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: P630662

Luminaire Tested: GWS-SA1E-727-U-SL2-W

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P630662 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-27) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA1E-727-U-SL2-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS |
| Light Source: | (16) 2700K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 6227.4 lumens |
| Efficiency: | N/A |
| Efficacy: | 106.6 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B1 - U0 - G2 |

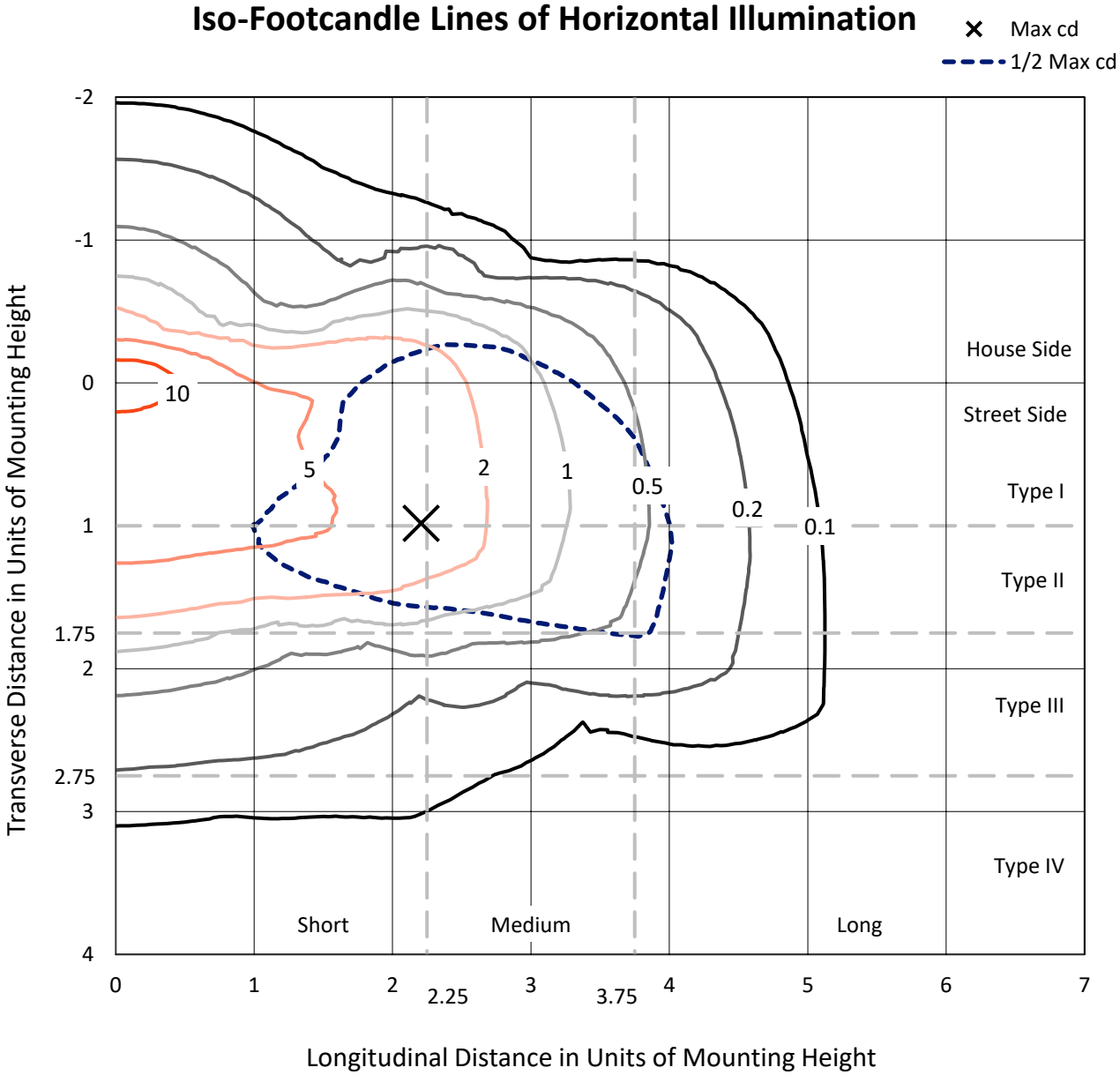
| | |
|---|---|
| Input Watts (W): | 58.4 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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

