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: P630087

Luminaire Tested: GWS-SA1C-830-U-T3R-W-HSS

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: | P630087 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-18) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA1C-830-U-T3R-W-HSS |
| Description: | GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | (16) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 2989 lumens |
| Efficiency: | N/A |
| Efficacy: | 87.7 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B0 - U0 - G1 |

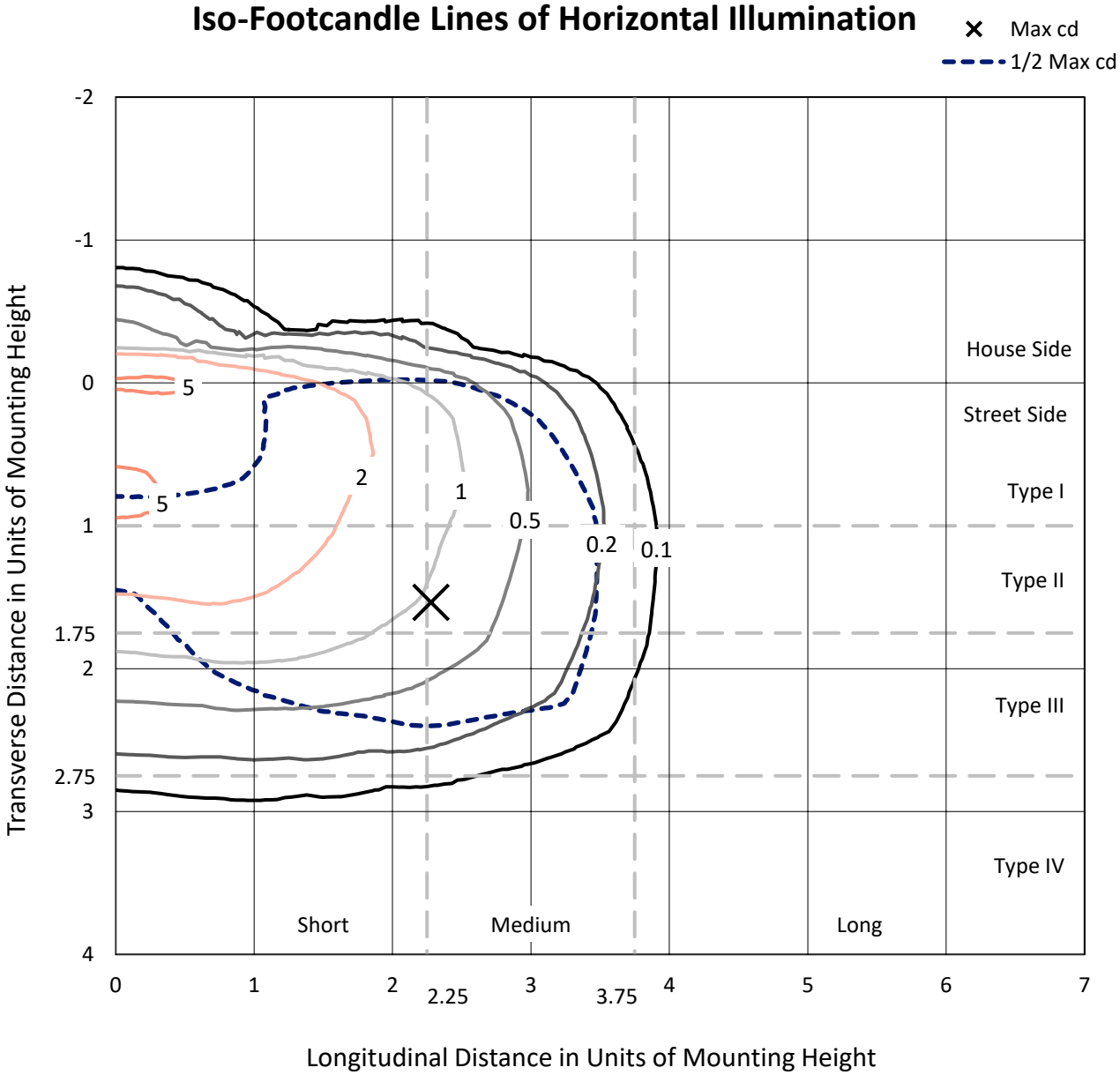
| | |
|---|---|
| Input Watts (W): | 34.1 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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

