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

Scaled data based on original data using

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1437892

Luminaire Tested: **GALN-SB9D-927-U-T3LG-HSS**

Issue Date: 03/27/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P1437892 |
| Test Lab: | INNOVATION CENTER(G1) |
| Issue Date: | 03/27/202 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GALN-SB9D-927-U-T3LG-HSS |
| Description: | GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 9xLight Square PACKAGE 90CRI 2700K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD |
| Light Source: | (234) 2700K CCT, 90 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

Luminaire Equipment:

| Sample No. | Condition | Description |
|---|---|---|
| a | good | reflector |
| b | good | lens |
| c | good | housing |
| d | good | cord |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 43095.8 lumens |
| Efficiency: | N/A |
| Efficacy: | 65.5 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1.5' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B3 - U0 - G5 |

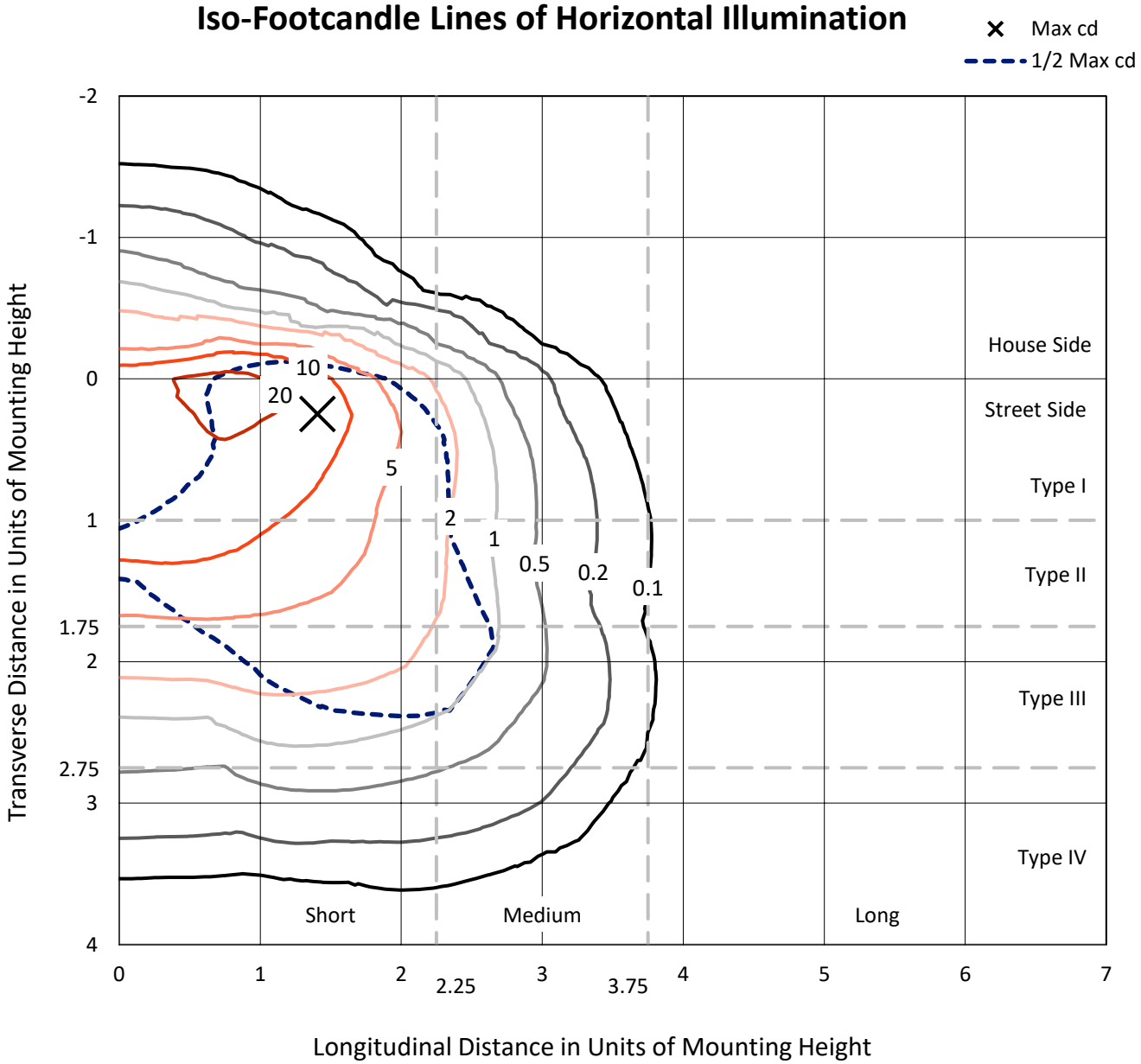
| | |
|---|---|
| Input Watts (W): | 658 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.97 |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°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: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

## Iso-Footcandle Lines of Horizontal Illumination



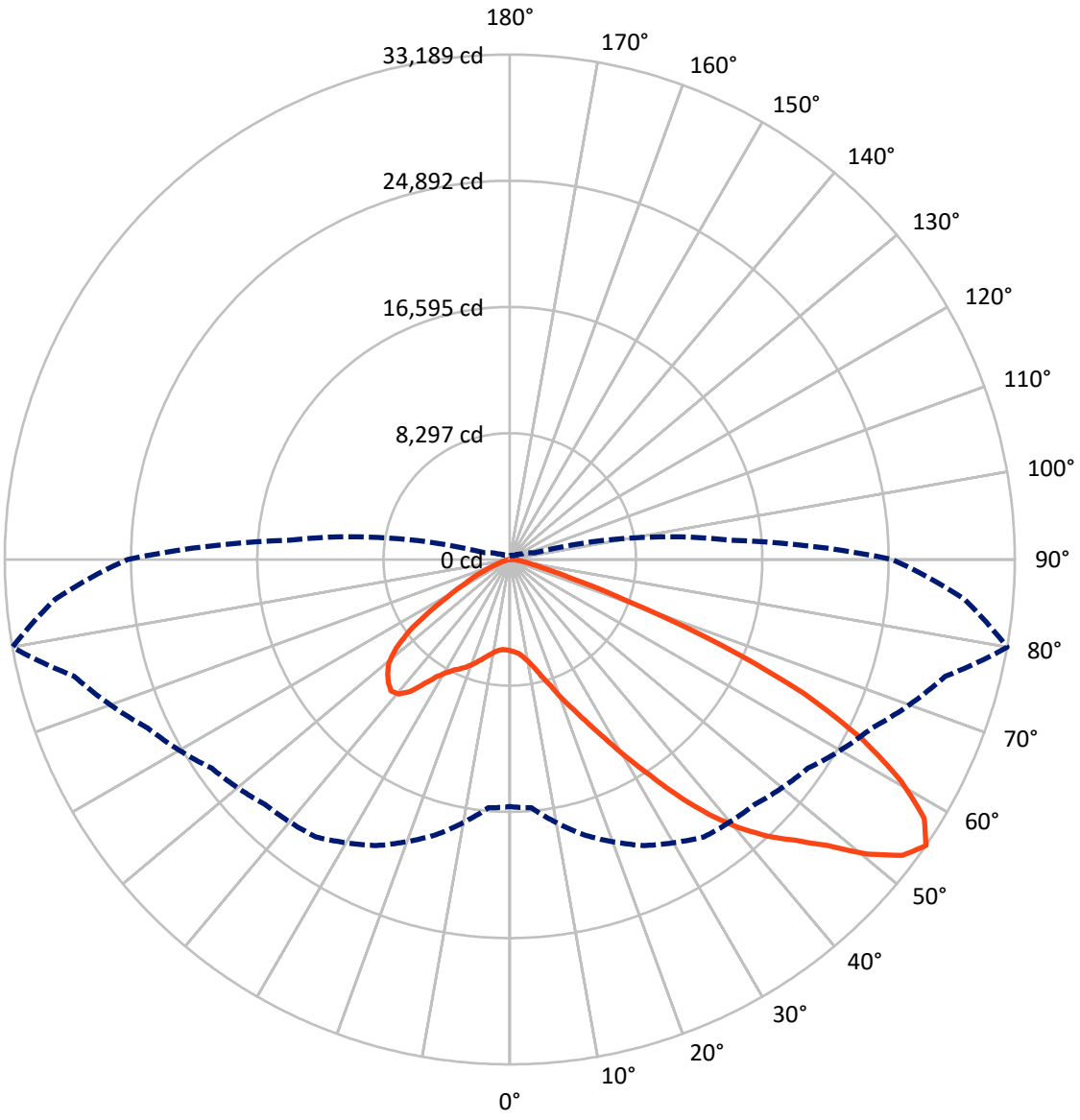

Based on 20 foot mounting height. Maximum calculated value = 26.6 fc
Type III - Short - N/A