Scaled Data Report

REPORT NUMBER: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

## Iso-Footcandle Lines of Horizontal Illumination



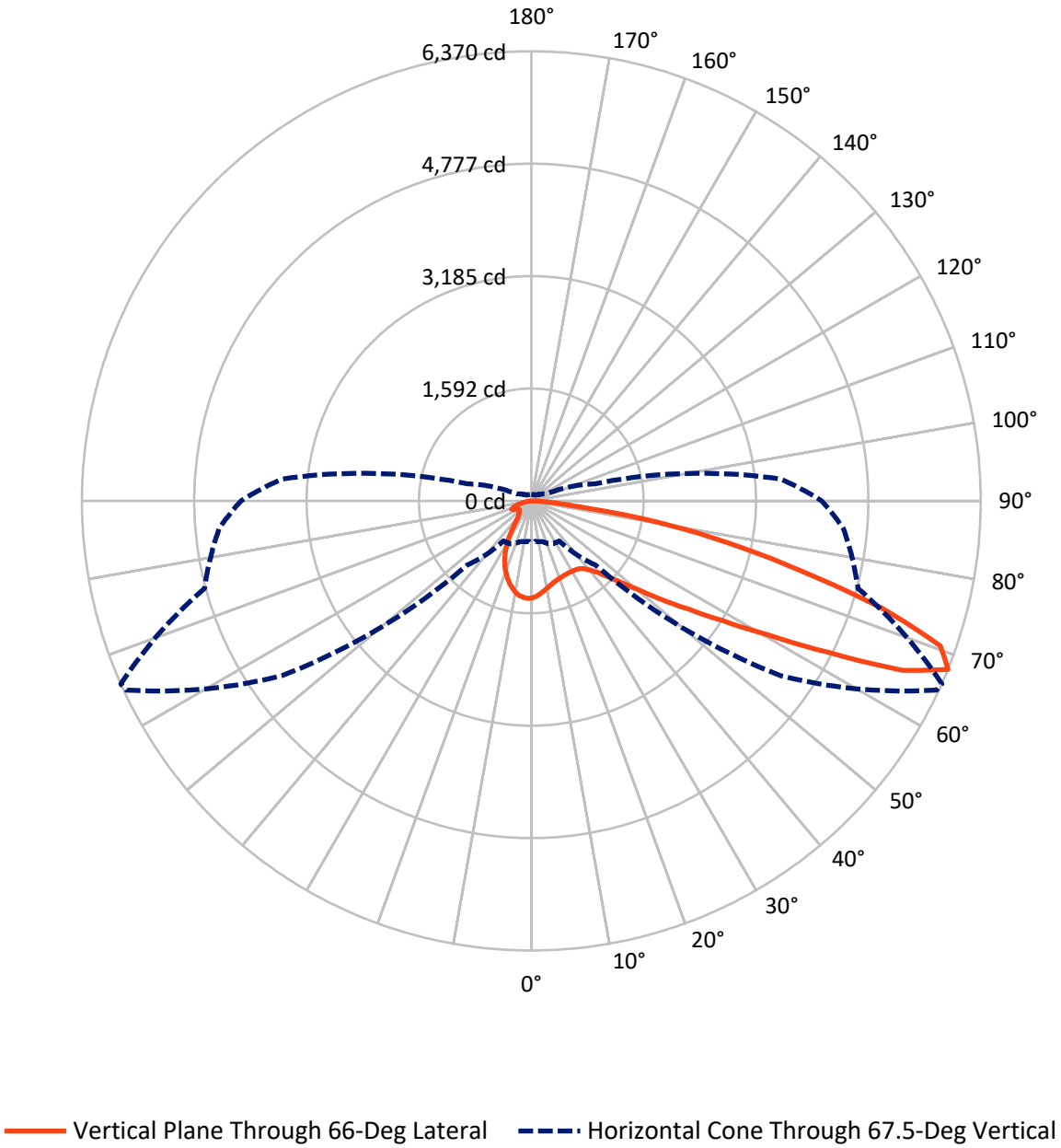

Based on 10 foot mounting height. Maximum calculated value = 13.8 fc
Type II - Short - N/A

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

Scaled Data Report

REPORT NUMBER: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

## Luminous Intensity Polar Plot



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

Scaled Data Report

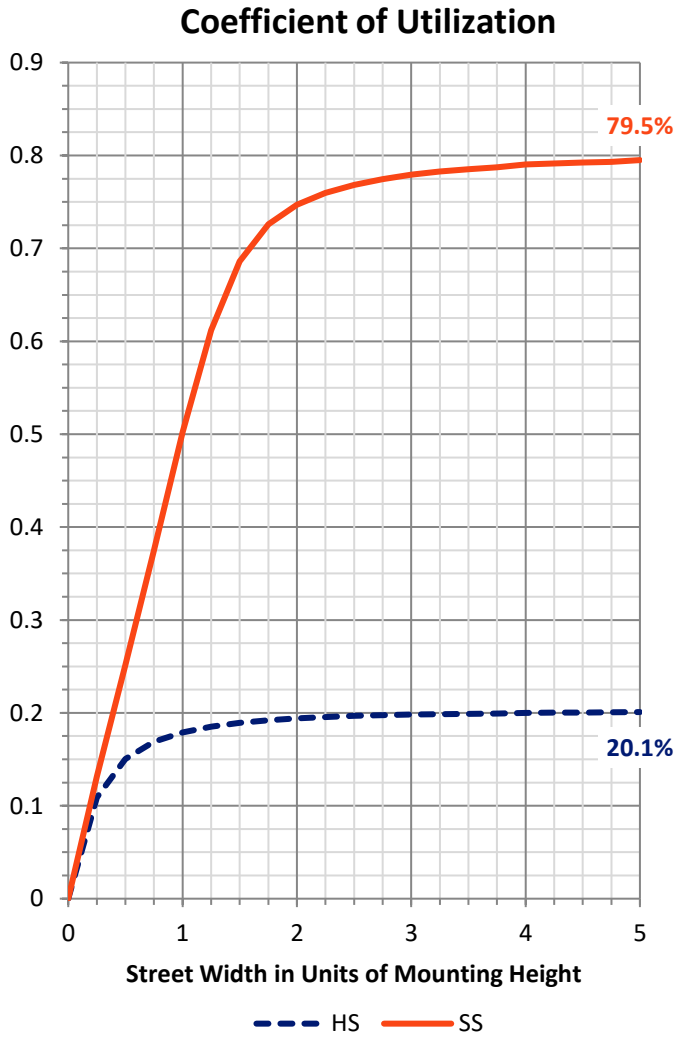
REPORT NUMBER: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1263.7 | 0.0 | 1263.7 |
| | % Fixture | 20.3 | 0.0 | 20.3 |
| **Street Side** | Lumens | 4963.7 | 0.0 | 4963.7 |
| | % Fixture | 79.7 | 0.0 | 79.7 |
| **Total** | Lumens | 6227.4 | 0.0 | 6227.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 120.8 | 1.9 |
| 10°-20° | 296.8 | 4.8 |
| 20°-30° | 408.0 | 6.6 |
| 30°-40° | 557.8 | 9.0 |
| 40°-50° | 845.1 | 13.6 |
| 50°-60° | 1313.8 | 21.1 |
| 60°-70° | 1599.5 | 25.7 |
| 70°-80° | 974.4 | 15.6 |
| 80°-90° | 111.3 | 1.8 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 6227.4 | 100.0 |
| 0°-180° | 6227.4 | 100.0 |



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

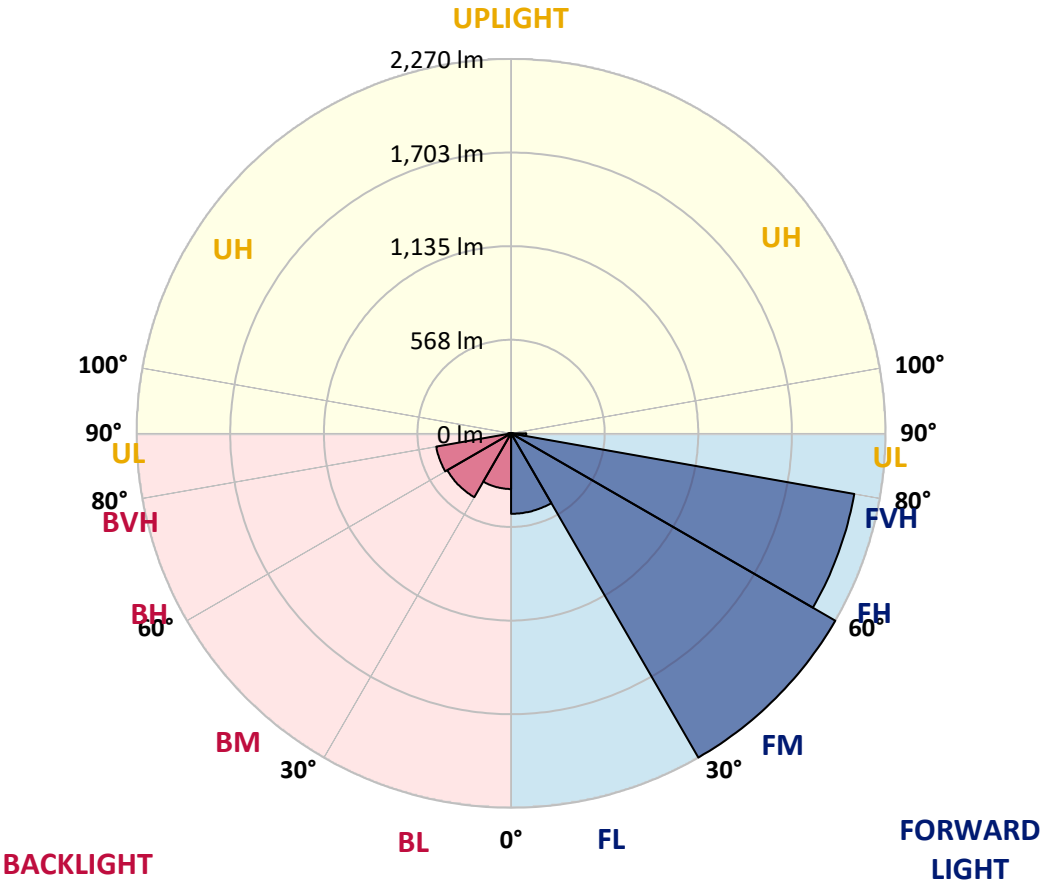
Scaled Data Report

REPORT NUMBER: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 487.9 | 7.8 | | | |
| FM | (30°-60°) | 2270.1 | 36.5 | | | |
| FH | (60°-80°) | 2113.1 | 33.9 | | | G2/5000 |
| FVH | (80°-90°) | 92.5 | 1.5 | | | G1/100 |
| BL | (0°-30°) | 337.6 | 5.4 | B1/500 | | |
| BM | (30°-60°) | 446.6 | 7.2 | B1/1000 | | |
| BH | (60°-80°) | 460.8 | 7.4 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 18.8 | 0.3 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G2**
Type II Short