Scaled Data Report

REPORT NUMBER: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

## Iso-Footcandle Lines of Horizontal Illumination



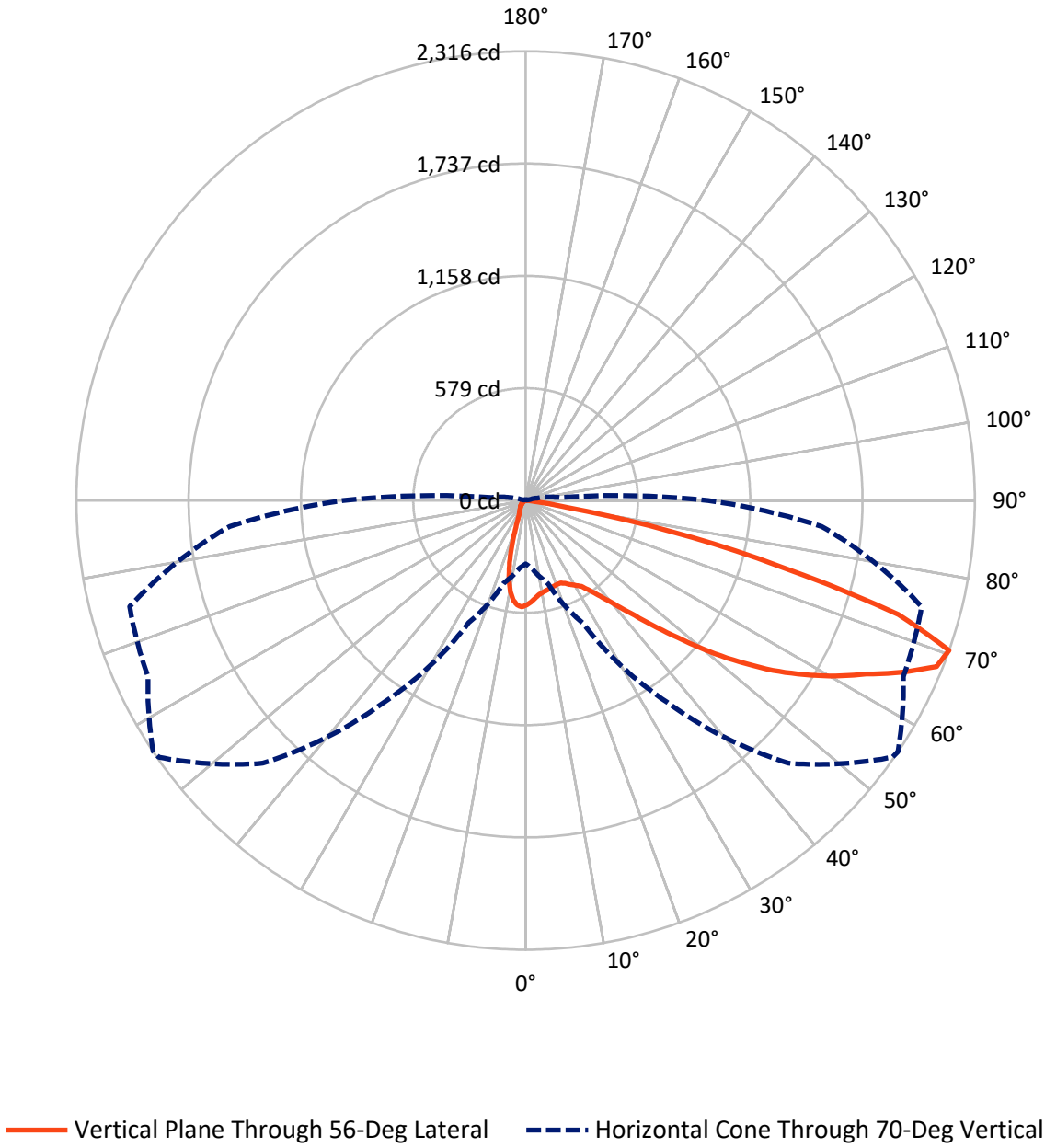

Based on 10 foot mounting height. Maximum calculated value = 5.7 fc
Type III - Medium - N/A

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

Scaled Data Report

REPORT NUMBER: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

## Luminous Intensity Polar Plot



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

Scaled Data Report

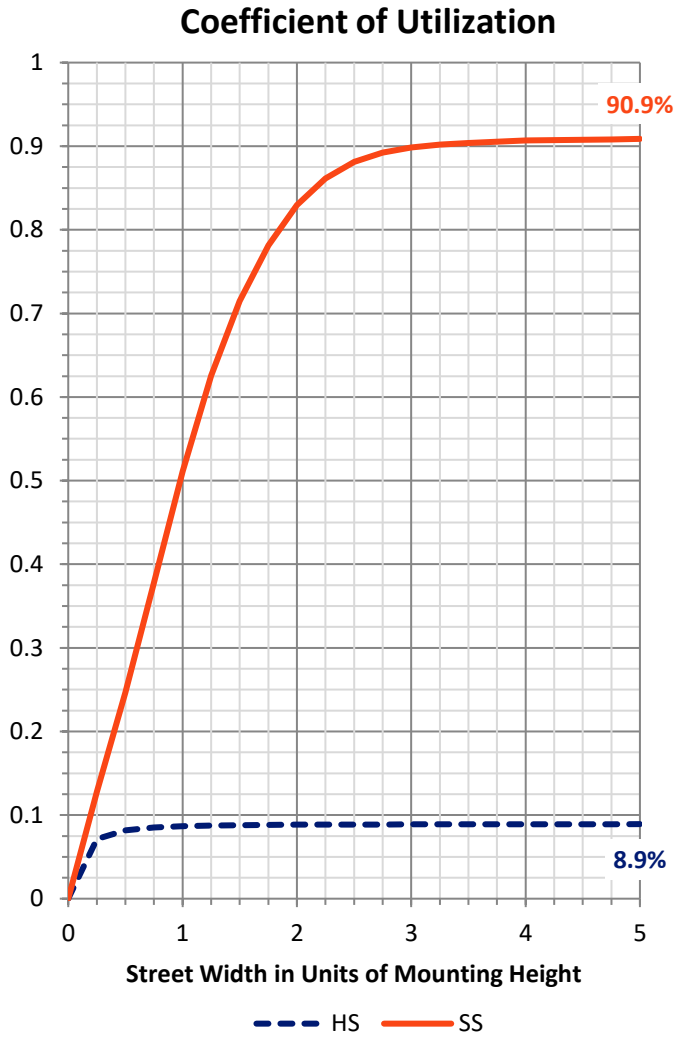
REPORT NUMBER: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 268.5 | 0.0 | 268.5 |
| | % Fixture | 9.0 | 0.0 | 9.0 |
| **Street Side** | Lumens | 2720.5 | 0.0 | 2720.5 |
| | % Fixture | 91.0 | 0.0 | 91.0 |
| **Total** | Lumens | 2989.0 | 0.0 | 2989.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 46.3 | 1.5 |
| 10°-20° | 104.1 | 3.5 |
| 20°-30° | 164.9 | 5.5 |
| 30°-40° | 284.3 | 9.5 |
| 40°-50° | 480.1 | 16.1 |
| 50°-60° | 705.4 | 23.6 |
| 60°-70° | 836.3 | 28.0 |
| 70°-80° | 356.6 | 11.9 |
| 80°-90° | 11.2 | 0.4 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 2989.0 | 100.0 |
| 0°-180° | 2989.0 | 100.0 |



