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: P637437

Luminaire Tested: GWS-SA4C-827-U-SLL-W

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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Peachtree City, GA 30269

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P637437 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-37) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA4C-827-U-SLL-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND SPILL LIGHT ELIMINATOR LEFT OPTICS |
| Light Source: | (64) 2700K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 13374.2 lumens |
| Efficiency: | N/A |
| Efficacy: | 104.1 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B2 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 128.5 |
| 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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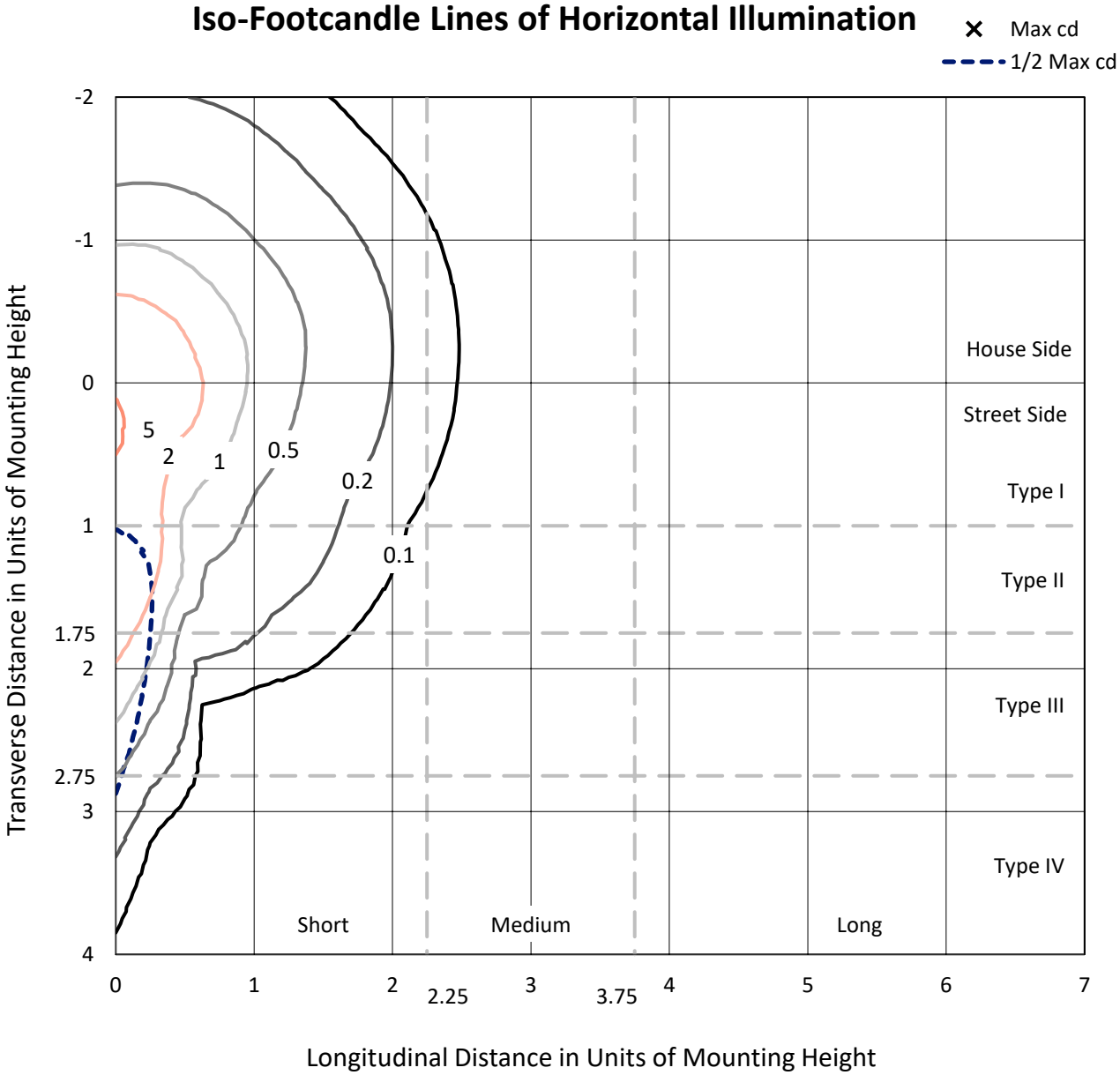
## Iso-Footcandle Lines of Horizontal Illumination




Based on 20 foot mounting height. Maximum calculated value = 5.6 fc
Type III - Short - N/A

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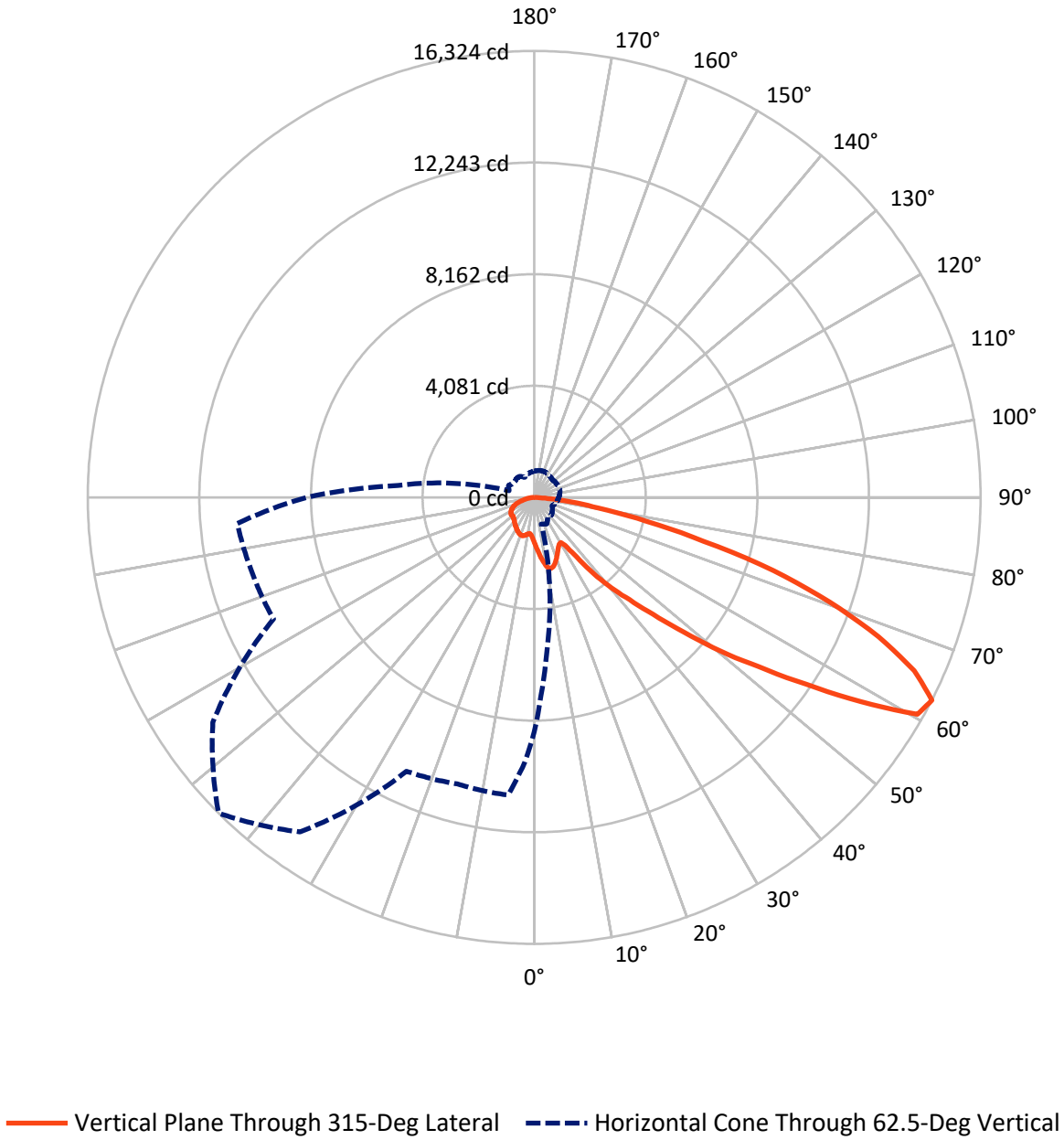
## Luminous Intensity Polar Plot