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

Scaled Data Report

REPORT NUMBER: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | *1376.1* | 1376.1 | 1376.1 |
| 2.5° | 1288.9 | 1293.4 | 1290.7 | 1307.9 | 1308.8 | 1330.6 | 1342.9 | 1353.4 | *1354.3* | 1367.9 | 1377.0 |
| 5° | 1200.7 | 1203.4 | 1203.4 | 1219.8 | 1230.7 | 1259.8 | 1287.9 | 1317.9 | *1320.2* | 1352.9 | 1377.9 |
| 7.5° | 1129.4 | 1132.1 | 1130.3 | 1152.1 | 1166.2 | 1198.4 | 1234.3 | 1280.2 | *1284.8* | 1337.5 | 1381.1 |
| 10° | 1073.5 | 1072.6 | 1077.1 | 1097.1 | 1115.3 | 1153.9 | 1193.9 | 1246.1 | *1253.0* | 1319.7 | 1384.7 |
| 12.5° | 1035.4 | 1036.3 | 1039.0 | 1059.9 | 1079.4 | 1117.6 | 1158.9 | 1215.7 | *1223.0* | 1299.3 | 1382.9 |
| 15° | 1017.2 | 1015.4 | 1017.6 | 1036.7 | 1055.3 | 1089.0 | 1131.7 | 1190.3 | *1197.5* | 1281.1 | 1383.3 |
| 17.5° | 1013.1 | 1011.7 | 1011.3 | 1024.9 | 1039.0 | 1070.3 | 1111.2 | 1170.7 | *1178.5* | 1269.3 | 1386.1 |
| 20° | 1025.8 | 1024.0 | 1019.0 | 1024.9 | 1030.8 | 1057.2 | 1096.7 | 1156.7 | *1165.3* | 1261.6 | 1391.5 |
| 22.5° | 1060.8 | 1057.6 | 1049.9 | 1042.6 | 1034.9 | 1050.8 | 1087.6 | 1146.2 | *1154.8* | 1256.6 | 1397.0 |
| 25° | 1113.9 | 1111.2 | 1103.0 | 1086.7 | 1058.5 | 1055.8 | 1085.8 | 1141.7 | *1150.3* | 1253.0 | 1399.2 |
| 27.5° | 1187.1 | 1183.0 | 1174.8 | 1151.2 | 1105.3 | 1074.4 | 1092.6 | 1141.2 | *1149.4* | 1248.9 | 1397.0 |
| 30° | 1273.9 | 1271.1 | 1266.6 | 1238.0 | 1176.6 | 1113.9 | 1108.0 | 1144.8 | *1151.2* | 1246.6 | 1392.4 |
| 32.5° | 1362.0 | 1359.3 | 1362.9 | 1349.3 | 1273.9 | 1179.4 | 1141.7 | 1154.8 | *1159.4* | 1246.1 | 1388.3 |
| 35° | 1439.7 | 1442.9 | 1469.2 | 1471.5 | 1397.4 | 1268.0 | 1194.8 | 1178.0 | *1178.9* | 1255.2 | 1390.2 |
| 37.5° | 1521.0 | 1533.3 | 1567.8 | 1597.3 | 1535.5 | 1385.2 | 1273.9 | 1221.6 | *1220.7* | 1278.4 | 1401.5 |
| 40° | 1628.7 | 1634.1 | 1678.2 | 1733.6 | 1695.0 | 1546.0 | 1386.1 | 1292.9 | *1286.6* | 1325.7 | 1432.0 |
| 42.5° | 1733.6 | 1746.8 | 1817.2 | 1880.8 | 1868.1 | 1727.3 | 1527.4 | 1399.7 | *1388.3* | 1409.2 | 1494.7 |
| 45° | 1867.2 | 1879.9 | 1958.9 | 2040.7 | 2063.9 | 1932.1 | 1708.2 | 1551.4 | *1540.1* | 1535.1 | 1609.6 |
| 47.5° | 2000.7 | 2013.9 | 2084.8 | 2202.9 | 2284.2 | 2188.4 | 1943.5 | 1751.8 | *1733.2* | 1713.6 | 1783.1 |
| 50° | 2090.7 | 2106.1 | 2173.8 | 2315.6 | 2506.4 | 2508.2 | 2222.4 | 2014.4 | *1990.7* | 1959.9 | 2027.5 |
| 52.5° | 2087.5 | 2097.5 | 2162.0 | 2325.6 | 2666.3 | 2875.7 | 2595.9 | 2348.7 | *2329.7* | 2262.4 | 2321.5 |
| 55° | 1923.5 | 1938.5 | 2003.5 | 2207.9 | 2683.6 | 3224.2 | 3144.7 | 2743.1 | *2709.0* | 2588.6 | 2653.6 |
| 57.5° | 1594.1 | 1606.9 | 1672.3 | 1924.4 | 2530.5 | 3402.7 | 3841.6 | 3245.5 | *3198.7* | 2943.9 | 3018.8 |
| 60° | 1203.4 | 1188.0 | 1218.9 | 1439.7 | 2164.3 | 3407.3 | 4456.7 | 3927.0 | *3848.8* | 3323.7 | 3386.4 |
| 62.5° | 903.2 | 887.7 | 894.5 | 956.8 | 1467.4 | 3132.0 | 4807.4 | 4859.2 | *4730.2* | 3752.5 | 3740.3 |
| 65° | 713.7 | 705.1 | 724.6 | 767.3 | 855.4 | 2385.1 | 4810.1 | 5867.3 | *5786.0* | 4249.5 | 4103.2 |
| 67.5° | *581.5* | *576.1* | *596.0* | *675.1* | *693.7* | *1281.6* | *4313.1* | *6338.0* | *6369.8* | *4793.8* | *4439.9* |
| 70° | 468.4 | 460.2 | 491.6 | 595.6 | 645.1 | 775.5 | 3089.7 | 6098.1 | *6149.4* | 5118.2 | 4344.9 |
| 72.5° | 323.5 | 323.9 | 339.8 | 482.5 | 622.8 | 669.6 | 1747.7 | 5077.7 | *5189.0* | 4824.2 | 3819.8 |
| 75° | 218.1 | 219.9 | 224.4 | 318.5 | 573.8 | 649.7 | 931.3 | 3844.3 | *3922.9* | 3987.4 | 3157.4 |
| 77.5° | 131.7 | 132.7 | 143.1 | 192.6 | 395.7 | 606.5 | 631.0 | 2786.7 | *2848.5* | 2628.6 | 1957.1 |
| 80° | 76.3 | 79.5 | 89.0 | 129.0 | 267.1 | 455.7 | 488.4 | 1708.6 | *1778.6* | 1168.5 | 621.9 |
| 82.5° | 33.6 | 35.9 | 48.6 | 75.0 | 155.8 | 387.5 | 381.2 | 675.1 | *665.1* | 325.7 | 215.8 |
| 85° | 5.9 | 7.3 | 10.4 | 23.6 | 57.2 | 204.4 | 295.8 | 298.0 | *280.3* | 123.6 | 89.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 44.5 | 80.0 | *79.5* | 35.0 | 30.9 |
| 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: P630662
CATALOG NUMBER: GWS-SA1E-727-U-SL2-W

