 60°-70° | 2487.5 | 25.1 |
| 70°-80° | 1772.6 | 17.9 |
| 80°-90° | 193.5 | 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° | 9905.0 | 100.0 |
| 0°-180° | 9905.0 | 100.0 |

Coefficient of Utilization



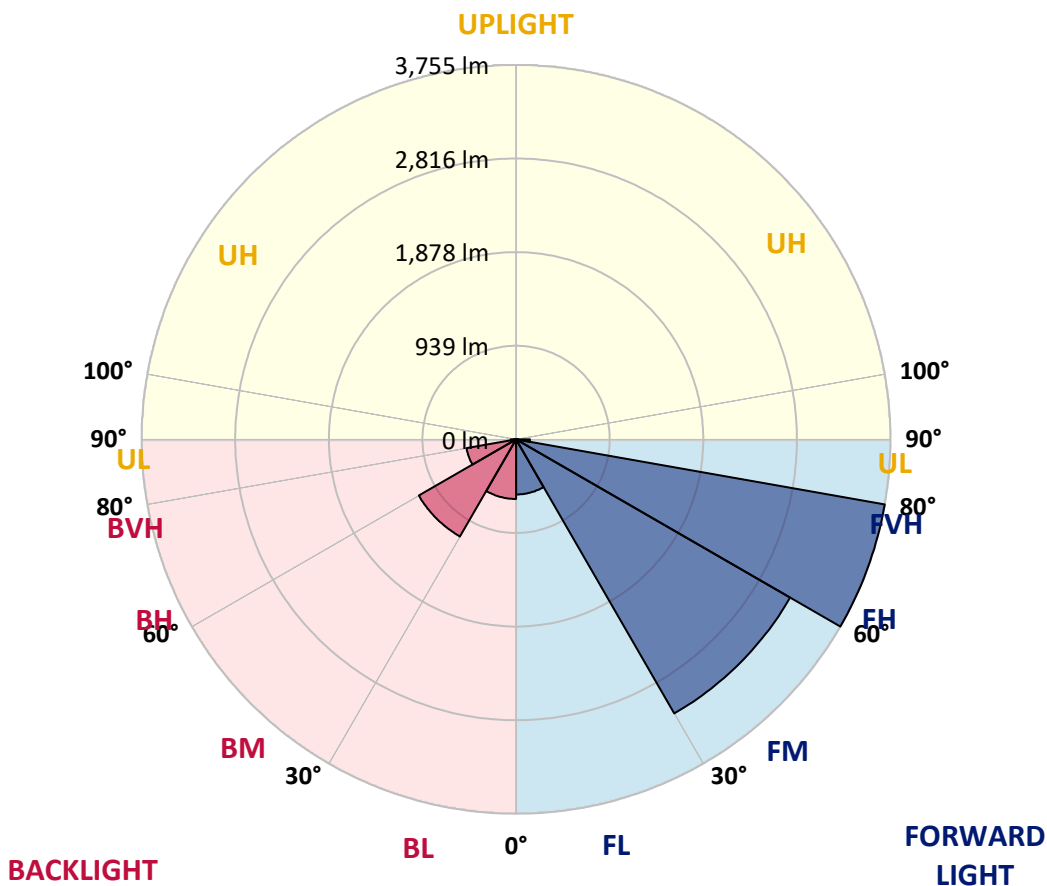
REPORT NUMBER: P634985

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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°) | 553.0 | 5.6 | | | |
| FM (30°-60°) | 3174.3 | 32.0 | | | |
| FH (60°-80°) | 3755.3 | 37.9 | | | G2/5000 |
| FVH (80°-90°) | 138.9 | 1.4 | | | G2/225 |
| BL (0°-30°) | 598.0 | 6.0 | B2/1000 | | |
| BM (30°-60°) | 1126.1 | 11.4 | B2/2500 | | |
| BH (60°-80°) | 504.8 | 5.1 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 54.6 | 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





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 36° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 |
| 2.5° | 1322.5 | 1320.3 | 1315.9 | 1329.1 | 1342.3 | 1340.8 | 1359.2 | 1376.9 | 1396.0 | 1415.8 | 1442.3 |
| 5° | 1216.6 | 1215.1 | 1211.5 | 1231.3 | 1251.2 | 1250.4 | 1280.6 | 1309.2 | 1348.2 | 1390.8 | 1443.8 |
| 7.5° | 1110.8 | 1107.1 | 1112.2 | 1137.2 | 1165.2 | 1168.1 | 1209.3 | 1256.3 | 1312.9 | 1376.9 | 1451.8 |
| 10° | 1017.4 | 1016.7 | 1018.9 | 1046.8 | 1088.7 | 1091.6 | 1144.6 | 1210.0 | 1285.0 | 1370.2 | 1470.2 |
| 12.5° | 993.1 | 991.7 | 985.8 | 999.8 | 1031.4 | 1035.8 | 1093.8 | 1174.0 | 1265.9 | 1373.9 | 1495.2 |
| 15° | 1032.8 | 1029.2 | 1008.6 | 1002.0 | 1017.4 | 1021.1 | 1070.3 | 1152.7 | 1254.8 | 1380.5 | 1526.8 |
| 17.5° | 1101.2 | 1099.0 | 1060.0 | 1032.8 | 1043.1 | 1046.1 | 1082.8 | 1149.0 | 1251.9 | 1393.8 | 1565.8 |
| 20° | 1201.2 | 1191.6 | 1130.6 | 1089.4 | 1089.4 | 1093.8 | 1115.9 | 1165.2 | 1255.6 | 1409.9 | 1609.9 |