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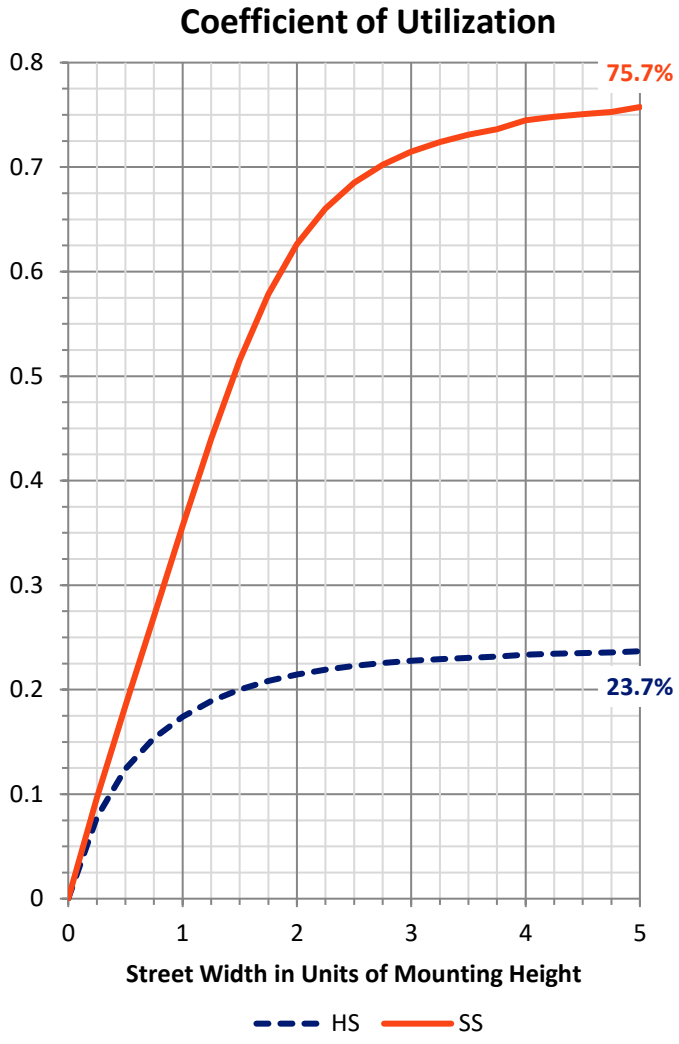
**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 3197.8 | 0.0 | 3197.8 |
| | % Fixture | 23.9 | 0.0 | 23.9 |
| **Street Side** | Lumens | 10176.4 | 0.0 | 10176.4 |
| | % Fixture | 76.1 | 0.0 | 76.1 |
| **Total** | Lumens | 13374.2 | 0.0 | 13374.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 164.3 | 1.2 |
| 10°-20° | 533.9 | 4.0 |
| 20°-30° | 840.5 | 6.3 |
| 30°-40° | 1152.0 | 8.6 |
| 40°-50° | 1797.5 | 13.4 |
| 50°-60° | 3099.2 | 23.2 |
| 60°-70° | 3591.6 | 26.9 |
| 70°-80° | 1895.8 | 14.2 |
| 80°-90° | 299.5 | 2.2 |
| 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° | 13374.2 | 100.0 |
| 0°-180° | 13374.2 | 100.0 |



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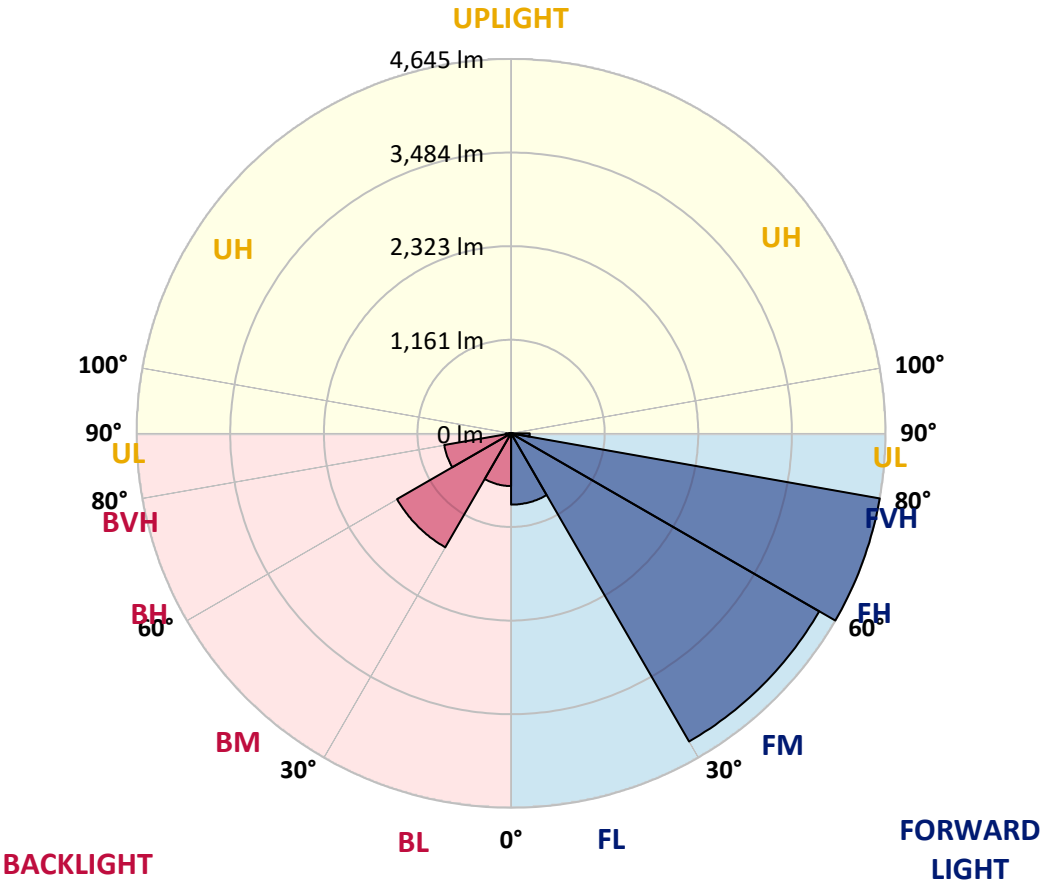
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 884.5 | 6.6 | | | |
| FM | (30°-60°) | 4415.3 | 33.0 | | | |
| FH | (60°-80°) | 4645.4 | 34.7 | | | G2/5000 |
| FVH | (80°-90°) | 231.2 | 1.7 | | | G3/500 |
| BL | (0°-30°) | 654.1 | 4.9 | B2/1000 | | |
| BM | (30°-60°) | 1633.4 | 12.2 | B2/2500 | | |
| BH | (60°-80°) | 842.0 | 6.3 | B2/1000 | | G2/1000 |
| BVH | (80°-90°) | 68.3 | 0.5 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B2-U0-G3**
Type III Short