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

Scaled Data Report

REPORT NUMBER: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

## Luminous Intensity Polar Plot



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

Scaled Data Report

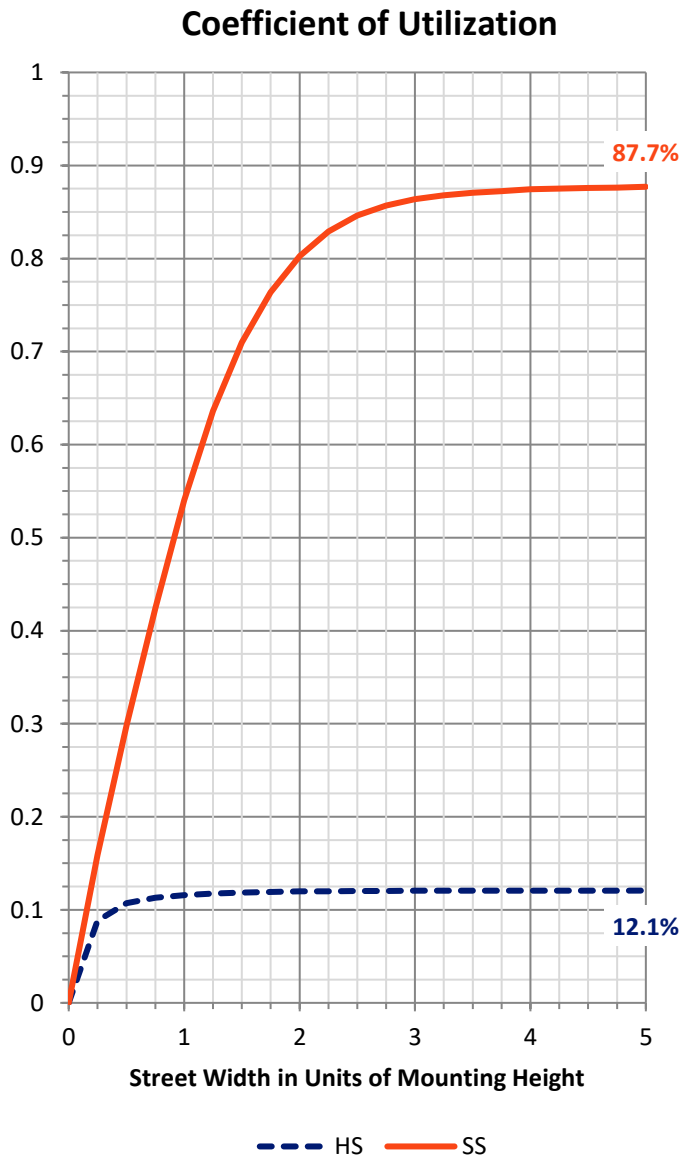
REPORT NUMBER: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 5238.8 | 0.0 | 5238.8 |
| | % Fixture | 12.2 | 0.0 | 12.2 |
| **Street Side** | Lumens | 37857.0 | 0.0 | 37857.0 |
| | % Fixture | 87.8 | 0.0 | 87.8 |
| **Total** | Lumens | 43095.8 | 0.0 | 43095.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 503.8 | 1.2 |
| 10°-20° | 1328.2 | 3.1 |
| 20°-30° | 2600.2 | 6.0 |
| 30°-40° | 5289.9 | 12.3 |
| 40°-50° | 8917.9 | 20.7 |
| 50°-60° | 11394.4 | 26.4 |
| 60°-70° | 9728.2 | 22.6 |
| 70°-80° | 3108.7 | 7.2 |
| 80°-90° | 224.5 | 0.5 |
| 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° | 43095.8 | 100.0 |
| 0°-180° | 43095.8 | 100.0 |



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

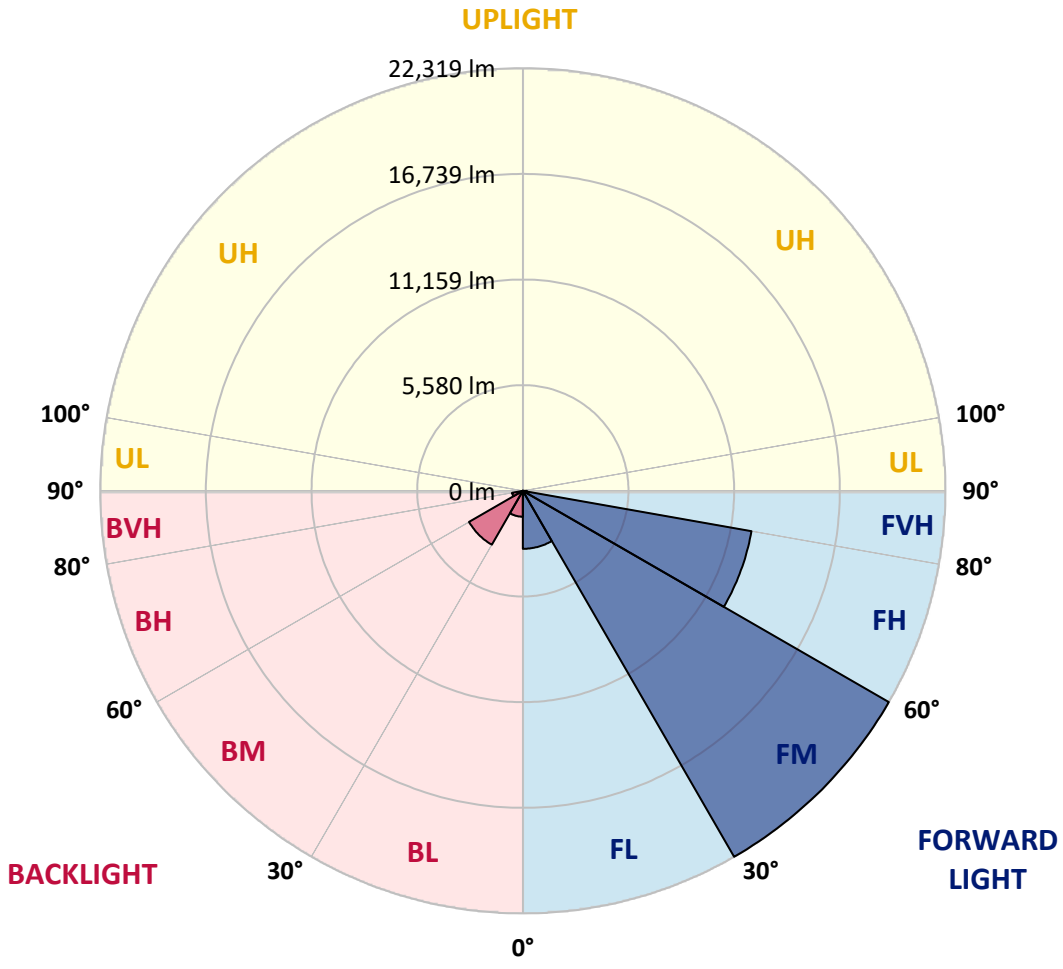
Scaled Data Report

REPORT NUMBER: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 3064.2 | 7.1 | | | |
| FM | (30°-60°) | 22319.0 | 51.8 | | | |
| FH | (60°-80°) | 12261.1 | 28.5 | | | G5 |
| FVH | (80°-90°) | 212.8 | 0.5 | | | G2/225 |
| BL | (0°-30°) | 1368.0 | 3.2 | B3/2500 | | |
| BM | (30°-60°) | 3283.3 | 7.6 | B3/5000 | | |
| BH | (60°-80°) | 575.8 | 1.3 | B2/1000 | | G2/1000 |
| BVH | (80°-90°) | 11.7 | 0.0 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G5**
Type III Short