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

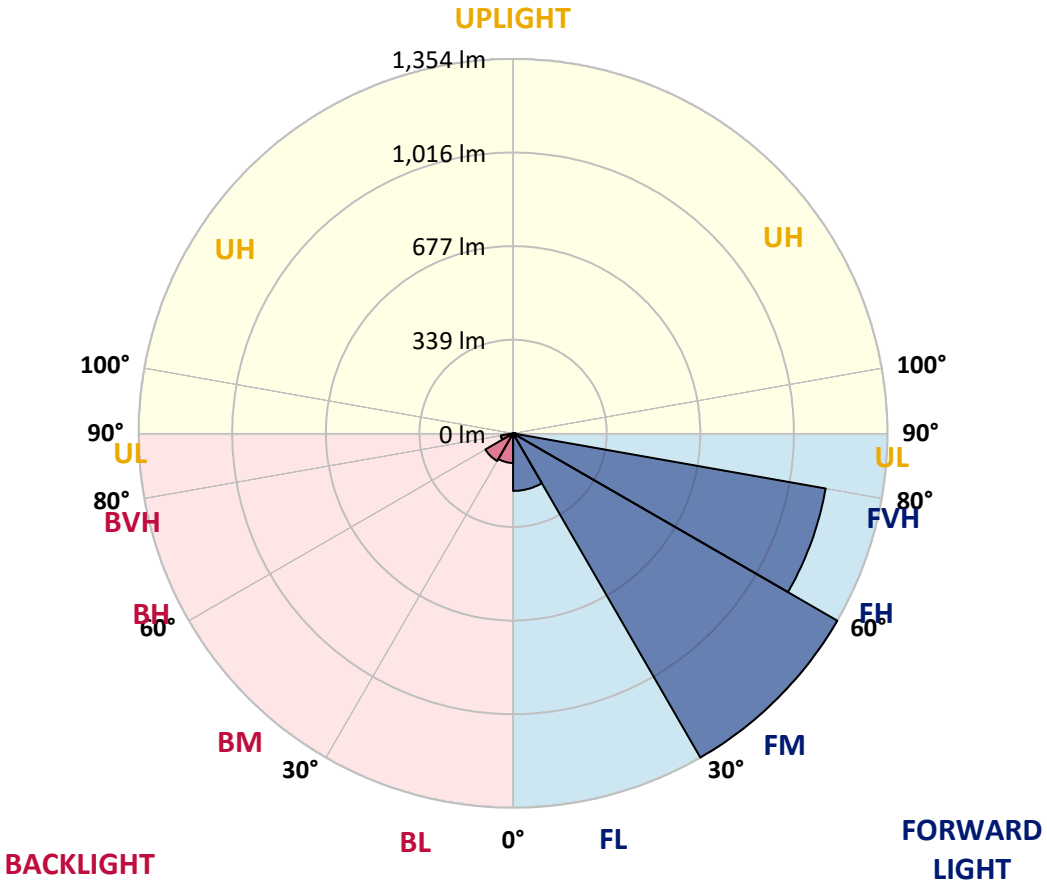
Scaled Data Report

REPORT NUMBER: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 208.3 | 7.0 | | | |
| FM | (30°-60°) | 1354.1 | 45.3 | | | |
| FH | (60°-80°) | 1148.1 | 38.4 | | | G1/1800 |
| FVH | (80°-90°) | 10.1 | 0.3 | | | G1/100 |
| BL | (0°-30°) | 106.9 | 3.6 | B0/110 | | |
| BM | (30°-60°) | 115.6 | 3.9 | B0/220 | | |
| BH | (60°-80°) | 44.8 | 1.5 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 1.1 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B0-U0-G1**
Type III Medium