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 | 1376.1 |
| 2.5° | 1382.9 | 1370.6 | 1381.5 | 1382.9 | 1380.6 | 1378.8 | 1365.2 | 1353.4 | 1352.0 | 1339.3 | 1339.3 |
| 5° | 1387.9 | 1376.5 | 1382.0 | 1371.5 | 1355.2 | 1338.4 | 1309.3 | 1289.3 | 1280.2 | 1263.9 | 1263.9 |
| 7.5° | 1394.7 | 1382.9 | 1376.5 | 1350.6 | 1312.5 | 1275.7 | 1228.9 | 1189.8 | 1173.9 | 1150.7 | 1149.8 |
| 10° | 1401.1 | 1386.1 | 1364.3 | 1313.8 | 1253.0 | 1194.4 | 1126.2 | 1070.8 | 1033.1 | 1005.4 | 1005.4 |
| 12.5° | 1400.6 | 1381.1 | 1337.9 | 1263.4 | 1179.4 | 1094.4 | 1003.6 | 920.0 | 870.0 | 826.8 | 824.1 |
| 15° | 1399.7 | 1372.9 | 1304.3 | 1204.8 | 1093.5 | 975.8 | 852.3 | 743.2 | 669.2 | 626.9 | 623.3 |
| 17.5° | 1398.8 | 1362.4 | 1266.6 | 1138.0 | 989.0 | 828.6 | 665.6 | 547.4 | 485.6 | 459.8 | 460.7 |
| 20° | 1398.8 | 1350.6 | 1226.2 | 1061.2 | 868.6 | 652.4 | 488.4 | 402.5 | 387.1 | 388.4 | 389.8 |
| 22.5° | 1394.7 | 1336.1 | 1181.2 | 977.7 | 734.6 | 479.7 | 360.3 | 331.2 | 339.4 | 352.1 | 353.9 |
| 25° | 1385.2 | 1312.0 | 1128.9 | 885.0 | 575.1 | 349.4 | 293.9 | 288.5 | 303.5 | 319.4 | 323.9 |
| 27.5° | 1370.2 | 1284.3 | 1070.3 | 776.4 | 423.4 | 280.8 | 258.5 | 258.0 | 269.9 | 281.7 | 285.8 |
| 30° | 1354.3 | 1253.4 | 1008.5 | 655.6 | 306.7 | 244.4 | 235.8 | 235.8 | 241.7 | 249.0 | 248.0 |
| 32.5° | 1335.6 | 1222.1 | 942.2 | 529.7 | 249.9 | 224.0 | 221.2 | 219.9 | 220.8 | 223.5 | 223.5 |
| 35° | 1319.7 | 1194.4 | 874.1 | 396.6 | 224.0 | 212.6 | 209.9 | 206.7 | 205.3 | 203.5 | 204.4 |
| 37.5° | 1313.8 | 1172.6 | 803.7 | 298.9 | 211.3 | 204.4 | 199.9 | 195.3 | 192.2 | 191.3 | 190.8 |
| 40° | 1323.4 | 1163.5 | 733.2 | 246.2 | 202.2 | 195.8 | 190.8 | 184.9 | 182.2 | 182.2 | 182.2 |
| 42.5° | 1360.6 | 1170.3 | 661.5 | 222.6 | 195.8 | 188.5 | 181.3 | 175.8 | 174.9 | 175.8 | 176.3 |
| 45° | 1428.8 | 1196.6 | 587.0 | 210.8 | 190.4 | 181.3 | 172.6 | 168.5 | 168.5 | 169.5 | 169.5 |
| 47.5° | 1550.5 | 1265.7 | 513.4 | 203.5 | 184.9 | 175.4 | 166.3 | 162.2 | 161.7 | 162.6 | 162.6 |
| 50° | 1761.3 | 1390.2 | 447.0 | 198.5 | 180.8 | 170.8 | 161.7 | 156.3 | 154.9 | 154.5 | 154.5 |
| 52.5° | 2027.1 | 1606.0 | 404.8 | 194.9 | 175.8 | 165.8 | 156.7 | 149.5 | 146.7 | 145.4 | 145.4 |
| 55° | 2348.3 | 1893.5 | 404.8 | 192.2 | 169.5 | 159.9 | 149.5 | 142.2 | 138.1 | 136.3 | 136.3 |
| 57.5° | 2712.2 | 2228.3 | 474.7 | 189.9 | 164.5 | 153.1 | 141.7 | 134.5 | 129.9 | 127.2 | 127.2 |
| 60° | 3082.4 | 2582.2 | 647.8 | 186.7 | 159.9 | 144.5 | 133.1 | 126.3 | 120.4 | 117.2 | 116.8 |
| 62.5° | 3466.3 | 2972.0 | 875.9 | 188.5 | 156.7 | 136.3 | 124.0 | 116.3 | 111.3 | 108.1 | 107.7 |
| 65° | 3817.9 | 3343.2 | 1075.3 | 202.6 | 157.2 | 129.0 | 113.6 | 106.8 | 102.7 | 98.6 | 98.1 |
| 67.5° | *4116.4* | *3548.1* | *935.4* | *231.2* | *166.7* | *120.4* | *103.1* | *96.3* | *92.7* | *90.0* | *89.5* |
| 70° | 3907.4 | 3235.5 | 530.6 | 249.0 | 179.9 | 111.3 | 91.3 | 86.8 | 83.1 | 81.3 | 80.9 |
| 72.5° | 3341.4 | 2739.4 | 354.8 | 219.9 | 164.0 | 99.5 | 80.4 | 76.8 | 74.1 | 71.8 | 71.3 |
| 75° | 2706.7 | 2172.5 | 271.2 | 180.4 | 127.7 | 80.9 | 69.1 | 66.3 | 63.6 | 61.3 | 60.9 |
| 77.5° | 1601.4 | 1255.2 | 199.9 | 142.7 | 90.0 | 63.1 | 57.2 | 55.0 | 52.2 | 50.4 | 50.0 |
| 80° | 511.1 | 436.1 | 126.8 | 98.1 | 59.5 | 48.6 | 44.1 | 42.3 | 39.5 | 37.3 | 36.8 |
| 82.5° | 194.9 | 168.5 | 67.2 | 50.0 | 39.5 | 33.2 | 29.5 | 27.7 | 25.9 | 23.6 | 23.2 |
| 85° | 86.3 | 80.9 | 37.3 | 26.8 | 21.4 | 16.4 | 14.5 | 13.6 | 11.4 | 9.5 | 9.1 |
| 87.5° | 30.4 | 30.4 | 15.9 | 7.7 | 4.5 | 2.3 | 1.4 | 0.5 | 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-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