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

Scaled Data Report

REPORT NUMBER: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 80° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | *6003.2* | 6003.2 |
| 2.5° | 6039.9 | 6052.2 | 6039.9 | 6052.2 | 6076.7 | 6064.4 | 6113.4 | 6101.2 | 6101.2 | *6088.9* | 6039.9 |
| 5° | 5696.9 | 5709.1 | 5733.6 | 5794.9 | 5880.7 | 5966.4 | 6076.7 | 6150.2 | 6223.7 | *6211.4* | 6162.4 |
| 7.5° | 5023.1 | 5047.6 | 5145.6 | 5268.1 | 5549.9 | 5807.2 | 6088.9 | 6272.7 | 6432.0 | *6481.0* | 6444.2 |
| 10° | 4643.3 | 4667.8 | 4729.0 | 4851.5 | 5108.8 | 5537.6 | 6088.9 | 6468.7 | 6750.5 | *6848.5* | 6860.8 |
| 12.5° | 4606.5 | 4618.8 | 4667.8 | 4802.5 | 5023.1 | 5390.6 | 6076.7 | 6726.0 | 7203.8 | *7350.8* | 7399.8 |
| 15° | 4631.0 | 4655.5 | 4704.5 | 4814.8 | 5072.1 | 5488.6 | 6174.7 | 7130.3 | 7804.1 | *8012.4* | 8024.7 |
| 17.5° | 4729.0 | 4753.5 | 4814.8 | 4937.3 | 5219.1 | 5745.9 | 6481.0 | 7546.8 | 8527.0 | *8759.7* | 8894.5 |
| 20° | 4925.1 | 4937.3 | 5010.8 | 5170.1 | 5488.6 | 6064.4 | 6934.3 | 8110.4 | 9396.8 | *9739.8* | 9837.9 |
| 22.5° | 5182.3 | 5219.1 | 5317.1 | 5513.1 | 5917.4 | 6505.5 | 7559.1 | 8796.5 | 10352.4 | *10707.7* | 10879.2 |
| 25° | 5464.1 | 5513.1 | 5660.1 | 5978.7 | 6493.2 | 7179.3 | 8330.9 | 9703.1 | 11479.5 | *11908.3* | 12141.1 |
| 27.5° | 6039.9 | 6052.2 | 6150.2 | 6554.5 | 7216.1 | 8061.4 | 9311.0 | 10867.0 | 12802.7 | *13305.0* | 13562.3 |
| 30° | 7301.8 | 7314.1 | 7228.3 | 7338.6 | 8012.4 | 9102.8 | 10462.7 | 12226.9 | 14346.4 | *15044.7* | 15253.0 |
| 32.5° | 8845.5 | 8906.8 | 8894.5 | 8821.0 | 9127.3 | 10144.1 | 11834.8 | 13856.3 | 16159.6 | *16894.7* | 17090.7 |
| 35° | 10597.4 | 10744.5 | 10707.7 | 10683.2 | 10720.0 | 11479.5 | 13403.0 | 15657.3 | 18217.8 | *19112.1* | 19271.4 |
| 37.5° | 12312.6 | 12349.4 | 12520.9 | 12729.2 | 12753.7 | 13280.5 | 15216.2 | 17568.5 | 20129.0 | *21268.4* | 21513.4 |
| 40° | 13635.8 | 13758.3 | 14187.1 | 14603.6 | 15032.4 | 15449.0 | 16710.9 | 19112.1 | 21648.2 | *23179.6* | 23289.9 |
| 42.5° | 14664.9 | 14958.9 | 15583.8 | 16233.1 | 17102.9 | 17568.5 | 18132.0 | 20202.5 | 22885.6 | *24882.5* | 24833.5 |
| 45° | 15914.5 | 16037.1 | 16919.2 | 17776.7 | 18658.8 | 19369.4 | 19357.2 | 21121.4 | 23853.4 | *26340.5* | 26034.2 |
| 47.5° | 16759.9 | 16906.9 | 18107.5 | 19112.1 | 20018.8 | 20374.0 | 20447.6 | 22113.7 | 25188.8 | *28104.7* | 27381.8 |
| 50° | 17213.2 | 17470.5 | 18781.4 | 20055.5 | 21035.6 | 21145.9 | 21476.7 | 23412.4 | 26940.8 | *30444.7* | 29084.8 |
| 52.5° | 17262.2 | 17507.2 | 19014.1 | 20655.8 | 21721.7 | 21942.2 | 22505.8 | 24882.5 | 28643.7 | *32319.1* | 30064.9 |
| 55° | *16245.3* | *16392.3* | *18732.4* | *20753.8* | *22260.8* | *22775.3* | *23926.9* | *26242.5* | *29636.1* | *33189.0* | *29979.1* |
| 57.5° | 15289.7 | 15436.7 | 17470.5 | 20582.3 | 22812.1 | 23865.7 | 25446.1 | 27173.6 | 28864.2 | *32110.9* | 28067.9 |
| 60° | 14468.9 | 14542.4 | 16392.3 | 19786.0 | 23020.3 | 24931.6 | 26757.0 | 26254.7 | 26867.3 | *29525.8* | 24796.8 |
| 62.5° | 12925.2 | 12974.2 | 15167.2 | 18352.6 | 22603.8 | 25752.4 | 27210.3 | 24306.7 | 24674.3 | *25960.7* | 20949.9 |
| 65° | 9764.3 | 9948.1 | 11957.3 | 17274.4 | 21917.7 | 26132.2 | 26156.7 | 21930.0 | 21550.2 | *21243.9* | 16478.1 |
| 67.5° | 6628.0 | 6836.3 | 8049.2 | 15534.7 | 20802.8 | 26291.5 | 24110.7 | 18854.9 | 16416.8 | *14836.4* | 10793.5 |
| 70° | 5292.6 | 5292.6 | 5709.1 | 12484.2 | 18156.5 | 24257.7 | 21574.7 | 14236.1 | 10425.9 | *8196.2* | 5782.7 |
| 72.5° | 3479.4 | 3491.6 | 3883.7 | 7926.6 | 12876.2 | 18499.6 | 17593.0 | 8232.9 | 5415.1 | *4177.7* | 2854.6 |
| 75° | 1261.9 | 1261.9 | 1702.9 | 3173.1 | 6811.8 | 11014.0 | 10720.0 | 3932.7 | 2940.3 | *2278.8* | 1727.4 |
| 77.5° | 673.8 | 698.3 | 820.8 | 1310.9 | 2609.5 | 4484.0 | 4190.0 | 2009.2 | 1666.2 | *1421.2* | 1078.1 |
| 80° | 453.3 | 465.6 | 551.3 | 808.6 | 1261.9 | 1727.4 | 1347.7 | 1127.1 | 1127.1 | *955.6* | 722.8 |
| 82.5° | 245.0 | 257.3 | 367.5 | 526.8 | 673.8 | 808.6 | 649.3 | 661.6 | 796.3 | *649.3* | 416.5 |
| 85° | 171.5 | 171.5 | 281.8 | 379.8 | 379.8 | 392.0 | 281.8 | 416.5 | 465.6 | *404.3* | 281.8 |
| 87.5° | 98.0 | 98.0 | 159.3 | 183.8 | 183.8 | 171.5 | 85.8 | 147.0 | 183.8 | *208.3* | 122.5 |
| 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: P1437892
CATALOG NUMBER: GALN-SB9D-927-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 | 6003.2 |
| 2.5° | 6027.7 | 5990.9 | 5917.4 | 5770.4 | 5696.9 | 5598.9 | 5513.1 | 5402.9 | 5378.4 | 5366.1 | 5317.1 |
| 5° | 6125.7 | 6052.2 | 5831.7 | 5513.1 | 5243.6 | 4986.3 | 4729.0 | 4582.0 | 4459.5 | 4398.2 | 4386.0 |
| 7.5° | 6370.7 | 6223.7 | 5819.4 | 5255.8 | 4753.5 | 4312.5 | 3932.7 | 3601.9 | 3430.4 | 3283.4 | 3295.6 |
| 10° | 6738.3 | 6505.5 | 5843.9 | 5010.8 | 4263.5 | 3552.9 | 3001.6 | 2523.8 | 2180.7 | 2021.5 | 2009.2 |
| 12.5° | 7228.3 | 6897.5 | 5929.7 | 4765.8 | 3663.2 | 2670.8 | 1972.5 | 1690.7 | 1617.2 | 1604.9 | 1592.7 |
| 15° | 7828.6 | 7363.1 | 6015.4 | 4447.3 | 2854.6 | 1850.0 | 1604.9 | 1543.7 | 1531.4 | 1519.2 | 1519.2 |
| 17.5° | 8551.5 | 7902.1 | 6064.4 | 3908.2 | 2082.7 | 1592.7 | 1506.9 | 1470.2 | 1457.9 | 1445.7 | 1445.7 |
| 20° | 9458.1 | 8502.5 | 6125.7 | 3222.1 | 1764.2 | 1531.4 | 1433.4 | 1384.4 | 1372.2 | 1372.2 | 1359.9 |
| 22.5° | 10352.4 | 9176.3 | 6076.7 | 2621.8 | 1702.9 | 1457.9 | 1347.7 | 1298.6 | 1274.1 | 1274.1 | 1261.9 |
| 25° | 11381.5 | 9862.4 | 5929.7 | 2364.5 | 1690.7 | 1396.7 | 1261.9 | 1188.4 | 1151.6 | 1139.4 | 1139.4 |
| 27.5° | 12557.7 | 10646.4 | 5696.9 | 2376.8 | 1690.7 | 1347.7 | 1151.6 | 1053.6 | 1029.1 | 1004.6 | 1004.6 |
| 30° | 13905.3 | 11602.1 | 5525.4 | 2536.0 | 1715.2 | 1298.6 | 1053.6 | 931.1 | 894.4 | 869.8 | 882.1 |
| 32.5° | 15449.0 | 12667.9 | 5513.1 | 2793.3 | 1751.9 | 1225.1 | 943.4 | 808.6 | 771.8 | 759.6 | 771.8 |
| 35° | 17200.9 | 13991.1 | 5794.9 | 2989.3 | 1653.9 | 1065.9 | 808.6 | 698.3 | 661.6 | 661.6 | 673.8 |
| 37.5° | 19148.9 | 15510.2 | 6174.7 | 2940.3 | 1335.4 | 845.3 | 698.3 | 612.6 | 575.8 | 588.1 | 600.3 |
| 40° | 20925.4 | 16698.6 | 6236.0 | 2511.5 | 1004.6 | 722.8 | 600.3 | 539.1 | 514.6 | 526.8 | 539.1 |
| 42.5° | 22273.0 | 17654.2 | 5647.9 | 1948.0 | 845.3 | 612.6 | 514.6 | 465.6 | 453.3 | 477.8 | 477.8 |
| 45° | 23363.4 | 18034.0 | 4716.8 | 1445.7 | 747.3 | 526.8 | 453.3 | 428.8 | 404.3 | 416.5 | 416.5 |
| 47.5° | 24502.8 | 18095.3 | 3846.9 | 1163.9 | 661.6 | 477.8 | 416.5 | 392.0 | 367.5 | 367.5 | 367.5 |
| 50° | 25605.4 | 17948.3 | 2940.3 | 1029.1 | 612.6 | 428.8 | 379.8 | 355.3 | 330.8 | 318.5 | 318.5 |
| 52.5° | 25874.9 | 16772.1 | 2156.2 | 955.6 | 563.6 | 404.3 | 355.3 | 330.8 | 306.3 | 294.0 | 294.0 |
| 55° | *25127.6* | *14542.4* | *1690.7* | *857.6* | *514.6* | *367.5* | *330.8* | *306.3* | *269.5* | *257.3* | *257.3* |
| 57.5° | 22665.0 | 11087.5 | 1347.7 | 735.1 | 465.6 | 355.3 | 306.3 | 281.8 | 245.0 | 232.8 | 232.8 |
| 60° | 19467.4 | 7865.4 | 1090.4 | 600.3 | 428.8 | 318.5 | 281.8 | 245.0 | 220.5 | 196.0 | 196.0 |
| 62.5° | 15926.8 | 5647.9 | 882.1 | 502.3 | 404.3 | 281.8 | 257.3 | 220.5 | 171.5 | 134.8 | 134.8 |
| 65° | 12214.6 | 4055.2 | 686.1 | 404.3 | 367.5 | 245.0 | 220.5 | 183.8 | 134.8 | 98.0 | 98.0 |
| 67.5° | 7902.1 | 2621.8 | 514.6 | 355.3 | 281.8 | 208.3 | 171.5 | 147.0 | 122.5 | 85.8 | 73.5 |
| 70° | 4165.5 | 1531.4 | 379.8 | 306.3 | 208.3 | 159.3 | 147.0 | 122.5 | 98.0 | 61.3 | 61.3 |
| 72.5° | 2156.2 | 1004.6 | 281.8 | 269.5 | 159.3 | 110.3 | 122.5 | 98.0 | 73.5 | 36.8 | 36.8 |
| 75° | 1384.4 | 673.8 | 208.3 | 220.5 | 98.0 | 85.8 | 85.8 | 61.3 | 36.8 | 24.5 | 12.3 |
| 77.5° | 894.4 | 453.3 | 147.0 | 183.8 | 61.3 | 49.0 | 49.0 | 24.5 | 12.3 | 0.0 | 0.0 |
| 80° | 526.8 | 281.8 | 98.0 | 122.5 | 24.5 | 24.5 | 12.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 269.5 | 147.0 | 49.0 | 49.0 | 12.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 171.5 | 73.5 | 12.3 | 12.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 85.8 | 24.5 | 12.3 | 0.0 | 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 | 0.0 |