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

Scaled Data Report

REPORT NUMBER: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 |
| 2.5° | 501.7 | 500.9 | 501.4 | 505.6 | 513.2 | 516.8 | 522.8 | 523.9 | 528.8 | 535.1 | 537.6 |
| 5° | 469.1 | 466.4 | 467.8 | 473.5 | 482.3 | 492.1 | 503.4 | 506.4 | 518.7 | 532.7 | 543.1 |
| 7.5° | 439.3 | 436.3 | 439.6 | 448.6 | 460.9 | 471.6 | 488.3 | 490.2 | 509.9 | 534.6 | 553.5 |
| 10° | 392.5 | 393.3 | 399.9 | 415.8 | 434.7 | 456.8 | 479.3 | 482.0 | 506.4 | 540.9 | 570.2 |
| 12.5° | 356.7 | 354.7 | 361.9 | 379.9 | 406.5 | 438.8 | 472.4 | 476.0 | 506.6 | 550.4 | 591.5 |
| 15° | 340.0 | 339.4 | 342.4 | 355.6 | 381.3 | 419.3 | 466.1 | 470.8 | 510.2 | 559.2 | 611.8 |
| 17.5° | 340.5 | 339.7 | 339.4 | 347.1 | 366.2 | 404.8 | 459.3 | 465.3 | 513.2 | 568.8 | 633.1 |
| 20° | 364.3 | 360.5 | 353.6 | 350.1 | 361.6 | 395.5 | 454.6 | 461.5 | 517.6 | 578.9 | 655.8 |
| 22.5° | 414.1 | 415.5 | 397.2 | 378.0 | 372.5 | 396.6 | 454.1 | 462.0 | 527.2 | 594.8 | 683.7 |
| 25° | 513.8 | 511.6 | 477.6 | 434.7 | 404.8 | 409.2 | 463.7 | 473.3 | 546.1 | 617.5 | 710.0 |
| 27.5° | 638.6 | 640.5 | 594.0 | 525.5 | 463.1 | 435.2 | 481.2 | 490.8 | 568.0 | 631.7 | 727.5 |
| 30° | 774.6 | 772.7 | 722.9 | 647.1 | 545.8 | 478.5 | 498.7 | 507.2 | 578.9 | 639.4 | 745.6 |
| 32.5° | 903.3 | 898.9 | 849.6 | 770.2 | 651.2 | 546.6 | 522.8 | 527.7 | 593.4 | 656.1 | 770.0 |
| 35° | 1013.0 | 1012.7 | 969.8 | 885.2 | 759.6 | 632.0 | 564.1 | 568.2 | 620.5 | 682.6 | 805.8 |
| 37.5° | 1126.3 | 1122.5 | 1074.3 | 997.1 | 871.0 | 725.6 | 627.4 | 625.7 | 663.2 | 721.8 | 849.9 |
| 40° | 1219.4 | 1216.9 | 1180.0 | 1105.8 | 986.7 | 829.1 | 704.0 | 699.1 | 713.9 | 776.0 | 911.2 |
| 42.5° | 1288.4 | 1288.7 | 1277.2 | 1232.0 | 1109.4 | 948.7 | 800.3 | 792.7 | 792.4 | 857.8 | 992.2 |
| 45° | 1340.7 | 1344.2 | 1361.5 | 1354.6 | 1254.2 | 1088.0 | 923.8 | 915.9 | 902.4 | 964.0 | 1085.0 |
| 47.5° | 1365.0 | 1369.7 | 1421.7 | 1449.1 | 1380.9 | 1226.2 | 1070.8 | 1054.1 | 1027.8 | 1105.3 | 1188.7 |
| 50° | 1362.6 | 1370.8 | 1443.3 | 1526.5 | 1495.9 | 1366.4 | 1230.9 | 1223.0 | 1180.0 | 1254.7 | 1291.4 |
| 52.5° | 1306.7 | 1324.2 | 1444.7 | 1573.6 | 1584.3 | 1495.6 | 1396.5 | 1381.7 | 1360.9 | 1410.7 | 1387.7 |
| 55° | 1155.1 | 1176.4 | 1386.9 | 1588.6 | 1653.2 | 1608.4 | 1558.5 | 1546.5 | 1512.0 | 1558.0 | 1471.8 |
| 57.5° | 1072.7 | 1091.0 | 1265.4 | 1581.3 | 1711.8 | 1712.6 | 1702.8 | 1692.9 | 1664.5 | 1703.6 | 1570.3 |
| 60° | 1023.2 | 1041.5 | 1200.5 | 1554.2 | 1764.9 | 1822.7 | 1838.3 | 1837.2 | 1796.1 | 1869.2 | 1685.8 |
| 62.5° | 950.6 | 975.8 | 1132.9 | 1483.8 | 1802.7 | 1931.1 | 1978.1 | 1970.8 | 1925.0 | 2041.6 | 1800.2 |
| 65° | 804.2 | 826.1 | 994.4 | 1367.8 | 1780.5 | 2020.8 | 2129.8 | 2133.6 | 2080.8 | 2204.0 | 1890.6 |
| 67.5° | 563.9 | 580.0 | 747.2 | 1124.2 | 1630.0 | 2050.4 | 2285.0 | 2284.7 | 2194.7 | 2287.2 | 1850.6 |
| 70° | 326.8 | 349.0 | 441.5 | 695.0 | 1268.1 | 1916.0 | 2308.2 | 2316.2 | 2148.4 | 2113.4 | 1531.4 |
| 72.5° | 126.5 | 144.8 | 250.2 | 369.2 | 661.3 | 1467.7 | 1985.5 | 2008.8 | 1798.0 | 1630.3 | 1065.9 |
| 75° | 37.8 | 42.2 | 117.7 | 196.5 | 265.5 | 708.9 | 1344.2 | 1350.8 | 1233.4 | 1016.9 | 546.3 |
| 77.5° | 28.2 | 31.2 | 51.5 | 99.4 | 93.1 | 214.9 | 695.5 | 759.6 | 654.7 | 363.2 | 150.5 |
| 80° | 19.2 | 22.7 | 36.7 | 48.4 | 34.5 | 57.2 | 195.4 | 214.6 | 199.8 | 81.6 | 37.8 |
| 82.5° | 8.5 | 10.9 | 26.0 | 24.4 | 12.6 | 16.4 | 60.2 | 64.0 | 41.3 | 24.6 | 13.1 |
| 85° | 0.8 | 1.1 | 9.9 | 10.7 | 4.7 | 3.8 | 12.6 | 12.6 | 9.0 | 8.5 | 5.5 |
| 87.5° | 0.0 | 0.0 | 0.3 | 0.5 | 0.5 | 0.8 | 1.1 | 1.4 | 1.6 | 2.2 | 2.7 |
| 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: P630087
CATALOG NUMBER: GWS-SA1C-830-U-T3R-W-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 | 538.9 |
| 2.5° | 543.9 | 540.6 | 544.7 | 548.0 | 548.8 | 542.8 | 539.2 | 534.0 | 532.9 | 533.2 | 531.8 |
| 5° | 551.3 | 549.6 | 552.6 | 549.1 | 539.8 | 522.3 | 507.2 | 490.5 | 481.5 | 476.3 | 475.7 |
| 7.5° | 564.9 | 564.1 | 560.8 | 544.7 | 515.7 | 476.8 | 439.3 | 402.6 | 379.9 | 371.7 | 370.3 |
| 10° | 585.2 | 583.6 | 570.2 | 531.8 | 470.0 | 395.2 | 332.3 | 279.7 | 247.7 | 238.4 | 226.9 |
| 12.5° | 608.5 | 605.2 | 575.9 | 504.2 | 401.0 | 297.5 | 219.0 | 160.1 | 132.5 | 124.3 | 124.3 |
| 15° | 630.9 | 623.8 | 572.6 | 458.5 | 316.1 | 193.5 | 122.4 | 92.5 | 84.0 | 81.8 | 81.8 |
| 17.5° | 653.9 | 640.2 | 559.7 | 396.1 | 218.4 | 114.4 | 81.6 | 75.8 | 74.7 | 75.0 | 75.3 |
| 20° | 675.5 | 654.2 | 537.0 | 321.1 | 139.3 | 79.9 | 73.1 | 71.7 | 71.2 | 71.7 | 71.4 |
| 22.5° | 699.1 | 667.0 | 502.5 | 239.2 | 90.6 | 72.0 | 69.5 | 68.4 | 67.9 | 68.7 | 68.7 |
| 25° | 722.3 | 676.4 | 456.8 | 160.9 | 72.0 | 67.1 | 65.7 | 64.6 | 64.0 | 64.3 | 64.3 |
| 27.5° | 734.4 | 672.8 | 396.9 | 102.6 | 64.6 | 62.1 | 60.8 | 59.4 | 58.6 | 58.3 | 58.6 |
| 30° | 742.6 | 661.8 | 323.5 | 73.1 | 58.6 | 55.6 | 54.2 | 53.1 | 50.9 | 49.5 | 50.1 |
| 32.5° | 755.5 | 650.9 | 243.9 | 61.3 | 53.6 | 49.0 | 46.8 | 44.1 | 41.1 | 39.7 | 39.7 |
| 35° | 770.8 | 635.8 | 171.1 | 55.3 | 48.4 | 43.5 | 39.4 | 34.8 | 31.2 | 30.1 | 30.1 |
| 37.5° | 791.0 | 621.6 | 113.9 | 51.2 | 44.1 | 38.9 | 33.1 | 27.6 | 23.8 | 23.3 | 23.0 |
| 40° | 821.4 | 609.6 | 80.2 | 48.2 | 40.2 | 33.9 | 27.1 | 21.3 | 18.6 | 17.8 | 17.8 |
| 42.5° | 860.8 | 597.2 | 63.5 | 45.2 | 37.0 | 29.3 | 21.6 | 17.0 | 14.8 | 14.2 | 14.0 |
| 45° | 909.6 | 582.7 | 55.3 | 42.4 | 33.7 | 24.4 | 17.2 | 14.2 | 12.6 | 12.0 | 12.0 |
| 47.5° | 962.4 | 563.0 | 51.5 | 38.9 | 29.8 | 19.7 | 14.5 | 12.3 | 11.5 | 11.2 | 10.9 |
| 50° | 1014.4 | 536.5 | 48.2 | 35.6 | 25.5 | 16.1 | 12.6 | 11.2 | 10.7 | 10.4 | 10.4 |
| 52.5° | 1059.8 | 505.6 | 44.1 | 31.8 | 20.8 | 14.0 | 11.2 | 10.4 | 9.9 | 9.3 | 9.0 |
| 55° | 1098.7 | 471.9 | 38.9 | 27.4 | 17.0 | 12.3 | 10.4 | 9.6 | 9.0 | 8.5 | 8.2 |
| 57.5° | 1148.8 | 452.7 | 31.2 | 22.2 | 14.0 | 10.9 | 9.6 | 8.8 | 8.2 | 7.4 | 7.4 |
| 60° | 1204.4 | 438.8 | 23.3 | 17.5 | 12.0 | 10.1 | 8.8 | 7.9 | 7.4 | 6.6 | 6.6 |
| 62.5° | 1249.0 | 418.0 | 18.3 | 14.2 | 10.4 | 9.0 | 7.9 | 7.1 | 6.6 | 5.7 | 5.7 |
| 65° | 1265.9 | 375.0 | 15.1 | 11.2 | 8.5 | 7.9 | 7.1 | 6.6 | 5.7 | 4.9 | 4.9 |
| 67.5° | 1189.3 | 289.0 | 12.6 | 9.0 | 7.1 | 6.8 | 6.3 | 6.0 | 4.9 | 4.4 | 4.1 |
| 70° | *941.9* | *176.3* | *10.4* | *7.4* | *6.0* | *5.7* | *5.7* | *5.2* | *4.4* | *4.1* | *3.8* |
| 72.5° | 645.4 | 90.9 | 8.5 | 6.0 | 5.2 | 5.2 | 4.9 | 4.7 | 4.1 | 3.8 | 3.8 |
| 75° | 335.3 | 30.4 | 6.6 | 4.7 | 4.1 | 4.4 | 4.4 | 4.1 | 3.8 | 3.8 | 3.6 |
| 77.5° | 96.1 | 13.7 | 4.9 | 3.6 | 3.3 | 3.3 | 3.6 | 3.6 | 3.6 | 3.3 | 3.3 |
| 80° | 24.9 | 7.9 | 3.6 | 2.7 | 2.7 | 2.7 | 2.7 | 3.0 | 3.3 | 3.0 | 3.0 |
| 82.5° | 10.1 | 4.4 | 2.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.7 | 2.7 | 2.7 |
| 85° | 6.3 | 2.2 | 1.9 | 1.9 | 1.9 | 1.6 | 1.6 | 1.9 | 1.9 | 2.2 | 2.2 |
| 87.5° | 3.8 | 1.6 | 1.6 | 1.6 | 1.6 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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

# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

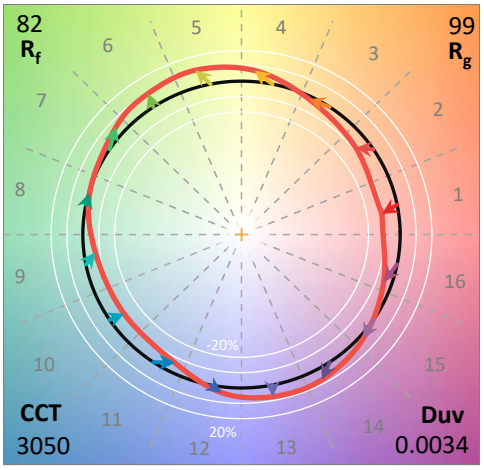
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

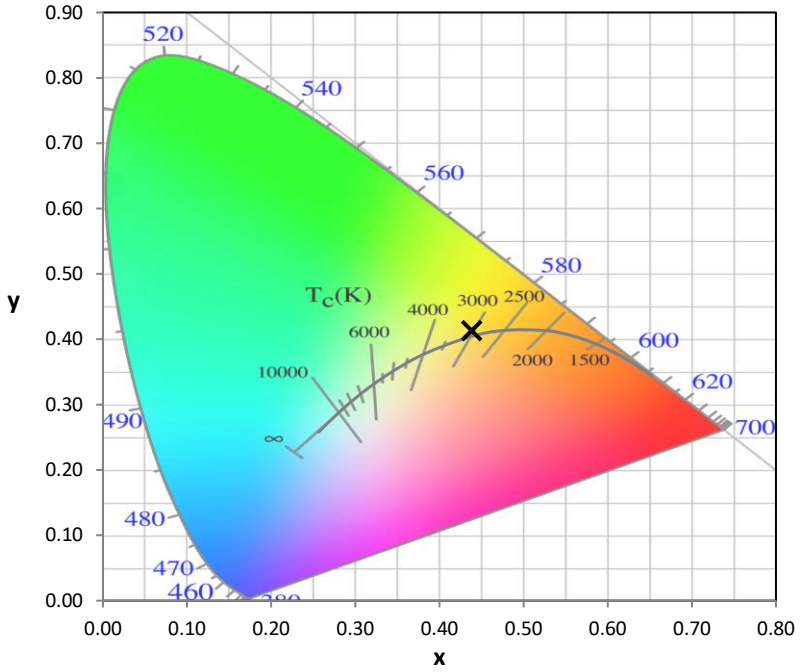
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

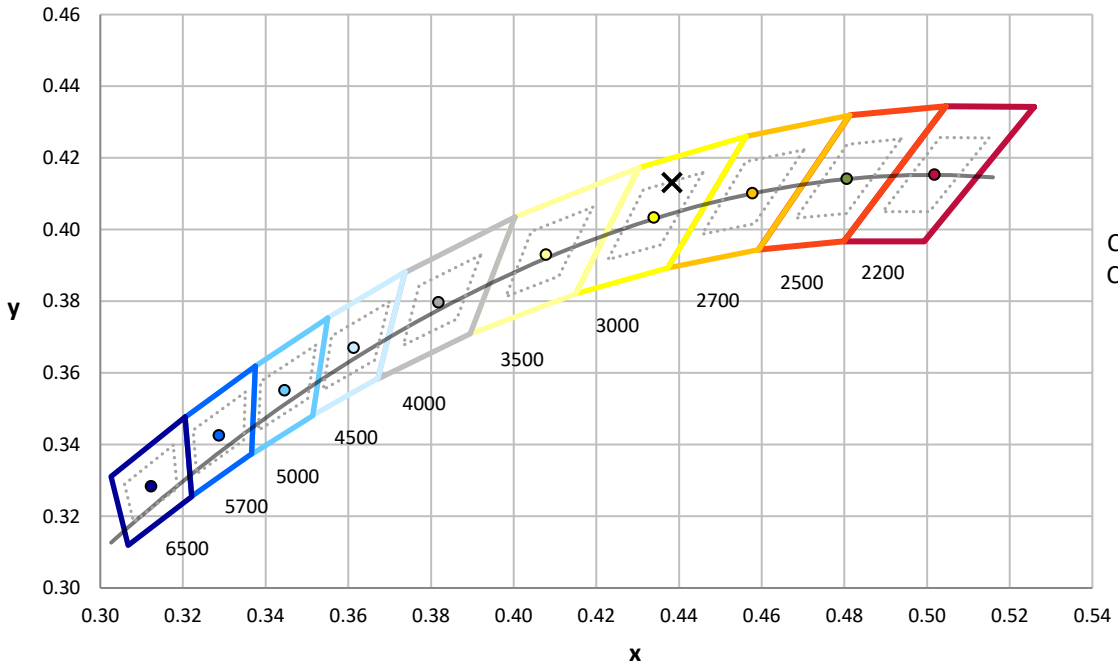
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2408-195-9