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 2° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 |
| 2.5° | 1811.7 | 1804.6 | 1794.3 | 1759.6 | 1738.1 | 1713.5 | 1687.9 | 1658.3 | 1624.5 | 1601.0 | 1577.5 |
| 5° | 1965.2 | 1953.9 | 1929.4 | 1846.5 | 1789.2 | 1726.8 | 1674.6 | 1615.3 | 1557.0 | 1517.1 | 1477.2 |
| 7.5° | 2112.5 | 2098.2 | 2060.3 | 1933.5 | 1840.4 | 1750.3 | 1671.6 | 1585.6 | 1498.7 | 1439.4 | 1392.3 |
| 10° | 2259.8 | 2230.1 | 2182.1 | 2016.3 | 1893.6 | 1789.2 | 1699.2 | 1593.8 | 1478.2 | 1397.4 | 1347.3 |
| 12.5° | 2372.3 | 2344.7 | 2292.5 | 2092.0 | 1946.8 | 1815.8 | 1714.5 | 1617.4 | 1519.2 | 1433.2 | 1382.1 |
| 15° | 2477.7 | 2441.9 | 2382.6 | 2162.6 | 1990.8 | 1814.8 | 1683.9 | 1598.9 | 1584.6 | 1563.1 | 1496.6 |
| 17.5° | 2553.4 | 2520.7 | 2459.3 | 2219.9 | 2015.3 | 1783.1 | 1598.9 | 1548.8 | 1613.3 | 1678.7 | 1615.3 |
| 20° | 2619.9 | 2582.0 | 2519.6 | 2259.8 | 2020.4 | 1712.5 | 1495.6 | 1496.6 | 1597.9 | 1687.9 | 1672.6 |
| 22.5° | 2676.2 | 2634.2 | 2579.0 | 2304.8 | 2018.4 | 1614.3 | 1405.6 | 1467.0 | 1568.3 | 1638.8 | 1640.9 |
| 25° | 2745.7 | 2710.9 | 2664.9 | 2371.3 | 2018.4 | 1514.0 | 1340.1 | 1431.2 | 1518.1 | 1577.5 | 1575.4 |
| 27.5° | 2830.6 | 2807.1 | 2769.3 | 2472.6 | 2036.8 | 1430.2 | 1303.3 | 1385.1 | 1453.7 | 1504.8 | 1503.8 |
| 30° | 2925.8 | 2904.3 | 2875.6 | 2580.0 | 2068.5 | 1367.7 | 1282.8 | 1327.9 | 1378.0 | 1418.9 | 1418.9 |
| 32.5° | 3023.0 | 3014.8 | 2984.1 | 2665.9 | 2043.9 | 1348.3 | 1265.4 | 1270.6 | 1297.2 | 1330.9 | 1327.9 |
| 35° | 3158.0 | 3149.8 | 3110.9 | 2732.4 | 1937.6 | 1320.7 | 1237.8 | 1212.3 | 1215.3 | 1236.8 | 1244.0 |
| 37.5° | 3355.4 | 3343.2 | 3285.9 | 2810.2 | 1776.9 | 1251.1 | 1192.8 | 1150.9 | 1141.7 | 1150.9 | 1164.2 |
| 40° | 3593.8 | 3575.4 | 3497.6 | 2915.5 | 1591.8 | 1157.0 | 1122.2 | 1087.4 | 1072.1 | 1075.2 | 1090.5 |
| 42.5° | 3892.5 | 3853.6 | 3742.1 | 3027.0 | 1408.7 | 1074.1 | 1043.5 | 1022.0 | 1004.6 | 1002.5 | 1032.2 |
| 45° | 4377.4 | 4271.0 | 4094.0 | 3126.3 | 1254.2 | 1030.2 | 972.9 | 957.5 | 943.2 | 951.4 | 986.2 |
| 47.5° | 5224.4 | 5028.0 | 4683.3 | 3211.2 | 1160.1 | 1031.2 | 916.6 | 900.2 | 899.2 | 915.6 | 954.5 |
| 50° | 6388.6 | 6105.2 | 5573.3 | 3268.5 | 1111.0 | 1043.5 | 882.8 | 856.2 | 875.7 | 892.1 | 928.9 |
| 52.5° | 7503.7 | 7071.0 | 6437.7 | 3267.5 | 1089.5 | 1045.5 | 892.1 | 815.3 | 875.7 | 879.8 | 914.6 |
| 55° | 8456.1 | 7672.5 | 6671.0 | 2931.9 | 1058.8 | 1037.3 | 927.9 | 783.6 | 864.4 | 879.8 | 907.4 |
| 57.5° | 9213.1 | 8055.1 | 6653.6 | 2368.2 | 1151.9 | 992.3 | 949.3 | 776.5 | 831.7 | 881.8 | 913.5 |
| 60° | 9129.2 | 7880.1 | 6224.9 | 1453.7 | 1142.7 | 912.5 | 946.3 | 789.8 | 776.5 | 854.2 | 906.4 |
| 62.5° | *8571.7* | *7253.1* | *5487.4* | *1008.7* | *1073.1* | *866.5* | *896.1* | *813.3* | *725.3* | *814.3* | *871.6* |
| 65° | 7791.1 | 6443.9 | 4572.8 | 773.4 | 889.0 | 868.5 | 811.2 | 796.9 | 680.3 | 750.9 | 812.3 |
| 67.5° | 6758.9 | 5440.3 | 3610.2 | 612.8 | 619.9 | 751.9 | 736.6 | 707.9 | 638.4 | 694.6 | 749.9 |
| 70° | 5081.2 | 3970.3 | 2483.8 | 493.1 | 469.6 | 628.1 | 661.9 | 636.3 | 597.4 | 613.8 | 672.1 |
| 72.5° | 3580.5 | 2592.3 | 1360.6 | 390.8 | 362.1 | 482.9 | 574.9 | 570.8 | 527.9 | 540.1 | 597.4 |
| 75° | 2660.8 | 1834.2 | 850.1 | 308.9 | 294.6 | 345.8 | 481.8 | 494.1 | 458.3 | 472.6 | 516.6 |
| 77.5° | 1770.8 | 1187.7 | 472.6 | 229.2 | 229.2 | 252.7 | 359.1 | 416.4 | 389.8 | 401.0 | 431.7 |
| 80° | 977.0 | 604.6 | 236.3 | 150.4 | 154.5 | 173.9 | 261.9 | 299.7 | 300.8 | 328.4 | 336.6 |
| 82.5° | 308.9 | 192.3 | 105.4 | 88.0 | 82.9 | 99.2 | 168.8 | 214.8 | 200.5 | 255.7 | 235.3 |
| 85° | 70.6 | 45.0 | 19.4 | 19.4 | 21.5 | 32.7 | 64.4 | 114.6 | 146.3 | 176.0 | 127.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 45.0 | 66.5 | 59.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 |
| 2.5° | 1563.1 | 1542.7 | 1536.5 | 1519.2 | 1517.1 | 1500.7 | 1494.6 | 1494.6 | 1501.8 | 1501.8 | 1508.9 |
| 5° | 1460.8 | 1435.3 | 1420.9 | 1400.5 | 1395.4 | 1383.1 | 1374.9 | 1375.9 | 1385.1 | 1391.3 | 1403.6 |
| 7.5° | 1370.8 | 1353.4 | 1343.2 | 1334.0 | 1331.9 | 1329.9 | 1320.7 | 1319.7 | 1322.7 | 1331.9 | 1341.1 |
| 10° | 1333.0 | 1320.7 | 1323.8 | 1330.9 | 1342.2 | 1348.3 | 1340.1 | 1336.0 | 1333.0 | 1339.1 | 1347.3 |
| 12.5° | 1369.8 | 1357.5 | 1363.7 | 1375.9 | 1391.3 | 1397.4 | 1394.3 | 1393.3 | 1396.4 | 1419.9 | 1437.3 |
| 15° | 1450.6 | 1427.1 | 1418.9 | 1424.0 | 1436.3 | 1442.4 | 1439.4 | 1443.4 | 1462.9 | 1524.3 | 1568.3 |
| 17.5° | 1550.9 | 1493.6 | 1460.8 | 1451.6 | 1456.7 | 1461.9 | 1461.9 | 1472.1 | 1505.9 | 1595.9 | 1651.1 |
| 20° | 1605.1 | 1530.4 | 1475.2 | 1452.7 | 1454.7 | 1459.8 | 1459.8 | 1474.1 | 1512.0 | 1608.2 | 1644.0 |
| 22.5° | 1590.8 | 1522.2 | 1454.7 | 1430.2 | 1431.2 | 1435.3 | 1435.3 | 1447.5 | 1481.3 | 1566.2 | 1582.6 |
| 25° | 1534.5 | 1474.1 | 1407.6 | 1386.2 | 1388.2 | 1395.4 | 1393.3 | 1400.5 | 1426.1 | 1495.6 | 1504.8 |
| 27.5° | 1467.0 | 1413.8 | 1348.3 | 1331.9 | 1341.1 | 1355.5 | 1343.2 | 1344.2 | 1367.7 | 1426.1 | 1427.1 |
| 30° | 1394.3 | 1350.4 | 1292.0 | 1279.8 | 1297.2 | 1304.3 | 1293.1 | 1293.1 | 1316.6 | 1356.5 | 1355.5 |
| 32.5° | 1315.6 | 1288.0 | 1246.0 | 1232.7 | 1252.1 | 1263.4 | 1249.1 | 1251.1 | 1269.5 | 1296.1 | 1285.9 |
| 35° | 1241.9 | 1227.6 | 1208.2 | 1199.0 | 1211.2 | 1221.5 | 1212.3 | 1216.3 | 1233.7 | 1240.9 | 1226.6 |
| 37.5° | 1171.3 | 1169.3 | 1171.3 | 1171.3 | 1174.4 | 1177.5 | 1171.3 | 1181.6 | 1196.9 | 1187.7 | 1171.3 |
| 40° | 1110.0 | 1118.1 | 1137.6 | 1132.5 | 1129.4 | 1132.5 | 1128.4 | 1145.8 | 1161.1 | 1144.7 | 1125.3 |
| 42.5° | 1058.8 | 1074.1 | 1103.8 | 1103.8 | 1097.7 | 1099.7 | 1097.7 | 1119.2 | 1130.4 | 1107.9 | 1086.4 |
| 45° | 1014.8 | 1037.3 | 1075.2 | 1080.3 | 1070.1 | 1070.1 | 1074.1 | 1100.7 | 1104.8 | 1074.1 | 1051.6 |
| 47.5° | 984.1 | 1011.7 | 1054.7 | 1063.9 | 1048.6 | 1047.5 | 1058.8 | 1087.4 | 1087.4 | 1051.6 | 1026.1 |
| 50° | 962.6 | 993.3 | 1044.5 | 1056.8 | 1041.4 | 1037.3 | 1055.7 | 1083.4 | 1077.2 | 1034.3 | 1008.7 |
| 52.5° | 948.3 | 980.0 | 1043.5 | 1060.8 | 1050.6 | 1046.5 | 1064.9 | 1084.4 | 1069.0 | 1023.0 | 996.4 |
| 55° | 939.1 | 973.9 | 1046.5 | 1060.8 | 1049.6 | 1042.4 | 1060.8 | 1078.2 | 1070.1 | 1016.9 | 991.3 |
| 57.5° | 944.2 | 979.0 | 1042.4 | 1049.6 | 1036.3 | 1024.0 | 1045.5 | 1070.1 | 1067.0 | 1018.9 | 993.3 |
| 60° | 936.0 | 967.8 | 1019.9 | 1022.0 | 999.5 | 980.0 | 1011.7 | 1048.6 | 1048.6 | 1011.7 | 989.2 |
| 62.5° | *898.2* | *929.9* | *975.9* | *978.0* | *952.4* | *930.9* | *967.8* | *1011.7* | *1010.7* | *981.1* | *957.5* |
| 65° | 835.8 | 865.5 | 917.6 | 922.7 | 897.2 | 874.7 | 912.5 | 953.4 | 956.5 | 929.9 | 909.4 |
| 67.5° | 767.2 | 793.8 | 832.7 | 853.2 | 831.7 | 808.2 | 842.9 | 881.8 | 880.8 | 849.1 | 827.6 |
| 70° | 685.4 | 710.0 | 745.8 | 763.2 | 749.9 | 727.4 | 759.1 | 779.5 | 770.3 | 755.0 | 740.7 |
| 72.5° | 604.6 | 628.1 | 661.9 | 661.9 | 647.6 | 626.1 | 635.3 | 672.1 | 683.4 | 672.1 | 662.9 |
| 75° | 519.7 | 540.1 | 563.7 | 568.8 | 537.1 | 498.2 | 541.2 | 572.9 | 586.2 | 581.1 | 569.8 |
| 77.5° | 432.7 | 448.1 | 482.9 | 473.6 | 414.3 | 393.9 | 428.6 | 475.7 | 484.9 | 481.8 | 466.5 |
| 80° | 333.5 | 342.7 | 379.5 | 361.1 | 315.1 | 301.8 | 317.1 | 354.0 | 356.0 | 345.8 | 326.3 |
| 82.5° | 224.0 | 236.3 | 260.9 | 225.1 | 224.0 | 211.8 | 199.5 | 203.6 | 222.0 | 219.9 | 206.6 |
| 85° | 114.6 | 120.7 | 144.2 | 135.0 | 115.6 | 100.3 | 95.1 | 101.3 | 91.0 | 82.9 | 71.6 |
| 87.5° | 48.1 | 52.2 | 71.6 | 39.9 | 12.3 | 0.0 | 0.0 | 6.1 | 9.2 | 13.3 | 14.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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**CANDELA DISTRIBUTION (continued):**