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

# LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2106-271-1

Luminaire Tested: GFLD-SA1-A-927-U-WR-X-BK

Test Date: 06/16/2021

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.09

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

## Test Information

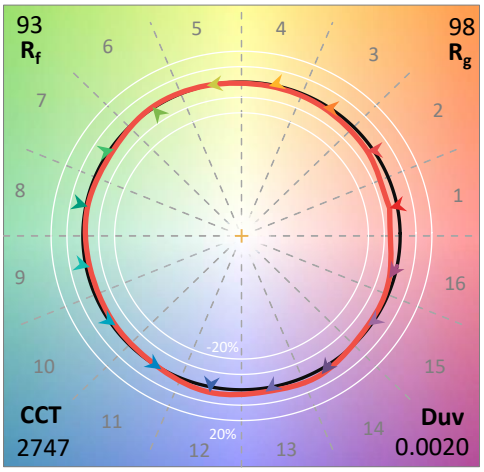
| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | SP1-2106-271-1 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 |
| Measurement Geometry: | 4π |
| Issue Date: | 06/16/2021 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **GFLD-SA1-A-927-U-WR-X-BK** |
| Description: | MCGRAW EDISON |

N6, BLACK

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2747 | CRI (Ra): | 92.5 | | |
| CIE u': | 0.2598 | R1: | 92.3 | R9: | 58.3 |
| CIE v': | 0.5293 | R2: | 95.5 | R10: | 88.5 |
| Duv: | 0.0020 | R3: | 97.5 | R11: | 93.7 |
| CIE x: | 0.4594 | R4: | 93.1 | R12: | 84.9 |
| CIE y: | 0.4160 | R5: | 91.8 | R13: | 93.0 |
| CIE z: | 0.1246 | R6: | 95.1 | R14: | 97.8 |
| Peak Wavelength (nm): | 624 | R7: | 92.9 | | |
| Dominant Wavelength (nm): | 583 | R8: | 81.7 | | |
| Purity: | 63 | | | | |

| | |
|---|---|
| Rf: | 93.1 |
| Rg: | 98.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 198M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 24.3/43% |
| Sphere Temperature (°C): | 24.2 |

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

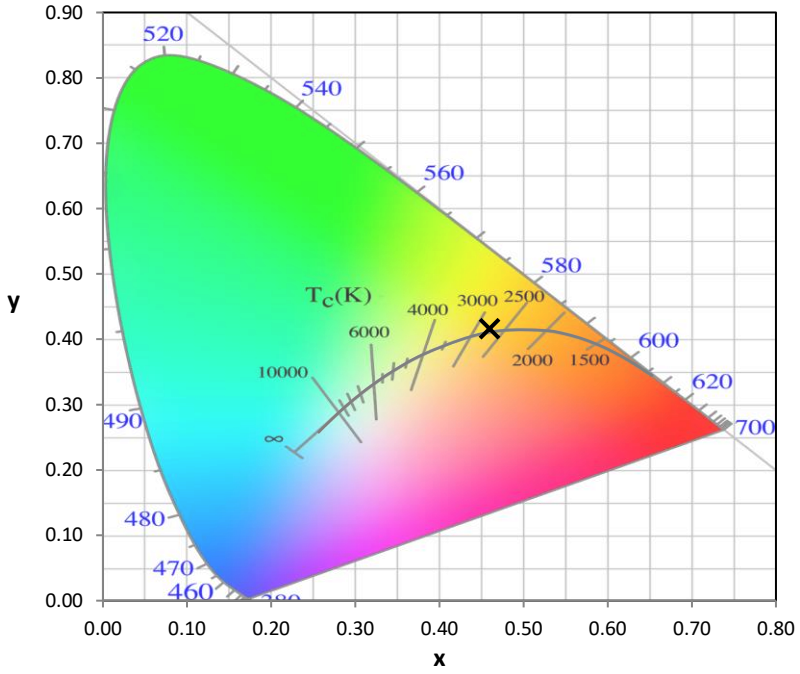
REPORT NUMBER: SP1-2106-271-1

| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 1/31/2021 | 7/31/2021 |
| Power Meter | XITRON 2801 IN0071 | 12/1/2020 | 12/1/2021 |
| AC Power Source | CHROMA 61603 IN0063 | 12/1/2020 | 12/1/2021 |
| DC Power Source | AGILENT E3634A IN0208 | 12/1/2020 | 12/1/2021 |
| Sphere Thermometer | ONSET IN0085 | 12/1/2020 | 12/1/2021 |
| Room Thermometer | ONSET IN0046 | 12/1/2020 | 12/1/2021 |

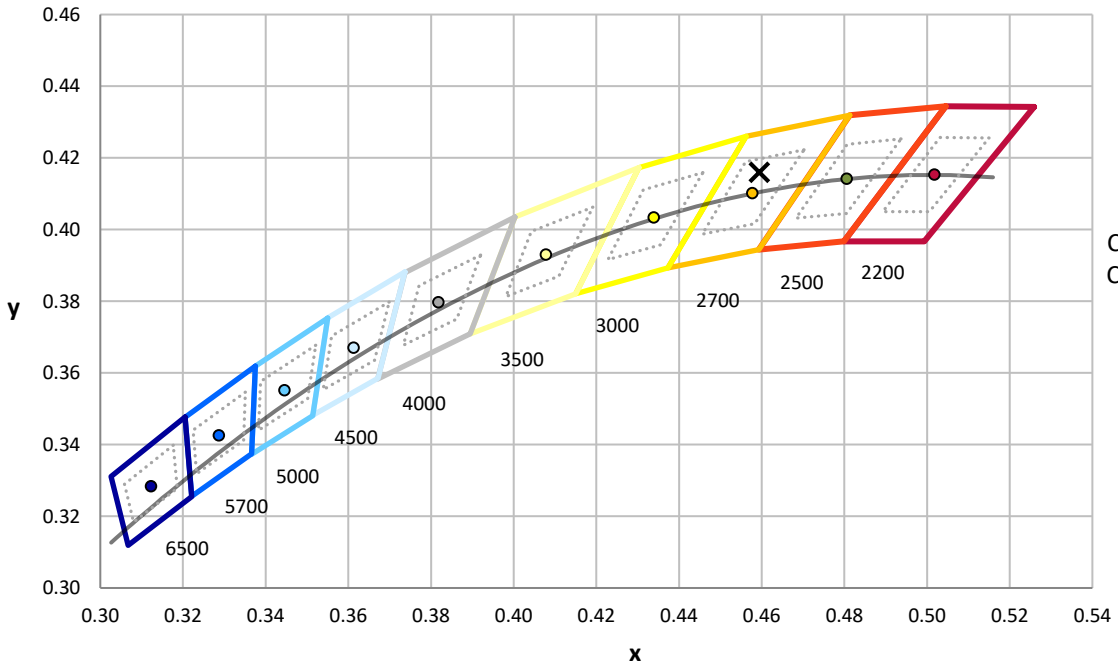
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2106-271-1