## CIE 1931 Chromaticity Diagram




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

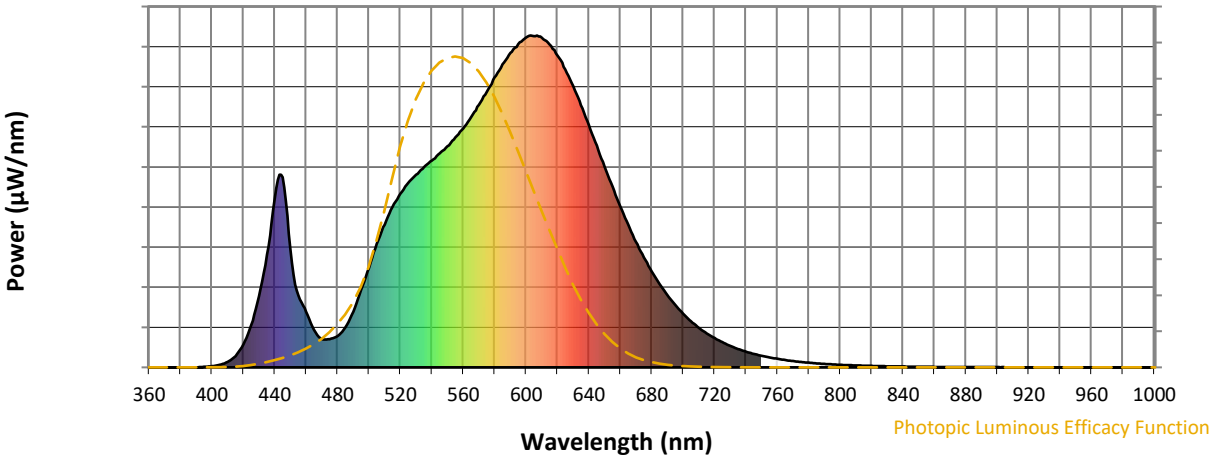



CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2408-195-9

## Photopic Flux vs. Wavelength

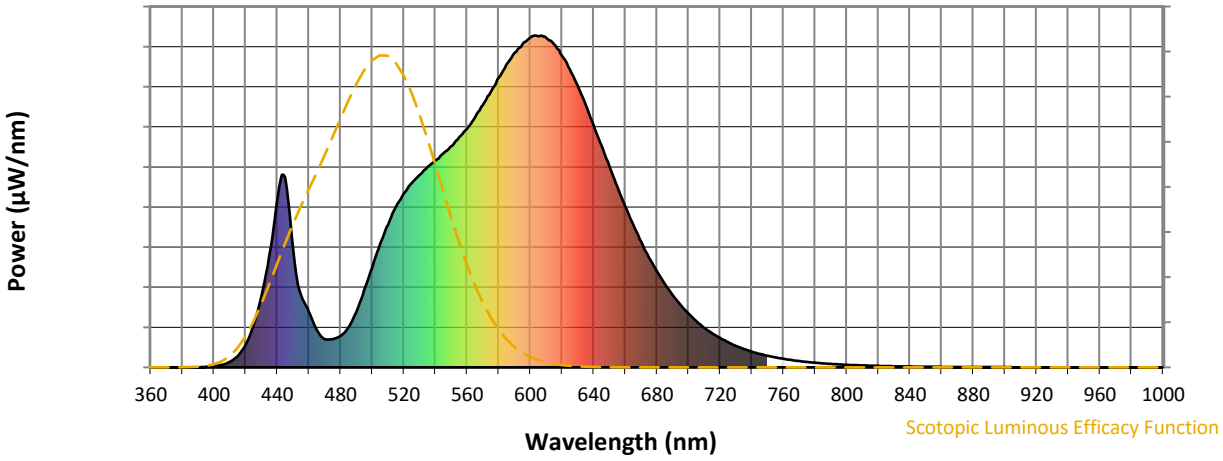



## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

## Scotopic Flux vs. Wavelength

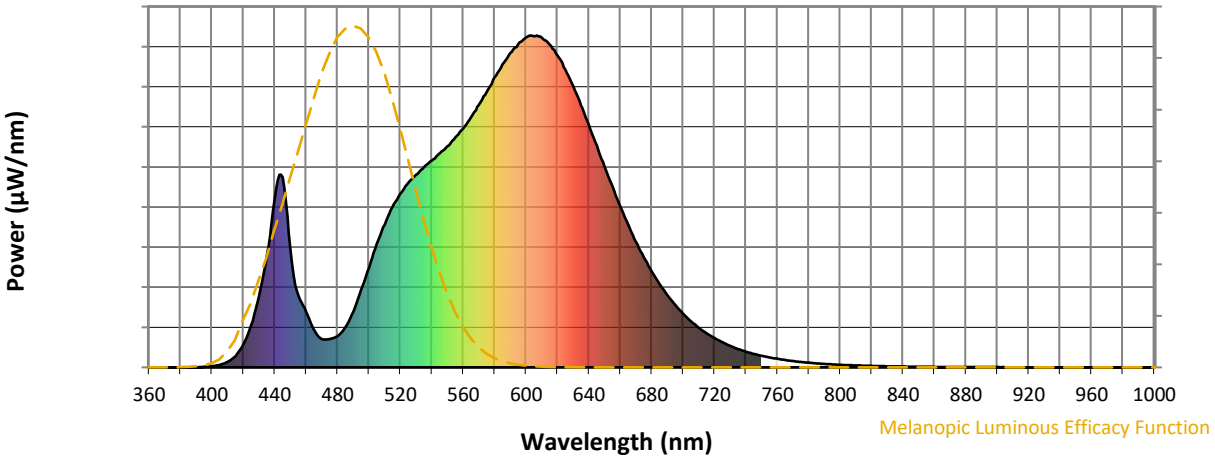



**Scotopic Lumens: NR** **S/P: 1.27**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

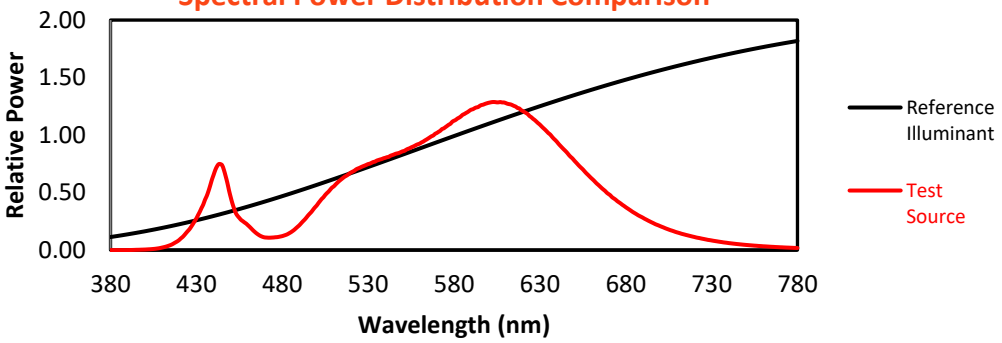
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

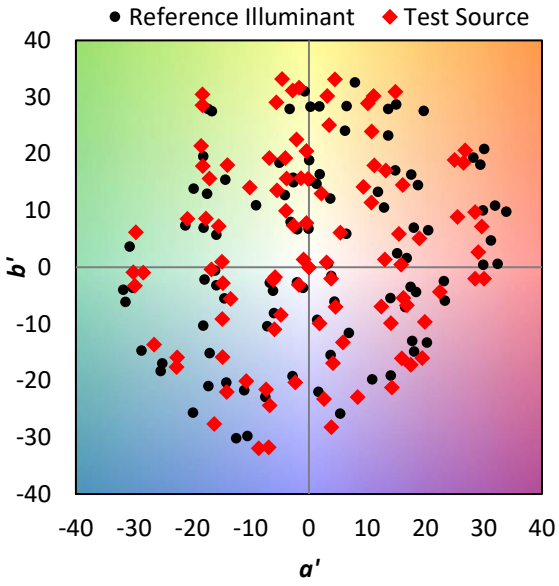
## Summary

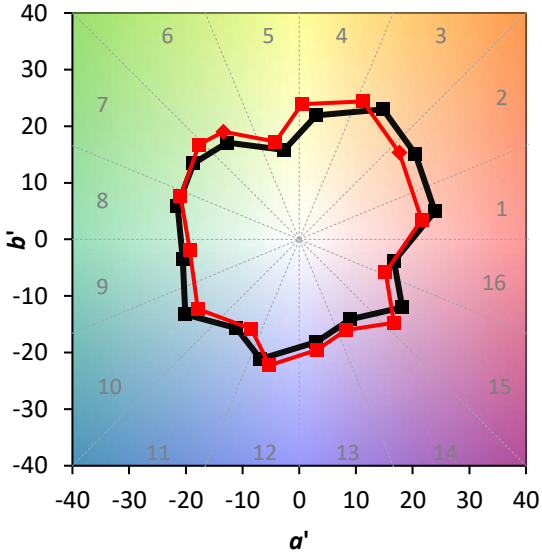
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