| | 185° | 195° | 205° | 215° | 225° | 235° | 245° | 255° | 265° | 270° | 275° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 |
| 2.5° | 1525.3 | 1536.5 | 1564.2 | 1598.9 | 1632.7 | 1667.5 | 1705.3 | 1728.9 | 1757.5 | 1794.3 | 1795.4 |
| 5° | 1418.9 | 1444.5 | 1484.4 | 1537.6 | 1592.8 | 1656.2 | 1729.9 | 1791.3 | 1864.9 | 1923.2 | 1946.8 |
| 7.5° | 1353.4 | 1390.3 | 1440.4 | 1507.9 | 1580.5 | 1659.3 | 1755.5 | 1858.8 | 1979.5 | 2057.2 | 2103.3 |
| 10° | 1359.6 | 1415.8 | 1466.0 | 1523.2 | 1588.7 | 1673.6 | 1797.4 | 1934.5 | 2082.8 | 2185.1 | 2242.4 |
| 12.5° | 1469.0 | 1528.4 | 1519.2 | 1516.1 | 1560.1 | 1663.4 | 1831.2 | 2011.2 | 2192.3 | 2294.6 | 2363.1 |
| 15° | 1607.1 | 1629.6 | 1542.7 | 1477.2 | 1503.8 | 1626.6 | 1849.6 | 2079.8 | 2283.3 | 2408.1 | 2475.7 |
| 17.5° | 1677.7 | 1632.7 | 1527.3 | 1429.1 | 1422.0 | 1570.3 | 1858.8 | 2149.3 | 2385.6 | 2510.4 | 2582.0 |
| 20° | 1645.0 | 1579.5 | 1490.5 | 1397.4 | 1346.3 | 1493.6 | 1853.7 | 2204.6 | 2478.7 | 2617.9 | 2676.2 |
| 22.5° | 1574.4 | 1517.1 | 1447.5 | 1358.5 | 1284.9 | 1409.7 | 1840.4 | 2259.8 | 2561.6 | 2701.7 | 2752.9 |
| 25° | 1497.7 | 1454.7 | 1397.4 | 1319.7 | 1250.1 | 1336.0 | 1831.2 | 2333.5 | 2656.7 | 2790.7 | 2823.5 |
| 27.5° | 1420.9 | 1389.2 | 1342.2 | 1281.8 | 1241.9 | 1284.9 | 1834.2 | 2429.6 | 2779.5 | 2906.3 | 2893.0 |
| 30° | 1345.2 | 1317.6 | 1284.9 | 1258.3 | 1240.9 | 1272.6 | 1826.1 | 2531.9 | 2914.5 | 3032.2 | 2953.4 |
| 32.5° | 1273.6 | 1248.1 | 1227.6 | 1231.7 | 1241.9 | 1277.7 | 1784.1 | 2625.0 | 3038.3 | 3138.6 | 3018.9 |
| 35° | 1212.3 | 1185.7 | 1185.7 | 1200.0 | 1237.8 | 1260.3 | 1675.7 | 2697.6 | 3175.4 | 3275.6 | 3112.0 |
| 37.5° | 1155.0 | 1131.4 | 1146.8 | 1170.3 | 1206.1 | 1213.3 | 1536.5 | 2768.2 | 3374.9 | 3469.0 | 3256.2 |
| 40° | 1104.8 | 1081.3 | 1108.9 | 1138.6 | 1157.0 | 1153.9 | 1395.4 | 2866.4 | 3610.2 | 3707.3 | 3447.5 |
| 42.5° | 1064.9 | 1043.5 | 1068.0 | 1105.9 | 1108.9 | 1112.0 | 1292.0 | 2960.6 | 3883.3 | 4007.1 | 3776.9 |
| 45° | 1032.2 | 1016.9 | 1029.1 | 1067.0 | 1067.0 | 1114.0 | 1227.6 | 3039.3 | 4294.5 | 4513.5 | 4381.5 |
| 47.5° | 1006.6 | 997.4 | 1003.6 | 1015.8 | 1036.3 | 1150.9 | 1186.7 | 3099.7 | 5043.4 | 5473.0 | 5340.0 |
| 50° | 992.3 | 983.1 | 991.3 | 965.7 | 1027.1 | 1169.3 | 1173.4 | 3145.7 | 6030.6 | 6703.7 | 6539.0 |
| 52.5° | 980.0 | 977.0 | 982.1 | 922.7 | 1047.5 | 1157.0 | 1163.1 | 3084.3 | 6692.4 | 7914.9 | 8077.6 |
| 55° | 975.9 | 978.0 | 953.4 | 891.0 | 1072.1 | 1116.1 | 1132.5 | 2645.5 | 6872.5 | 8959.4 | 9969.1 |
| 57.5° | 978.0 | 971.8 | 909.4 | 894.1 | 1073.1 | 1034.3 | 1176.4 | 1887.4 | 6610.6 | 9413.6 | 11819.7 |
| 60° | 970.8 | 940.1 | 856.2 | 921.7 | 1026.1 | 938.1 | 1144.7 | 1230.7 | 5920.1 | 9064.8 | 11927.1 |
| 62.5° | *939.1* | *894.1* | *810.2* | *937.1* | *942.2* | *880.8* | *1039.4* | *948.3* | *4999.4* | *8318.0* | *10891.9* |
| 65° | 893.1 | 832.7 | 771.3 | 905.4 | 857.3 | 854.2 | 781.6 | 760.1 | 4020.4 | 7429.0 | 9909.8 |
| 67.5° | 817.4 | 757.0 | 742.7 | 832.7 | 771.3 | 757.0 | 628.1 | 630.2 | 3208.1 | 6481.7 | 8922.6 |
| 70° | 731.4 | 671.1 | 682.3 | 752.9 | 686.4 | 629.1 | 508.4 | 524.8 | 2433.7 | 5400.4 | 7591.7 |
| 72.5° | 675.2 | 594.4 | 595.4 | 662.9 | 603.6 | 509.5 | 418.4 | 432.7 | 1544.7 | 4070.5 | 6035.7 |
| 75° | 569.8 | 523.8 | 501.3 | 537.1 | 512.5 | 396.9 | 351.9 | 348.8 | 915.6 | 2917.6 | 4519.6 |
| 77.5° | 475.7 | 439.9 | 428.6 | 443.0 | 382.6 | 293.6 | 283.4 | 278.3 | 518.7 | 1869.0 | 2961.6 |
| 80° | 344.8 | 335.5 | 334.5 | 341.7 | 294.6 | 215.9 | 215.9 | 216.9 | 279.3 | 1014.8 | 1669.5 |
| 82.5° | 218.9 | 239.4 | 211.8 | 235.3 | 200.5 | 153.4 | 143.2 | 162.7 | 160.6 | 432.7 | 703.8 |
| 85° | 91.0 | 124.8 | 116.6 | 123.8 | 95.1 | 83.9 | 90.0 | 97.2 | 93.1 | 166.7 | 274.2 |
| 87.5° | 17.4 | 20.5 | 22.5 | 21.5 | 21.5 | 26.6 | 29.7 | 35.8 | 35.8 | 48.1 | 82.9 |
| 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