## CIE 1931 Chromaticity Diagram




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



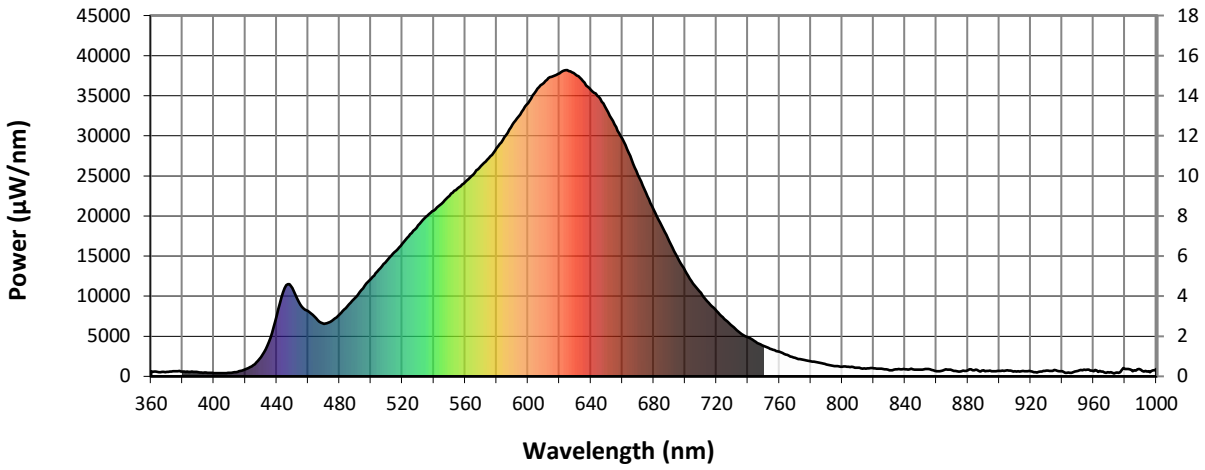

CCT = 2747K
CIE x = 0.4594
CIE y = 0.4160
Duv = 0.0020

Point lies inside the ANSI 2700K 4-step quadrangle

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

REPORT NUMBER: SP1-2106-271-1

## Photopic Flux vs. Wavelength



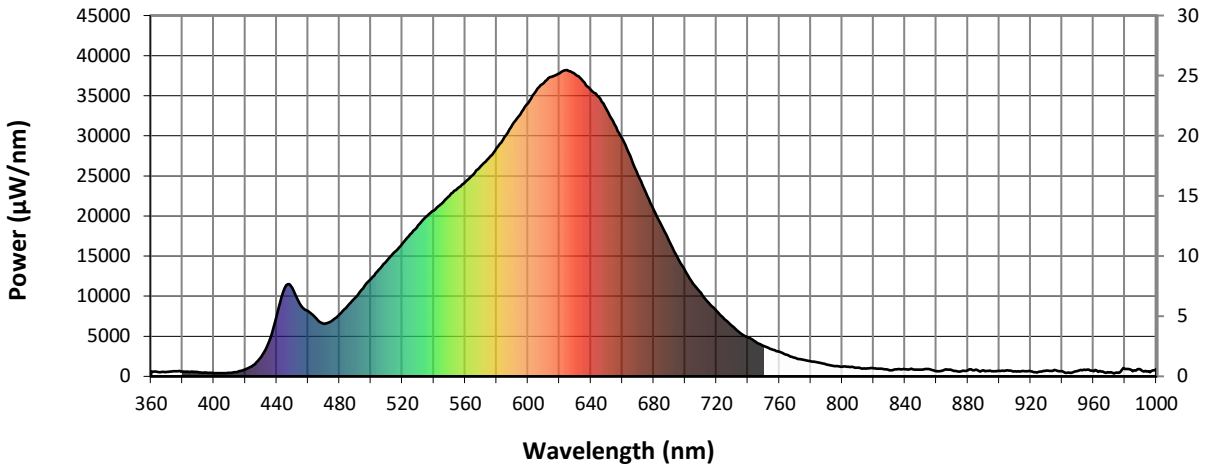

######

| 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 | 649 | NR | 490 | 9819 | NR | 620 | 37806 | NR | 750 | 3792 | NR | 880 | 778 | NR |
| 365 | 535 | NR | 495 | 10995 | NR | 625 | 38173 | NR | 755 | 3383 | NR | 885 | 829 | NR |
| 370 | 546 | NR | 500 | 12186 | NR | 630 | 37677 | NR | 760 | 3071 | NR | 890 | 745 | NR |
| 375 | 624 | NR | 505 | 13274 | NR | 635 | 36852 | NR | 765 | 2656 | NR | 895 | 648 | NR |
| 380 | 611 | NR | 510 | 14396 | NR | 640 | 35711 | NR | 770 | 2297 | NR | 900 | 661 | NR |
| 385 | 569 | NR | 515 | 15467 | NR | 645 | 34820 | NR | 775 | 2076 | NR | 905 | 740 | NR |
| 390 | 512 | NR | 520 | 16543 | NR | 650 | 33278 | NR | 780 | 1860 | NR | 910 | 635 | NR |
| 395 | 465 | NR | 525 | 17716 | NR | 655 | 31397 | NR | 785 | 1717 | NR | 915 | 683 | NR |
| 400 | 418 | NR | 530 | 18837 | NR | 660 | 29663 | NR | 790 | 1494 | NR | 920 | 620 | NR |
| 405 | 411 | NR | 535 | 19916 | NR | 665 | 27479 | NR | 795 | 1276 | NR | 925 | 580 | NR |
| 410 | 439 | NR | 540 | 20679 | NR | 670 | 25115 | NR | 800 | 1183 | NR | 930 | 717 | NR |
| 415 | 565 | NR | 545 | 21563 | NR | 675 | 22916 | NR | 805 | 1161 | NR | 935 | 780 | NR |
| 420 | 866 | NR | 550 | 22521 | NR | 680 | 20799 | NR | 810 | 1065 | NR | 940 | 630 | NR |
| 425 | 1393 | NR | 555 | 23411 | NR | 685 | 18810 | NR | 815 | 970 | NR | 945 | 433 | NR |
| 430 | 2399 | NR | 560 | 24238 | NR | 690 | 16831 | NR | 820 | 1013 | NR | 950 | 676 | NR |
| 435 | 4305 | NR | 565 | 25148 | NR | 695 | 14867 | NR | 825 | 970 | NR | 955 | 802 | NR |
| 440 | 7544 | NR | 570 | 26216 | NR | 700 | 13210 | NR | 830 | 769 | NR | 960 | 645 | NR |
| 445 | 11003 | NR | 575 | 27219 | NR | 705 | 11593 | NR | 835 | 894 | NR | 965 | 620 | NR |
| 450 | 11015 | NR | 580 | 28466 | NR | 710 | 10403 | NR | 840 | 893 | NR | 970 | 474 | NR |
| 455 | 8956 | NR | 585 | 29834 | NR | 715 | 9162 | NR | 845 | 864 | NR | 975 | 478 | NR |
| 460 | 8133 | NR | 590 | 31413 | NR | 720 | 8146 | NR | 850 | 828 | NR | 980 | 905 | NR |
| 465 | 7252 | NR | 595 | 32655 | NR | 725 | 7155 | NR | 855 | 921 | NR | 985 | 639 | NR |
| 470 | 6556 | NR | 600 | 34084 | NR | 730 | 6272 | NR | 860 | 633 | NR | 990 | 838 | NR |
| 475 | 6915 | NR | 605 | 35555 | NR | 735 | 5418 | NR | 865 | 816 | NR | 995 | 621 | NR |
| 480 | 7734 | NR | 610 | 36593 | NR | 740 | 4870 | NR | 870 | 767 | NR | 1000 | 903 | NR |
| 485 | 8748 | NR | 615 | 37350 | NR | 745 | 4295 | NR | 875 | 601 | NR | | | |