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

## Test Information

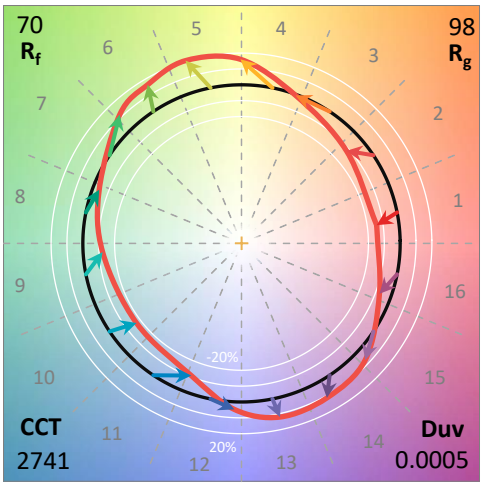
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-1-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-727-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.***TESTED IN SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2741 | CRI (Ra): | 71.5 | | |
| CIE u': | 0.2605 | R1: | 69.2 | R9: | -16.1 |
| CIE v': | 0.5272 | R2: | 79.4 | R10: | 51.4 |
| Duv: | 0.0005 | R3: | 87.8 | R11: | 63.1 |
| CIE x: | 0.4573 | R4: | 69.4 | R12: | 42.0 |
| CIE y: | 0.4113 | R5: | 66.4 | R13: | 70.2 |
| CIE z: | 0.1313 | R6: | 69.8 | R14: | 92.4 |
| Peak Wavelength (nm): | 602 | R7: | 79.8 | | |
| Dominant Wavelength (nm): | 583 | R8: | 50.1 | | |
| Purity: | 61.2 | | | | |

| | |
|---|---|
| Rf: | 69.9 |
| Rg: | 98.3 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 56M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.3./42% |
| Sphere Temperature (°C): | 25.7 |

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

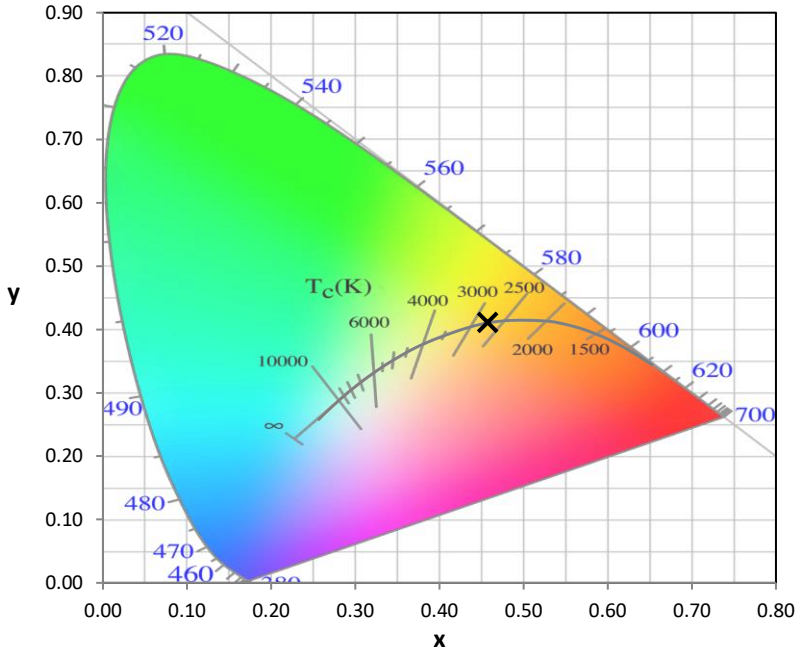
REPORT NUMBER: SP1-1908-441-1-R4

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

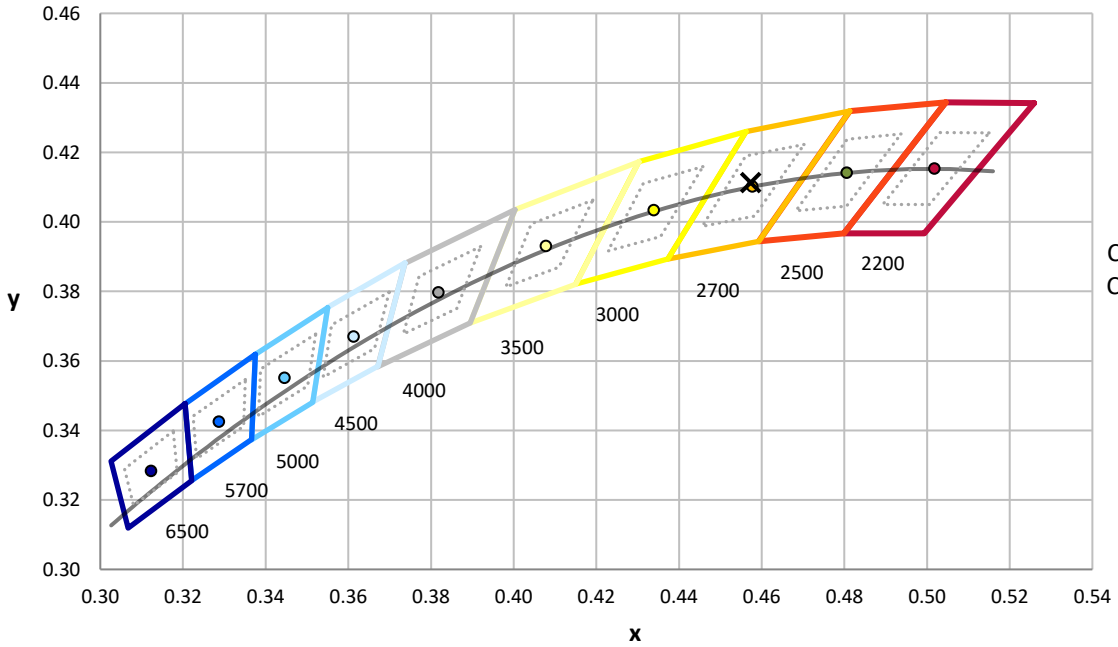
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## CIE 1931 Chromaticity Diagram