Scaled Data Report

REPORT NUMBER: P637437
CATALOG NUMBER: GWS-SA4C-827-U-SLL-W

**CANDELA DISTRIBUTION (continued):**

| | 285° | 295° | 305° | 315° | 325° | 335° | 345° | 355° | 358° | 360° |
|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 | 1667.5 |
| 2.5° | 1834.2 | 1863.9 | 1857.8 | 1871.1 | 1853.7 | 1859.8 | 1825.0 | 1815.8 | 1809.7 | 1811.7 |
| 5° | 2022.5 | 2082.8 | 2094.1 | 2116.6 | 2101.2 | 2101.2 | 2039.9 | 1993.8 | 1977.5 | 1965.2 |
| 7.5° | 2213.8 | 2300.7 | 2358.0 | 2364.1 | 2356.0 | 2339.6 | 2250.6 | 2167.7 | 2138.1 | 2112.5 |
| 10° | 2383.6 | 2487.9 | 2552.4 | 2583.1 | 2567.7 | 2542.1 | 2431.7 | 2318.1 | 2282.3 | 2259.8 |
| 12.5° | 2513.5 | 2605.6 | 2648.5 | 2669.0 | 2667.0 | 2657.7 | 2567.7 | 2445.0 | 2407.1 | 2372.3 |
| 15° | 2597.4 | 2643.4 | 2627.1 | 2626.0 | 2640.4 | 2677.2 | 2649.6 | 2553.4 | 2509.4 | 2477.7 |
| 17.5° | 2651.6 | 2607.6 | 2535.0 | 2501.2 | 2531.9 | 2618.9 | 2682.3 | 2628.1 | 2588.2 | 2553.4 |
| 20° | 2671.0 | 2514.5 | 2409.2 | 2346.8 | 2382.6 | 2508.4 | 2664.9 | 2682.3 | 2648.5 | 2619.9 |
| 22.5° | 2648.5 | 2401.0 | 2257.8 | 2184.1 | 2218.9 | 2369.3 | 2613.8 | 2726.3 | 2703.8 | 2676.2 |
| 25° | 2593.3 | 2282.3 | 2110.4 | 2043.9 | 2081.8 | 2235.2 | 2522.7 | 2767.2 | 2768.2 | 2745.7 |
| 27.5° | 2524.8 | 2172.8 | 2007.1 | 1944.7 | 1981.5 | 2124.8 | 2433.7 | 2803.0 | 2838.8 | 2830.6 |
| 30° | 2455.2 | 2107.4 | 1958.0 | 1914.0 | 1941.6 | 2068.5 | 2342.7 | 2839.8 | 2911.5 | 2925.8 |
| 32.5° | 2423.5 | 2139.1 | 2073.6 | 2093.1 | 2057.2 | 2101.2 | 2309.9 | 2892.0 | 2999.4 | 3023.0 |
| 35° | 2465.4 | 2420.4 | 2586.1 | 2662.9 | 2536.0 | 2369.3 | 2351.9 | 2970.8 | 3123.2 | 3158.0 |
| 37.5° | 2669.0 | 3023.0 | 3270.5 | 3540.6 | 3320.6 | 2953.4 | 2559.5 | 3104.8 | 3300.2 | 3355.4 |
| 40° | 3112.0 | 3548.8 | 3995.8 | 4344.7 | 4012.2 | 3518.1 | 2954.4 | 3304.3 | 3543.7 | 3593.8 |
| 42.5° | 3529.3 | 4041.9 | 4657.7 | 5108.8 | 4677.1 | 3979.5 | 3380.0 | 3639.8 | 3864.9 | 3892.5 |
| 45° | 3938.5 | 4525.7 | 5458.7 | 6085.8 | 5499.6 | 4418.3 | 3814.8 | 4206.6 | 4376.4 | 4377.4 |
| 47.5° | 4418.3 | 5071.0 | 6463.3 | 7356.4 | 6591.2 | 4904.2 | 4222.9 | 5103.7 | 5340.0 | 5224.4 |
| 50° | 4992.2 | 5613.2 | 7497.5 | 8834.6 | 7922.1 | 5501.7 | 4741.6 | 6197.3 | 6519.6 | 6388.6 |
| 52.5° | 5760.5 | 6210.6 | 8637.2 | 10276.0 | 9372.7 | 6182.0 | 5493.5 | 7641.8 | 7748.2 | 7503.7 |
| 55° | 6841.8 | 7073.0 | 10100.1 | 12056.0 | 10992.1 | 7019.8 | 6593.2 | 9454.5 | 9156.8 | 8456.1 |
| 57.5° | 9304.2 | 8437.7 | 11978.3 | 14086.7 | 12824.3 | 8542.0 | 9003.4 | 11453.5 | 10394.7 | 9213.1 |
| 60° | 11364.5 | 10094.9 | 13716.3 | 16102.0 | 14394.6 | 10219.7 | 11266.3 | 11801.3 | 10348.6 | 9129.2 |
| 62.5° | 10669.9 | 10517.4 | 14343.4 | 16324.0 | 14930.6 | 11045.3 | 10845.8 | 10924.6 | 9673.5 | 8571.7 |
| 65° | 9361.4 | 9702.1 | 13783.9 | 15271.3 | 14336.3 | 10305.7 | 9810.5 | 10114.4 | 8901.1 | 7791.1 |
| 67.5° | 8589.1 | 8839.7 | 12788.5 | 13586.4 | 13256.0 | 9505.7 | 9005.4 | 8785.5 | 7702.1 | 6758.9 |
| 70° | 7799.3 | 8007.0 | 11391.1 | 11471.9 | 11571.1 | 8175.8 | 7363.5 | 6708.8 | 5741.1 | 5081.2 |
| 72.5° | 6739.5 | 6750.8 | 9624.4 | 9155.8 | 9344.1 | 6397.8 | 5927.2 | 5015.8 | 4178.9 | 3580.5 |
| 75° | 5654.1 | 5345.2 | 7618.3 | 6399.9 | 6777.4 | 4976.9 | 4921.6 | 3780.0 | 3151.9 | 2660.8 |
| 77.5° | 4310.9 | 3949.8 | 5565.1 | 4208.6 | 4760.0 | 3314.5 | 3700.2 | 2563.6 | 2217.9 | 1770.8 |
| 80° | 2894.1 | 2669.0 | 3075.1 | 2375.4 | 3114.0 | 2284.4 | 2413.3 | 1452.7 | 1259.3 | 977.0 |
| 82.5° | 1526.3 | 1303.3 | 1900.7 | 1408.7 | 1878.2 | 1255.2 | 905.4 | 449.1 | 382.6 | 308.9 |
| 85° | 591.3 | 684.4 | 932.0 | 501.3 | 728.4 | 448.1 | 261.9 | 111.5 | 93.1 | 70.6 |
| 87.5° | 114.6 | 177.0 | 97.2 | 0.0 | 0.0 | 0.0 | 0.0 | 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 |