| 22.5° | 1333.5 | 1314.4 | 1228.4 | 1172.5 | 1157.8 | 1163.7 | 1173.2 | 1205.6 | 1271.0 | 1437.1 | 1665.0 |
| 25° | 1482.0 | 1464.3 | 1362.2 | 1283.5 | 1262.9 | 1265.1 | 1257.0 | 1262.9 | 1304.8 | 1474.6 | 1733.4 |
| 27.5° | 1640.0 | 1628.3 | 1519.5 | 1419.5 | 1387.2 | 1387.2 | 1358.5 | 1344.5 | 1351.9 | 1517.3 | 1809.8 |
| 30° | 1781.2 | 1765.0 | 1673.1 | 1563.6 | 1520.9 | 1520.9 | 1466.5 | 1436.4 | 1418.8 | 1569.5 | 1912.0 |
| 32.5° | 1855.4 | 1845.9 | 1784.9 | 1701.0 | 1648.9 | 1640.8 | 1593.7 | 1558.4 | 1517.3 | 1646.7 | 2050.2 |
| 35° | 1952.5 | 1950.3 | 1913.5 | 1848.1 | 1781.9 | 1770.2 | 1737.8 | 1709.9 | 1638.6 | 1743.0 | 2234.0 |
| 37.5° | 2074.5 | 2070.8 | 2064.9 | 2026.0 | 1946.6 | 1944.4 | 1915.7 | 1881.9 | 1789.3 | 1881.9 | 2456.7 |
| 40° | 2211.2 | 2204.6 | 2197.3 | 2196.5 | 2148.7 | 2140.6 | 2138.4 | 2100.2 | 1970.8 | 2049.5 | 2689.0 |
| 42.5° | 2399.4 | 2376.6 | 2307.5 | 2338.4 | 2373.7 | 2366.3 | 2394.3 | 2336.9 | 2197.3 | 2248.7 | 2908.8 |
| 45° | 2631.0 | 2575.1 | 2438.4 | 2447.2 | 2536.1 | 2550.8 | 2647.9 | 2633.9 | 2446.5 | 2478.8 | 3140.4 |
| 47.5° | 2769.9 | 2721.4 | 2594.2 | 2586.9 | 2697.9 | 2716.2 | 2927.2 | 2953.7 | 2714.8 | 2755.9 | 3426.4 |
| 50° | 2883.8 | 2850.0 | 2745.6 | 2755.9 | 2873.6 | 2891.9 | 3204.4 | 3261.0 | 2967.6 | 3039.7 | 3758.6 |
| 52.5° | 3021.3 | 2972.8 | 2891.9 | 2940.4 | 3084.5 | 3106.6 | 3512.4 | 3573.4 | 3195.5 | 3351.4 | 4102.7 |
| 55° | 3098.5 | 3078.6 | 3080.1 | 3154.4 | 3335.2 | 3365.3 | 3835.1 | 3824.8 | 3404.3 | 3618.2 | 4361.4 |
| 57.5° | 3276.4 | 3269.0 | 3336.7 | 3364.6 | 3627.8 | 3666.7 | 4157.8 | 4069.6 | 3594.0 | 3824.8 | 4485.7 |
| 60° | 3590.3 | 3571.9 | 3630.7 | 3673.4 | 3989.5 | 4044.6 | 4518.0 | 4309.2 | 3722.6 | 3978.4 | 4443.8 |