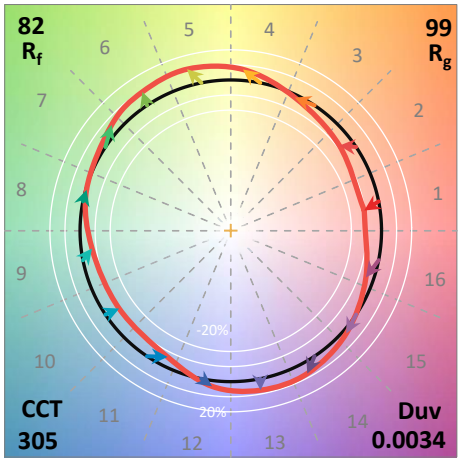
## Spectral Power Distribution Comparison

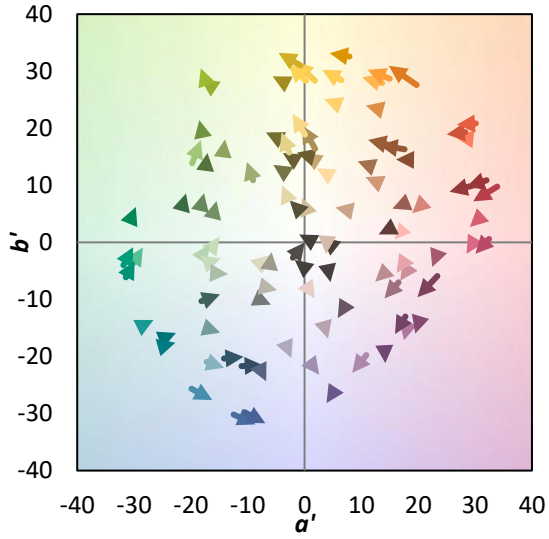



## Color Vector Graphics



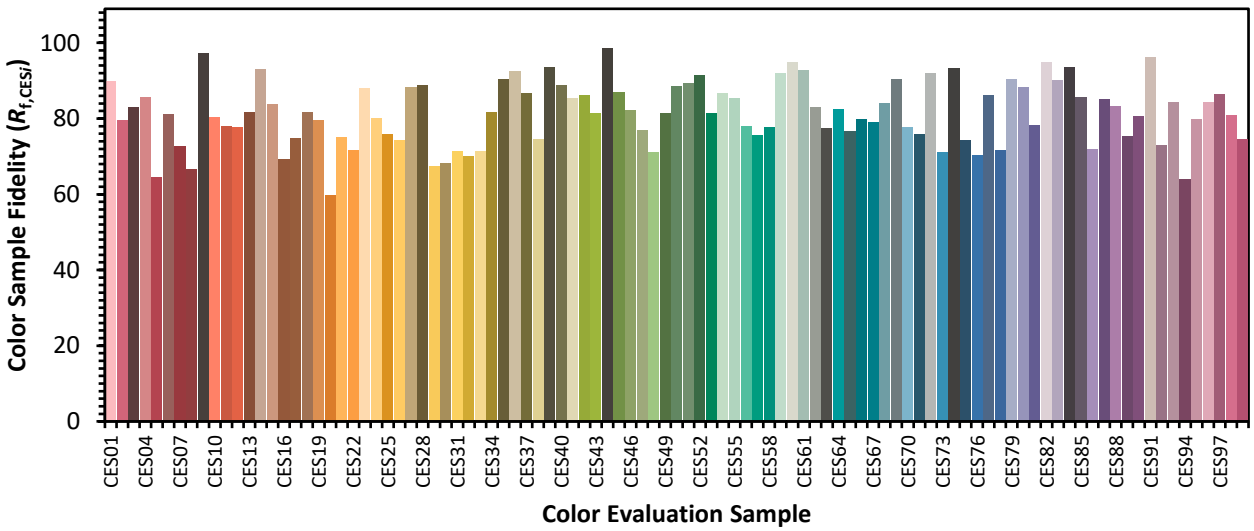



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

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

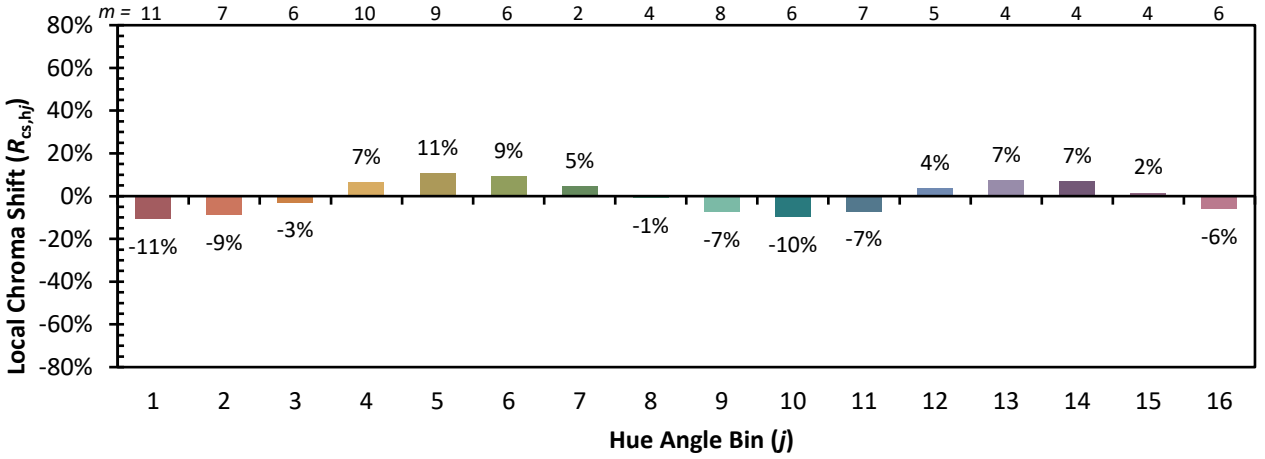
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |

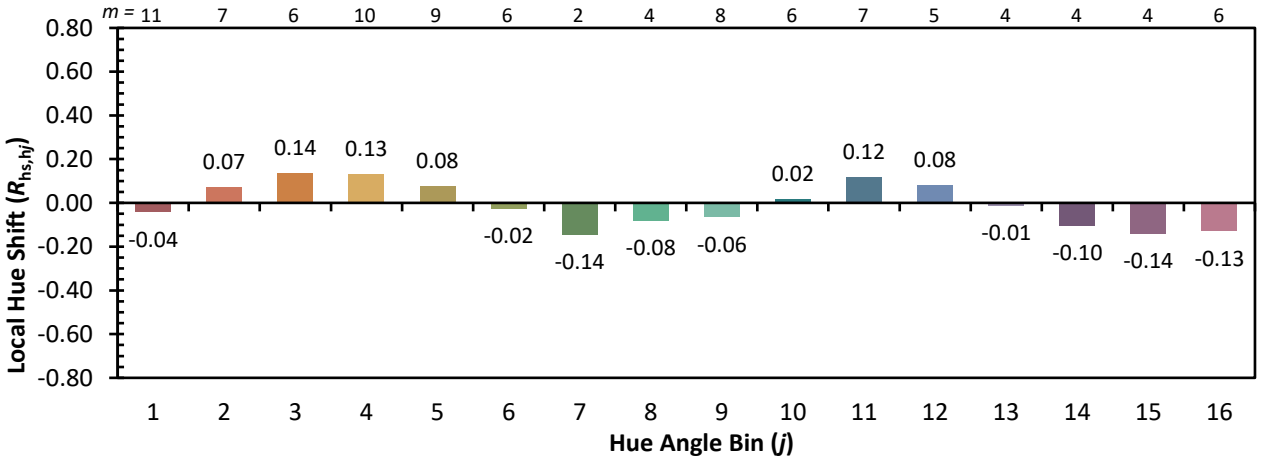


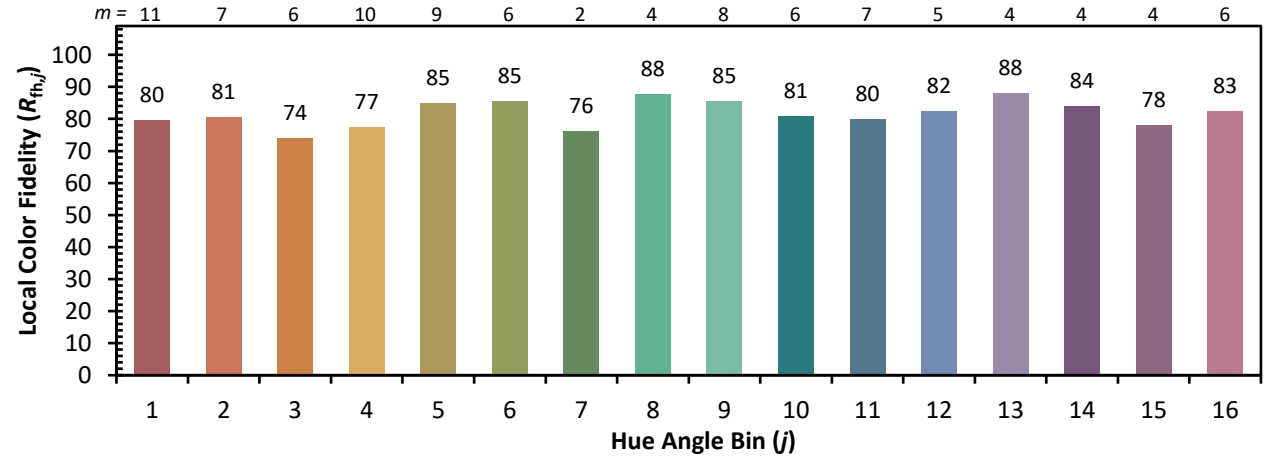
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Color Rendition by Hue-Angle Bin



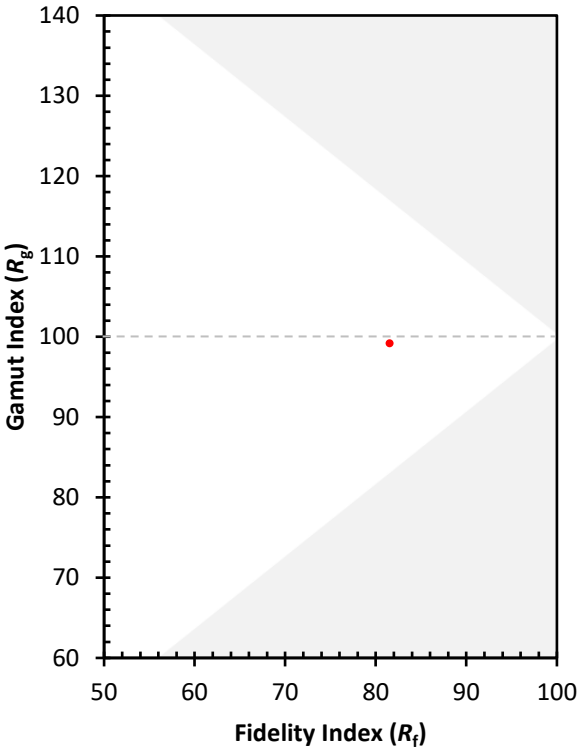



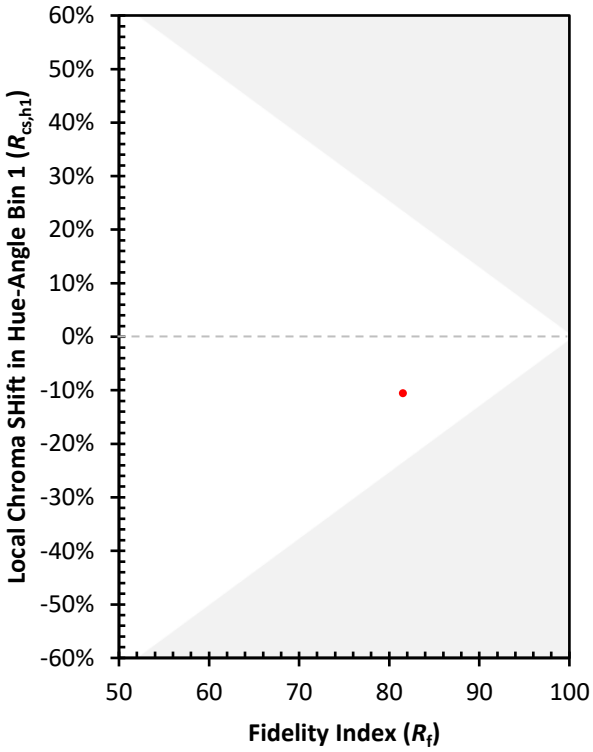



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Measure Comparisons




(END OF REPORT)