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

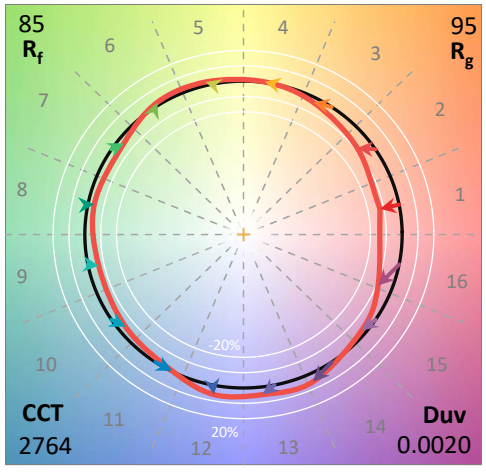
## Test Information

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




## Test Conditions

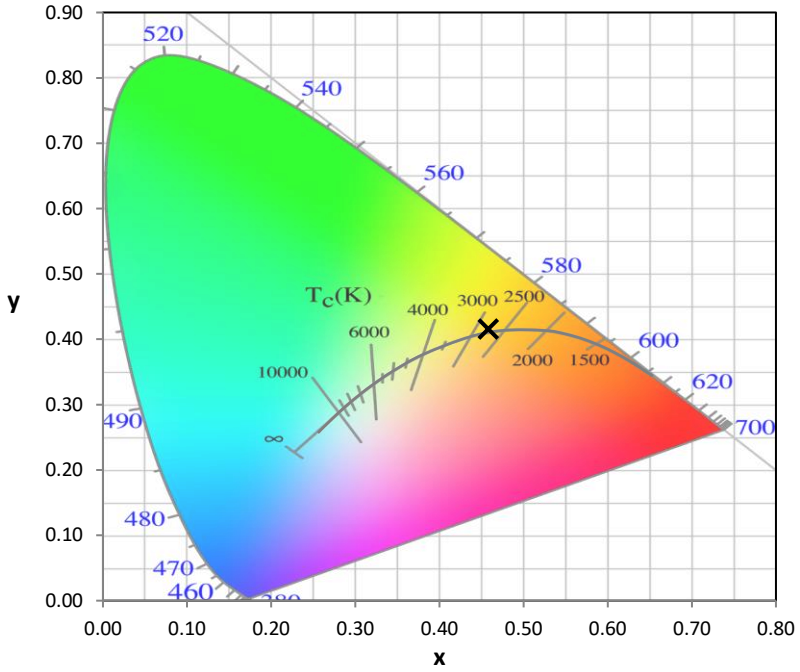
| | |
|---|---|
| Stabilization Time: | 81M |
| Operation Time: | 2H 21M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-157-9

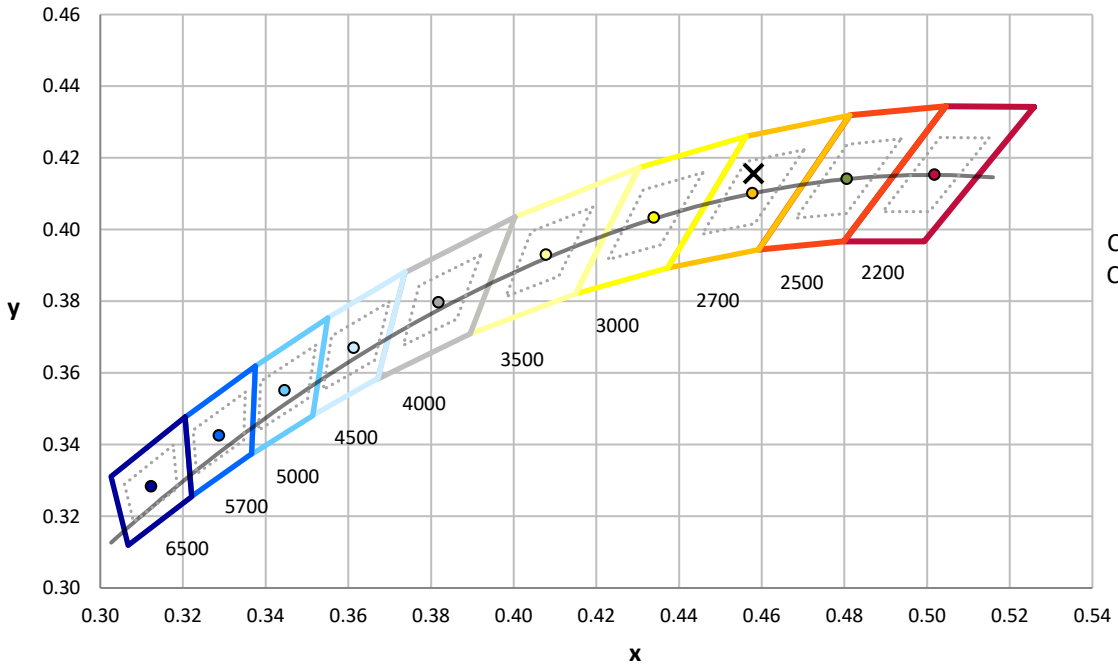
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