| 62.5° | 4031.4 | 4008.6 | 4010.8 | 4078.4 | 4473.9 | 4532.0 | 4918.6 | 4509.2 | 3762.3 | 4002.0 | 4178.4 |
| 65° | 4579.7 | 4546.7 | 4509.2 | 4601.1 | 5117.1 | 5165.6 | 5354.6 | 4654.7 | 3667.5 | 3775.5 | 3624.1 |
| 67.5° | 5158.3 | 5131.1 | 5087.0 | 5279.6 | 5950.0 | 5979.4 | 5843.4 | 4642.2 | 3366.8 | 3169.8 | 2542.0 |
| 70° | 5192.1 | 5198.7 | 5407.5 | 6104.4 | 7037.2 | 7044.6 | 6305.8 | 4390.8 | 2726.5 | 2054.6 | 1266.6 |
| 72.5° | 4843.7 | 4832.6 | 5104.6 | 6255.1 | 7912.0 | 7937.0 | 6524.1 | 3557.2 | 1684.9 | 1024.7 | 594.0 |
| 75° | 3934.3 | 3953.4 | 4239.4 | 5472.9 | 6781.4 | 6803.5 | 5318.5 | 2097.3 | 800.5 | 501.3 | 380.1 |
| 77.5° | 1693.7 | 1800.3 | 2364.1 | 3855.7 | 4856.9 | 4788.5 | 2741.2 | 849.8 | 427.1 | 357.3 | 291.1 |
| 80° | 488.8 | 530.8 | 842.4 | 1833.4 | 2910.3 | 2858.9 | 1085.0 | 318.3 | 297.7 | 268.3 | 208.8 |
| 82.5° | 158.0 | 175.0 | 308.7 | 730.0 | 1304.1 | 1302.6 | 411.7 | 188.2 | 194.8 | 182.3 | 134.5 |
| 85° | 44.1 | 50.7 | 94.8 | 221.3 | 403.6 | 395.5 | 119.1 | 88.9 | 103.7 | 105.1 | 66.9 |
| 87.5° | 0.0 | 0.0 | 0.7 | 1.5 | 1.5 | 1.5 | 2.9 | 13.2 | 30.1 | 38.2 | 27.2 |
| 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: P634985
 CATALOG NUMBER: GWS-SA3C-827-U-T4FT-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 | 1449.6 |
| 2.5° | 1458.5 | 1456.3 | 1486.4 | 1509.9 | 1532.0 | 1546.7 | 1551.1 | 1554.0 | 1559.9 | 1562.8 | 1559.9 |
| 5° | 1468.8 | 1479.8 | 1529.8 | 1566.5 | 1595.9 | 1613.6 | 1614.3 | 1612.8 | 1617.2 | 1613.6 | 1611.4 |
| 7.5° | 1490.8 | 1512.1 | 1575.3 | 1614.3 | 1633.4 | 1634.2 | 1616.5 | 1595.9 | 1585.6 | 1576.8 | 1573.9 |
| 10° | 1520.2 | 1551.8 | 1620.9 | 1646.7 | 1640.8 | 1613.6 | 1574.6 | 1542.3 | 1523.9 | 1510.7 | 1507.7 |