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

REPORT NUMBER: SP1-2106-271-1

## Scotopic Flux vs. Wavelength



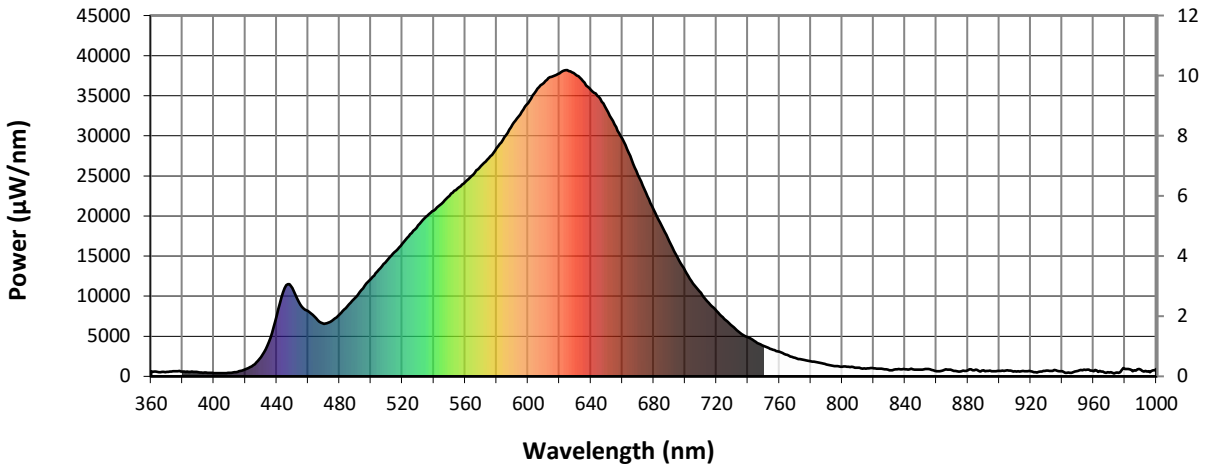

**Scotopic Lumens: 2290.1** **S/P: 1.28**

| 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 | 649 | NR | 490 | 9819 | NR | 620 | 37806 | NR | 750 | 3792 | NR | 880 | 778 | NR |
| 365 | 535 | NR | 495 | 10995 | NR | 625 | 38173 | NR | 755 | 3383 | NR | 885 | 829 | NR |
| 370 | 546 | NR | 500 | 12186 | NR | 630 | 37677 | NR | 760 | 3071 | NR | 890 | 745 | NR |
| 375 | 624 | NR | 505 | 13274 | NR | 635 | 36852 | NR | 765 | 2656 | NR | 895 | 648 | NR |
| 380 | 611 | NR | 510 | 14396 | NR | 640 | 35711 | NR | 770 | 2297 | NR | 900 | 661 | NR |
| 385 | 569 | NR | 515 | 15467 | NR | 645 | 34820 | NR | 775 | 2076 | NR | 905 | 740 | NR |
| 390 | 512 | NR | 520 | 16543 | NR | 650 | 33278 | NR | 780 | 1860 | NR | 910 | 635 | NR |
| 395 | 465 | NR | 525 | 17716 | NR | 655 | 31397 | NR | 785 | 1717 | NR | 915 | 683 | NR |
| 400 | 418 | NR | 530 | 18837 | NR | 660 | 29663 | NR | 790 | 1494 | NR | 920 | 620 | NR |
| 405 | 411 | NR | 535 | 19916 | NR | 665 | 27479 | NR | 795 | 1276 | NR | 925 | 580 | NR |
| 410 | 439 | NR | 540 | 20679 | NR | 670 | 25115 | NR | 800 | 1183 | NR | 930 | 717 | NR |
| 415 | 565 | NR | 545 | 21563 | NR | 675 | 22916 | NR | 805 | 1161 | NR | 935 | 780 | NR |
| 420 | 866 | NR | 550 | 22521 | NR | 680 | 20799 | NR | 810 | 1065 | NR | 940 | 630 | NR |
| 425 | 1393 | NR | 555 | 23411 | NR | 685 | 18810 | NR | 815 | 970 | NR | 945 | 433 | NR |
| 430 | 2399 | NR | 560 | 24238 | NR | 690 | 16831 | NR | 820 | 1013 | NR | 950 | 676 | NR |
| 435 | 4305 | NR | 565 | 25148 | NR | 695 | 14867 | NR | 825 | 970 | NR | 955 | 802 | NR |
| 440 | 7544 | NR | 570 | 26216 | NR | 700 | 13210 | NR | 830 | 769 | NR | 960 | 645 | NR |
| 445 | 11003 | NR | 575 | 27219 | NR | 705 | 11593 | NR | 835 | 894 | NR | 965 | 620 | NR |
| 450 | 11015 | NR | 580 | 28466 | NR | 710 | 10403 | NR | 840 | 893 | NR | 970 | 474 | NR |
| 455 | 8956 | NR | 585 | 29834 | NR | 715 | 9162 | NR | 845 | 864 | NR | 975 | 478 | NR |
| 460 | 8133 | NR | 590 | 31413 | NR | 720 | 8146 | NR | 850 | 828 | NR | 980 | 905 | NR |
| 465 | 7252 | NR | 595 | 32655 | NR | 725 | 7155 | NR | 855 | 921 | NR | 985 | 639 | NR |
| 470 | 6556 | NR | 600 | 34084 | NR | 730 | 6272 | NR | 860 | 633 | NR | 990 | 838 | NR |
| 475 | 6915 | NR | 605 | 35555 | NR | 735 | 5418 | NR | 865 | 816 | NR | 995 | 621 | NR |
| 480 | 7734 | NR | 610 | 36593 | NR | 740 | 4870 | NR | 870 | 767 | NR | 1000 | 903 | NR |
| 485 | 8748 | NR | 615 | 37350 | NR | 745 | 4295 | NR | 875 | 601 | NR | | | |

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

REPORT NUMBER: SP1-2106-271-1

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 849.3** **S/P: 0.48**

| 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 | 649 | NR | 490 | 9819 | NR | 620 | 37806 | NR | 750 | 3792 | NR | 880 | 778 | NR |
| 365 | 535 | NR | 495 | 10995 | NR | 625 | 38173 | NR | 755 | 3383 | NR | 885 | 829 | NR |
| 370 | 546 | NR | 500 | 12186 | NR | 630 | 37677 | NR | 760 | 3071 | NR | 890 | 745 | NR |
| 375 | 624 | NR | 505 | 13274 | NR | 635 | 36852 | NR | 765 | 2656 | NR | 895 | 648 | NR |
| 380 | 611 | NR | 510 | 14396 | NR | 640 | 35711 | NR | 770 | 2297 | NR | 900 | 661 | NR |
| 385 | 569 | NR | 515 | 15467 | NR | 645 | 34820 | NR | 775 | 2076 | NR | 905 | 740 | NR |
| 390 | 512 | NR | 520 | 16543 | NR | 650 | 33278 | NR | 780 | 1860 | NR | 910 | 635 | NR |
| 395 | 465 | NR | 525 | 17716 | NR | 655 | 31397 | NR | 785 | 1717 | NR | 915 | 683 | NR |
| 400 | 418 | NR | 530 | 18837 | NR | 660 | 29663 | NR | 790 | 1494 | NR | 920 | 620 | NR |
| 405 | 411 | NR | 535 | 19916 | NR | 665 | 27479 | NR | 795 | 1276 | NR | 925 | 580 | NR |
| 410 | 439 | NR | 540 | 20679 | NR | 670 | 25115 | NR | 800 | 1183 | NR | 930 | 717 | NR |
| 415 | 565 | NR | 545 | 21563 | NR | 675 | 22916 | NR | 805 | 1161 | NR | 935 | 780 | NR |
| 420 | 866 | NR | 550 | 22521 | NR | 680 | 20799 | NR | 810 | 1065 | NR | 940 | 630 | NR |
| 425 | 1393 | NR | 555 | 23411 | NR | 685 | 18810 | NR | 815 | 970 | NR | 945 | 433 | NR |
| 430 | 2399 | NR | 560 | 24238 | NR | 690 | 16831 | NR | 820 | 1013 | NR | 950 | 676 | NR |
| 435 | 4305 | NR | 565 | 25148 | NR | 695 | 14867 | NR | 825 | 970 | NR | 955 | 802 | NR |
| 440 | 7544 | NR | 570 | 26216 | NR | 700 | 13210 | NR | 830 | 769 | NR | 960 | 645 | NR |
| 445 | 11003 | NR | 575 | 27219 | NR | 705 | 11593 | NR | 835 | 894 | NR | 965 | 620 | NR |
| 450 | 11015 | NR | 580 | 28466 | NR | 710 | 10403 | NR | 840 | 893 | NR | 970 | 474 | NR |
| 455 | 8956 | NR | 585 | 29834 | NR | 715 | 9162 | NR | 845 | 864 | NR | 975 | 478 | NR |
| 460 | 8133 | NR | 590 | 31413 | NR | 720 | 8146 | NR | 850 | 828 | NR | 980 | 905 | NR |
| 465 | 7252 | NR | 595 | 32655 | NR | 725 | 7155 | NR | 855 | 921 | NR | 985 | 639 | NR |
| 470 | 6556 | NR | 600 | 34084 | NR | 730 | 6272 | NR | 860 | 633 | NR | 990 | 838 | NR |
| 475 | 6915 | NR | 605 | 35555 | NR | 735 | 5418 | NR | 865 | 816 | NR | 995 | 621 | NR |
| 480 | 7734 | NR | 610 | 36593 | NR | 740 | 4870 | NR | 870 | 767 | NR | 1000 | 903 | NR |
| 485 | 8748 | NR | 615 | 37350 | NR | 745 | 4295 | NR | 875 | 601 | NR | | | |