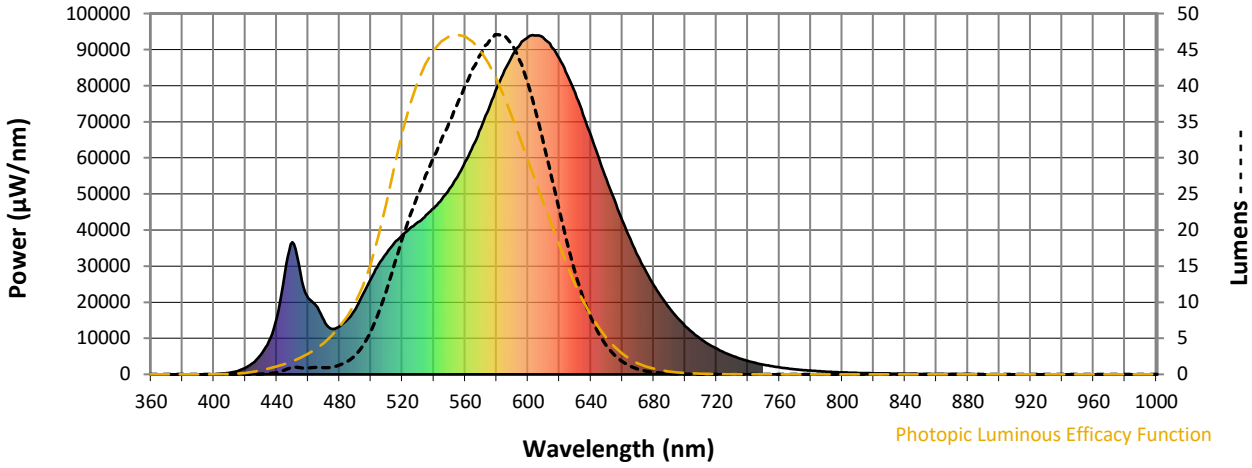



CCT = 2764K
CIE x = 0.4581
CIE y = 0.4156
Duv = 0.0020

Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-9

## Photopic Flux vs. Wavelength

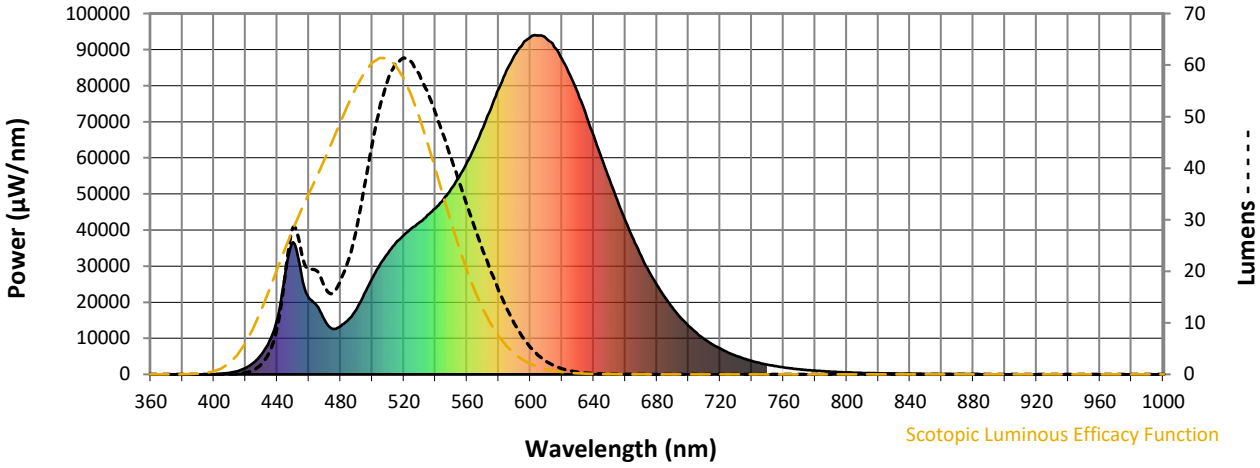



**Photopic Lumens: 4337.9**

| λ (nm) | Power (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

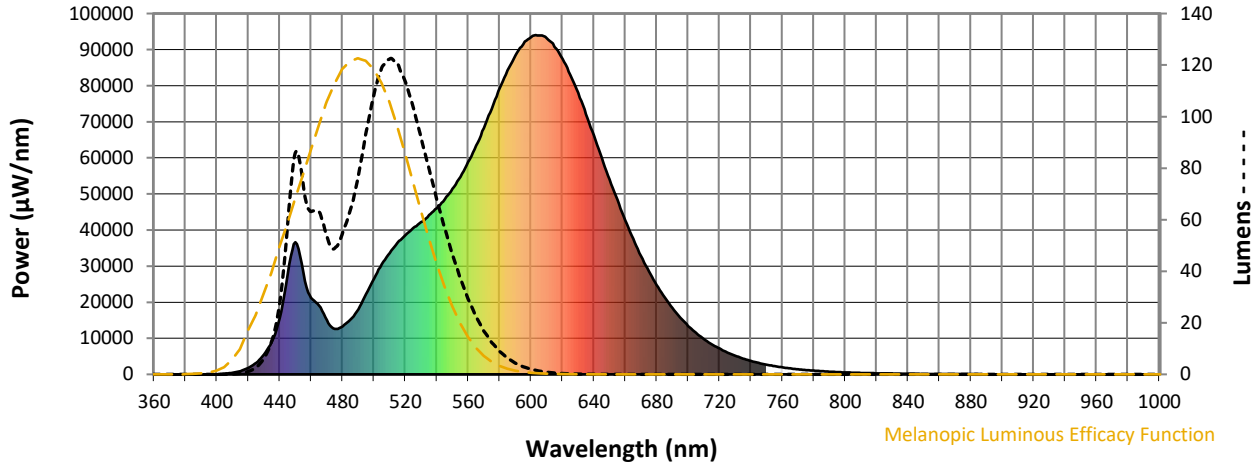



**Scotopic Lumens: 5286.7** **S/P: 1.22**

| λ (nm) | Power (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 | | | |

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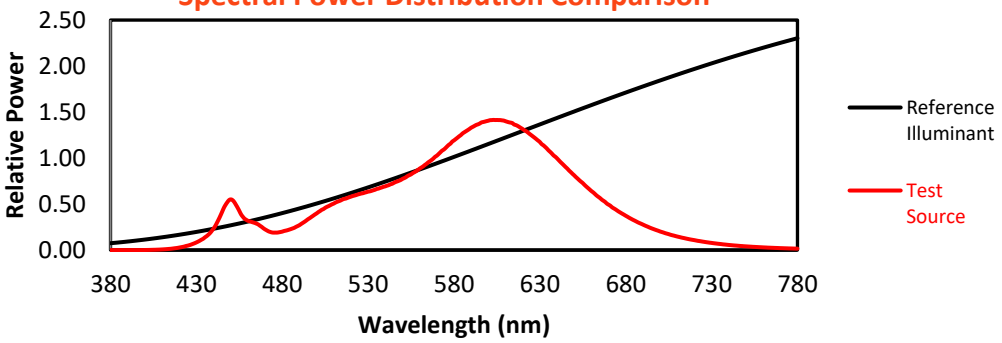
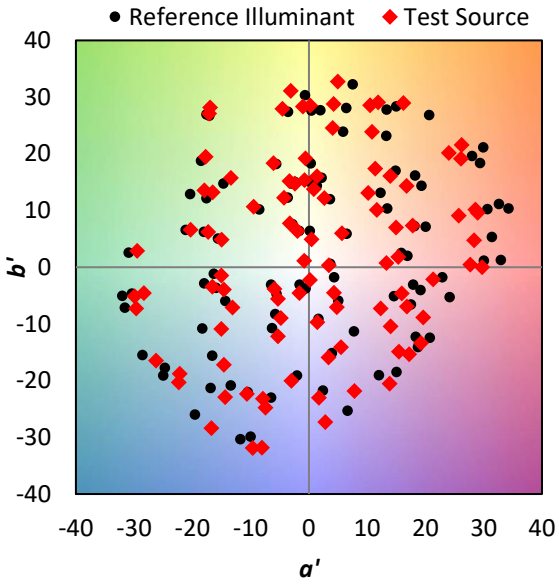
## Summary

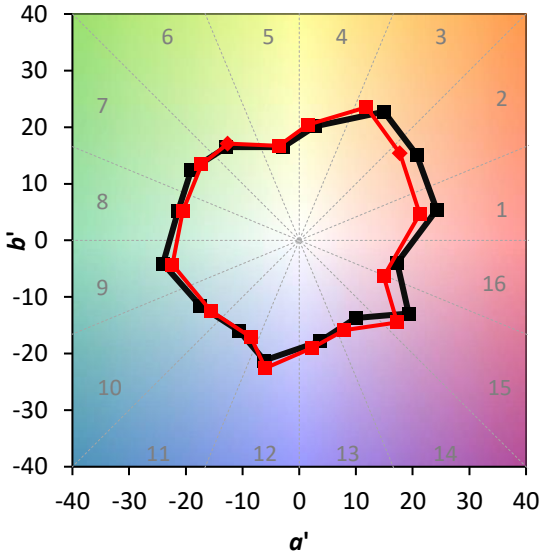
$R_f$ = 84.7
$R_g$ = 94.6
CIE $R_a$ = 80.9
$R_9$ = -1.5

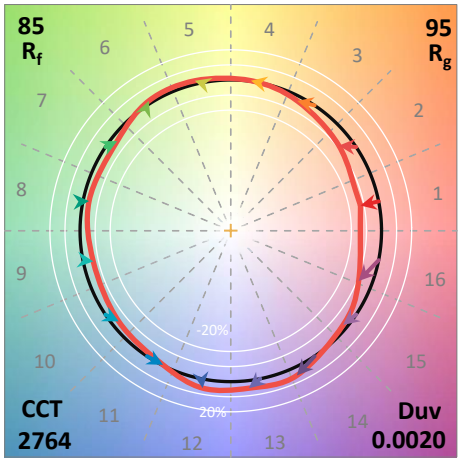
## Spectral Power Distribution Comparison

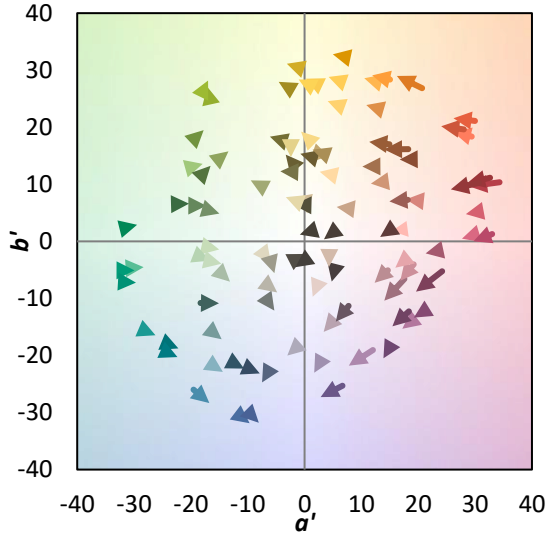



## Color Vector Graphics



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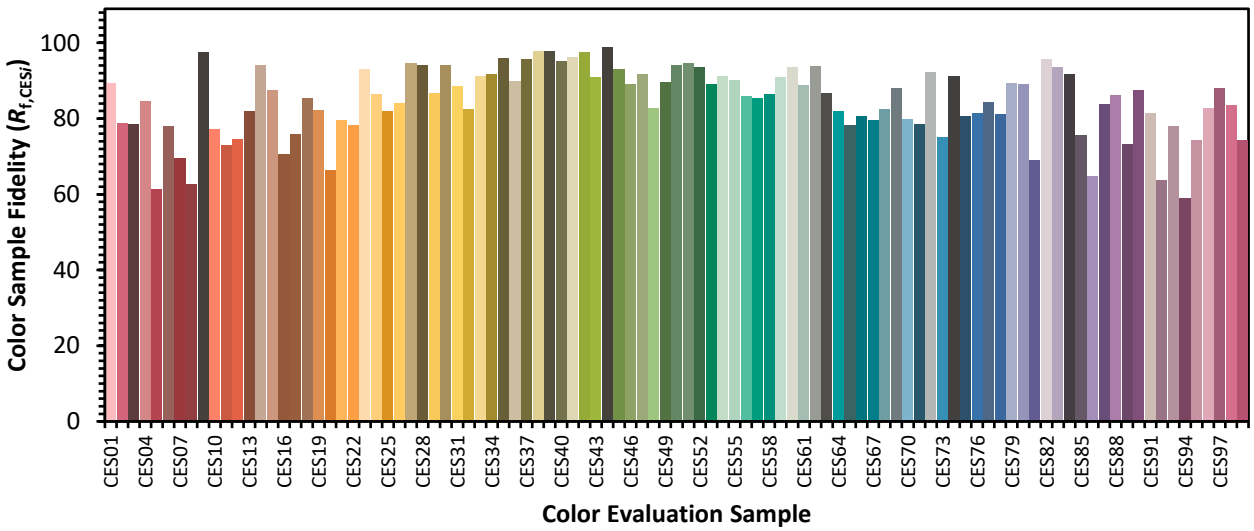
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| 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 | |