| 12.5° | 1560.6 | 1595.9 | 1661.4 | 1660.6 | 1623.9 | 1575.3 | 1529.8 | 1490.8 | 1464.3 | 1448.9 | 1443.8 |
| 15° | 1598.9 | 1643.7 | 1690.8 | 1656.2 | 1598.1 | 1539.3 | 1480.5 | 1428.3 | 1393.0 | 1368.8 | 1364.4 |
| 17.5° | 1645.9 | 1693.7 | 1712.1 | 1642.2 | 1565.8 | 1490.1 | 1411.4 | 1343.0 | 1295.3 | 1266.6 | 1264.4 |
| 20° | 1700.3 | 1743.0 | 1722.4 | 1618.0 | 1523.9 | 1424.6 | 1318.1 | 1241.6 | 1190.1 | 1162.2 | 1164.4 |
| 22.5° | 1763.5 | 1794.4 | 1725.3 | 1584.9 | 1465.8 | 1332.0 | 1212.9 | 1139.4 | 1104.9 | 1090.2 | 1090.9 |
| 25° | 1831.2 | 1851.0 | 1720.2 | 1540.1 | 1376.9 | 1218.8 | 1104.9 | 1071.1 | 1068.1 | 1064.4 | 1065.9 |
| 27.5° | 1911.3 | 1906.9 | 1704.7 | 1476.8 | 1257.0 | 1087.2 | 1029.2 | 1038.0 | 1049.7 | 1048.3 | 1049.7 |
| 30° | 2018.6 | 1976.7 | 1684.9 | 1389.4 | 1114.4 | 977.0 | 984.3 | 1009.3 | 1024.7 | 1026.2 | 1030.6 |
| 32.5° | 2141.4 | 2053.9 | 1653.3 | 1270.3 | 978.4 | 915.2 | 942.4 | 972.6 | 990.9 | 994.6 | 1000.5 |
| 35° | 2287.7 | 2142.1 | 1597.4 | 1121.8 | 880.7 | 878.5 | 903.5 | 924.0 | 943.9 | 945.4 | 945.4 |
| 37.5° | 2456.0 | 2230.3 | 1508.5 | 957.9 | 820.4 | 846.8 | 870.4 | 874.8 | 879.9 | 875.5 | 877.7 |
| 40° | 2610.4 | 2315.6 | 1382.0 | 808.6 | 771.1 | 818.9 | 838.8 | 824.1 | 807.9 | 796.9 | 799.1 |
| 42.5° | 2739.8 | 2373.7 | 1214.4 | 704.2 | 721.1 | 793.9 | 809.4 | 779.2 | 747.6 | 727.0 | 730.0 |
| 45° | 2885.3 | 2427.3 | 1017.4 | 633.7 | 678.5 | 776.3 | 786.6 | 747.6 | 707.2 | 676.3 | 671.9 |
| 47.5° | 3086.0 | 2536.9 | 842.4 | 584.4 | 648.4 | 766.7 | 783.6 | 730.7 | 677.8 | 631.5 | 626.3 |
| 50° | 3333.7 | 2692.0 | 696.2 | 552.1 | 634.4 | 761.6 | 782.9 | 712.3 | 649.1 | 594.7 | 591.0 |
| 52.5° | 3604.3 | 2843.4 | 588.1 | 527.1 | 620.4 | 746.1 | 779.2 | 691.7 | 619.0 | 560.2 | 555.7 |