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



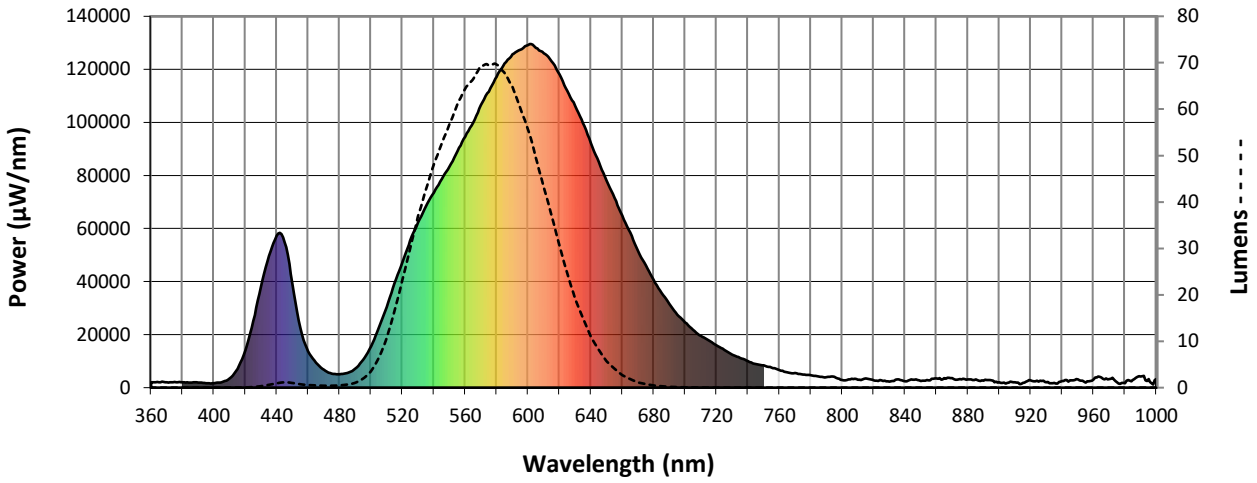

CCT = 2741K
CIE x = 0.4573
CIE y = 0.4113
Duv = 0.0005

Point lies inside the ANSI 2700K 4-step quadrangle

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

REPORT NUMBER: SP1-1908-441-1-R4

## Photopic Flux vs. Wavelength



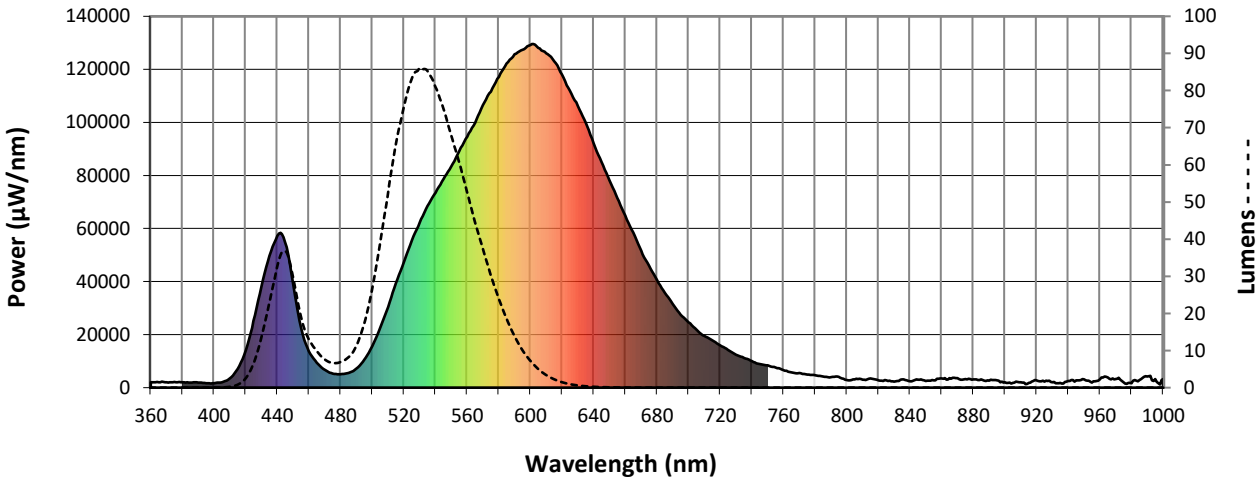

**Photopic Lumens: 6211.7**

| 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 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

REPORT NUMBER: SP1-1908-441-1-R4

## Scotopic Flux vs. Wavelength



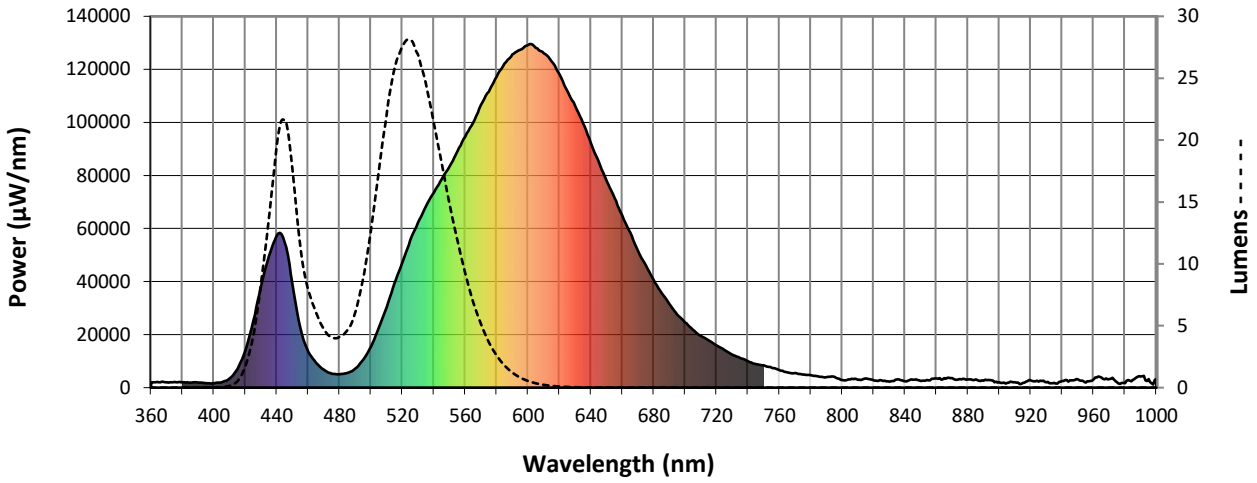

**Scotopic Lumens: 6474.3** **S/P: 1.04**

| 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 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

REPORT NUMBER: SP1-1908-441-1-R4

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 2145.7** **M/P: 0.35**

| 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 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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