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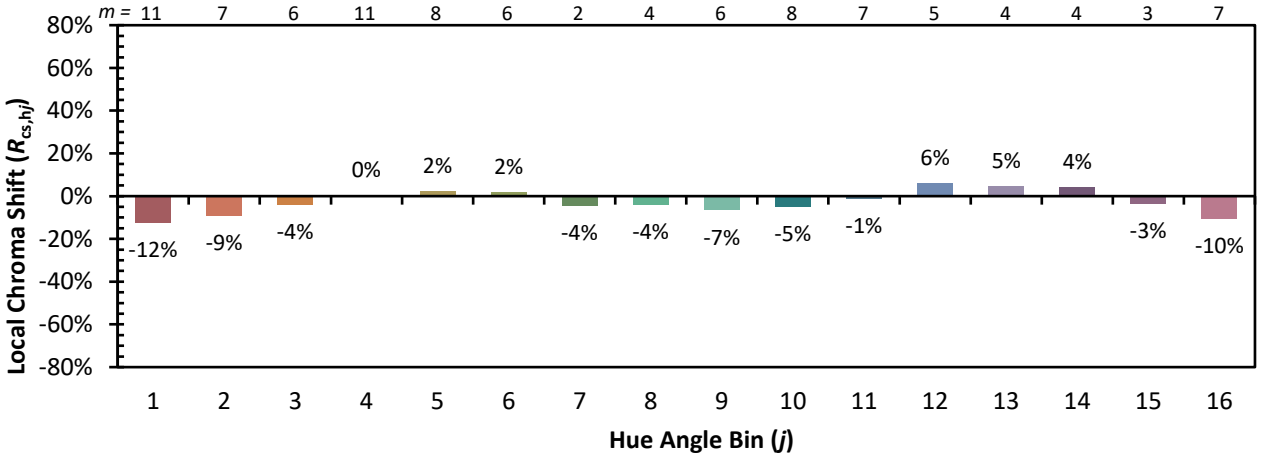
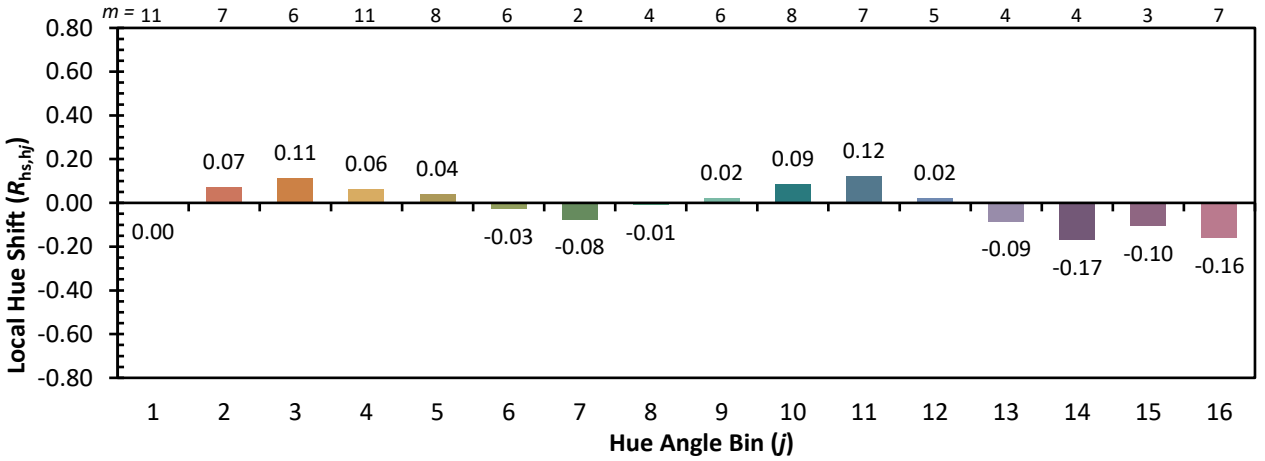
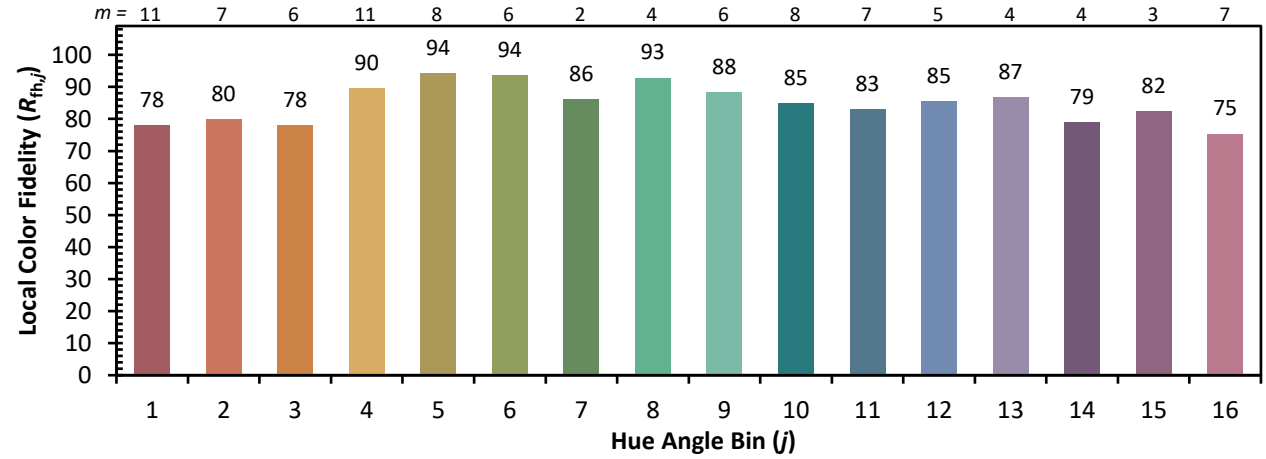
## Color Rendition by Hue-Angle Bin



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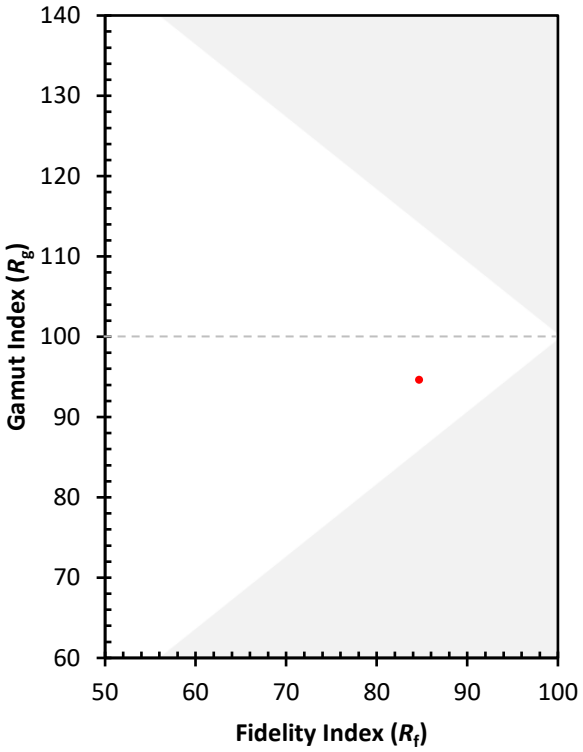
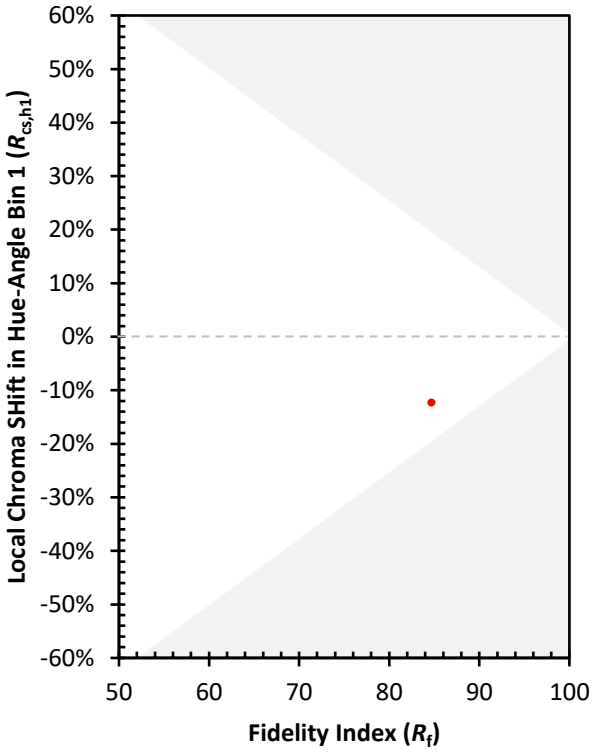
## Measure Comparisons

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