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

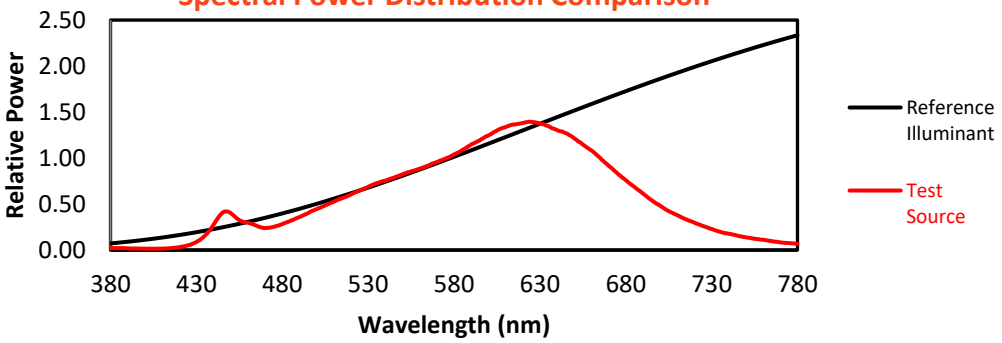
REPORT NUMBER: SP1-2106-271-1

# TM-30-18

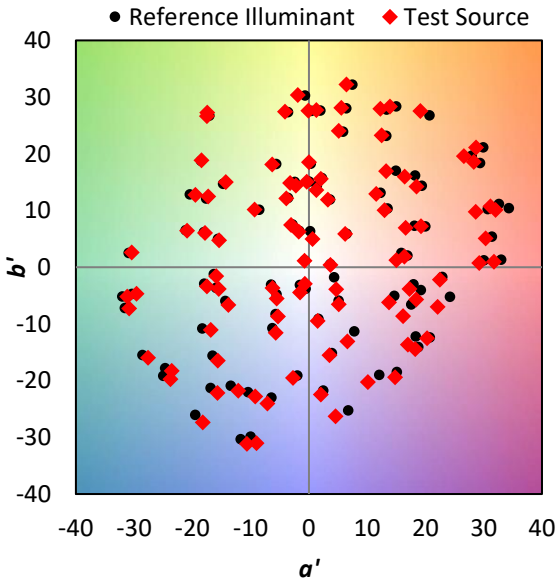
## Summary

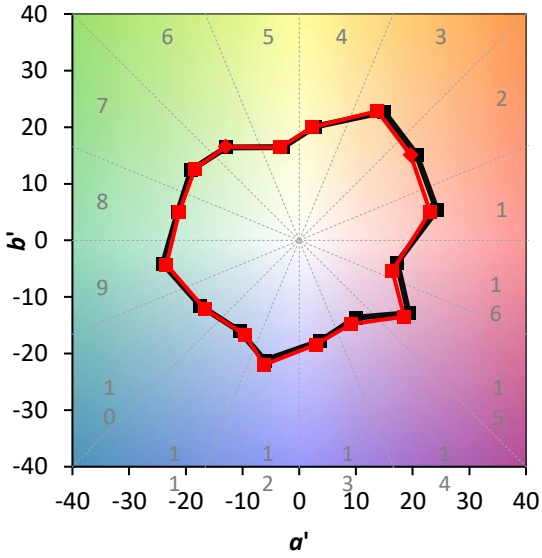
$R_f$ = 93.1
$R_g$ = 98.2
CIE $R_a$ = 92.5
$R_9$ = 58.3

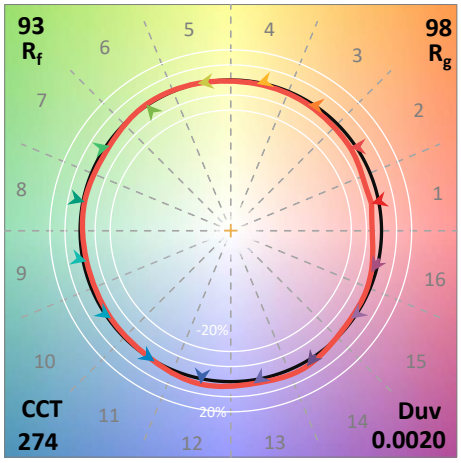
## Spectral Power Distribution Comparison

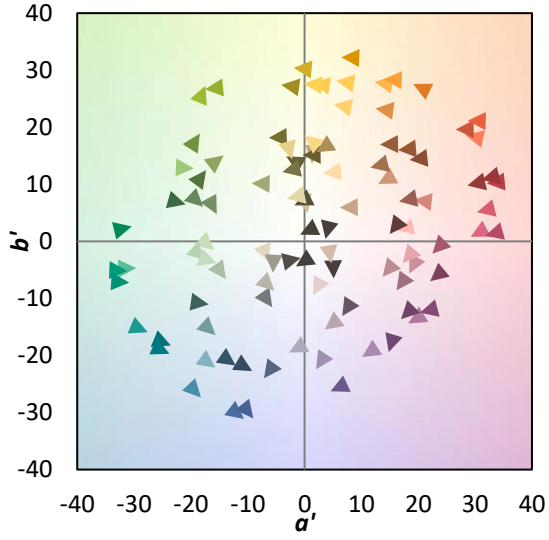



## Color Vector Graphics



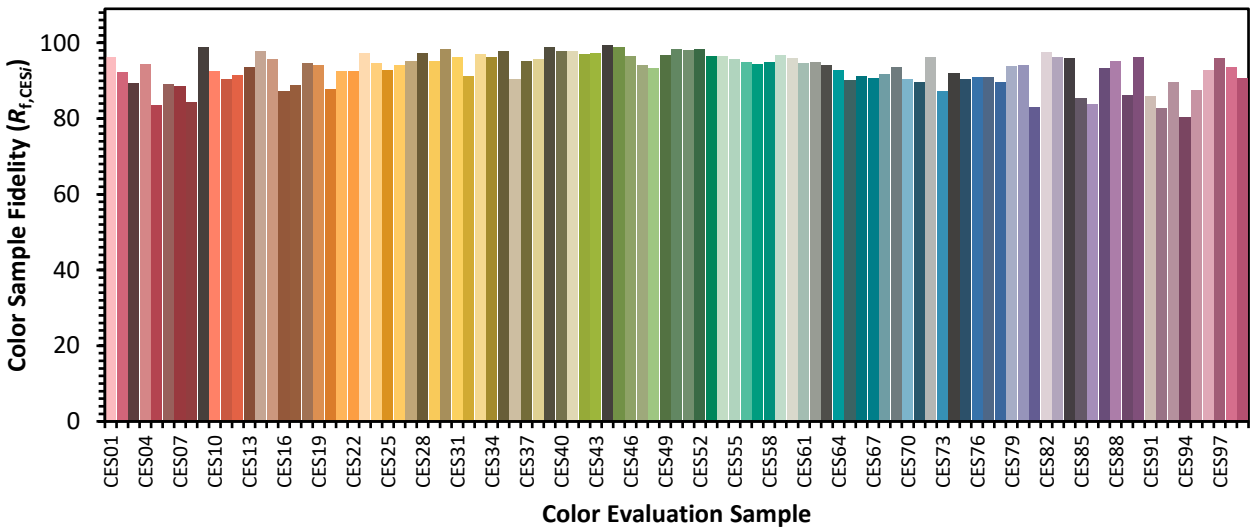
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2106-271-1

## TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 91 |
| CES02 = 64 | CES27 = 95 | CES52 = 98 | CES77 = 91 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 90 |
| CES04 = 70 | CES29 = 95 | CES54 = 96 | CES79 = 94 |
| CES05 = 51 | CES30 = 98 | CES55 = 96 | CES80 = 94 |
| CES06 = 52 | CES31 = 96 | CES56 = 95 | CES81 = 83 |
| CES07 = 44 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 43 | CES33 = 97 | CES58 = 95 | CES83 = 96 |
| CES09 = 29 | CES34 = 96 | CES59 = 97 | CES84 = 96 |
| CES10 = 76 | CES35 = 98 | CES60 = 96 | CES85 = 85 |
| CES11 = 59 | CES36 = 91 | CES61 = 95 | CES86 = 84 |
| CES12 = 66 | CES37 = 95 | CES62 = 95 | CES87 = 93 |
| CES13 = 44 | CES38 = 96 | CES63 = 94 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 93 | CES89 = 86 |
| CES15 = 72 | CES40 = 98 | CES65 = 90 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 91 | CES91 = 86 |
| CES17 = 50 | CES42 = 97 | CES67 = 91 | CES92 = 83 |
| CES18 = 57 | CES43 = 97 | CES68 = 92 | CES93 = 90 |
| CES19 = 72 | CES44 = 99 | CES69 = 94 | CES94 = 80 |
| CES20 = 68 | CES45 = 99 | CES70 = 90 | CES95 = 87 |
| CES21 = 87 | CES46 = 96 | CES71 = 90 | CES96 = 93 |
| CES22 = 79 | CES47 = 94 | CES72 = 96 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 87 | CES98 = 94 |
| CES24 = 91 | CES49 = 97 | CES74 = 92 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 90 | |