| 55° | 3784.4 | 2903.0 | 515.3 | 503.6 | 597.6 | 721.9 | 764.5 | 671.9 | 573.4 | 519.7 | 513.1 |
| 57.5° | 3837.3 | 2826.5 | 464.6 | 482.2 | 568.2 | 688.1 | 736.6 | 630.0 | 545.5 | 502.8 | 497.7 |
| 60° | 3746.1 | 2633.9 | 433.0 | 464.6 | 535.9 | 644.7 | 688.1 | 605.7 | 523.4 | 485.2 | 481.5 |
| 62.5° | 3488.8 | 2336.9 | 408.7 | 446.2 | 502.8 | 599.1 | 657.2 | 576.3 | 499.1 | 469.0 | 463.9 |
| 65° | 2971.3 | 1916.4 | 388.9 | 427.1 | 471.2 | 555.7 | 623.4 | 546.9 | 472.7 | 449.9 | 444.0 |
| 67.5° | 2078.2 | 1346.0 | 367.6 | 404.3 | 439.6 | 513.8 | 588.1 | 519.7 | 445.5 | 428.6 | 422.7 |
| 70° | 1015.9 | 713.8 | 341.8 | 377.8 | 405.8 | 471.2 | 552.8 | 486.6 | 409.5 | 399.9 | 391.8 |
| 72.5° | 483.7 | 399.2 | 311.7 | 341.8 | 359.5 | 414.6 | 494.0 | 438.9 | 366.8 | 346.2 | 332.3 |
| 75° | 324.2 | 283.8 | 272.0 | 299.2 | 303.6 | 347.7 | 423.4 | 378.6 | 323.4 | 299.9 | 288.2 |
| 77.5° | 245.5 | 216.9 | 228.6 | 252.9 | 244.1 | 286.0 | 348.4 | 337.4 | 291.8 | 270.5 | 264.6 |
| 80° | 172.8 | 158.0 | 181.6 | 196.3 | 189.7 | 243.3 | 313.9 | 288.9 | 240.4 | 216.9 | 212.4 |
| 82.5° | 108.8 | 105.9 | 133.8 | 136.0 | 138.2 | 192.6 | 258.0 | 227.1 | 186.7 | 153.6 | 142.6 |
| 85° | 54.4 | 60.3 | 80.1 | 80.1 | 79.4 | 99.2 | 147.0 | 127.9 | 100.7 | 80.1 | 77.9 |
| 87.5° | 18.4 | 25.7 | 34.6 | 27.9 | 21.3 | 16.9 | 19.1 | 23.5 | 25.0 | 24.3 | 24.3 |
| 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 ($\mu\text{W}/\text{nm}$) | 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



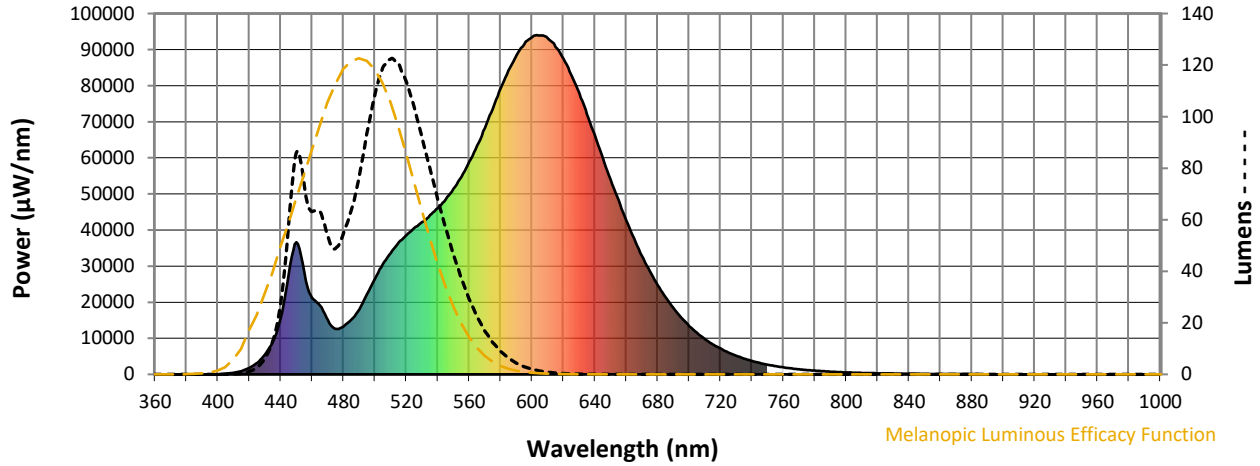
Scotopic Lumens: 5286.7

S/P: 1.22

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | 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)