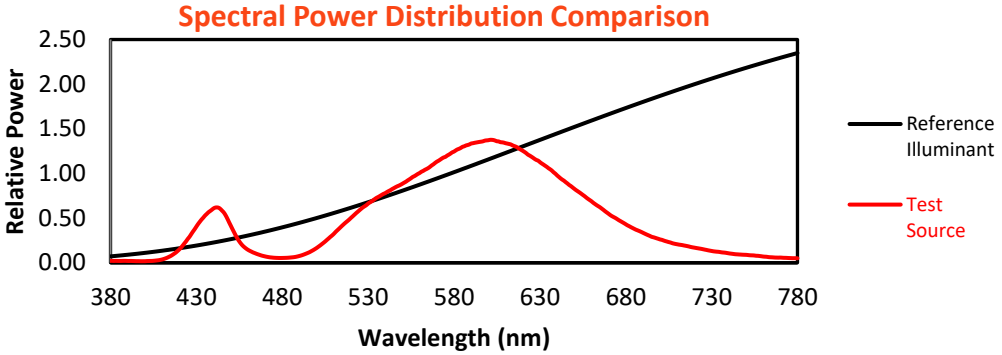
REPORT NUMBER: SP1-1908-441-1-R4

# TM-30-18

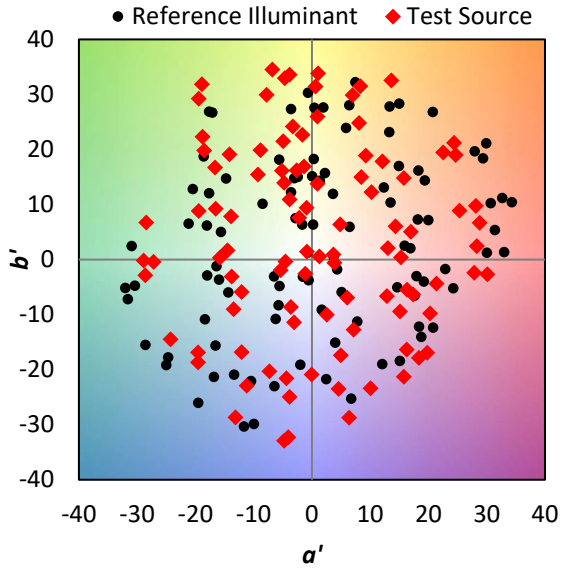
## Summary

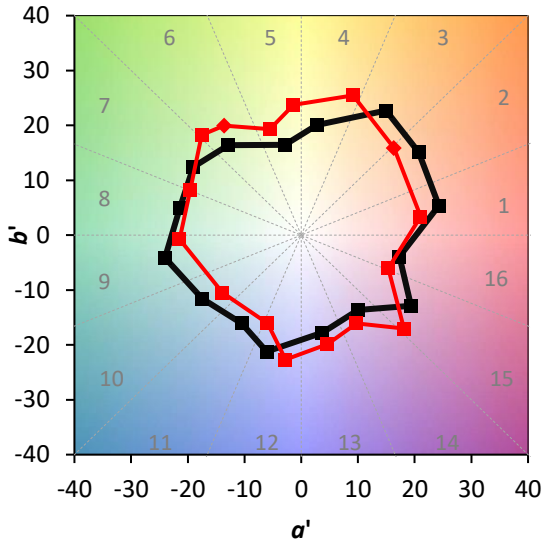
$R_f$ = 69.9
$R_g$ = 98.3
CIE $R_a$ = 71.5
$R_9$ = -16.1

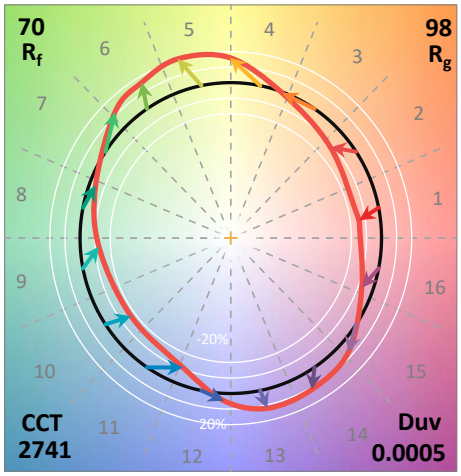
## Spectral Power Distribution Comparison

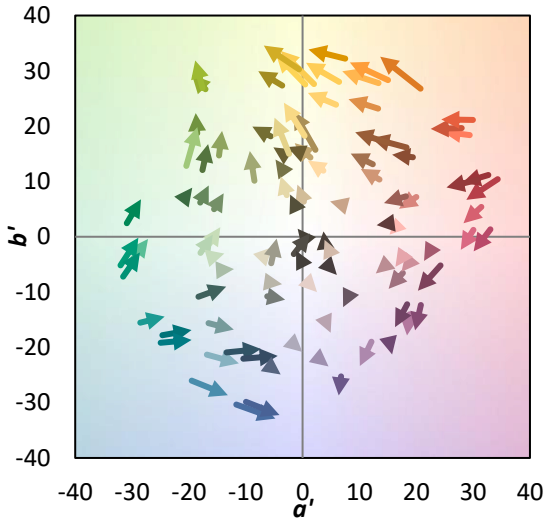



## Color Vector Graphics



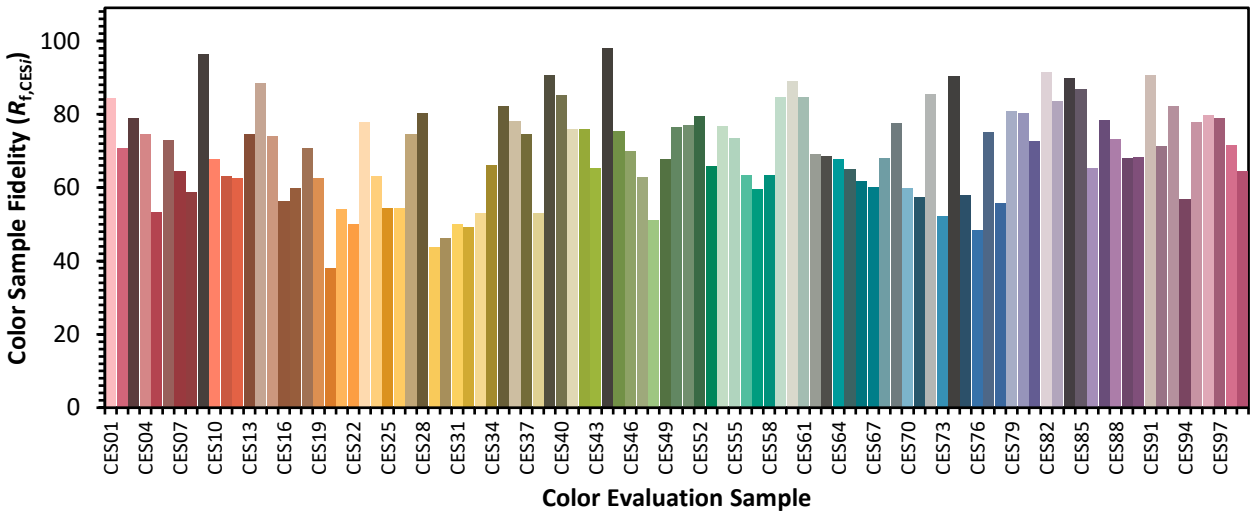
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

## TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |

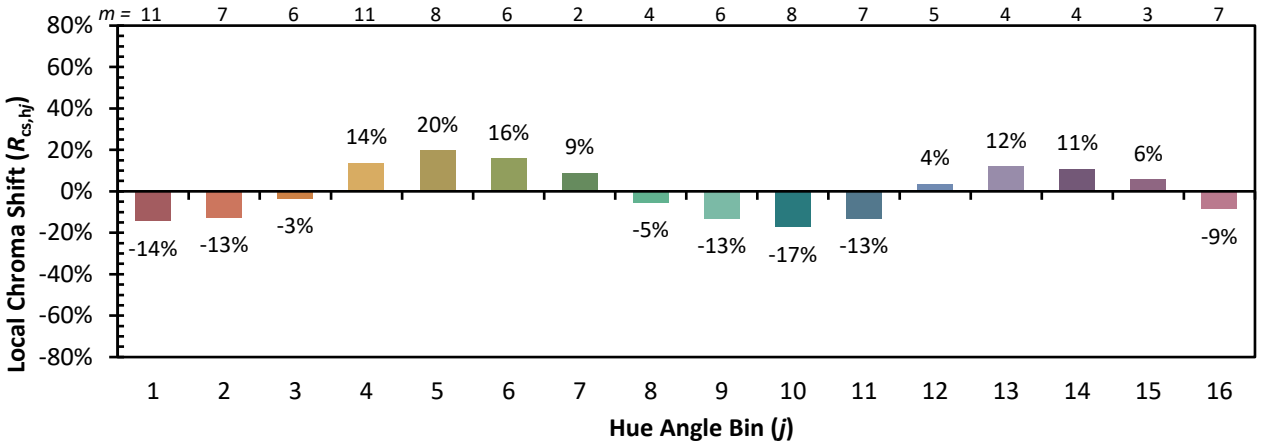


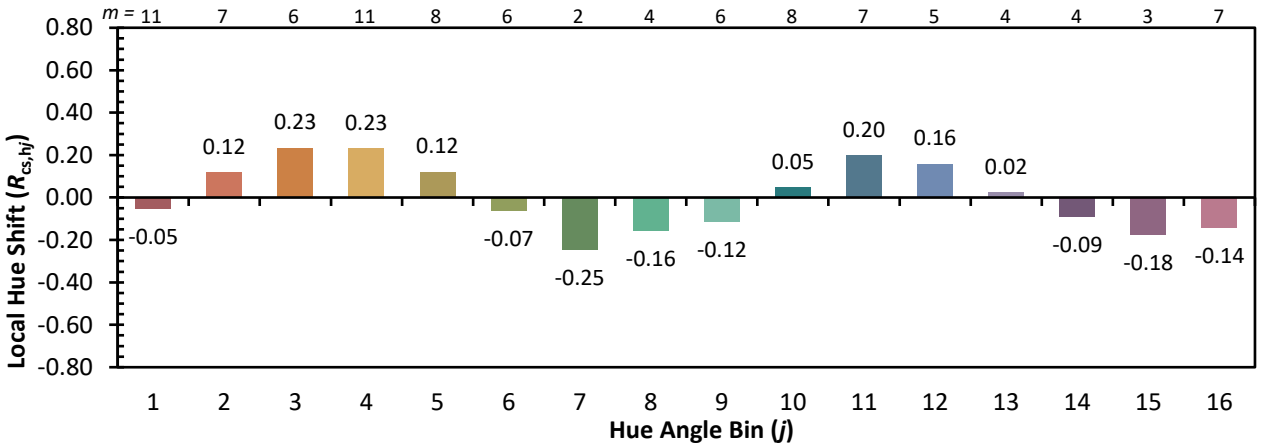
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

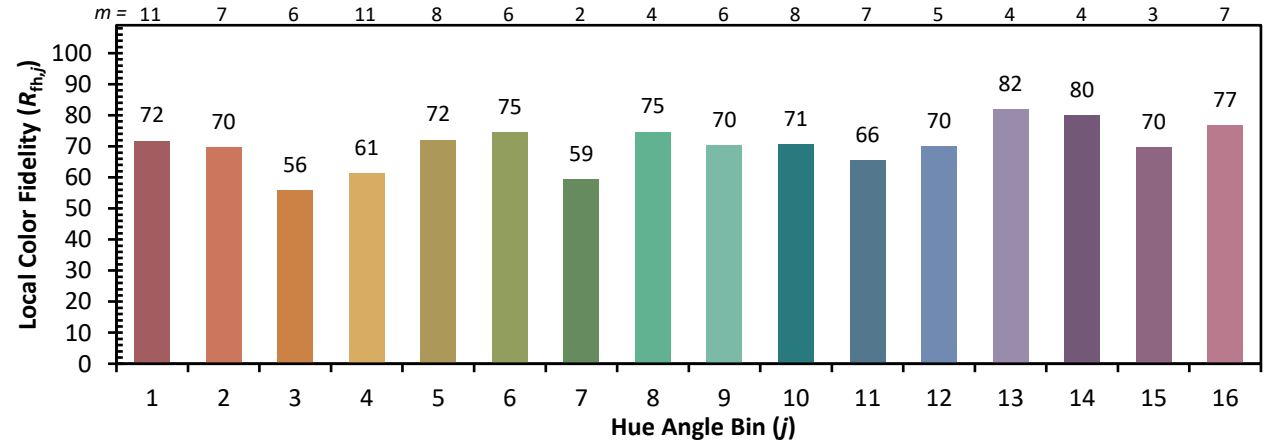
REPORT NUMBER: SP1-1908-441-1-R4

## TM-30-18

### Color Rendition by Hue-Angle Bin



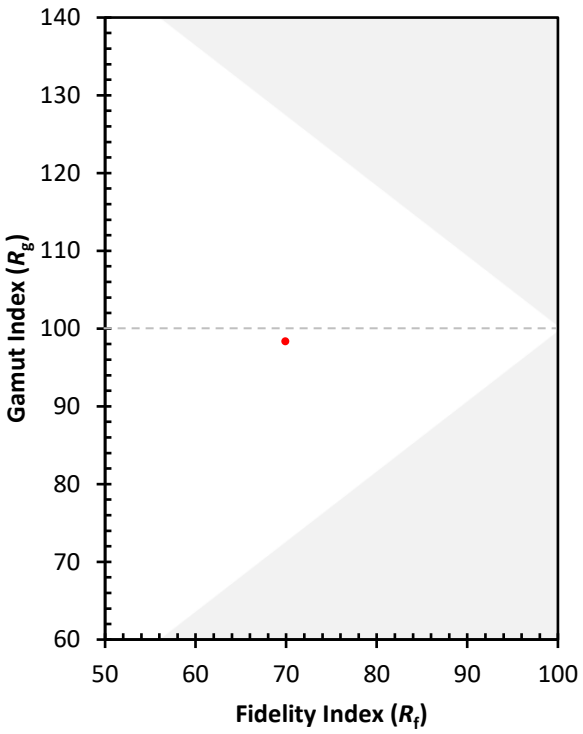



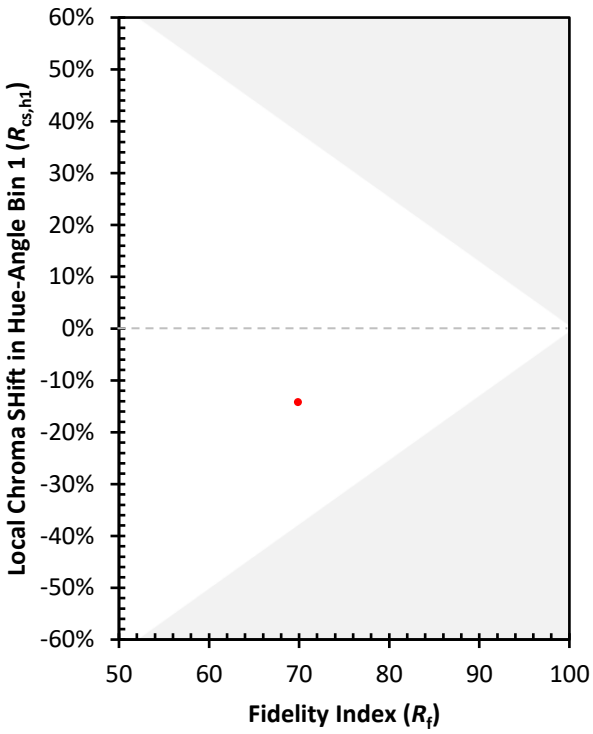
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-1908-441-1-R4

**TM-30-18**

## Measure Comparisons




(END OF REPORT)