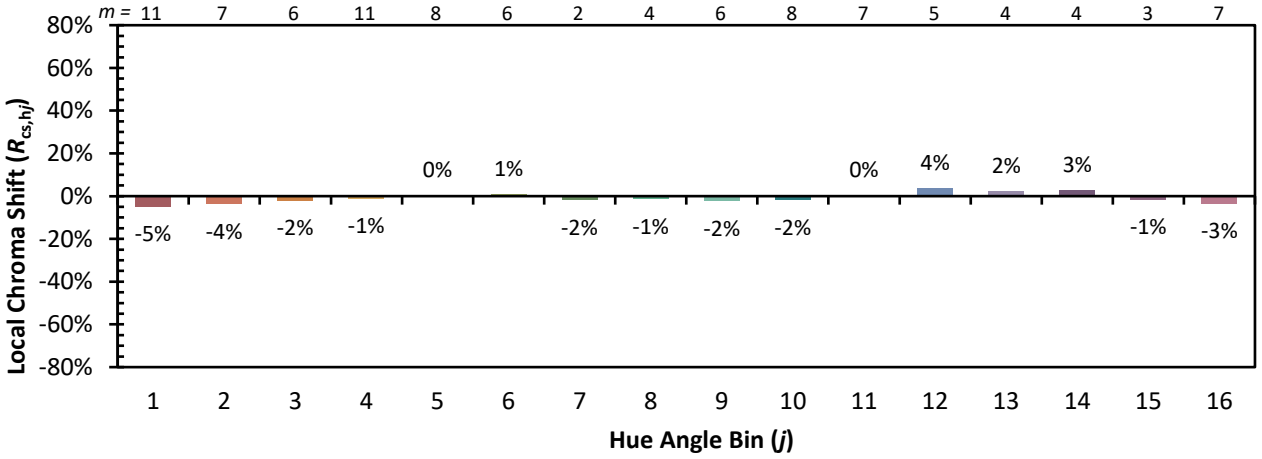


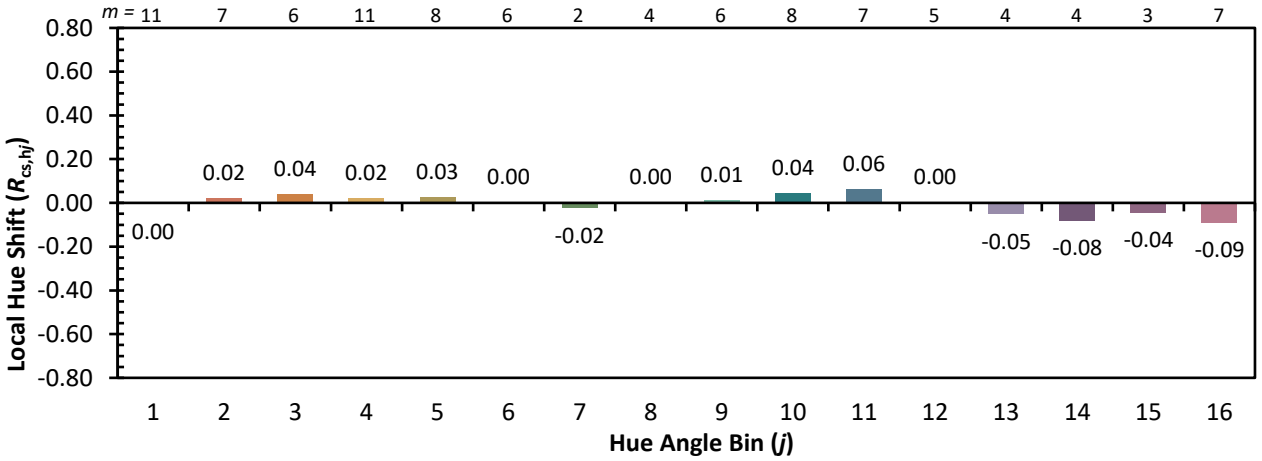
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

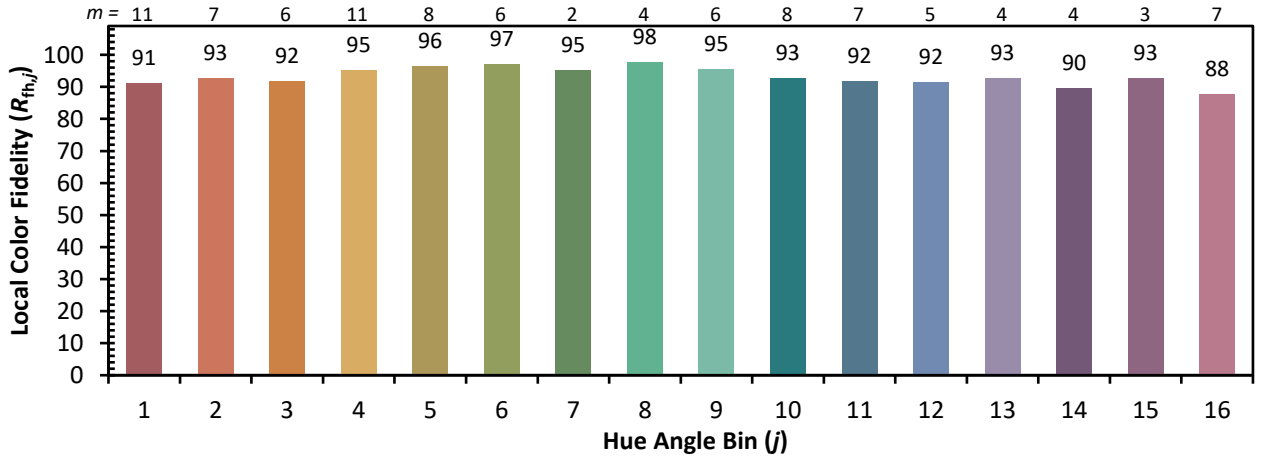
REPORT NUMBER: SP1-2106-271-1

## TM-30-18

### Color Rendition by Hue-Angle Bin



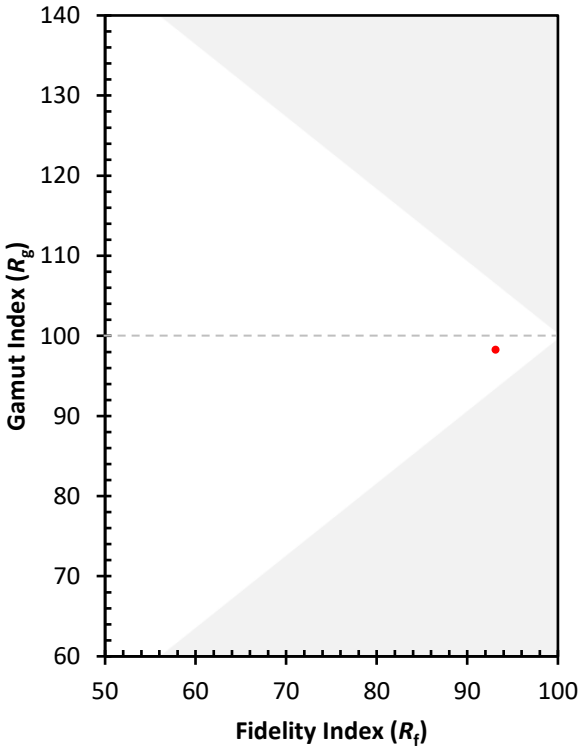



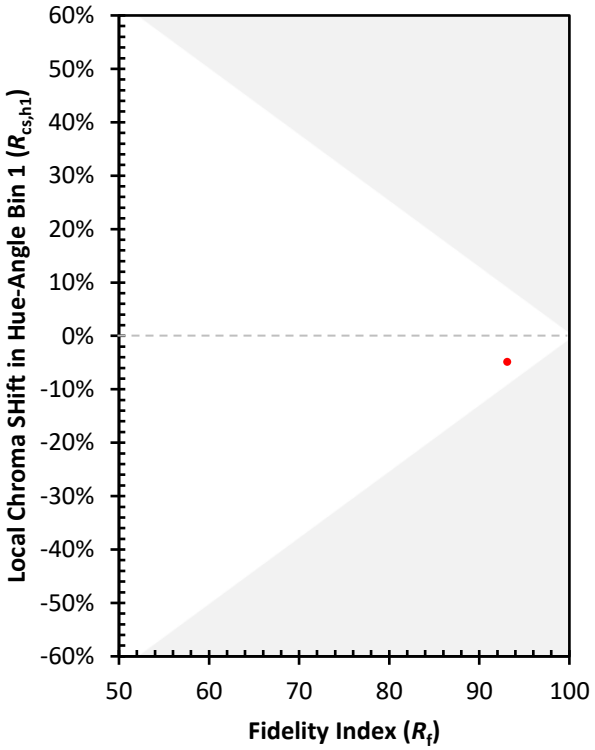
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2106-271-1

## TM-30-18

### Measure Comparisons




(END OF REPORT)